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DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK  
MULTILATERAL INVESTMENT FUND

**HONDURAS**

**COFFEECHAIN: DIGITALIZATION OF THE COFFEE CHAIN TO INCREASE THE  
RESILIENCE OF SPECIALTY COFFEE GROWERS IN HONDURAS**

**(HO-T1343)**

**DONORS MEMORANDUM**

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## PROJECT SUMMARY

### **COFFEECHAIN: DIGITALIZATION OF THE COFFEE CHAIN TO INCREASE THE RESILIENCE OF SPECIALTY COFFEE GROWERS IN HONDURAS (HO-T1343)**

Honduras's coffee sector comprises more than 122,000 small coffee-growing family farms operating in 16 of the country's 18 departments. These growers generate 30% of the country's agricultural GDP and 4% of total GDP. Honduras is the world's fifth largest producer of coffee.<sup>1</sup> The sector has considerable potential to alleviate rural poverty and help achieve the Sustainable Development Goals (SDGs).<sup>2</sup> The coffee industry has been identified as a priority sector in the Honduran government's Development Plan and in the Strategic Plan for the Agrifood Sector in Honduras 2014-2018.<sup>3</sup>

The CoffeeChain project will be IDB Lab's first pilot to digitalize the value chain of a product as important at the national level as coffee. Through the implementation of blockchain technology, the project will help ensure a decent income, improve profitability, and enhance the transparency of transactions for 800 small family farms that grow and sell coffee in the region of La Paz, Santa Barbara, and Copán in Honduras, which will support the process of registering coffee growers in the medium term. The project will also generate lessons learned as public policy inputs for developing the productive potential of coffee.

The project will focus on providing innovative blockchain-based solutions to create a digital record of transactions in the coffee supply chain and thereby make the coffee supply more valuable, profitable, and stable. The process of digitalizing traceability will be carried out in coordination with three leading cooperatives in the sector—COMSA,<sup>4</sup> COPRANIL,<sup>5</sup> and COMMOVEL<sup>6</sup>—and their commercial partners.

The project will tackle the challenges involved in coffee production and address the impact on coffee exports of the restrictions and limitations associated with the quarantine imposed in response to the COVID-19 health crisis, by promoting the inclusion of small-scale coffee growers in high-value global markets in a resilient and sustainable way through better collaboration between firms and the consolidation of a transparent supply chain.

The executing agency is Heifer Project International – Honduras (HPI-HN), a nongovernmental organization with experience developing value chains and innovating pilot projects using blockchain technology in the poultry and coffee sectors.

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<sup>1</sup> Analysis of the Coffee Value Chain in Honduras (UNDP, IHCAFE, HEIFER Project International Honduras).

<sup>2</sup> <http://www.undp.org/content/undp/es/home/sustainable-development-goals.html>.

<sup>3</sup> <https://portalunico.iaip.gob.hn/>.

<sup>4</sup> [Café Orgánico Marcala SA de CV](#).

<sup>5</sup> [Cooperativa Regional Agroforestal Nuevas Ideas Limitada](#).

<sup>6</sup> [Cooperativa Mixta Montaña Verde Limitada. Cooperativa exportadora de Café Orgánico](#).

## **ANNEXES**

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## **APPENDICES**

Proposed resolution
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## **INFORMATION AVAILABLE IN THE TECHNICAL FILES**

Annex IV	Itemized budget
Annex V	Diagnostic assessment of integrity and institutional capacity
Annex VI	Project status reports and fulfillment of milestones and fiduciary agreements
Annex VII	Procurement plan
Annex VIII	Project intervention map
Annex IX	Strategic elements of the intervention and coffee market system analysis

## **ABBREVIATIONS**

COMMOVEL	Cooperativa Mixta Montaña Verde Limitada
COMSA	Cooperativa de Café Orgánico Marcala, S.A. de C.V.
COPRANIL	Cooperativa Regional Agroforestal Nuevas Ideas Limitada
CROP	Centro de Recursos de Operación de Proyectos [Project Operation Resources Center]
CSA	Climate-smart agriculture
HPI-HN	Heifer Project International – Honduras
IHCAFE	Instituto Hondureño del Café [Honduran Coffee Institute]
SDGs	Sustainable Development Goals
UNDP	United Nations Development Programme

## HONDURAS

### COFFEECHAIN: DIGITALIZATION OF THE COFFEE CHAIN TO INCREASE THE RESILIENCE OF SPECIALTY COFFEE GROWERS IN HONDURAS (HO-T1343)

