

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

URUGUAY

**PROGRAM TO PROMOTE THE ADOPTION OF DIGITAL TECHNOLOGIES
IN URUGUAY'S AGRICULTURE SECTOR**

(UR-L1185)

LOAN PROPOSAL

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| ABBREVIATIONS | |
|---------------|--|
| ANII | Agencia Nacional de Investigación en Innovación [National Innovation Research Agency] |
| ANTEL | Administración Nacional de Telecomunicaciones [National Telecommunications Administration] |
| CGN | Contaduría General de la Nación [Office of the Comptroller General] |
| DICOSE | Livestock Control Office |
| FAO | Food and Agriculture Organization of the United Nations |
| ICTs | Information and Communication Technologies |
| IICA | Inter-American Institute for Cooperation on Agriculture |
| INEFOP | Instituto Nacional de Empleo y Formación Profesional [National Employment and Vocational Training Institute] |
| ITU | United Nations International Telecommunications Union |
| MGAP | Ministry of Livestock, Agriculture, and Fisheries |
| MSMEs | Micro-, small, and medium-sized enterprises |
| NCB | National competitive bidding |
| PMU | Project Management Unit |
| REUNE | Registro Único de Productores [Master register of producers] |
| RUO | Master register of operators |
| SIIF | Sistema Integrado de Información Financiera [Integrated Financial Information System] |
| SNIA | Sistema Nacional de Información Agropecuaria [National Agricultural Information System] |
| SOFR | Secured Overnight Financing Rate |
| TCR | Tribunal de Cuentas [Office of the Auditor General] |

PROGRAM SUMMARY
URUGUAY
PROGRAM TO PROMOTE THE ADOPTION OF DIGITAL TECHNOLOGIES
IN URUGUAY'S AGRICULTURE SECTOR
(UR-L1185)

| Financial Terms and Conditions | | | | |
|---|---------------|--|---|--|
| Borrower: | | | Flexible Financing Facility ^(a) | |
| Oriental Republic of Uruguay | | | Amortization period: | 24.5 years |
| Executing agency: | | | Disbursement period: | 5 years |
| The borrower through its Ministry of Livestock, Agriculture, and Fisheries | | | Grace period: | 6 years ^(b) |
| Source | Amount (US\$) | % | Interest rate: | SOFR-based |
| IDB (Ordinary Capital): | 6,500,000 | 93 | Credit fee: | (c) |
| | | | Inspection and supervision fee: | (c) |
| Local counterpart: | 500,000 | 7 | Weighted average life: | 15.25 years |
| Total: | 7,000,000 | 100 | Approval currency: | U.S. dollar |
| Program at a Glance | | | | |
| Program objectives/description: The program's general objective is to boost the competitiveness of the agriculture sector by deepening the digital transformation of the Ministry of Livestock, Agriculture, and Fisheries (MGAP) and the impetus for adopting digital technologies (AgTech), with emphasis on family producers and rural women. Its specific objectives are to: (i) increase access to digital services and the satisfaction of individual users and agricultural institutions with those services; and (ii) expand digital skills and the adoption of emerging technological solutions that can help agricultural producers to mitigate and adapt to climate change. | | | | |
| Special contractual conditions precedent to the first disbursement of the financing: (i) approval and entry into effect of the program Operating Regulations , in the terms agreed upon with the Bank; and (ii) engagement of a specialist to head the procurement department and an assistant for the accounting department of MGAP's Project Management Unit (paragraph 3.2). | | | | |
| Exceptions to Bank policies: None. | | | | |
| Strategic Alignment | | | | |
| Challenges: ^(d) | | SI <input type="checkbox"/> | PI <input checked="" type="checkbox"/> | EI <input type="checkbox"/> |
| Crosscutting themes: ^(e) | | GE <input checked="" type="checkbox"/> and DI <input type="checkbox"/> | CC <input checked="" type="checkbox"/> and ES <input checked="" type="checkbox"/> | IC <input checked="" type="checkbox"/> |

^(a) Under the Flexible Financing Facility (document FN-655-1), the borrower has the option to request modifications to the amortization schedule, as well as currency, interest rate, commodity, and catastrophe protection conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.

^(b) Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided they do not entail any extension of the original weighted average life of the loan or the last payment date, as documented in the loan contract.

^(c) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with applicable policies.

^(d) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

^(e) GE (Gender Equality) and DI (Diversity); CC (Climate Change) and ES (Socioenvironmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and rationale

- 1.1 **Background.** The government of the Oriental Republic of Uruguay requested a specific investment loan from the Bank to boost competitiveness in the agriculture sector through the digitization of priority public services offered by the Ministry of Livestock, Agriculture, and Fisheries (MGAP) and expand the adoption of digital technologies. The program will be developed in the framework of the current digital transformation process,¹ which presents imbalances,² with stress on small family producers and rural women.
- 1.2 With a population of 3.5 million, Uruguay produces enough food for approximately 30 million, most of which is exported. The agriculture and agribusiness sector account for 70% of the country's total exports. Over the last 20 years, Uruguay has seen strong growth in agriculture. The area under cultivation has grown by nearly four times and total grain production is almost five times higher. Today, the country has 16.4 million hectares suited to agricultural use, representing more than 90% of its total area.
- 1.3 **Problem addressed and rationale.** Agricultural production is rapidly becoming a high-tech industry in which digital disruption has led to a transformation in production and marketing processes. However, some population groups have been left behind in the adoption of digital technologies. For example, family farming, in which 70% of farmers engage, is lagging behind in the adoption of these technologies due, among other factors, to the lack of access to relevant information. One example of the importance of digitalization in agricultural production are precision farming techniques, which help to reduce costs, increase efficiency, and improve environmental sustainability. These technologies are based on digital tools that facilitate rapid processing of a large volume of data from different sources (sensors that detect moisture, temperature, and light, satellite images, GPS) to enable inputs to be used in the right way, at the right time, and in the right amounts. This improves energy efficiency, reduces greenhouse gas emissions, and facilitates better use of water resources. Additionally, other digital technologies can optimize logistics, storage, and transport; facilitate early detection of pests, diseases, and other health risks; and make for more efficient product traceability. A recent study³ affirms that the total value of the market for digital technologies applied to agriculture around the world will amount to US\$22.5 billion in 2025, compared to US\$9 billion in 2020.

¹ [Digital transformation](#) is the incorporation of computer-based technologies into all areas of a company's or an organization's products, processes, and strategies.

² [FAO-IDB-Cooperative Program](#), Rural Development Branch (DGDR), MGAP. Plan to promote the use of different ICT tools to optimize the extension system and technical assistance for family farming. MGAP 2021.

³ Juniper Research – [AgTech: Market Outlook, Emerging Opportunities & Forecasts 2020-2025](#).

- 1.4 As for gender, women have historically had a smaller presence than men in the Uruguayan countryside (Chiappe, 2005).⁴ The General Agricultural Census of 2011 found that women account for about 43.8% of the rural population and 39% of the farming population. Women have also had less access than men to MGAP's rural development policies. In fact, it is estimated that women make up less than one quarter (22%) of the users/beneficiaries of those policies. It also found that women have less knowledge of and access to technologies owing to their lack of contact with agricultural outreach workers (Mascheroni, 2016).⁵ In general, there is a wide gender gap in the agriculture sector in terms of access to skilled jobs and leading-edge technologies. To narrow it, MGAP has designed a National Agricultural Policy Gender Plan that seeks to promote women's access to agricultural programs.⁶
- 1.5 **Main challenges for the adoption of digital technologies in family farming.** Uruguay's agriculture sector faces a number of constraints on the adoption of digital solutions, including: (i) scant access to financing and high risk aversion among family producers; (ii) lack of knowledge and information on recent technological solutions and their benefits; (iii) limited generational replacement; (iv) lack of a policy to support the digital transformation of agricultural companies; and (v) the complexity of existing regulations.^{7,8} At the institutional level, a coordinated policy to support the digital transformation of agricultural companies and reduce existing regulatory complexities is needed to consolidate digital transformation of the sector.
- 1.6 A survey of more than 300 producers on the use of ICTs in family farming indicates that just 8% of family producers have access to some kind of advanced digital technology, such as drones, artificial intelligence applications, or teledetection tools with satellite images. The survey shows digital technologies are mainly used by larger producers who can afford them and who have the capacity to partner with service companies or the ability to resolve their business needs through investments and self-generated information. For example, 41% of producers with more than 50 hectares have received training in the use of ICTs, compared to 31% of producers with fewer than 50 hectares. While 58% of producers working more than 50 hectares mention that they have access to agricultural technologies, just 33% of small producers say so. This confirms the scant penetration of advanced digital technologies among family farmers and points to the need for interventions to promote their adoption. There are also sharp differences between generations in the use of digital technologies, which are more widespread among people

⁴ Chiappe, M. (2005) [La situación de las mujeres rurales en la agricultura familiar de cinco países de América Latina](#) [The Status of Rural Women in Family Farming in Five Latin American Countries]. Latin American Association of Development Promotion Organizations (ALOP). Montevideo.

