

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**ARGENTINA**

**SATELLITE TECHNOLOGY DEVELOPMENT PROGRAM (PROSAT II)**

**(AR-L1310)**

**LOAN PROPOSAL**

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REQUIRED LINKS	
1.	<a href="#">Multiyear execution plan/annual work plan</a>
2.	<a href="#">Monitoring and evaluation plan</a>
3.	<a href="#">Procurement plan</a>

OPTIONAL LINKS	
1.	<a href="#">Program economic analysis</a>
2.	<a href="#">Draft program Operating Regulations</a>
3.	<a href="#">Climate change analysis</a>
4.	<a href="#">Relevant international experience in the sector</a>
5.	<a href="#">Direct contracting</a>
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## ABBREVIATIONS

Agtech	Entrepreneurs and companies involved in technology-based agricultural services
CNIE	Comisión Nacional de Investigaciones Espaciales [National Commission for Space Research]
CONAE	Comisión Nacional de Actividades Espaciales [National Commission for Space Activities]
ICAS	IDB Institutional Capacity Assessment System
ICB	International competitive bidding
INDEC	Instituto Nacional de Estadística y Censos [National Institute of Statistics and Census]
INPE	Instituto Nacional de Pesquisas Espaciais [Brazilian Institute for Space Research]
INTA	Instituto Nacional de Tecnología Agropecuaria [National Institute for Agricultural Technology]
INVAP	Investigación Aplicada [company]
LIBOR	London Interbank Offered Rate
FAOSTAT	United Nations Food and Agriculture Organization Corporate Statistical Database
NASA	U.S. National Aeronautics and Space Administration
NCB	National competitive bidding
PROSAT	Programa de Desarrollo de Tecnologías Satelitales [Satellite Technology Development Program]
QCBS	Quality- and cost-based selection
SABIA-Mar	Satélites Argentino-Brasileños para Información Ambiental del Mar [Argentine-Brazilian Satellite for Environmental Information on the Sea]
SAC	Satélites de Aplicaciones Científicas [Satellites for Scientific Applications]
SAOCOM	Satélite Argentino de Observación con Microondas [Argentine Microwave Observation Satellite]
SAR	Synthetic aperture radar
SINAGIR	Sistema Nacional para la Gestión Integral del Riesgo y la Protección Civil [National System for Comprehensive Risk Management and Civil Protection]
UEPEX	System for External Project Execution Units

**PROGRAM SUMMARY**  
**ARGENTINA**  
**SATELLITE TECHNOLOGY DEVELOPMENT PROGRAM (PROSAT II)**  
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Financial Terms and Conditions				
<b>Borrower:</b>			<b>Flexible Financing Facility<sup>(a)</sup></b>	
Argentine Republic			<b>Amortization period:</b>	25 years
<b>Executing agency:</b>			<b>Disbursement period:</b>	36 months
The National Commission for Space Activities (CONAE), an decentralized agency under the Ministry of Education, Culture, Science, and Technology			<b>Grace period:</b>	5.5 years <sup>(b)</sup>
<b>Source</b>	<b>Amount (US\$)</b>	<b>%</b>	<b>Interest rate:</b>	LIBOR-based
<b>IDB (Ordinary Capital):</b>	60 million	66%	<b>Credit fee:</b>	<sup>(c)</sup>
			<b>Inspection and supervision fee:</b>	<sup>(c)</sup>
<b>Local:</b>	31 million	34%	<b>Weighted average life:</b>	15.25 years
<b>Total:</b>	91 million	100%	<b>Approval currency:</b>	United States dollar
Program at a Glance				
<b>Program objective/description:</b> The program's general objective is to help increase the effectiveness of public policies for managing disaster risk, enhancing productivity, and improving the productive performance of sectors that use satellite monitoring. Its specific objectives are to: (i) improve the monitoring and response capacity of government agencies responsible for disaster risk prevention and management by providing satellite images using synthetic aperture radar (SAR) technology; and (ii) improve satellite information to support the performance of productive sectors that use the specific applications developed through the program.				
<b>Special contractual conditions precedent to the first disbursement of the loan:</b> The borrower, through the executing agency, will present evidence to the Bank's satisfaction that the <a href="#">program Operating Regulations</a> have entered into effect, as previously agreed upon by the executing agency and the Bank (paragraph 3.3).				
<b>Special contractual conditions of execution for Component 2:</b> The approval and entry into effect of the new CONAE data policy will be a special condition of execution for using Bank financing to implement the activities described in paragraph 1.28(v) of Component 2 (paragraph 3.4).				
<b>Exceptions to Bank policies:</b> None.				
Strategic Alignment				
<b>Challenges:<sup>(d)</sup></b>	SI <input type="checkbox"/>	PI <input checked="" type="checkbox"/>	EI <input checked="" type="checkbox"/>	
<b>Crosscutting themes:<sup>(e)</sup></b>	GD <input type="checkbox"/>	CC <input checked="" type="checkbox"/>	IC <input type="checkbox"/>	

<sup>(a)</sup> Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency, interest rate, and commodity conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.

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

<sup>(c)</sup> 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 the applicable policies.

<sup>(d)</sup> SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

<sup>(e)</sup> GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

## I. DESCRIPTION AND RESULTS MONITORING

### A. Background, problem addressed, and rationale

- 1.1 **Macroeconomic context in Argentina.** Argentina is going through a period of fiscal and current account adjustments and, under the stand-by arrangement with the International Monetary Fund, it does not currently have access to international debt markets. Progress has been made towards macroeconomic adjustment: the fiscal target for 2018 was met; Congress approved the budget for 2019 and achieved primary balance; and changes in relative prices have helped decrease the country's external imbalance. The tightening of fiscal and monetary policy, along with political uncertainty and its impact on country risk, are exacting a toll on the economy in the short term, which is currently in recession. According to market consensus, a 1.3% drop in GDP is expected in 2019, following the 2.5% drop observed in 2018. The government has made significant progress on institutional reforms and the country's reintegration with the global economy, although it is still facing considerable challenges related to growth, poverty reduction, disinflation, and balancing its fiscal account balances.
- 1.2 Covering an area of 2,791,810 square kilometers, Argentina is a very sizeable country—the world's eighth largest. It also has an extensive coastline (approximately 4,700 kilometers) and an exclusive economic zone measuring more than one million square kilometers<sup>1</sup> over its continental shelf. This vast territory contains abundant natural resources in the agriculture, livestock, forestry, fishing, and mining sectors, which are a major part of the Argentine economy.
- 1.3 Natural resource sectors account for around 12% of Argentina's GDP,<sup>2</sup> but more than 70% of its export basket,<sup>3</sup> making it a crucial area for the economy. Within this sector, agrifood chains are the largest, and account for about 14% of total employment, 8% of gross value added,<sup>4</sup> and approximately two thirds of total exports.<sup>5</sup> Nearly 45% of total value of exports is attributable to five crops—soybeans, corn, wheat, barley, and sunflowers—which account for 39% of export sales. The cattle industry—beef, leather, and dairy—accounts for 6.4% of exports.<sup>6</sup> While average agricultural yields for Argentina's main crops are relatively high, gaps remain in the yields of each of these crops with the leading export countries of these commodities.<sup>7</sup>
- 1.4 Furthermore, the country's large land area, geographic location, and location of its main cities make it particularly vulnerable to natural disasters. Over 50% of such disasters over the past 75 years have been floods, impacting the population as well as economic production. In the province and city of Buenos Aires alone, which

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<sup>1</sup> [National Geographic Institute. Policy, Area, and Population Division.](#)

<sup>2</sup> Castro, Lucio, "Variedades de Primarización: Recursos Naturales y Diferenciación Productiva. El Desafío de Sudamérica en la Relación con China," 2014, Center for the Implementation of Public Policies for Equity and Growth.

<sup>3</sup> IDB, "Flying to Quality: Export Sophistication as an Engine of Growth," November 2018.

<sup>4</sup> National Institute for Statistics and Census (INDEC), "[Informe de Avance del Nivel de Actividad, Cuarto Trimestre de 2018](#)" en [Informes Técnicos de Agregados Macroeconómicos \(PIB\)](#), March 2019.

<sup>5</sup> "El Campo Argentino en Números," Agricultural Foundation for Development in Argentina, 2017.

<sup>6</sup> INDEC, "[Complejos Exportadores, año 2018](#)" in [Informes Técnicos de Comercio Exterior](#), March 2019.

<sup>7</sup> Rosario Stock Exchange, year XXXVI, Edition 1896, February 2019.

