Resilience for the Future:

A Viable Pathway to Regenerative Landscapes in the Cerrado

March 2025

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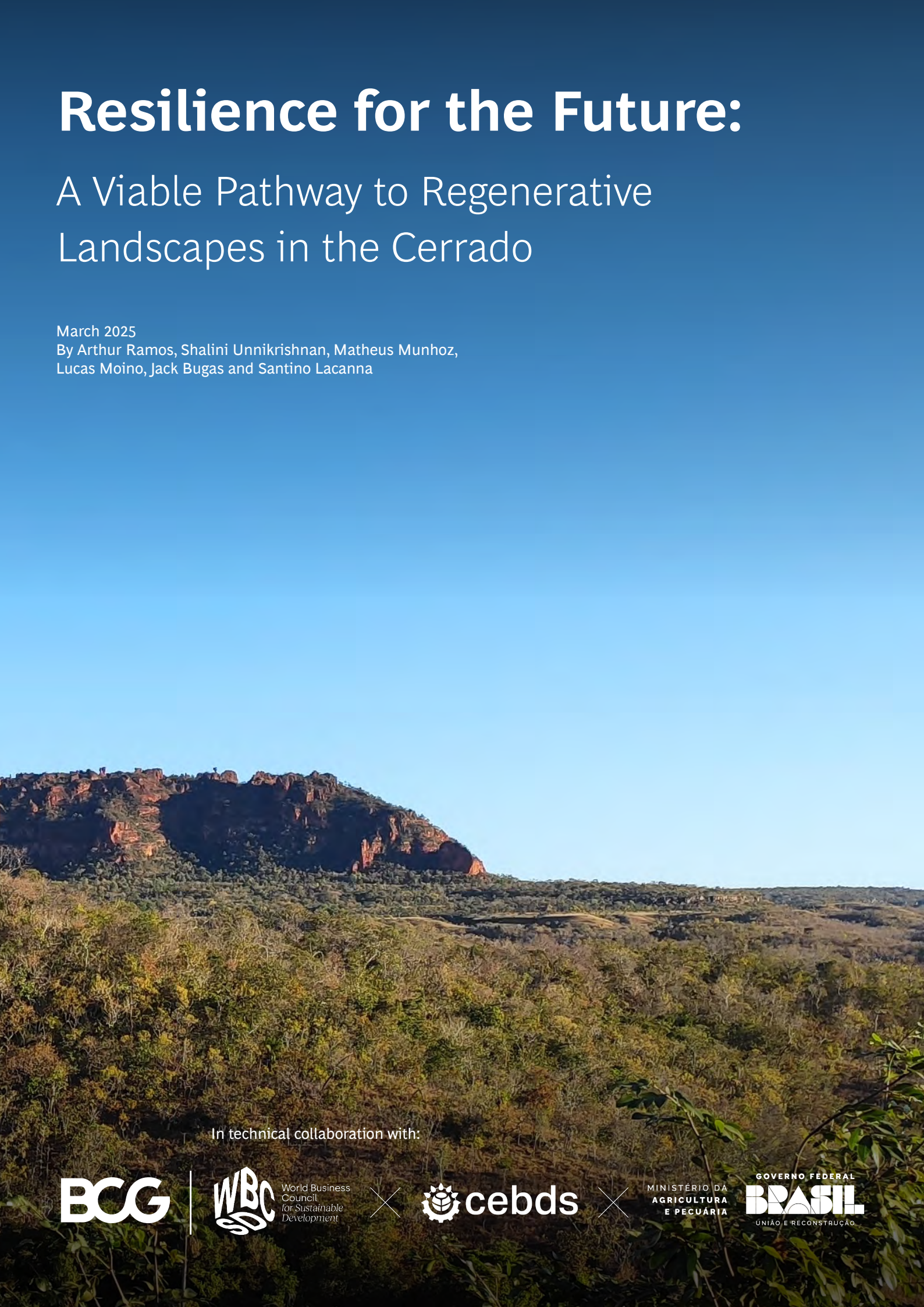

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Foreword

Our agri-food system is at a crossroads. Climate change is disrupting harvests and supply chains, threatening farmer livelihoods and global food security. Thirty percent of global emissions come from agriculture and land use change, 40% of agricultural land is degraded, and there is a US$12T hidden cost of inaction from our ability to adapt.

Nearly 30% of the agricultural land in the Americas – 334 million hectares – has fallen into degradation. The opportunity to reverse this trend is compelling: these lands could sequester up to 13.1 billion tons of CO_2 equivalent over 20 years by adopting sustainable land-use and agricultural practices: curbing deforestation and land conversion and scaling up regenerative farming. This would offset 39% of the greenhouse gas (GHG) emissions from the continent during that period.

Brazil stands at the forefront of this effort. In 2023, the country emitted 2.3 billion tons of CO_2e, a figure underscored by the urgency of its commitment at COP29. Brazil announced a goal to reduce net GHG emissions by 59% to 67% by 2035, compared to 2005 levels. To achieve this, the country must address two primary sources of emissions: deforestation and land conversion, which accounts for 46% of total emissions, and agriculture, responsible for another 28%. Together, these sources contribute 74% of the nation's emissions.

The Cerrado, Brazil's agricultural hub and the world's most biodiverse savanna, offers a unique opportunity for change. Adopting regenerative landscapes in this region represents an integral part of the solution, positioning its farmers at the heart of this shift. Beyond emission reduction, regenerative practices in the biome can create real economic value and build resilience for producers by restoring soils, protecting water resources, and strengthening ecosystems and communities. Our recent survey conducted with farmers in the Cerrado confirms their willingness to lead this transformation but require access to credit and technical assistance to scale.

The Landscape Accelerator – Brazil (LAB) is a joint initiative led by BCG, CEBDS, and WBCSD under the Action Agenda on Regenerative Landscapes (AARL). This initiative, which includes the technical support of Brazil's Ministry of Agriculture and Livestock (MAPA), aims to expand and accelerate the adoption of regenerative agriculture and sustainable land-use across the country.

This report – developed with technical collaboration from MAPA, WBCSD and CEBDS – builds on an extensive knowledge base and expert insights to outline the potential impact of regenerative agriculture and sustainable land use within landscapes and a pathway for its widespread implementation in the Cerrado. It highlights how these regenerative landscapes can address multiple objectives, balancing environmental sustainability with economic growth. The report is designed to inspire stakeholders across the food value chain to take the necessary steps to support the transition toward sustainable agribusiness systems.

The time to scale regenerative landscapes in Brazil is now.

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Executive summary

The Brazilian Cerrado: agriculture and biodiversity powerhouse. Spanning almost 200 million hectares, the world's most biodiverse savannah plays a central role in global agricultural production. It harbors 30% of Brazil's biodiversity and 5% of all known species while producing 25% of the world's soy, 6% of beef, 27% of sugarcane, 9% of cotton and 6% of corn. By 2050, the Cerrado is projected to account for 70% of Brazil's soybeans and nearly half of its beef, expanding Brazil's influence on the global food stage and reinforcing the Cerrado's vital role in agriculture and conservation.