#### PROJECT INFORMATION

<b>Country and geographic location:</b>	Honduras, in the departments of La Paz, Santa Bárbara, and Copán.		
<b>Executing agency:</b>	Heifer Project International, Honduras (HPI-HN), nongovernmental organization		
<b>Focus area:</b>	Climate-smart agriculture (CSA)		
<b>Coordination with other donors / Bank operations:</b>	The project will be coordinated with: (i) the Bank's Comprehensive Rural Development and Productivity Project (HO-L1201); (ii) Producers of Traceable, Quality Specialty Coffees (HO-T1344); and (iii) LAC Chain: Global Partnership for the Development of the Blockchain Ecosystem in LAC (IDB Lab). <sup>7</sup>		
<b>Project beneficiaries:</b>	The project will be carried out in the departments of La Paz, Santa Bárbara, and Copán. It will directly benefit 800 coffee-growing families with annual incomes of less than US\$2,000 who are members of the COMSA, COPRANIL, and COMMOVEL cooperatives and others to be identified. In addition, it will indirectly impact 1,000 families by making specialty coffees more valuable and profitable.		
<b>Financing:</b>	Technical cooperation:	US\$650,000	
	<b>Total, IDB Lab contribution:</b>	US\$650,000	50%
	Counterpart contribution, HPI-HN:	US\$650,000	50%
	<b>Total project budget:</b>	US\$1,300,000	100%
<b>Execution and disbursement periods:</b>	The execution period will be 24 months, and the disbursement period will be 30 months.		
<b>Special contractual conditions:</b>	As a special condition precedent to the first disbursement: (i) an interagency agreement will be signed with Heifer Project International – Honduras and at least three coffee associations that are prepared to develop the pilot projects for digitalization of the coffee chain; (ii) a collaboration/services agreement will be signed between the executing agency and Affogato; and (iii) a project steering committee will be established.		
<b>Environmental and social impact review:</b>	This project was evaluated pursuant to the requirements of the IDB's Environment and Safeguards Compliance Policy (OP-703) on 4 March 2020 and classified as a category "C" operation.		
<b>Unit with disbursement responsibility:</b>	Bank's Country Office in Honduras (CID/CHO)		

<sup>7</sup> This is a new partnership to promote the development of a blockchain ecosystem in Latin America and the Caribbean that is inclusive, efficient, and secure for all. This partnership seeks to ensure that the benefits obtaining from the expanded technology reach the most underserved populations through the region. Source: IDB Lab.

## I. THE PROBLEM

### A. Context and description

- 1.1 Coffee is an important product for Honduras. Cultivated by over 122,000 families in 16 of the country's 18 departments, it generates 30% of the country's agricultural GDP and 4% of total GDP.<sup>8</sup> This crop is responsible for more jobs than any other, and it is the country's top revenue producer. Coffee is grown on over 280,000 hectares of land, most of which are held by small farmers on less than five hectare.
- 1.2 In recent years, Honduran coffee has performed well in three major areas related to production: (i) the average quality of Honduran coffee has improved, and consistent year-to-year delivery on the global markets has raised the profile of the national product in the eyes of large retailers such as JDE, Starbucks, and NKG;<sup>9</sup> (ii) Honduran coffee has achieved recognition for its regional coffees and has succeeded in positioning its denomination of origin, in particular for Marcala coffee (DO Marcala), the first coffee from Honduras with international recognition; and (iii) exports of specialty coffees (private-certified premium coffees), as a percentage of total exports, have trended upward to nearly 30% in 2019,<sup>10</sup> and the country already boasts an internationally recognized electronic auction platform for microlots of coffee.<sup>11</sup>
- 1.3 Despite these advances, the price of coffee over the past two years has not managed to break the US\$1-per-pound barrier, which translates into losses for small growers, whose costs per pound exceed this threshold. Considerable price volatility and the shock to the supply chain as a result of COVID-19 in 2020 have led to greater uncertainty in the supply and demand signposts for coffee. COVID-19 has prompted workforce restrictions at farms, processing plants, and ports, and these uncertainties jeopardize coffee production and earnings for small farmers in the long term.
- 1.4 **The problem.** In July 2019, IDB Lab convened a meeting for exchange and dialogue among various of the most important actors and participants in the coffee chain in Honduras, in order to discuss the possible formation of a blockchain platform or partnership for the country's coffee sector. As a result of this meeting and several other interventions with the sector, a proposal was developed, the results of which figure into this project. In that context, the dialogue revealed that to address the problems described above, the following points should be taken into account.
- 1.5 (i) A persistent problem in the Honduran coffee sector is the disparity in the distribution of earnings among the various links in the supply chain, as well as little to no product traceability. Traceability, in particular, has become a prerequisite for guaranteeing the origin of the product and implementing agricultural certification programs, which benefit consumers and small farmers alike. A full 80% of national coffee is moved via a grower-intermediary-exporter circuit with the presence of

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<sup>8</sup> The Honduran Coffee Institute (IHCAFE) divides the country into six coffee-growing regions: Copán, Opalaca, Montecillos, Comayagua, El Paraíso, and Agalta. Within these regions, the top-producing departments are: La Paz, Santa Bárbara, Intibucá, Copán, Comayagua, and El Paraíso.

