

PARAGUAY



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NDC Private Sector Engagement Project

Engaging private sector in NDC implementation - Assessment of private sector investment potential in the agriculture sector

EXECUTIVE SUMMARY

ABOUT UNDP

UNDP's work on climate change spans more than 140 countries and USD \$3.7 billion in investments in climate change adaptation and mitigation measures since 2008. With the goal to foster ambitious progress towards resilient, zero-carbon development, UNDP has also supported the implementation of the Paris Agreement on Climate Change by working with countries on achieving their climate commitments or Nationally Determined Contributions (NDCs).

THE UNDP NDC SUPPORT PROGRAMME

The NDC Support Programme provides technical support for countries to pursue a “whole-of-society”, integrated approach that strengthens national systems, facilitates climate action and increases access to finance for transformative sustainable development. The programme helps countries address these financial barriers by deploying a structured approach for scaling up sectoral investments and putting in place a transparent, enabling investment environment. Beyond direct country support, UNDP facilitates exchanges and learning opportunities on NDC implementation at the global and regional level by capitalizing on our close collaboration with the UNFCCC and other strategic partners. The Programme, which works in contribution to the NDC Partnership, is generously supported by the German Federal Minister for the Environment, Nature Conservation, and Nuclear Safety (BMU), the German Federal Ministry of Economic Cooperation and Development (BMZ), the European Union and the Government of Spain.

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EXECUTIVE SUMMARY

Transforming Nationally Determined Contributions (NDCs) into tangible actions that lead to long-term zero-carbon and climate-resilient development requires financing. Access to finance is fundamental to realize the objectives set by the NDCs. However, countries continue to face challenges in securing the financial resources needed to achieve their NDC targets. The private sector is expected to provide a significant share of the financing required.

To increase private investment in NDC targets, it is important that the private sector stakeholders engaged in markets and industries understand the business environment, the current market and the investment potential in specific sectors.

This report estimates the private sector investment potential for delivering NDC sectoral targets for the agriculture sector in Paraguay through assessments of the NDC targets, the enabling environment, the current market and Paraguay's investment potential. Its findings will allow for mapping private sector actors in the agriculture sector, one of the country's NDC priority sectors.

GREENHOUSE GAS EMISSIONS AND CLIMATE TARGETS

Paraguay is a relatively low emitter of greenhouse gases (GHG), with total emissions estimated at 51,293.28 gigagrams of carbon dioxide equivalent (Gg CO₂e) in 2015. This represents 0.09 percent of global GHG emissions. However, emissions from specific sectors, such as agriculture, have been increasing since 1990. The agriculture sector is the most significant source of greenhouse gas emissions in Paraguay. In 2015, it generated 52.90 percent of total national emissions, followed by LULUCF, with 30.72 percent, and the energy sector, with 12.03 percent. Emissions from the LULUCF sector are due primarily to emissions and removals from croplands (arable and tillage land, rice fields, and agro-forestry systems). These emissions, combined with those from the agriculture sector, show the importance and potential of the agriculture sector for climate change mitigation in Paraguay.

Paraguay's agriculture sector represents 18 percent of the national economy and, after adding its contribution to other sectors – such as agroindustry - more than 41 percent. In 2018, the agriculture and livestock sectors represented more than 51 percent of the country's exports, with agricultural products representing the largest share, followed by meat products and processed oils (composed largely of soybean oil). Most agriculture production is concentrated in three crops - soy, maize and wheat. Between 2009/2010 and 2011/2012 soy occupied, on average, 56 percent of planted area with seasonal crops. In 2017, Paraguay produced more than 10 million tons of soybeans. Beef production in Paraguay has increased significantly in recent years due to substantial improvements in animal genetics, which have allowed entry into new markets and the sale of beef export products at better prices. Given the importance of the soy and cattle value chains in Paraguay's agriculture sector, the analysis focuses on them.

In its NDC, Paraguay describes its objectives in terms of climate change mitigation, aiming to reduce GHG emissions by 20 percent compared to 2030 projections. The country has committed to reduce half of its emissions unilaterally, while the other half is conditional on international support. The agriculture sector should therefore aim to reduce 10 to 20 percent of its emissions by 2030. The NDC does not identify specific mitigation actions for the agriculture sector. However, related documents, such as Paraguay's National Plan for Climate Change Mitigation and Action Plan and Paraguay's second biennial update report (BUR) to the UNFCCC in 2018, highlight mitigation strategies for this sector.