⁵ Mascheroni, P. [Mujeres rurales: Trabajo y acceso a recursos productivos](#) [Rural Women: Work and Access to Productive Resources]. 2016.

⁶ MGAP. [Plan Nacional de Género en las Políticas Agropecuarias, Resolución 534/021](#) [National Agricultural Policy Gender Plan. Resolution 534/021]. MGAP 2021.

⁷ Larrazabal, M. [Informe Final – Digitalización del sector agropecuario en Uruguay. 2021](#) [Final Report: Digitalization of the Agriculture Sector in Uruguay. 2021].

⁸ Aguirre, E. et al. [Problemas a abordar por parte de la Dirección General de Desarrollo Rural](#) [Problems to be Addressed by the Rural Development Branch]. MGAP, Office of Programming and Agriculture Policy (OPyPA), 2018.

between the ages of 21 and 44. For example, 49% of the farmers over age 60 who were surveyed use the Internet to obtain agricultural information, compared to 91% of producers under 44. In addition, 24% of people over age 60 mention that they had received training in the use of ICTs compared to 47% of producers under 44. Younger farmers also know more about advanced technologies.

- 1.7 The main institutional challenges to support digital transformation in agriculture include: (i) implementing a public management strategy to modernize services, streamline paperwork and controls, improve open data storage and exchange, and promote the supply and demand of digital agricultural services and the interconnectivity and compatibility of data among the different stakeholders in the sector; (ii) prioritizing investments in digital training and skills; and (iii) having a public-private cooperation strategy to foster coordinated action. It is therefore crucial to strengthen public-private cooperation, establish joint priorities for spurring the cultural change demanded by digital transformation, and promote the supply and adoption of digital solutions for farming.
- 1.8 **Opportunity.** Compared to other Latin American and Caribbean countries, Uruguay is relatively well-positioned in terms of access to ICTs. According to the Telecommunications Report, as of December 2018, the country had 91.1% coverage with 3G and 56.4% with 4G (Sotomayor et al., 2021). However, a wide gap still exists between rural and urban areas (IICA-IDB-Microsoft, 2020). The country also has a dynamic ICT industry, mainly geared to software production. The ICT sector had total billing of US\$1.158 billion, equivalent to 2.2% of GDP in 2016 (INEFOP, 2019; Sotomayor et al., 2021). Furthermore, Uruguay ranks first in the ICT Development Index for Latin American countries calculated by the International Telecommunications Union (ITU) to measure access to, use, and skills for ICT development in the different countries. Eighty-nine percent of producers view the use of technology as an opportunity for their economic activity, 62% of them have Internet access, 88% have cell phones with Internet access, and 79% use a digital application in farming activities (e.g. WhatsApp and Facebook).
- 1.9 MGAP has made significant headway in digitizing the services it provides, which reduces transaction times and increases the profitability of agricultural businesses. As part of the Program to Support Agricultural Public Management II (loan 3800/OC-UR), investments were made to improve MGAP's on-line services on the central and departmental levels and more than 160 forms were simplified that previously had to be submitted in person, reducing transaction costs and times through the use of electronic files. In parallel, laboratories and digital border controls were modernized to promote and streamline exports and improve phytosanitary health protection in the country. Nonetheless, weaknesses remain in the standardization of systems, data accrual, and digitization for the purpose of making open data available (agrometeorology, traceability, soil mapping, water resources) so that a supply of affordable technological solutions can be generated and expanded. These weaknesses will be addressed through the activities proposed in this operation.
- 1.10 **Bank's experience in the country and complementarity with other operations.** The Bank has contributed to the country's rural development by supporting

agricultural production, particularly family farming.⁹ It has also supported the development of digital government, cybersecurity, and digital skills and talent.¹⁰ On the ventures level, promotion of ICT development and digital adoption has been led by IDB Lab, with pilot projects and support for the National Innovation Research Agency (ANII) for innovative policies and programs. Through the technical-cooperation operations “Innovation Vouchers for Creative Industries” (operation ATN/ME-15756-UR for US\$1,178,115.59, which has been fully disbursed) and “Digital Solutions Learning Lab for Uruguay’s Logistics Industry” (operation ATN/ME-17065-UR for US\$1,729,000, which is in execution) with ANII, IDB Lab has tested the use of vouchers in the creative and logistical industries. The projects have produced tools that are easily accessible and can be rapidly implemented for small and medium-sized companies that want to innovate by incorporating creative inputs or digitally transforming their businesses. Similar tools will be used to implement Component 2 of the program. Two Bank-financed productive rural development programs (operation 3080/OC-UR for US\$5,000,000 and operation 4644/OC-UR for US\$3,832,000) focused on incentives to promote the adoption of technologies and centered on family farms: operation 3080/OC-UR (fully disbursed) was targeted to on-farm production technology and operation 4644/OC-UR (in execution) was targeted to market integration. In 2021, the Program for Digital Transformation of MSMEs (operation 5294/OC-UR for US\$15,000,000, which is in execution) was approved in cooperation with the National Development Agency (ANDE), which will directly complement the proposed program and will broaden the scope and tools for digital transformation on the level of small family farms, since the program will use tools similar to those used by ANDE, but targeted and adapted exclusively to the agriculture sector. Together with ANII, the third operation under the business and venture innovation program is expected to be approved in 2022, which prioritizes investments in innovation in sectors that are keys for climate policy in Uruguay, including economic sectors that are pertinent for MGAP’s institutional mandate.

- 1.11 **Lessons learned.** The most important lessons learned from similar operations in the country and the region are to: (i) stress the role of rural women as agents in technology decision-making; and (ii) improve communication mechanisms or use other additional options to increase beneficiary participation.

⁹ [Rural Productive Development Program II](#) (4644/OC-UR) and [Program to Support Agricultural Public Management II](#) (3800/OC-UR), both executed by MGAP, have specific, although limited, investments in ICTs and improvements in formalities affecting producers.

¹⁰ The [Program to Support the Digital Government Strategy](#) (4867/OC-UR) and the Program to Strengthen Cybersecurity in Uruguay (4843/OC-UR) are recent examples of a broad list that includes investments in the health sector, digital skills and talent, and different technical-cooperation supports implemented by IDB Lab.

Table 1: Lessons learned

| Lesson | Reflected in the program's design |
|--|--|
| 1. Technical assistance and training To promote the adoption of technologies, solutions must be tailored to farm needs that focus more on transfers of practices and know-how than on the incorporation of assets. | The operation includes training and technical assistance for digital leaders and family producers. |
| 2. Information asymmetries The lack of information on the use, implementation, and benefits of digital technologies with a climate approach limit their adoption. | The operation will implement a digital platform with an inventory of available solutions and other tools to support users and developers of digital solutions. A program to train leaders in digital transformation will also be financed to enable them to train other producers and have a spillover effect. |
| 3. Public-private coordination For successful digital transformation, active participation by the private sector and tools for its coordination with the public sector are indispensable. | The program will implement an AgTech network that seeks to coordinate agents in the sector to generate and implement a national digital agenda with participation by the private and public sectors and academia. |
| 4. Gender approach To ensure broad participation by women, specific efforts will be made to communicate and socialize the benefits of digital technologies with this population segment. | The program includes mass communication campaigns and specific targets for women's participation. |

- 1.12 **Empirical evidence.** The literature presents ample evidence of the benefits of rural producer access to ICTs (Deichmann, Goyal, Mishra, 2016).¹¹ The benefits of adopting these technologies arise mainly from a reduction in transaction costs, better access to relevant information, and improved efficiency in the use of inputs. Specifically, the impacts include: (i) improvements in the operation of markets through greater transparency and coordination among stakeholders (Goyal, 2010; Mitchell, 2014);¹² (ii) increases in productivity (Beuermann et al., 2012; Lokanathan and de Silva, 2010; Cole and Fernando, 2012); and (iii) improved functioning of agricultural value chains (Karippacheril et al., 2011, Jack and Suri, 2014). However, to foster the adoption of new technologies, priority should be placed on access to finance and information through technical assistance that raises producer awareness regarding their implementation and advantages (Chuang et al., 2020; Pineiro et al., 2020; Salazar et al., 2015). The development of new technological ecosystems and organizational models that combine the public sector, academia, research centers, and the private sector, are fundamental for promoting agricultural digitalization (Shepherd et al., 2018) (see [optional link 7](#)).
- 1.13 **Strategic alignment.** The program is consistent with the second Update to the Institutional Strategy 2020-2023 (document AB-3190-2) since it responds to the productivity and innovation challenge by increasing the use of digital solutions in the agriculture sector. It contributes to the Corporate Results Framework 2020-2023

¹¹ Deichmann, U., A. Goyal, and D. Mishra. 2016. [Will Digital Technologies Transform Agriculture in Developing Countries?](#) Policy Research Working Paper 7669. World Bank, Washington, D.C. License: CC BY 3.0 IGO.

