FOREST TRENDS SUPPLY CHANGE An Initiative of Forest Trends

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Commitments in-Country:

Companies, Cattle, & Commitments that Count in Paraguay, 2020

AN ANALYSIS BASED UPON SUPPLY CHANGE DATA

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Executive Summary

Cattle ranching for beef, dairy, and leather represents the largest driver of tropical deforestation worldwide. **Paraguay has one of the highest rates of deforestation in the world, largely due to the rapid expansion of cattle ranching over the past few decades, especially in the western Chaco region.** Forest protection in Paraguay is impeded by ambiguous environmental laws, weak enforcement, and a lack of comprehensive legal forest protections and traceability infrastructure for in-country cattle ranching.

Supply Change identified two parallel trends with the potential to motivate the Paraguayan government to improve the regulation and enforcement of its forest protection policies: first, Paraguay's exports to countries with more robust import requirements for cattle traceability and environmental standards are growing; and second, the number of corporate commitments to reduce deforestation in their cattle supply chains is increasing.

Supply Change analyzed the state of corporate reporting on commitments addressing deforestation risk in cattle supply chains in Paraguay. Drawing on publicly available data from the International Finance Corporation (IFC), a sister organization of the World Bank and a member of the World Bank Group, and the existing *Supply Change* dataset of more than 850 companies, the *Supply Change* team tracked 81 companies that were believed to produce and/or procure cattle products (beef, dairy, leather, etc.) from Paraguay based on reporting collected during the period from July to October of 2018.

Fifteen companies made commitments to address deforestation in their cattle supply chains. Seven of these had commitments that only covered cattle products sourced from Brazil and/or the Amazon, and only two companies (Minerva and McDonald's) specifically mentioned Paraguay in their commitment documentation. These commitments all aim to achieve zero or zero net deforestation in their supply chains, and many also included aspirational statements that support compliance with environmental laws, reducing greenhouse gas emissions, improving yields without expanding into forests, and supporting smallholder producers.

Strategic leadership from the Paraguayan government and from the private sector will be pivotal for ensuring the country can achieve both its sustainable development goals and its aspiration to become one of the world's leading producers of cattle products. The Paraguayan government and multilateral partners can seize this opportunity to strengthen institutional capacity for traceability and land use monitoring beyond the initiatives the government has already launched as a way to allay growing concerns around climate change, deforestation, and health-related risks among import markets.

The Paraguayan Government can take steps to anticipate this growing need and position itself as a data-rich market with low risks and high rewards. To do this the government can:

- Establish a nationwide traceability system for tracking and maintaining documentation of adherence to higher health standards as well as land use outcomes by tracing the source of production for individual cattle from birth to slaughter, based on the existing Traceability System of Paraguay (SITRAP);
- Strengthen regional cattle platforms to support greater collaboration around sustainability planning, improve supply chain transparency, implement higher environmental and social standards, and secure sustainable finance;
- Streamline laws and regulations that protect forests across all regions (including the Atlantic Forest and the Chaco), while establishing clear expectations for compliance, monitoring, and enforcement; and
- Leverage domestic resources for: (1) sustainable agriculture from relevant donor countries and private foundations to support enforcement and monitoring of forest laws, (2) initiatives to improve cattle productivity, and (3) matching companies pursuing sustainable ranching with interested investors.

Companies can bolster their efforts to expand exports of cattle products from Paraguay by strengthening their environmental and health standards to meet expectations of a growing number of corporate buyers, nonprofits, and governments around the world. To do this companies can:

- Establish and report on measurable, verifiable commitments to address deforestation by drawing on guidance from the Accountability Framework initiatives (AFi), the Carbon Disclosure Project (CDP), and expertise of local initiatives (Appendix 2, Table 5);
- Register and map suppliers expeditiously within the new forest monitoring system or within a government approved system, whether or not companies have long-term contracts or engage in spot market deals (Case Study 1); and
- Ensure effective implementation and meaningful impacts by pursuing on-the-ground engagement and trust with suppliers (Case Study 2).

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Glossary

Definitions and explanations for key terms in this report:

Cattle Company Supply Chain Levels:

- **Producer:** A rancher, plantation owner, or smallholder cooperative member
- **Processor:** A slaughterhouse or tannery
- **Trader:** An importer, exporter, and/or seller of non-finished products within the country of production
- **Manufacturer:** A manufacturer of beef, leather, dairy, or other cattle products (if producing a final product for consumption), or a butchery
- **Retailer:** A retailer, wholesaler, grocery, co-op, supermarket/restaurant, or other type of organization where end consumers can buy directly from the company

Cattle Production

Cattle production includes ranches for three different purposes or production phases: breeding, rearing, and fattening (also called "finishing"), all of which can drive forest clearance to make space for these activities (Gibbs 2015; Proforest 2017). Cattle supply chains can vary in complexity; over the course of its lifetime a cow may be bred, reared, and fattened all on one ranch or on several, through ranch-to-ranch transfers.

Certification

A company commits to purchasing commodities certified by an independent third party, applying both specified and unspecified standards. In certain cases, company commitments are considered to adhere to proprietary internal certification systems.

Commitment

A commitment is any publicly available corporate statement specific to a particular commodity (e.g., palm, timber & pulp, soy, or cattle), related to certified (or otherwise "sustainable") commodities or certificates/credits; supply chain traceability; supplier certification; bilateral purchase agreements; and any other organizational targets for low/zero deforestation or ecological degradation.

Commitment (General)

An overarching commitment that is not specific to a particular commodity (e.g., to "all raw materials," "all supply chains," "all products," etc.). For the purposes of this research, these commitments could reasonably be assumed to have the potential to include cattle.

Exposure

Exposure indicates that a company produces, sells, or procures the commodity, related derivatives, and/or byproducts as part of its core business. For example, a steak house would use beef as a "core" part of its product offerings. As we collect only publicly available data, we only include exposure based on our understanding of public documents and product descriptions.

REDD+

Reductions in Emissions from Deforestation and Forest Degradation plus conservation, sustainable management of forests, and enhancement of forest carbon stocks (REDD+) are programs set up by countries to provide financial incentives to conserve forests. In many cases, donor countries provide technical assistance, monitoring, and results-based financing for nations with REDD+ programs. This finance is often channeled through international groups such as the Forest Carbon Partnership Facility and the United Nations REDD (Case Study 3).

Traceability

A company's ability to determine the origin or intermediate source of a commodity within its supply chain (e.g., 100% of cattle is traceable to the ranch). When cattle abattoirs/ meatpackers/ slaughterhouses pursue traceability, they can consider two groups of suppliers:

- **Direct suppliers:** Direct suppliers sell cattle from their properties directly to abattoirs. Direct suppliers typically operate fattening (or finishing) ranches, which cover the final phases of the production lifecycle.
- **Indirect suppliers:** Indirect suppliers do not sell cattle from their properties directly to the abattoirs, but rather sell, trade, and transfer cattle to other ranches throughout the production lifecycle. Indirect suppliers typically cover earlier production stages, including breeding and rearing operations, such as cow-calf systems.

Zero Net Deforestation

A company commits to "zero deforestation," "no-deforestation," "deforestation free," or similar language that implies "no deforestation anywhere," whether the company has defined the term or not. See Brown and Zarin (2013) for a discussion of zero deforestation and zero net deforestation terms and their implications.

- Note: McDonald's, for example, committed to "eliminate deforestation in [its] beef" and went on to clarify to its suppliers what not to deforest (primary forests and areas of high conservation value, among other criteria) (McDonald's 2018).

Zero Net Deforestation

In its commitment, a company "acknowledges that some forest loss could be offset by forest restoration and afforestation on degraded land" (WWF 2009). This can be achieved through direct restoration or the purchase of forest carbon offsets, biodiversity offsets, or other environmental currencies. Note: The Accountability Framework initiative (AFi) advocates that companies move beyond zero net deforestation commitments popularized by the Consumer Goods Forum and only set zero deforestation commitments (also called no-deforestation commitments), which do not allow for forest loss to be offset by forest restoration and afforestation on degraded land.

Box 1: Key Commitment Goals and Procurement Policies for Cattle Commitments

- **High Conservation Value:** High Conservation Value (HCV) areas are natural habitats that possess inherent conservation values, such as the presence of rare or endemic species, the provision of ecosystem services, sacred cultural sites, or resources harvested by local residents.
- **High Carbon Stock:** High Carbon Stock (HCS) areas of viable natural forest with high carbon and biodiversity storage identified using the HCS approach.
- **Peatland:** Wetlands that contain peat soil. Peatlands store large amounts of carbon, support high levels of biodiversity, and provide essential ecosystem services, such as flood prevention.
- **Wildlife, Biodiversity:** Protection of wildlife and biodiversity in the vicinity of production activities in forest landscapes.
- **Greenhouse Gas Emissions Management:** Reduction of greenhouse gas (GHG) emissions from producer operations in forest landscapes.
- **Water Management:** Responsible management of water resources relating to production in forest landscapes, including watershed protection, prohibiting peatland drainage, reducing irrigation, and preventing water pollution.
- **Waste Management:** Prevention of waste and pollution for production that occurs in forest landscapes (e.g., water pollution, pollution that harms biodiversity, inefficient resource use, etc.).
- **Soil Management:** Maintenance of healthy soils (e.g., soil fertility, erosion prevention, etc.).
- **Responsible Fertilizer Use:** Fertilizer use that does not pollute waterways.
- **Responsible Pesticide Use:** Pesticide use for production in forest landscapes, including limiting or banning their use, and ensuring it does not damage the health of workers, communities, and ecosystems.
- **Animal Welfare:** Ethical treatment of cattle.
- **Improve Productivity:** Increase of heads of cattle per hectare in order to increase production without encroaching on forests.
- **Legality:** Compliance with environmental laws at the site of production (which would include Paraguayan law, unless otherwise specified).
- **Free, Prior, and Informed Consent (FPIC):** Recognition of the rights of indigenous and traditional communities to give or withhold consent to actions that will affect them, especially actions affecting their lands, territories, and natural resources.
- **Human Rights:** Adherence to social criteria in addition to environmental criteria, including respecting the rights of local communities, safe working conditions, fair labor practices, etc.
- **Fire Prevention/Control:** Measures that reduce the risk of fire for production in forest landscapes, including prohibiting burning as a means of clearing land, prohibiting peatland drainage, supporting firefighting activities, etc.
- **Grievance Mechanism:** Formal process that individuals, communities, workers, and/or civil societies can use to voice complaints about company activities that they perceive as problematic, usually with regards to human rights.
- **Transparency:** Promise to regularly report on progress towards commitment.
- **Supporting Smallholders:** Financial, technical, logistical, etc., assistance for smallholder producers (i.e., small family farms).