<sup>9</sup> Direct interviews and a workshop with participation from the SAFE Platform partners, April 2019.

<sup>10</sup> IHCAFE, 2020.

<sup>11</sup> IHCAFE electronic auctions, 2019.



- multiple intermediaries, which has a direct effect on the low value assigned due to quality and the low price that farmers receive, which increases their economic vulnerability.<sup>12</sup>
- 1.6 (ii) The country's coffee industry faces additional challenges such as the effects of climate change and the associated rising incidence of pests and disease; poor field management practices; a low rate of investment by growers; the aforementioned low prices, which strongly affect output and quality. On this last point, the impact on quality threatens a sector of the Honduran coffee industry that produces specialty coffees, which are primarily grown by cooperatives and associations that have private certifications that confer a premium on the product, allowing it to obtain a better price. A drop in quality would affect the ability of these growers to maintain their certifications.
- 1.7 (iii) Quality and output between coffee-producing regions vary considerably. This is due to the low adoption and implementation of good agricultural practices, limited use of appropriate technologies for storage, and almost no practice of keeping records on production data, i.e., automated electronic records that would make it possible to separately identify lots based on quality.<sup>13</sup>
- 1.8 In this regard, it is important to incorporate the cooperatives, in their capacity as operational and management entities representing the growers that can play the role of early adopters in the use of technologies for traceability and digitalization of processes.

## II. THE INNOVATION PROPOSAL

### A. Project description

- 2.1 The project will help raise the income of 800 small family farms that grow and sell coffee in the region of La Paz, Santa Bárbara, and Copán in Honduras. It will focus on the digital transformation of the coffee value chain using disruptive technologies, in order to implement innovative blockchain-based solutions that will facilitate digital record-keeping of transactions in the coffee supply chain. Improved traceability through the creation of dashboards will allow for the transparent analysis of the information to boost coffee sales at the selected coffee cooperatives and their commercial partners. The project will also strengthen business management for these digital innovations, through business advisory services with the leaders of the cooperatives.
- 2.2 The project will work with small coffee growers and at least three strategic commercial partners: COMSA, COPRANIL, and COMMOVEL, all coffee cooperatives representative of the areas of the project.
- 2.3 **Project location and beneficiaries.** The project will be carried out in three departments in which coffee cooperatives that have operations with Heifer or IDB Lab are represented: (a) the department of La Paz, which produces 6.2% of national output (573,748 quintals of Oro coffee), in partnership with Cooperativa de Café Orgánico (COMSA) working in 11 municipios (La Paz, Chinaca, Guajiquiro,

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<sup>12</sup> The remaining 20% is sold directly by growers to export companies.

<sup>13</sup> IHCAFE, February 2019.

Marcala, Opatoro, San José, San Pedro de Tutule, Santa Ana, Santa Elena, Santa María, and Santiago Puringla); (b) the department of Copán, which produces 15.2% of national output (1,412,300 quintals of Oro coffee), in partnership with Cooperativa Regional Agroforestal Nuevas Ideas Limitada (COPRANIL); and (c) the department of Santa Bárbara, which produces 8.3% of national output (766,294 quintals of Oro coffee), in partnership with Cooperativa Mixta Montaña Verde Limitada (COMMOVE), an exporter of certified organic coffee. The project will directly benefit 800 coffee-growing families with annual incomes of less than US\$2,000.<sup>14</sup> In addition, it will impact the 3,700<sup>15</sup> members of these 800 beneficiary families and indirectly benefit 1,105 non-participating families that are active members of the cooperatives.

- 2.4 The eligibility criteria that associations and cooperatives must meet to participate in the project are as follows: (i) they are legally established; (ii) they have established areas under active coffee cultivation with expansion potential for an organic system; (iii) they comply with the regulations set by the Department of Agriculture;<sup>16</sup> (iv) they demonstrate an interest in adopting innovative technologies and pursuing a blockchain-based technology solution to generate alternative business models based on transparency and trust along the entire coffee value chain; (v) they have at least 100 active partners in coffee production and keep basic records on coffee sales and purchases; (vi) they preferably have minimum productive or bulking infrastructure; (vii) they are connected to markets open to the development of inclusive business models in contexts of poverty; and (viii) they are interested in expanding purchase volumes and honoring different pricing for specialty coffees based on quality.
- 2.5 In addition, the project will support activities to coordinate the digital ecosystem in Honduras by establishing direct collaboration with developers and local providers of technologies and solutions such as Affogato, a company with prior experience establishing blockchain interoperability (operativity between various digital platforms) using Ethereum or Hyper Ledger in the coffee sector.<sup>17</sup>