Progress, however, has come at a steep cost. Nearly half of the Cerrado – two Spains – has been converted for agriculture, with conversion rates surging by 71% in recent years. Fires now exceed the ecosystem's capacity to recover, while more than 600 plant species and dozens of animal species are endangered or already extinct. A hotter, drier climate is destabilizing critical ecosystem services and farming systems, increasing risks for local communities, and threatening the Cerrado's long-term sustainability.

Production and conservation go hand in hand. Across 32.3 million hectares – one Norway – there is an opportunity to adopt regenerative practices. Of these, 23.7 Mha are pastureland with some level of degradation that can be restored, generating 13–22% IRR with payback in 7–9 years. The remaining 8.6 Mha are cropland that could increase adoption of regenerative practices, delivering IRR of 16–29% with payback in 3–5 years. A BCG survey with farmers in the region confirms that they are ready to make this shift, provided they have access to financing and technical assistance.

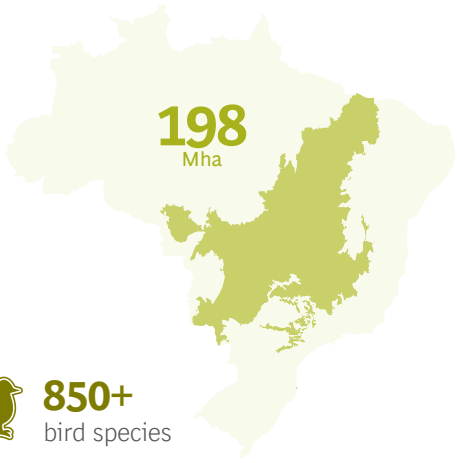
Significant opportunity to be seized. By scaling these initiatives, the Cerrado could protect 43 Mha, halt further land conversion, and significantly boost productivity. This transformation would solidify Brazil's leadership in global food production, generate up to US$100 billion in economic value (NPV) while reducing and removing carbon emissions by up to 140 $MtCO_2e$ and improving soil health, biodiversity, water efficiency, and farmers' livelihoods. The transition in the Cerrado is expected to generate up to US$20 billion in annual GDP increase for Brazil by 2050, equivalent to nearly 0.9% of the country's current economic output.

Time to scale is now. Transitioning the Cerrado represents a US$55 billion investment opportunity through 2040, with average 19% IRR. Some landscapes in the region could reach IRR as high as 29%. Approximately US$1 billion in blended funding are needed through 2030 to mitigate early-stage risks. Around 85% of the funding could come from private investments, supported by reliable systems for measurement, monitoring, reporting, and verification, scalable financial instruments, and trusted partnerships with producers on the ground.

Let's accelerate the transition – together. The Cerrado has the potential to set the global standard for regenerative agricultural landscapes at scale. This report provides a blueprint for redefining the balance between agriculture, conservation, and climate action in the region. Success depends on mobilizing targeted investment mechanisms, capital, fostering robust public-private collaboration, and implementing harmonized metrics and precision monitoring systems. The time to act is now.

Transitioning the Cerrado into a regenerative landscape powerhouse

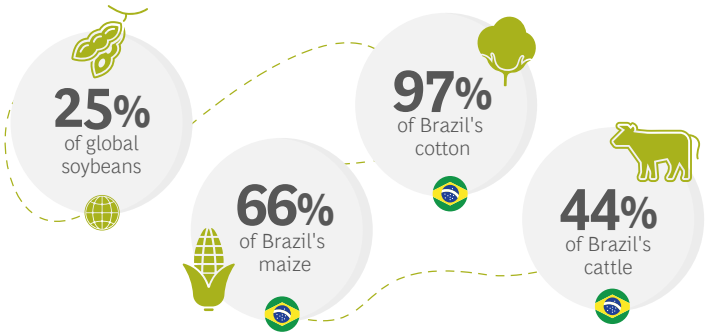
1 Cerrado is a major global food and biodiversity hub...



850+ bird species

12,000+ plant species

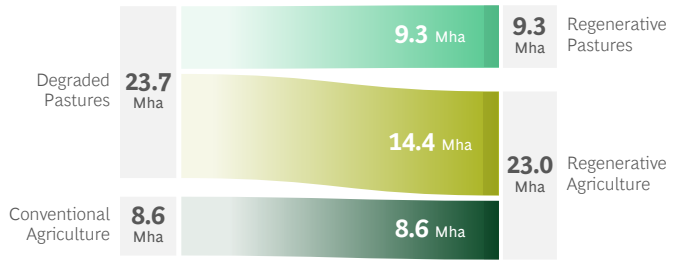
800+ freshwater fish species



2 ...but production has come at environmental and social costs

- 95 Mha, **almost half** of the Brazilian Cerrado (two Spains), have already been **converted**
- **Rising pressure** on traditional **people**, communities, and smallholder farmers
- 600+ plants, 30+ birds, 100+ fishes, and 40+ mammals **endangered or extinct**
- A **hotter, drier climate** in the Cerrado is driving greater **volatility in agriculture**

3 Opportunity to transition the Cerrado into a global lighthouse for the world on regenerative landscapes and regenerative agriculture



32.3 million hectares with viable business cases to transition to regenerative landscapes

100+ **USD billion in NPV** by transitioning these 32.3 Mha into regenerative landscapes

43+ **million hectares** of standing natural areas in the biome that could be conserved

140+ **million tCO_2e** in mitigation and sequestration potential considering business plan levers