Introduction to *Supply Change* and Cattle Commitments

Forest Trends' *Supply Change* Initiative tracks a global set of companies that represent all levels of the supply chain from producer to retailer, and their commitments to address deforestation that stems from the production of the "big four" commodities: palm, soy, timber & pulp, and cattle. This tracking also includes associated commitment goals and procurement policies, as well as the progress companies have made in achieving their commitments over time. A list of common commitment goals and procurement policies for cattle supply chains is provided in Box 1(page 3).

Figure 1: Overview of Supply Change Coverage of Cattle Companies, Commitments, and Procurement Policies

Source: Supply Change.

Supply Change analyzed the state of corporate reporting on commitments addressing deforestation related to cattle production in Paraguay. During the period from July to October of 2018, the *Supply Change* team tracked 81 companies that are believed to produce and/or procure cattle products (beef, dairy, leather, etc.) from Paraguay, reviewing statements from public documents from channels that are either managed directly by the company (e.g., websites, sustainability reports, annual reports) or by external parties (e.g., CDP).

The objectives for this research are to inform decision making among abattoirs, investors, subnational governments, and national government agencies looking to expand production of Paraguayan cattle products, while anticipating growing demands for higher environmental and social standards.

The report provides context for decision-making via an overview of land use change, trading patterns, and commitments to address deforestation among 81 companies believed to operate in Paraguay. Additionally, the report features case studies on investments in large-scale traceability, leadership in small-scale sustainability, and lessons learned from sustainable finance in Brazil. Finally, the report includes a list of example commitments and a summary of resources relevant for companies with cattle supply chains in Paraguay.

Challenges to Stopping Deforestation in Paraguay

Cattle ranching for beef, dairy, and leather is the largest driver of tropical deforestation worldwide, contributing to biodiversity loss, carbon emissions, loss of livelihoods for indigenous communities, and other issues (Lawson 2014). Pasture expansion was responsible for 71% of total deforestation between 1990 and 2005 in Latin America, especially in Argentina, Brazil, Bolivia, and Paraguay (De Sy et al. 2015).

While some countries, including Brazil (Case Study 3), have made great strides in reducing deforestation, **Paraguay has one of the highest rates of deforestation in the world**, due in part to weak enforcement and a lack of comprehensive legal forest protections and traceability policies for in-country cattle ranching.

Legality

Despite legislative efforts in Paraguay over the past half century to reduce deforestation (Figure 2), the language in environmental laws remains ambiguous or in favor of non-sustainable cattle ranching practices. Abetted by global market demand for cheap cattle products, Paraguay has one of the highest rates of deforestation in the world (NASA 2018).

The expansion of the cattle industry has been one of the primary drivers of deforestation in Paraguay. However, the Paraguayan beef industry primarily exports cattle products to developing-country markets that don't have stringent environmental and traceability import regulations. These markets also lack public demand for companies operating in Paraguay with exposure to cattle-driven deforestation risk to develop commitments to address this issue.

Current cattle regulations in Paraguay and in key countries of export focus on beef safety standards, not deforestation-free cattle production (Viet and Sarsfield 2017). As a result, import country requirements are primarily focused on food safety guidelines, and do not typically include environmental standards. This lack of demand for environmental standards from import countries has enabled similar deficiencies in Paraguay's domestic requirements. However, preferences in the private sector could shift (Case Study 2), especially if monitoring and enforcement capabilities improve within the country. At the end of March 2019, the Paraguayan government signed an agreement with World Resources Institute to be the first South American country to develop a national forest monitoring platform drawing on real-time satellite imagery from Global Forest Watch (World Resources Institute 2019a) as a way to verify compliance with forest legislation (Instituto Forestal Nacional 2019).

Figure 2: Timeline of Forest Laws in Paraguay

Box 2: Forest Protection Laws in Paraguay

The Government of Paraguay's passage of *Forest Law 422* in 1973, requiring all rural landholders with more than 20 hectares (ha) in forest zones to preserve at least 25% of the natural forest area existing in 1986 (Paraguay 1974), has been largely ineffective. Roughly 4.4 million (M) ha of the Paraguay's Gran Chaco dry forest ecosystem has been converted to farmland – mostly grazing pasture and cattle farms – between 1987 and 2012 (NASA 2016). This is due to unclear wording and loose definitions of forested areas that have left the law open to interpretation (UNDP 2017).

In response to continued deforestation, the Paraguayan government prohibited the conversion of forestland for agricultural uses in the Eastern Region's ecologically important Atlantic Forest through the passage of the *Zero Deforestation Law (Law 2524)* (Paraguay 2018b). While the Zero Deforestation Law measurably reduced deforestation in Eastern Paraguay, cattle ranching and deforestation have accelerated in the Chaco Region in western Paraguay.[1] That is because Paraguay's national plans allows for deforestation in the Chaco Region (Gran Chaco 2015). However, there are some restrictions; under Paraguayan law (Decree 18.831, Decree 13202), property owners with more than 50 ha in the Chaco Region must preserve at least 50% of native forests on their land, and must maintain 100 meters (m) of forest buffers for every 100-ha cleared (Paraguay 2018a; USAID 2017).

Photo Credit: Peer V, WikiCommons.

Traceability

Under Paraguay's current domestic regulations, it is compulsory for the movement of herds of cattle within Paraguay to be tracked by the government-run Sistema Informático de Gestión de Oficinas Regiones (SIGOR), mostly to improve compliance with health-related standards. Individual animals, meanwhile, need only be traceable to the slaughterhouse, which typically is when they are 20-24 months old (Joseph 2017). Similarly, many of the Paraguayan beef industry's current key importers do not have comprehensive traceability import standards. For example, the government of Chile – the largest importer of Paraguayan beef – only requires documentation of the corral location from exporters (Veit and Sarsfield 2017).[i]

However, for many governments and companies, identifying the ranches and processing facilities where cattle products come from is a prerequisite to judge compliance with legal requirements and zero deforestation goals. Consequently, the formation of a new national forest monitoring platform (that includes the locations of ranches and processing facilities) and of more robust traceability systems for individual cattle could make it easier for commodity buyers to trace cattle products within their supply chains and evaluate the land use changes associated with that supply.

The Paraguayan government is seeking to export more cattle products to a number of import markets that require they be traceable beyond the slaughterhouse and adhere to increasing sanitary standards, including the European Union (EU). In its first year, the current Benitez administration identified the United States, Singapore, Canada, and Saudi Arabia as priority markets for export (Agencia de Información Paraguaya 2019b). New trade opportunities could arise in Japan and South Korea (markets with strict import restrictions), or with the United Kingdom[ii] (which will likely experience trade realignments following Brexit) (Economía Virtual. 2019; Sputnik News. 2018). An existing voluntary initiative, the Traceability System of Paraguay (SITRAP), documents adherence to higher food safety requirements throughout the supply chain to meet higher standards for key import markets like the EU (Agencia de Información Paraguaya 2019a). As of this report's writing, 600 cattle owners have already registered and purchased ear tags for tracking individual animals from birth to slaughter (SITRAP 2019).

Potential Drivers of Demand for Sustainable Paraguayan Beef

Paraguay's established role in global beef markets provides a foundation upon which to expand its presence in markets that will pay higher prices for higher environmental and health standards. Due to its landlocked location, Paraguay has limited opportunity to expand exports of fresh and chilled beef; however, there are numerous possibilities to expand and increase exportation of frozen, boneless cuts.

Box 3: Summary of Paraguayan Exports (2017)

- US $1.1 billion (B) worth of beef products were exported by Paraguay
- The majority of frozen, boneless cuts (US$575M) were sold to Russia (39%), Israel (10%), and Vietnam (8%);
- The majority fresh or chilled, boneless cuts ($571M) were sold to Chile (73%), Brazil (16%), and Lebanon (2%).

Source: SENACSA 2017; ITC 2017

Potential Driver: Country Markets

Cattle export opportunities could come from improved health and environmental standards in Paraguay. Exports could increase in countries like Japan and South Korea[iii] (which prefers importing from countries with stringent food safety and environmental standards)(Economía Virtual. 2019; USDA 2010; Ryan and Ceetham 2017), the EU, and the United States (where Paraguay was approved to import beef in 2017) (Joseph 2018). Improvements to previous sanitary concerns (notably foot-and-mouth disease) by the Paraguayan government and private sector make expansion into various markets possible. The US Department of Agriculture reports that, "in general, Paraguayan [processing] plants are in good condition and supported by investments to improve processing efficiency, cold chain capacity and processing volume," (Joseph 2018). Recent developments in the EU market could foreshadow increasing requests among importers to address deforestation risk. In a July 2019 communication, the EU commission prioritized the import of products with deforestation-free supply chains and encouraged companies to scale up use of traceability tools and to reduce consumption of products with supply chains associated with deforestation and forest degradation (European Commission 2019a; European Commission 2019b). Furthermore, the new EU-Mercosur Trade Agreement, to which Paraguay is a party, includes a provision to implement the Paris Agreement, including tackling deforestation (European Commission 2019c).