¹² Goyal, A. (2010) Information, [Direct Access to Farmers, and Rural Market Performance in Central India](#). American Economic Journal: Applied Economics, 23, pp. 22-45. Mitchell, P.H. [Global Education for Collaborative Practices](#).

(document GN-2727-12) through the following indicators: (i) Farmers with improved access to agricultural services and investments; (ii) Agencies with strengthened digital technology and managerial capacity; (iii) Women beneficiaries of economic empowerment initiatives; and (iv) CO₂ emissions avoided. It is also aligned with the crosscutting themes of: (i) gender equality, with its focus on better technology in women-led agricultural enterprises; (ii) climate change and environmental sustainability. In particular, the program is directly aligned with the crosscutting objectives of climate change and the IDB Group's Climate Change Action Plan 2021-2025 (document GN-2848-9) by promoting technological investments that decrease the climate and environmental footprint of the agriculture sector; and (iii) institutional capacity and the rule of law, since Component 1 provides financing for activities that strengthen MGAP's digital modernization. According to the [joint methodology of the multilateral development banks for tracking climate finance](#), 34.21% of the operation's resources are invested in climate change mitigation activities. These funds contribute to the IDB's climate financing target. The program is aligned with the IDB Group Country Strategy with Uruguay 2021-2025 (document GN-3056), particularly its priority area of sustainable productive development and its strategic objective of promoting innovation. The program is consistent with the following sector frameworks documents: (i) Agriculture Sector Framework Document (document GN-2709-10) in action line 1: Foster investments that help to boost agricultural productivity consistent with sustainable management of natural resources; (ii) the Food Security Sector Framework Document (document GN-2825-8) in dimension of success 3: Increase food access for the most vulnerable population of the Latin America and the Caribbean region through income generation that leads to higher consumption and cost-effective mechanisms to stimulate the adoption of technological innovations that are profitable, environmentally appropriate, and contribute to climate change adaptation among producers with a particular focus on vulnerable groups; and (iii) the Innovation, Science and Technology Sector Framework Document (document GN-2791-8) regarding the importance of the digital economy and the need to promote business digitalization. The operation is consistent with Vision 2025 (document AB-3266) in that it helps to reactivate the productive sector, includes a gender perspective, and contributes to climate change mitigation.

- 1.14 **Gender and youth.** The program will help to narrow gender gaps through two activities. The first, in Component 1, is preparation of a diagnostic assessment that focuses on gender, using information generated by the master register of producers (REUNE) information management system,¹³ that will coordinate and consolidate inputs from different areas and institutions linked to MGAP with specific data on gender, which is currently scattered among different databases. This will facilitate the production of specific gender policies in the near future with greater speed and efficiency.
- 1.15 The second activity under the calls for proposals to accede to the incentives offered in Component 2 is prioritization of gender equality in the adoption of technological applications, digital literacy and training, centering on the supply of technologies directed to the family production sector, with a focus on climate change adaptation. This area will cooperate with the National Employment and

¹³ REUNE will provide a master register of physical and legal entities linked to MGAP in order to manage centralized data on producers, technicians, and companies, moving toward a one-stop digital portal to MGAP.

Vocational Training Institute (INEFOP),¹⁴ which will provide methodologies and technical assistance based on its experience in developing and transferring digital skills to stakeholders in the agriculture sector.

- 1.16 As well, the program's focus is designed to promote generational replacement, which is one of the main problems mentioned by farm producers in MGAP's survey (25% of responses). Younger farmers generally have a better understanding of and greater access to technology. For example, 91% consult the Internet on agricultural topics; 84% are interested in participating in pilot productive technology tests, but just 50% have access to them. The program seeks to train young leaders to promote the adoption of digital technologies by other producers and heighten interest in farming among young people in rural areas.
- 1.17 **Technological innovation.** The program is fully focused on innovation in MGAP's digital services and the promotion of leading-edge technologies for the agriculture sector. It will help improve digitalization and generate new information technologies, services for producers, and digital solutions and technologies. Component 2, in particular, will spark an innovative impulse for cooperation between the public and private sectors to foster digital technologies (AgTech) and technology linkage, accelerating the processes of dissemination and adoption in Uruguayan farming, and drawing on existing innovations and open data to generate accessible digital applications.
- 1.18 **Climate change.** ECLAC estimates that the economic cost of climate change in Uruguay can be up to 10 GDP points in lost income from changes in geophysical systems and the impact on the productive infrastructure. In particular, 70% of the country's exports are agroindustrial in nature and highly vulnerable to climate fluctuations. Although the country was successful in its first energy transition, today's challenge consists of achieving the second transition through decarbonization in the productive sectors, which would decouple economic growth from greenhouse gas emissions. Land use, land-use change, and forestry (LULUCF) activities produce the highest greenhouse gas emissions and climate action in this sector requires a series of key activities to comply with the targets of the Paris Agreement. The program will include financing for energy efficient activities in the use of technological solutions and in the design and implementation of an AgTech platform that focuses on climate change mitigation and adaptation. Through it, MGAP will seek to complement measures that will contribute to the national targets for climate change mitigation and adaptation while generating higher economic growth.
- 1.19 The program includes actions to improve information and adopt good environmentally sustainable practices and technologies and for climate change adaptation and mitigation. Component 1 will make progress in this direction by obtaining better agricultural services to be offered by MGAP (simplified paperwork that avoids travel costs and improves wait times), reengineering in data storage and processing with a focus on energy efficiency for the interpretation of diagnostic studies and implementation of policies, etc. In Component 2, precision agriculture aimed at more efficient use of inputs, better use of natural resources, and climate

¹⁴ INEFOP has a [digital skills program](#) that will provide better opportunities for work and ventures with a focus on the country's sustainable development.

change adaptation forms the foundation of the new digital technologies that will be promoted.

B. Objective, components, and cost

1.20 **Objectives.** The program's general objective is to boost the competitiveness of the agriculture sector by deepening the digital transformation of MGAP and the impetus for adopting digital technologies (AgTech), with emphasis on family producers¹⁵ and rural women. Its specific objectives are to: (i) increase access to digital services and the satisfaction of individual users and agricultural institutions with those services; and (ii) expand digital skills and the adoption of emerging technological solutions that can help agricultural producers to mitigate and adapt to climate change.

1.21 **Component 1. Strengthening MGAP's digital modernization (IDB US\$4,125,000; local counterpart US\$270,000).** The focus will be on continuing the modernization and institutional strengthening process at MGAP and its digital transformation through investments and improvements in: (i) the digital processing of permits and certificates for the transportation of agricultural goods; (ii) digital registers of productive entities; and (iii) service for the public, considering the integration of new digital technologies and the inclusion of multiple means of communication (in person, telephone, Web, social networks, and intelligent assistants). This component includes investments in equipment and the generation of new processes in the areas of a master digital register of producers, digitization of waybills, control and transport, information services, and a new system for managing MGAP's digital services, with the focus on energy efficiency, security, and quality, and will allow for greater connectivity of databases and information systems to facilitate sector policy planning. Accordingly, this component's outputs will be:

- a. Waybills designed and implemented digitally for a reduction in costs and simplification of paperwork, with a direct impact on producer profitability and satisfaction, and a considerable improvement in the connectivity of institutions involved in control and transport activities, and the registration of operations.
- b. One-stop digital management portal for productive entities, integrated with a gender focus, to progress toward a management system that integrates information from different sources. The portal will also facilitate single one-time registration for different online processes and systems, offering personalized information, notifications of business requirements, and two-way communication between the entities.
- c. Service desks for internal and external support in the use of MGAP's digital tools, framed within an integrated system of data quality and security, designed and implemented. This is a comprehensive technology service model, based

¹⁵ The MGAP defines family farmers as all physical persons who directly manage a farm and/or engage in a productive agricultural activity. Such individuals and their families must simultaneously meet the following requirements: (i) operate the farm or carry out the productive activity with contracted permanent salaried labor of up to two nonfamily members or the equivalent in nonfamily seasonal workers of 250 days a year, for each permanent employee; (ii) work a farm of up to 500 hectares, CONEAT index 100, under any form of tenure; (iii) live on the farm that is being worked or at a locality not more than 50 kilometers away; and (iv) report nominal family income that does not come from farming or a productive agricultural activity of 14 BPC or less on average a month (index used to calculate income, taxes, and social contributions).

on good practices and help for internal and external users that includes channeling of complaints and suggestions.