## **B. Components and activities**

- 2.6 The project has four components: (i) technological innovation along the value chain; (ii) digitalization of information and traceability; (iii) business strengthening for cooperatives and growers; and (iv) connectivity and partnerships for scalability.
- 2.7 **Component I: Technological innovation along the value chain (IDB Lab: US\$185,000; Counterpart: US\$74,500).** The objective of this component is to design and implement an innovative digital tool using blockchain technology that

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<sup>14</sup> The general poverty rate among households in the departments of La Paz, Copán, and Santa Bárbara is 80.9%, 77.4%, and 77.9%, respectively. Source: Poverty and extreme poverty by municipio, estimated using the 2013/2014 poverty map prepared by the IDB, World Bank, and the National Institute of Statistics (INE).

<sup>15</sup> Each nuclear family is estimated to have 4.7 members, which is the figure used to estimate the number of indirect beneficiaries.

<sup>16</sup> They have credentials, land titles or permits, and/or environmental certifications.

<sup>17</sup> According to information from the National Institute of Statistics (INE), 16.6% of Honduras's 9.3 million citizens have access to the Internet in their homes. Just 12.8% of them connect to the Internet from a computer, whereas 87.2% do so from a mobile telephone.

can generate a digital record of operations along the coffee supply chain between coffee cooperatives, their growers, and their commercial partners, and even consumers seeking a sustainable quality product. This includes the digitalization of operations related to cupping, registration of international standards and certifications, and the design and implementation of an auction model for the purchase and sale of coffee that increases value and profits by providing access to various international markets and positioning small farmers closer to the end consumer.

- 2.8 The following activities are planned under the component: (i) analysis and design of the digital blockchain module; (ii) analysis and design of the auction module on the digital platform; (iii) design of the cupping module; (iv) codification and configuration of the blockchain platform by the service provider company; (v) implementation and launch of the blockchain platform; and (vi) analysis and design of the interoperability of the blockchain platform for purposes of importing and exporting information to and from any other systems or platforms that may be identified.
- 2.9 **Expected outcomes/outputs:** (i) a blockchain platform in operation for at least two commercial partners (cooperatives); (ii) a platform module developed with blockchain technology that will support transparent processes along the coffee value chain; (iii) a commerce/electronic auction module for purchase and sale transactions of coffee; (iv) 800 growers benefited by the adoption by commercial partners and cooperatives of new technologies that give transparency to the coffee chain; and (v) 320 growers trained in the use of online commerce and auctions.
- 2.10 **Component II: Digitalization of information and traceability (IDB Lab: US\$64,100; Counterpart: US\$113,823).** The objective of this component is to use the blockchain platform to record all information and data on coffee pre-sales processes such as field records on planting, management, and harvesting activities, bulking and processing records, and storage, handling, and packing records. In addition, an innovative technology tool will be designed and implemented to visualize the information via a dashboard that will help the cooperatives perform transparent analyses of the data entered into the blockchain platform and support the development of additional digital products for the cooperatives.
- 2.11 The following activities are planned under the component: (i) mapping and diagnostic assessment of growers; (ii) analysis and mapping of the traceability of the coffee value chain at COMSA, COMMOVEL, and COPRANIL; (iii) design and implementation of a dashboard; (iv) training of employees at the three cooperatives on the use of dashboards for decision-making; (v) identification, georeferencing, and digital mapping of the farms of cooperative members; (vi) validation of agricultural certifications for the purpose of standardizing production management and the type of product to be sold, for example, organic production under the fair trade certification; and (vii) training of field technicians on agricultural traceability.
- 2.12 **Expected outcomes/outputs:** (i) identification of 800 growers and digitalization of the characteristics of their farms, as beneficiaries of the project; (ii) mapping of the agricultural traceability of the growers (all activities and processes related to their crop management); (iii) mapping of commercial traceability (commercial activities from farm to end consumer); (iv) implementation of at least one dashboard at

COMSA and COPRANIL; (iv) at least two employees at each commercial partner (cooperatives) trained in the creation of dashboards; (v) at least one route mapped to optimize production and facilitate coffee bulking activities; (vi) at least one instrument that facilitates the processes required for certification; and (vii) at least three field technicians trained in agricultural traceability along the coffee value chain.