Potential Driver: Corporations with Commitments that Count

Many companies have expressed support for initiatives which have 2020 targets for reducing or eliminating deforestation, including the Consumer Goods Forum's Zero Net Deforestation resolution, the New York Declaration on Forests, and related multilateral initiatives like the Tropical Forest Alliance. Consequently, these companies may come under increasing pressure to address the issue within their supply chains. In addition to, or in absence of, country policies regarding sustainable cattle legislation, traceability, or other criteria, **companies are creating their own standards and commitments for producing and sourcing sustainable cattle.** These commitments seek to address cattle-driven deforestation in a way that is transparent and accountable.

Corporate Ambition to Address Cattle-Driven Deforestation in Paraguay

Supply Change-Tracked Commitments

Out of all the companies *Supply Change* tracks (not just those active in Paraguay), there are 484 companies with cattle exposure. Just 12% (56/484) have committed to address deforestation from cattle within their supply chains through cattle-specific commitments. The companies that have made commitments use cattle products at various stages in the supply chain, including producers, processors, traders, manufacturers, or retailers.
Key global insights include:

- Over half of all the companies with cattle commitments (31/56) are headquartered in Europe (Appendix 1, Figure 3), of which, 12 are headquartered in the United Kingdom.
- Typically, these companies represent food-related sectors (31/56), which include food producers, restaurants, retailers, and wholesalers (Appendix 1, Figure 3).

Paraguay in Focus

Based on existing *Supply Change* research and publicly available information from the IFC, *Supply Change* identified 81 companies that produce and/or procure cattle products (beef, dairy, leather, etc.) and are believed to operate in Paraguay.[iv] *Supply Change* found that 19% (15/81) of these companies have committed to address cattle-driven deforestation. The commitments were published through a variety of channels that are either managed directly by the company (e.g., websites, sustainability reports, annual reports) or by external parties (e.g., CDP).

Box 4: Chinese Sustainable Meat Companies

While import countries might not have strict environmental sourcing policies, select corporate buyers from those countries can have additional public and/or private requirements. In 2017, for example, 64 companies from China signed the Chinese Sustainable Meat Declaration, committing to promote sustainable meat production, consumption, and trade, demonstrating that traditionally cheaper markets could begin demanding higher environmental performance. Although Paraguay has no formal commercial relationship with China (it recognizes Taiwan only), Paraguayan commodities are exported to China via other countries (e.g., Uruguay and Argentina). This highlights a general trend in emerging markets for sustainably produced meat.

Source: WWF 2017

Key insights on Paraguayan cattle exposed companies and their commitments include:

- *Geographic Coverage:* Over half (8) of the 15 companies believed to produce and/or source cattle products from Paraguay have commitments that apply globally.
- *Paraguay Specificity of Commitments:* Only two of the 15 companies specify Paraguay in their cattle commitment.
- *Other Geographic Specificity of Commitments:* Six companies have made commitments with a geographic scope that covers only cattle products from Brazil and/or the Amazon.
    - This may be due to greater public scrutiny over deforestation that these geographies have received, government enforcement of forest protection laws, and/or more reliable satellite-based monitoring systems capable of proving commitment compliance.
- *Commodity Specificity of Commitments:* Of the 15 of companies with commitments, 12 (80%) have made cattle specific commitments, and three (19%) have made general commitments.
- *Commitment Coverage of Cattle Products:* One third (5) of commitments cover all of the cattle products sourced by companies.
    - Companies use or produce different types of cattle products, including beef and meat products (including processed beef, offal, etc.), dairy, leather & hides, and tallow & tallow products.
- *All commitments mention traceability, zero deforestation, and/or legality:* All commitments – either general or cattle-specific – included aspirations to address at least one of these aspects of their cattle (or general) supply chain, and, the majority (13) specifically referred to zero deforestation (Table 2).
    - The ease with which companies achieve greater traceability and monitor progress on their commitment can vary by their location in the supply chain, how many suppliers they have, how many different cattle products they use, and the jurisdictions from which they source.

Box 5: Spotlight on Traceability

Many export-focused, food-related sector companies have prioritized improving supply chain traceability capabilities, primarily to allay food safety-related concerns (e.g., foot-and-mouth disease) and avert or lift costly import bans (BBC News 2011; Rousseau 2017). Despite these investments, it does not appear as though companies are employing these traceability systems to help with monitoring environmental risks.

In Brazil, two of the largest protein producers, Marfrig and Minerva, made commitments to source deforestation-free cattle from both their direct and indirect suppliers as part of their agreement with Greenpeace (Case Study 2). Yet both have only reported compliance for their direct suppliers (e.g., those engaged in fattening) and failed to do so for indirect suppliers (e.g., those engaged in breeding and rearing (Brindis 2016)). This lack of traceability leads to a risk of non-compliant supply being mixed (or "laundered") with compliant supply before it reaches a company's direct suppliers (Gibbs et al. 2015). Comparisons of land use change at the location associated with cattle vaccination sites has been used to verify non-compliance with cattle commitments (Klingler, Richards, and Ossner 2018).

Box 6: Spotlight on Legality

McDonald's and Minerva were the only companies to specifically mention Paraguay in their commitment documentation (Appendix 1, Table 4). While these companies were the only tracked to mention Paraguay specifically, many companies assess the risk of sourcing from countries with high rates of deforestation. Some companies then try to engage with suppliers from those countries to reduce deforestation, while others avoid higher-risk suppliers entirely.

Finally, not all companies make their commitments and procurement policies public, so cattle product suppliers may be pressured to improve their land use practices from additional corporate buyers, such as Minerva (Case Study 2).

Company demographics:

- *Headquarter Location:* The majority (13/15) of these companies are headquartered in North America or Europe (UK, Netherlands, France, and Norway).
  - The remaining three companies are based in Brazil, a country with a history of engagement around addressing deforestation in the Amazon (Case Study 3).
- *Industry Sectors:* The majority (12) of these companies represent food-related sectors, including Food Products (5), Food Retailers & Wholesale (2), Restaurants & Bars (2), and Mixed Retailing (2). The remaining are classified as Furniture, Apparel Retailers, and Footwear, respectively, representing companies purchasing leather or leather byproducts.
- *Supply Chain Levels:* The companies that use cattle products and have made commitments are at all levels in the supply chain.
  - Most companies are retailers (10), followed by manufacturers (7), processors (3), traders (2), and then producers (2).
  - Many of these companies are vertically integrated and use cattle products at multiple points in the supply chain.
    - Three companies function explicitly as "exporters." However, as many of these companies have multinational operations, there are others that are certainly involved in buying, selling, and transporting cattle products across national borders (Appendix 1, Table 3).
    - Both Brazilian companies are exporters of cattle products (Table 1); Minerva exports its products worldwide, while Marfrig exports to the United States and Europe.

Table 1: Comprehensiveness of Commitments for Companies Believed to be Sourcing or Producing Cattle Products in or from Paraguay*

Company	Commitment type	Products used	Products in commitment	Complete product coverage	Global commitment coverage
Danone	Cattle	Dairy	Dairy	Yes	Yes
Domino's	Cattle	Beef, dairy	Beef	No	Yes
General Mills	General	Dairy	Dairy	Yes	Yes
Ikea	Cattle	Leather, beef & dairy	Leather	No	Yes
Marfrig	Cattle	Beef	Cattle – All	Yes	No
Marks & Spencer	Cattle	Beef, dairy, leather	Beef	No	No
McDonald's	Cattle	Beef**, dairy	Beef	No	Yes
Minerva	Cattle	Cattle, beef**, offal, leather, tallow biofuel	Cattle – All	Yes	No
Nike	Cattle	Leather	Leather	Yes	No
Norges Gruppen	General	Beef, dairy	Beef	No	Yes
Pentland Group	Cattle	Leather & hair-on hides	Leather	No	No
PepsiCo	General	Dairy	Unclear	No	Yes
Tesco	Cattle	Beef, dairy, leather	Beef, Leather	No	No
Unilever	Cattle	Dairy, beef	Dairy, Beef	No	Yes
Walmart	Cattle	Beef, dairy, leather	Beef	No	No

*Due to limited publicly available information, *Supply Change* was only able to confirm which companies produce or source cattle products, and if they source ***any*** of the four commodities tracked (cattle, palm oil, soy, timber) from Paraguay. Therefore, *Supply Change* acknowledges the possibility that some companies listed may not source cattle products from Paraguay and/or may not be present in the country. **Company states product is sourced from Paraguay

Mechanics of Company Commitments

Companies develop their commitments with specific goals and procurement policies that incorporate a range of sustainability criteria (e.g., buying goods traceable to the farm, respecting environmental laws, protecting wildlife)(Table 2). Additionally, company commitments range in **scope** (e.g., geographic specificity), **focus** (e.g., adherence to environmental law), **timeframe**, and more (Table 2).

In many cases, companies will also provide details about *how* they intend to achieve the commitment. Addressing and implementing commitments could provide businesses with a competitive advantage and better market access. In Table 2 below, we include information about which specific goals and policies are included in the commitments of companies sourcing cattle products in Paraguay.

The commitment goals and procurement policies that companies reference can have a large impact on commitment implementation. Companies will often develop policies in-line with the criteria mentioned in these commitments to which their suppliers must adhere.

