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Landscape Protection Plan for Hacienda San José



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2 Investment description

2.1 Current operations

Hacienda San Jose (HSJ), a business with initially a singular farm (referred to here as “Finca HSJ”) in the Vichada province of Colombia, was bought by Gabriel Jaramillo and his family in 2012. Over the past eight years, Jaramillo has invested significantly in the farm in order to build up superior genetics, farming techniques and the infrastructure needed so that they can roll out an ambitious expansion strategy over the coming decade.

HSJ's current configuration encompasses 8,891 hectares (ha) of grass lands, forests, reserves, and wildlife corridors in the Primavera Municipality of Vichada Department in eastern Colombia's relatively undeveloped plains (see Farm and Landscape Maps in Annex 1. It is a leading agribusiness company in genetics and meat production.

HSJ developed its farming operations by establishing improved pastures and rotational grazing systems, construction of water supply infrastructure, civil works for modern breeding and veterinary practices, and other farming facilities and equipment. Finca HSJ is now wholly built to support approximately 7,000 Nelore Short Cycle breeding cows and protect nearly 1,500 ha of gallery forests, riparian zones, and inundated grasslands. HSJ has learned a great deal about water management, identifying areas suitable for rotational grazing, implementing world-class breeding and veterinary practices, and establishing and managing rotational grazing systems.

2.2 ESG context

So far, HSJ has focused its sustainability efforts entirely on its own farm. They undertook an extensive evaluation of the farm and regulatory requirements established by environmental control and quality licensing bureau of the region (referred to as Corporinoquia) to compensate for biodiversity and ecosystem service losses. Based on this, HSJ did agree with Corporinoquia on the planting of gallery forests in certain areas of the farm. This amounted to approximately [30 ha] of reforestation. Furthermore, HSJ have maintained all buffer zones to riparian areas across the farm, which is not a business-as-usual activity in the region.

HSJ obtained Rainforest Alliance (RA) Sustainable Agricultural Practices Certification Level C from RA-accredited NaturaCert¹ on September 19, 2019. And, recertified on May 25, 2021, for another year. HSJ is now only the second company in Colombia with this certification in livestock. The current RA category C denotes that significant improvement is required to advance to Category A. The expiration of the current certificate is September 18, 2022. Since RA is phasing out its beef livestock certification program, HSJ is exploring options for other credible third-party certifiers including GlobalGAP and the emerging Aval GANSO standard.

¹ NaturaCert is an initiative of the Natura Foundation, designed to offer certification and verification services for national and international standards for sustainable Colombian products.



HSJ collaborate with Panthera who have placed 20 cameras in the forest on the farm and advised HSJ where to connect forest zones to allow large cats (panthers have been spotted on the farm) to travel freely amongst protected forest. Protecting key species such as large cats means the entire ecosystem is being protected.

From the outset, HSJ have embedded sustainability in their approach; and their stockyard was designed and maintained with a Temple Grandin² design and animal management technique. Similarly, water wells on the farm are operated with solar energy, and the farm has over 400km of renewable pine fences. There are further examples across the infrastructure of the farm of this type of environmental best practice.

HSJ's farm shares a common boundary and a cooperative relationship with a Sikuani³ community in an adjacent *resguardo*. This rural community with haciendas and livestock provides more than half of the 20+ cowboys⁴ working for HSJ. The farm offers considerable support to the local village, including facilitation of engagement with government to improve the general infrastructure (including a school, hospital, and other facilities). The company established working relationships with adjacent farms and has committed substantial resources and attention to working collaboratively with communities in its operations.

HSJ has many guidance documents, policies, and written procedures, and these are being implemented on the current farm. Still, there is an apparent absence of an effective management system to promote continuous improvement and cohesively manage diverse operations under HSJ's management control.

2.3 Proposed project

HSJ intends to establish its nucleus farm, i.e. Finca HSJ, as the breeding hub for its genetics program and for this farm to act as the blueprint for its expansion. The business intends to expand to have influence of around 180,000 hectares of sustainably managed livestock farming at the end of &Green's loan period, which will include more than 13,000 hectares of forest conservation, and material gallery forests, but more importantly will set the bar for the expansion of sustainable livestock management in Colombia.

Ultimately, HSJ will scale up their cow-calf and stocking-and-finishing (S&F) operations to around 400,000 hectares by 2050. The S&F farm would then have grown to about 230,000 hectares, at a stocking rate of one head per hectare.

² Mary Temple Grandin is an American scientist and activist. She is a prominent proponent for the humane treatment of livestock for slaughter and author of more than 60 scientific papers on animal behavior.

³ The Guahibo (also called Guajibo, or Sikuani) people are an indigenous people native to Llanos or savannah plains in eastern Colombia encompassing Arauca, Meta, Guainia, and Vichada departments and in southern Venezuela near the Colombian border.

⁴ A horse-mounted cattle herdsman.



HSJ will operate a take-or-pay program with these farms, selling them genetics (via calves) and then buying back the heifers if HSJ's standard has been met. HSJ intends to use leasing or take-or-pay contracts to offer a full management package to land-owners including genetics, veterinary services, animal nutrition and pasture management, and finishing operations. The company proposes a modest ramp up to establish cow-calf operations to seed farms that HSJ will fully manage through leases with off-taker agreements or management contracts.

HSJ intends to eventually develop the full value chain including slaughter, processing, and secondary product manufacturing.

Although the final, integrated beef production model will not rely on external suppliers, the initial establishment of the company requires the purchase of heifers from external parties in Colombia. These will be one-off purchases and the suppliers are therefore not considered part of the 'primary supply chain'⁵.

2.4 Environmental and Social Due Diligence (ESDD) Overview

&Green's Investment Advisor, SAIL Ventures, first travelled to HSJ in 2018 upon an introduction from IDB Invest. Subsequently, SAIL Ventures has been on site three times; once with a regional cattle expert and once with E&S consultants. The deal was put on hold in 2020 when the impact of COVID on the business was unclear, and engagement was restarted in early 2021.

In 2019, a first IFC PS Gap assessment was carried out by Ambiente Consulting. The consultants also drafted an initial LPP. One of the consultants involved in this work, Dave Gibson, was re-engaged in 2021 for an update of their 2019 IFC PS Gap Assessment, to incorporate any changes in HSJ and the proposed project.

In addition, Climate Focus and GANSO were hired to design a Land Acquisition Tool (LAT). GANSO is a partnership between Climate Focus and the International Center for Tropical Agriculture (CIAT), created to transform areas with degraded pastures and soils into green, productive, and sustainable landscapes. A social component was added to the LAT by AMPLO, a Colombian ESG consultant. AMPLO also carried out a social risk assessment and stakeholder mapping exercise.

Since the exact expansion area is not yet known, a detailed Environmental and Social Impact Assessment (ESIA) is not possible. Rather, ESDD focused on setting the parameters for HSJ to expand in compliance with all agreed sustainability safeguards, detailed in the LAT.

Additional work on climate resilience, greenhouse gases (GHG) and transformational change was done by &Green's Strategic Advisor Matt Spannagle.

⁵ IFC defines the "primary supply chain" as those suppliers who, **on an ongoing basis**, provide goods or materials essential for the core business processes of the IFC client's project, and "supply chain workers" as those workers engaged by a primary supplier.



All DD reports are annexed to this LPP, see Supporting Documents in Annex 7.

3 Landscape

3.1 Scope

Vichada, where HSJ's current farm is located, is in the centre of the vast Orinoquía Region, which covers some 10 million hectares of eastern Colombia. HSJ intends to expand its footprint westward toward Meta and the Villavicencio processing market including finishing operations. The intended project area covers a landscape of approximately 2.8 million hectares on the southern side of the Orinoco River, stretching roughly from the Venezuelan border in the northeast to Villavicencio in the southwest. The figure below indicates roughly the area in which HSJ is likely to expand.



Figure 1 – Projected Expansion Area for HSJ.