- together account for over 50% of the country's GDP, areas prone to floods generate 30% of gross provincial product.<sup>8</sup> This risk profile is being further exacerbated by climate change, even in a scenario of a moderate increase in global average temperatures.<sup>9</sup> Models forecast that average temperatures will rise from between 0.5° to 1°degree Celsius by 2039, with changes in precipitation varying from -10% (Patagonia and Mendoza) to 10% (central and eastern Argentina).<sup>10</sup>
- 1.5 For a country with these characteristics, Earth observation satellites are a very cost-effective technology. It is able to collect data over vast land areas—practically in real time—and has potential to help improve the sustainable management of natural resources as well as risks related to climate change and natural disasters. Worldwide, Earth observation is one of several activities that use satellite services, such as communications, navigation assistance, scientific research, and weather forecasting. Several studies have measured the impact of harnessing Earth observation satellite technology to improve production-related activities, mainly in agriculture. A review of a set of such studies found that the use of Earth observation technologies in the U.S. agriculture sector generated a return of US\$31.74 per hectare.<sup>11</sup> Over the 2004-2013 period, Earth observation satellite launches accounted for 21% of total launches. For the 2014-2023 period, they are expected to reach 29%,<sup>12</sup> indicating that Earth observation satellite use is becoming increasingly important.
- 1.6 With regard to Earth observation satellites, an important distinction must be made between satellites that use optical technology and those that use radar technology. The former uses sunlight reflected by the Earth to create images of the planet's surface. These satellites cannot collect data when it is dark or when there is cloud cover, fog, dust, hail, or smoke. The second type of satellite uses technology known as synthetic aperture radar (SAR) to send microwave signals to the Earth and then processes the signals it receives in return. Since it is an active sensor, it can collect data day and night, in any atmospheric conditions on Earth. This ability offers significant advantages during conditions that would otherwise prevent observation by planes or optical satellites.<sup>13</sup>
- 1.7 The lack of Earth observation data from SAR technology limits the effectiveness of some government agencies in responding to natural disasters, as well as farmers in their planting, fumigating, irrigating, or fertilizing practices. In the first case, agencies receive information from technical experts and affected populations on the ground about real and potential damage caused by disasters, though diagnostic scope is limited. Agencies also receive optical Earth observation data, but during floods, one of the most frequent disasters in Argentina), the information cannot be obtained at night or when it is cloudy. Since floods tend to occur after several continuous days

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<sup>8</sup> [Staying Afloat: Flood Risk in Argentina, Swiss Re](#), 2016.

<sup>9</sup> Cambio Climático: Variabilidad Pasada y una Prospectiva de las Amenazas de acuerdo a los Escenarios Futuros. Documento País 2012: Riesgos de Desastres en Argentina. United Nations Development Programme, 2012.

<sup>10</sup> [Third National Communication of the Government of Argentina to the United Nations Framework Convention on Climate Change](#). 2015.

<sup>11</sup> More information on this and other relevant studies can be found in the [monitoring and evaluation plan](#).

<sup>12</sup> Comprehensive Socio-economic Impact Assessment of the Canadian Space Sector, Euroconsult, 2015.

<sup>13</sup> [RADASART](#).

- of rain, this is a critical time for information to be lacking, which could be provided by a SAR satellite. For example, during the major floods in northern Argentina during the spring of 2018, satellite information could not be obtained on the extent of the flooding over the many days of the storm. Additionally, having information on soil moisture levels derived from SAR technology allows for much more accurate insight into potential flood development and/or damage caused. Currently, when an agricultural disaster is declared, farmers self-report their losses and technical experts from the appropriate government ministries also visit farms to take samples, with the inherent limitations of this policy. The most advanced farmers have optical earth observation information, which does not provide soil moisture data. As a result, decisions on planting, fertilizing, irrigating, and fumigating are based on field estimates or historical experience. The margin for error is high and can result in a loss of inputs, irrigation, or lower crop yields. This lack of relevant information can lead to losses of 15% more than the cost of inputs and crop yield losses of approximately 5%.<sup>14</sup>
- 1.8 Argentina has been a satellite technology pioneer in the region. In 1960, it created the National Commission for Space Research (CNIE), which in 1991 became the National Commission for Space Activities (CONAE).<sup>15</sup> Its core objectives are to promote the development of satellite technology at the national level, perform civil scientific research, and provide crucial information to the public. Since 1990, several satellites have been successfully designed, built, and launched.<sup>16</sup>
- 1.9 This long, nearly 60-year track record has enabled Argentina to develop and maintain a range of institutional capabilities, technology infrastructure, and highly skilled human resources, garnering recognition from leading space agencies worldwide. The fact that the World Meteorological Organization<sup>17</sup> has a Center of Excellence in Buenos Aires underscores CONAE's high-level capacity. One important experience to note is the SAC mission (Satellite for Scientific Applications, denoted as A, B, C, and D) that CONAE spearheaded with collaboration from the National Aeronautics and Space Administration (NASA). Launched between 1996 and 2011,<sup>18</sup> these four satellites contained locally developed components and were able to take measurements of the Earth's magnetic field, atmospheric temperature and water vapor, and the salinity level of the Argentine Sea. They also assisted in early detection of fire and flood risks.
- 1.10 After the SAC mission, CONAE decided to move forward and develop its most ambitious project: the SAOCOM (Argentine Microwave Observation Satellite)

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<sup>14</sup> See the results matrix and [program economic analysis](#) for more details and sources.

<sup>15</sup> Through [Decree 995/1991](#), CONAE was created as an autonomous agency under the Office of the Presidency of Argentina. It is the only national government agency with the authority to address, design, execute, monitor, manage, and administer projects and undertakings in the space field. Fifteen years later, [Decree 242/2016](#) stipulated that CONAE would operate under the Ministry of Science, Innovation, and Production Technology. In 2018, [Decree 801/2018](#) amended the Law on Ministries so that the duties of the former Ministry of Science, Innovation, and Production Technology would continue under the current Ministry of Education, Culture, Science, and Technology.

<sup>16</sup> Argentina has also carried out successful endeavors in the area of communications. It built two telecommunications satellites locally, which today provide services for the entire country.

<sup>17</sup> [World Meteorological Organization Regional Climate Centres](#).

<sup>18</sup> SAC-B was lost during launch due to a technical failure that prevented the satellite from separating from the launcher.

mission. This project involves developing, launching, and operating two satellites, known as SAOCOM 1A and 1B, which, along with four satellites from the Italian Space Agency that are already in operation, will become part of the Italian-Argentine Satellite System for Emergency Management. The [SAOCOM mission](#) has the following objectives: (i) to provide information using SAR Earth observation; and (ii) provide services based on the analysis of that information. The quantity and quality of information generated by SAR technology helps farmers make better decisions and allows for improved forecasting and management of risks and hydrologic emergencies.

- 1.11 Additionally, this type of information is essential for evaluating the impacts of climate change, i.e. by monitoring soil moisture levels in order to generate early flood alerts. Argentina is one of the ten emerging economies that are most vulnerable to climate change. In recent decades, an average temperature increase has been recorded, along with more frequent heavy rainfall.<sup>19</sup> By measuring soil moisture levels, SAR technology is able to generate data that help address one of the main constraints on climate modeling,<sup>20</sup> and improves capacity for formulating public policies on climate change adaptation. All of this information is valuable because it occurs in real time and can thus contribute to decision-making. In order for this to happen, and to take full advantage of the data generated by this type of satellite, the satellite must pass over a given location a minimum number of times. In the case of SAOCOM, a single satellite can make one pass every 96 hours, and with two satellites this is reduced by half to 48 hours. For instance, in order to detect and prevent the spread of Argentina's main wheat pest in a timely manner, a satellite pass must occur every 72 hours or less, since that is the cut-off time for fumigating and preventing the pest from spreading.<sup>21</sup>
- 1.12 [Cybersecurity for the SAOCOM mission.](#) During development of the SAOCOM mission, CONAE strengthened its cybersecurity capabilities in order to protect its satellite infrastructure from cyberthreats. It contracted an evaluation of its information technology vulnerabilities, improved its communications networks, implemented more sophisticated security procedures, trained its staff on cybersecurity, and made its technology architecture more secure. CONAE plans to contract another vulnerability assessment in 2021, given that cybercrime is becoming more sophisticated.
- 1.13 **Positive externalities of SAOCOM 1A and collaboration with the private sector.** Along with the decision to employ SAR technology for its own satellites, the Argentine government decided to take advantage of the country's scientific and technological capabilities and commissioned the SAOCOM satellites to be developed and built in Argentina. This decision produced a range of positive externalities, including the rise of the "space economy"<sup>22</sup> in Argentina. Additionally, Investigación Aplicada (INVAP), an unlisted private company, was created. It is 100% state-owned and has been the main contractor for development and

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<sup>19</sup> [Third National Communication](#), page 105.

<sup>20</sup> A. Loew, et al. Potential and Limitations of Multidecadal Satellite Soil Moisture Observations for Selected Climate Model Evaluation Studies, September 2013.

<sup>21</sup> For more details, see the [economic analysis](#).

<sup>22</sup> Organisation for Economic Co-operation and Development. (2014). The Space Economy at a Glance 2014. Paris: OECD Publishing.

construction of these two satellites. INVAP has approximately US\$200 million in annual sales, 20% of which are exports, and it specializes in high tech projects.<sup>23</sup> In addition to this company, CONAE has some 70 domestic suppliers, 10 of which are scientific institutions and the remainder are small- and medium-sized enterprises (SMEs) that mainly focus on high tech.<sup>24</sup>

- 1.14 **Rationale.** When the SAOCOM mission was first being developed, Argentina requested and received Bank financing for the Satellite Technology Development Program (PROSAT I) (operation 1777/OC-AR), approved in 2006 for a total of US\$150 million, of which US\$50 million was Bank financing. This financing allowed for the design, construction, and launch of the first of the two satellites in the series, SAOCOM 1A, and also contributed to the construction of the second, SAOCOM 1B. Financing for both of these satellites was proposed under the PROSAT I program, to include their construction, development, and launch. However, it was only able to fully finance the first satellite and a portion of the second. The reason for diminished scope of the financing was attributable to cost overruns, delays owing to improvements that were made to the original design, and events of force majeure for key providers.<sup>25</sup> The first satellite was successfully launched on 7 October 2018, and began to transmit its first signals in early 2019.<sup>26</sup> Because the SAOCOM program was designed to operate with both satellites in orbit, Argentina has requested Bank financing to complete the construction, launch, and deployment into orbit of the second satellite; adapt supporting ground infrastructure; and promote development of satellite applications.
- 1.15 **International experience in the sector.** Other countries that are similar to Argentina are successfully using satellite technology for multiple purposes. One example of a country with a larger economy, but similar geographic characteristics and population to Argentina, is Canada, a pioneer in using satellites in various areas ([link](#)). Within the region, Brazil shares Argentina's challenge of monitoring a vast territory and having an economy where natural resources are a major sector. Brazil has also developed a large satellite industry, spearheaded by that country's National Institute for Space Research (INPE), which has developed an array of satellites that are currently in operation.
- 1.16 **Bank experience in the country.** This operation is a continuation of the PROSAT program (loan contract 1777/OC-AR) that first provided financing for the SAOCOM mission. That program's execution, a performance-driven loan, has been completed.<sup>27</sup> Lessons learned from the execution of that program include: (i) the importance of having panels of external technical reviewers for each key phase of the program; (ii) success was based on having intensive interaction with

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<sup>23</sup> INVAP has developed nuclear research reactors, which it sold through competitive bids to other advanced countries such as Australia and, more recently, the Netherlands.

