

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PARAGUAY

**PROJECT TO IMPROVE AND EXPAND ANIMAL HEALTH SERVICES IN
PARAGUAY**

(PR-L1148)

LOAN PROPOSAL

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ABBREVIATIONS

BCP	Central Bank of Paraguay
CSF	Classical Swine Fever
CVP	Permanent Veterinary Committee of the Southern Cone
DIGEAF	Bureau of Administration and Finance
ESMP	Environmental and Social Management Plan
FMD	Foot-and-Mouth Disease
GDP	Gross domestic product
GEF	Global Environmental Facility
ICAS	Institutional Capacity Assessment System
IICA	Inter-American Institute for Cooperation on Agriculture
IRR	Internal rate of return
LIBOR	London Interbank Offered Rate
NPV	Net present value
OIE	World Organisation for Animal Health
OVE	Office of Evaluation and Oversight
PEU	Program Execution Unit
PMU	Project Management Unit
PPP	Public-Private Partnership
PVS	Performance of Veterinary Services
QCBS	Quality- and Cost-Based Selection
SCSP	Public Sector Procurement System
SEAM	Ministry of the Environment
SENACSA	National Service for Animal Health and Quality
SENASICA	National Service for Agri-Food Health, Safety, and Quality
SIAF	Integrated Financial Management System
SIGOR	Regional Office Computerized Management System
SISA	Animal Health System
UNDP	United Nations Development Program

PROJECT SUMMARY
PARAGUAY
PROJECT TO IMPROVE AND EXPAND ANIMAL HEALTH SERVICES IN PARAGUAY
(PR-L1148)

Financial terms and conditions						
Borrower: National Service for Animal Health and Quality (SENACSA)			Flexible Financing Facility ^(a)			
Guarantor: Republic of Paraguay			Amortization period:		24 years	
Executing agency: The borrower, through the Project Management Unit and with the support of the Bureau of Administration and Finance			Disbursement period:		5 years	
Source	Amount (US\$)	%	Grace period:		5.5 years ^(b)	
IDB Ordinary Capital:	15,000,000	100	Interest rate:		LIBOR-based	
			Credit fee:		^(c)	
			Inspection and supervision fee:		^(c)	
Total:	15,000,000	100	Weighted average life:		14.75 years	
			Approval currency:		United States dollars from the Ordinary Capital	
Project at a Glance						
Project objective/description: The program's general objective is to help improve the productivity of the livestock sector. The specific objectives are to: (i) improve the effectiveness of animal health services with a risk management approach; and (ii) expand the coverage of veterinary services, including for smaller species.						
Special contractual conditions precedent to the first loan disbursement: (i) the Program Execution Unit will have been formed according to the terms agreed upon with the Bank; and (ii) the borrower will have presented, to the Bank's satisfaction, evidence that the program Operating Regulations have entered into force (paragraph 3.4).						
Special contractual conditions for execution: The project will be executed in accordance with the contractual provisions on environmental, social, health, and safety issues set forth in the legal requirements section of the Environmental and Social Management Report , including Annex B.						
Exceptions to Bank policies: SENACSA will be the borrower and the executing agency. The guarantee by the Republic of Paraguay will be limited to SENACSA's financial obligations in the context of the loan (including repayment of principal, payment of interest, and other lending charges) and will not cover performance obligations or local counterpart contributions. Accordingly, the Board of Executive Directors is being asked to approve a partial waiver of the Bank's policy on Guarantees required from the borrower (document GP-104-2) (paragraph 3.1).						
Strategic Alignment						
Challenges: ^(d)	SI	<input type="checkbox"/>	PI	<input checked="" type="checkbox"/>	EI	<input type="checkbox"/>
Crosscutting themes: ^(e)	GD	<input type="checkbox"/>	CC	<input checked="" type="checkbox"/>	IC	<input checked="" type="checkbox"/>

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

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

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

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

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

I. PROJECT DESCRIPTION AND RESULTS MONITORING¹

A. Background, problem, and rationale

- 1.1 Paraguay closed 2017 with real GDP growth of 4.3%, up from 4.1% in 2016. Inflation, meanwhile, reached 4.5%, higher than the target of 4% set by the Central Bank of Paraguay (BCP) for 2017, while the central government's budget deficit was 1.5% of GDP, similar to the previous year. In the short and medium terms, the country's GDP is expected to grow by around 3.5% to 4.0%, and its fiscal position should get stronger in line with the provisions of the Fiscal Responsibility Law.
- 1.2 In this context, the agricultural sector is key to the Paraguayan economy, due to its contribution to GDP (an annual average of 25% in the 2004-2016 period) as well as to its share of the country's jobs (annual average of 30% during the same period). Furthermore, from 2004 to 2016, the sector grew at an average annual rate of 5.7%. On par with this growth, the sector's exports have significantly increased over the past decade; in 2016, they accounted for 60% of the total value of exports (BCP, 2017). The livestock subsector accounts for approximately 5.5% of national GDP, with around 13 million head of cattle, 1.3 million pigs, and 500,000 sheep, among other species (National Service for Animal Health and Quality, SENACSA, 2016). Exports of animal products and byproducts totaled an annual average of US\$1.424 billion in the three-year period 2014-2016 and account for 16% of all exports (SENACSA, 2017).²
- 1.3 The importance of sheep, pig, and poultry products in the domestic market should also be highlighted. The majority of these products come from small family farms (IICA, Paraguay Observatory, 2016). According to the 2008 National Agricultural Census, there are 289,000 productive farms managing 31 million hectares of land, of which 66% are dedicated to livestock activity. Of these, 92% have less than 50 hectares and are considered family farms.
- 1.4 In the past few years, Paraguayan beef production has increased significantly due to growth in the cattle herd and slaughter.³ However, there are still significant productivity gaps compared to other countries in the region. For example, in Paraguay, the bovine calving rate⁴ is approximately 46%, lower than in the other MERCOSUR countries, which have an average rate of 61% (SIGOR SENACSA, 2017). The national annual average cattle offtake rate⁵ is 15%, while in the other countries in the region it averages 24%. Likewise, while Paraguay produces 28 kg of meat per hectare per year, Brazil produces 49 kg, Argentina 34 kg, and Uruguay 40 kg.⁶ With regard to productivity rates for small livestock, in Paraguay the lambing

¹ The references presented in the document are available at [optional electronic link 1](#).

² Paraguay ranks sixth in the world among meat exporters.

³ SIGOR: in the last decade the cattle herd grew 40% (from 10 million to 14 million heads) and the slaughter doubled (from 1.1 million to 2 million head of cattle).

⁴ The calving rate refers to the percentage of weaned calves.

⁵ The offtake rate is the percentage of cattle slaughtered divided by the population monitored by the official veterinary services; it is from 2016.

⁶ EA Digital 2014 <http://ea.com.py/v2/blogs/el-aumento-del-hato-ganadero-no-genera-productividad-sinoineficiencia-a-escala-mayor/>.

rate is 40%; in Uruguay, it is 90%.⁷ Increasing productivity through technical change is complex, above all when taking into account the limited return on certain new technologies compared to the extensive production in areas with a relative abundance of land. However, expanding the agricultural frontier also has negative effects, namely, increasing deforestation.⁸ The main challenges for improving productivity include the availability of improved adapted pastureland; improving the genetic quality of the herd to increase efficiency in converting pasture to meat or milk; the appropriate management of pastures and livestock; improving reproductive efficiency and animal health. Furthermore, productivity is affected by the sector's vulnerability to climate change, and the livestock sector is the country's principal source of greenhouse gas emissions.⁹

- 1.5 **The importance of livestock health.** International empirical evidence shows that animal health has significant positive effects on livestock productivity, access to international markets, and consumer health, due to fewer cases of zoonotic diseases.¹⁰ Globally, there is ever more concern over the sustained increase in detections of new and re-emerging infectious agents. This is accompanied by significant social and economic impacts on public and animal health in the affected regions. The growing risks of transmission of animal diseases and exchange of pests associated with trade liberalization, the movement of persons, and climate change, has led to greater epidemiological risks (*Globalization and Infectious Diseases*, 2004).
- 1.6 The countries in the region, immersed in this risky scenario, are increasingly vulnerable, since they have the world's largest population of animals intended for commercial use ([Naranjo, 2017](#)). This new global risk scenario led the member states of the World Trade Organization to sign an Agreement on the Application of Sanitary and Phytosanitary Measures (WTO, 1995), whereby they commit to assessing and managing the risk to ensure sanitary and phytosanitary protection.¹¹ Accordingly, government veterinary services must design their sanitary strategies using a risk management approach that includes the pillars of identifying and reducing risks, as well as responding to sanitary emergencies.
- 1.7 Pursuant to the Plan of Action 2011-2020 of the Hemispheric Program for the Eradication of Foot-and-Mouth Disease,¹² the region of South America will move toward eradicating foot-and-mouth disease (FMD), which would mean an end to vaccination in the near future. This would lead to significant economic benefits by making it possible for Paraguay to access markets with more stringent health requirements and higher prices, but it would also increase the vulnerability of the

⁷ *Efecto de características maternas y del cordero sobre peso vivo al nacimiento, señalada, destete supervivencia neonatal* [Effect of maternal and lamb characteristics on live weight at birth, marking weight, weaning weight, and neonatal survival] (Grasso, 2013).