As the future expansion farms are not yet known, the entire potential expansion area, inclusive of HSJ's current farm and operations, is considered the project landscape. The characteristics of this landscape are described in more detail in this chapter.

HSJ does not have any operations besides the current farm, and there is no external supply chain.

3.2 Topography and soils

Current and expanded HSJ operations are focused on the Orinoco high plains or "Altillanura", a roughly 50,000 km² plateau that parallels the Meta River in the Vichada and Meta Departments. The Altillanura is composed of softly undulating plains carved by extensive surface waters which drain eastward into the Orinoco River, which separates Colombia and Venezuela. These flat plains, called 'Llanos', are covered with fire-perpetuated savannas on the plateaus and piedmont areas. In contrast, the lower regions are occupied by seasonally inundated wooded grasslands and gallery forests along watercourses.

The Altillanura soils are highly weathered sandy clay mixtures of sedimentary origin with extremely low fertility, high aluminium toxicity, and very acidic. In the seasonally flooded lowland savannas, soils are more fertile with more silt and organic matter. Flooding helps keep these in a



wide variety of perennial grasses and short woody vegetation, but now the pressure on production and fire are further refining structure and reducing diversity. Similar to the Brazilian Cerrado, the Atillanura can be highly productive given the climate.

Within the wetland complexes, there are significant peatland areas along the Meta River south of Primavera, according to CIFOR. Most of the concentrations appear in Casanare, but additional research needs to verify the nature of these peatlands areas that have not been well described.

3.3 Climate and Hydrology

The Meta River falls less than 100m over the 500 km between Puerto Lopez and Finca HSJ. Annual rainfall estimates change significantly across the Orinoquía, with 2500mm recorded at the Carimagua station 160km south of HSJ to 1200-1600mm per year in the Venezuelan Apure. The variability in Orinoquía's climate has been noted by today's climate scientists and archaeologists studying human settlements that experienced historic droughts. Climate models and synthetic climate data obtained through NASA's Global Land Data Assimilation System (GLDAS-2.1) indicate increasing variability in inter-seasonal and inter-annual soil water storage ("blue water") available to plants and animals.

Information from 2000 to the present indicates the increased intensity of rainfall events and significant increases in attendant runoff and flooding. Synthetic meteorological data predicts several key climatic trends: (1) increasing rainfall intensity (mm/storm); (2) a shift in monsoon arrival (a 2-4-week lag in consolidation); (3) shortening of monsoonal (or lengthening of the dry season); and (4) rising night-time minimum temperatures.

While there may not be a marked change in annual rainfall, concentrated rainfall results in increased flooding and loss of precious topsoil, further reducing climate resiliency and sustained delivery of ecosystem services. The increases in temperature, particularly night-time lows, can impact growing seasons. This may mean more herbaceous growth during the rainy season and more fire risk in a lengthening dry season.



3.4 Environment

3.4.1 Habitat description

There are four types of vegetation in the Llanos ecoregion: two types of forest and two types of savannas, see listed below and indicated in Figure 1. In many places, the transition from grassland to forest is razor-sharp, usually owing to more intensive grazing after fire. In others, the slope characteristics have helped pond water into a depression yielding seasonally inundated grass and shrubland. Most of the wildlife in the region appreciate the variability and edge it provides.

Gallery Forests are a uniform strip of forest vegetation with continuous canopy, with a variable width ranging from a few meters to 500 meters, located on the edge of water bodies and characterized by dense undergrowth forest with well-structured forest cover, lianas, palms, and large trees. Gallery forests can be further divided into well-drained and flooded forest ("Morichale"):

- Well-drained Gallery Forest corresponds to the strip of gallery forest bordering areas of well-drained savannas. It presents an underwood, relatively dense, with few palms. These are "high" forests with intolerant species having achieved dominance usually on steeper banks of permanent streams.
- Morichales are almost pure or mixed associations predominated Morichale palm (*Mauritia flexuosa*) on organic and acidic soils. Morichales are located at along the lateral springs and headwaters of the gallery forests and have been reduced by cultivation and fire practices associated with ranching.

Savannas – are typically characterized by flat to undulated relief, with sandy loamy soils. They can be separated into very well-drained, and seasonally flooded:

- Inundated Savannas (also known as "saladilla") are located in the floodplains of the streams and rivers that remain flooded in the Orinoco region for more than 6 months. They tend to be juxtaposed between the gallery forest and the upland "open savannas" The herbaceous component is dominated by grasses. Still, it develops into a dense shrub component as it approaches gallery forest (scattered in the savanna). Depending on grazing pressure and frequency of fire these may have remnant tree species (and larger) than the open savanna.
- Open Savannas are located on the plateaus and piedmonts dominated by numerous species of grasses. The shrub component is scarce and is represented by *Mimosa microcephala* that grows isolated between the herbaceous matrixes. The presence of trees is almost null, showing only some individuals of the American *Curatella* that grows scattered into the bush.

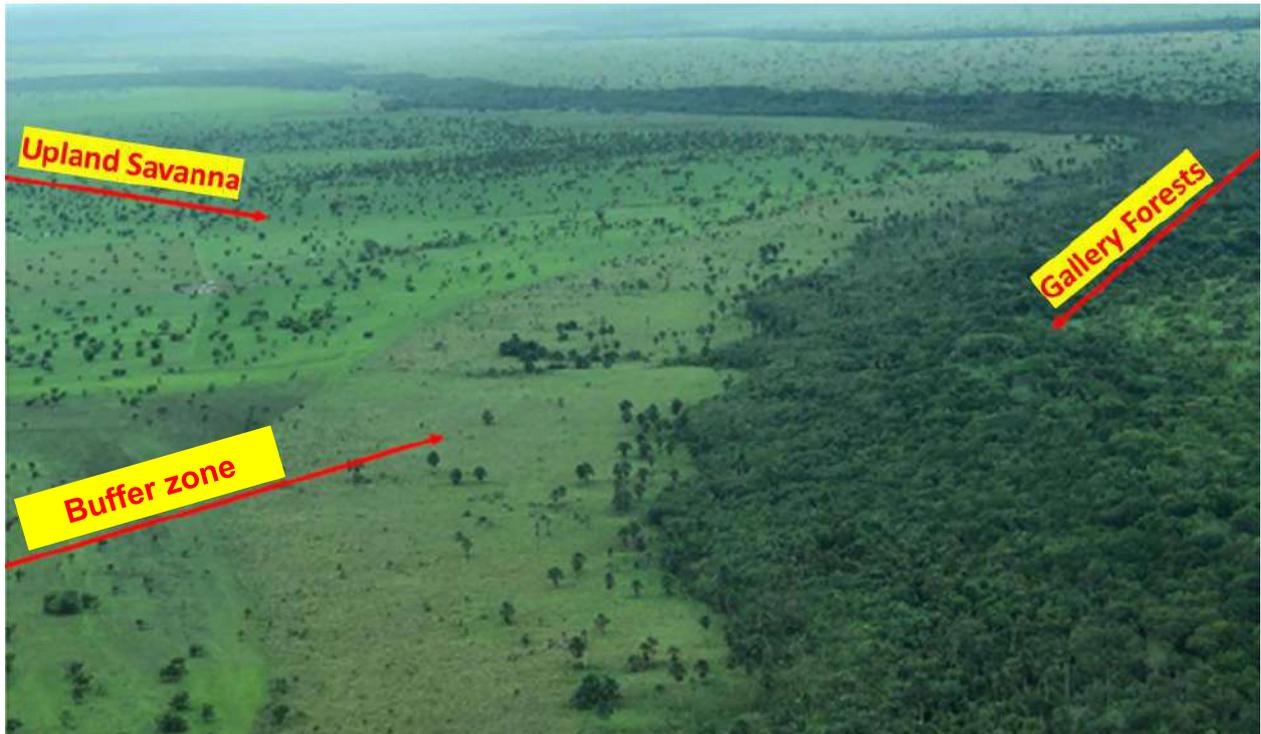


Figure 2. This photo from HSJ identifies the typified structure and juxtaposition of the primary vegetative elements. The protection of the Gallery and Inundated Forest by the buffer zone is evident.