<sup>24</sup> "Al Infinito y Más Allá. Una Exploración sobre la Economía Espacial en Argentina," Andrés López et al., 2017.

<sup>25</sup> For instance, an earthquake in the Italian city where one of key suppliers has its headquarters added an additional two years to the program's schedule.

<sup>26</sup> The firm SpaceX was in charge of the launch of the first satellite. It will also be responsible for the launch of the second satellite.

<sup>27</sup> The project completion report for this operation will be submitted to the Bank's internal review procedures in June 2019.

stakeholders in the early stages that dealt with demand for satellite information used to develop applications; and (iii) holding specific calls for proposals so that other organizations were able to take advantage of the opportunities offered by these new types of data, and also providing funding for winning proposals to facilitate their implementation.<sup>28</sup> These lessons are also based on international best practices at space agencies that follow formal and rigorous peer-review procedures throughout project development, with broad participation from agencies in other countries. The lessons learned and best practices will be used in the new program, with ample participation by reviewers from agencies in other countries. In addition to loan contract 1777/OC-AR, the Bank has contributed to two projects for regional public goods (technical cooperation operations ATN/OC-12483-RG and ATN/OC-15882-RG) that used satellite information to develop applications in areas of regional interest (eight participating countries), including fire prevention, flood management, landscape epidemiology, and agricultural productivity. Through Component 2 of this program, the dissemination and use of these applications will also be supported. Additionally, this operation is being supplemented by the recently approved Contingent Credit Facility for Natural Disaster Emergencies (document AR-O0008), and will provide satellite information to generate useful, real-time data that can improve emergency management decision-making processes. The Bank has also supported Argentina's efforts to strengthen its capacity for innovation and improve its production profile, including natural resource sectors, as well as its performance in the forecasting, management, and prevention of natural disasters. Several loan operations over the last few years have helped boost public and private investment in research and development, particularly during the past decade with Technology Innovation Programs I, II, III, IV, and V,<sup>29</sup> under the Conditional Credit Line for Investment Projects (document AR-X1015). Other operations have improved services for the forestry and agriculture sector,<sup>30</sup> and others aim to strengthen natural disaster response capabilities.<sup>31</sup>

- 1.17 **Collaboration with the IDB Group.** Several Bank divisions are participating in this program, including IDB Lab. Collaboration with the latter is very important for ensuring that specific impacts of the program on the agricultural sector are achieved. IDB Lab has supported the emergence of new technology companies that provide goods and services to the agriculture sector (agtech) through the following operations: (i) ATN/ME-17150-RG, AgTech Experimentation Consortiums; (ii) RG-T2996, the NXTP Program for Acceleration of Fintech and Agtech Startups; and (iii) EQU/MS-16957-RG, Risk Reduction in Agricultural Production through Data Analysis and Satellite Imaging. As part of this technical assistance, agtech companies and CONAE are coordinating and planning the best way for these users to take advantage of the SAR data this program will help generate.
- 1.18 **Role of other multilateral organizations.** CONAE has also received financing from the Development Bank of Latin America through two loan operations, for a total of US\$140 million. The first operation was for US\$70 million and has been fully

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<sup>28</sup> During execution of loan contract 1777/OC-AR, there were two calls for proposals of this type, called "announcements of opportunity," through which 32 projects were financed.

<sup>29</sup> Loan contracts 2180/OC-AR, 2437/OC-AR, 2777/OC-AR, 3497/OC-AR, and 4025/OC-AR.

<sup>30</sup> Loans contracts 3806/OC-AR, 2412/OC-AR, 2740/OC-AR, and 2853/OC-AR.

<sup>31</sup> Loan contracts 3688/OC-AR and AR-O0008.

executed, while the second, also for US\$70 million, is still in execution. The objective of the second project is to finance the Argentine portion of the binational satellite program SABIA-Mar (the Argentine-Brazilian Satellite for Environmental Information on the Sea), a joint development between CONAE and the Brazilian Space Agency. This project aims to develop and launch two satellites into orbit that use optical technology for Earth observation, one for each country, focusing on the sea and coastlines of both countries. Although the technologies that will be used for SABIA-Mar are different from those of SAOCOM, both satellites share CONAE's technical support and administrative infrastructure, and INVAP is the company that will develop the SABIA-Mar satellite.

- 1.19 **Regional integration.** CONAE has cooperation and data-sharing agreements with a number of international institutions, especially in Latin America, with institutions in Bolivia, Brazil, Chile, Colombia, Ecuador, Mexico, Paraguay, Peru, and Uruguay. In some cases, such as with Brazil, the agreement is with the space agency and offers close integration between both countries in order to jointly develop a new constellation of satellites, i.e. the aforementioned SABIA-Mar satellites. In other instances, the agreements are with institutions that use satellite data for research purposes, as is the case with agreements with several Chilean universities. Other agreements seek to provide satellite information to national agencies in countries working on issues related to the environment, land, health, and agricultural technology ([CONAE's international agreements](#)). Additionally, CONAE is implementing a continuing policy for training human resources in the use of special technologies. In 1997, it created the Mario Gulich Institute for Advanced Space Studies,<sup>32</sup> located in Córdoba, which is offering this training jointly with other universities in the province. The Institute offers master's and doctorate programs in space technologies, as well as shorter courses, both in-person and remotely, to provide training on using satellite technologies for various purposes. The Institute also offers scholarships to students from other Latin American countries, which represent 25% of its master's-level graduates. Without this training, the staff in agencies who receive these scholarships would not have the skills to interpret satellite data and thereby improve the effectiveness of their interventions.
- 1.20 **Other international agreements.** CONAE has signed cooperation agreements with the world's major space agencies, including those in the United States, China, Russia, and the European Union. In addition to the agreements with the European Space Agency, CONAE has separate [agreements with agencies in European countries](#), such as Belgium, France, Germany, Italy, Norway, and the United Kingdom. One of CONAE's most important international efforts is the role it plays in the international [Charter on Cooperation to Achieve the Coordinated Use of Space Facilities in the Event of Natural or Technological Disasters](#) (known as "the Charter"). This organization is made up of CONAE and 16 other space agencies that have Earth observation platforms and instruments that are available to countries during emergency situations. In South America, Argentina plays a leading role in coordinating this mechanism's activation of this mechanism.
- 1.21 **Data use.** CONAE is developing a data policy that establishes criteria for the use, sale, and intellectual property rights of these data. It identifies three types of users: (i) national public agencies with which it has signed agreements to receive data as

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<sup>32</sup> [Mario Gulich Institute for Advanced Space Studies](#).

a public good; (ii) space agencies in other countries that sign data-exchange agreements; and (iii) commercial users to which data can be sold. CONAE already has a data policy, but is reviewing it in anticipation of a new data-exchange agreement to be signed with the Italian Space Agency in Italy. This agreement will cover data generated by SAOCOM satellites and by the other four Italian satellites that are part of the constellation.

- 1.22 **Strategic alignment.** This program is consistent with the Update to the Institutional Strategy 2010-2020 (document AB-3008) and is strategically aligned with the development challenge of low productivity and innovation. It also promotes better performance by Argentina's agroforestry and agriculture sector by using timely satellite information to increase crop yields or reduce costs and/or losses. In addition, the program is aligned with the development challenge of limited economic integration since it involves cooperation in research targeting technology and satellite applications, the use of space, and the exchange of satellite data with institutions in other countries of the region in areas such as telecommunications, environmental monitoring, alternative energy sources, remote sensors, as well as human resources training and the transfer of knowledge in other Latin American countries in specific skills for using this type of information. The program is also aligned with the crosscutting issue of climate change and environmental sustainability since it generates data that, along with images and specific applications, will improve the ability of government agency decision-making on climate change adaptation and mitigation measures, as well as management of natural disasters, pursuant to paragraph 2.26 of the Climate Change Sector Framework Document (document GN-2835-8). A full 89.21% of the operation's resources are invested in climate change adaptation activities, according to the [joint methodology of the multilateral development banks for tracking climate change adaptation finance](#). These resources contribute to the IDB Group target of increasing financing for climate-related projects to 30% of approvals by year-end 2020. They will also contribute to the Corporate Results Framework 2016-2019 (document GN-2727-6) through the following indicators: (i) beneficiaries of improved management and sustainable use of natural capital; (ii) professionals from public and private sectors trained or assisted in economic integration; (iii) government agencies benefited by projects that strengthen technological and managerial tools to improve public service delivery; (iv) farmers given access to improved agricultural services and investments; (v) countries that have improved disaster risk management; and (vi) projects that support innovative ecosystems. The program is aligned with the IDB Group Country Strategy with Argentina 2016-2019 (document GN-2870-1), specifically with the strategic objectives "fostering of environmentally sustainable solutions and support for climate change-related disaster risk management" and "developing the business services and public goods needed to foster integration and innovation." Additionally, the program is aligned with the Sector Strategy on Institutions for Growth and Social Welfare (document GN-2587-2), specifically with the component on institutions for innovation and technological development. Lastly, the program is consistent with the guidelines of the Innovation, Science, and Technology Sector Framework Document (document GN-2791-8), specifically with regard to investment in science, technology, and innovation.