400+ **thousand farmers** that could be impacted by the transition in the biome

4 A clear path to scale regenerative landscapes in the Cerrado is in sight

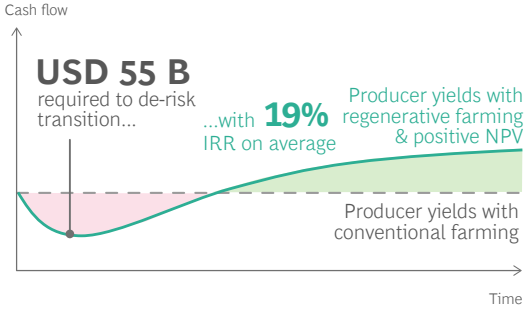
Activating farmers

Financing the transition

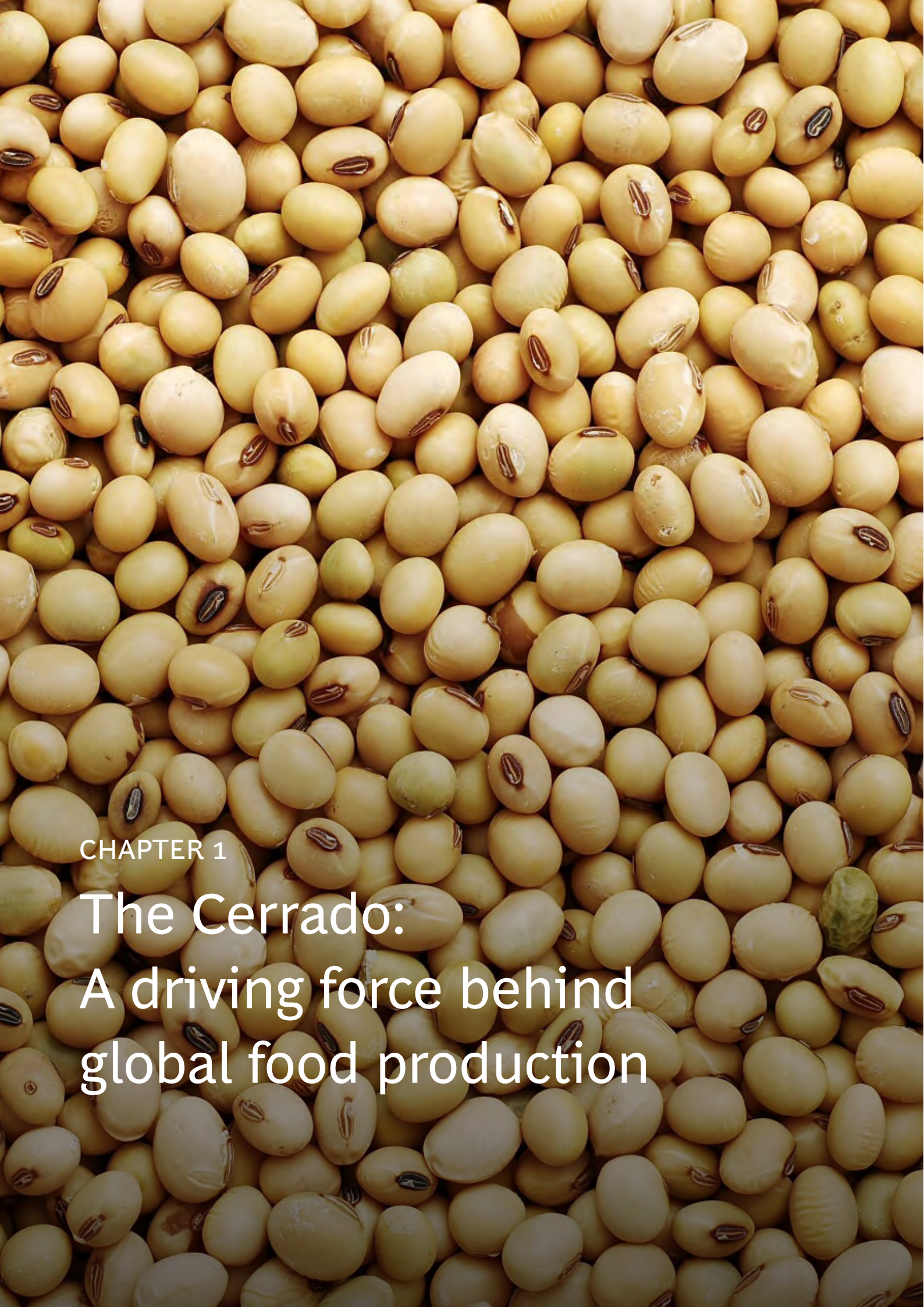
Verifying practices & outcomes

Landscape approach

Illustrative landscape cash flow over time



Supply chain, financial players, and government must collaborate to unlock Cerrado's full potential



CHAPTER 1

The Cerrado: A driving force behind global food production

The Brazilian Cerrado[1] , located predominantly in Brazil's Central Plateau, is the second-largest biome in the country, surpassed only by the Amazon. Covering approximately 2 million square kilometers – or 200 million hectares – it occupies an area larger than Mexico or Indonesia and is nearly the size of Greenland or Saudi Arabia. This vast region represents about 25% of Brazil's land area and is characterized by its ecological and structural similarities to other tropical savannas found in regions such as Africa, Southeast Asia, and Australia.

Its elevation varies widely, from 300 meters in areas like Baixada Cuiabana, in Mato Grosso, to over 1,600 meters in the Chapada dos Veadeiros, in Goiás. The biome's soils are predominantly Latosols – deep, nutrient-poor, and acidic – but well-suited to sustain the Cerrado's unique vegetation. Other soil types, such as Argisols, also occur extensively, adding to the biome's geological diversity.

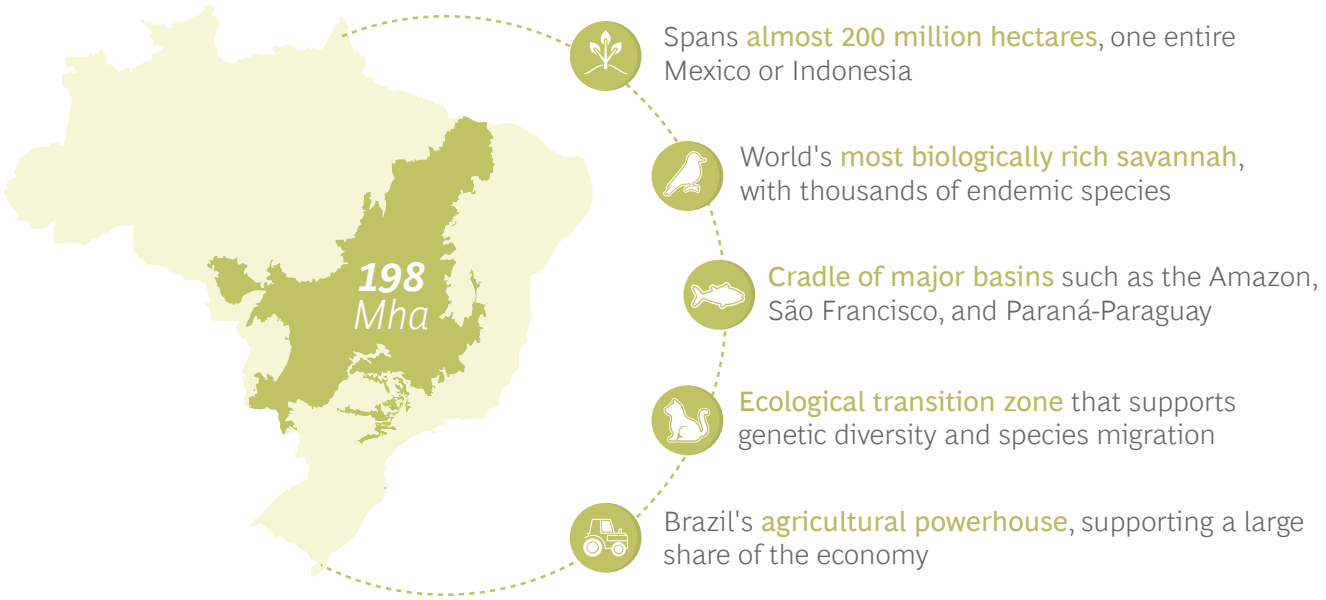
The biome spans multiple states as a continuous expanse, including Goiás, Tocantins, and the Federal District, and significant portions of Bahia, Maranhão, Mato Grosso, Mato Grosso do Sul, Minas Gerais, Piauí, Rondônia, and São Paulo. Isolated cerrado vegetation patches are also found in the northern states of Amapá, Amazonas, Pará, and Roraima, and in the southern state of Paraná, outside the official borders of the biome. It transitions into other biomes, blending with the Amazon Rainforest, Atlantic Forest, Caatinga, and Pantanal.