Table 2: Key Commitment Goals and Procurement Policies of Companies Believed to be Sourcing or Producing Cattle Products in or from Paraguay*

COMPANY	PROTECT AND/OR PRESERVE				IMPROVE SITES OF PRODUCTION								COMPLY				IMPLEMENT				SUPPORT
	HIGH CONSERVATION VALUE AREAS	HIGH CARBON STOCK AREAS	PEATLAND	WILDLIFE, BIODIVERSITY	GHG EMISSIONS MANAGEMENT	WATER MANAGEMENT	WASTE MANAGEMENT	SOIL MANAGEMENT	RESPONSIBLE FERTILIZER USE	RESPONSIBLE PESTICIDE USE	ANIMAL WELFARE	IMPROVE YIELDS	LEGALITY**	FREE, PRIOR & INFORMED CONSENT (FPIC)	HUMAN RIGHTS	ZERO/ZERO NET DEFORESTATION	FIRE PREVENTION/CONTROL	GRIEVANCE MECHANISM	TRACEABILITY	TRANSPARENCY	SUPPORTING SMALLHOLDERS
Danone				✓	✓	✓	✓	✓	✓	✓	✓		✓		✓	✓		✓			✓
Domino's											✓				✓	✓			✓		
General Mills					✓	✓							✓		✓			✓		✓	
Ikea						✓	✓	✓		✓	✓		✓		✓	✓			✓	✓	
Marfrig													✓		✓	✓		✓	✓	✓	✓
Marks & Spencer						✓				✓	✓				✓			✓	✓		✓
McDonald's	✓	✓	✓	✓	✓	✓					✓		✓	✓	✓	✓		✓	✓	✓	✓
Minerva											✓		✓		✓	✓		✓		✓	
Nike										✓						✓		✓	✓		
Norges Gruppen				✓	✓	✓	✓				✓				✓	✓			✓	✓	
Pentland Group										✓	✓		✓		✓			✓	✓	✓	
PepsiCo	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓
Tesco	✓	✓	✓												✓	✓					
Unilever	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓		✓	✓
Walmart					✓	✓		✓		✓	✓	✓	✓		✓	✓		✓	✓	✓	✓

*Due to limited publicly-available information, *Supply Change* was only able to confirm which companies produce or source cattle, and if they source ***any*** of the four commodities tracked (cattle, palm oil, soy, timber) from Paraguay.
** Companies promised to adhere to all environmental laws within their supply chains, but these statements did not typically differentiate between different regions.

Key Findings from Implementation of Commitments

Compliance: The majority of the companies (12) aim to source cattle products from zero/zero net deforestation supply chains. Nearly all of them (10) also committed to comply with environmental laws. These linked commitments could foreshadow greater demand for producers and processers to adhere to stricter environmental standards and be held accountable to forest laws.

Improvements at Sites of Production: A majority of companies (9) aim to acquire supply from sites actively managing their water resources, and around one quarter (3) aim for supply to come from sites improving yields without expanding into forests. Climate-related challenges such as droughts and floods have had documented impacts on cattle pregnancy, birth rates, weight loss, and overall meat outputs in Paraguay (Døvre 2019, as cited in Arce and Diego Arias 2015). Protecting forests and managing water resources can help ranchers mitigate these production risks by improving availability of feed crops and water, flood control, and favorability of micro-climates. Around half (7) of the companies have promised to reduce greenhouse gas (GHG) emissions, which reflects a growing focus on climate mitigation within corporate supply chains.

Supplier Support: Around half (7) of companies are offering support to smallholder producers to meet their commitments. These promises highlight the potential for producers and processors operating in Paraguay to gain additional benefits from selling to large international companies committed to achieving results within their cattle supply chains.

New Trends in Implementation of Commitments

- **Companies have a new opportunity to pinpoint land use-related GHG risks originating within their commodity supply chains** using a field-tested and standardized approach – with the recent release of Quantis's Accounting for Natural Climate Solutions, a methodology for measuring emissions from land use (Quantis 2019).
- **Across the world, 522 companies and counting are in the process of or have already set Science-Based Targets for reducing their GHG emissions**. Executives from more than half of the companies say that their targets have boosted investor confidence and provided competitive advantage (Science-Based Targets 2019). **As part of their climate commitments, corporate commodity buyers will likely increase monitoring of and expectations for suppliers to protect forests.** This is because the targets (including the scope and level of ambition) are designed based on the latest climate science, which attribute to deforestation and forest degradation 10-15% of global emissions, with cattle ranching being the largest single driver.
- The world's largest sustainability disclosure platform, CDP, found that **between 2017 and 2018 the number of suppliers disclosing forest-related impacts to buyers tripled.** The same study reported that representatives from a number of influential corporate buyers said they expected to drop suppliers based on environmental performance criteria (CDP 2019).
- Producers and processors may wonder how to forestall concerns around deforestation and GHG emissions, while increasing production and exports. **It is expected that productivity (the number of heads of cattle raised per hectare) can be increased while decreasing GHG emissions and avoiding ranchland expansion** (Ramirez, 2019), and there are many existing initiatives capable of supporting these endeavors (Appendix 2, Table 5). This can position companies to attract environmental investors (Case Study 3) and draw interest from international buyers with zero/zero net deforestation commitments.
- A coalition of 13 banks (and counting) have joined the new Sustainable Finance Roundtable which aims to establish standardized environmental and social criteria for grants and loans in an effort to promote forest protection and sustainable development**. This highlights the increasing number of opportunities for companies to access funding for sustainable expansion of activities.**

Box 7: Spotlight on McDonald's Commitment

As part of its commitment to eliminate deforestation from its cattle supply chain, McDonald's requires its suppliers to receive the local community's Free, Prior, and Informed Consent (FPIC) before developing plantations on community-owned land (McDonald's 2018). The fast-food giant's zero deforestation goal prohibits the clearance of High Conservation Value (HCV) and High Carbon Stock (HCS) areas and primary forests (McDonald's 2018). McDonald's monitors its suppliers' adherence to FPIC and other sustainability criteria using third-party audits.

Case Study 1: Minerva's Commitment and Investment in Traceability

Paraguay's neighbor, Brazil, has a much larger and more diversified cattle industry, but Brazil's cattle industry has faced transparency and traceability issues similar to Paraguay's. Collaboration between government and corporations like Minerva Foods has been essential to addressing these issues, and the actions taken in Brazil could be a source of inspiration for the Paraguayan cattle industry.

In 2009, Brazil's cattle industry had a problem. The environmental watchdog Greenpeace uncovered that the cattle industry in the Amazon was the single-largest driver of deforestation globally (Minerva Foods 2015; Greenpeace 2009). Their report brought intense media scrutiny and pressure from Nike, Adidas, and other buyers on Brazil's four largest cattle traders to eliminate this deforestation risk from their supply (Adam 2009). In response, traders committed to a Zero Deforestation Cattle Agreement dubbed the "G4 agreement", which pledged to stop directly sourcing from ranches involved in deforestation and illegal activity and to establish monitoring systems in their supply chains (Zero Deforestation Cattle 2018).

One of the pledging companies, Minerva Foods, is the second-largest Brazilian exporter of fresh beef, the largest meat processing company in Paraguay (with 39% of beef exports), and a leading exporter of live cattle (Minerva Foods 2018a). In 2008, Minerva had initiated a socio-environmental commitment within its domestic supply chain[v] to monitor roughly 9M ha of land in the Brazilian Amazon (Minerva Foods 2016). However, because of its new pledge, the cattle trader adopted stricter criteria for its direct and indirect suppliers, implemented a blacklist system for noncompliant suppliers, and implemented stronger monitoring and traceability strategies (Minerva Foods 2015). Since then, Minerva reported that 100% of its cattle sourced from direct suppliers in Brazil adhered to these new guidelines in 2014 and 2015 (Minerva Foods 2016).

While Greenpeace's report exposed a risk to Minerva's business model, the company also sensed new opportunities that could come out of a more sustainable brand image. The company has operation units and distribution centers located in Argentina, Brazil, Chile, Colombia, Paraguay, and Uruguay, and international sales offices in Algeria, China, Chile, Colombia, the United States, Italy, Iran, Lebanon and Russia.

Minerva's long-term business strategy of expanding into new markets benefited from loans targeting sustainability improvements. For example, Minerva began operations in Paraguay with the purchase of Friasa in 2008, Frigomerc in 2012, and three other industrial facilities in 2017. In 2013, Minerva negotiated a loan agreement with IFC, which had a sustainability contingency: the company had to expand its commitment in the Amazon to the Chaco region, which extends across parts of Paraguay, Bolivia, and Argentina. Minerva has sourced from many suppliers since entering the Paraguayan market (6,000 to 7,000 cattle suppliers across Paraguay), but only supplies from roughly 2,000 in any given year, 40% of which are in the Chaco.

Photo Credit: Vivalavida, WikiCommons

However, there are challenges working with these suppliers. Minerva works in a spot market, where buyers may have commitments, but purchasing is dictated by quality, availability, and supply – not by cooperative commitments. Suppliers transport cattle from the ranches to Minerva´s meatpacking plants to be processed, then Minerva transports the meat to export ports or to their distribution centers in Brazil, Chile, and Paraguay. In Paraguay, unlike in Brazil, transportation of cattle products is the responsibility of the suppliers (producers, middlemen), which can be challenging if the farms are remote or the suppliers' vehicles are not in good condition.

The absence of adequate traceability and monitoring in the cattle sector also makes it difficult for companies such as Minerva to implement their commitments. Problems include a lack of enforcement of monitoring and assessment by the government, lack of pressure from the industry and consumers, lack of transparency of public or official data on land use (not only in the Chaco region but throughout the country), and changing legal protections for forests (Earthsight 2017).

Although Minerva's influence over its suppliers is evident, the company has not yet fulfilled its commitment. The company is preparing itself for further changes to logistics and in terms of its products and markets. However, to fully achieve its commitment, Minerva is hoping for increased government leadership on issues such as traceability and monitoring that will advance the cattle industry. By taking these initial steps to increase their sustainability, Minerva is poised to take full advantage of government leadership and a new national system when they arise.

In 2015, Minerva Foods joined the Alliance for Sustainable Development of the Chaco (WWF 2018a), alongside the United States Agency for International Development (USAID), Neuland Cooperative, IFC, WWF, Wildlife Conservation Society (WCS), and the municipality of Filadelfia. The Alliance aims to reduce deforestation related to beef and soy production in Paraguay, and to improve field productivity and sustainability. This alliance, and the communication it has with its suppliers, were contributing factors in Minerva's decision to create an organic certification program with 150 private ranches[vi] already certified by the Protocol of the European Union (European Union 2007). Minerva expects this will open the door to new markets and increase sales volume.