**B. Objectives, components, and cost**

- 1.23 **Objectives.** The program's general objective is to help increase the effectiveness of public policies for managing disaster risk, enhancing productivity, and improving the productive performance of sectors that use satellite monitoring. Its specific objectives are to: (i) improve the monitoring and response capacity of government agencies responsible for disaster risk prevention and management by providing satellite images using SAR technology; and (ii) improve satellite information to support the performance of productive sectors that use the specific applications developed through the program.
- 1.24 **Component 1. Improving satellite data (IDB: US\$56,700,000; counterpart: US\$30,100,000).** This component will finance SAOCOM 1B costs associated with engineering, the completion of its construction, launch, and deployment into orbit, as well as updating the software and hardware needed to download the data that are generated.
- 1.25 **Subcomponent 1.1. Satellite construction and launch.** This satellite is identical to the SAOCOM 1A, which is already in orbit. Lessons learned will be used to build and launch the SAOCOM 1B satellite, the launch of which is planned for March 2020. This subcomponent includes SAOCOM 1B costs associated with engineering, the completion of its construction, integration, and testing, as well as quality assurance, the launch campaign, and its deployment into orbit. This subcomponent will finance the following activities: (i) integration and testing of the platform and its components; (ii) integration and complete testing of the satellite's SAR antenna; (iii) completion of the satellite's integration; (iv) final acceptance of the satellite once environmental testing has been completed; (v) finalizing the launch campaign; (vi) launch and deployment of the satellite into operation; and (vii) final calibration of the satellite.
- 1.26 **Subcomponent 1.2. Ground platform operational for receiving and processing images from SAOCOM 1A and 1B.** This subcomponent includes the cost of updating/upgrading the software and hardware required to download satellite data from SAOCOM 1B, as well as processing and incorporating the data into the services created by this mission. These activities are crucial for generating information and thereby improving decision-making with regard to disasters, forecasting and evaluation of climate risk, generating maps of soil moisture levels, and coastal surveillance, among others. Specifically, it will finance activities such as: (i) hardware procurement/integration and development of communications software, downloading data, and satellite monitoring; (ii) testing of communications hardware and software, downloading data, and satellite monitoring; and (iii) integrating SAOCOM 1B into the mission's filing and classification system.
- 1.27 **Component 2. New satellite applications (IDB: US\$2,400,000; counterpart: US\$700,000).** The objective of this component is to promote the development and use of information technology applications that are based on the processing of SAR (synthetic aperture radar) data generated by the SAOCOM mission and other data

sources.<sup>33</sup> The objective is to advance scientific research and support decision-making for production-related and/or social purposes, with emphasis on promoting endeavors in technology services with high added value. The use of these applications based on SAR satellite data is expected to have a highly beneficial impact on agriculture, land use planning, natural resources management, and climate change mitigation and adaptation, in both Argentina and other countries of the region.

- 1.28 Component 2 can be used to finance the following activities: (i) CONAE strengthening to promote applications development; (ii) skills training in SAR data processing and applications development; (iii) cloud computing services that offer access to SAR data and an environment for developing applications;<sup>34</sup> (iv) calls for research projects (announcements of opportunity); (v) calls for projects and challenges/contests for developing applications;<sup>35</sup> and (vi) training of technical experts in agencies in Argentina and in other countries of the region on the use of SAR technologies.
- 1.29 **Program administration, monitoring, and evaluation (IDB: US\$900,000; counterpart: US\$200,000).** Financing will be provided for the audits and technical evaluations required throughout the program cycle, as well as for program administration costs.
- 1.30 **Beneficiaries.** In preparing this operation, various studies were carried out and meetings were held with potential public and private users of the information to be generated by the SAOCOM mission. A set of direct and indirect beneficiaries was identified. The direct public-sector beneficiaries are Argentina's: (i) National Geographic Institute; (ii) National Water Institute; (iii) Secretariat for Civil Protection; (iv) National Office for Agricultural Emergencies and Disasters, an agency of the Secretariat of the Interior for Agribusiness; (v) Coastguard Station [Prefectura Naval Argentina]; and (vi) National Office of Forestry, an agency of the Secretariat of the Interior for the Environment and Sustainable Development. These agencies provide public goods and services to a very significant number of indirect beneficiaries. In some cases, these goods and services may include the entire population of Argentina, e.g. the protection of natural areas or development of more accurate maps. However, for issues such as the prevention of and assistance during natural disasters or vulnerability to climate change, the indirect beneficiaries are often the population groups that are most susceptible to incurring costs related to the impacts of climate change, such as those residing in the areas most vulnerable to natural disasters and extreme weather events.
- 1.31 The information to be generated by the SAOCOM satellites will also benefit the private sector, including agroforestry and agricultural producers, and sectors facing

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<sup>33</sup> Satellite applications make intensive use of machine learning algorithms (e.g. for automatic detection and classification of ships, rural roads, or landslides). Typically, data is processed from different satellite technologies (optical imaging and SAR data) and different bands (e.g. L, X, K, and S), and combined with data from other sources (e.g. censuses and surveys, poverty maps, infrastructure, and maps).

<sup>34</sup> Most satellite agencies have or subcontract service platforms for accessing satellite data and applications. Occasionally, they provide environments for developing applications using cloud computing. Examples include [Mundi](#) (the Copernicus Mission) and [OneAtlas](#) (Airbus).

<sup>35</sup> These activities include announcements of opportunity, workshops on open innovation and rapid prototyping, and challenges and competitions for developing algorithms.

major logistics challenges, like energy companies. In these cases, direct and indirect beneficiaries can also be identified. The former include: (i) the National Institute for Agricultural Technology (INTA); and (ii) entrepreneurs and companies that provide agtech services. These direct beneficiaries will be able to have an impact on a much larger group of indirect beneficiaries. These mainly include Argentine agricultural producers, as well as energy companies or public utilities that must monitor extensive networks (e.g. gas/oil pipelines, transmission lines, and fiber optics networks) in areas characterized by low population density as well as unequal distribution of population and economic activity.<sup>36</sup> To achieve this massive scope, activities that involve agtech entrepreneurs and companies will be very important. This is a new tool that did not exist during execution of operation 1777/OC-AR and was still in its early stages when the projects of the IDB's Regional Public Goods Initiative were getting under way. This projects will be financed under Component 2 of the program.

### C. Key results indicators

- 1.32 In order to measure impact, the proposed indicator is the increase in production (volume harvested per planted area) of the country's most important crops (i.e. corn, wheat, sunflowers, and soybeans). Aggregate yields are expected to increase in the medium term with the use of SAR data—whether it be for private or public use, for productive purposes, or for preventing and/or managing climate risks. In order to measure outcomes, three groups of indicators will be used. The first is related to achieving specific objective 1 and measures both the number of government agencies that adopt SAR satellite monitoring in order to manage risks, as well as the annual economic losses caused by natural disasters affecting the agricultural sector. These losses are expected to decrease due to an improvement in the quality of government agencies' response to natural disasters throughout the entire country using data generated by the SAOCOM mission. The second indicator is associated with specific objective 2 and is related to improvements in technology (and therefore available satellite imaging); the number of private users of this new technology; and the increase in yields of planted areas of corn, wheat, sunflowers, and soybeans for agricultural companies that use satellite data generated by the SAOCOM mission. These yields will be measured in terms of planted areas of more sophisticated farmers that are willing to adopt SAR data applications in the more immediate term. The third indicator, also associated with specific objective 2, measures the decrease in operating costs for agricultural companies that use satellite information generated by the SAOCOM mission. By adopting these applications, the most advanced companies are expected to have higher yields and lower direct costs.
- 1.33 **Economic analysis.** Using a 12% discount rate, the [program economic analysis](#) yields a net present value of US\$110 million (with an internal rate of return slightly above 16%). Consistent with the program objectives, monetization of the main benefits is a result of efficiency gains for agricultural producers (due to better information for planning the optimal time for planting, harvesting, fumigating, and fertilizing), as well as lower economic losses for the agricultural sector since government agencies will be able to better prevent and manage natural disasters (mainly floods and hail, in addition to droughts). The analysis also takes into account the revenue obtained from the sale of SAR data and satellite applications to

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<sup>36</sup> For more information on the beneficiaries, see [optional link 7](#).

intermediate and end users. Because of these benefits, the benchmark for the program's potential benefits is low, as there are applications for other sectors (other agricultural crops besides those mentioned previously, other productive applications in sectors such as water, health, forestry, and livestock). There are also positive externalities—such as developing production-related capabilities in technology that can generate impact on other industries—that will considerably increase the monetizable benefits. The main costs are associated with infrastructure investments for deploying satellites into orbit, adapting ground stations for downloading data, and developing applications for specific uses. Even when accounting for various scenarios in the analysis (e.g. lower-than-expected adoption by beneficiaries, lower revenue from the sale of data and applications, and fewer gains from improved disaster management), the net present value estimates are still positive.

## II. FINANCING STRUCTURE AND MAIN RISKS

### A. Financing instruments

- 2.1 The program will be financed with a US\$60 million specific investment loan drawn on the Bank's Ordinary Capital, under the Flexible Financing Facility. In accordance with document GN-2564-3, this option is deemed to be the most appropriate as there are specific investments in goods, works, and services that are part of an entire program, for which there are estimates of technical, financial, and economic feasibility.
- 2.2 The execution period will be 36 months (see Table 2), which is shorter than that of the average Bank loan operation and the PROSAT I program. This is due to the fact that the longest and most complex program activity—developing and building the SAOCOM 1B satellite—is already very far along. The PROSAT I program required a longer execution period than planned due to initial technological uncertainty and changes to the original design. This operation, however, is not subject to that risk because all that remains to be done is to finish building the second satellite and deploy it, with launch scheduled for the first quarter of 2020. The remainder of the execution period will be used for commissioning the satellite once it is in orbit, as well as for developing and promoting applications.