In the context of this report, the analysis will focus on actions that can catalyse private sector investment in the soybean and cattle value chains. The table below presents the policy actions in related to these value chains identified to achieve the country's mitigation goals.

Mitigation actions relevant to the soybean and cattle value chains based on Paraguay's sectoral objectives

| VALUE CHAINS | ACTIONS BASED ON THE BUR AND NATIONAL CLIMATE CHANGE MITIGATION PLAN AND PROGRAMMES OF ACTION |
|---------------------|-----------------------------------------------------------------------------------------------|
| SOYBEAN VALUE CHAIN | Manage crop nutrients |
| | Manage soils (reduced tillage, waste retention, use of organic fertilizers) |
| | Use tractors and mobile equipment efficiently, manage irrigation and water efficiently |
| | Introduce technologies with mitigation co-benefits |
| | Encourage the sustainable modernization of farms |
| | Develop financial incentives for producers based on the sustainable practices implemented |
| CATTLE VALUE CHAIN | Improve livestock diet |
| | Increase productivity per unit of surface area |
| | Develop financial incentives for producers based on the sustainable practices implemented |

ENABLING ENVIRONMENT

The existence of an enabling policy environment, including related legislation, laws, programs and plans, is crucial to achieve the sustainable development targets in any country. Paraguay's overall development policy is governed by a long-term vision to 2030 under which sectoral policies are developed.

CLIMATE CHANGE-RELATED POLICIES

Paraguay has delivered its National (2001), Second (2011) and Third (2016) National Communications, Intended Nationally Determined Contributions (INDC) (2015), and Second BUR (2018) to the UNFCCC. The country has also developed national climate change-related policies, such as the 2016 National Climate Change Policy, which recognizes the importance of climate change mitigation and adaptation actions for Paraguay. The policy mentions food security and the agriculture sector as priority sectors for Paraguay and also explicitly mentions the importance of mobilizing private sector investments for climate action.

AGRICULTURE-RELATED POLICIES

Paraguay has developed a number of agriculture-related policies that focus directly on the private sector, as their target beneficiaries are crop or livestock producers. The Government of Paraguay's first National Development Plan (PND 2030) recognizes the importance of the agriculture sector in Paraguay, as well as its dependence on international markets. It also recognizes that the sector remains fragile, given the impact of climate change. The PND provides general guidelines for the development of both smallholder agriculture and agroindustry in the country, including developing financing lines for SMEs and strengthening productivity and competitiveness.

The Agrarian Strategic Framework 2014–2018 provides guidelines for improving the competitiveness of national agricultural products, food security, and strengthening family farm management and measures to counter the impacts of climate change. Some of the strategies identified include introducing technologies to support agricultural competitiveness and actions related to managing the risks associated with climate variability and climate change.

The livestock sustainable development policy and national plan to develop bovine meat value chains focus on strategies that support the development of livestock value chains in Paraguay. They aim at improving the competitiveness of small, medium and large producers in the livestock sector. Some are linked closely to climate change mitigation and adaptation, such as improving fodder.

PRIVATE SECTOR ENGAGEMENT AND INVESTMENT-RELATED POLICIES

The policy framework supporting private sector development in Paraguay is limited. The country adopted a Public-Private Partnership (PPP) law in 2013 and regulations were issued in 2014. Although PPPs are traditionally leveraged for infrastructure, they can also be used in agriculture to provide information and advisory services to producers, particularly in connection with technologies such as remote sensing.

OVERALL BUSINESS ENVIRONMENT

As for most countries since the COVID-19 pandemic began, Paraguay's macroeconomic situation has worsened in 2020. Despite strong performance in the past 15 years, with 4.5 percent growth per year on average (2004-2017), real GDP is forecast to contract by 3.1 percent in 2020. Compared to its neighbours, Paraguay has been more successful in containing the economic impact of the pandemic and the agriculture sector is less affected than others. Paraguay's prudent fiscal policy stance and its current expansionary monetary policy stance should help mitigate the economic slowdown and maintain domestic demand as the economy reopens slowly.

Agricultural production should remain strong in 2020, despite logistical disruptions. Demand for food remains stable. Paraguay received a \$300 million loan support package from the World Bank to foster a more resilient economy and boost rural productivity, including \$100 million directly aimed at financing productive agricultural activities. GDP should start to recover and increase in 2021 at an expected average rate of 3.3 percent until 2024, assuming that the pandemic is under control worldwide.