1.22 **Component 2. Digital technologies for the agriculture sector (IDB US\$2,145,000; local counterpart US\$75,000).** The focus will be on digital technology generation and access through coordination and management mechanisms to promote the use of data, information, and digital solutions. The component also includes a review of the regulatory framework governing ICTs in the agriculture sector, a training strategy for sector actors, and an incentives plan for adopting digital agricultural technologies. This component will have five outputs:

- a. AgTech Uruguay network implemented, with a climate change focus. It will be managed by an executive secretary with administrative support and will implement a platform open to the private sector with an inventory of available solutions, a repository of open data, and other information tools and instruments to support users, digital solutions developers, and other relevant parties, with a climate change focus. The network will prepare a working agenda jointly with representatives of the public and private sectors and will establish thematic working groups. It will play an important role in the democratization of access to information on emerging technologies. The network will also organize events and congresses and will facilitate investment rounds, distribute outreach materials, and manage the preparation of a skills matrix to facilitate the digitization process, and a proposed regulatory framework to surmount the technological barriers to AgTech development in Uruguay. Lastly, the network will coordinate preparation of a proposed regulatory framework to develop the AgTech sector in Uruguay.
- b. Training in digital literacy with a gender focus. This will include the preparation and dissemination of educational contents to acquire skills in digital technologies in the agriculture sector concentrating on literacy for beneficiaries with low-level skills, particularly women. This output will be developed in cooperation with INEFOP, since its mandate is to act in the field of employment and vocational training for the private sector by promoting a systemic vision of employment and work. This activity will be targeted to farming families.
- c. Training for leaders in digital transformation in agriculture with a climate change focus, to advance in digital transformation, seeking to train producers who will act as catalysts in their establishments and replicators in their environments, as well as technicians who work independently or for organizations linked to the sector, and interested women and young people. The program will be complemented by the development of rural digital transformation tools for family farmers and with training for leaders in digital transformation with ANDE, which is executing the Digital Transformation Program for MSMEs (loan 5294/OC-UR).
- d. Digital technical assistance for producers targeted to the agriculture and fisheries sectors, with a focus on producers with intermediate levels of digital maturity, who will be supported in incorporating existing digital solutions, with support from AgTech facilitators. This activity will be primarily targeted to family producers.
- e. Technology adoption projects with a climate change approach, focused on good environmental practices and adaptation to climate change, through financial support for digital transformation, identifying producers' groups with similar needs and demands for the adoption of new technologies. Through a

competitive process (annual calls), support will be provided for the adaptation and adoption of existing solutions for producer groups. This tool primarily targets family farmers (30 groups with a minimum of five producers each) and will provide nonreimbursable financial assistance of up to U\$20,000 (not more than 80% of the cost of the solution), with project execution times of 12 months. Applications that increase the capacity of participating producers to adapt to climate change will be prioritized. Agreements will be signed with the beneficiary producers to ensure maintenance of the investments. Success stories will be communicated to generate synergies and spur other producers to move ahead with their digital transformation.

- 1.23 Through its outputs, Component 2 will generate mechanisms for interaction among service companies, public and semipublic institutions (such as universities and institutes devoted to research and the transfer of agricultural technology), researchers, technicians, developers, users, and producers who demand applications and solutions. They will center on the transfer of knowledge to implement climate change mitigation and adaptation activities, with a gender approach.
- 1.24 **Administration, evaluation, and monitoring (IDB US\$230,000; local counterpart US\$155,000).** These funds will be used to finance the costs of program administration, monitoring, evaluation, and audits, and the cost of two full-time technical experts (the head of the procurement department and an accounting department assistant), who will be supported by the existing structure of MGAP's Project Management Unit (PMU) in the areas of planning, monitoring, evaluation, procurement, and financial aspects related to execution. An evaluation of the program's impact will be performed and will provide relevant information for evaluating methods, strategies, and the ex post return on the investment financed by the Bank's loan.

C. Key results indicators

- 1.25 The main program beneficiaries will be agricultural producers with emphasis on small family operations, rural women, and the users of MGAP information and services. Specifically, the investments in Component 1 will benefit all agricultural producers, while Component 2 expects to benefit 2,200 family producers, at least 615 of whom will be women. The expected impact of the program is to boost the competitiveness of the agriculture sector by deepening the digital transformation of MGAP's services and activities and the impetus for adopting digital technologies. The program's results are related to an increase in MGAP's digital services, the building of producers' digital skills, and an improvement in access to and the adoption of digital technologies in Uruguayan agriculture. The main indicators are shown in Table 2.

Table 2. Main results matrix indicators

| Impact and results indicators | Timing of measurement | Reason for selection |
|--|-----------------------|---|
| 1. ICT development index | Years 1 and 5 | Measures the development of ICTs in the country |
| 2. CO ₂ emissions avoided | | Measures the impact of digitization of services on climate change mitigation |
| 3. Digital business forms available | | Measures the depth of MGAP's digital services |
| 4. User satisfaction | | Measures user satisfaction with the digital services provided |
| 5. Producers who are familiar with and use at least one digital tool | | Measures access to advanced digital technologies by producers, and serves to evaluate exposure to digital technologies with a focus on measures to mitigate and adapt to climate change |
| 6. Percentage of MGAP business conducted online, including waybills (GPT), master register of operators (RUO), and the Livestock Control Office (DICOSE) | Years 1, 3, and 5 | Measures the use of digital services by producers |

- 1.26 **Economic analysis.** An overall cost-benefit analysis of the program was performed, based on an annual social discount rate of 12%, in keeping with Bank policies, and the reduction in costs and expected differential benefits for each component were analyzed over a 15-year horizon. The net present value estimated for the program was US\$22.5 million, in a scenario of low carbon prices, which corresponds to an internal rate of return of 74.43% for the whole project. The benefits corresponded to time savings and the simplification of business, fewer trips to conduct it, and the reduction in fuel emissions costs resulting from the replacement of in-person office visits with digital forms as part of the activities of Component 1. The impact of the activities to promote adoption of AgTech in Component 2 on the direct beneficiaries and the multiplier effect were also estimated. Accordingly, a meta-analysis of studies on the adoption of technology and the average internal rate of return on investments in extension programs and programs to promote new agricultural technologies was used. Various sensitivity analyses were also performed using the main analysis variables and the results continue to be robust for all the program's financial and socioeconomic viability indicators.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The program will be financed as a specific investment loan, since the outputs to be financed are associated with specific objectives and their successful execution is linked to the indivisibility of the program. The US\$6.5 million loan will be financed from the Bank's Ordinary Capital under the Flexible Financing Facility, with a local counterpart of US\$500,000, which is the equivalent of 7% of the total cost.

Table 3. Costs by component US\$*

| EDT | Component | IDB | Local counterpart | Total | % |
|--------------|--|------------------|-------------------|------------------|--------------|
| 1 | Component 1: Strengthening MGAP's digital modernization | 4,125,000 | 270,000 | 4,395,000 | 62.8 |
| 1.1 | Output 1.1: Digital waybills | 1,955,536 | 98,079 | 2,053,615 | |
| 1.2 | Output 1.2: One-stop digital management portal for MGAP's productive entities, with a gender focus | 894,927 | - | 894,927 | |
| 1.3 | Output 1.3: Service desk for internal and external support in the use of MGAP's digital tools | 1,274,537 | 171,921 | 1,446,458 | |
| 2 | Component 2: Digital technologies for the agriculture sector | 2,145,000 | 75,000 | 2,220,000 | 31.7 |
| 2.1 | Output 2.1: AgTech Uruguay network with a climate change focus | 669,154 | 75,000 | 744,154 | |
| 2.2 | Output 2.2: Digital literacy promoted, with a gender focus | 295,000 | - | 295,000 | |
| 2.3 | Output 2.3: Training for leaders in digital transformation, with a climate change focus | 115,000 | - | 115,000 | |
| 2.4 | Output 2.4: Producers who receive digital technical assistance | 440,846 | - | 440,846 | |
| 2.5 | Output 2.5: Technology adoption projects, with a climate change focus | 625,000 | - | 625,000 | |
| 3 | Program administration, audits, and evaluation | 230,000 | 155,000 | 385,000 | 5.5 |
| Total | | 6,500,000 | 500,000 | 7,000,000 | 100.0 |

* The budget for outputs is indicative.

Table 4. Disbursement planning

| Source | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Total | % |
|-------------------|----------------|------------------|------------------|------------------|----------------|------------------|----------------|
| IDB | 570,586 | 2,291,828 | 1,801,663 | 1,288,496 | 547,427 | 6,500,000 | 92.86% |
| Local counterpart | 71,318 | 110,257 | 112,966 | 115,748 | 89,711 | 500,000 | 7.14% |
| Total | 641,904 | 2,402,085 | 1,914,629 | 1,404,244 | 637,138 | 7,000,000 | 100.00% |
| % | 9.17 | 34.32 | 27.35 | 20.06 | 9.10 | 100.00 | |

B. Environmental and social risks

- 2.2 Under the new Environmental and Social Framework, this operation was classified as category "C." No significant negative environmental or social impacts are anticipated.