**Table 1. Estimated program costs (US\$ millions)**

Components	IDB	Local	Total	%
<b>Component 1. Improving satellite data</b>	<b>56.7</b>	<b>30.1</b>	<b>86.8</b>	<b>95.4</b>
Subcomponent 1.1. Satellite construction and launch	47.2	24.7	71.9	79.0
Subcomponent 1.2. Ground platform for receiving and processing images from operational SAOCOM 1A and 1B	9.5	5.4	14.9	16.4
<b>Component 2. New satellite applications</b>	<b>2.4</b>	<b>0.7</b>	<b>3.1</b>	<b>3.4</b>
Administration, monitoring, and evaluation	0.9	0.2	1.1	1.2
<b>Total</b>	<b>60.0</b>	<b>31.0</b>	<b>91.0</b>	<b>100.0</b>

**Table 2. Disbursement schedule (US\$ millions)**

Financing	Year 1	Year 2	Year 3	Total
IDB	31.4	27.8	0.7	60.0
Local	22.1	8.7	0.1	31.0
<b>Total</b>	<b>53.5</b>	<b>36.5</b>	<b>0.9</b>	<b>91.0</b>
<b>Percentage</b>	<b>59</b>	<b>40</b>	<b>1</b>	<b>100</b>

**B. Environmental and social risks**

- 2.3 Based on the Environment and Safeguards Compliance Policy (Operational Policy OP-703), the program has been classified as a category “C” operation. All of the processes under Component 1 will be carried out in existing buildings, with minimal impact. The processes for transporting the satellite to the launch site, as well as the launch itself, will also have minimal impact.

**C. Fiduciary risks**

- 2.4 Using the methodology of the Institutional Capacity Assessment System (ICAS), the institutional capacity analysis of the executing agency identified the following opportunities for improvement: (i) CONAE’s lack of previous experience in implementing the Bank’s procurement standards and policies, due to the fact that the previous loan was a performance-driven loan and thus did not have to apply these standards to contracts for certain amounts; and (ii) lack of knowledge of the current financial management policy. Accordingly, fiduciary areas will be strengthened through specific training. It was confirmed that there is appropriate contract management capacity for completing the construction, launch, and deployment into orbit of SAOCOM 1B, in order to integrate it with SAOCOM 1A, and carry out all testing of satellite components. Given the financial management capacity demonstrated during execution of PROSAT I, the Bank believes that the executing agency’s capacities can be strengthened by a refresher workshop.

**D. Other key issues and risks**

- 2.5 **Development risks.** Three medium development risks have been identified. The first is that if potential beneficiaries do not have sufficient knowledge, information, or capacity to use the data being offered, the absorption rate could be lower than anticipated, which would reduce the expected benefits. This risk will be mitigated with support to government institutions so that they can take advantage of SAR data using resources from Component 2 of the loan, and also promote training in SAR data processing using CONAE resources. The second risk is that due to shortcomings in the methods for creating applications that use this technology, the applications produced could be insufficient in terms of quantity, effectiveness, or availability, which would reduce the anticipated benefits. This will be mitigated by promoting the development of applications through different methods, such as announcements of opportunity, hackathons, and targeted challenges, using resources from Component 2 of the loan. The third risk is the possibility of incidents occurring during satellite launch or orbit that prevent the program from meeting its objectives. To mitigate this risk, CONAE has taken out an insurance policy that will cover these risks and includes total or partial loss, malfunction, or damage during mission launch and orbit, from the time of launch and up to one year of useful life.
- 2.6 **Program sustainability.** With regard to sustainability commitments after the operation has ended, CONAE has over twenty years of experience in implementing its multiyear plans, reflecting Argentina’s long-term commitment to this issue. The plans cover long periods (11 years), and have survived successive government administrations and macroeconomic situations, while managing to keep their activities and objectives intact. And because they have been funded from the corresponding budgets, that trend is expected to continue going forward. The first plan covered the 1995-2006 period, and was updated to cover 1997-2008 and

2004-2015, with a review in 2010. The current plan for 2016-2027 was approved by CONAE's Board of Directors and is being reviewed by the executive branch of Argentina's national government.<sup>37</sup> The executive branch's objective is to develop knowledge and technology in the field of space, based on three main components: (i) Earth observation; (ii) exploration and peaceful use of outer space; and (iii) development of technology for use in space.<sup>38</sup> The [cybersecurity measures that CONAE has adopted to defend itself against cyberattacks](#) reinforce the technological sustainability of the SAOCOM mission (paragraph 1.12). Additionally, CONAE has international commitments under its agreements with other space agencies regarding the data generated by SAOCOM (see paragraphs 1.18, 1.19, and 1.20), as well as future resources that will be generated by selling data from those satellites. These tools will help Argentine authorities keep their commitment to sustaining the program's investments.

### III. IMPLEMENTATION AND MANAGEMENT PLAN

#### A. Summary of implementation arrangements

- 3.1 The borrower will be the Argentine Republic and the program's executing agency will be CONAE, a decentralized agency of the Ministry of Education, Culture, Science, and Technology. The executing agency will be in charge of planning, managing, and overseeing the program's administrative and financial activities. Through its relevant areas, it will also be responsible for the program's outcomes, objectives, and use of resources. The executing agency will execute the program and will be responsible for general and technical coordination of all program activities. It will have the following duties and responsibilities: (i) coordinate the program's financial and administrative procedures; (ii) coordinate, consolidate, prepare, and present all information and documentation required by the Bank on comprehensive program management (start, planning, execution, monitoring, and end), following the schedule, format, and requirements requested by the Bank; (iii) ensure coordination, consistency, and compliance with plans through the program management tools in order to achieve the expected outcomes, taking into account the restrictions of scope, cost, time, risk, and quality; (iv) request, manage, and monitor the disbursements of the funds needed for the program's execution; (v) based on the information provided by relevant areas, document the progress made on the results matrix, the procedures used to measure outcome indicators in that matrix, and revisions of targets, with a view to facilitating the midterm and final evaluations; (vi) coordinate and/or contract annual external audits according to the provisions of the loan contract; and (vii) fulfill and comply with the terms of the loan contract. All other institutional arrangements and mechanisms for the program's execution will be spelled out in depth in the [program Operating Regulations](#).
- 3.2 **Interagency coordination.** CONAE provides information that is crucial to the operations of several national agencies. Accordingly, it has agreements with these agencies to ensure ongoing contact and to provide an appropriate institutional framework for these agencies to express their needs and for CONAE to provide input. Some of these agencies are mentioned in paragraph 1.30 as direct

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<sup>37</sup> Executive branch approval of the plan does not affect the execution of this program.

<sup>38</sup> [National Space Plan](#).

beneficiaries of the program. In terms of interagency coordination within the Argentine government, one of CONAE's most important roles in the SAOCOM project is to participate in the National System for Comprehensive Risk Management and Civil Protection (SINAGIR), established by Law 27,287 of 2016. The law also established the Network of Scientific-Technical Agencies for Comprehensive Risk Management (GIRCYT), of which CONAE is a member. The purpose of this network is to serve SINAGIR on an ongoing basis.

- 3.3 **Special contractual conditions precedent to the first disbursement of financing.** The borrower, through the executing agency, will present evidence to the Bank's satisfaction that the [program Operating Regulations](#) have entered into effect, as previously agreed upon by the executing agency and the Bank. This is a condition because the program Operating Regulations will establish the execution and fiduciary arrangements necessary for the program's successful execution.
- 3.4 **Special contractual conditions of execution for Component 2:** The approval and entry into effect of the new CONAE data policy will be a special condition of execution for using Bank financing to implement the activities described in paragraph 1.28(v) of Component 2. Unless this policy is in effect, agreements cannot be reached with potential data users and clients (paragraph 1.21).
- 3.5 **Retroactive financing.** The Bank may retroactively finance from and/or recognize as a charge against the proceeds of the investment loan, up to US\$12,000,000 (20% of the loan amount) in eligible expenditures incurred by the borrower<sup>39</sup> prior to the loan approval date in the categories of works, goods, nonconsulting services, and consulting services, provided that requirements substantially similar to those established in the loan contract have been met. Such expenditures will have been incurred on or after 21 March 2019 (the project profile approval date), but under no circumstances include expenditures incurred more than 18 months prior to the loan approval date. This financing is necessary because the project to complete and transfer the satellite is well underway and subject to a strict schedule that requires important contracts and procurement to be completed before the project approval date. To that end, procurement processes that are currently underway have been identified for retroactive financing under Subcomponent 1.1 on satellite construction and launch.
- 3.6 **Fiduciary agreements and requirements.** The main fiduciary management measures that will be applied to the operation (Annex III) have been agreed upon and cover the following: (i) the exchange rate to be used; (ii) audits; (iii) modalities and thresholds for procurement processes, in accordance with the Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (document GN-2350-9); (iv) all procurement to be carried out will be included in the procurement plan approved by the Bank through the Procurement Plan Execution System (SEPA), and the methods and levels established therein, as described in the

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<sup>39</sup> The borrower has indicated that it will need retroactive financing for this operation because the execution schedule, scheduled launch date, and current contracts require that expenditures be incurred before the anticipated loan approval date.

fiduciary agreements and requirements (Annex III); and (v) the financial supervision plan.