3.4.2 Biodiversity

The llanos ecoregion has less biotic diversity and fewer endemic species than the adjacent ecoregions and the biological wealth of the region is more attributable to its vast extent within the Orinoco Basin than it is to a wide variety of ecotones, habitats, or species. There are few endemic plant species in the llanos⁶ no endemic birds restricted to the llano's ecoregion⁷, and only two endemic mammals⁸. Similarly, the herpetological endemism in the llanos is exceptionally low in comparison with adjacent ecoregions. While the overall diversity of animals and plants is 1,200 species⁹ most are found elsewhere, and only a few are specialized to ecoregion's particular conditions or habitats. Nearly all biodiversity is anchored in the remaining gallery forests (covering 10-20% of the project landscape). The savannas are much less diverse.

The IUCN Red List for Endangered Species identifies the Orinoco Crocodile (*Crocodylus intermedius*) as a Critically Endangered (CR) species and the Amazon River Dolphin (*Inia geoffrensis*) and a crabgrass (*Digitaria cardenasiana*) as Endangered (EN) in the HSJ projected landscape. It also

⁶ Pérez, E. M. and J. Ojasti. 1996. La utilización de la fauna silvestre en la América Tropical y recomendaciones para su manejo sustentable en las sabanas. *Ecotropicos* 9:71-82.

⁷ Wege, D.C., and A.J. Long. 1995. Key areas for threatened birds in the neotropics. *Birdlife Conservation Series* No. 5, Cambridge.

⁸ Eisenberg, J. F. and J.R. Polisar, 1999. The mammals of North-Central Venezuela. *Bulletin of the Florida Museum of Natural History* 42:115-160

⁹ Map of life <https://mol.org/en/regions/?regiontype=point&location=2.6663501570041706,-74.28544177359176>



identifies another twelve species of birds, mammals, and plants as Vulnerable (VU). Apart from the crab grass found in the savanna, all of these species are located in forest habitat and most prefer forest habitat adjacent to wetlands.

Several other forest or wetland species are identified through the CITES Appendix III list which should be mentioned. These are all Vulnerable (VU) or Near Threatened (NT) species but found within the forested habitats of the expanded project landscape and will need to be identified and monitored. Species at risk of extinction in the llanos include the giant armadillo (*Priodontes maximus*); the giant river otter (*Pteronura brasiliensis*); the ocelot (*Leopardus pardalis*); the tapir (*Tapirus terrestris*); the manati (*Trichechus manatus*). It is worth noting that HSJ has been a strong collaborator with the Panthera Foundation and hosted camera traps along the Cano Muco and the lateral springs in the northern part of Finca HSJ.

E. M. Pérez & L. Bulla ([WWF, in process](#)) conclude, "the open savannas are the least used habitat by the megafauna of this ecoregion, and most of the faunistic richness is concentrated around permanent and temporary water sources." This conclusion is supported by a vast body of experts and sources. It helps explain why biologists and conservation organizations have focused chiefly on threatened species rather than the ecoregion or complete "landscapes."

There are no Key Biodiversity Areas in the landscape. There are several small and recently established "cultural reserves" but no nationally registered IUCN Category I to IV Protected Areas. The Rio Bitá RAMSAR site has recently been selected as a notable addition to the region's protected areas.

The current operations on HSJ's farm have been conducted on savannas which have been the subject of many decades of human-induced changes. Satellite evidence indicates that 80% of the 8,660 hectares farm has been repeatedly burned, grazed, and otherwise managed for beef cattle production. Visible sheet erosion, fire scars, and vegetation recession on the lateral pipes indicate significant degradation of the landscape. Vegetation sampling on the savannas confirms substantial modification of the primary ecological functions and species composition.

HSJ has set aside the areas of remnant natural habitat in their current farm to protect these areas' integrity.

3.4.3 Forest and Habitat Loss

There has been limited loss of forest in the Vichada and eastern Meta Departments. This is due to the small proportion of the landscape classified as forest. It is also due to the nature of gallery forests and the protection of these areas by surrounding wetlands. The ratio of forest to grassland has not changed significantly for at least the past 35 years.

Despite the described fire pressure, the only significant forest loss in Vichada has been caused by flooding and not fire. Review of fire data from several sources (ESA/Sentinel, NASA/FIRMS) reveal that the narrow strips of gallery forests along riverine topographies are the only areas that are not



burning on an annual basis. This is primarily due to their structure and fuel loading characteristics and their ability to retain enough moisture to defend themselves from range fires. However, the vegetative cover of lateral springs has been slowly receding from continued use of fire and grazing pressure over recent decades. The loss of these short forest and bush complexes has been significant, and the qualitative impact on habitat is severe and increasing.

Fire data is striking and unmistakable: every hectare of every grassland has burned, most often repeatedly, over recent history. More than 70,000 fires have been recorded inside the project landscape by the NASA/FIRMS platform during the past ten years, and more than 30,000 fires have been recorded during the past three years. Repeated ignition points inside wooded savannas and grasslands indicate consistent and deliberate use of fire to remove unpalatable dry season forage and "green up" pastures with the onset of the monsoons. The fires also purposefully halt the grassland's progression to later stages of succession hence the savannas are now characterized by a continuous cover of perennial grasses.

Burning of savanna has the unintended consequence of stripping vegetative cover and inducing sheet erosion. But the combined impact of such fire is precise and intended: change the composition and structure to increase the viability of fire propagated assemblages of native and invasive species. Indeed, human activity has directly modified the areas' primary ecological functions and species composition, which is the definition of Modified Habitat in IFC PS6.

There is ample information that Altillanura (upland grasslands) can be restored by merely excluding fire and cattle for even brief periods. Most forest plantations operations still use backburning of areas between the plantations and the wetlands areas to prevent bush encroachment and fuel loading. Simple cattle exclusions through fencing, fire prevention, and rotational production system will allow HSJ to accelerate restoration of areas around "pipes" and protection of gallery forests at a much lower cost.

Considering the habitat loss and disturbances described above, the analysis from the consultants engaged in ESDD indicates that most of the savannas in the project landscape are "modified" according to PS6. This analysis is corroborated by various species indexes and GIS layers that have helped describe the nature and level of threats to habitats. WWF focuses on biodiversity and climate priorities with their SULLU tool, where HSJ's project landscape rests at the bottom of its priorities. The Degradation Index by The Nature Conservancy (TNC) indicates moderate to elevated levels of soil and vegetation loss. A tool developed by Corporinoquia places the project area at "low" risk of habitat and species loss, and eBird indicates avian diversity is low across the project landscape. Cumulatively, the organizations downgrade the relative importance of the landscape or suggest that its "intactness" or value has already declined.

The consultants that carried out the inventory work during the HSJ Biodiversity Management Plan determined that the native grasslands on HSJ were quite simple (11 species, 10 genera), modified by human use of fire, and reduced in extent and complexity by grazing. They identified far more diversity and complexity in the forest areas.



A more detailed habitat assessment is outlined in the table below.