The ease of doing business and the enabling environment for cross-border and foreign investments are also important factors in investment decisions. Challenges to starting a business, accessing credit and protecting minority investors remain, while the country performs well in enforcing contracts. Overall, the regulatory environment for foreign investment in Paraguay is supportive and does not discriminate against foreign-owned businesses. There are no restrictions on foreign investment in specific sectors and no capital requirements to invest in the country. Paraguay guarantees free exchange of currency and provides incentives for foreign investors.

The overall enabling environment for private investment in the agriculture sector in Paraguay is fairly strong. Despite an economic outlook disrupted by the COVID-19 pandemic, the country remains fairly stable in terms of its macroeconomic outlook, with monetary and fiscal policies that support growth in the medium and long term. Compared to neighbouring countries, Paraguay has been more successful in containing the economic impact of the pandemic and the agriculture sector is less affected than others. Agricultural production should remain strong in 2020, despite logistical disruptions.

CHALLENGES, RECOMMENDATIONS AND POTENTIAL FOR PRIVATE SECTOR INVESTMENTS IN THE AGRICULTURE SECTOR

Multiple barriers and challenges constrain Paraguay's agriculture sector, preventing investment from scaling up in the country. The report focuses on the soybean and cattle value chains.

SOYBEANS

The soybean production and processing ecosystem in Paraguay can be divided among input providers, producers, middlemen, transformative industries and exporters. The soybean production value chain is structured around producers, who are the main drivers for the adoption of low-carbon technologies. Production in Paraguay is defined by the area of land available to farmers, including smallholders and larger producers.

Among larger producers, significant stakeholders often participate in more than one stage of the value chain, reflecting a high level of vertical integration. Some exporters and processing industries may also be involved in transportation, aggregation and production. Because of their size, smallholders must rely on cooperatives for multiple functions. Commercial producers usually have access to their own planting and harvesting equipment. Commercial grain producers typically rotate their crops, planting soybeans, maize, wheat and sunflowers. Few smallholders own their own equipment and, instead, rent from input providers. Because of the small scale of their production, family producers must rely on cooperatives and local intermediaries in order to participate in the export value chain.

The following gaps and challenges represent the primary constraints to the development of the soybean value chains in the context of climate change mitigation.

NITROUS OXIDE (N₂O) EMISSIONS FROM SOYBEAN PRODUCTION

Multiple factors have an impact on N₂O emissions and reducing them is a complex undertaking. Those factors include fertilizers applied to soils, non-adapted irrigation techniques and soil composition. Recent research suggests that emissions can be reduced significantly through better management of fertilizer use. Precision agriculture techniques, such as variable rate technologies and the optimization of agricultural nitrogen efficiency, may help reduce N₂O emissions by 19 percent to 40 percent. To minimize the impact of applying nitrogen to the soils and mitigate N₂O emissions, inputs must be applied precisely.

RECOMMENDATION AND POINT OF ENTRY 1

Support to precision agriculture

Precision agriculture is a data-based management practice that aims to apply the appropriate amounts of agricultural inputs, such as water, pesticides and fertilizers, to a specific area. Precision agriculture thus combines technologies that make it possible to apply precise amounts of inputs using area/site/lot-specific data analysis. For nutrient management, precision agriculture will typically combine variable rate application (VRA) controllers, which enable producers to apply different amounts of inputs, with guidance technologies, such as GPS and sensor kits, to map and analyse soil content.

POOR ACCESS TO MECHANIZATION AND TECHNOLOGIES FOR SMALLHOLDERS

Family agriculture is characterized by poor access to mechanization, new technologies and innovation. Ultimately, this leads to soil degradation. Farmers cannot manage inputs efficiently and avoid fertility losses. However, commercial producers in industrialized countries have been the main adopters of precision agriculture approaches. Adoption by smallholders is low because of capital requirements and the lack of services that target them. Farmers' access to precision agriculture mapping-related services should be improved. Smallholder farmers could benefit from improved management of nitrogen application, including reducing fertilizer costs. For example, domestic companies could extend their services to smallholders or foreign companies and start-ups could bring their services to Paraguay.

RECOMMENDATION AND POINT OF ENTRY 2

Tailoring precision agriculture to smallholders

Precision agriculture, especially the variable use of fertilizers, usually relies on the intensive use of technology, machinery and equipment. However, tailored solutions for improving fertilizer application could also be provided to smallholders. For example, very small landowners could apply fertilizer manually, using micro-dosing. Larger smallholders, who may already use some equipment to apply fertilizer, could rely on remote precision agriculture services offered by third-party providers.

POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN THE SOYBEAN VALUE CHAIN

The analysis concludes that the key reduction action in the soybean value chain is the introduction of precision agriculture technologies for nutrient management. Private investment potential is estimated at **US\$690.45 million**, with annual investments in services totaling approximately \$200,000.

Commercial producers cover most of the soybean production area. They have a greater incentive to introduce precision fertilizer application technologies than smallholders as they can realize cost savings on large production areas. Commercial producers also have a greater incentive to introduce automated or auto-steer technologies, as those would provide additional cost savings while also supporting the variable fertilizer application. For the purpose of this report, it is assumed that 50 percent of Paraguay's commercial producers will introduce VRA technologies for soybeans, representing a potential investment of \$501,203,375.

Although the areas covered by commercial producers exceed those covered by family producers, the latter are also responsible for a significant share of production in Paraguay. However, this report assumes that only family producers with the largest areas would be interested in introducing precision agriculture. This report assumes that the top 20

percent of family producers in terms of production area would be able to invest in equipment and that the remaining family producers would rely mainly on third-party services for data analysis. This report also assumes that auto-steered technologies are not attractive to all family producers. This represents a potential investment of \$189,233,100, plus annual investment of approximately \$200,000 in services.

CATTLE

Mitigation actions in Paraguay's agriculture sector include improving livestock diet, increasing cattle productivity and providing greater financial support to producers so that enteric fermentation-based emissions can be reduced.

Paraguay's cattle ecosystem can be divided among input providers, producers, processing industries and exporters. The cattle supply chain can be categorized based on the volume of production and the quality standards followed throughout production. Small producers are usually integrated in small-scale, informal value chains, in which slaughterhouses usually target local markets and supermarkets and are therefore less likely to comply with sanitary norms. Larger producers usually target the export market. The value chain for these markets is structured to minimize costs, while at the same time ensuring compliance with sanitary and quality standards.

Smallholders are characterized by low productivity and a lack of integration in the overall value chain. Rather than producing cattle for meat production, smallholders usually use cattle for dairy production and sell the cattle for meat when they are no longer productive. Meat is thus destined for the local market. Larger producers are characterized by the larger number of cattle available and their ability to comply with sanitary requirements. They are better integrated into global value chains and usually supply modern slaughterhouses. Most still use extensive production and low-productivity, grazing-based systems, while some farms have begun using feedlots and more modern techniques to improve efficiency.

The productivity of the value chain, which is based on its feed, is an important factor in enteric emissions from the cattle sector. Ruminant production systems with low productivity lose more energy per unit of animal product than those with high productivity. Although more effective farming systems have higher methane emissions, they have much lower emission intensity. Improving feed is thus of significant importance, even if it requires additional investment. Paraguay cattle are usually been fed on pasture forage, which is available in quantity. Although feeding cattle on grass is common and profitable, compared with other diets, it results in low productivity and increased enteric fermentation. If grassland management techniques, improved pasture species and forage are not introduced, grazing will remain a low-productivity system that generates significant methane emissions.

RECOMMENDATION AND POINT OF ENTRY 3

Improving cattle production diets

Feed is an important factor in enteric fermentation as it relates directly to the efficiency of animal production. Thus, the less feed used to raise animals of a weight and quality desired for slaughter, the less enteric fermentation is produced.

In mixed dairy cattle systems in East Africa, the potential GHG reduction resulting from improved feed quality is estimated at between 12 and 19 percent. Paraguay should consider similar initiatives, such as introducing hay, fertilizing pastures and introducing feedlots.

POTENTIAL FOR PRIVATE SECTOR INVESTMENT IN THE CATTLE VALUE CHAIN

The analysis concludes that the main reduction action in the cattle value chain is the introduction of efficient feed to reduce enteric fermentation. Private investment potential is estimated at **\$865.42 million**.

For the purpose of this report, it is assumed that commercial producers will have greater capacity to make the initial investment to introduce efficient feed, especially for finishing. Commercial producers are therefore expected to introduce feedlots for finishing and better forage for grazing. This report assumes that 25 percent of commercial producers and 10 percent of family producers will introduce better forage for grazing, while all commercial producers and 50 percent of family producers will introduce grain silage for feedlots.

Private sector investment potential is estimated at \$1,555.86 million, most of which will be leveraged from commercial producers for the introduction of VRA technologies for the soybean value chain and for the introduction of improved forage in the cattle value chain.