These hybrid landscapes are often referred to as "Amazonian savannas" or by other regional terms, reflecting their mixed characteristics. Beyond Brazil's borders, the cerrado vegetation extends into parts of Bolivia and Paraguay, and it shares similarities with the Llanos grasslands of northern South America, including Venezuela and Colombia.

The Cerrado has undergone a significant transformation over the past four decades. Once sparse ranchlands, the Cerrado has become one of the most productive agricultural regions in the world, driving Brazil's leadership in global agribusiness. Today, it produces 55% of Brazil's primary agricultural output and plays a vital role in the supply of commodities such as soybeans, maize, sugarcane, seed cotton, poultry, and cattle.

Between 1985 and 2023, agricultural production in the Cerrado grew at an extraordinary pace. Soybean production surged from 8 million tons to 98 million tons, a thirteenfold increase that now accounts for 25% of global output. This growth was driven by a 6.9-fold expansion in cultivated area and significant productivity gains, with yields per hectare nearly doubling over the period. Maize output increased fourteenfold, reaching 86.5 million tons, or 6% of global production. Cultivated land for maize expanded 4.3 times, while productivity improved by a remarkable 3.3 times due to advances in crop varieties, irrigation, and nutrient management. Sugarcane production also expanded substantially, rising from

Exhibit 1 - Overview of the Brazilian Cerrado



Sources: IBGE; EMBRAPA

1. This report considers the biome Cerrado as Cerrado *sensu lato*, with biome borders as defined by IBGE. This is different from the vegetation type cerrado (savanna, or cerrado *sensu strictu*) and the morphoclimatic and phytogeographic domain of the Cerrado

101 million tons in 1985 to 468 million tons in 2023. Now contributing 27% of the world's sugarcane, the Cerrado supports both Brazil's ethanol and sugar industries, with a fourfold increase in cultivated area and modest productivity growth of 1.1 times.

Seed cotton has seen similar success, with output rising from 1 million tons in 1985 to 7.3 million tons in 2023, an 8.5-fold increase. Productivity nearly tripled, while cultivated land doubled, positioning the Cerrado as a significant contributor to global cotton markets, producing 9% of the world's total. Livestock production has also flourished. The region's cattle herd grew from 61 million to 104 million animals, now making up 6% of the global total. This growth was supported by improvements in pasture management and a 1.6-fold expansion in grazing areas. Poultry numbers increased from 114 million to 413 million animals, a 3.6-fold rise over the same period, reflecting the Cerrado's ability to meet growing demand for protein sources. (**Exhibit 2**)

The Cerrado's contributions extend far beyond production volumes. Agribusiness accounts for 25% of Brazil's GDP, equivalent to BRL 2.7 trillion, with the Cerrado responsible for more than half of this output. Primary agricultural activities contribute BRL 0.7 trillion, or 7% of GDP, while agroindustry adds another BRL 0.6 trillion through the processing of commodities such as ethanol, soybean meal, and textiles. Agri-services, including logistics, infrastructure, and technology, contribute BRL 1.2 trillion, or 11% of GDP, reflecting the broader economic influence of the Cerrado.

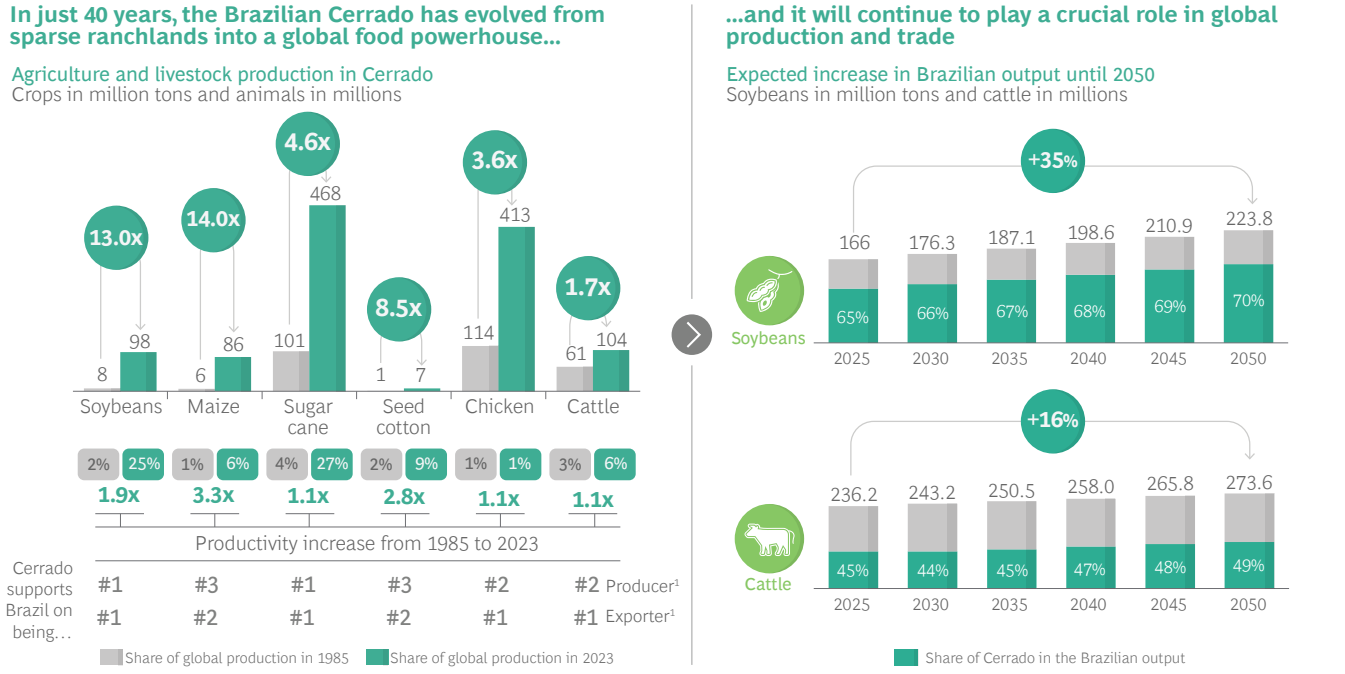
Inputs such as fertilizers, seeds, and machinery generate an additional BRL 0.2 trillion. This interconnected value chain supports not only the rural economy but also urban centers, driving infrastructure development, employment, and innovation across Brazil.