Factor	Modified Habitat	Natural Habitat	Critical Habitat
IFC PS Definition	Areas that contain a substantial proportion of plant and/or animal species of non-native origin; where human activity <u>has</u> modified an area's primary ecological functions and species composition; and areas managed for agriculture, forest plantations, reclaimed coastal zones,	Areas composed of <u>viable assemblages</u> of plant and/or animal species of native origin; and/or where human activity has not modified in areas primary ecological functions and species composition.	<ul style="list-style-type: none"> - Areas of Critically Endangered and/or Endangered species - Significant importance to endemic or restricted range species - Supporting globally significant concentrations of migratory or contractor species - Highly threatened or unique ecosystems - Areas with key evolutionary processes
IFC PS Requirement	Identify and minimize impacts of on areas of significant biodiversity value	<ul style="list-style-type: none"> - Habitat conversion or degradation using the Mitigation Hierarchy - No Net Loss of biodiversity thru set-asides, corridor protection, & habitat restoration - Consultation with affected communities 	<ul style="list-style-type: none"> - Adherence to Mitigation Hierarchy - No measurable adverse impacts on CR/EN habitat - No reduction in CR or EN populations - Biodiversity Action Plan designed to achieve Net Gain
Influencing Conditions	46,000 fires in the landscape in the past 5 years and 30,000 fires in the past three years. Few, if any, properties in landscape have <u>not</u> had fire in the past 10 years. It is estimated that 75% of all habitats in the landscape has been converted to agriculture or forestry or modified to	Twenty-four percent of the entire projected landscape contains gallery forest, seasonally inundated Morichale (palm) swamps, and permanently inundated wetlands. These areas are protected with setbacks.	IUCN Red List indicates there is 1 CR and 2 EN species within 50 km of the project area of influence. There are also eighty-two public and private protected areas, 4 Key Biodiversity Areas, and 1 RAMSAR site within this 50 km radius.



	some extent by human-induced fire for cattle management purposes.		
Identifying Factors	<ul style="list-style-type: none"> - Historic use of fire - Lack of vegetation on springs - Evidence of soil erosion 	<ul style="list-style-type: none"> - Species composition including frequency, complexity, dominance, lack of introduced species - Vegetation height and dominance 	<ul style="list-style-type: none"> - Identification of CR, EN, VU species - Inside Red List location - Inside Key Biodiversity Area or Protected Area

3.5 Social

3.5.1 Socioeconomics

Vichada Department has a low population density and the population of La Primavera, the municipality closest to HSJ's current operations, estimated at 9,600 in the 2018 census (National Administrative Department of Statistics - DANE), is among the lowest in Colombia. The demographics are skewed toward younger cohorts, with nearly half of the population below 20 years old. Most of the communities live in mixed or single-family dwellings concentrated in the few towns and settlements along the Meta River, with minimal health and education facilities. The interior areas are very sparsely populated, and beyond the few oil palm, forestry, and cattle farms, there are few jobs. The lack of schools and health facilities and poor roading means that skilled workers are at a premium and must be lodged.

HSJ has invested in novel approaches to rural schools and health facilities through its affiliate APRODENA. APRODENA is Nueva Antioquia's development association. It promotes social and economic development for its local population with private resources from surrounding enterprises.

HSJ is looking to partner with a social financial services provider, such as Fundación Bancolombia, providing access to financial assistance for willing sellers that are interested to improve their financial management.

3.5.2 Indigenous Peoples

There are approximately 41,000 indigenous people in Vichada and Meta, the vast majority of which are located in roughly 40 indigenous reserves (*resguardos*), which occupy some 3.5 million hectares¹⁰. Smaller populations are dispersed and blended with non-indigenous communities throughout the Orinoquía region, according to census information. HSJ currently shares a common boundary and a cooperative relationship with a Sikuani community in an adjacent *resguardo* with three separate communities known as Campo Alegre, Ripialito, Laguna Grande. Members of this once semi-nomadic group are now agrarian with haciendas and livestock. Since

¹⁰ Data from DANE



the previous owners' titles came about before the Reserve, there was no formal requirement for their collective consent. This rural community provides more than half of the 20+ cowboys working for HSJ. The mutually beneficial relationship they now share may be tested in other communities with less cohesive societies during expansion.

3.5.3 Armed groups

Venezuela launched its largest military campaign in decades this April, causing 5,000 civilians to flee the country and enter Colombia near the town of Arauquita. The attack by the Venezuelan armed forces (FANB) targets Colombian guerrillas, dissident rebels who once belonged to the FARC. Despite the 2016 peace agreement between the FARC and the Colombian government, hundreds of fighters refused to lay down their weapons and continued trafficking drugs. The National Liberation Army (ELN), another leftist Colombian guerrilla group, is also present on both sides of the border. Colombian officials and analysts have long accused Venezuela of giving shelter to Colombian guerrillas, as their supposed ideological allies. The reasons for the sudden military clash are unclear. HSJ's operations are located around 250km southeast of Arauquita, and Vichada and specifically the Primavera municipality has no history of contentious border activities. The border close to the envisioned project area is delineated by the Orinoco River, which makes it less likely for refugees to cross, and the guerrillas are less likely to reside in the dry savanna landscape of the Orinoquía Region.

3.6 GHG emissions

According to the World Bank, the Orinoquía region is responsible for 16.8% of Colombia's composite national emissions, and 53% of this is from forest loss and land-use change (mostly Meta). The second most important category of emissions is methane from enteric fermentation from livestock. The project landscape shows low levels of above and below ground carbon stocks. The International Soil Reference and Information Centre (ISRIC/SoilGrid) predicts soil carbon between 15 to 20 t/hectare, and the Oak Ridge Laboratory estimates total terrestrial carbon at roughly 20 t/ha. These estimates are similar to soil carbon measurements in Brazil's open savannas (Cerrado). Gallery forest soil carbon stocks are estimated at 160 to 180 t/ha by WWF, also using the IPCC criteria – the remnant gallery forests of Vichada are only 10% of the landscape but account for roughly 50% of the carbon stocks. The third landscape component – wetlands and seasonally inundated grasslands – are not well mapped in Vichada.

A report produced by the International Center for Tropical Agriculture (CIAT) and the University of Stuttgart, commissioned by HSJ, undertakes a comprehensive farm footprint, comparing the operations proposed by HSJ, to the current extensive cattle ranching baseline. This shows a substantial increase in emissions, primarily due to larger cattle numbers and hence higher emissions from enteric fermentation. This is balanced by increased sequestration, particularly soil sequestration, though this will be realised over longer timeframes, is reversible, and has high uncertainty. Good pasture management certainly increases carbon stock, but reliable quantification generally requires field testing, which can be expensive.



Significantly greater sequestration can be achieved with increased planting of trees. The Colombian government is pursuing silvopastoral systems as part of its Nationally Determined Contribution (NDC)¹¹. Even modest increase in tree cover will likely result in larger sequestration than reportable soil carbon uptake. HSJ has a conservation action plan in place that includes landscape restoration elements. Windbreaks were planted on their current farm, and native trees were planted to restore existing forest habitat.

In their NDC, Colombia also committed to reducing black carbon, formed through the incomplete combustion of fossil fuels, biofuel, and biomass, by 40% compared to 2014 levels. This makes them only the third country to set a specific commitment for this pollutant in their NDC. This is important because the commitment identifies reductions in agricultural burning as a component of reaching this goal¹².

3.7 Infrastructure

Infrastructure in Vichada is very poorly developed. There are no paved roads outside several of a few the towns in this vast municipality. The roads connecting HSJ with Puerto Carreno to the east and Villavicencio to the west are barely improved dirt and often impassable during the December to March monsoons, which forces most commerce onto the Meta River. There is no power grid along the Route 40 Corridor, which passes through HSJ. Telecommunications are restricted to satellite-based internet and phone services and short-wave radio transmissions. Currently, the plans for a national highway between Puerto Carreno and Villavicencio are on hold. Improved logistics are critical to HSJ's success in Vichada. The current three-day barge travel to Puerto Lopez (roughly 600 km) exceeds most Animal Welfare standards and jeopardizes environmental and social returns.

3.8 Regulatory framework

Beyond the conservation aspects, the Government of Colombia has conducted its review of the Meta and Vichada Departments. National institutions have been working closely with civil society NGOs, USAID and the World Bank to navigate what it believes should be sustainable land use and how to achieve it. All facets of the Colombian Government have included wetlands and forest cover, providing a basis for their protection through an integrated landscape management approach to achieving No Net Loss.

¹¹ Nationally Determined Contributions (NDC) are non-binding national plans highlighting climate actions, including climate related targets for greenhouse gas emission reductions, policies and measures governments aim to implement in response to climate change and as a contribution to achieve the global targets set out in the Paris Agreement.