C. Fiduciary risks

- 2.3 The institutional capacity assessment identified strengths stemming from the experience of MGAP's PMU. It points out that the technical departments have the capacity to effectively manage all the outputs they are responsible for, using technical staff with experience, who work full-time. It also underlines historical

performance in procurement and the technical quality of the contracts it manages, plus the ability to operate and maintain the goods and services to be generated by the program. At the time the program was being prepared, a medium-high risk was identified related to the process of paying eligible expenditures, which requires preventive intervention by the Office of the Auditor General and the Office of the Comptroller General, for which a mitigation measure is established linked to the financial plans and the percentage of the operation requiring justification. The fiduciary team will continue to identify and manage risks during execution.

D. Other risks and key issues

- 2.4 **Sustainability.** With regard to Component 1, the sustainability of the services generated and maintenance of the equipment and personnel that are involved in generating the outputs is guaranteed by MGAP's annual budget. Component 2 will implement a governance mechanism for the AgTech system, with the participation of the public and private sectors, which will be financed by the program during execution. In future, AgTech network services will be financed from the public purse. It is expected that the network will become self-financing as the sector grows and as the services offered by the AgTech platform to the private sector gradually bring in resources to guarantee the sustainability of its initiatives. In parallel, mechanisms will be studied for providing digital technical and advisory services, subscriptions to information and training services, and technological applications offered by the platform to strengthen its financial sustainability going forward. Part of the AgTech network output includes an analysis to identify the self-financing strategy.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 The borrower will be the Oriental Republic of Uruguay. The Ministry of Livestock, Agriculture, and Fisheries (MGAP) will be the program executing agency through its Project Management Unit (PMU), which reports to the Office of the Secretary (DGS). MGAP, acting through the PMU, will be responsible for planning, monitoring, and evaluating the program's results; procurement, administrative, and financial management; direct coordination with the technical areas involved; environmental and social management; and management of the program's communications. The PMU has an executive manager, an administrative and finance manager, and a technical-operations area, as well as a legal advisory area and a social and environmental safeguards advisory area. MGAP has proven experience executing projects through the PMU, which consists of different professionals and technicians, and works as a team for all the credit operations executed by MGAP and financed by multilateral agencies. MGAP's past experience executing technical-cooperation projects and loans and the anticipated preparation and rollout of activities will adequately facilitate the startup and execution of the operation. Technical quality management will be the responsibility of that National Agricultural Information System (SNIA) through the Agricultural Information Systems Promotion Office and the Continuous Improvement Unit (UMC), which will define needs, prepare terms of reference, technical specifications, technical evaluation of proposals, and provide contract supervision, approving the goods, services, and consulting services that form part of the

- program's components. The program will use Bank proceeds to finance: (i) an administration and finance specialist; and (ii) an accounting assistant. The core team for execution will be composed as follows: (a) an executive manager, (b) an administration and finance manager, (c) a planning coordinator, and (d) a procurement and contracts coordinator. The [program Operating Regulations](#) will spell out the execution arrangements for each component, with clearly-defined responsibilities, among other relevant operational aspects.
- 3.2 The following will be special contractual conditions precedent to the first disbursement of the loan: **(i) approval and entry into effect of the [program Operating Regulations](#), in the terms agreed upon with the Bank; and (ii) engagement of a specialist to head the procurement department and an assistant for the accounting department of MGAP's PMU.** The first condition is necessary to ensure appropriate program execution, given that the Bank's experience in the region indicates that approval of operating regulations prior to the first disbursement contributes to the internal organization of the executing agency for program implementation. The second condition is essential for ensuring that MGAP has a suitable team to begin program execution.
- 3.3 **Fiduciary agreements and requirements.** Annex III sets out the financial management and procurement guidelines that will apply to the program. Procurement operations financed in full or in part by loan proceeds will be conducted in accordance with the Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-15) and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (document GN-2350-15). The national procurement system, which was approved by the Bank's Board of Executive Directors in a resolution dated 26 February 2020, will be used to the extent established in the resolution and the provisions of Annex III of this document.
- 3.4 **Disbursements and audits.** Disbursements will mainly take the form of advances of funds or some other modality established in the Financial Management Guidelines for IDB-financed Projects (document OP-273-12). Advances will be made in accordance with a financial plan that covers the project's real liquidity requirements for up to 12 months and, except for the first advance of funds, subsequent advances will be processed when at least 50% of total cumulative balances pending justification have been justified. This is because MGAP needs funds in the program bank account to undertake new obligations and because processing payments requires the preventive intervention of the Office of the Auditor General (TCR) and the Office of the Comptroller General (CGN). To manage the proceeds, MGAP will use the Treasury Single Account. It will submit the program's audited financial statements within 120 days after the close of the program's fiscal year if they are examined by an independent firm of auditors acceptable to the Bank, or within 180 days after the close of the program's fiscal year if they are examined by the TCR. The last of these audited financial statements will be submitted within 120 days of the date of the last disbursement or any extensions thereof if they are examined by an independent firm of auditors acceptable to the Bank, or within 180 days following the date of the last disbursement or any extensions thereof if they are examined by the TCR.

- 3.5 **Direct contracting.** The following direct contracts are included in the procurement plan: (i) with the National Telecommunications Administration (ANTEL) for a total of US\$115,318 for the entire execution cycle of the proposed operation in line with paragraph 3.11(a) and (d) of document GN-2350-15, considering that ANTEL is the only company in the country that can provide the requested services from the technical standpoint, given that it guarantees the levels of security required by the Agency for the Development of e-Government and the Knowledge and Information Society (AGESIC), combining two essential features (Level III validation and access to RedUy) and given the legal mandate (Decree 92/014, Article 3) to house the central government's information system in secure data centers located within the country; and (ii) with INEFOP to provide training services for the digital adoption, literacy, and training for leaders in digital transformation for a total of US\$345,000 for the entire execution period of the operation, in line with paragraph 3.11(d) of document GN-2350-15, considering that INEFOP's mandate is to act in the field of employment and vocational training for the private sector through a systemic vision of employment and work. Its mandate includes facilitating permanent training for employability or improved employability as part of a range of policy measures intended to create decent jobs and attain sustainable economic and social development. In addition, 12 individual consultants will be contracted in line with paragraph 3.11(a) of document GN-2350-15, which allows for such contracts in cases of continuity of service, on the understanding that the current contractual conditions of the consultants identified will not be changed, for a total US\$1,453,048 for the entire execution period as described in the operation's procurement plan. These contracts are justified because the consultants will continue the activities that they began under operation 3800/OC-UR.¹⁶ In the event of technical or economic changes—or any other type of changes—they will be subject to the Bank's ex ante supervision.

B. Summary of arrangements for monitoring results

- 3.6 **Monitoring.** The operation will be monitored in accordance with the [monitoring and evaluation plan](#). MGAP will submit semiannual reports to the Bank on progress and compliance with the physical and financial goals for outputs established in the project status reports, the annual work plan, and the procurement plan. The progress report for the second half of the calendar year will also include any necessary replanning of the physical and financial goals, based on the annual review of the multiyear execution plan, the annual work plan, and real progress made on the program. Monitoring activities will also include tracking the results indicators in the baseline as the starting point for conducting the evaluations planned in the program and as described in the monitoring and evaluation plan.
- 3.7 **Evaluation.** MGAP will submit a midterm evaluation report to the Bank 90 days after 50% of the loan proceeds have been committed or half of the execution period has elapsed, whichever occurs first, and the program completion report within 90 days after 90% of loan proceeds has been disbursed. The final evaluation will include the results of the program impact evaluation. An experimental methodology will be used to evaluate the impact of Components I and II. For Component I, a behavioral experiment will be conducted to measure the impact of the use of

¹⁶ They work as technicians, computer specialists, and administrators in developing REUNE, the guidelines, the help desk, and other services related to the ministry's services.

MGAP's digital services. For Component II, the impact of digital literacy and digital packages on the adoption of digital technologies by agricultural procurers will be studied through random measurements on two levels: regional and individual.