The Cerrado has been a significant driver of Brazil's economic development, with its GDP contribution steadily increasing over the past decades. Between 1985 and 2021, the Cerrado's GDP grew at a compound annual growth rate (CAGR) of 3.7%, outpacing the broader national economy's growth rate of 2.4% (in real terms). By 2021, the Cerrado contributed BRL 2.4 trillion in GDP (in 2024 values), accounting for 22% of Brazil's total GDP.

If considered as an independent economy, the Cerrado would rank as the world's 40th largest, surpassing countries such as the UAE, Chile, Colombia, Portugal, and Peru. This economic strength is coupled with lower volatility compared to the national average, reflecting the stability provided by its diversified and highly productive agricultural sector. The region's ability to sustain consistent growth amidst broader economic fluctuations highlights its level of resilience and its role as a cornerstone of Brazil's economic landscape.

The region was also important regarding infrastructure development in Brazil. Storage capacity for grains in the country doubled over the last 15 years. Between 2007 and 2023, silos and warehouse capacity grew from 92 million tons to 188 million tons, representing a compound annual

Exhibit 2 - The Cerrado is a food powerhouse critical to global food supply



Note: Cotton exports are based on total lint volume, while production refers to unginned seed cotton. Other products reflect the total export value, including unprocessed or minimally processed commodities.; 1. Brazil's position in the global producer and exporter ranking in 2022.

Sources: IBGE; FAOSTAT; USDA; MapBiomas; BCG Analysis

growth rate (CAGR) of 4.3%. The Cerrado has played a central role in this expansion, with its storage capacity increasing by 4.8% annually and now accounting for 52% of Brazil's total. Despite this growth, storage capacity remains insufficient relative to the region's grain production, highlighting the need for continued investment to bridge this gap and enhance supply chain efficiency.

Paved highway networks have also expanded significantly, transforming connectivity in the Cerrado. In 1960, there were no paved highways crossing the region, limiting its economic integration. By 2021, a network of highways connected key production zones with domestic and export markets, improving logistics and reducing transportation bottlenecks. This enhanced connectivity has strengthened the Cerrado's position as a vital hub for agricultural exports and supported the efficient movement of goods within Brazil and beyond.

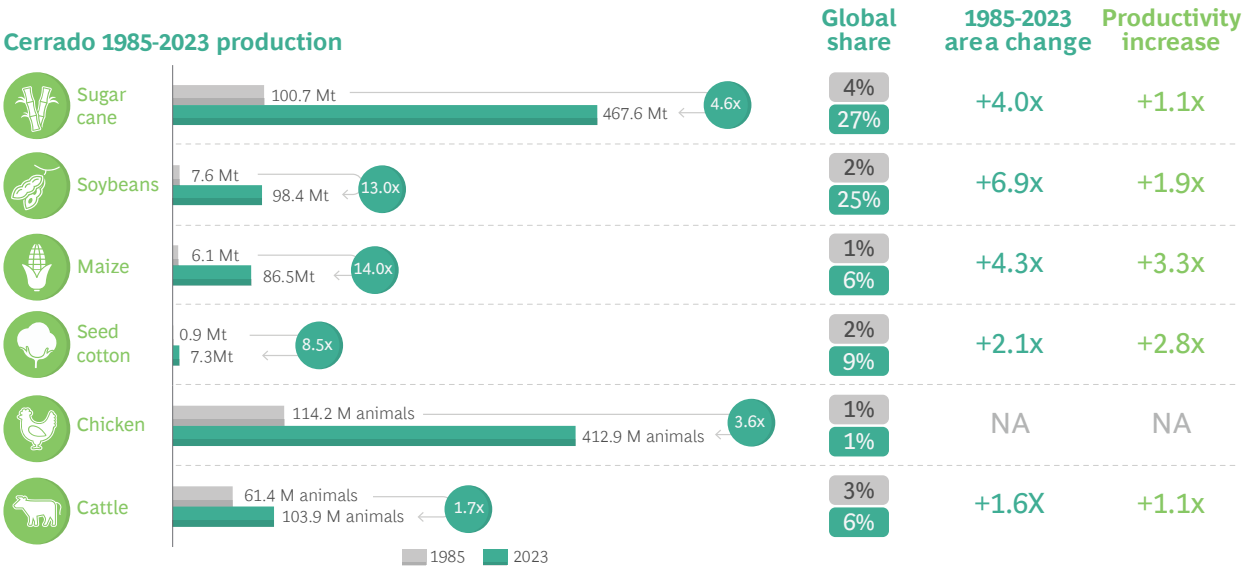
Looking ahead, the Cerrado is expected to play an even greater role in meeting global food demand. Global soybean production is projected by FAO to rise by 44%, reaching 483 million tons by 2050. Brazil is forecast to remain a leading supplier, with production increasing from 74.1 million tons in 2012 to 105.9 million tons by mid-century. The Cerrado is expected to account for 70% of this growth, highlighting its capacity for expansion and efficiency gains. Cattle production is also expected to grow, with the global herd size projected to increase by 47%, from 1.46 billion animals in 2012 to 2.15 billion by 2050.

Brazil's cattle herd is forecast to rise from 211 million animals to 264 million, with the Cerrado contributing 49% of the national total by mid-century.

These trends underscore the Cerrado's unique position as a reliable and efficient supplier of essential commodities. Over the past 40 years, its success has stemmed from both land expansion and productivity improvements. Cultivated areas for soybeans, maize, sugarcane, and seed cotton expanded by 6.9x, 4.3x, 4.0x, and 2.1x, respectively, while productivity gains ensured that output growth far outpaced land use increases. For example, maize productivity rose by 3.3 times, while soybean yields nearly doubled. In livestock, improvements in pastureland management allowed for a 1.1-fold increase in cattle productivity despite a relatively modest expansion in grazing areas. (**Exhibit 3**)

Brazil and the Cerrado stand as global leaders in agricultural exports, dominating key markets such as soybeans, maize, sugar, beef, and chicken. In 2022, Brazil accounted for 50% of global soybean exports, valued at US$46.7 billion, the Cerrado alone contributing with 65% of Brazilian production, highlighting its importance within the supply chain. Similarly, Brazil is the second-largest exporter of maize, contributing 19% of global exports (US$12.3 billion), with the Cerrado responsible for 65% of Brazilian production. This reflects the region's role as a cornerstone of agricultural production, especially in grains that are crucial to global food and feed systems.