- 3.7 **Direct contracting.** This program involves the development and use of technologically advanced and sensitive information. In addition to procurement based on good supplier practices for satellite design and build, Annex III (paragraphs 4.7 and 4.8) describes the activities under Subcomponent 1 that will be contracted directly. These contracts include launch insurance to be taken out with Nación Seguros [an Argentine insurance carrier]; completion of design, construction, and entry into operation of the SAOCOM 1B satellite through different labor sources contracted with the Argentine company VENG S.A.; and continued execution of the framework contract for collaboration between CONAE and INVAP (SAOCOM 1A and 1B, phase III) (for more information, see [optional electronic link 5](#).) These contracts are in line with sections 3.6 (a) and (b) of document GN-2349-9, and with sections 3.10 (a) and (d) and 3.12 of document GN-2350-9. They are also based on previously existing supplier contracts, which began construction of SAOCOM and are naturally continuing under the new program; the need to ensure technical and technological compatibility and standardization; and the specific labor and operating practices of contracts in the satellite industry. A portion of these contracts will be part of the retroactive financing described in paragraph 3.5 and will be based on CONAE's current work schedules.

**B. Summary of results monitoring arrangements**

- 3.8 **Monitoring.** Program monitoring will be in accordance with the [monitoring and evaluation plan](#). The executing unit will submit semiannual progress reports to the Bank to complete the program monitoring report and execution of the annual work plan and procurement plan. Semiannual progress reports will be presented no later than 60 days after the end of the first half of the corresponding calendar year. The progress report for the second half of the calendar year will also include details on any adjustments to the physical and financial targets, if necessary, based on the annual review of the multiyear execution plan and the annual work plan, and on the program's actual progress.
- 3.9 **Evaluation.** The midterm evaluation will be conducted after two years have elapsed, or once 50% of the loan proceeds have been disbursed. The objective of the midterm evaluation is to review the status of execution and make appropriate adjustments based on the evaluation's findings. At the end of the program, the executing agency will conduct a final evaluation that will be submitted to the authorities of the Ministry of Education, Culture, Science, and Technology. The terms of reference for contracting the evaluation will be submitted to the IDB for approval. The final evaluation will be coordinated with preparation of the project completion report. The evaluation will be presented to the IDB no later than 90 calendar days after 100% of the loan proceeds have been disbursed.

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Productivity and Innovation -Economic Integration -Climate Change and Environmental Sustainability	
Country Development Results Indicators	-Beneficiaries of improved management and sustainable use of natural capital (#)* -Professionals from public and private sectors trained or assisted in economic integration (#)* -Government agencies benefited by projects that strengthen technological and managerial tools to improve public service delivery (#)* -Farmers with improved access to agricultural services and investments (#)* -Countries that have improved disaster risk management (#)* -Projects supporting innovation ecosystems (#)*	
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2870-1	(i) Development of environmentally sustainable solutions and support to disaster risk management; and (ii) development of business services and public goods to foster integration and innovation.
Country Program Results Matrix		The intervention is not included in the 2019 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	7.1	
3.1 Program Diagnosis	1.8	
3.2 Proposed Interventions or Solutions	4.0	
3.3 Results Matrix Quality	1.3	
4. Ex ante Economic Analysis	9.0	
4.1 Program has an ERR/NPV, or key outcomes identified for CEA	3.0	
4.2 Identified and Quantified Benefits and Costs	3.0	
4.3 Reasonable Assumptions	0.0	
4.4 Sensitivity Analysis	2.0	
4.5 Consistency with results matrix	1.0	
5. Monitoring and Evaluation	10.0	
5.1 Monitoring Mechanisms	2.5	
5.2 Evaluation Plan	7.5	
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood	Medium	
Identified risks have been rated for magnitude and likelihood	Yes	
Mitigation measures have been identified for major risks	Yes	
Mitigation measures have indicators for tracking their implementation	Yes	
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, Accounting and Reporting. Procurement: Information System.
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		

Note: (\*) Indicates contribution to the corresponding CRF's Country Development Results Indicator.

The SATELLITE TECHNOLOGY DEVELOPMENT PROGRAM (PROSAT II) (AR-L1310) has as a general objective to contribute to the increase of the effectiveness of public policies on disaster risk management and productive development, as well as improving productive performance in sectors that use satellite monitoring. The specific objectives are: (i) to improve the monitoring and response of public agencies in charge of the prevention and management of disaster risks through the provision of satellite images with SAR technology; and (ii) improve satellite information to support the performance of productive sectors that use the specific applications developed with the program. The executing agency for this loan is the National Commission for Space Activities (CONAE), a decentralized entity operating under the Ministry of Education, Culture, Science and Technology (MECCyT).

The diagnosis of the program identifies as main problems the lack of better tools to have more effective disaster risk management policies and the effect this has on the productivity of some agricultural sectors. Given the lack of information available, it is difficult to have quantification of the magnitudes of the deficiencies of some of the determinants of the problems mentioned above.

The economic analysis suggests positive net benefits that come from the efficiency gains of agricultural producers (for better information to plan optimal sowing, harvesting, fumigation and fertilization times) and the reduction of economic losses in the agricultural sector resulting from improvements in the public agencies in the prevention and management of natural disasters (mainly floods and hail, in addition to droughts). The revenue from the sale of SAR information and satellite applications to intermediate and final users is all included in the analysis. The main costs incurred are infrastructure investments to put the satellite into orbit, the adaptation of earth stations for data download and the development of applications for specific uses. However, some of the assumptions used to calculate benefits and the targets of some outcome indicators are not supported by empirical or theoretical evidence, and the target year is not specified.

Given the lack of relevant evidence for the effectiveness of this type of programs, the project includes two potential impact evaluations for component I and II, based on a non-experimental methodology. In this evaluation the impact of the use of images with SAR technology will be measured in the annual yield of the farmers and in the saving in the cost of production. Additionally, a theoretical attribution analysis will be done for the other results indicators.

## RESULTS MATRIX

<b>Project objective:</b>	The program's general objective is to help increase the effectiveness of public policies for managing disaster risk, enhancing productivity, and improving the productive performance of sectors that use satellite monitoring. Its specific objectives are to: (i) improve the monitoring and response capacity of government agencies responsible for disaster risk prevention and management by providing satellite images using synthetic aperture radar (SAR) technology; and (ii) improve satellite information to support the performance of productive sectors that use the specific applications developed through the program.
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### EXPECTED IMPACTS

Indicator	Unit of measurement	Baseline	Baseline year	Target	Means of verification	Observations
<b>EXPECTED IMPACT 1</b> Increased productivity in the domestic agriculture sector (aggregate)						
Annual yield of corn production	Tons per hectare	7.58	2017	7.88	United Nations Food and Agriculture Organization Corporate Statistical Database (FAOSTAT)	FAOSTAT data are public and updated annually, with a lag of approximately one year. Measurements will be provided for the country involved (Argentina), as well as for donors, for the purposes of developing the synthetic control.
Annual yield of wheat production	Tons per hectare	3.30	2017	3.38		
Annual yield of sunflower production	Tons per hectare	1.95	2017	2.07		
Annual yield of soybean production	Tons per hectare	3.17	2017	3.22		

### EXPECTED OUTCOMES

Indicator	Unit of measurement	Baseline	Baseline year	Target	Means of verification	Observations
<b>Expected Outcome 1 (related to specific objective 1):</b> To improve monitoring and the response times of the government agencies responsible for disaster risk prevention and management by providing satellite images based on SAR technology.						
Number of government agencies that adopt SAR satellite monitoring as a management tool	Number of agencies	0	2019	2	CONAE annual report that includes a list of government agencies that use SAR images	The baseline is zero because the first SAR images to be processed using data transmitted by SAOCOM 1A will be produced in the second half of 2019. At minimum, INTA and the Secretariat for Civil Protection are expected to become users in the short term.
Agriculture sector economic losses attributable to natural disasters	Millions of U.S. dollars	1,800	2017	1,650	Economic losses: Secretariat of State for Agroindustry	This indicator is based on estimated annual economic losses prepared by the National Office for Agricultural Emergencies and Disasters (an agency for the Secretariat of State for Agroindustry), for all types of disasters, except for droughts. The baseline reflects the average observed for the 2016-2017 period, according to information provided by the Secretariat of State for

Indicator	Unit of measurement	Baseline	Baseline year	Target	Means of verification	Observations
						Agroindustry. The target is based on estimates from program economic analysis.
<b>Expected Outcome 2 (related to specific objective 2):</b> Improved satellite information and, in turn, support for the performance of productive sectors that use specific applications developed through the program.						
Satellite monitoring coverage during cloud cover	%	55	2019	100	CONAE report, based on records of Argentina's National Meteorological Service	The baseline is calculated based on records of Argentina's National Meteorological Service, which reported approximately 3.57 oktas of cloud cover (cloud cover of approximately 45%). This number is found by calculating average monthly oktas for all weather stations in Argentina over a 10-year period (see the <a href="#">monitoring and evaluation plan</a> ). Thus, monitoring capacity from optical technology is 55%. The remaining 45%, which is currently limited due to cloud cover, will be measured by radar technology (see the <a href="#">monitoring and evaluation plan</a> ).
Number of traditional farmers that use information from SAR maps	Number of farmers	0	2019	4,000	Annual report on participants in INTA's Rural Change Program, and a survey on participant adoption of technology	The baseline is zero because the first SAR images to be processed using data transmitted by SAOCOM 1A will be produced in the second half of 2019. The target is based on the number of participants in INTA's Rural Change Program.
Number of precision farmers that use information from SAR maps	Number of farmers	0	2019	598	Mapped agricultural data from the CREA Association and an ad hoc follow-up survey	The baseline is zero because the first SAR images to be processed using data transmitted by SAOCOM 1A will be produced in the second half of 2019. The target is based on users that have reported using advanced measurement techniques to manage annual crops, according to the 2014 CREA Census.
Annual yield from precision agricultural companies that produce corn, wheat, sunflowers, and soy	Tons per hectare	4.11	2019	4.35	Mapped agricultural data from the CREA Association and an ad hoc follow-up survey	Mapped agricultural data from the CREA Association are updated annually and are based on reports from association members. The baseline is derived from summer averages in 2017-2018, and winter averages in 2018-2019. Yield is calculated using a ratio of volume harvested per area harvested.