⁸ From 2001 to 2013 pastureland in Latin America was increased by 96.9 million hectares, mostly through deforestation in regions like Colombia, central Brazil, western Paraguay, northern Guatemala, and eastern Nicaragua (Graesser et al., 2015).

⁹ Taking into account emissions from converting forest to cropland (Third National Communication from Paraguay to the United Nations Framework Convention on Climate Change (SEAM/UNDP/GEF, 2017)).

¹⁰ IDB. Agriculture and Natural Resources Management Sector Framework Document (document GN-2709-5).

¹¹ World Trade Organization. https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm.

¹² Pan American Health Organization/Pan American Foot-and-Mouth Disease Center (PAHO/PANAFTOSA, 2010).

country's livestock population, which would be left without vaccine protection and exposed to potential reintroductions of the disease. This represents a strategic shift towards a risk management perspective in the design of health services, entailing major structural and organizational-operational adaptations.

- 1.8 The animal products market, principally in the pork and poultry production sector, is also rapidly evolving towards new requirements related to the comprehensive safety of the production chain, including specifications on biosecurity management, real-time monitoring of hygienic-sanitary conditions, and farm-to-fork traceability, etc. Keeping more than one livestock species is another risk-reduction strategy for farmers, as it provides them with a broader range of options for adapting to the unpredictability of the weather than if they keep only one species (Reijntjes et al., 1992).
- 1.9 **Ties between animal health and climate change.** Evidence exists that interventions in animal health represent an important strategy for adapting to¹³ and mitigating¹⁴ climate change, which impacts animal health through its direct and indirect effects on the host-pathogen system environment. In fact, climate variability and extreme climate events are important factors in predicting the occurrence of diseases in animals.¹⁵ The direct effects are more pronounced in vector-transmitted diseases and/or diseases affected by weather conditions such as temperature and humidity.¹⁶ In turn, the indirect effects are derived from changes in biodiversity and land use, as well as from animals' efforts to adapt to the new environment.¹⁷ Managing health risks (which involves preventive veterinary medicine, monitoring, detection, and early response) is thus key to addressing the impacts of climate change on animal health.¹⁸ Therefore, in many countries, measures aimed at and support for effective animal health services may be the most important and necessary adaptation strategies,¹⁹ since efficient veterinary services are vital to addressing the impacts of climate change on animal health.²⁰ It is also necessary to support animal health services in all countries so as to control and appropriately manage transboundary diseases and the food safety problems that may be exacerbated by climate change and the intensification thereof associated with climate variability.²¹
- 1.10 **Health risk management approach.** The challenges involved in implementing new trade agreements that have stricter health requirements, as well as in addressing climate change scenarios, call for a new approach in health services based on identifying risks, assessing their potential effects, preventive action programs, and timely, effective communication. This entails creating risk management platforms

¹³ Climate Change Impacts and Risks for Animal Health in Asia (S. Forman et al., 2008).

¹⁴ Reducing Greenhouse Gas Emissions through Better Animal Health (A. Stoot et al., 2010).

¹⁵ Climate-smart livestock production. FAO 2017. https://www.wto.org/english/tratop_e/sps_e/spsagr_e.htm.

¹⁶ Impact of Climate Change on Livestock Health: A Review (N. Abdela and K. Jilo, 2016).

¹⁷ Climate-smart livestock production. FAO 2017.

¹⁸ Climate Change and Animal Health (J. Lubroth, 2012).

¹⁹ Managing Animal Diseases Risk in Australia: The Impact of Climate Change (P. Van den Bossche and J.A.W. Coetzer, 2008).

²⁰ Climate Change Impacts and Risks for Animal Health in Asia (S. Forman et al., 2008).

²¹ Managing Animal Diseases Risk in Australia: The Impact of Climate Change (P.F. Black et al., 2008).

that use modern information technologies (OIE, 2004 and 2011).²² Therefore, new approaches to health certification and management are needed, with public-private participation and integration; collaborative monitoring, detection, and intervention systems; application of best practices protocols for production, health, and biosecurity; and use integrated production systems. A notable example is Mexico's National Service for Agri-Food Health, Safety, and Quality (SENASICA), which has successfully adopted the risk management concept. With the launch of its Health Intelligence Unit, the incorporation of preventive medicine services, and the creation of the Internal Rapid Alert Network for the timely exchange of data and generation of strategic information, the country has been able to successfully comply with the commitments it acquired upon joining the World Trade Organization, and over the past 10 years has doubled the value of its agri-food exports, which has reached US\$30 billion. According to the OIE, Mexico's preventive actions have enabled it to obtain an animal health status held by only five countries in the world (Australia, United States, Portugal, Switzerland, and Mexico).²³

- 1.11 **Livestock health in Paraguay.** Paraguay has obtained official status as an FMD-free country where vaccination is practiced and as a country free from classical swine fever (CSF), pursuant to the World Organisation for Animal Health's Terrestrial Animal Health Code (OIE, 2017). Despite these achievements, the country is a prime example of potential vulnerability due to emergency risk scenarios. Indeed, Paraguay has the region's highest proportion of farm animals to humans, which reduces its capacity to contain epidemiological outbreaks. And as a landlocked country with more than 3,500 km of land borders with three other countries, it is highly exposed to the entry of infectious agents (Naranjo, 2017).
- 1.12 According to a study²⁴ conducted in 2012, the country suffered losses worth US\$54 million in beef cattle and US\$74 million in dairy cattle due to brucellosis and tuberculosis, and lost revenue of US\$33 million due to CSF and US\$72 million due to Newcastle disease in poultry. In 2011, FMD reappeared in Paraguay. The impacts of this outbreak caused economic losses of US\$170 million in exports alone, equivalent to 7.2% of the livestock contribution to GDP (Giménez Rolón, 2012). These figures are consistent with reports by the OIE, which attribute more than 20% of global livestock production losses to various diseases.
- 1.13 Some economically important prevalent diseases²⁵ are still having a significant effect on the productivity of the national livestock herd; these diseases have a high zoonotic risk and are included among export certification requirements. Addressing these diseases is a priority in order to reduce productivity gaps and minimize barriers to exportation, as well as because they pose a high risk to public health. Bovine and caprine brucellosis are both on the rise in the country. These diseases have high

²² OIE, 2004. Handbook on Import Risk Analysis for Animals Products, Vol. 2 quantitative risk analysis. OIE, 2010. Terrestrial Animal Health Code. Paris, France.

²³ National Service for Agri-Food Health, Safety, and Quality of Mexico. <https://www.gob.mx/senasica/articulos/unidad-de-inteligencia-sanitaria-101745?idiom=es>.

²⁴ *Análisis del Gasto Público en Servicios de Sanidad Agropecuaria* [Analysis of Public Expenditure on Agricultural Health Services] (Giménez Rolón, 2012).

²⁵ The prevalence of a disease is the total number of individuals who have the disease or a characteristic at a given time or during a given period of time, divided by the population at that moment in time or halfway through the period. It quantifies the proportion of individuals in a population who have a disease at a given time.

prevalence rates and cause significant losses²⁶ to affected producers (low reproduction rates due to abortions, subfertility, and infertility); they also are hazardous to human health, principally for family farmers (SENACSA, 2017). Although bovine tuberculosis has been sporadically detected in some breeding herds, up-to-date information that would make it possible to estimate its prevalence and incidence rates is not available.