ACCESS TO FINANCE

Access to financing is critical for the agriculture sector. Short-term financing allows smallholders to buy the inputs required to sustain production, while medium- and long-term financing provides producers and enterprises with the capacity to increase investments in equipment, infrastructure and technology. Investing in additional production assets is essential to reducing GHG emissions in the agriculture sector.

Given agriculture's position as one of Paraguay's main economic sectors, several institutions provide financing to producers and large companies. However, a limited number of institutions provide green financing and financing to the agriculture sector in Paraguay. Public credit institutions and banks, such as the Agricultural Loan Facility (CAH), the Financial Development Agency (AFD) and the Livestock Fund (FG) are significant credit providers which can provide short- and long-term financing, as well as technical assistance. Most commercial banks and other financial institutions provide credit to the agriculture sector. The AFD extends lines of credit to most commercial banks and non-bank financial institutions for specific agriculture-related programmes. Commercial banks offer limited options for long-term credit. Access to longer-term credit is crucial if producers are to make necessary investments and adjust their production processes by adopting low-carbon practices throughout the value chain.

None of these provide green financing for the agriculture sector explicitly. However, the banking sector has started to develop sustainability guidelines for agriculture. Several factors may explain the lack of specific "green" products for the agriculture sector. First, banks make investment decisions based on risk assessments that already consider several sustainability practices, such as preventing deforestation. Second, commercial banks already provide products that could help Paraguay's agriculture become low carbon and more resilient. For example, automated equipment and precision application of fertilizers may fall under equipment financing, while providing more efficient silage may be covered under agricultural inputs. Additional regulations may be required to provide more regulatory incentives to commercial banks to make green investments.

RECOMMENDATION AND POINT OF ENTRY 4

Encouraging green investments in Paraguay

Investments in climate change mitigation are similar to traditional investments, as they relate to financing equipment, machinery and inputs. However, "green" investments are considered to be more sustainable in the long term. They increase producers' and industry's resilience to climate change and their ability to reduce their contribution to climate change. This lowers the risk of investments. Some investors have integrated these environmental criteria into their investment framework, encouraged to do so because these investments present fewer risks than traditional investments. Several environmental, social and governance (ESG) rating agencies rate portfolios and companies on their performance in these areas, which is increasingly driving such investments.

The development of guidelines and guidance formalizing green investments has also encouraged these investments. If Sustainable Finance Board of Paraguay formalized definitions for green investments, this could encourage additional investment by the financial sector in sustainable agriculture.

Cooperatives also represent significant stakeholders in Paraguay for achieving financial inclusion. Similar to commercial banks, cooperatives usually provide financing on a short-term basis, which creates similar challenges in terms of equipment investments.

RECOMMENDATION AND POINT OF ENTRY 5

Providing equipment and machinery to smallholders at a lower cost

Agriculture, as well as precision agriculture, often requires equipment and machinery, such as tractors. Precision agriculture also relies on GPS and automated solutions. Such equipment and machinery remain expensive for smallholders. Access to equipment and machinery is usually facilitated by improving access conditions to agricultural credit. However, access can also be improved by reducing their up-front cost.

Leasing may offer smallholders an appropriate financial solution. For example, leasing does not require collateral, as the asset leased becomes the collateral. When the lease ends, the lessor may retain legal ownership of the asset, thereby reducing the credit risk for the financial service provider.

Lending assets on a short-term basis offers another solution to address access to credit. Some start-ups and companies already lend agricultural equipment and machinery on a short-term basis.

Paraguay also has limited access to equity, venture capital and impact finance. The venture capital space remains nascent in the country. Fostering innovation in agriculture is crucial to encourage additional equity and venture capital investments.

RECOMMENDATION AND POINT OF ENTRY 6

Fostering innovation in climate-smart agriculture

Innovative enterprises also require adequate financing conditions to further support innovation in climate-smart agriculture businesses. Agtech and cleantech ventures, social ventures, and enterprises require capital early to develop their business model, proof of concept and prototypes and to grow at scale. In addition to capital, they also need technical support.

In 2019, the government launched working groups to develop a national innovation strategy. The Ministry of Information and Communications Technology also launched an incubator, InnovandoPy, which aims at fostering innovation in Paraguay.

Providing additional support to entrepreneurs, based on incubation and acceleration agtech and cleantech services, could help drive innovation and strengthen Paraguay’s innovation ecosystem. Given its status, the innovation ecosystem needs pre-seed and seed funding. This can be achieved by providing grants or other concessional finance to acceleration services and/or investors (impact investors and VCs).