Finally, as part of the terms of a BRL 137.7M loan, Minerva worked to determine how it could improve sustainability as a private actor in a country where there is no data transparency or external pressure. According to Taciano Custodio, Sustainability Manager at Minerva Foods, Minerva established the following recently published (IFC 2013) procurement requirements for the Chaco region:[vii]

- Do not buy from areas with illegal deforestation (registrations since January 2018)
- Do not buy from ranches that are in indigenous territories and protected lands
- Lands must be titled, not only recognized, by the government of Paraguay
- Address the issue of forced labor and child labor
- Maintain the involvement of the meat sector in sectoral projects that consider the production sustainability of the Paraguayan Chaco

Thanks to these commitments, there has been a direct impact on traceability in the Chaco. **As of October 1, 2018, 250 suppliers will be mapped each year with geographic coordinates and specific criteria and, guided by the IFC performance standards, Minerva will classify these 250 suppliers according to environmental criteria. This has never been done in Paraguay** (Cifo.co 2017)**.** This information will be used to create a database, recognized by the government, of suppliers guaranteed to not be associated with production on indigenous lands, protected areas, or illegally deforested land.

As companies push for greater transparency within Paraguay's beef sector, they may have opportunities to collaborate with the government to develop land registries and otherwise improve traceability. Paraguay's neighbor Brazil has undertaken many of these same issues in its own supply chain and could provide insight and inspiration for the Paraguayan cattle industry (Case Study 3).

Case Study 2: Sustainability Experience among Mennonite Abattoirs Operating in Paraguay

Traceability can be a crucial element to establishing a sustainable cattle industry and gaining increased access to international markets and corporate partners with strong sustainability standards.

Paraguay is home to around 30,000 Mennonites, an Anabaptist Christian group with origins in central Europe, who mostly live in three settlements in the Chaco region: Menno, Fernheim, and Neuland. Since they arrived in the country, between 1927 and 1947, the Mennonite colonies have played a large role in the country's growing beef industry. They are currently responsible for about 40% of Paraguay's total beef production, through their beef processing companies FrigoChorti, FrigoChaco, and Neuland.

Mennonite colonies own their own territory and have expanded their area from an initial 15,000 ha to more than 1M ha today (La Nación 2016). They are organized into agricultural and industrial development cooperatives. The cooperatives' overarching functions are to provide the Mennonite farmers with a distribution network, which gives them a guaranteed market and greater economic security (Córdoba et al. 2015). However, the cooperatives also contribute to improved environmental practices, such as soil management and conservation practices, waste treatment, recovery of salinized areas, and reforestation.

For the past 15 years, stronger enforcement of environmental laws has required producers to obtain an environmental license, which is an impact assessment of the productive area and the remaining forest that compares current satellite images with those taken in 1986. A license typically covers a single 200-300 ha property, but since the cooperative owns the land and rents plots to its associates, Neuland cooperative applied for their license as a whole. This mapping of farms and reserves creates an accurate picture of land use in the Chaco and will contribute to the development of strategic plans approved by the MADES Ministry of Environment and Sustainable Development) and the INFONA (National Forestry Institute), which will detail actions that need to be taken to regenerate the forest loss and leverage conservation areas, productive areas, and biological corridors according to the legal framework.[viii]

While Paraguay has started to strengthen its environmental regulations, enforcement remains an issue. There has been minimal implementation of cattle traceability practices (Box 6), which are not required by most of the cooperative's domestic and global buyers. In Paraguay, there is no national system requiring detailed data on the origin of the livestock before it reaches a processing plant; similarly, the main export markets of Russia and Chile do not request more thorough traceability information about cattle.

However, greater traceability is necessary for export to high-value, heavily regulated markets, and nearly 70% of the companies (many of them large, well-known corporations) operating in Paraguay that have made cattle commitments are pledging to increase traceability within their cattle supply chains. The cooperatives can already trace livestock from the Mennonite members' farms, so they have already made progress towards this important metric. However, cooperatives regularly purchase livestock from external suppliers to meet market commitments. In these cases, the traceability begins when the cattle reach the processing plants. The cooperatives do, however, establish environmental Memoranda of Understanding (MOUs) with outside suppliers settling required environmental standards. The cooperatives also assess their suppliers regarding cattle management and environmental licenses (Neuland 2018).

The three Mennonite cooperatives created the *Pioneros del Chaco Expo* to promote investment in local producers through innovation and technology, to establish strategic alliances with government and companies, and to encourage more sustainable production (Expo Pioneros 2018). Like Minerva Foods (Case Study 1), Neuland Cooperative was also invited to take part in the Alliance for Sustainable Development of the Chaco with USAID, the municipality of the Chaco, and several non-governmental organizations (USAID and Alianza para el Desarrollo Sostenible 2018).

Although Mennonite Cooperatives are continually working to comply with cattle industry standards and environmental laws, producers are skeptical that these new environmental initiatives will have an immediate effect on production without support from industry or government. However, they hope that these initiatives will one day lead to certification programs or preferential markets and that they will be ready to engage in these initiatives. "Our biggest dream is to produce meat in an environmentally friendly area... We believe that it is a good impact for the meat market of Paraguay," says Sebastian Boldt, Agricultural Services Manager at Neuland.[ix]

Case Study 3: Sustainable Finance Opening Doors in Brazil

Brazil successfully reduced deforestation rates while increasing agricultural production between 2004 and 2015. In this 11 year period, Brazil reduced deforestation in the Amazon by 84% while increasing exports of beef by 22% (Fearnside 2017; Brazilian Beef 2018). However, momentum is dwindling due to lack of economic viability and financial support; deforestation increased by 24% in 2015 and has continued to rise since then (Theil and Schaap 2018).

The Brazilian federal government, states, and companies have received substantial funding from Reducing Emissions from Deforestation and Forest Degradation (REDD+) and other sustainable investments to support activities that combat deforestation. By supporting the same measures, Paraguay could attract similar funding. This would provide direct economic incentives for the Paraguayan government, cooperatives, corporations, and individual landowners to reduce deforestation, and could have positive impacts on the efficiency and profitability of the Paraguayan cattle industry. Below are some emerging sources of financing for sustainability efforts in Brazil, with potential lessons for Paraguay:

Donor countries: Brazil's progress combating deforestation is supported by billions of dollars in funding for the development of REDD+ activities in Brazil. The main institution for REDD+ finance in Brazil is the Amazon Fund, which has received US$3.1B in contributions from donor countries, private individuals, and businesses (BDNES 2017). The government of Norway has contributed R$2.9B (US$873M) to the Amazon Fund and has recently begun financing sustainable agribusiness products in addition to REDD+ (BDNES 2017; Xinhua Español 2017). Similarly, Germany and the UK have donated US$153M to expand programs to fight deforestation in the Amazon, earmarking around US$88M to environmental programs for indigenous peoples and farmers (Spring 2017).

To date, REDD+ funding has prioritized REDD+ "readiness" activities like capacity building, stakeholder engagement, institutional strengthening, and public policy, rather than implementation activities such as financial credit, technical assistance, and payments for environmental services. Shifting towards implementation activities that supply finance to farmers, ranchers, and other on-the-ground land managers will be important in combating deforestation (Bastida et al. 2017).

Private foundations: Between 2009 and 2016, US$80M – mostly from private foundations such as the Moore Foundation, Althelia, and Fundo Vale – has gone towards supporting low-carbon agriculture in the Amazon. Forest Trends' analysis found that nearly all of this committed funding has been disbursed (Bastida et al. 2017). This highlights a benefit to working with private foundations: public REDD+ funding has a much slower disbursement rate. Only 88% had been disbursed of the US$2.2B committed by 2016, and even that is a significant improvement compared with previous years. Of the US$80M from private foundations, only 25 of the mapped 67 projects target livestock and soybean production, despite the impact of these commodities on deforestation.

Domestic funding: Sustainable finance is also available from domestic sources, such as from Brazil's Low Carbon Agriculture Plan (ABC Plan). From its launch in 2011 and 2016, the ABC Government Plan invested a total of US$6.1B, US$607.9M of which has been earmarked for rural credit to small and large producers that use low carbon agriculture techniques in the Amazon. However, the resources for the northern region are notably lower when compared to the amount invested in other regions, particularly in the central-west and southeast. Out of the US$6.1B invested, 70% was allocated to these regions while the northern region was allocated just 10% of resources. Domestic investment needs to be diverted towards emerging frontiers such as Mato Grosso, Pará, and Rondônia to address deforestation risks. Additionally, the Brazilian government launched a US$50M funding program through the Agriculture and Cattle Plan that provides resources for low carbon agriculture programs that would promote sustainable practices and technology (Sputnik 2018).

Box 8: Brazilian Roundtable for Sustainable Livestock (GTPS)

This multi-stakeholder initiative is made up of representatives from the livestock industry from throughout the supply chain, civil society organizations, academia, and government. Their goal is to develop a livestock production industry that is sustainable socially, environmentally and economically by formulating principles, standards, and common practices for those involved in the beef cattle value chain in Brazil. Their four core principles are continuous improvement, transparency and ethics, good agricultural practices, and legal compliance (Forest500 2018).

Of the companies researched by *Supply Change,* seven companies with cattle commitments participate in the GTPS. These companies are Carrefour, JBS, Marfrig, Mars, Minerva, Arcos Dorados/McDonalds, and Walmart.

Domestic laws: Brazil's Forest Code of 1965 (revised in 2012) requires rural landowners in the Amazon to permanently maintain 80% of the forest and requires rural landowners to register with the Cadastro Ambiental Rural (CAR) (Brazil 2012). Landowners can participate in programs, such as The Amazon Fund, to comply with the law and can receive concessional credits and other financial incentives for forest conservation (De Siqueira et al. 2017). The law has also received external support; the World Bank's Forest Investment Program (FIP) has made US$32.5M available through a concessional loan to improve implementation of the Forest Code in rural properties in the Cerrado region (Serviço Florestal Brasileiro 2018).