- 1.14 **Health services in Paraguay.** SENACSA²⁷ is the national body responsible for making, regulating, coordinating, implementing, and overseeing the country's policies on and management of animal health and quality. The Ministry of Agriculture and Livestock²⁸ is responsible for furthering livestock policies in coordination with SENACSA. As the government veterinary service, SENACSA is committed to maintaining the health statuses achieved in Paraguay,²⁹ as well as to eliminating prevalent diseases, including zoonotic diseases, making greater efforts to process samples for surveillance and control throughout the country, including on the borders.
- 1.15 In 2013, the OIE evaluated SENACSA's performance (OIE-PVS,³⁰ 2014), assessing the strengths and weaknesses of the government veterinary service. Among its strengths, the service has material resources, including infrastructure, equipment, and vehicles. It has been successfully administering the FMD control program for years, which has given it experience in managing health programs. SENACSA's veterinary service is highly specialized in the fight against FMD and has demonstrated the ability to fulfill its professional obligations of surveillance, control, and certification for the safe export of beef to the most selective markets in the world. SENACSA has also demonstrated its high level of commitment to the OIE process of improving veterinary services.
- 1.16 The following are among the weaknesses identified for SENACSA's transition to a risk management approach: (i) shortage of highly trained human resources; (ii) lack of infrastructure and modern equipment; (iii) limited capacity for identifying health risks, as well as for the control and surveillance of prevalent and emerging diseases; and (iv) weaknesses with regard to simplifying procedures and processes that would

²⁶ Quantifications of losses due to brucellosis calculated in Brazil in 2013 show an average loss of US\$120 and US\$210 for each female infected with brucellosis in the meat and milk production systems, respectively (Bovine Brucellosis Program 2017, IICA-SENACSA).

²⁷ Law 2426/2004.

²⁸ SENACSA and the Ministry of Agriculture (Law 81/92) are two independent institutions with complementary functions. They coordinate to optimize their respective resources, plans, and programs. Specifically, the Ministry of Agriculture, through its Office of the Deputy Minister of Livestock Farming (Resolution 1783/11), enforces government policy on the livestock sector and proposes, evaluates, and coordinates the enforcement of regulations on the health and quality of products and inputs for national and international sales, as well as other functions.

²⁹ Such as the statuses achieved with regard to FMD, rinderpest, bovine spongiform encephalopathy, peste des petits ruminants (also known as sheep and goat plague), among other diseases.

³⁰ The PVS is the OIE Tool for the Evaluation of Performance of Veterinary Services. The PVS gap analysis allows the veterinary services to define the objectives to be reached in the next five years, in compliance with OIE quality standards and based on national priorities and limitations. The OIE PVS Tool determines the effectiveness of the veterinary services, identifies gaps and weaknesses, and establishes recommendations for 40 competencies grouped into four components: (i) human, technical, and financial resources; (ii) technical authority and capability; (iii) interaction with interested parties; and (iv) access to markets. Each competency is evaluated from 1 to 5, with the latter being the most advanced. The resulting values can be expressed as a percentage. In November 2017 the OIE performed a new PVS of SENACSA, which will be used as a baseline once published.

make it possible to lower transaction costs.³¹ Paraguay achieved an average performance value of 64% in the PVS evaluation, which is worse than other countries in the region like Uruguay (83%), Chile (82%), and Colombia (70%).

- 1.17 The PVS also identified the lack of an overall management system as one of the government veterinary services' greatest weaknesses. With the current data management system, it is not possible to synthesize useful information for adequate analysis, control, and/or planning. SENACSA does have SIGOR³² (the regional office computerized management system) in place; this system can record and analyze data on establishments and producers, livestock inventories, cattle movements, progress on anti-FMD vaccine campaigns, etc. However, there are no computerized systems in place for the laboratories, quarantines, food producer inspections, and waste control, among other issues. Although SENACSA's Animal Health Bureau uses an animal health system (SISA)³³ that was designed to inform, store, and maintain a database about animal health in the country through SENACSA's zonal units, it is not integrated into SIGOR. SIGOR and SISA are both key tools for the risk management model.
- 1.18 In addition, according to the user survey and demand study ([Ferrari, 2017](#)), incorporating new information technologies into SENACSA's services is a priority, in order to streamline procedures, lower transaction costs, and facilitate the expansion of services to users.³⁴ The following key processes that can be improved were identified as a result of the study: (i) reduction of in-person procedures; (ii) 24/7 availability of the online system; (iii) incorporation of functionalities for small livestock producers; (iv) strengthening of services associated with the opening and development of markets for new export chains; and (v) simplification of import and export procedures.
- 1.19 Lastly, one of the main limitations observed in the PVS stems from the structure of SENACSA's annual budget. Funds come from several sources: the National Treasury contribution (22%), internal resources from the provision of services (21%), and taxes on the movement of animals and meat exports (57%). This reliance on contributions from the livestock sector for services provided is a disadvantage of the government veterinary services' specialization in beef production, as it can create a dependence on beef exports, meaning that if they are restricted for health reasons, funding could be affected. A recent analysis of the effectiveness of various health systems in Latin America (OVE, 2015) concluded that it was important to allocate resources to generating public goods from the services. This analysis highlighted the achievements of health campaigns in terms of reducing the effects of diseases, as well as the social return on those initiatives.

³¹ In the 2013 PVS, SENACSA achieved scores of 66% and 53% in the categories of (i) human, technical, and financial resources; and (ii) technical authority and capacity, respectively.

³² SIGOR is a web-based system developed to manage the services provided by SENACSA throughout the country. SIGOR manages health information, the control of poultry and cattle movement, revenue under Law 808/96, and proceedings in legal cases. The system is used in facilities including zonal units, livestock fairs, control posts, and meat packing plants. SIGOR has 12 modules in place and 3 online services offered through the institution's portal.

³³ SISA has four modules in place (property georeferencing, immediate notification of diseases, attention to suspected cases, and monthly epidemiological records).

³⁴ This study sought to identify evidence of benchmarking associated with foreign trade practices involving similar procedures, but did not find any. SENACSA does not have any studies on procedure costs.

- 1.20 The same assessment made recommendations for putting together joint strategies for the public and private sectors, promoting the recovery of costs for institutional sustainability, preventive health work, the economic evaluation of outcomes, and the development of new health capacities. In Paraguay, public-private collaborative efforts in animal health have been successful.³⁵ SENACSA's involvement with the cattle sector is effective and encouraged, due to the importance of beef exports to the country. However, coordination with other productive sectors, such as the dairy, pig, small ruminant, and poultry sectors, is still incipient (OIE-PVS, 2013). Accordingly, the Government of Paraguay is interested in emulating the public-private sector coordination achieved in the cattle subsector in other livestock subsectors (e.g., pig, sheep, goat, and poultry).
- 1.21 **Bank experience.** Between 2002 and 2014, the Bank approved 17 investment loans to strengthen agricultural health and food safety systems in the region, for US\$359 million, approximately 10% of the total sector portfolio (OVE, 2015).³⁶ Based on those operations, as well as on some recently approved ones (Peru 4457/OC-PE, Uruguay 3800/OC-UR, Bolivia 3797/BL-BO, Guyana 3798/BL-GY, and Mexico 3864/OC-ME), and taking into account the conclusions and recommendations that issue from the OVE document Comparative Project Evaluation of Agriculture Health and Food Safety 2002-2014, Table 1 below shows the main lessons learned and how they have been incorporated into the design of the proposed operation.

Table 1. Incorporation of recommendations into program design

Recommendations	Incorporation into program design
Participation of the private sector, through joint work and the incorporation of new information and communications technologies.	The program makes it a priority to make more services available online, so as to streamline and improve the efficiency of service delivery. Animal health control programs will be executed in coordination with producers.
Make the laboratories sustainable.	The laboratories currently operated by SENACSA are self-financed, but they do not have the capacity required to execute the public disease control programs. The program will finance the improvement of the laboratories' capacities. The laboratories will continue to be self-financed.
Evaluation and outcomes, with regard to the direct beneficiaries.	The program includes a monitoring and evaluation program, and an impact assessment plan, which will analyze the impacts of the program actions on its direct beneficiaries.