REPORTING FRAMEWORK TO ALIGN BUSINESS OPPORTUNITIES WITH NDC IMPACT TARGETS IN PARAGUAY’S AGRICULTURE SECTOR

Governments and international organizations engage the private sector to leverage stakeholder investments in the NDC. The NDC can offer the private sector additional business opportunities, but it is often unaware of those opportunities. It is therefore important to highlight and translate them in clear reporting frameworks, which the private sector can then leverage to enhance its understanding of the added value that climate investments bring.

A clear understanding of this alignment, or the extent to which the private sector can align with NDC actions, offers the private sector potential advantages. First, it enables the sector to clearly identify actionable actions, which can be translated into business opportunities. The NDC and SDGs have been chosen as the main reporting frameworks for this report. Business opportunities in the agriculture sector identified in this report are linked to NDC objectives and SDG targets. A summary of the business opportunities, the corresponding climate and SDG frameworks is provided below (direct benefits in green, co-benefits in orange).

| BUSINESS OPPORTUNITY | NDC TARGETS AND BUR/NATIONAL CLIMATE CHANGE MITIGATION PLAN AND PROGRAMMES OF ACTION ACTIONS | SDG FRAMEWORK |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|---------------------------------------------|
| SOYBEAN VALUE CHAIN | | |
| Climate-smart nutrient management (precision agriculture and variable fertilizer application) | 10- 20% emission reduction | 2 – Zero hunger |
| | Manage crop nutrients | 13 – Climate action |
| | Introduce technologies with mitigation co-benefits | 1 – No poverty |
| | Encourage the sustainable modernization of farms | 8 – Decent work and economic growth |
| | Develop financial incentives for producers based on the sustainable practices implemented | 9 – Industry, innovation and infrastructure |

| BUSINESS OPPORTUNITY | NDC TARGETS AND BUR/NATIONAL CLIMATE CHANGE MITIGATION PLAN AND PROGRAMMES OF ACTION ACTIONS | SDG FRAMEWORK |
|--------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Illustrative metrics | # and value (US\$) of climate-smart equipment and services deployed (to commercial producers and smallholders) Smallholder and commercial producer productivity (tons of soybeans produced/ha) Volume of nitrogen fertilizer used (tons/output) for soybean production (commercial and smallholders) Direct (estimated) carbon reduction achieved through efficient nutrient management (tCO ₂ e) # and value of loans (US\$) developed for precision agriculture | |
| LIVESTOCK VALUE CHAIN | | |
| Improving the productivity of the livestock herd | 10- 20% emission reduction Improve livestock diet Increase productivity per unit of surface area Develop financial incentives for producers based on the sustainable practices implemented | 2 – Zero hunger 13 – Climate action 1 – No poverty 8 – Decent work and economic growth 9 – Industry, innovation and infrastructure 3 – Good health 12 – Responsible consumption and production |
| Illustrative metrics | # of producers with improved diet management (commercial and smallholders) # of head of livestock benefitting from improved diets # of days until slaughter for livestock benefitting from improved diets Direct (estimated) carbon reduction achieved through productivity improvements (tCO ₂ e) # and value of loans (US\$) developed for low-carbon practices in the livestock value chain | |

*Additional SDG targets are developed for these opportunities in the main report.

ASSESSMENT RESULTS AND CONCLUSION

The Government of Paraguay has developed a favourable enabling environment for investment in its agriculture sector. Although the macroeconomic outlook is less favourable due to the impact of the COVID-19 pandemic, soybeans and cattle retain significant investment potential. Both value chains are important contributors to the national economy and the predominance of these two sectors highlights the importance of their value chains for climate change mitigation and their potential for private sector investment in emission reduction actions. Total investment potential in the introduction of precision agriculture technologies, such as variable fertilizer application, and in improved feed in Paraguay is estimated at \$1,555.86 million, most of which will be leveraged from commercial producers.

Although the private sector leads in terms of investments, the agriculture sector still faces barriers to obtaining financing. Several commercial banks are involved in agricultural credit, but most provide short-term credit, which does not allow producers and companies to introduce better, more efficient productive assets. Green investments should be expanded in Paraguay by encouraging ESG integration into the model provided by the EU and the EU taxonomy. Agricultural leasing and digital solutions to connect farm equipment owners to farmers should also be considered.

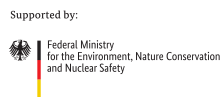
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