¹² See: <https://www.ccacoalition.org/en/news/colombia%E2%80%99s-ndc-increases-its-2030-climate-change-ambition-and-integrates-new-targets>



Areas of Interest for Rural, Economic, and Social Development (Zonas de Interés de Desarrollo Rural, Económico y Social – **ZIDRES**) were created by Law 1776 on 29 January 2016 to promote competitive economic development in rural farming areas in Colombia.

Colombia's Ministry of Agriculture Rural Planning Department (UPRA) has developed legal and physiographic conditions to screen out specific land attributes and identify lands suitable for agriculture. Environmental restrictions included removing Protected Areas, Indigenous Reserves, gallery forests, inundated pastures, steep or rocky terrain, flood plains, erosion-prone areas, and setbacks from intermittent and permanent watercourses from land to be considered "available". UPRA has also developed a national *Sistema de Información para la Planificación Rural Agropecuaria*¹³ (**SIPRA**) database for territorial planning purposes and as the backbone to the ZIDRE process mentioned above.

The georeferenced databases are linked directly to the Institute of Hydrology, Meteorology and Environmental Studies (**IDEAM**) system on agroecological information, the national land cadaster, census, and several topical social databases managed by DANE.

The SIPRA system provides limited property information that will become increasingly important for screening offerors of property and livestock suppliers during initial operation. The LAT being developed by HSJ with Climate Focus and GANSO support should also have traceability requirements for phytosanitary purposes.

Buffer zones for perennial surface waters have been legally established at a minimum width of thirty meters from each margin of the main channel at high tide or in flood stage (Decree 1449¹⁴). The same legislation states that all forests on permanent or seasonal water bodies should be at least 100m in width and that any property larger than 50ha must set aside 10% of the total area in "forest cover."

Environmental Licensing, as established in Colombia's Environmental Law¹⁵, requires any project that involves the extraction of water directly from natural sources to allocate at least 1% of the total investment for the recovery, conservation, and monitoring of the respective hydrographic basin. For HSJ, a study of Finca HSJ's floral and faunal composition determined that the most effective way to mitigate groundwater extraction for cattle irrigation was through protection of perennial watercourses. It was also concluded that restoring several springs inside the farm would best ensure groundwater recharge leading to a landscape approach. HSJ developed an extensive Biodiversity Conservation Plan and agreed to restore 10ha on three springs to improve water

¹³ <https://sipra.upra.gov.co/>

¹⁴ <https://www.alcaldiabogota.gov.co/sisjur/normas/Norma1.jsp?i=1503>

¹⁵ Provisions of paragraph 1 of article 43 of the Environmental Law 99 of 1993 (Decree 1900 of 2006, compiled in chapter 3 of title 9 of part 2 and modified by Decrees 2099 of December 22, 2016, Decree 075 of January 20, 2017, and Decree 1120 of June 29, 2017).
https://www.icbf.gov.co/cargues/avance/docs/decreto_1900_2006.htm



returns and enhance wildlife habitat through native species plantings and livestock exclusion in three areas.

3.9 Sector

Colombia has 514,800 sites where livestock are raised¹⁶, with 27 million head of cattle¹⁷. Livestock raising contributed 1.4% of Colombia's gross national product (GNP) in 2017 and 21.8% of the agricultural GNP. It generates 6% of national employment and 19% of agricultural employment¹⁸. Colombia has 34.4 million hectares of pasture of which 27.9% are classified as unmanaged¹⁹. For perspective, that means pastureland more than twice the size of The Netherlands is unmanaged, and thus most likely degraded.

In most regions, forage production is low and seasonal droughts are severe with little supplementary irrigation available. Cattle are managed with set stocking at constant low rates in large-sized paddocks²⁰. Sustainable intensified production in suitable areas regions can increase substantially the amount of milk or meat produced and have lower environmental impacts²¹.

¹⁶ ICA [Instituto Colombiano Agropecuario] (2017). *Censo Pecuario Nacional*. Available online at: <https://www.ica.gov.co/Areas/Pecuaria/Servicios/Epidemiologia-Veterinaria/Censos-2016/Censo-2017.aspx> (consulted on November 27, 2018).

¹⁷ FAO and DANE 2019

¹⁸ FEDEGAN [Federación Colombiana de Ganaderos] (2018). *Cifras de Referencia del Sector Ganadero Colombiano*. Available online at: <http://estadisticas.fedegan.org.co/DOC/download.jsp?pRealName=Cifras Referencia 2017.pdf&ildFiles=641> (consulted on September 5, 2018).

¹⁹ DANE [Departamento Nacional de Estadística] (2014). *Censo Nacional Agropecuario 2014*. Bogotá: Departamento Administrativo Nacional de Estadística.

²⁰ FEDEGAN [Federación Colombiana de Ganaderos] (2014). *Plan de Desarrollo Ganadero 2014–2019: Por una Ganadería Moderna, Sostenible y Solidaria*. Federación Colombiana de Ganaderos. Retrieved from <https://goo.gl/9dq1qS> (consulted on September 24, 2018).

²¹ Front. Sustain. Food Syst., 06 August 2019 <https://doi.org/10.3389/fsufs.2019.00061>



4 Transformational Change Assessment

4.1 &Green Theory of Change and Mission Statement

&Green works across tropical forest landscapes to support agri-commodity businesses that empower communities, protect forests & optimize production to drive transformational change in global supply chains.

4.2 Transformational Change Potential HSJ

&Green's investment in HSJ will help transform the Colombian cattle sector from a low quality, inefficient sector associated with deforestation in the Amazon rainforest, to a sustainable, inclusive, deforestation-free and efficient supply chain which produces high-quality beef.

4.3 Colombian Cattle Sector: Baseline

Extensive and inefficient - There are currently approximately 27 million head of cattle in Colombia, on a total of 40 million hectares, averaging around 0.7 head per hectare as a stocking rate, compared with 1.24head/ha in Brazil²², and HSJ's desired stocking rate of 1 head per hectare. Average pregnancy age in Colombia is 32 months, with HSJ's genetics allowing for a first pregnancy at 10-14 months²³. Extensive cattle ranching is a major driver of deforestation in Colombia, applying unsustainable land management practices including seasonal burning of grasslands.

Low quality - Colombian cattle farmers often operate a hybrid model, producing both milk and beef on a single farm, reducing the quality and production efficiency of both commodities²⁴. Poor genetics further contribute to low production and low quality in the sector. As a result, Colombian livestock markets are uncompetitive in the region and globally, though nearly 35% of the country's land use is dedicated to livestock farming.

No sustainability standard - Most cattle farms around the world are low-productivity low-cost systems with an inefficient use of land and resources. In general cattle ranching is a 'past time' more than a focused productive farming operation, as we see in the grains and oilseeds for example. These systems lack the capacity and funds to shift to a sustainable, certified production model. Fragmentation in the supply chain results in poor traceability of the final product, further complicating the implementation of a credible sustainability certification program. Incentives to change the production systems and map supply chains, such as a price premium, or consumer demand for sustainable products, are typically low in the beef sector. Most of the beef production is consumed domestically, and local consumers are unlikely to pay a premium. Few regions globally have been able to successfully brand themselves as 'premium beef' - e.g. Uruguay, Australia - but then it is at a regional level and not usually related to a specific farm.

²² FAO 2019

²³ Data provided by HSJ

²⁴ Data from DANE indicate that, in 2019, 45% of national profits from cattle production are from this hybrid model.



Regional challenges - The Orinoquía is a remote and sparsely populated region with high levels of poverty²⁵, where decades of deficient land management have resulted in structural, large-scale burning of grasslands. The guerrilla wars over the past decades have seen owners, many living on the other side of the Andes in the big cities, not travelling to their farms at all. This creates a downward cycle of management quality and increasingly extensive farming in the area.

Investments in degrading land management - Colombian private investors currently invest in agricultural land (mainly pastureland with cattle) as a form of long-term savings, and as a personal statement (success indicator and partially a weekend retreat); but typically these assets are poorly managed and show clearly unsustainable farming practices. These investors lack access to information about the impact of their investments, which are degrading landscapes throughout rural Colombia, and there are few alternatives unless they invest significant time and resources themselves to uplift these farmlands.