- 1.22 **Country strategy with the sector.** The project is first and foremost aligned with the guidelines and objectives of the National Development Plan 2030, the Agriculture Strategic Framework 2014-2018, and SENACSA's Institutional Strategic Plan 2013-2018. The project is linked to the following strategic pillars of the National Development Plan 2030: (i) inclusive economic growth and (ii) Paraguay's international integration, as well as with the crosscutting pillar of efficient and transparent public management. The program will also contribute to the Agriculture Strategic Framework strategic pillar of "livestock and farm development," which prioritizes establishing disease monitoring and control programs, maintaining and

³⁵ Law 808/96 declared the national FMD eradication program to be mandatory and created the Interagency Commission, forming a public-private partnership (PPP) made up of representatives of SENACSA and the Rural Association of Paraguay.

³⁶ Of the 17 loans approved for agricultural health between 2002 and 2014, none involved Paraguay.

improving the health status of livestock production, and upgrading and modernizing the laboratory system. It is also aligned with the national contribution, which identifies livestock farming as a priority sector for climate adaptation and highlights the country's commitment to reducing its vulnerability to climate change.³⁷

- 1.23 **IDB country strategy.** The operation is aligned with the IDB Country Strategy with Paraguay (2014-2018) (document GN-2769), since it contributes to the strategic objective of increasing “the supply of agricultural public goods and services.”
- 1.24 **Strategic alignment.** The program is aligned with the Update to the Institutional Strategy 2010-2020 (document AB-3008) and with the challenge of productivity and innovation, by improving the provision of essential public goods, like health services for rural development and economic integration. The program is also aligned with the crosscutting areas of: (i) strengthening institutional capacity and the rule of law, by strengthening an institution that is strategic for rural development; and (ii) climate change and environmental sustainability, by providing mechanisms that contribute to climate change adaptation. It also contributes to the Corporate Results Framework 2016-2019 (document GN-2727-6), through the indicator: “government agencies benefitted by projects that strengthen technological and managerial tools to improve public service delivery.” In addition, the operation is included in the 2018 Operational Program Report (document GN-2915). The program is also consistent with the first dimension of success of the Agriculture and Natural Resources Management Sector Framework Document (document GN-2709-5), which calls for achieving high levels of agricultural productivity in the region and proposes that high-quality health services and public goods be provided; the Food Security Sector Framework Document (document GN-2825-3) with regard to the dimension of access to safe and nutritious foods; and the Climate Change Sector Framework Document (document GN-2835-3), in that it promotes higher agricultural productivity through the adoption of climate change adaptation practices.
- 1.25 Approximately 41% of operation resources will be invested in climate change mitigation and adaptation activities, in accordance with the [Multilateral Development Banks' joint methodology for estimating climate finance](#).³⁸ These resources contribute to the IDB Group's target of increasing financing of climate-change-related projects to 30% of combined total approvals by the end of 2020.

B. Objectives, components, and cost

- 1.26 **Objective.** The program's general objective is to help improve the productivity of the livestock sector. The specific objectives are to: (i) improve the effectiveness of animal health services with a risk management approach; and (ii) expand the coverage of veterinary services, including for smaller species.
- 1.27 To those ends, investments are planned in two components, described below:
- 1.28 **Component I. Health risk management (US\$10.8 million).** This component will strengthen SENACSA's capacities for identifying, assessing, and managing risk, by expanding the functions of its information systems to generate epidemiological information for decision-making. With a properly equipped monitoring network, inspection processes at entry points, and posts for monitoring farm animal movements, protocols will be established for responding to health events, and

³⁷ National Contributions of the Republic of Paraguay (Republic of Paraguay, 2015).

³⁸ See [optional electronic link 5](#) for detailed information.

strategies will be drawn up for mitigating their potential effects. The institutional strengthening will also include the training of human resources and the provision of specific inputs and equipment. A health intelligence network will be implemented while improving physical infrastructure at certain identified priority points; this will involve equipping and modernizing the SENACSA laboratories. A network of public and private laboratories will also be set up and provided with a comprehensive management system to expand and speed up diagnostic and control capacities, as required by the risk management approach. In addition, given the potential of individual identification and traceability as a tool for health risk management, the component will finance the design of software and the procurement of the equipment necessary for animal identification and individual traceability. Moreover, in keeping with the risk management approach, the component will support the Reproductive Diseases Program in eradicating brucellosis, by helping to improve SENACSA's capacities for managing, preventing, and responding to that type of health event. In short, this component will finance: (i) a health intelligence network (for identification and prevention, with an early alert system for preventive communication and an emergency response system); (ii) the modernization and expansion of physical infrastructure (in the various regions, at control posts, and on the border) and equipment to support the tasks of diagnosis, surveillance, and control; (iii) the identification of individual animals for traceability; (iv) support for the national brucellosis program; and (v) a program to modernize the organization.

- 1.29 **Component II. Expansion of services (US\$3.1 million).** This component will improve and expand service delivery to users by simplifying and digitizing procedures,³⁹ emphasizing the most important ones, to decrease transaction costs. The component will also develop new computer functionalities, including expanding and optimizing SIGOR, to facilitate decision-making and the provision of health services. This will include not only expanding the systems' capacities and improving telecommunications, but also securing computer services to ensure availability remotely and in zonal offices. The program will include training for human resources on generating services for users and risk management capacities. The expansion of SENACSA's services is expected to involve the preparation and implementation of health plans that will include the identification, registry, health management, vaccination, surveillance, and certification of smaller species (sheep, goat, pigs, poultry). To facilitate the process of executing the health plans and providing services to small and medium-sized producers, the component will finance the formation and operation of a public-private partnership⁴⁰ that will include representatives of SENACSA and of small livestock producer associations. The component includes support activities to obtain the effective participation of producers, such as: (i) training; (ii) certification of private technicians; and (iii) the

³⁹ This is aligned with the "infrastructure and connectivity" pillar of the digital agenda that the Bank is promoting in Paraguay; among other improvements, the ability to use an electronic signature for priority procedures will be incorporated.

⁴⁰ The PPP will be formed by representatives of SENACSA and of the small livestock production sector (Rural Association of Paraguay, associations of sheep, goat, pig, and poultry farmers). It will have one standing member and one alternate from each institution, who will be unpaid and will each have a single vote; it will be led by SENACSA, which will be responsible for auditing and certifying all national and international processes. It will have one coordinator, and the Commission will decide how the allocated resources are to be handled. Among its functions, the PPP will: (i) actively participate in health plans and campaigns; (ii) ensure the use of best practices with regard to animal wellbeing and the defense of the environment; (iii) implement compartmentalization for health campaigns; and (iv) update and train the various actors.

preparation of materials for dissemination. To summarize, this component will finance: (i) the incorporation of new functionalities into the computer system, new online services, and the implementation of electronic signatures to improve efficiency in the delivery of services to users; and (ii) the preparation and implementation of health plans (identification, registration, health management, vaccination, surveillance, and certification) for small species (sheep, goat, pigs, poultry); a public-private partnership will be formed to that end, and will facilitate implementation of the health plans as well as the development and strengthening of small livestock chains.

- 1.30 **Program administration (US\$1.1 million).** Program administration resources will be used to fund the formation and operation of the Program Execution Unit (PEU), as well as for contingencies and reporting.
- 1.31 Activities from both components, in particular those focused on identifying, monitoring, assessing, and managing health risks, and the training sessions for technicians and producers, contribute to climate actions ([optional electronic link 5](#)).