Indicator	Unit of measurement	Baseline	Baseline year	Target	Means of verification	Observations
<b>Expected Outcome 3 (related to specific objective 2):</b> Reduction in the operating costs of agricultural companies that use satellite data generated by the SAOCOM mission.						
Direct annual costs (% of gross receipts) for companies that produce corn, wheat, sunflowers, and soybeans	%	55.61	2019	48.61	Mapped agricultural data from the CREA Association and an ad hoc follow-up survey	Mapped agricultural data from the CREA Association are updated annually and are based on reports from association members. The baseline information is from CREA's estimate for the 2018-2019 season. Direct costs are calculated by adding fixed direct costs (including cost of labor, seeds, herbicides, fungicides, insecticides, and fertilizers), and direct variable costs (including cost of harvesting, shipping, and business expenses). Gross receipts are calculated using the product price per quantity sold.

### OUTPUTS

Output	Unit of measurement	Baseline	Second half 2019/ first half 2020	Second half 2020/ first half 2021	Second half 2021/ first half 2022	Target	Means of verification	Observations
<b>Component 1. Improving satellite information</b>								
<b>Subcomponent 1.1. Satellite build and launch</b>								
SAOCOM 1B satellite in orbit and operating successfully	Operational satellite	1	0	1	0	2	Official information from CONAE reported to the IDB	CONAE will submit a report on the status of SAOCOM 1B by February 2019. The baseline is considered to be one completed unit, i.e. the SAOCOM 1A satellite, which is already operational. The satellite is considered to be functioning successfully once it has completed the commissioning phase (see the description of activities in the program loan proposal document).
<b>Subcomponent 1.2. Ground platform operational for receiving and processing images from SAOCOM 1A and 1B</b>								
Ground platform operational for receiving and processing images from SAOCOM 1A and 1B	Operational platform	0.5	0	0.5	0	1	Official information from CONAE reported to the IDB	CONAE should present a report on the status of the ground segment by February of 2019. The baseline is considered to be half of a unit, i.e. the part of the ground segment that is currently able to receive information generated by the SAOCOM 1A satellite.

Output	Unit of measurement	Baseline	Second half 2019/ first half 2020	Second half 2020/ first half 2021	Second half 2021/ first half 2022	Target	Means of verification	Observations
								The final target of 1 for this indicator refers to the completed ground platform system for receiving and processing images from SAOCOM, which will be able to receive and process information from both satellites. The platform is considered to be operational once it has received and processed the first image from SAOCOM 1B.
<b>Component 2. New satellite applications</b>								
New applications developed and operational for using satellite information from SAOCOM	Applications developed	2	1	1	1	5	Operators' report submitted to CONAE	The operators are the companies and organizations responsible for operating the applications.
Scholarships for students from other Latin American countries who receive training on the use of SAR technologies at CONAE's Mario Gulich Institute for Advanced Space Studies.	Scholarships funded	4	5	5	5	19	Mario Gulich Institute for Advanced Space Studies report submitted to CONAE	The baseline is the number of students from Latin American and Caribbean countries (excluding Argentinians) who took training courses on SAR technology in 2018.

## **FIDUCIARY AGREEMENTS AND REQUIREMENTS**

<b>Country:</b>	Argentina
<b>Project number:</b>	AR-L1310
<b>Name:</b>	Satellite Technology Development Program (PROSAT II)
<b>Executing agency:</b>	The National Commission for Space Activities (CONAE), a decentralized agency of the Ministry of Education, Culture, Science, and Technology
<b>Fiduciary team:</b>	Roberto Laguado and Juan Carlos Lazo (FMP/CAR)

### **I. EXECUTIVE SUMMARY**

- 1.1 The borrower, through CONAE, an agency of the Ministry of Education, Culture, Science, and Technology, will be the program's executing agency. CONAE's executive and technical director will be responsible for fulfilling the program's objectives and decision-making on its overall implementation, supervision, and technical management.
- 1.2 The Bank analyzed the institutional capacity of CONAE based on the Institutional Capacity Assessment System (ICAS) report for that agency and its recent experience in executing operation 1777/OC-AR (PROSAT I). Accordingly, a low level fiduciary risk was identified.

### **II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY**

- 2.1 CONAE is a decentralized agency of the Ministry of Education, Culture, Science, and Technology and has successful experience in the areas of satellite design, production, and launch.<sup>1</sup> In this context, CONAE has developed and maintained an array of institutional capacities, technology infrastructure, and highly skilled human resources, earning recognition from leading space agencies around the world.

### **III. FIDUCIARY RISK EVALUATION AND MITIGATION ACTIONS**

- 3.1 Using both the ICAS methodology and recent experience in the executing of Bank operations, the institutional capacity analysis of the executing agency identified a low level of fiduciary risk. However, the following opportunities for improvement were identified: (i) CONAE's lack of previous experience in implementing the Bank's procurement standards and policies, due to the fact that the previous loan was a performance-driven loan and thus did not have to apply these standards to contracts for certain amounts; and (ii) lack of knowledge of the current financial management policy. Accordingly, fiduciary areas will be strengthened through specific training. It was confirmed that there is appropriate contract management capacity for completing the construction, launch, and deployment into orbit of SAOCOM 1B, in order to integrate it with SAOCOM 1A, and carry out all testing of satellite components. Given the financial management

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<sup>1</sup> Argentina has also undertaken successful endeavors in the area of communications, having built two telecommunications satellites locally that today provide services to the entire country.

capacity demonstrated during execution of PROSAT I, the Bank believes that a refresher workshop would help strengthen the executing agency's capabilities.

#### **IV. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION**

- 4.1 The fiduciary agreements and requirements for procurement establish the provisions that apply to execution of all procurement envisioned for the program.

##### **A. Procurement execution**

- 4.2 **Retroactive financing.** The Bank may retroactively finance from and/or recognize as a charge against the proceeds of the investment loan, up to US\$12,000,000 (20% of the loan amount) in eligible expenditures incurred by the borrower prior to the loan approval date in the categories of works, goods, nonconsulting services, and consulting services, provided that requirements substantially similar to those established in the loan contract have been met. Such expenditures will have been incurred on or after 21 March 2019 (the project profile approval date), but under no circumstances include expenditures incurred more than 18 months prior to the loan approval date. This financing is necessary because the project to complete and transfer the satellite is well underway and subject to a strict schedule that requires important contracts and procurement to be completed before the project approval date. To that end, procurement processes that are currently underway have been identified for retroactive financing under Subcomponent 1.1 on satellite construction and launch.
- 4.3 The Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (document GN-2350-9) will apply. Of the country subsystems approved by the Bank, the information system will be used.
- 4.4 **Procurement of works, goods, and nonconsulting services.** Procurement of works, goods, and nonconsulting services<sup>2</sup> generated under the program and subject to international competitive bidding (ICB) will be executed using the standard bidding documents issued by the Bank. Bidding subject to national competitive bidding (NCB) will be executed using the national bidding documents agreed upon with the Bank. During preparation of the selection processes, the program sector specialist is responsible for reviewing the technical specifications for procurement. The Compr.AR and Contrar.AR systems may be used to advertise, receive, and evaluate bids, if so indicated in the procurement plan.
- 4.5 **Selection and contracting of consultants.** Consulting services contracts generated under the program will be executed using the standard request for proposals issued by the Bank.
- 4.6 **Selection of individual consultants.** This process will take into account the candidates' qualifications for performing the work, based on competitive processes and comparing the qualifications of at least three candidates.

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<sup>2</sup> Document GN-2349-9, paragraph 1.1: Nonconsulting services will be treated as goods.

- 4.7 **Direct contracting.** This program involves the development and use of technologically advanced and sensitive information, and procurement is based on good supplier practices for satellite design and build. Each of the contracts is in line with sections 3.6 (a) and (b) of document GN-2349-9, and with sections 3.10(a) and (d) and 3.12 of document GN-2350-9, since all of the contracts are based on previous contracts. Construction of the SAOCOM satellites began under these original contracts, which were satisfactorily executed. The current operation is a natural continuation of this construction and will help ensure technical and technological compatibility, using the satellite industry's best practices for labor and operations. A portion of these contracts will be included under the retroactive financing described in paragraph 4.2, based on CONAE's current work schedules.
- 4.8 The contracts will include launch insurance to be contracted with Nación Seguros; completion of the design, construction, and commissioning of satellite 1B through various labor sources contracted with the firm VENG S.A.; and continued execution of the framework contract for collaboration between CONAE and INVAP (SAOCOM 1A and 1B, Phase III). The corresponding details are provided in Section B, Main procurement items, and [optional link 5](#).
- 4.9 Extensions through new contracts on subsequent and natural phases, or extensions of each activity, are also considered to be approved and will be included in the procurement plan for Bank approval.
- 4.10 The contracts with VENG S.A. and INVAP follow best practices for satellite projects (e.g. NASA and European Space Agency) and will include an appendix containing the rules governing the policies for procurement and selection of consultants that describe: (i) eligibility based on nationality; and (ii) prohibited practices and audits.
- 4.11 **New satellite applications.** Under Component 2, open calls for bids will take place and consulting products will be developed, among other options, in order to innovate and develop products that use radar information. The basic execution and selection mechanism will be explained in the program Operating Regulations. The baselines, allocated resources, and details of each activity will be approved by the Bank. Due to the nature of the program, it will not be necessary to consult a procurement specialist.