Exhibit 3 - Both cultivable area and productivity have grown significantly in the Cerrado



Sources: IBGE; FAOSTAT; USDA; MapBiomas; BCG Analysis

The Cerrado's contribution extends beyond grains to sugar, beef, and chicken exports. Brazil leads the global sugar export market with a 33% share, valued at US$11 billion, and the Cerrado contributes 60% of Brazilian production, underlining its role in value-added agricultural commodities. In beef exports, Brazil accounts for 18% of the global market, valued at US$12 billion, with the Cerrado providing almost half of the Brazilian cattle, equating to nearly US$5 billion. Meanwhile, Brazil's dominance in chicken exports is equally noteworthy, representing 28% of global trade (US$8.7 billion), with the Cerrado contributing with 25% of total Brazilian production. (**Exhibit 4**)

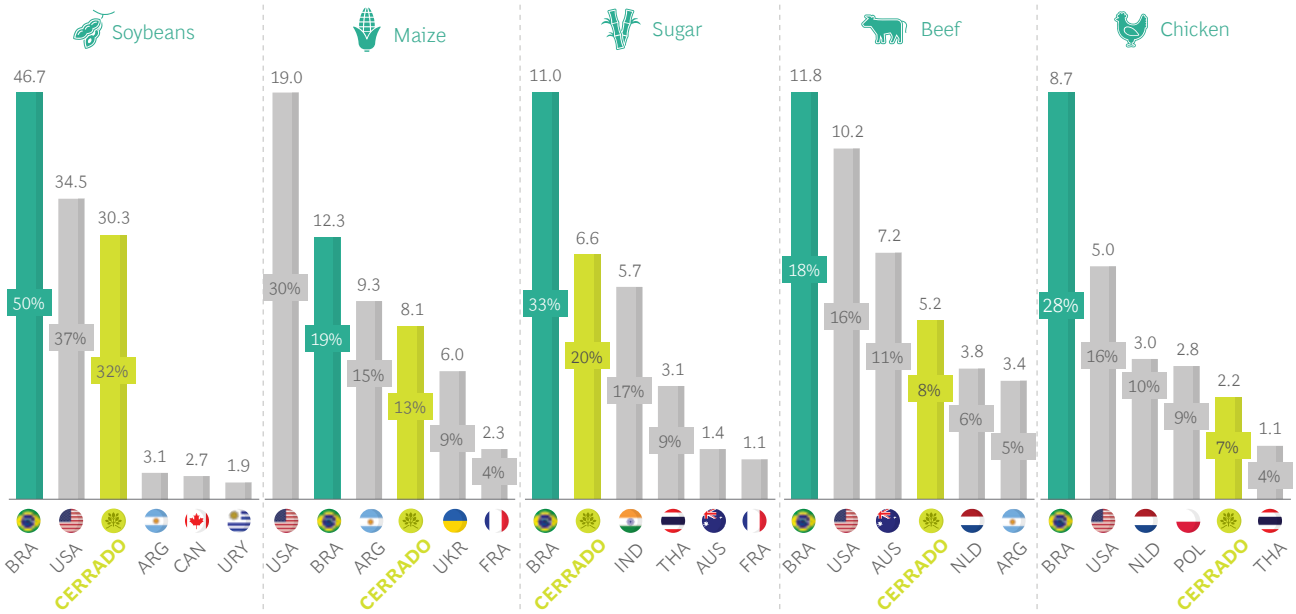
Brazil leads global soybean production, with 121 million tons harvested in 2022, followed by the United States at 116 million tons. The Cerrado alone produced 77 million tons, surpassing major producing countries like Argentina (44 million tons) and China (20 million tons). Average soybean yields in the Cerrado reached 3.4 tons per hectare in 2022, exceeding Brazil's national average of 3.0 tons and outperforming the United States at 3.3 tons per hectare. This positions the Cerrado as one of the world's most efficient soybean-producing regions, thanks to advanced farming techniques and optimized soil management practices.

Projections for the 2024/25 harvest suggest an even greater expansion of Brazil's soybean dominance. According to CONAB estimates, production could rise to between 166.0 and 172.2 million tons, driven by a 9.6% increase in productivity, reaching 3,508 kilograms per hectare. Within the Cerrado, certain municipalities already showcase remarkable productivity levels, with Chapadão do Sul (MS) achieving yields of 4.6 tons per hectare, followed by São Gabriel do Oeste (MS) and Capão Bonito (SP) at 4.5 tons. Other high-performing areas include Itapeva (SP) at 4.4 tons and Itumbiara (GO) at 4.2 tons. (**Exhibit 5**)

Agriculture has played an important role in driving economic and social development in the Cerrado, with the region's GDP per capita and Human Development Index (HDI) now surpassing Brazil's national average. Between 1985 and 2021, the Cerrado's GDP per capita rose from BRL 23.1 thousand to BRL 51.9 thousand (in 2024 values), representing a compound annual growth rate (CAGR) of 2.3%. This growth rate is nearly double the 1.2% observed in the rest of Brazil, reflecting the economic momentum generated by the Cerrado's position as a hub for agricultural production and export.

Exhibit 4 - The Cerrado – on its own – is a global agribusiness leader

Top world exporters in 2022
in billion USD and % of global exports in value



Note: Export value of derivatives, such as oil and flour, is not considered—only unprocessed or lightly processed commodities. Cerrado's share of exports is calculated as a percentage of production.; **1.** Sugar may be produced from beets, includes raw and refined sugar.; **2.** Boneless or not.

Sources: FAOSTAT; IBGE (PAM); BCG Analysis

Over the same period, the Cerrado achieved significant improvements in its Municipal Human Development Index (MHDI), rising from an average of 0.480 in 1990 to 0.772 in 2021. This 0.292-point increase outpaced the national average of 0.268, driven by better access to education, healthcare, and infrastructure. The economic benefits from agricultural development have translated into broader social progress, elevating the quality of life for communities across the region.

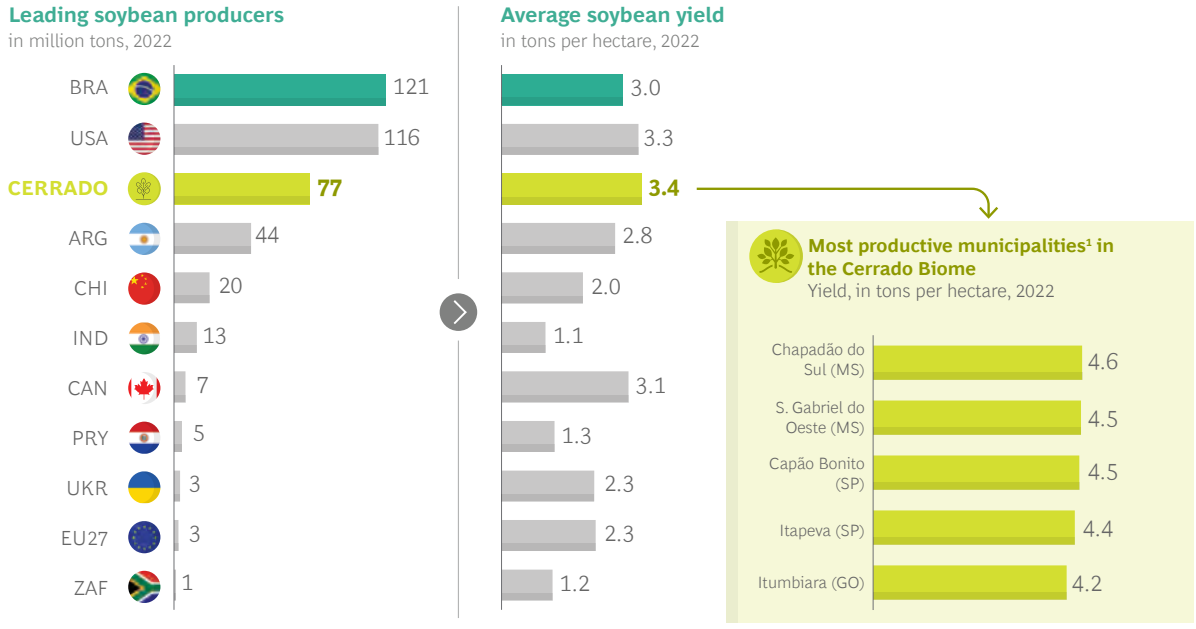
These statistics demonstrate how the Cerrado amplifies Brazil's position as a powerhouse in agricultural exports. The region's diverse output underpins the country's ability to supply a significant portion of the world's demand for grains, proteins, and sugar. By leveraging its extensive arable land and infrastructure, the Cerrado continues to act as an engine for Brazil's agricultural growth, fostering economic value and reinforcing the country's role as a critical player in global food security.