C. Key results indicators

- 1.32 The program has a Results Matrix agreed upon with the borrower (Annex II) that contains the program impact, outcome, and output indicators, and the respective baselines and targets. In line with the program's objective, the principal impacts will be: (i) improved cattle offtake rate (proxy for improved productivity); and (ii) increased small species exports. The expected outcomes are: (i) improved effectiveness of the animal health services (SENACSA's score on specific aspects rated in the PVS, including risk management); (ii) reduced prevalence of brucellosis; and (iii) health coverage expanded to new categories, emphasizing small livestock.
- 1.33 The incorporation of the risk management approach and the implementation of the health surveillance unit represent important innovations that will improve the country's health capacity. In this context, SENACSA will enter into partnership agreements with institutions that are leaders on this issue, such as Mexico's SENASICA.
- 1.34 **Economic viability.** An ex ante economic analysis ([optional electronic link 2](#)) of the program has confirmed its expected viability. Based on a comparison of the costs and benefits expected over a 20-year period, the analysis estimates that the program will have a net present value (NPV) of US\$58.4 million and an internal rate of return (IRR) of 34.2%.
- 1.35 These estimates take into account the potential positive effects of the program in terms of fewer losses from possible disease outbreaks, improved access to markets, improved productivity, and SENACSA's more efficient service delivery. More specifically, the analysis includes the expected program benefits with regard to the following: (i) beef productivity, production, and exports, as a result of improved control of FMD, bovine brucellosis, and implementation of a traceability system; (ii) pork production and exports, as a result of improved control and prevention of a potential CSF outbreak; (iii) chicken productivity, production, and exports, as a result of improved control of avian influenza and Newcastle disease, and the expansion of SENACSA services to small species; and (iv) SENACSA's administrative management of services. It should be noted that other important benefits (like the improvements in public health derived from the improved control of zoonotic livestock diseases) were not considered in the analysis due to the difficulty of

accounting for them. Therefore, the program's NPV and IRR may be underestimated.

- 1.36 In terms of economic costs, the analysis took into account the program investment as well as the associated incremental costs, namely: (i) incremental costs incurred by SENACSA (on staff, transportation, control and monitoring, laboratories, traceability, and operation of the SISA); and (ii) additional sanitation costs incurred by the producers.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 The program is designed as a specific investment loan under the Flexible Financing Facility (document FN-655-1). It has a total cost of US\$15 million, fully financed by the Bank from Ordinary Capital resources.

Table 2. Program cost and financing (US\$ thousands)

Description	IDB	%
Component I. Health risk management	10,860	73
Component II. Expansion of services	3,074	20
Administration (audit, evaluation, and contingencies)	1,066	7
TOTAL	15,000	100

- 2.2 The program's disbursement period will be five years starting from the loan contract's effective date. Program funds will mostly be disbursed as advances of funds, but the direct payment and reimbursement of expenditures modalities may also be used.

Table 3. Disbursement schedule (in US\$)

	Year 1	Year 2	Year 3	Year 4	Year 5	Total
Total	1,191,162	6,898,277	4,901,727	1,054,167	954,667	15,000,000
%	8	46	33	7	6	100

B. Environmental and social risks

- 2.3 The program has been classified as a Category "B" operation according to the Bank's Environment and Safeguards Compliance Policy (sector policy OP-703); Disaster Risk Management Policy (sector policy OP-704); Access to Information Policy (operational policy OP-102); Gender Equality in Development (sector policy OP-761); Indigenous Peoples Policy (sector policy OP-765); and Involuntary Resettlement Policy (sector policy OP-710).
- 2.4 The Environmental and Social Analysis ([optional electronic link 8](#)) performed for the program indicates that the construction works for the service facilities (regional, zonal, and at border points) may have low to moderate localized, short-term environmental and social impacts, such as: elimination of the plant cover; increased noise levels; emission of gases, particulate matter, and dust; generation of waste; and increased accident rates. An environmental and social management plan (ESMP) was designed to prevent and mitigate these impacts. None of the projects analyzed will entail resettlement, expropriation of lands, or significant harm to

indigenous communities or territories. The ESMP also includes a plan for improving the environmental management of SENACSA's central laboratory, to be implemented prior to the equipment procurement bidding process. Although natural threats in the project areas include drought, forest fires, and heat waves, the associated risk is considered to be low. Nonetheless, the ESMP includes measures to prevent exacerbation of the risk from heat waves (limiting construction work hours, ensuring systems are in place for providing water at the work sites) and fires (ensuring fire prevention systems are in place at the construction areas and in the design of projects).

- 2.5 Meaningful consultations were held for the projects in Campo Aceval, Villa Hayes, Filadelfia, Puerto Casado, Puerto Falcón, and Ciudad del Este. Queries included requests for materials to be procured and labor contracted locally, and for horse tie-up sites to be planned. The consultations report was published on the Bank's website ([optional electronic link 9](#)). The program will strengthen SENACSA by financing the design and implementation of a socioenvironmental management system. To ensure compliance with the program's socioenvironmental commitments, the coordinating unit will include a socioenvironmental specialist.

C. Fiduciary risks

- 2.6 The following aspects of SENACSA's institutional capacity were evaluated during preparation of the operation: capacity for programming and organizing; capacity for executing the programmed and organized activities, including systems for managing staff, goods, services, and finances; and control capacity. According to the evaluation, in general the executing agency has technical competencies in fiduciary matters, and the consolidated result of the evaluated capacities reveals that it has a satisfactory degree of development. However, its lack of prior experience in executing projects with multilateral financing, principally in the area of procurement, is considered a weakness. Accordingly, the project has been assigned a medium level of risk. As an action to mitigate the risk of delays in project procurement processes, the area responsible for procurement requires strengthening with competent staff knowledgeable about the policies of multilateral organizations, as well as through specific workshops and courses on IDB procurement policies.

D. Other project risks

- 2.7 The following principal risks were identified, with their principal mitigation measures: (i) as high risk: delay in processing of the loan law; and (ii) as medium risk: (a) a lack of candidates interested in holding key positions in the PEU; (b) limited internet connectivity and access speed; (c) traceability software not developed due to the lack of a legal framework; and (d) execution times or priority affected by a change of government. The respective mitigation activities were defined and agreed upon, and are especially supported by SENACSA and the Rural Association of Paraguay, with leading public and private sector agents, to reinforce the policy-level work in the critical institutions identified.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 **Borrower and executing agency.** SENACSA will be the borrower and the executing agency. The guarantee by the Republic of Paraguay will be limited to SENACSA's financial obligations in the context of the loan (including repayment of

- principal, payment of interest, and other lending charges) and will not cover performance obligations or local counterpart contributions.⁴¹ Accordingly, the Board of Executive Directors is being asked to approve a partial waiver of the Bank's policy on Guarantees required from the borrower (document GP-104-2). The executing agency will be SENACSA, acting through the Project Management Unit (PMU) with the support of the Bureau of Administration and Finance (DIGEAF).
- 3.2 For program management, the executing agency will form a Program Execution Unit (PEU), which will report to the program management unit (PMU) and will be directly responsible for and have jurisdiction over the program's technical and operational issues. For execution and monitoring, the PEU will work in coordination with the DIGEAF for the fiduciary processes involved in program management.⁴² The PMU will play the strategic role of the program's technical and operational management, and will also be responsible for coordinating relations with other institutions and SENACSA units involved in program execution. The program's fiduciary procedures will be carried out through SENACSA's DIGEAF, which will determine how to coordinate with the PEU and the functions for which the PEU is responsible.
- 3.3 The key program execution positions established for the PEU are: (i) general coordinator; (ii) component I coordinator; (iii) component II coordinator; (iv) financial and administrative specialist; (v) procurement specialist; (vi) planning and monitoring specialist; and (vii) socioenvironmental specialist.
- 3.4 **The following will be special contractual conditions precedent to the first loan disbursement: (i) the PEU will have been formed according to the terms agreed upon with the Bank; and (ii) the borrower will have presented, to the Bank's satisfaction, evidence that the program Operating Regulations have entered into force.**⁴³ These conditions will be fulfilled before the start of program execution. The program Operating Regulations define the basic rules applicable during loan execution (for example, field work, regional coordination and oversight, data processing and analysis, in addition to the fiduciary considerations), as well as the PEU members' levels of responsibility.
- 3.5 **Procurement of works, goods, consulting and nonconsulting services.** Procurement financed in whole or in part with Bank resources will be conducted in line with the Policies for the Procurement of Works and Goods 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). Pursuant to document GN-2538-11 of October 2013, the use of the electronic reverse auction and competitive bidding subsystems of Paraguay's public sector procurement system (SCSP) will apply to the operation in the terms specified in the Fiduciary Agreements and Requirements (Annex III). The Procurement Plan contains a breakdown of the procurement

⁴¹ SENACSA is an autonomous, self-governing legal entity of the Republic of Paraguay subject to public law, which is able to finance its budget with resources from national and/or international loans. SENACSA has sufficient capacity to execute the obligations assumed with respect to the Bank. Therefore, the waiver will not affect the operation's risk profile.