- 2.13 **Component III: Business strengthening for cooperatives and growers (IDB Lab: US\$155,000; Counterpart: US\$181,300).** The objective of this component is to provide specialized technical assistance on the digital traceability of the coffee value chain, business management, and use of innovative technologies to optimize production and marketing processes. The component will have a special gender focus, given the importance of women in the business configuration of the cooperatives and as members. At present, women represent 25% of the total membership of the cooperatives and nearly 40% of personnel, including extension and administrative workers.
- 2.14 The following activities are planned under this component: (i) training for growers on traceability in the coffee value chain; (ii) training for technical and management personnel at the cooperatives on the use of the blockchain platform and other disruptive technologies, including artificial intelligence, the Internet of things, and predictive analysis, which will support better management of the coffee value chain; and (iii) business management training for personnel at the three cooperatives. These activities will include technical and training materials that contribute to a gender focus, with surveys conducted in advance to understand the specific needs of women—both growers and cooperative employees—for the adoption of recommended practices. At least 40% of cooperative personnel who receive training are expected to be women. In its work with active projects in Honduras, Heifer has reached 4,500 women farmers, according to its monitoring and evaluation program, and it has a gender policy in place to guide its work. This component will bring a gender focus to the level of cooperatives by leveraging current experience.<sup>18</sup>
- 2.15 **Expected outcomes:** (i) at least 10 employees from the three cooperatives trained in the use of the blockchain platform; (ii) 30% of growers trained in blockchain technologies; (iii) at least one specialized person from each cooperative trained as a business advisor to help ensure the practical implementation of the business management plan and methodology; and (iv) at least 30% of the growers have a farm development plan in place.
- 2.16 **Component IV: Connectivity and partnerships for scalability (IDB Lab: US\$109,500; Counterpart: US\$83,000).** In partnership with Heifer Labs (innovation division of Heifer International), the project will run an interoperability test<sup>19</sup> with the main food supply systems such as IBM Food Trust and the ConsenSys ecosystem, which already use blockchain technology to support traceability in their processes. To achieve interoperability, the project will ensure

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<sup>18</sup> Heifer has a women's empowerment and gender strategy in place that fundamentally guides its work in Honduras.

<sup>19</sup> Interoperability is the capacity for a transaction to run on multiple blockchain systems and for data recorded in a blockchain to be accessible and verifiable for another possibly foreign transaction in a semantically compatible way. NIST.

- that the processes follow international standards on digital data, which in this case is the GS1 standard.<sup>20</sup> The problem that interoperability solves is communication with other blockchains. The benefits accruing to the grower as a result of interoperability in a blockchain system are similar to the benefits obtained from standardization: increased productivity, efficient use of available resources, lower costs as a result of shared recordkeeping systems, storage, and open access to data on inventory, management, finance, environmental footprints, and land use, all in standard format.
- 2.17 In this regard, this component will orientate the executing agency and other participants in the project to ensure that there is an effective coordination and alignment process with IDB Lab's digital assets, such as the LAC Chain Global Partnership, and digital connection initiatives, such as Data Plug In. In particular, the latter is an IDB Lab initiative that seeks to establish closer collaboration and engagement with projects that are able to measure the results of its initiatives through digital modules, so that the impact and results of IDB Lab operations can be more directly obtained. This component will also coordinate closely with Banco de fAlr Lac,<sup>21</sup> an initiative for the responsible management and use of data, efficient management of digital platforms and artificial intelligence, as well as ethics in the establishment of digitalization processes for projects.
- 2.18 The following activities are planned under this component: (i) documentation of the experience of using innovative digital blockchain-based technologies and the impact in terms of reducing transaction costs; (ii) a forum to promote the results in coordination with fAlr Lac and/or LAC Chain; (iii) a forum to share experiences with other cooperatives and associations on the use of digital technologies; and (iv) participation in national and international fairs on the use of digital technologies for coffee-grower organizations; (v) promotion of complementary business initiatives that support the development of the various links in the coffee chain. To this end, the information generated by the project will be systematized and published, and there will be open access to the data on the LAC Chain and fAlr Lac networks and on the DATAVERSE platform.<sup>22</sup>
- 2.19 Expected outcomes: (i) document on lessons learned and best practices in blockchain and the responsible use of data; (ii) a forum on results from applying the technologies proposed by the project; (iii) at least one new productive sector interested in digitalizing its supply chain as a result of the project experience; and (iv) at least 40 coffee growers participating and/or accessing knowledge transfer activities to improve market linkages.

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<sup>20</sup> Standards for commercial electronic data. [https://www.gs1.org/sites/default/files/bridging\\_blockchains\\_interoperability\\_is\\_essential\\_to\\_the\\_future\\_of\\_da.pdf](https://www.gs1.org/sites/default/files/bridging_blockchains_interoperability_is_essential_to_the_future_of_da.pdf)

<sup>21</sup> fAlr Lac was established in October 2019 as a partnership between the public and private sectors and civil society, led by the IDB, to ensure responsible and widespread adoption of artificial intelligence in Latin America and the Caribbean.