The Forest Code also helps promote land claim transparency in rural areas. For example, Brazil's federal agency, the Institute of Environment and Renewable Natural Resources (IBAMA) uses satellite monitoring systems like the Program to Calculate Deforestation in the Amazon (PRODES) and the Real Time System for Detection of Deforestation (DETER) to monitor deforestation on private land in the Amazon (Anderson and Weisse 2016; Assunçao et al. 2017). IBAMA and the satellite forest monitoring tools show how technology can promote transparency and Brazil's reputation as a leader in forest conservation.

Subnational initiatives: The state of Mato Grosso is on the frontier between the Amazon forest and *Cerrado* savannah biomes and is a major commodity-producing region. Mato Grosso has been at the forefront of subnational sustainability approaches. For example, in 2015, the government announced the Produce-Conserve-Include (PCI) strategy, which seeks to preserve existing forests and reforest on degraded land while improving livelihoods and doubling economic output by 2030. The PCI strategy aims to increase livestock productivity, sustainable forest management, and market access for smallholder farmers while reducing deforestation. In terms of direct financial incentives, the PCI strategy intends to increase credit access from BRL 411M to BRL 1,300M (PCI Monitor 2018).

Box 9: Novo Campo Program

The Instituto de Centro Vida (a Brazilian nonprofit), Althelia (a British investment firm), and other corporate partners developed the Novo Campo program in response to pressure from consumers and clients to address deforestation in the Brazilian cattle industry. The program aims to increase the productivity, profitability, and sustainability of cattle ranching in Brazil to reduce the need for further deforestation. The program engages with local farmers, connects them with high value markets, and provides technical assistance to help them implement sustainable practices in line with the GTPS indicators (Zero Deforestation Cattle 2015).

As of 2017, they have worked with 20 farms, including 10,000 restored ha of pasture and 340,000 head of cattle, and helped achieve reductions in GHG emissions as high as 90% on some ranches (WWF 2018b). Being aligned with the GTPS principles allows buyers to verify beef sustainability, and allows ranchers to access higher-paying markets and increase their profitability. Arcos Dorados, a franchisee of McDonald's and one of the biggest beef buyers in the world, is a partner of the Novo Campo program, and believes that this program will allow them to source beef from the Amazon without contributing to deforestation (WWF 2018c).

Private Sector initiatives: A growing number of banks and investment groups are pressuring public companies to report deforestation impacts within their global supply chains through shareholder campaigns (Ceres 2016). Other groups are providing financial support to producers seeking to operate sustainably through resources such as the Brazilian Roundtable for Sustainable Livestock (Althelia 2018) (Box 8) or the Novo Campo Program (Box 9).

Commodity-driven deforestation in the Amazon biome has often overshadowed and diverted resources away from comparable problems in the Cerrado and Chaco biomes. However, alarming research and media coverage of the destruction in the Cerrado biome prompted 64 consumer goods companies including Walmart, McDonald's, and Unilever to sign the Cerrado Manifesto. The signatories promise to protect the Cerrado from unsustainable cattle and soy production (TFA 2018), and many of those same companies went further to build the US$5.6 trillion FAIRR (Farm Animal Investment Risk and Return) investor coalition with comparable aims to protect the Cerrado (Rosen 2018). So far, no disbursements have been publicized.

Compared to Paraguay, Brazil is a much larger and more diversified exporter of cattle products and has received more global attention for deforestation threats to the Amazon. Paraguay stands to benefit from pursuing forest conservation, because it has the potential to attract financial support from donor countries, private donors, and private initiatives. Subnational programs targeting problematic areas like the Chaco could attract additional funding. Several nongovernmental organizations and initiatives have already begun to work with Paraguay's cattle industry (Annex 2) to address similar issues, and this support has the potential to be ramped up. Paraguay's rapid deforestation rate is a prime target for Norway's payment for performance schemes, which provided crucial funding to Brazil's government to establish the CAR. Support for establishing a national registry for landowners will be crucial for private companies operating in Paraguay to be able to assess and ensure compliance with their commitments. Finally, the World Bank's FIP (Forest Investment Program) could provide important funding for the Paraguayan Government to enforce both existing and future environmental laws.

Conclusion

Strategic leadership from the Paraguayan government and from the private sector will be pivotal for ensuring the country can achieve both its sustainable development goals and its aspiration to become one of the world's leading producers of cattle products.

Leadership Opportunities for the Paraguayan Government

Brazil has received substantial funding for REDD+ and other activities to combat deforestation. Paraguay could obtain similar results-based funding to support avoided deforestation and sustainable agriculture initiatives. This would not only provide direct economic incentives for the Paraguayan government, cooperatives, corporations, and individual landowners to reduce deforestation, but could have positive impacts on the efficiency and profitability of the Paraguayan cattle industry.

Additionally, increasing concern regarding climate change, deforestation, and health-related risks hidden within commodity supply chains is prompting a growing number of country regulators in Europe, industry groups, and influential corporate buyers to seek data to inform their commitments, procurement decisions, and standards. **The Paraguayan Government can take steps to anticipate this growing need and position itself as a data-rich market with low risks and high rewards**. Here are a few concrete steps the Paraguayan Government can take:

- Continue to establish a public national forest monitoring system that shines light on where cattle products come from through land titling, mapping, and real-time monitoring of land use outcomes associated with private land in all regions in the country.
    - A public national forest monitoring system will allow the government to identify noncompliance with its forest laws, allow global buyers to assess deforestation risk from potential suppliers, and allow producers, processors, and traders to access markets concerned about deforestation. This system can build on or complement existing traceability systems used for sanitation.
- Establish a nation-wide traceability system for tracking and verifying sustainability for individual cattle from birth to slaughter based on SITRAP.
    - The government should bolster existing Livestock Registration Requirements for SITRAP (SENACSA 2018)[x] to include land use change performance requirements and verification rather than only requiring the completion of environmental impact assessments as they do now.
    - The traceability system should make land use change and social impacts associated with individual cattle producers publicly available and promote their use in informing investment and sourcing decisions. For instance, the Paraguayan government could publish a monthly list of noncompliant producers as Brazil's federal agency, IBAMA, does.
- Strengthen regional cattle platforms to support greater collaboration around sustainability planning, improve supply chain transparency, implement higher environmental and social standards, and secure sustainable finance.
    - The government should provide support to the Green Chaco Project's *Sustainable Meat Action Plan for the Chaco* to ensure it includes time bound objectives for establishing a clear system of monitoring land use change.
- Streamline laws and regulations that protect forests across all regions (including the Atlantic Forest and the Chaco), while establishing clear expectations for compliance, monitoring, and enforcement.
    - Authorities should implement relevant recommendations around national and subnational policies, regulations, land use planning, and protection of areas of High Conservation Value and High Carbon Stock proffered in an upcoming legal analysis by Green Chaco Project.
- Leverage domestic resources for sustainable agriculture from relevant donor countries and private foundations to support: 1) Enforcement and monitoring of forest laws; 2) Initiatives targeting improvements in cattle productivity without expansion; 3) Matchmaking between companies pursuing sustainable ranching with companies and investors looking to mitigate deforestation risks; and 4) Sustainability leadership among subnational, private sector, and multilateral initiatives (Appendix 2, Table 5).

Leadership Opportunities for Producers, Processors, Traders, or Manufacturers Operating in Paraguay

Why Make a Sustainability Commitment?

Offering cattle products from sustainably managed ranches could be a promising strategy for suppliers that want to increase sales to new and existing markets. Hundreds of influential manufacturers and retailers with a global presence are under pressure by several coalitions of investors, including two respectively managing US$87 trillion and US$26 trillion in assets, to report on and address hidden climate and deforestation risks within their commodity supply chains (CDP 2019, Ceres 2016). Consequently, developing sustainability commitments can draw interest from a growing number of international buyers with high environmental and sanitary standards headquartered in Europe and North America, as well as those in emerging markets like Brazil (Chain Reaction Research 2018) and China, which are also increasingly focused on these topics. Furthermore, a growing number of investors are offering additional financial support for sustainable expansion, much like the IFC did for Minerva (Case Study 1).

Hardly any companies publicly mention Paraguay in their low/no-deforestation commitments. However, many low/no-deforestation commitments are global in nature. Existing suppliers could be re-evaluated and potential suppliers could be precluded as buyers if they fail to meet environmental criteria. Not many companies have specified aims to increase productivity without expansion, which could be an opportunity for producers and processors to market themselves as proactive businesses driving for efficiency while avoiding deforestation.

What Strategies Can Companies Employ to Make and Keep Commitments?

- Companies can draw on Accountability Framework initiative (AFi) and CDP guidance for establishing and reporting measurable, verifiable commitments to address deforestation as a way to meet expectations of a growing number of corporate buyers, nonprofits, and governments around the world.
- Being able to **accurately trace cattle products back to the ranches** where the cattle were bred, reared, and fattened is critical for producers and processors to be able to effectively evaluate deforestation risks and report on progress to concerned buyers.
- Companies can pursue longer-term relationships with suppliers as a way to build trust and collaborate on long-term sustainability (Case Study 2).
    - Because SITRAP is a voluntary system, companies can provide time-bound incentives and/or requirements for suppliers to register. Companies can also work with other stakeholders to include land use information with SITRAP tracking.
- Whether companies are securing long-term contracts or engaging in spot market deals, there is an opportunity to expeditiously register and map all of their suppliers within the new forest monitoring system or to use a government approved system as Minerva has done (Case Study 1).
- Companies can turn to a number of initiatives in Paraguay (such as SITRAP or SIGOR) to help with traceability, sustainability, and accessing export markets (Appendix 2, Table 5).
- Producers and processors can pursue intensification programs in order to meet production goals without compromising commitments on sustainability (Ramirez, 2019).
- Remote sensing tools like Global Forest Watch Pro can help companies monitor and analyze land use change among their suppliers.