| Development Effectiveness Matrix | | |
|--|---|---|
| Summary | | UR-L1185 |
| I. Corporate and Country Priorities | | |
| Section 1. IDB Group Strategic Priorities and CRF Indicators | | |
| Development Challenges & Cross-cutting Issues | -Productivity and Innovation -Gender Equality and Diversity -Climate Change -Institutional Capacity and the Rule of Law | |
| CRF Level 2 Indicators: IDB Group Contributions to Development Results | -Farmers with improved access to agricultural services and investments (#) -Women beneficiaries of economic empowerment initiatives (#) -Emissions avoided (annual tons CO2 equivalent) -Agencies with strengthened digital technology and managerial capacity (#) | |
| 2. Country Development Objectives | | |
| Country Strategy Results Matrix | GN-3056 | The program is aligned with its priority areas, in particular Sustainable Productive Development and its strategic objective of increasing innovation. |
| Country Program Results Matrix | GN-3087 | The intervention is included in the 2022 Operational Program. |
| Relevance of this project to country development challenges (If not aligned to country strategy or country program) | | |
| II. Development Outcomes - Evaluability | | Evaluable |
| 3. Evidence-based Assessment & Solution | | 9.4 |
| 3.1 Program Diagnosis | | 1.9 |
| 3.2 Proposed Interventions or Solutions | | 3.5 |
| 3.3 Results Matrix Quality | | 4.0 |
| 4. Ex ante Economic Analysis | | 10.0 |
| 4.1 Program has an ERR/NPV, or key outcomes identified for CEA | | 1.5 |
| 4.2 Identified and Quantified Benefits and Costs | | 3.0 |
| 4.3 Reasonable Assumptions | | 2.5 |
| 4.4 Sensitivity Analysis | | 2.0 |
| 4.5 Consistency with results matrix | | 1.0 |
| 5. Monitoring and Evaluation | | 10.0 |
| 5.1 Monitoring Mechanisms | | 4.0 |
| 5.2 Evaluation Plan | | 6.0 |
| III. Risks & Mitigation Monitoring Matrix | | |
| Overall risks rate = magnitude of risks*likelihood | | Medium Low |
| Environmental & social risk classification | | C |
| IV. IDB's Role - Additionality | | |
| The project relies on the use of country systems | | |
| Fiduciary (VPC/FMP Criteria) | Yes | Financial Management: Budget, Treasury, External Control, Internal Audit. Procurement: Information System, Price Comparison, Contracting Individual Consultant, National Public Bidding. |
| Non-Fiduciary | | |
| The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions: | | |
| Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project | | |

Evaluability Assessment Note: The general objective of the project is to improve the competitiveness of the agricultural sector, through the deepening of the digital transformation of the Ministry of Livestock, Agriculture and Fisheries' (MGAP) services and activities and the promotion of the adoption of digital technologies, with an emphasis on family producers and rural women. The specific objectives are: (i) to increase access to digital services and the satisfaction of citizens and agricultural entities with regard to these services; and (ii) to increase digital skills and the adoption of emerging technological solutions that contribute to mitigation measures and adaptation to CC by agricultural producers.

In general, the diagnosis is adequate, with a well-identified problem and clear determinants. The results matrix exhibits vertical logic with clear specific objectives and SMART result indicators that allow its fulfillment to be demonstrated. The economic analysis consisted of estimating the benefits of the program through a Cost Benefit Analysis (CBA) for Components 1 and 2.

The program has a Monitoring and Evaluation Plan that specifies: (i) the methodology to measure the indicators; (ii) the impact evaluation methodology; (iii) data requirements; and (iv) those responsible and the estimated budget. Experimental impact evaluations are proposed, with interventions based on the provision of information to producers, to assess their effect on the adoption of digital technologies. Additionally, two experimental evaluations of interventions (digital literacy and provision of technological packages) are proposed to evaluate how they affect the adoption of technology and the effect that has on the income of rural households.

RESULTS MATRIX

| | |
|---------------------------|--|
| PROGRAM OBJECTIVE: | The general objective is to boost the competitiveness of the agriculture sector by deepening the digital transformation of the Ministry of Livestock, Agriculture, and Fisheries (MGAP) and the impetus for adopting digital technologies (AgTech), with emphasis on family producers and rural women. The specific objectives are to: (i) increase access to digital services and the satisfaction of individual users and agricultural institutions with those services; and (ii) expand digital skills and the adoption of emerging technological solutions that can help agricultural producers to mitigate and adapt to climate change. |
|---------------------------|--|

GENERAL DEVELOPMENT OBJECTIVE

| Indicator | Unit of measurement | Baseline value | Baseline year | Expected year of achievement | Target | Means of verification | Comments |
|---|---------------------|----------------|---------------|------------------------------|---------|---|---|
| General development objective: To boost the competitiveness of the agriculture sector by deepening the digital transformation of MGAP's services and the impetus for adopting AgTech, with emphasis on family producers and rural women. | | | | | | | |
| I.1: ICT development index | Index | 7.16 | 2017 | 2027 | 8.6 | Source: United Nations International Telecommunications Union (ITU) . | Baseline: ITU (2017) The ICT development index, published since 2009, is a composite index that includes 11 indicators. It is used to monitor and compare ICT development between countries over time. Calculation method |
| I.2: Uruguay's percentage participation in AgTech ventures in Latin America and the Caribbean | Percentage | 0.5 | 2018 | 2027 | 1 | Measured during the life of the program. Final program evaluation. | Baseline: IDB Lab. AgTech Innovation Map in Latin America and the Caribbean . |
| I.3. CO ₂ emissions avoided | U.S. dollars | 0 | 2022 | 2027 | 545,000 | Final evaluation based on MGAP data | Minimum price per ton of CO ₂ : US\$40 (2020). Rate of annual increase 2.25%. Target: Economic Evaluation. CRF indicator |

SPECIFIC DEVELOPMENT OBJECTIVES

| Indicator | Unit of measurement | Baseline value | Baseline year | Year 1 2023 | Year 2 2024 | Year 3 2025 | Year 4 2026 | Year 5 2027 | End of program | Means of verification | Comments |
|--|--|--|---------------|-------------|-------------|-------------|-------------|-------------|--------------------------|---|---|
| Specific development objective 1. To increase access to digital services and the satisfaction of individual users and agricultural institutions with those services. | | | | | | | | | | | |
| R1. Producers can conduct their business with MGAP digitally | Number of procedures | 166 | 2022 | | | | | | 186 | MGAP records | This indicator measures the number of procedures digitally available with MGAP for producers. MGAP currently has 252 procedures, with approximately 166 of them offered online. |
| R2. Business with MGAP conducted digitally by producers (percentage of GPT, DICOSE, and RUO business conducted online) | % of producers | 0 | 2022 | | | | | | 60 | | |
| R2.1. Business with MGAP conducted digitally by female farm producers | percentage | 0 | 2022 | | | | | | 20 | | |
| R3: Average user satisfaction with MGAP's digital services | Number (scale of 1 to 10) | 6.53 | 2022 | | | | | | 8 | Final program evaluation MGAP satisfaction survey | Rating scale: 1 = very dissatisfied; and 10 = very satisfied. |
| Specific development objective 2. To expand digital skills and the adoption of emerging technological solutions that can help agricultural producers to mitigate and adapt to climate change. | | | | | | | | | | | |
| R4: Ability to access digital technologies linked to the agriculture sector | Percentage by category: A lot; Somewhat; Little; None. | A lot = 6 Somewhat = 36 Little = 46 None = 12 | 2021 | | | | | | A lot + Somewhat = 55 | Final program evaluation survey | Baseline: MGAP survey on the use of ITCs in family farming. |
| R5: Farm producers who adopt at least one digital technology | Percentage of farmers who are aware of and use the tool | 8 | 2021 | | | | | | 38 | Final program evaluation survey | Baseline: MGAP survey on the use of ITCs in family farming. The technologies include drones, precision farming, the Internet of things, e-commerce platforms, blockchain, artificial intelligence applications, teledetection with satellite images, and FinTech. Target: Economic evaluation, Ruzzante et al. (2021) |
| R6. Women who adopt at least one digital technology | % who know and use the tool | 8 | | | | | | | 38 | | |

| Indicator | Unit of measurement | Baseline value | Baseline year | Year 1 2023 | Year 2 2024 | Year 3 2025 | Year 4 2026 | Year 5 2027 | End of program | Means of verification | Comments |
|-----------|---------------------|----------------|---------------|-------------|-------------|-------------|-------------|-------------|----------------|-----------------------|---|
| | | | | | | | | | | | Technologies will be promoted to improve adaptation to climate change and environmental sustainability. |

OUTPUTS

| Indicator | Unit of measurement | Baseline value | Baseline year | Year 1 2023 | Year 2 2024 | Year 3 2025 | Year 4 2026 | Year 5 2027 | End of program | Means of verification | Comments |
|---|---------------------|----------------|---------------|-------------|-------------|-------------|-------------|-------------|----------------|--|--|
| Component 1. Strengthening digital modernization in MGAP | | | | | | | | | | | |
| Output 1. Waybills (GPTs) developed and available digitally to the public | Waybill | 1 | 2022 | - | 1 | 2 | 2 | 1 | 7 | Operating reports on the tool with the number of digital GPTs issued | Preliminary waybills: 1. livestock; 2. native forests; 3. fruits and vegetables (farm produce); 4. apiculture products (farm produce); 5. fisheries products; 6. hides and wool. Baseline: Industrial hemp. |
| Output 2: One-stop digital management portal for productive entities, implemented, with a gender focus | Portal | 0 | 2022 | - | - | - | 1 | - | 1 | Revision of the one-stop portal for digital management | Entails the consolidation of different records and procedures and personalized business for 42 productive entities. Includes the master register of producers (REUNE) and MGAP online. |
| Milestone 1: Systemization of analyses and information in the register of rural women carried out | Document | 0 | 2022 | - | 1 | - | - | - | 1 | Revision of the approved document | The program plans to obtain relevant information on rural women that will be available in 2023 to establish a report with a baseline on the current situation. |
| Milestone 2: Registers integrated into REUNE | Register | 0 | 2022 | - | 1 | 1 | - | - | 2 | Operations report on the results of integrating the registers | Livestock Control Office (DICOSE) and master register of operators (RUO) |
| Milestone 3: Registers integrated into the one-stop portal | Register | 0 | 2022 | - | 1 | 1 | - | - | 2 | Operations report on the results of integrating the registers | DICOSE and RUO |