Development risk - Since the 2016 peace deal with FARC, the government aims to stimulate economic growth in areas such as the Orinoquía which directly suffered during the war. Now, the government is targeting these regions, and the Orinoquía specifically, for significant rural economic growth. If unchecked, it is highly likely that this growth will follow the same destructive land use patterns. Hence a new and sustainable business model is needed.

4.4 Colombian Cattle Sector: &Green Vision

&Green envisions a future where HSJ catalyses the sustainable intensification of cattle production across the vast cattle farms and grasslands in the Orinoquía region and beyond. The Colombian cattle sector will develop to be globally relevant and competitive by sustainably producing premium quality beef. HSJ's integrated supply chain builds scale and enables replication of forest conservation and quality production across Colombia. Using the same or less land for greater production, this reduces the incentive for extensive cattle farming, decreasing pressure on (forested) land. The intensification blueprint will allow for more targeted and effective government interventions to prevent further deforestation.

Consumers prefer the high quality beef that is recognised through the established and popular sustainability trademark. Sustainable certification is a benchmark for the Colombian cattle sector, and provides entry to premium export markets, both for small- and largescale cattle farmers.

Colombian private investors can proudly invest in the sustainable development of their own country, contributing to social inclusion and cohesion in rural Colombia. Sound land management

²⁵ Municipalities with highest levels of municipal multidimensional poverty predominate in Orinoquía-Amazonia and Pacifica regions [...]. Highest municipal multidimensional poverty incidence rates were presented in: Uribia (La Guajira) with 92.2%, Cumaribo (Vichada) with 91.4% and Alto Baudó (Chocó) with 90.6%. DANE 2020 <https://mppn.org/colombia-launches-a-municipal-multidimensional-poverty-measure/>



practices safeguard Colombia's rich biodiversity in the rural farming and forest landscapes while achieving competitive economic returns.

5 Pathways of Transformational Change

This chapter explains the pathways with which &Green's investment in HSJ can contribute to realizing the vision laid out in chapter 3.4. Three key pathways are considered: Systems Change, Scale and Sustainability. The sections below describe what each of these pathways looks like for HSJ, including the measures and commitments required to create systemic change, ensuring replication of the model, and mainstreaming this model in the cattle sector.

Each measure includes an indicator to track progress. These indicators are listed in the ESAP (see Annex 2). Key indicators have milestones and targets that HSJ commits to achieve throughout the loan period. Other indicators are used for monitoring purposes only.

A selection of these indicators will be used to track the transformational change impact of this deal. See annex 3.

5.1 Systems Change

This transaction "stimulates innovation in business models" (&Green Lending Guidelines) by taking the best growth ideas from a more mature industry (Brazil) and building a similar system of genetic excellence relevant to Colombia, and (crucially) building-in environmental sustainability from the outset. HSJ commits to compliance with IFC Performance Standards and No Deforestation, No Development on Peat and No Exploitation (NDPE) Policy conditions throughout their operations. HSJ will develop an integrated supply chain, where centralised operational control allows for traceability and sustainable management of the full production process. This enables verifiable implementation of IFC PS and an NDPE, and, transformation of the cattle sector, facilitates sustainability certification of the beef products.

5.1.1 Intensification

HSJ is the first centre of excellence in beef cattle production in the undeveloped eastern plains of Colombia, leveraging superior genetics and advanced pasture management techniques to efficiently produce more beef per hectare. Three main components of this sustainable intensification model are highlighted here: superior genetics, grass selection and grazing management.

Superior genetics. The seedstock activity is production and market-driven; the genetics is chosen based on optimizing production efficiencies of the local environment and satisfying the needs of the marketplace. HSJ has the exclusive rights to market the genetics of Cia. De Melhoramento (CIA)



in Colombia²⁶. The emphasis of these genetics is to produce animals more rapidly and in less time. This is done by focusing on improved sexual precocity, fertility and growth, thus providing higher productivity and less costs.

Grass selection. Grass species *Brachiaria humidicola* will be planted in all the new plantings and any of the areas that need replanting. This variety has a high tolerance to acidic and low fertility soils, as well as to the high humidity levels and flooding in the Llanos.

Grazing management. Adaptive Multi-Paddock (AMP) grazing is a management system in which livestock are regularly moved from one plot to another to avoid overgrazing and provide adequate resting time for regeneration of pastures. AMP grazing presents a multitude of benefits, including the following:

- Production: Improves yield per hectare, as an adequate adaptive rotation program allows optimal pasture regrowth.
- Nutrition: Increases grass quality, avoiding selection which allows for a more equal grazing.
- Land: Limits soil erosion by improving soil structure and not allowing bare soils.
- Soil: Controls the spread of manure, spreading it naturally throughout the plot, acting as a natural fertilizer.
- Environment: Improves plant root systems, which increases soil quality, water infiltration and carbon sequestration. AMP optimized the use of pasture and allows for much higher stocking rates for both wet and dry season, then conventional extensive grazing methods. This practice also allows for a build up a reserve of forage on all the paddocks for the dry season.

HSJ will implement this sustainable intensification model on all its expansion areas. To track the intensification impact of this investment, the following indicator is used:

hectares under intensive cattle farming

5.1.2 IFC Performance Standards

The ESDD concluded that seven of the eight IFC Performance Standards on Environmental and Social Sustainability should be considered.

PS8 - Cultural Heritage is not applicable. Colombia's eastern plains ("Llanos") are scantily populated and historically are not known for extensive habitation or cultural assets. The eastern llanos of Colombia inhabited by semi-nomadic and autonomous chieftains until 750 b.p. These dispersed and mobile groups of hunter-gatherers had trade-based integration with more sedentary communities in the Western Highlands and there are no registered archaeological sites in Vichada or eastern Meta. Tuparro National Reserve (100 kilometers to the south of HSJ) is a registered

²⁶ CIA is the result of the union of cattle ranchers from Brazil, Paraguay and Colombia who seek to produce beef in an increasingly lucrative and sustainable way in the tropics. For HSJ, CIA provides advise in genetic selection and evaluation of breeding stock.



UNESCO Biosphere Reserve but it has been established largely for biological assets, not cultural representation.

On the basis of the IFC PS Gap Assessment by Ambiente Consulting, and the updates by Dave Gibson (IFC PS specialist), an IFC PS Compliance Matrix was developed by &Green that lists the compliance gaps and recommended corrective actions per IFC PS requirement (see Annex 4). This results in a percentage compliance score per IFC PS.

HSJ currently has a 58% overall compliance score against the IFC PS, and the following score per IFC PS:

IFC PS	Baseline compliance score	Target
1	51%	>90%
2	68%	>90%
3	61%	>90%
4	83%	>90%
5	50%	>90%
6	61%	>90%
7	72%	>90%
8	NA	NA
TOTAL	58%*	>90%

* Note that this is the average of all IFC PS compliance items, not the average of all IFC PS' compliance scores.

HSJ will commit to increasing their IFC PS compliance levels year on year, as per the milestones in the ESAP, and achieve a minimum of 90% compliance with all applicable Performance Standards three years after signing the loan agreement. The recommended actions described in the IFC PS Compliance Matrix serve as a guidance to HSJ in their compliance processes. HSJ commits to demonstrate completion of the priority actions listed in the ESAP, as per the respective milestones.

5.1.3 NDPE

HSJ is building an integrated supply chain, where it intends to hold full operational control, and thus securing NDPE compliance is relatively straightforward and largely covered under IFC PS compliance. An NDPE Policy Statement will be published on HSJ's website prior to disbursing the loan agreement.

A Risk Map will be produced to guide purchasing of heifers in HSJ's initial upscaling phase towards low-risk areas. HSJ will avoid purchasing at auctions or other non-traceable sales transactions.

5.1.4 Environmental Returns and Net Gain

Conservation and restoration are key components in HSJ's sustainable intensification model, and an integral part of &Green's Theory of Change. HSJ commits to conserving natural forest areas, wetlands (Morichale), and inundated savannah areas. Identification of these set-asides is included in the LAT.