<sup>22</sup> The DATAVERSE platform is a software application for publishing, sharing, citing, extracting, and analyzing data. It is free of charge. <http://thedata.harvard.edu/dvn/faces/login/LoginPage.xhtml?clearWorkflow=true>.

- 2.20 As part of the intervention model, collaboration partnerships will be established with Affogato, a company that offers multiple blockchain solutions and specializes in products to help the coffee sector develop interoperability in the digitalization of the coffee chain. The executing agency will establish a cooperation agreement with Affogato to design modules that will market the Marcala coffee denomination of origin (DO Marcala), develop transactions along the value chain, bring transparency to the handling of certifications with the markets and the visibility of environmental and social impacts. The services of IBM Food Trust will be used to map the traceability of the agriculture chain and the interoperability of systems and build the capacity of local blockchain providers and developers such as Affogato in Honduras.

### **C. Project results, measurement, monitoring, and evaluation**

- 2.21 **Monitoring and evaluation system.** At the impact level, the project will produce three specific results: (i) an increase of at least 30% in the average income earned from coffee production by the growers participating in the project, to US\$2,600 per year; (ii) an increase averaging at least 30% in the gross earnings of the participating cooperatives; and (iii) the incorporation of at least 5,000 additional growers to a digital or blockchain traceability mechanism, as a result of the replication or adoption of the project technologies by other cooperatives or companies in the sector.
- 2.22 For project monitoring, the executing agency, Heifer Project International – Honduras, plans to use the Project Operation Resource Center (CROP) system, which will enable online verification of the background information on the individuals and corporate beneficiaries, their geographic location, and delivery of resources and knowledge via the project. The **Survey CTO** tool will be used to gather information in digital format using tablets and upload it to the CROP system for immediate (online) consultation.

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

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

- 3.1 The proposal is aligned with the Bank's country strategy with Honduras for 2019-2022, which identifies innovation and productivity in agriculture as a priority and focuses on activities to strengthen public and private actors, the sustainable management of agriculture, forestry, and biodiversity systems, land use and management for climate change mitigation and adaptation purposes, and the strategy for IDB Lab's LAC Chain platform to help reinforce the triple-impact model by strengthening the blockchain ecosystem in Honduras.
- 3.2 The project is consistent with IDB Lab's climate-smart agriculture strategy, as indicated in the thematic paper presented to the donors, specifically the section that promotes agricultural development through targeted interventions along the value chain. Moreover, agriculture is a priority sector for the Bank, as part of the comprehensive development agenda advance in its country strategy. The project is innovative for the country and will enhance the competitiveness of the coffee sector, which generates 30% of agricultural GDP.

- 3.3 During the execution phase, the Bank staff responsible for the Comprehensive Rural Development and Productivity Project (HO-L1201) will be provided with the semiannual progress reports and knowledge products generated under this operation, for the purpose of sharing these with the beneficiary organizations in the coffee cluster.

## **B. Scalability**

- 3.4 The project promotes participatory learning by training human capital at entities—including the IHCAFE, cooperatives, and businesses—that support the coffee sector in the departments of La Paz, Copán, and Santa Bárbara. These entities, which will continue to be present in the area even after the intervention, will be able to use technologies to digitalize the coffee chain, based on the design of a coffee assets registry,<sup>23</sup> drawing on a document entitled “Farm Sustainability and Coffee Asset Registry.” This document can be made available for the project and revised based on the lessons learned and the new contributions made by stakeholders in this project, for replication with other coffee organizations.
- 3.5 In partnership with the **Affogato Network**, efforts will be made to scale out, at the national level, the learnings and technological developments generated by the project in the targeted departments. Affogato is a company that offers multiple blockchain solutions and specializes in products for the coffee chain in Honduras. The Affogato team includes engineers certified in blockchain by ConsenSys and scholarships by the Ethereum Foundation. Affogato’s work thus far has been open source, so an additional anticipated benefit of the project will be capacity-building in the use of blockchain and the recording of data, as well as the interoperability of the systems that will make it possible to innovate the design of new modules depending on the specific needs on the ground. Its intervention in the proposed project will be the implementation of the commercial traceability and market auctions module at each of the project’s partner cooperatives.
- 3.6 **Managing knowledge at scale** will be pursued by tapping the findings of research, on-farm experiments, studies and analysis of data, and analysis of the profitability and value of coffee obtaining from transparency and traceability. Notably, this experience is also based on the lessons learned by Heifer from the blockchain experience carried out with the Honduran coffee cooperative COPRANIL in 2019.<sup>24</sup> COPRANIL began using blockchain technology to record data along its value chain. This project is expected to scale up the impact, with a larger number of growers using the system in order to increase transparency and position for the new market. This process will also mean integrating other technologies such as artificial intelligence and predictive analysis into the coffee sector, as well as digitalizing financial transactions.