| Indicator | Unit of measurement | Baseline value | Baseline year | Year 1 2023 | Year 2 2024 | Year 3 2025 | Year 4 2026 | Year 5 2027 | End of program | Means of verification | Comments |
|--|---------------------|----------------|---------------|-------------|-------------|-------------|-------------|-------------|----------------|---|---|
| Output 3: Service desks for internal and external support in the use of MGAP's digital tools designed and implemented | Service desk | 0 | 2022 | - | 1 | - | 1 | - | 2 | Information on the startup of the desks | Includes a quality management system (complaints, suggestions, disputes, and satisfaction monitoring). Internal service desk in 2024 and external service desk in 2026 for all MGAP's digital services. |
| Milestone 1. Services integrated into the service desks | Services | 0 | 2022 | 1 | - | 2 | 3 | - | 6 | Revision of the list of services covered by the desks | Involves incorporation of the following services: 1. electronic files; 2. electronic notifications; 3. digital waybill; 4. REUNE; and 5. digital business forms |
| Milestone 2. Integrated management system (data quality and security) implemented | System | 0 | 2022 | - | - | 1 | - | - | 1 | Internal audit report to the SIG | System implemented and in operation. It covers complaints, disputes, and user satisfaction. |
| Component 2: Digital technologies for the agriculture sector | | | | | | | | | | | |
| Output 4. AgTech Uruguay network implemented, with a climate change focus | Network | 0 | 2022 | - | - | - | 1 | - | 1 | Physical and virtual AgTech network in operation | Different tools and outputs will be created to promote producers' adaptation to climate change. |
| Milestone 1. AgTech network operating regulations formalized | Network | 0 | 2022 | - | 1 | - | - | - | 1 | Operating regulations approved | |
| Milestone 2. AgTech sector platform operating | Platform | 0 | 2022 | - | - | 1 | - | - | 1 | Version 1 of the AgTech network operating | |
| Milestone 3. Legal document produced containing a proposed regulatory framework | Document | 0 | 2022 | - | - | - | 1 | - | 1 | Report (with the content specified in the comments) | Includes an analysis of the limitations of the existing regulatory framework and proposed recommendations and actions to remove those barriers. Aimed at developing a draft regulatory framework. |
| Milestone 4. Skills matrix prepared | Matrix | 0 | 2022 | - | 1 | - | - | - | 1 | AgTech skills matrix approved | |

| Indicator | Unit of measurement | Baseline value | Baseline year | Year 1 2023 | Year 2 2024 | Year 3 2025 | Year 4 2026 | Year 5 2027 | End of program | Means of verification | Comments |
|--|---------------------|----------------|---------------|-------------|-------------|-------------|-------------|-------------|----------------|-----------------------------|--|
| Output 5. Initial training in digital literacy, with a climate and gender focus | Individuals | 0 | 2022 | 100 | 500 | 600 | 600 | - | 1,800 | Training attendance records | To be carried out through INEFOP |
| Milestone 1. Women who receive digital literacy training in climate-smart agriculture, with a focus on climate change mitigation and adaptation | Women | 0 | 2022 | 30 | 150 | 180 | 180 | - | 540 | Training attendance records | Corporate Results Framework (CRF) indicator |
| Output 6. Training for leaders in digital transformation of agriculture, with a climate change focus | Individuals | 0 | 2022 | - | 50 | 100 | 100 | - | 250 | Training attendance records | To be performed in conjunction with ANDE + TD Agro. Training will include a specific module for climate change adaptation. CRF indicator |
| Milestone 1. Women trained | Women | 0 | 2022 | - | 15 | 30 | 30 | - | 75 | | CRF indicator |
| Output 7. Producers who receive digital technical assistance and digital packs | Producers | 0 | 2022 | - | 30 | 60 | 60 | - | 150 | Contracts signed | Digital packs – support in purchasing existing digital solutions. CRF indicator |
| Output 8. Projects for adopting technologies with a climate change focus implemented | Projects | 0 | 2022 | - | 10 | 10 | 10 | - | 30 | Contracts signed | These outputs will be disseminated for replication through different avenues (e.g. publications on platforms and videos). |

Country: Uruguay **Division:** RND **Operation number:** UR-L1185 **Year:** 2022

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Executing agency: Ministry of Livestock, Agriculture, and Fisheries (MGAP)
Name of the operation: Program to Promote the Adoption of Digital Technologies in Uruguay's Agriculture Sector

I. Fiduciary context of the executing agency

1. Use of country systems in the operation (any system or subsystem approved subsequently may be applicable to this operation, depending on the Bank's terms of validation).

| | | | |
|--|--|--|--|
| <input checked="" type="checkbox"/> Budget | <input type="checkbox"/> Reports | <input checked="" type="checkbox"/> Information system | <input checked="" type="checkbox"/> National competitive bidding (NCB) |
| <input checked="" type="checkbox"/> Treasury | <input checked="" type="checkbox"/> Internal audit | <input checked="" type="checkbox"/> Shopping | <input type="checkbox"/> Other |
| <input type="checkbox"/> Accounting | <input checked="" type="checkbox"/> External control | <input checked="" type="checkbox"/> Individual consultants | <input type="checkbox"/> Other |

2. Fiduciary execution mechanism: Not applicable

3. Fiduciary capacity

| | |
|--|---|
| Fiduciary capacity of the executing agency | The borrower is the Oriental Republic of Uruguay, and the executing agency will be MGAP. The institutional capacity assessment of the executing agency's overall fiduciary capacity indicates a low level of risk. MGAP has an appropriate organizational and administrative structure to take charge of execution. The Fiduciary Agreements and Requirements established for this program are based on MGAP's history as executing agency of loans 4950/OC-UR, 3800/OC-UR, and 4644/OC-UR. MGAP has implemented fiduciary systems that are sufficient to ensure it will attain the expected results and maintain audited financial statements with unqualified opinions as in 3800/OC-UR and 4644/OC-UR (4950/OC-UR waived to date). |
|--|---|

4. Fiduciary risks and response to risk

| Risk category | Risk | Level | Response to risk |
|---------------|--|-------------|---|
| Planning | If the response times of the Office of the Comptroller General (CGN) and the Office of the Auditor General (TRC) exceed one month, MGAP will be unable to conclude the payment processes envisaged in its financial planning, which means that it will be unable to submit timely justification of advances to the Bank. | Medium-high | In view of experience with loans 4950/OC-UR, 3800/OC-UR, and 4644/OC-UR, the percentage for justification of advances for the present operation will be made more flexible. Complementarily, MGAP should consider involving the CGN and the TCR in planning the program's payments. |

5. Policies and guidelines applicable to the operation: Bank procurement policies GN-2349-15 (Policies for the Procurement of Goods and Works Financed by the IDB) and GN-2350-15 (Policies for the selection and contracting of consultants financed by the IDB) will apply. In financial management, Guide OP-273-12 or the most recent version will apply.

6. Exceptions to policies and guidelines: None.

II. Considerations for the special provisions of the loan contract

Exchange rate: The parties agree that the applicable exchange rate will be option (b)(ii) of Article 4.10 of the General Conditions. The agreed exchange rate will be the rate in effect on the date the borrower, the executing agency, or any other person or legal entity empowered to incur expenditures makes payment to a contractor, supplier, or beneficiary.

Audits: The program's audited financial statements will be submitted within 120 days after the close of the program's fiscal year if they are examined by an independent firm of auditors acceptable to the Bank, or within 180 days after the close of the program's fiscal year if they are examined by the TCR. The last of these audited financial statements will be submitted within 120 days of the date of the last disbursement or any extensions thereof if they are examined by an independent firm of auditors acceptable to the Bank, or within 180 days following the date of the last disbursement or any extensions thereof if they are examined by the TCR.