**Table 4.1. Thresholds for international bidding and international short list (US\$)**

Works			Goods			Consulting	
ICB	NCB	Shopping	ICB	NCB	Shopping	Advertising, international consulting services	Shortlist 100% national
≥25,000,000	< 25,000,000 ≥350,000	< 350,000	≥ 1,500,000	< 1,500,000 ≥100,000	< 100,000	>200,000	≤1,000,000

## B. Major procurement processes

Table 4.2. Type of bidding and amounts

Activity	Type of bidding	Estimated date	Estimated Amount (US\$)
Procurement and integration of hardware, software development for communications, downloading of data, and satellite monitoring	NCB	Q4/2020	4,130,000
Satellite insurance (Nación Seguros will be the carrier)	Direct contracting	Q4/2020	20,730,000
Environmental tests, SAOCOM 1B satellite	NCB	Q4/2020	5,000,000
Air and ground transportation from Argentina to the United States	ICB	Q2/2019	2,800,000
Launch and deployment into orbit (several contracts)	ICB	In execution	3,300,000
Ground qualification of communications hardware and software, downloading of data, and satellite monitoring (2019 and 2020)	QCBS	T2/2019	10,770,000
Adaptation of ground segment for new products/applications	QCBS	Q2/2019	1,180,000
Provision of systems engineering activities, product insurance, and product support (provider will be VENG S.A.)	Direct contracting	Start: April 2019 Completion: March 2020	3,106,000
Operation of systems, subsystems, and units of specific software for the mission's ground segment (provider will be VENG S.A.)	Direct contracting	Start: April 2019 Completion: February 2020	3,184,000
Integration and test of the SAT antenna and subsets for the satellite (provider will be VENG S.A.)	Direct contracting	Start: September 2018 Completion: June 2019	2,100,000
Provision of systems engineering activities, product insurance, and product support. Phase: operation of satellite SAOCOM 1B (provider will be VENG S.A.)	Direct contracting	Start: April 2020 Completion: December 2020	2,950,000
Entry into service and operation of systems, subsystems, and specific software units for the ground segment of the SAOCOM mission. Phase: entry into operation of the SAOCOM 1B satellite. (provider will be VENG S.A.)	Direct contracting	Start: March 2020 Completion: December 2020	3,500,000
Integration and tests of the SAR antenna and subsets of satellite SAOCOM 1B. Phase: entry into operation of the SAOCOM 1B satellite (provider will be VENG S.A.)	Direct contracting	Start: July 2019 Completion: December of 2020	3,160,000
Framework Collaboration Contract SAOCOM 1A/1B, phase III (provider will be INVAP S.E.)	Direct contracting	Start: August 2013 Completion: December 2020	15,020,000

## C. Procurement supervision

- 4.12 Procurement will be supervised according to the procurement plan and will generally be subject to ex ante review, with the exception of Table 4.3 below. Ex post review visits will take place every 12 months. Ex post review reports will include at least one physical inspection visit, selected from the procurement processes subject to ex post review. At least 10% of the reviewed contracts will undergo a physical inspection during the program.
- 4.13 The thresholds established for ex post review are based on the fiduciary execution capacity of the executing agency that was reviewed during operation design. They may be modified by the Bank in the event this capacity changes.

Table 4.3. Thresholds for ex post review (US\$)

Works	Goods or services	Consulting services	Individual consulting
< 5,000,000	< 800,000	< 600,000	No threshold

## D. Special provisions

- 4.14 **Mechanisms to prevent prohibited practices.** Please see the provisions of documents GN-2349-9 and GN-2350-9 for prohibited practices (multilateral organizations' lists of ineligible companies and natural persons).

## E. Records and files

- 4.15 Procurement documentation will be kept in CONAE's offices, as it is responsible for program procurement. For ex post reviews, records and files of all procurement documentation will be kept and properly organized, labeled, and updated.

# V. FINANCIAL MANAGEMENT

- 5.1 The Financial Management Guidelines for IDB-financed Projects (document OP-273-6) and the Financial Management Operative Guidelines for IDB-financed Projects (document OP-274-2) will apply.

## A. Programming and budget

- 5.2 The executing agency's budget has program categories and other expenditure classifications (main budget lines). Budget allocation regarding all sources of financing will be determined in advance in order to ensure that the operation is executed within the designated timeframe.
- 5.3 The executing agency is responsible for formulating and programming the annual budget and is in charge of all procedures for consolidating the annual budget for approval. If the need to increase or reallocate a line item arises, the executing agency will request this modification and will take the necessary steps to ensure its approval.

## B. Cash flow

- 5.4 Disbursements will be made in accordance with a detailed financial plan, based on the program's actual liquidity needs.

- 5.5 The executing agency will handle the bank accounts that are opened for the exclusive and separate management of the loan resources. Additionally, it will be responsible for monitoring the balances of the special accounts in dollars on a monthly basis and reconciling the program's bank accounts.

- 5.6 The Bank recommends that the executing agency use eDisbursements.

**C. Accounting, information systems, and report generation**

- 5.7 The executing agency will use the System for External Project Execution Units (UEPEX)<sup>3</sup> as its financial management system, which helps identify program funds, as well as sources of financing. Using the list of Bank-approved accounts approved, the UEPEX system is able to record program investments for each category of the cost matrix. Accounting records will be kept based on cash flow and, where appropriate, will follow the International Financial Reporting Standards, in keeping with established country criteria. The required financial reports are: (i) financial plan covering a period of up to 180 days after the request for advances; (ii) audited annual financial statements, in accordance with article 7.03 (a) of the General Conditions of the loan contract; these will be prepared at the end of each fiscal year and at the end of execution of the operation, and no later than 120 days after the indicated cut-off dates; and (iii) other reports as required by the fiduciary specialists.

- 5.8 CONAE's office of planning, administration, and finance is responsible for carrying out the following loan-related activities: (i) keeping accounting records of program execution using the UEPEX system; (ii) preparing the disbursement requests and checking that they have been approved and deposited into the bank accounts; (iii) checking the balances of the special accounts in dollars on a monthly basis and reconciling program bank accounts; (iv) analyzing account balances on a monthly basis and producing a reconciled balance in pesos and dollars; (v) preparing the financial reports required by various entities; and (vi) preparing the financial statements of the loan and presenting them to the external auditor, who will produce the corresponding reports.

**D. Internal control and internal audit**

- 5.9 The national entity in charge of internal control is the Sindicatura General de la Nación (National Auditing Office). Internal audits of each executing agency are carried out by the internal auditing unit. This unit is directly under CONAE's executive and technical director and is responsible for performing audits and making recommendations, based on the authority granted to it under Law 24,156 (Financial Management Act).

**E. External control: external financial audit and program reports**

- 5.10 In order to have flexibility in contracting the auditing service for this operation, there will be the option to choose from various institutions that are eligible for auditing IDB-financed operations. Once it comes time to begin this procurement

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<sup>3</sup> [UEPEX](#).

process, the executing agency will ask the Bank to provide a short list of institutions that may be invited to bid.

**F. Financial supervision plan**

- 5.11 The initial financial supervision plan will be based on risk and fiduciary capacity evaluations carried out during on-site and desk reviews of the program, which include a range of operational, financial and accounting, compliance and legal, frequency, and accountability measures. One financial inspection visit is planned each year. Ex post review of disbursements will also be performed.

**G. Execution mechanism**

- 5.12 The executing agency will be CONAE, a decentralized agency of the Ministry of Education, Culture, Science, and Technology. The program Operating Regulations will describe the execution structure to be followed by the executing agency. Within this structure, one area will be responsible for technical considerations of the program. CONAE's office of planning, administration, and finance will provide support to the technical area and will be in charge of the program's administrative coordination and financial supervision. Execution will be centralized.

**H. Management of disbursements**

- 5.13 Disbursements will be made through advances of funds in accordance with the financial plan, which is in effect for no more than 180 days. Funds will be disbursed once 80% of the previous resources have been spent. Requests for disbursements will include the disbursement request form, execution status, and the financial plan. Although supporting documentation for expenditures or payments made will not be required for reporting, this does not mean that the Bank has approved the incurred expenditures. The original supporting documentation for expenditures will be available for the Bank to review at any time, upon request.
- 5.14 The exchange rate that will be applied is established in article 4.10 (b)(i) of the loan contract. In order to determine the equivalent of the expenditures incurred in local currency using local counterpart funding, or of the expenditures reimbursed using loan resources, the agreed exchange rate will be the rate in effect on the first business day of the month that the payment was made. Due to the constraints of the UEPEX system, a payment made using IDB funds or local counterpart funds will use the same exchange rate used to convert disbursements into local currency ("pesofication" rate).
- 5.15 The proceeds of the Bank loan that are requested in the form of advances of funds will be deposited in an account denominated in dollars. They will then be converted into local currency, in accordance with operational needs, in an account to be used exclusively for the program. That account will be used to pay for planned expenditures and investments.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-\_\_\_/19

Argentina. Loan \_\_\_\_/OC-AR to the Argentine Republic. Satellite  
Technology Development Program (PROSAT II)

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 Argentine Republic, as borrower, for the purpose of granting it a financing to cooperate in the execution of the Satellite Technology Development Program (PROSAT II). Such financing will be for an amount of up to US\$60,000,000 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 \_\_\_\_ 2019)