Conservation of Gallery Forests. This constitutes the natural forests and adjacent buffer zones, which is estimated to be approximately 7% of the average farm holding in the project landscape. These areas would be expected to exclude livestock and the use of fire and meet applicable requirements in IFC PS, NDPE Policy and sustainability certification standard (i.e., RA, Aval GANSO or equivalent). The KPI milestones are calculated as 7% of the projected expansion area, as per the financial model provided by HSJ. The KPI is defined as:

#hectares of forest conserved

Conservation of Wetlands. All wetlands will also be conserved but are not counted towards the 'forest conserved' KPI above. These areas are set-aside to protect seasonal water bodies and inundated forests or grasslands. These areas are estimated to be approximately 7% of the total land area of any given property, with some overlap with the 'forest conserved' KPI above.

Restoration of Gallery Forests. This is the land area under natural and/or active restoration, estimated at around 2.5% of the expansion area. In general, these are upland spring catchments, buffer zones, biodiversity corridors or areas important to hydrological ecosystem services. Restoration activities may be conducted through plantations or assisted regeneration as prescribed by Corporinoquia with the exclusion of livestock and fire. The KPIs are:

#hectares Forest restoration with natural regeneration (regenerate)

#hectares Forest restoration with ACTIVE regeneration (target planting)

HSJ will direct their development towards degraded, 'modified' habitat, and will identify and protect any natural and critical habitat on their farms. IFC PS 6 requires a demonstrated No Net Loss balance for developments on natural and modified habitat. There are several generalizable and tangible biodiversity conservation benefits that would result from scaling livestock intensification practices as proposed by HSJ. While these benefits would accrue most directly to properties that HSJ manages, they would also result in reducing risks and positive impacts on biodiversity in areas outside its direct influence or management control if fully enacted. Below a description of tangible conservation benefits:

- **Productivity Improvements** – It is estimated that livestock intensification using a rotational design would shift production from the current 0.7 head per hectare to roughly 1 head per hectare. When adapted at scale, this would mean a significant decrease in the area required for beef production and thus reduced pressure on the marginal grasslands and natural areas. While the productivity increases would likely benefit most directly to HSJ-managed properties, the demonstration effect would undoubtedly impact farm practices beyond direct customers. This is core to the HSJ business proposition.
- **Increased Employment and Income** – It is estimated that livestock intensification in the Orinoquia will double the current direct and indirect jobs in livestock rearing and associated veterinary services logistics. Additional employment, and the service and retail expansion it



will stimulate, will provide employment and nutritional alternatives to rural dwellers who may currently depend on hunting, fishing, and live animal trade for their livelihoods.

- **Fire Management** – Livestock intensification will directly result in reduced use of fire through awareness, education and eventually interdiction. As the primary threat to biodiversity and ecosystem services in the region, the frequency and severity of fires will reduce pressure on the remaining areas of high biodiversity value. The prevalence of fire can be easily observed in the broader landscape and provides a good tool for monitoring adoption of intensification practices.
- **Corridor Consolidation and Protection** – HSJ's scaling would support other companies, civil society, and conservation NGOs to protect the remaining forest and riparian areas. Improving the connectivity and integrity of these corridors through buffer zones, restricted grazing, and improved mapping can improve consolidation and restoration as well as reduce fragmentation. HSJ's support for a standardized methodology for HCV set-asides and APRODENA's support for conservation education will also provide tangible benefits for areas with significant biodiversity values. This type of information would be validated by the types of scientific data that HSJ has already begun and is conducted also by neighbouring enterprises and NGOs.
- **Traceability** – Sustained improvements in phytosanitary conditions and monitoring the origin of cattle entering its value chain and national and regional markets will depend on establishing a national standard for traceability. Together with the risks and impacts process identified in PS1 development of traceability in order to exclude products or services which may come from areas of high biodiversity value (or any illicit farming activities) is in step with PS6. 26-30. Colombia has an impressive geospatial registry for deforestation, protected areas trespass, and property boundaries yet it is not yet appropriately integrated. HSJ's support for scaling up a national standard (Aval GANSO), will be in direct alignment with PS6.29 in the "active engagement and support of the development of a national standard".

Beyond biodiversity benefits accruing to the indirect project area, several aspects of HSJ's model will have measurable benefits for biodiversity and will substantially mitigate the risks to areas of high biodiversity value and avoidance of losses. HSJ ensures no net loss through their Environmental Return and Social Inclusion commitments, described in this LPP and detailed in the ESAP and IFC PS Compliance Matrix, as well as their adherence to a recognized sustainability standard. A robust monitoring framework will be established, as required by IFC PS, to assess any changes in biodiversity, soil, hydrology, or other habitat elements.

5.1.5 Social inclusion

HSJ will have a significant impact as an employer in the sparsely populated, poor Orinoquía region. Promoting local jobs and training employees in their enhanced systems and technology is one of the main pathways to social inclusivity for HSJ. The first indicator for social inclusion will therefore be:



jobs (FTE equivalent) provided, direct and indirect, of which xx% local people and xx% women

In addition to employment, HSJ contributes to local development through several social programs:

- Their partnership with APRODENA, where they provide access to education to children in rural Vichada.
- Their good neighbourly program, where they provide their genetics to local farmers.
- Their program whereby local (and increasingly countrywide) farmers are welcomed to come and stay on their farm and learn about their farming practises.
- Future collaboration with a social financial services provider, such as Fundación Bancolombia, providing access to financial assistance for willing sellers that are interested.
- Fire management education of neighbouring farmers; HSJ currently engages with neighbours at an ad hoc level but is recommended to further involve local farmers in their fire management strategy, targeting a reduction in fire risk from human-induced fires.

The metric to capture social inclusion through community services will be:

individuals benefitting through (i) access to education, (ii) access to improved cattle farming practices through knowledge sharing, (iii) access to improved cattle farming through resource sharing, (iv) access to improved fire management, (v) local business development, (vi) gender programs (skills training for women), (vii) access to cultural services

5.1.6 Climate Resilience

As discussed in section 2.3 (Climate and Hydrology) above, climate change can generate new (previously unseen at the location) hazards, or increase and exacerbate existing climate hazards. The three most relevant climate hazards to cattle farming in the region are listed below, as well as HSJ's approach to this ('Resilience Actions').

#	Changed hazard	Resilience action - current	Resilience action - future
1	Increasing rainfall intensity (mm/storm), with concentrated rainfall resulting in increased flooding, and higher risk of loss of topsoil and aboveground biomass.	Drainage systems have been put in place in the current farm.	Flood risk assessment will be a standard part of the due diligence process on potential expansion areas, and integrated in the Land Acquisition Tool (LAT).
2	Longer dry seasons and greater variability, resulting in potentially lower surface water availability for animal watering and soil moisture storage and availability for plant growth.	Cattle irrigation, using boreholes and drinking troughs instead of open water sources. This greatly reduces	Same as current, implemented across all expansion farms.



		polluting natural water courses, damage to buffer zones etc.	
		Protect runoff return flow and more humid microclimates via protecting remnant forests and riverine corridors. This is described in the Biodiversity Compensation Plan.	Determining conservation set asides is part of the LAT.
3	Slight temperature increase (especially night-time lows) combined with changed hydrology may mean more herbaceous growth during the rainy season and more fire risk (higher fuel load) in longer dry season.	HSJ has a Fire Management Plan in place that includes fire breaks, water infrastructure, training, and communication systems.	HSJ will modernize its fire prevention, detection, and robust suppression capabilities. Additional focus on community engagement is one of the recommended actions in the IFC PS Compliance Matrix.