Leadership Opportunities for Companies Concerned about Procuring Cattle Products from Paraguay

When considering potential cattle product suppliers, companies with sustainability commitments can check for and encourage suppliers to adopt commitment(s) themselves and weigh the scope, focus, and timeframe of each suppliers' commitment. For large corporate buyers of cattle products, having low/no-deforestation commitments that apply globally can help them recognize and plan for tackling deforestation across their supply chain. However, all companies can benefit from developing a tailored accompanying country plan that sets clear expectations for monitoring and compliance with their commitment and forest laws. This can help companies account for differences in legal protections for forests in Eastern and Western Paraguay and the untested forest monitoring system in development. Providing supplier support for improving productivity, land titling, mapping lands, real-time monitoring of land use, and legal compliance (Case Study 2) are concrete strategies for companies to ensure their suppliers meet their sustainability commitments. Finally, companies can direct their suppliers to disclosure platforms like CDP, which can guide suppliers in their delivery of meaningful performance metrics comparable with other suppliers.

Planning Ahead as Investors Concerned about Forest Risks Look to Paraguay

A growing number of international private foundations and other donors are pressuring global buyers of to address deforestation (Ceres 2016) across all the countries in which they source forest-risk commodities. Companies and governments can look to Ceres' new investor brief "Out on a Limb" to learn more about the questions and recommendations which investors may have of from companies with forest-risk supply chains. Going forward, investments and loans may also increasingly include environmental performance requirements as a precondition for investment, particularly in areas with high deforestation risk (Case Study 1). A number of local banks in Paraguay are already relying on remote sensing data from Global Forest Watch to assess loans to farmers and traders (World Resources Institute 2019b). Work by the Sustainable Investment Roundtable to standardize environmental and social criteria for forest protection loans signals a growing opportunity for entrepreneurial companies operating in Paraguay to implement sustainable practices. Also, the emergence of the Cerrado Manifesto and accompanying FAIRR investor initiative designed to address deforestation in Brazil's similarly imperiled Cerrado ecosystem could highlight how the Sustainable Investment Roundtable could evolve. A recent assessment by Global Canopy and SCRIPT highlighted key risks facing prominent investors in, and exporters of, cattle products from the Paraguayan Chaco (Døvre 2019). To get ahead of these emerging investor expectations, companies can review the AFi for relevant guidance on how to set, monitor, and report progress on commitments to address deforestation within Paraguay. Paraguay has many relevant resources, including regional and national initiatives that can help companies no matter where they are in the process of addressing deforestation(Appendix 2, Table 5).

Endnotes

[i] In other countries, the requirements are much more strict. In Brazil, for example, in order to meet the Tariff Quota or Hilton Quota (ISEA 2012), cattle must able to be traced from when they are 40 days old.

[ii] In 2016, the UK imported US$897M in boneless, fresh or chilled beef, primarily from Ireland (67%), Netherlands (9%), Australia (4%), South Africa (4%), Poland (4%), and Germany (3%). Paraguay accounted for US$4.2M (0.47%) of the market. The frozen, boneless market is much less significant at only US$223M (imported from Ireland (57%), Uruguay (8%), Germany (8%), South Africa (6%), Brazil (4%), and the Netherlands (4%)).

[iii] South Korea does not currently import high volumes of beef from Paraguay but is a potential future market for Paraguayan beef. In 2016, South Korea imported US$1.0B in boneless, frozen beef primarily from Australia (56%), the United States (35%), New Zealand (5%), and Uruguay (2%); and US$555M frozen, bone-in beef cuts, primarily from the US (71%), Australia (19%), and New Zealand (7%).

[iv] Using publically-available information, Supply Change identified all the companies that produce or source cattle, and cross-referenced these with a list of companies that produce or source any of the four commodities we track (palm oil, timber, soy, and cattle) from Paraguay. Therefore, we could not confirm whether the products that sourcing from Paraguay are cattle products; they may only source soy, palm or timber from Paraguay.

[v] Interview with Minerva Foods representative, October 5, 2018.

[vi] Interview with Minerva Foods representative, October 5, 2018.

[vii] Interview with Minerva Foods representative, October 5, 2018.

[viii] Interview with Neuland representative, October 8, 2018.

[ix] Interview with Neuland representative, October 8, 2018.

[x] Currently, registration documentation for SITRAP outlines expectations around animal rights and sanitary requirements but fails to include expectations around land use change outcomes.

Appendix 1: Supplemental Tables, Figures, and Graphs

Table 3: Companies Believed to be Sourcing or Producing Cattle Products in or from Paraguay* by Commitment Type and by Type of Cattle Product

COMPANIES	COMMITMENT(S) : CATTLE-SPECIFIC AND/OR GENERAL		EXPORTERS AND SELLERS OF NON-FINISHED PRODUCTS IN-COUNTRY?	TYPE OF CATTLE PRODUCT PRODUCED, PURCHASED, OR SOLD
				
Agromir	N	N	Yes	Unknown
Ahold Delhaize	N	N	No*	Unknown
Albron	N	N	No	Unknown
August Storck	N	N	No	Unknown
BMW	N	N	No	Unknown
CHS (CHSCP)	N	N	No	Unknown
COFCO Limited (China National Cereals, Oils and Foodstuffs Corporation)	N	N	Yes	Beef, Dairy
Cresud	N	N	Yes	Beef
Dairy Crest Group	N	N	No	Dairy
Danone	Y	Y	No*	Unknown
Diageo	N	N	No*	Unknown
Dieta+	N	N	Unknown	Unknown
Domino's	Y	N	No*	Beef, Dairy
Edeka Zentrale	N	N	No	Unknown
Ferrari	N	N	No	Unknown
General Mills	N	Y	No*	Unknown
GPS Food Group	N	N	Yes	Beef
Grupo André Maggi	N	N	Unknown	Unknown
HKScan Group	N	N	Yes	Beef
ICA Gruppen	N	N	No*	Unknown
Ikea	Y	N	No*	Leather, Beef and Diary**
Kaufland	N	N	No	Unknown
Kroger	N	N	No	Unknown
Lactalis Group	Y	N	Yes	Dairy
Lidl Stiftung & Co.	N	N	No	Unknown
Marfrig	Y	N	Yes	Beef
Marks & Spencer	Y	Y	No*	Unknown
Marubeni	N	N	No*	Unknown
McDonald's	Y	N	No*	Beef
Mead Johnson Nutrition Company	N	N	No*	Unknown
Metro AG	N	N	No	Unknown
Migros	N	N	No*	Unknown
Minerva	Y	N	Yes	Beef, Leather, Biodiesel, Cattle
Miratorg Agribusiness Holding	N	N	Unknown	Beef
Mitsubishi Corporation	N	N	No	Unknown
Mousquetaires	N	N	No	Beef, Dairy
Nike	Y	N	Yes	Leather
Norges Gruppen	N	Y	No*	Unknown

COMPANIES	COMMITMENT(S) : CATTLE-SPECIFIC AND/OR GENERAL		EXPORTERS AND SELLERS OF NON-FINISHED PRODUCTS IN-COUNTRY?	TYPE OF CATTLE PRODUCT PRODUCED, PURCHASED, OR SOLD
				
Orkla	N	Y	Yes	Beef, Dairy
Pentland Group	Y	N	No*	Leather
PepsiCo	N	Y	No*	Unknown
Restaurant Brands International	N	Y	No	Beef
REWE Group	N	N	No	Unknown
Rezervnaja Prodovol'stvennaja Kompanija TD ZAO	N	N	Yes	Beef
Sobeys	N	N	No	Beef, Dairy
Starbucks Coffee Company	N	N	No	Unknown
Superunie	N	N	No	Unknown
Systeme U	N	N	No	Unknown
Tesco	Y	Y	No*	Unknown
Unilever	Y	Y	No*	Unknown
VanDrie Group	N	N	Yes	Beef, Leather, Dairy
Waitrose	N	N	No	Unknown
Walmart	Y	N	No*	Unknown
Whole Foods Market	N	N	No	Unknown
Yum! Brands	N	N	Yes	Beef, Dairy

* Although international movement of cattle-based products likely exists.
** Cattle product is likely to have been produced or sold in Paraguay, but this could not be confirmed.