⁴² This arrangement will be maintained while SENACSA requests that the Finance Ministry change the PMU's status to Financial Administration Subunit and Procurement Operations Subunit, so it will be able to manage the program independently from the DIGEAF.

⁴³ For the Operating Regulations to enter into force, they must be approved by resolution of SENACSA's highest authority.

processes to be implemented during execution, as well as the procedures the Bank will apply to review them.

- 3.6 The Fiduciary Agreements and Requirements (Annex III) establish the framework for the financial management, planning, supervision, and execution of procurement involved in program execution. No specific situations that require special arrangements or treatments are foreseen with regard to procurement.
- 3.7 **Disbursements.** Disbursements will be made as established in the financial management guidelines set forth in document OP-273-6. Preferably, advances will be made on a semiannual basis, once at least 80% of the advanced amount has been justified with the required presentation of the accountability forms and the financial planning spreadsheet.
- 3.8 **Audits.** During execution, the PEU will present, on an annual basis, the audited financial statements for the program, in the terms required by the Bank. An independent audit firm acceptable to the Bank will be selected for the program. The audited financial statements will be presented within 120 days following the close of the fiscal year, with the closing statements being presented within the 120 days following the date set for the last disbursement.

B. Summary of arrangements for monitoring results

- 3.9 The project has a detailed monitoring and evaluation plan that has been agreed upon with SENACSA, which, through the PEU, will be responsible for generating the information necessary to monitor the indicators contained in the Results Matrix, and for sharing it with the Bank.
- 3.10 **Monitoring.** During project execution, the PEU will prepare semiannual monitoring reports and send them to the Bank no later than 60 days following the end of each six-month period. These reports will provide a detailed account of the physical and financial execution of the project, as well as of the progress made on all Results Matrix indicators. The reports will also provide a detailed account of the problems encountered during project execution and the corrective measures taken, and will explain any deviation from the project management instruments (multiyear execution plan, annual work plan, procurement plan). No later than the final quarter of each year of project execution, the PEU will present, to the Bank's satisfaction, the AWP for the following year and the maintenance plan for the equipment purchased with loan proceeds, as well as compliance with the program's environmental and social requirements established in the ESMP. Bank staff will make periodic inspection visits during which they will meet with PEU staff to discuss the progress made on the activities set forth in the AWP, the degree of compliance with the indicators established in the Results Matrix, the AWP for the following year, and the Procurement Plan for the next 12 months.
- 3.11 Pursuant to the Monitoring and Evaluation Plan, the project will include a midterm and final evaluation. The midterm evaluation will be performed within 90 days following the date on which 50% of the loan proceeds are committed, or when the execution period is half over, whichever occurs first. The purpose of this evaluation will be to review the progress of all activities, analyze the causes of any potential deviations from the planned progress, and propose corrective measures. The final evaluation will be conducted within 90 days following the date on which 95% of loan proceeds have been disbursed. These reports will include: (i) financial execution by subcomponent and financing source; (ii) progress made with regard to the Results

Matrix outputs, outcomes, and impacts; (iii) compliance with the ESMP; (iv) summary of the financial statements, procurement, disbursements, and internal control; (v) review of implementation; and (vi) lessons learned. The midterm and final evaluations will both be performed by non-PEU external consultants.

- 3.12 **Impact evaluation.** As set forth in the Monitoring and Evaluation Plan ([required electronic link 3](#)), the program as a whole will be evaluated reflectively based on the indicators included in the Results Matrix. Given that the program is an intervention to strengthen a national institution, it is not feasible to construct a counterfactual analysis that would make it possible to compare the final value of the impact and outcome indicators with what would have occurred without the program being in place.
- 3.13 Nevertheless, the impact of the reproductive diseases program, financed in Component I, will be evaluated, since its characteristics make this possible. This program consists in the application of a treatment procedure to eliminate brucellosis in infected beef-production establishments. As a pilot program, it will only treat 300 establishments, to be identified through serological tests of the cows brought to cattle fairs.
- 3.14 The impact evaluation will follow an experimental methodology, using a treatment group of 300 establishments and a control group of the same size. Both groups will be selected randomly from among the infected establishments (of which there are around 3,000). Once selected, the establishments in both groups will be notified that they are infected. The control group establishments will be quarantined and will be given a document with recommendations for carrying out the treatment at the property. The treatment group establishments will be quarantined and the same treatment procedure (which was merely recommended to the control group establishments) will be performed there at no cost.
- 3.15 The treatment process will last five years and will fundamentally consist in vaccinating the entire herd and in appropriately managing the infected animals, by separating them out. As part of the treatment process, and to monitor brucellosis prevalence and incidence rates, at each establishment a representative sample of animals will be taken. These animals will be identified with tags and will be tested throughout the treatment process. The information obtained from the samples at each establishment, together with the administrative information from the reproductive diseases program and a series of surveys performed at the beginning, middle, and end of the program, will be used to perform a difference in differences analysis of the treatment and control groups, before and after the reproductive diseases program has been carried out.
- 3.16 The evaluation is important because it will make it possible to rigorously measure the effectiveness of the treatment program implemented by SENACSA versus the effectiveness of merely providing the producers with information on how to perform the procedure. There appears to be some evidence (from Chile and Uruguay) that the intervention of health authorities in implementing this type of treatment process is highly effective, leading to a notable reduction of the disease's incidence rate in the short term. However, to date there is no rigorous empirical evidence showing that it does so, above all compared to the possibility of voluntary implementation for which the producers themselves are responsible.

Development Effectiveness Matrix		
Summary		
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Productivity and Innovation -Climate Change and Environmental Sustainability -Institutional Capacity and the Rule of Law	
Country Development Results Indicators	-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 (#)* -Beneficiaries of IDBG projects that contribute to at least one key dimension of food security (#)*	
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2769	Increase the supply of agricultural public goods and services
Country Program Results Matrix	GN-2915	The intervention is included in the 2018 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		8.0
3.1 Program Diagnosis		1.8
3.2 Proposed Interventions or Solutions		4.0
3.3 Results Matrix Quality		2.2
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		1.0
4.4 Sensitivity Analysis		2.0
4.5 Consistency with results matrix		0.0
5. Monitoring and Evaluation		8.0
5.1 Monitoring Mechanisms		2.5
5.2 Evaluation Plan		5.5
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		B
IV. IDB's Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, Accounting and Reporting. Procurement: nformation System, parison.
Non-Fiduciary	Yes	Strategic Planning National System, Monitoring and Evaluation National System, Environmental Assessment National System.
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	Yes	

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

The objective of the program is to contribute to improving the productivity of the livestock sector. The specific objectives are: (i) to improve the effectiveness of animal health services with a risk management approach; and (ii) expand the coverage of veterinary services, including minor species. The relative low productivity of the livestock sector is well articulated and supported, as well as its relationship with livestock health. However, little empirical evidence is presented about current weaknesses in managing health risks.

The results matrix exhibits vertical logic and presents medium-term impact indicators associated with productivity. Not all indicators classified as outcome indicators are outcome indicators, or have well-established baselines and goals.

The ex-ante economic analysis captures the benefits associated with the reduction of losses, improvements in access to markets and prices, and administrative efficiency. The key assumptions are mostly clearly presented and well supported. The sensitivity analysis includes the key assumptions. Although the economic analysis incorporates improvements in administrative efficiency, these indicators are not part of the results matrix.

RESULTS MATRIX

Project objective:	The program's general objective is to help improve the productivity of the livestock sector. The specific objectives are to: (i) improve the effectiveness of animal health services with a risk management approach; and (ii) expand the coverage of veterinary services, including for smaller species.
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EXPECTED IMPACT

Indicators	Unit of measurement	Baseline	Baseline year	Final target	Means of verification	Comments
IMPACT: Increase in the beef cattle offtake rate and the volume of pork and poultry meat exports						
Slaughter rate ¹ /Cattle population	Percentage	13.8%	2014-2016 average	18%	SENACSA report	3-year average
Number of export markets	Number of countries for which meat exports are authorized	13	2014-2016 average	16	SENACSA report	Export markets with SENACSA health agreements
Volume of pork and poultry meat, offal, and giblets exports	Tons	5,754	2016	7,500	Volume of exports reported by SENACSA	This indicator is used as a proxy for production due to the lack of statistics. Annual growth estimated at 5%

EXPECTED OUTCOMES

Indicators	Unit of measurement	Baseline	Baseline year	Final target ¹	Means of verification	Comments ²
OUTCOME 1: More effective risk management and animal health services						
Response time to notifications of suspected vesicular diseases	Hours	4	2017	3	SENACSA report based on specific records	Refers to the response time between the notification of and attention to the suspected case
Rating in Chapter II of the PVS (OIE)	Rating	3 ²	2017	3.6	OIE PVS report	Chapter II is "Technical Authority and Capability"
PVS critical competencies rating (OIE)	Rating	3	2017	3.6	OIE PVS report	Average rating obtained for critical competencies II.1 (laboratories), II.5 (epidemiological surveillance and early detection) and II.6 (emergency response)

¹ Slaughter in meat packing facilities with veterinary inspection. This is a more reliable proxy for the offtake rate that refers to the population addressed by the project.