By undertaking these actions, the areas (#hectares) of farm with improved resilience are used as a summary indicator (KPI) of ecosystem resilience: # hectares of ecosystems with increased resilience. In the case of HSJ, the intensified production model is considered to contribute to ecosystem resilience. Therefore, the metric to measure resilience is:

hectares under intensive cattle farming

The people working in and around these farms are direct beneficiaries. As the living standards in rural Orinoquía is substantially lower than the Colombian average, local people are particularly vulnerable to the impacts of climate change. Women have less access to education and financial and are therefore also at greater risk of being impacted by a changing climate hazard. Hence, the following indicator is used as a proxy for climate resilience:

direct jobs provided (fte equivalent) of which at least 35% to local people, and at least 10% to women



This number is combined with those people receiving community services that increase their resilience to provide a summary human-centred resilience indicator (# people with increased resilience). In the case of HSJ, this is defined as:

individuals benefitting through (i) access to education, (ii) access to improved cattle farming practices through knowledge sharing, (iii) access to improved cattle farming through resource sharing, (iv) access to improved fire management, (v) local business development, (vi) gender programs (skills training for women), (vii) access to cultural services

5.1.7 GHG

Although climate gains are not a core focus of the transformational change narrative of this investment, there are considerable emission reductions associated with HSJ's sustainable intensification model:

Sequestration

Increased soil sequestration - although this will be realised over longer timeframes, is reversible, and has high uncertainty, good pasture management certainly increases carbon stock.

Increased planting of woody biomass - HSJ will commit to reforestation of ca 2.5% of all expansion areas. Trees are planted for conservation reasons, to provide shade to reduce animal heat stress in pastures and to create windbreaks.

Emissions reductions

Higher production of better-quality product (i.e.: intensification) - has lower emissions per unit of product than the Business-as-Usual scenario. This is primarily due to the shorter life cycle and lower lifetime emissions per cow, and hence lower emissions per kg of beef produced.

Enhanced fire suppression - reduced GHG emissions from HSJ-promulgated fire awareness and management could be considered a significant net environment improvement and environmental return.

Forest conservation - HSJ will commit to conservation of all forest and wetland areas on their current and future farms. This amounts to around 5%-7% of their total area under management.

Avoided emissions

Reduced deforestation - higher production of higher quality makes the marginal producer less viable. In a market of rising demand, each additional kg of beef produced from the same hectare of land, is a kg that need not be produced from deforested land. Thus, higher productivity contributes to reduced deforestation pressure. These avoided emissions are quantified to demonstrate the benefits of intensification, but they are not attributed, since the avoided deforestation is not geographically identifiable.



These emissions benefits are likely to far exceed the increased emissions on-farm and can be reasonably estimated by establishing standard metrics that are comparable to publicly available, government and industry recognised figures.

The metrics selected to capture GHG benefits are a combination of Environmental Return KPIs, fire reduction metrics and intensification metrics:

#hectares forest conserved

#hectares forest restored with natural regeneration

#hectares forest restored with active regeneration (target planting)

Fire events and extent (annual), against a baseline burn frequency and area

kg beef sold (carcass weight)

5.1.8 HR and Governance

As part of their IFC PS compliance commitments, HSJ will secure sufficient and adequate resources to implement their Environmental and Social Management System. To secure sufficient capacity at the on-set of land acquisition, HSJ commits to hiring a dedicated E&S resource, and in-house GIS capacity, as per ESAP milestones.

A Sustainability Committee will be established with both a dedicated environmental and social specialist. &Green will hold a seat in this committee. The Sustainability Committee will advise the company's Board directly on relevant environmental and social related topics.

5.2 Scale

The investment will be a blueprint for commercial and sustainable business development in the Orinoquía region, for the expansion of HSJ's operations and for other agricultural businesses looking to establish in the region. HSJ has a policy of inviting peers and other stakeholders to learn about their business, to share information and genetics with neighbouring farmers in their 'good neighbourly' program. HSJ will connect with industry groups such as the Roundtable for Sustainable Livestock in Colombia to encourage, facilitate and enhance replication of the business model elsewhere in Colombia.

HSJ's goal is to reach a level of production in which it is able to supply the domestic and export markets with meat equivalent to 600 head of cattle a day – the required number to fully supply an abattoir. If this is achieved, HSJ will manage the entire upstream part of its cattle value chain which would enable it to ensure beef quality for end-customers as well as the highest E&S standards. HSJ's goal to manage the entire upstream part of the cattle value chain is only fully realised after 2050. This scaling potential is not considered part of the direct impacts attributable to &Green's loan but contributes to the potential for sector transformation.

5.2.1 Land Acquisition Tool

It is critical that HSJ's sustainability framework is fully integrated in the scale-up processes. In order to safeguard this, a Land Acquisition Tool (LAT) has been developed that guides HSJ in their land



acquisition processes (see Annex 6). The LAT merges the IFC PS, Aval GANSO requirements and additional social safeguards, such as a screening for relations with armed groups, in a comprehensive checklist. The checks are divided in an initial GO/NO GO quick screen, which is desktop based and requires minimal resources, and a more thorough investment evaluation process. The latter requires site visits including stakeholder consultations and results in a cost/benefit analysis that helps inform HSJ's acquisition decision. A post-acquisition checklist is included to safeguard initial compliance activities required upon acquisition.

HSJ will integrate the tool in their existing systems, covering operational, financial, and legal checks. HSJ will fill out the tool prior to any acquisition of new land. The metric to capture sustainable intensification is:

hectares under intensive cattle farming

5.3 Sustainability

HSJ will enable sustainability by supporting the development of, and building market demand for, a 'premium sustainable beef certified product'. This will be an important and unique market transformation in Colombia and can spur better practices in Latin America. HSJ will work with the Aval GANSO standard (or an equivalent standard) for sustainable livestock that is aligned with the IFC PS, NDPE and tailored to the regional context. HSJ will bring the Aval GANSO standard (or an equivalent standard) to scale and set the benchmark for sustainable beef production in Colombia.

5.3.1 Sustainability Standard

HSJ's operations are currently certified under Rainforest Alliance cattle certification program, part of their sustainable agriculture standard. However, this standard will be discontinued. HSJ will ensure the continuation of their sustainability certification against a comparable standard.

As a suitable alternative to RA, the Aval GANSO standard has been assessed (see Supporting Documents in Annex 8). The Aval GANSO standard was developed by GANSO and Climate Focus, and offers a voluntary evaluation tool for producers and livestock companies interested in evaluating their management, and a guarantee of sustainable production to the market. The tool is largely aligned with the IFC PS but adds local and sectoral context to the requirements. It outlines a clear path towards sustainability in livestock production that aims to achieve transformative impacts at the farm, landscape, and value chain level.

HSJ commits to demonstrating certification against the RA cattle standard, Aval GANSO Standard or equivalent, in accordance with the milestones laid out in the ESAP.



6 MRV

An ESG review will be undertaken by a third party, selected in consultation with &Green and paid for by HSJ. The review will be done annually for the first 5 years of the loan agreement, and every two years thereafter, for the full duration of the loan agreement. A different reviewer will be selected every 3 years.

The audit will comprise a full review of HSJ's compliance against the IFC PS, resulting in an updated IFC PS compliance matrix. In addition, the audit will assess the progress against all ESAP items, producing updated numbers for all KPIs.

HSJ will provide a bi-annual progress update against the ESAP items in the first 2 years after signing the loan agreement, and annually thereafter for the duration of the loan agreement. These reports will include updated KPI numbers as well as a written update against all ESAP items. In order to provide meaningful updates, HSJ will have in place an appropriate monitoring framework.

7 Budget

HSJ foresees the following budgetary needs for the implementation of this LPP. This list is not exhaustive and subject to changes.

Budget item	Estimated cost (per year) in USD
ESG Review	TBD with HSJ
Sustainability certification audit	
Sustainability Committee	
ESG Manager	
Restoration	
EIAs	
...	



ANNEX 1: Farm and Landscape Maps

ANNEX 2: ESAP

ANNEX 3: Transformational Change Indicators

ANNEX 4: IFC PS Compliance Matrix

ANNEX 5: NDPE Policy

ANNEX 6: Land Acquisition Tool

Supporting documents

ANNEX 7: ESDD Documents

ANNEX 8: Aval GANSO Standard