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<sup>23</sup> The coffee assets registry proposed by the project keeps a record of all actions that occur in the traceability process, from farm to distribution, i.e., all transactions needed to put the product in the consumer’s hands.

<sup>24</sup> An initiative was launched to use blockchain technology to record data at all points along COPRANIL’s value chain. As part of this first exercise, all of the coffee cooperative’s operational and commercial transactions were recorded, and processes to strengthen its commercial strategy, such as quality control, were digitalized. Engaging the entire governing board in the learning process has been very positive as a way of empowering the members and encouraging a sense of ownership over the changes made as a result of adopting blockchain.

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

- 3.7 **Market risk.** There is a risk that producer organizations will not succeed in linking up with markets that recognize the value-added in growing and marketing coffee in a sustainable way that generates more income and therefore will not diversify their marketing channels. **Mitigant:** HPI-HN will establish an interagency agreement with each of the coffee cooperatives that partner on the project. It is important to note that the cooperatives have a prior working relationship with the executing agency and have expressed their interest in participating in this initiative in order to improve traceability along their supply chain. Although market risk (particularly price volatility) is hard to avoid, the partnerships to identify differentiated markets will help mitigate the effects, and the use of blockchain will reduce the need for intermediaries as well as bring visibility to the processes. Meanwhile, the investment strategy in the coffee cooperatives is designed to strengthen the value proposition for growers and the market (two-way) through direct interconnection of the chain.
- 3.8 **Production and climate risks.** Climate events are likely to occur that will adversely affect the coffee quality and output. **Mitigant:** Through the dialogue roundtables, the plan is to define and establish (environmental and climate) risk management and climate change adaptation plans for coffee operations. The commercial cooperative partners for this project have the capacity to provide technical assistance to the growers for the adoption of new techniques that support sustainability, quality, and productivity on the farms. Investment in new biotechnology processes and innovations and continuous improvement processes for biodynamic farming will be key.
- 3.9 **Risk associated with the adoption of technological innovations.** As with any new technology, there is a certain degree of uncertainty associated with the cost of adopting, regulating, and managing the technology. This jeopardizes the trust needed for the adoption of blockchain. **Mitigant:** The partnership with LAC Chain will provide greater infrastructure and knowledge support for the initiative. Entrepreneurs in Honduras have experience with successful pilot projects and are working together specifically to build a tool that will cover gaps in the coffee sector. They have set up an association that promotes public engagement in regulatory and market concerns. In addition, the project includes a component for training and strengthening cooperatives and growers in the digitalization of the value chain, which will also mitigate the risk.

## **IV. INSTRUMENT AND BUDGET PROPOSAL**

- 4.1 The project has a total cost of US\$1,300,000, of which US\$650,000 (50%) will be contributed by IDB Lab as nonreimbursable technical cooperation resources and US\$650,000 (50%) will be contributed by HPI-HN as counterpart resources. The counterpart contribution will consist of cash resources for US\$243,377 and in-kind resources for US\$406,623, for a total of US\$650,000.



Project budget table

Item	IDB Lab	Counterpart		Total	%
		Kind	Cash		
<b>Component I:</b> Technological innovation along the value chain	US\$185,000	US\$74,500		US\$259,500	20%
<b>Component II:</b> Digitalization of information and traceability	US\$64,100	US\$113,823		US\$177,923	14%
<b>Component III:</b> Business strengthening for cooperatives and growers	US\$155,000	US\$133,300	US\$48,000	US\$336,300	26%
<b>Component IV:</b> Connectivity and partnerships for scalability	US\$109,500	US\$75,000	US\$8,000	US\$192,500	15%
Project administration and monitoring	US\$136,400	US\$10,000	US\$187,377	US\$333,777	26%
<b>Total</b>	<b>US\$650,000</b>	<b>US\$406,623</b>	<b>US\$243,377</b>	<b>US\$1,300,000</b>	
%	<b>50%</b>	<b>31%</b>	<b>19%</b>	<b>100%</b>	