² To be confirmed. In November 2017 an OIE mission performed the fieldwork for a new evaluation that will serve as a baseline for the project.

OUTCOME 2: Reduced prevalence of brucellosis						
Reduced prevalence of bovine brucellosis	%	6%	2017	4.5%	SENACSA report	Number of positive reactions divided by total number of tested animals
OUTCOME 3: Health coverage expanded to new categories, emphasizing small livestock						
Health plans in operation	Number of plans	2	2017	4	SENACSA report	Implies the existence of a registry of establishments, owners, and the movements of poultry, sheep, goat, and pigs, used as a basis for the health actions defined by SENACSA.

OUTPUTS

Outputs	Unit of measurement	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Final target ¹	Means of verification	Comments ²
Component I: Health risk management											
SISA's functions expanded and SISA integrated into SIGOR	Score Not available =0 Available=1	0	2017			1			1	SENACSA report	
Health surveillance unit implemented	Command unit	0	2017			1			1	SENACSA report	
Entry point controls operating in accordance with international standards	Score Not available =0 Available=1	0	2017				1		1	SENACSA report and OIE observations contained in the PVS. CVP project reports (ATN/OC-16011-RG)	
Simulations of foot-and-mouth disease outbreaks performed	Number of simulations	0	2016		1	1		1	3	Foot-and-mouth disease outbreak simulation reports	
Samples processed by laboratory networks	Number of samples (thousands)	120	2016			10	80	30	240	Report based on laboratory management system	In addition to the number of samples, the following should be verified: (a) SENACSA laboratory network has been integrated with equipped private laboratories (10 laboratories in total) and (b) comprehensive laboratory management software is operational
New diagnostic techniques implemented	Number of techniques	0					2	2	4		

Outputs	Unit of measurement	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Final target ¹	Means of verification	Comments ²
SENACSA facilities in the field built or renovated	Number of facilities	0	2017			7	4	6	17	SENACSA report based on inspection of works	
Computer system implemented for managing individual traceability	Computer application	0	0				1		1	SENACSA report	
Properties treated in the brucellosis eradication program	Number of properties	0	2017		100	200			300	SENACSA report	In addition to the properties in the brucellosis eradication program, the disease protocol should be checked.
Strategic staff members trained for SENACSA's new management model	Number of persons trained	0	2017		50	100	100		250	SENACSA report specifying implementation of the new management model and the number of persons trained for it	
Component II: Expansion of services											
Records of sheep and goat stock counted and control of movements functioning	Records system	0	2017					2	2	SIGOR-based SENACSA reports	
Health plans that include epidemiological surveillance implemented for sheep and goats	Health plans	0	2017		1	1			2	SENACSA reports on epidemiological surveillance results for the two species	
Poultry and pig farms under surveillance and certification programs	Number of farms	0	2017			5	10	10	25	SENACSA report including updated self-declaration of status as free from Newcastle disease, avian influenza, and CSF	
Small livestock PPP operating	Not operating=0 Operating=1	0	2017	1					1	Acting coordinator and documentation of periodic meetings of the PPP's governing body	

Outputs		Unit of measurement	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Final target ¹	Means of verification	Comments ²
Technicians and producers trained on sheep, goat, and pig health		Number of persons trained	Government technicians. Private technicians. Producers	0		30 30	30 30 400	30 30 600	600	90 90 1,600	Training reports prepared by the PPP	The training sessions include materials for mass distribution to participants
Improved efficiency in the provision of services to users	Online procedures and payments	% of procedures	20	2017			20	20	20	80	SENACSA report with list of procedures at the start and end of the program	Volume of online procedures/total volume of procedures (in person + electronic)
Improved efficiency in the provision of services to users	New modules in SIGOR	Number of modules	12	2017		1	1	1	1	16	Report on incorporated modules Initial baseline report with the current number of modules (2017) and a description thereof	

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country: Paraguay
Project name: Project to Improve and Expand Animal Health Services in Paraguay
Project number: PR-L1148
Executing agency: National Service for Animal Health and Quality (SENACSA)
Prepared by: Fernando Glasman, Bruno Candia, and Jorge Luis Gonzalez (fiduciary specialists)

I. EXECUTIVE SUMMARY

- 1.1 The institutional assessment for the project's fiduciary management was based on: (i) the fiduciary context of the country; (ii) the findings of the fiduciary risk evaluation and project risk management workshop; and (iii) the September 2017 report on findings using the Institutional Capacity Assessment System on the executing agency SENACSA. The fiduciary agreements applicable to project execution have been prepared as a result of this assessment.

II. THE COUNTRY'S FIDUCIARY CONTEXT

- 2.1 In general terms, the country systems for financial management have a medium level of development. Nevertheless, these systems need to be supplemented for the execution of Bank-financed projects. Specific financial reports are prepared through auxiliary accounting systems. Financial control tools such as the Integrated Financial Administration System (SIAF), the Integrated Accounting Subsystem (SICO), and other subsystems allow the executing agency to manage payment transfers to vendors under acceptable conditions through the Central Bank of Paraguay. The integration of these tools will allow audited financial statements for a program or project to be prepared in the SIAF in the future. Until then, parallel systems are being used. External control is currently performed through private audit firms.
- 2.2 In terms of the country's public sector procurement system (SCSP), Bank operations make full use of the public procurement information system, as well as the country's electronic reverse auction and competitive bidding subsystems, for the amounts and categories established in the agreements for the use thereof signed between Paraguay and the Bank on 17 June 2014.

III. THE EXECUTING AGENCY'S FIDUCIARY CONTEXT

- 3.1 The executing agency will be SENACSA, acting through the Project Management Unit (PMU) with the support of the Bureau of Administration and Finance (DIGEAF). The PMU reports to the Office of the President of the institution, and will provide general coordination of program execution, programming, and monitoring, ensuring that the conditions and targets set in the loan contract are met; the PMU will be the main contact between the IDB and the borrower during execution. In

- turn, the DIGEAF will handle administrative and financial activities, as well as procurement and contracting.
- 3.2 The following aspects of SENACSA's institutional capacity were assessed during the preparation of the operation: capacity for programming and organizing; capacity for executing the programmed and organized activities, including systems for managing staff, goods, services, and finances; and control capacity. According to the assessment, SENACSA has overall technical competencies in fiduciary matters. However, its lack of prior experience in executing projects with multilateral financing, principally in the area of procurement, is considered a weakness. Consequently, although the consolidated result for the SENACSA capacities assessed using the ICAS shows a satisfactory level of development, the program has been assigned a medium level of risk.

IV. FIDUCIARY RISK EVALUATION AND MITIGATION ACTIONS

- 4.1 Based on the evaluations of SENACSA, opportunities for improvement should focus on:
- a. Implementing a financial and accounting information system that makes it possible to record the transactions and issue information required by the Ministry of Finance, SENACSA, and the Bank;
 - b. Designing and developing the profiles of the PEU positions;
 - c. Strengthening accounting and internal control in Bank financial management policies.
- 4.2 **Procurement management.** In the September 2017 ICAS report, SENACSA was considered to have a satisfactory overall level of development. However, the specific assessment of the goods and services administration system yielded medium levels of development and risk. Accordingly, as mitigation actions, the area responsible for procurement needs to be strengthened with competent staff knowledgeable about the policies of multilateral organizations, as well as through specific workshops and courses on IDB procurement policies.
- 4.3 **Financial management.** The internal control unit lacks formal procedures for monitoring project-related activities. Therefore, SENACSA will draw up these procedures in a fiduciary manual for the PEU, contained in the Operating Regulations and to be approved by the competent authorities.