The Cerrado has emerged as a linchpin of global commodity production, encompassing food, forestry, textile cotton, biofuels, minerals, and other critical resources. As one of the world's most important agricultural regions, it plays an essential and enduring role in Brazil's economy and the supply of different industries worldwide. In agriculture, temporary crops[2] from the region represent 40% of the nation's total production value, while permanent crops contribute a modest 5%. Yet, its trajectory has undergone significant transformation.

Cattle ranching, once dominant, grew steadily from the 1970s but saw its share of the national herd peak in the mid-1990s. Economic stabilization under the Plano Real diminished its role as a store of value against inflation, paving the way for higher-margin crops such as soybeans, corn, and cotton. Concurrently, livestock activities shifted northward, particularly into the Amazon biome. In contrast, swine and poultry industries have expanded within the Cerrado, leveraging proximity to essential inputs like corn and soybean meal and proximity to consumers.

As demand for food continues to grow, the Cerrado's ability to deliver consistent growth in output and support a robust agribusiness value chain will ensure its ongoing importance. The region's ability to innovate and build on its successes will determine its role in shaping the future of agriculture and meeting the rising demands of a growing global population[3].

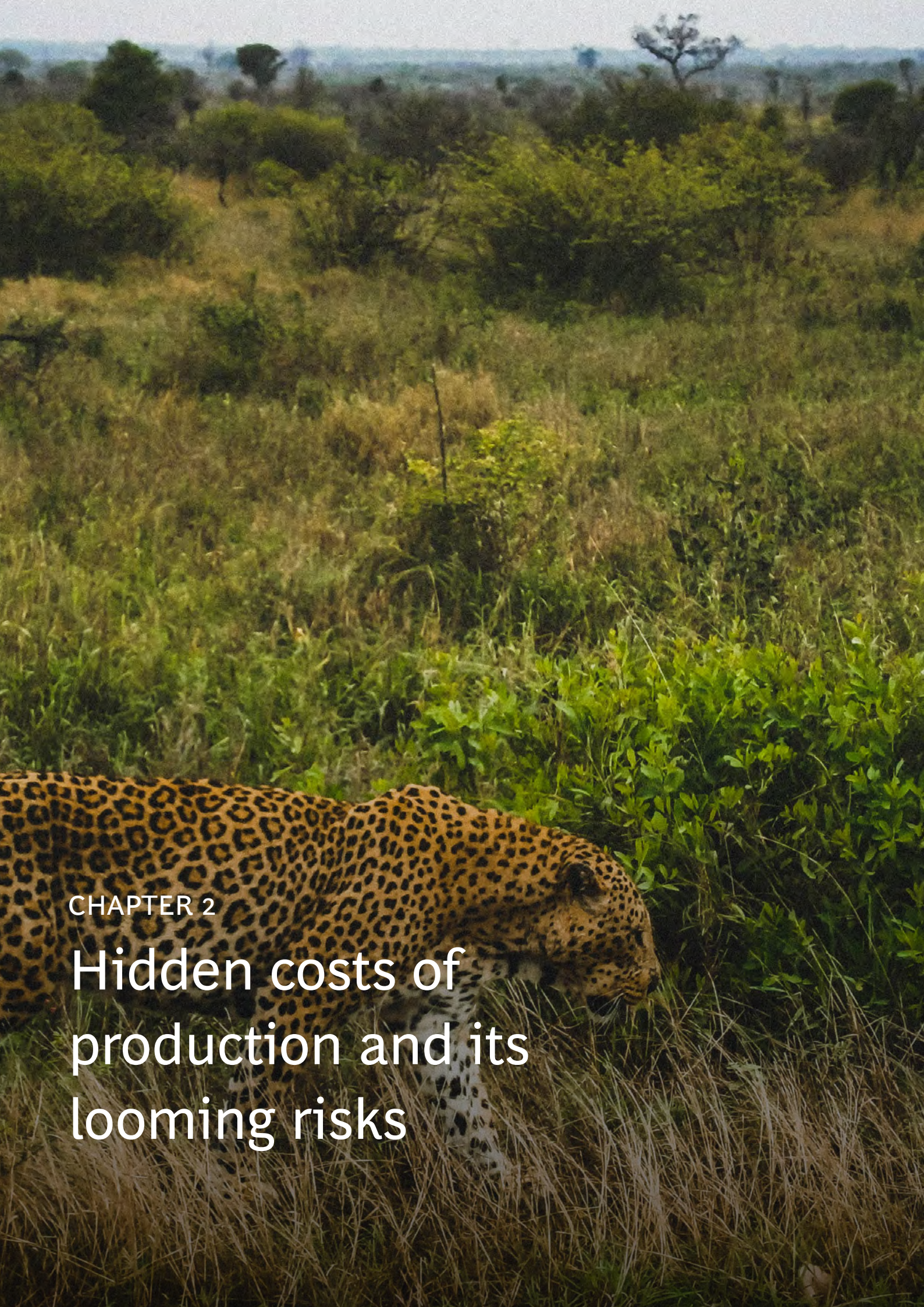
Exhibit 5 - Productivity today in some Cerrado regions is among the highest in the world



1. Selected average municipal productivity examples with relevant total production

Sources: FAOSTAT; IBGE (PAM); BCG Analysis

2. Temporary crops are short- to medium-duration crops, typically with a vegetative cycle of less than one year, requiring replanting after each harvest. Examples include soybeans, corn, and beans. Permanent crops, on the other hand, have long vegetative cycles and allow for successive harvests without replanting. Examples include coffee, apples, pears, grapes, mangoes, and oranges (IBGE, 2019); **3.** According to FAO projections, global food consumption is expected to rise by 70% by 2050, driven by a population growth to 9 billion and a significant increase in per capita calorie intake – from 2,789 kcal per day in 2000 to 3,130 kcal per day in 2050, a 12% rise.