III. Agreements and requirements for procurement execution

| | | |
|-------------------------------------|-------------------------|---|
| <input checked="" type="checkbox"/> | Bidding documents | <p>For the procurement of works, goods, and nonconsulting services carried out in accordance with Bank policies (document GN-2349-15) and subject to NCB, the Bank's standard bidding documents or other documents agreed upon by the executing agency and the Bank for the specific procurement item will be used. Likewise, the selection and contracting of consulting services will be carried out according to the policies for the selection of consultants (document GN-2350-15) using the standard request for proposals issued by the Bank or agreed upon by the executing agency and the Bank for the specific selection process. If appropriate and, depending on business requirements, individual cases may be studied and identified in the procurement plan for use of a procurement document agreed upon between the competent Uruguayan authority and the Bank.</p> <p>The project's sector specialist will be responsible for reviewing the technical specifications and terms of reference for procurements during preparation of the selection processes. This technical review can be conducted ex ante and is independent of the procurement review method.</p> |
| <input checked="" type="checkbox"/> | Use of national systems | <p>Since MGAP is an institution included in Article 2 of the Consolidated Accounting and Financial Administration Text (TOCAF) and in view of the approval issued by the Bank's Board of Executive Directors on 26 February 2020, MGAP may use the national procurement system in processes identified in the operation's procurement plan. In the event the Board broadens the extent to which approved national systems may be used, this will apply to the operation.</p> |

| | | | | | | | | | | |
|-------------------------------------|----------------------------------|---|---------------------|-------|----------------|---------------------|------|---------------|-------------|-------------|
| <input checked="" type="checkbox"/> | Direct contracting and selection | <p>The following direct contracts are envisaged, which will be included in the procurement plan: (i) with the National Telecommunications Administration (ANTEL) for a total of US\$115,318 for the entire execution cycle of the proposed operation in line with paragraph 3.11(a) and (d) of document GN-2350-15, considering that ANTEL is the only company in the country that can provide the requested services from the technical standpoint, given that it guarantees the levels of security required by the Agency for the Development of e-Government and the Knowledge and Information Society (AGESIC), combining two essential features (Level III validation and access to RedUy), and given the legal mandate (Decree 92/014, Article 3) to house the central government's information system in secure data centers located within the country; and (ii) with INEFOP to provide training services for the digital adoption, literacy, and training for leaders in digital transformation for a total of US\$345,000 for the entire execution period of the operation, in line with paragraph 3.11(d) of document GN-2350-15, considering that INEFOP's mandate is to act in the field of employment and vocational training for the private sector through a systemic vision of employment and work. Its mandate includes facilitating permanent training for employability or improved employability as part of a range of policy measures intended to create decent jobs and attain sustainable economic and social development. In addition, 12 individual consultants will be contracted in line with section 3.11(a) of document GN-2350-15, which allows for such contracts in cases of continuity of service, on the understanding that the current contractual conditions of the consultants identified will not be changed, for a total US\$1,453,048 for the entire execution period as described in the operation's procurement plan. In the event of technical or economic changes—or any other type of changes—they will be subject to the Bank's ex ante supervision.</p> | | | | | | | | |
| <input checked="" type="checkbox"/> | Procurement supervision | <p>The supervision method will be ex post, except in cases where ex ante supervision is justified. For procurements using the national system, supervision will be performed by the country's supervision system. The (i) ex ante, (ii) ex post, or (iii) national supervision system will be determined for each selection process in the procurement plan, which will be updated as established in the loan contract and the Bank's procurement policies. Each year's ex post reviews will be established in the project supervision plan, subject to change during execution. Inspections will verify the existence of procurements, leaving verification of their quality and compliance with the specifications to the sector specialist. The thresholds for review are:</p> <table><tr><td>Executing agency</td><td>Works</td><td>Goods/services</td><td>Consulting services</td></tr><tr><td>MGAP</td><td>US\$5,000,000</td><td>US\$500,000</td><td>US\$200,000</td></tr></table> | Executing agency | Works | Goods/services | Consulting services | MGAP | US\$5,000,000 | US\$500,000 | US\$200,000 |
| Executing agency | Works | Goods/services | Consulting services | | | | | | | |
| MGAP | US\$5,000,000 | US\$500,000 | US\$200,000 | | | | | | | |
| <input checked="" type="checkbox"/> | Records and files | <p>The agreed formats or procedures will be used for preparing and filing project reports, which are described in the Operating Regulations, and will conform to the applicable policy requirements.</p> | | | | | | | | |

Main procurement items

| Description | Selection method | New procedures/tools | Estimated date | Estimated amount, US\$ |
|---|---|----------------------|----------------|------------------------|
| Goods | | | | |
| Software for the help desk | ADD (procurement method X national systems) | | Q1 2025 | 200,000 |
| Works | | | | |
| Adaptation of infrastructure for the help desk | ADD (procurement method X national systems) | | Q1 2024 | 60,000 |
| Nonconsulting services | | | | |
| Servers and software licenses in the ANTEL cloud for the project's central infrastructure | Direct contracting (CD) | | Q1 2023 | 115,398 |
| Impact evaluation | Shopping via open invitation | | Q1 2023 | 100,000 |
| Firms | | | | |
| A consulting firm to compile, develop, and implement the digital waybill, including support and maintenance | Quality and cost-based selection (QCBS) | | Q1 2023 | 1,186,200 |
| Development and maintenance of the AgTech web platform | QCBS | | Q1 2024 | 150,000 |
| Individual | | | | |
| AgTech facilitator | Selection of an individual consultant (via open invitation) | | Q1 2024 | 166,846 |

To consult the 18-month procurement plan, see [REL#3](#).

IV. Agreements and requirements for financial management

| | | |
|---|--|---|
| ☒ | Programming and budget | <p>The program's budget will be managed through the national integrated financial information system (SIIF) as part of the national budget and is included in the consolidated national budget and approved by the Budget Act for the government's five-year term. Annual reprogramming or increases in the budget are prepared by the executive branch when it submits its report on annual budget execution. The executive branch submits those reports to the legislature within six months after the end of the year and may propose amendments for duly justified reasons. Therefore, MGAP should keep in mind the time required by the Ministry of Economic Affairs and Finance (MEF), as the approving body, to incorporate the project's budget into the country's general budget and to make amendments to the project's budget that entail increasing the funds assigned by the budget to MGAP (in the event budget increases come from MGAP's own resources, approval by the MEF is not required).</p> |
| ☒ | Treasury and disbursement management | <p>The project's funds will be managed through the General Treasury Account CUN). At MGAP's request, the National Treasury (TGN) will establish a special account in the Central Bank of Uruguay (BCU) to receive the Bank's loan and a specific account for the project in the Banco de la República Oriental del Uruguay (BROU) (state commercial bank) to make payments under the program. The currency of the operation is U.S. dollars and the exchange rate to be used is identified in Section II. Disbursement requests will be submitted via Online Disbursement (or the system in effect) and the preferred disbursement mode will be advances. The operation will work, in general, with a 12-month financial plan and at least 50% of accumulated balances pending justification will be justified. This provision has been made since central government agencies, of which MGAP is one, need to have financing in the BCU account to contract new obligations and, in addition, MGAP's payment process requires the preventive intervention of the TCR and the CGN whose response times are beyond MGAP's control (Financial Management Guidelines for IDB-financed Projects (document OP-273-12) Annex 1, paragraph 3.3(c) and (d)).</p> |
| ☒ | Accounting information systems and reporting | <p>Accounting will be recorded in MGAP's institutional system (integrated management system—SGI—a subledger that records and reports transactions in public investment projects). The SIIF will also be used, which handles the budget credits approved for the project, assigns, and executes them. To process commitments under the project, MGAP will follow the applicable procedures established by the CGN. As a complement to the policies and guidelines applicable to the operation, the Operating Regulations, which define workflows and internal controls, will also be used.</p> |
| ☒ | Internal control and internal audit | <p>Under current regulations, the national system will be used as the basis. In Uruguay, some institutions do not have internal audit units (IAUs) and MGAP is one of them. The National Internal Auditor carries out some internal audit functions in cases where an institution lacks an IAU. Considering MGAP's experience with loans 4950/OC-UR, 3800/OC-UR, and 4644/OC-UR, the program Operating Regulations will establish the framework applicable to financial management, in accordance with Bank guidelines and instructions, which complement the financial processes that govern MGAP under applicable local regulations.</p> |

| | | |
|---|--|--|
| ☑ | Internal control and financial reports | External control will be performed by the TCR (which the Bank considers eligible) just as for loans 3800/OC-UR and 4644/OC-UR currently in execution. However, an independent firm of auditors could also audit the program. Audits will be performed in accordance with terms of reference agreed on in advance with the Bank. The cut-off dates and submission deadlines are identified in Section II. The additional time allowed for the TCR reflects the TCR's internal process for approving audited financial statements prior to their submission to the Bank, the executing agency, and the general assembly. As established in the Consolidated Accounting and Financial Administration Text (TOCAF), the TCR will perform preventive examinations of all expenditures related to project execution. |
| ☑ | Financial supervision of the operation | May be adjusted depending on program execution and the external auditor's reports. The following activities are planned: monitoring of program progress and instruments, review of disbursement requests, and visits (in person or virtual) to MGAP. |

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/22

Uruguay. Loan ____/OC-UR to the Eastern Republic of Uruguay. Program to Promote the Adoption of Digital Technologies in Uruguay's Agriculture Sector

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Eastern Republic of Uruguay, as borrower, for the purpose of granting it a financing aimed at cooperating in the execution of the Program to Promote the Adoption of Digital Technologies in Uruguay's Agriculture Sector. Such financing will be in the amount of up to US\$6,500,000, from the resources of the Bank's Ordinary Capital, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ____ 2022)