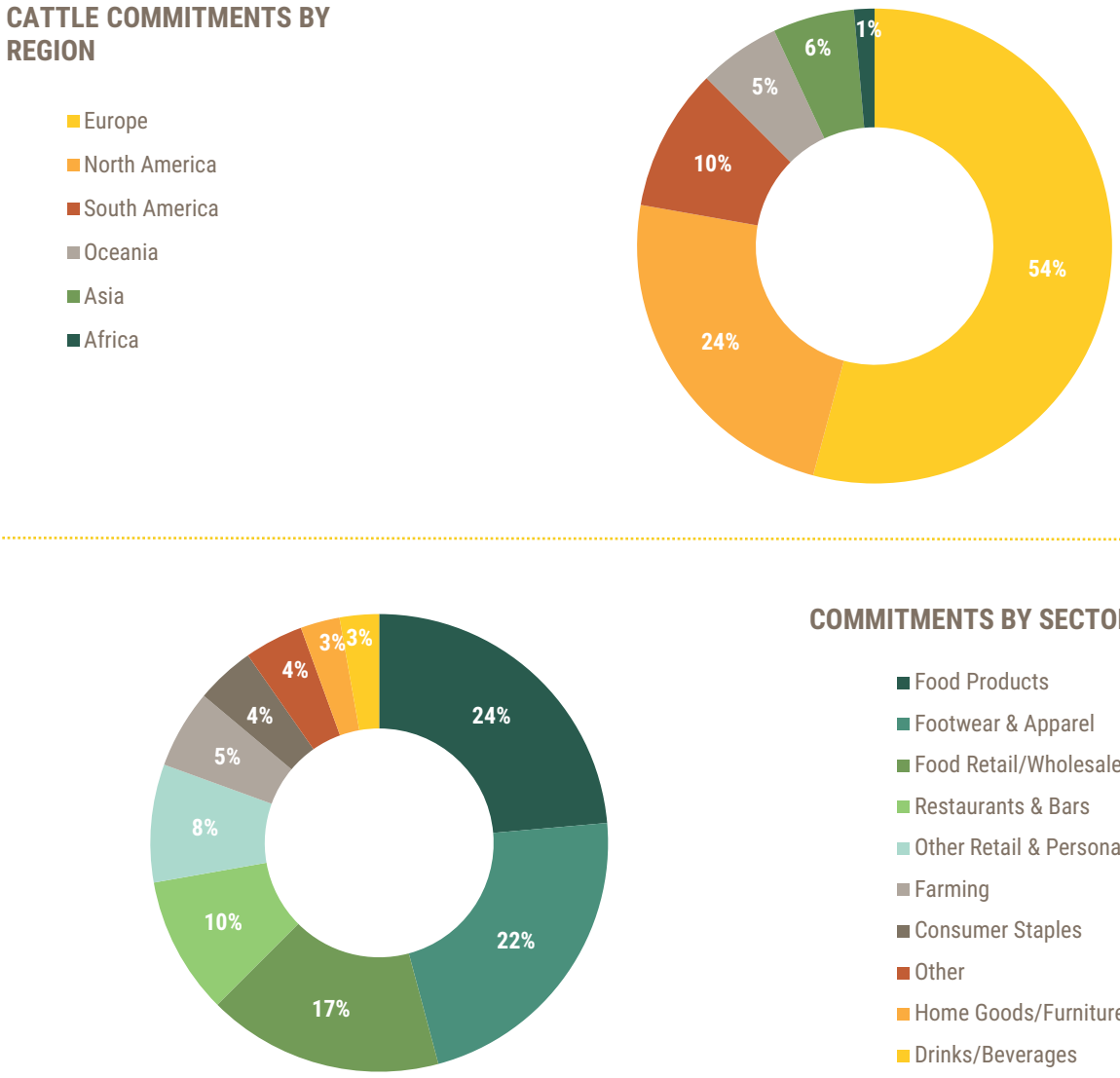
Table 4: Examples of Company Commitment Text[1]

COMPANY	COMMITMENT TEXT
General Commitments	
General Mills	*"We are committed to sustainably sourcing 100 percent of our 10 priority ingredients by 2020, representing more than 50 percent of our annual raw material purchases."*
PepsiCo	*"[We] seek to sustainably source our non-direct major agricultural raw material ingredients by 2025."*
Norges Gruppen	*"[Target:] Prevent deforestation, with particular focus on soya, palm oil, beef and paper."*
Cattle-Specific Commitments	
Minerva	*"Cattle sourced from direct suppliers operating in the Amazon biome will be deforestation-free"*
Marfrig	*"For both direct and indirect suppliers, cattle and by-products shall only be supplied by farms or groups who have formally committed to adopting a trustworthy tracking system which [...] also includes clear environmental criteria aimed at putting an end to deforestation."*
Cattle-Specific Commitment with Specific Geographic Reference to Paraguay	
McDonald's	*"[We are] committed to eliminating deforestation from our beef supply chain by 2020, focusing on the countries with identified deforestation risks."*[2]

[1] Refer to *Supply Change* for regularly updated company-by-company tracking of these commitments and additional milestones, goals, and metrics. *Supply Change* data is an aggregation of publicly available certification information, disclosures to multi-stakeholder bodies, and corporate sustainability reports.

[2] McDonald's identifies Paraguay as one of the countries with high deforestation risk on its Conserving Forests webpage: https://corporate.mcdonalds.com/corpmcd/scale-for-good/our-planet/conserving-forests.html

Figure 3: Business Information Summary of ALL Supply Change Companies with Cattle Commitments, 2018



Appendix 2: Relevant Resources on Cattle Production in Paraguay

Table 5: Organizations and Initiatives Supporting Cattle Production in Paraguay

Commitment Development and Reporting	
GOOD GROWTH PARTNERSHIP	**Good Growth Partnership** is led by UNDP and implemented in collaboration with Conservation International, IFC, UN Environment, and WWF. The Good Growth Partnership works in partnership with the governments of Brazil, Indonesia, Liberia, and Paraguay, as well as civil society and major private sector players, to reduce deforestation and enable sustainable development in three global commodity supply chains: soy, beef, and palm oil. In Paraguay, the Good Growth Partnership supports the sustainable production and demand for sustainable beef through the Green Chaco project.
CDP DISCLOSURE INSIGHT ACTION	**CDP,** formerly the Carbon Disclosure Project, operates a global disclosure system that enables companies, cities, states, and regions to measure and manage their environmental impacts. Each year, CDP invites hundreds of companies to disclose information on their environmental impacts on climate change, water security, and forests, and presents the company with letter grades based on their annual performance.
THE CFA	**Collaboration for Forests and Agriculture (CFA)** is an initiative led by WWF, the National Wildlife Foundation, the Nature Conservancy, and the Gordon and Betty Moore Foundation. CFA aims to define standards and incentives for companies to produce zero-deforestation beef and soy in the Brazilian Amazon and Cerrado, and the Gran Chaco in Paraguay and Argentina. The group assists companies with setting commitments and finding tools to help with monitoring.
Accountability Framework	**The Accountability Framework** is a set of common norms and guidance for establishing, implementing, and demonstrating progress on ethical supply chain commitments in agriculture and forestry. The Framework offers companies a "roadmap" to achieve and be recognized for strong environmental, social, and governance (ESG) performance by buyers, financiers/investors, civil society groups, consumers, and other stakeholders.
Commercial Network and Institutional Planning	
MPCS	**Mesa Paraguaya de Carne Sostenible** works with sustainable roundtables through the Global Roundtable for Sustainable Beef, exchanging information about needs and trends in sustainability from fellow associations and companies like Minerva Foods, Rabobank, McDonald's, Cargill, Kepak, and Ahold Delhaize.
CPC	**Paraguayan Meat Chamber** is an assembly of beef industry entrepreneurs. Its purpose is to establish strong commercial relations through the commercialization and promotion of beef and implementation of local and international laws regarding meat quality and sustainability standards.
Mesa de Finanzas Sostenibles	**Mesa de Finanzas Sostenibles (Sustainable Finance Roundtable)** is the first self-regulated initiative in the Paraguayan financial system. It was founded by four banks and operates as a voluntary collaboration platform to deal with environmental and social risks.
Plataforma Nacional de Commodities Sustentables	**National Sustainable Commodities Platform** is a UNDP-supported initiative that promotes participation and commitment from diverse stakeholders in the soy and cattle industry. Its long-term goal is to institutionalize the development of sustainable commodities through a National Action Plan.
Plataforma Nacional de Commodities Sustentables	**Chaco Region Platform for Sustainable Meat** is a regional multi-stakeholder roundtable that focuses on sustainable meat production in the Chaco region. It is affiliated with the National Sustainable Commodities Platform (listed above). The roundtable convenes a diverse group of stakeholders, including government officials, NGO representatives, and community members relevant to meat production in the Chaco region.
Plataforma Nacional de Commodities Sustentables	**Itapúa Department Meat Platform** was established by the National Sustainable Commodities Platform and specifically targets meat production in Itapúa, a department in the Chaco Region. Its purpose is to encourage sustainable meat production in Itapúa in a way that optimizes economic, social, and environmental performance.
Plataforma Nacional de Commodities Sustentables	**Alto Paraná Department Meat Platform** is a regional platform for the department of Alto Paraná within the Chaco region. Its purpose to achieve the Sustainable Development Goals through an intervention that seeks to improve the environmental and social performance of agricultural production for export in the area.
Traceability and Monitoring	
	Paraguay Rural Association brings together all agricultural producers in Paraguay and encourages economic development through livestock production. It promotes good practices in the meat industry through exchanges, research, incentives, and certifications. Together with the National Animal Health and Quality Service, they implemented the beef System of Traceability of Paraguay.

	SITRAP (Traceability System of Paraguay) is an auditable individual traceability system that allows satisfactory guaranties for export certification through relevant information about animal origin and movement, as well as certain information on sanitation and nutrition from birth to slaughter for animals from establishments that are registered in the system. SITRAP tracks the production chain and gives producers the possibility of locating their products in specific markets that require specific information about the origin and the different stages of the productions process.
	Global Forest Watch (GFW) Pro is an online platform designed to help commodity companies and banks manage geospatial data through analysis and dashboards of day-to-day operations. It allows users within commodity supply chains to quantify and manage progress towards meeting deforestation commitments, adhere to commitments, and demonstrate regulatory compliance.
Land Restoration	
	Paraguayan Nelore Breeders Association (APCN) assesses production and reproductive data for the Nelore cattle breed. APCN promotes Nelore commercialization and consumption through fairs and exhibits. The APCN is also involved in promoting environmental services certification options for cattle producers with surplus of forest on their land to access compensation for preserving these lands.
	United Nations Development Programme (UNDP) implemented a project called "**Green Production Landscapes**", led by the Paraguayan Environment Secretary, the Agriculture and Cattle Minister, and other entities. This initiative aims to restore the Alto Paranás Atlantic Forest and support the production of meat and soy without compromising biodiversity or environmental services.
	World Wildlife Fund (WWF) launched the **SuLu Project** that uses a holistic approach to promote climate-smart planning of the Chaco grasslands. It emphasizes enhancing carbon storage, biodiversity, and watersheds in the natural grassland ecosystems, and achieving sustainable agricultural production in the area.
Breed Sustainability	
	Paraguayan Braford Breeders Association works with 250 partners to select and improve the Braford cattle breed to achieve specific standards and compete in high value markets.
	Paraguayan Brahman Breeders Association aims to promote the consumption of the Brahman cattle breed though the selection and enhancement of physical and performance features.
	Paraguay´s Brangus Breeders Association works to give structure to sustainable breeding, and registering animals that comply with the characteristics included in their Genealogic Register guideline and sustainable breeding planning.

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