## V. EXECUTING AGENCY AND IMPLEMENTATION STRUCTURE

### A. Description of the executing agency

- 5.1 Heifer Project International – Honduras (HPI-HN) will be the executing agency. Heifer's work in Honduras spans a period of 40 years, with the implementation of projects in 17 of the country's 18 departments. HPI-HN has been legally constituted and recognized in Honduras since March 2003. Its headquarters are in Tegucigalpa, where all administrative, coordination, monitoring, and representation work is carried out. It also has three regional offices located in the country's western region (Gracias), central-western region (La Esperanza), and eastern region (Catacamas).
- 5.2 HPI-HN, drawing on its **social capital** model and training promoters and leaders at coffee companies and their organizations, will strengthen organizational, production, and business models, as well as community values, by improving the profitability and resilience of coffee. HPI-HN will partner with **public entities** such as the Department of Agriculture (SAG) and the Coffee Chain Committee, and with the private sector through collaboration with the Marcala Organic Coffee Cooperative (COMSA),<sup>25</sup> located in Marcala in the department of La Paz, which grows, processes, and sells organic coffee, focusing on the "boutique" specialty coffee market and working with 1,600 growers as well as technology providers such as Affogato Network and IBM.
- 5.3 HPI-HN also has experience with the development of value and supply chains in Honduras and with the implementation of **blockchain**, **since 2016**, through regional and international experiences such as: (i) Grass Roots Farmers' Cooperative, a cooperative of some 20 farmers in Arkansas that Heifer USA helped to establish in 2014. In mid-2017, Heifer Labs started working with the cooperative to record actions along its poultry supply chain using blockchain technology. On 1 August 2017, Grass Roots Farmers' Cooperative started to

<sup>25</sup> Marcala Organic Coffee: <https://www.comsa.hn/>

record actions along its poultry supply chains using Ethereum's public blockchain via the Provenance application.<sup>26</sup>

- 5.4 More recently, with the support of IDB Lab, Heifer has been leading a project known as Chocolate-4-All, which is focused on digitalizing the cocoa supply chain in the region of Olancho, Honduras. As with the COPRANIL project, progress is being made with the use of IDB technology, which includes IBM Food Trust and IBM Watson for Agriculture, in order to digitalize the registry of land in order to improve financial conditions for farmers. This project is reaching some 1,000 farmers.
- 5.5 Heifer is also a member of IBM Food Trust's advisory board, for which the issue of interoperability is a priority. Spearheading interoperability between the main blockchain platforms such as IBM Food Trust, Ethereum, and Bitcoin (RSK) will constitute a major contribution of this project to the blockchain ecosystem and the food system.
- 5.6 The strategic partners for the project are: (i) **Affogato Network**, a company that develops blockchain solutions and specializes in products for the coffee chain. The Affogato team has engineers certified in blockchain by ConsenSys and scholarships by the Ethereum Foundation. Its role will be to identify and design modules and train technical personnel at the cooperatives to develop **auction platforms** that will connect member growers, through the coffee cooperatives mainly, or independent growers, in the case of differentiated coffees, to more buyers in order to get better prices by selling their coffee to the highest bidder.
- 5.7 **Heifer Labs**: Heifer Labs is a division of the executing agency that has a team of advisors for advancing blockchain-based initiatives, with a portfolio in: (1) digital currency; (2) supply chains; (3) land registries; (4) grant tracking; and (5) training in blockchain technology. The role of Heifer Labs in this project is to partner on the modular design of the application, provide consulting services during the implementation phase, and design and implement the interoperability test and participate in governance of the blockchain technology.

## **B. Execution mechanism and structure**

- 5.8 Project administration will be the responsibility of HPI-HN, which will create an **execution unit** that will report on operational matters to HPI-HN's programmatic management. The execution unit will consist of a project manager, an administrative-financial officer, a specialist in coffee value chains, a specialist in business and technology, and a business advisor. The project manager will be responsible for operational and administrative aspects of the operation.
- 5.9 A project **steering committee** or **governing board** will be established, led by HPI-HN, to serve as a mechanism for technical dialogue and strategic coordination, as well as for feedback and reporting on status and results. The steering committee will consist of a representative from each of the project's strategic partners, namely, HPI-HN, the coffee cooperatives, Heifer Labs, Affogato, etc. Consideration may be given to inviting two representatives from coffee organizations. A representative from IDB Lab may participate as an observer.

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<sup>26</sup> Provenance's strategy document.

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

- 6.1 **Results-based disbursements and fiduciary arrangements.** The executing agency will adhere to IDB Lab's standard arrangements for results-based disbursements.

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

- 7.1 **Access to information.** In accordance with the Bank's Access to Information Policy, this document will be made available to the public upon approval.
- 7.2 **Intellectual property.** All technical works produced, and results obtained, as part of the CoffeeChain project will be the intellectual property of the IDB. The Bank will grant a royalty-free and non-exclusive license to the executing agency, including rights to disseminate, reproduce, and publish any product in any format. Any disseminated, reproduced, or published work will indicate that the project has been financed by IDB Lab. Any use by the executing agency of the name or logo of the Inter-American Development Bank or IDB Lab for any purpose will require the written prior authorization of the Bank.
- 7.3 Any intellectual property owned by IDB Lab or the executing agency prior to approval of the project will continue to be the sole and exclusive property of IDB Lab or the executing agency, as applicable.