V. CONSIDERATIONS FOR THE SPECIAL PROVISIONS OF THE CONTRACT

- 5.1 The following agreements and requirements should be considered in the special provisions: for the purposes of Article 4.10 of the General Conditions, the parties agree that the exchange rate to be applied will be the one indicated in section (b)(ii) of that article. The agreed-upon exchange rate will be the exchange rate on the effective date on which the borrower, the executing agency, or any other person or legal entity given the power to incur expenses, makes the respective payments to the contractor, vendor, or beneficiary.

VI. FIDUCIARY AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

- 6.1 The applicable procurement policies for this loan are documents GN-2349-9 and GN-2350-9. The Bank's Board of Executive Directors also approved (in document GN-2538-11) the use of the electronic reverse auction and competitive bidding subsystems of Paraguay's public sector procurement system (Law 2051/03). The use of other country systems accepted subsequent to approval of the project will be implemented automatically, and so stated in the Procurement Plan.

A. Procurement execution

- 6.2 **Procurement of works, goods, and nonconsulting services.** Contracts for works, goods, and nonconsulting services¹ subject to international competitive bidding (ICB) will be executed using the standard bidding documents issued by the Bank. In turn, the bidding procedures subject to national competitive bidding (NCB) will be executed using national competitive bidding documents agreed upon with the Bank. The project's sector specialist will be responsible for reviewing the technical specifications of procurement items during the preparation of selection processes. Initially, there are no plans for selection processes involving single-source selection.
- 6.3 **Selection and contracting of consultants.** Contracts for consulting services arising under the project will be executed using the standard request for proposals issued by or agreed upon with the Bank. The project's sector specialist is responsible for reviewing the terms of reference for contracting consulting services.
- a. **Selection of individual consultants.** Pursuant to procurement policies contained in document GN-2350-9.
 - b. **Training.** Procurement workshops will be held.
 - c. **Use of country system.** Pursuant to document GN-2538-11 of October 2013, the use of the SCSP electronic reverse auction and competitive bidding subsystems in Bank-financed operations will apply:
 - (i) To all contracts for goods and nonconsulting services subject to the use of the electronic reverse auction procedure under the SCSP and involving amounts below the Bank's established threshold for the shopping method for off-the-shelf goods (for reference, US\$250,000);
 - (ii) To all contracts for works involving amounts below the Bank's established threshold for use of the shopping method for complex works (for reference, US\$250,000), and to contracts for goods and nonconsulting services up to the amount established by the Bank for the use of the shopping method for complex goods and services (for reference, US\$50,000);
 - (iii) Contracts for amounts greater than or equal to the aforementioned amounts will be governed by Bank policies (document GN-2349-9).
- 6.4 Section 1 of the Bank policies (document GN-2349-9) will continue to be applicable to all executed contracts, regardless of amount or procurement method. Any system or subsystem approved subsequently will be applicable to this operation.

¹ Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-9) paragraph 1.1: Nonconsulting services are treated as goods.

The operation's Procurement Plan and updates thereto will indicate which contracts are to be executed through the approved country systems.²

6.5 **Advance procurement/retroactive financing.** None foreseen for this operation.

6.6 **Domestic preference.** None foreseen for this operation.

Table 1. Thresholds for ICB and international shortlist (US\$)

Method	ICB works	ICB goods and nonconsulting services	International shortlist in consulting services
Threshold	3,000,000	250,000	200,000

Table 2. Main procurement items

Activity	Method	Estimated date	Estimated amount (US\$)
Works			
Contracting of construction firm for the construction of works for SENACSA	ICB	Year 3	3,380,000
Goods			
Procurement of equipment for DIGELAB. 57 items	ICB	Year 1	2,307,500
Procurement of equipment	ICB	Year 2	330,000
Mobile inspections	ICB	Year 2	300,000
Nonconsulting services			
Contracting of treatment services for infected establishments	ICB	Year 2	540,000
Contracting of logistical support services for training sessions, workshops, and seminars	ICB	Year 1	285,000
Consulting firms			
Development of software for traceability	QCBS	Year 1	1,830,000
Design and development of new SIGOR features, systems security plan, and electronic signature functionality	QCBS	Year 1	705,000

Table 3. Total amounts by category

Categories	Total amounts (US\$)
Works	3,380,500
Goods	3,862,500
Nonconsulting services	895,000
Consulting firms	4,535,500
Individual consultants	1,256,500
Training sessions	670,000
Total, Procurement Plan	14,600,000

6.7 **Procurement supervision.** All procurement processes governed by procurement policy documents GN-2349-9 and GN-2350-9 will be subject to ex ante review by the Bank. Supervision of all procurement processes governed by the SCSP

² If another system or subsystem is approved by the Bank, it will be applicable to the operation, in accordance with the loan contract.

electronic reverse auction and competitive bidding subsystems (document GN-2538-11) will be conducted through the country system.³

- 6.8 **Special provisions.** No special provisions are anticipated beyond those specified in paragraph 5.1.
- 6.9 **Records and files.** The systems, formats, and procedures available to or agreed upon with the Bank should be used for the preparation and filing of project reports.

VII. FIDUCIARY AGREEMENTS AND REQUIREMENTS FOR FINANCIAL EXECUTION

A. Financial Management

7.1 Programming and budget

- a. The PEU, reporting to the Office of the President of SENACSA and in coordination with the DIGEAF, will centralize the coordination of execution, supported by other departments and units of SENACSA, as necessary.
- b. SENACSA will be responsible for budget programming, administration, and execution, under the zero-based budget system.

7.2 Accounting and information systems.

The country uses modified cash basis accounting; however, cash basis accounting is used for the accountability process of IDB-financed projects.

- a. **Information systems.** The PEU will have access to the SIAF through the DIGEAF. The country systems do not issue the reports necessary for the Bank. These reports are prepared using different systems, which entails additional work for the PEU.
- b. **Disbursements and cash flow.** Program disbursements will typically be made through advances of funds, which must be corroborated through the monthly submission of one detailed financial plan for up to six months, and one for a longer period, which can be used to determine the program's actual needs based on the multiyear execution plan, annual work plan, and procurement plan. The second and subsequent disbursements will be subject to justification of at least 80% of the previous advance. If requested, disbursements may also be made as direct vendor payments or reimbursements for payments made.
- c. **Exchange rate.** The exchange rate agreed upon with the executing agency for accountability will be the monetization rate.
- d. **Internal control and internal audit.** The ICAS establishes that there is an advanced level of internal control. However, the SENACSA internal audit office does not include Bank-financed projects in its audit plan.
- e. **External control and reports.** The executing agency will deliver annual program audit reports prepared by an independent audit firm accepted by the Bank, in accordance with the terms of reference previously approved by the Bank. The project's financial statements include a cash flow statement, statement of accrued investments, notes to these financial statements, and the statement from the project management team. The audit report will

³ Depending on the scope of the use of the system, supervision may be supplemented by project audits. If so, it should be mentioned in this Annex.

include an evaluation of the internal control system. The project will require the selection of an eligible independent audit firm. External audits will be covered by the loan proceeds, estimated at US\$200,000 over the planned five years of execution of the loan.

- f. **Financial supervision plan.** Financial supervision may be adjusted based on project execution and audit reports.

Table 4. Financial supervision plan

Nature/scope	Frequency
Ex post review of disbursements	1 per year
Financial audit and delivery of financial statements	Annual
Review of disbursement requests and attached reports	2/3 per year
Inspection visit/analysis of internal controls and control environment at the executing agency	Annual

- 7.3 **Execution arrangements.** As described in Section III.A. of the loan proposal.
- 7.4 Other financial management agreements and requirements, as set forth in paragraph 3.11 of the loan proposal.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/18

Paraguay. Loan ____/OC-PR to Servicio Nacional de Calidad y Salud Animal (SENACSA)
Project to Improve and Expand Animal Health Services in Paraguay

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 Servicio Nacional de Calidad y Salud Animal (SENACSA), as Borrower, and with the Republic of Paraguay, as Guarantor, for the purpose of granting the former a financing to cooperate in the execution of the Project to Improve and Expand Animal Health Services in Paraguay. Such financing will be for the amount of up to US\$15,000,000 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 ____ 2018)

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