CHAPTER 2

Hidden costs of production and its looming risks

The Cerrado is among the world's richest ecosystems and a recognized biodiversity hotspot. It supports over 12,000 plant species and 850 bird species, encompassing a third of Brazil's biodiversity. More than 40% of its woody plants and half of its bees are endemic to the region, making it irreplaceable in global ecological terms. As a habitat for species such as the jaguar, the Cerrado plays a vital role in maintaining genetic diversity and ecological stability.

Beyond its biological wealth, the Cerrado functions as a major carbon reserve, holding approximately 13.7 billion tons of carbon, with two-thirds stored underground. This makes it indispensable in global efforts to combat climate change and protect natural carbon cycles.

Covering 12 Brazilian states, including Goiás, Tocantins, Minas Gerais, and São Paulo, the Cerrado's reach also extends into Bolivia and Paraguay. Its landscape features 11 distinct vegetation types, from riparian and dry forests to grasslands such as Campo Limpo and Campo Rupestre. Sharing traits with savannas in Africa, Southeast Asia, and Australia, the Cerrado stands out for its ecological complexity and global relevance.

Known as Brazil's "water tank", the Cerrado is the source of South America's key river systems, including the Amazon, São Francisco, and Paraná-Paraguay basins. These waterways sustain millions of people and are central to agriculture and industry. The biome's deep-rooted vegetation enhances water infiltration, replenishes aquifers, and ensures hydrological balance across the continent.

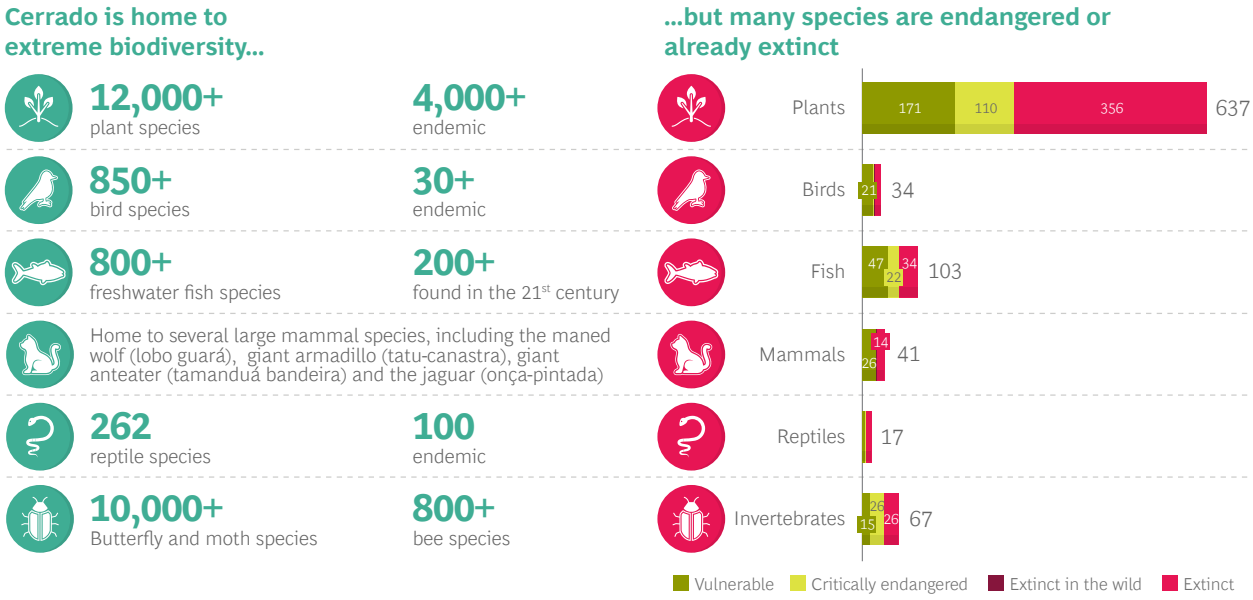
The Cerrado's intricate aquatic networks – springs, wetlands, ephemeral lagoons, and streams – nourish these river systems. Key headwaters include the Rio Paranaíba in the Paraná region and tributaries such as the Paracatu and Urucuia in the São Francisco basin. In the Amazon basin, rivers like the Araguaia, Tocantins, Xingu, and Tapajós originate in the Cerrado. Strategic areas such as Águas Emendadas connect these basins, facilitating biodiversity and aquatic species migration.

The Cerrado is not only a Brazilian asset but a global one. Its ecological and hydrological functions are fundamental to biodiversity, climate regulation, and water security. Protecting this biome is an imperative, both for sustaining local economies and for addressing global environmental challenges. Yet, these interconnections are increasingly disrupted by human activities.

Nearly half of the Cerrado's 198 million hectares has been repurposed for agriculture and cattle, with 48% of its natural landscapes altered. This rate of transformation surpasses that of other Brazilian biomes, including the Amazon (16%) and Pantanal (17%), leaving only 52% of the Cerrado's original habitats intact.

The biome's degradation is also partly accelerated by policies focused on protecting the Amazon. Gaps in enforcement and shifting economic incentives have redirected agribusiness expansion to the Cerrado, accelerating deforestation and land conversion. Between 2009 and 2023, the Cerrado saw annual conversion rates of 0.6 to 1.3 million hectares (0.3 to 0.7% of the biome per year). From 2021 to 2023, this rate surged by 37%, with 2023 marking the highest conversion figure in five years – 1.1 million hectares.

Exhibit 6 - Conversion has impacted Cerrado's rich biodiversity



Note: Categories according to the Brazilian classification of nationally endangered species.
Sources: CEPF - Critical Ecosystem Partnership Fund; BCG Analysis

Deforestation in the Cerrado released over 135 million tons of carbon dioxide between January 2023 and July 2024[4]. Savanna formations, the most extensive vegetation type in the Cerrado, accounted for 65% of these emissions, releasing approximately 88 million tons of CO_2. The MATOPIBA region, an agricultural frontier covering parts of Maranhão, Tocantins, Piauí, and Bahia, was the largest contributor, responsible for 80% of total emissions. This amounted to 108 million tons of CO_2e, equivalent to half the annual emissions from Brazil's transport sector.

This significant expansion has exacted a toll on biodiversity. Among plant species, 637 face extinction risk. Similarly, 103 freshwater fish, 41 mammal, and 67 invertebrate species are now threatened. Habitat loss pressures endemic species, causing sharp population declines and destabilizing ecosystems.

Some livestock ranches with lack of proper investment and techniques have left vast areas of pastureland degraded. In 2023, 35 million hectares of pastures, approximately, were in poor condition. Of these, 15 million hectares lie in areas with high agricultural potential, representing an opportunity for regeneration. By restoring degraded land, Brazil could increase productivity, curb further land conversion, and bolster sustainable beef production.

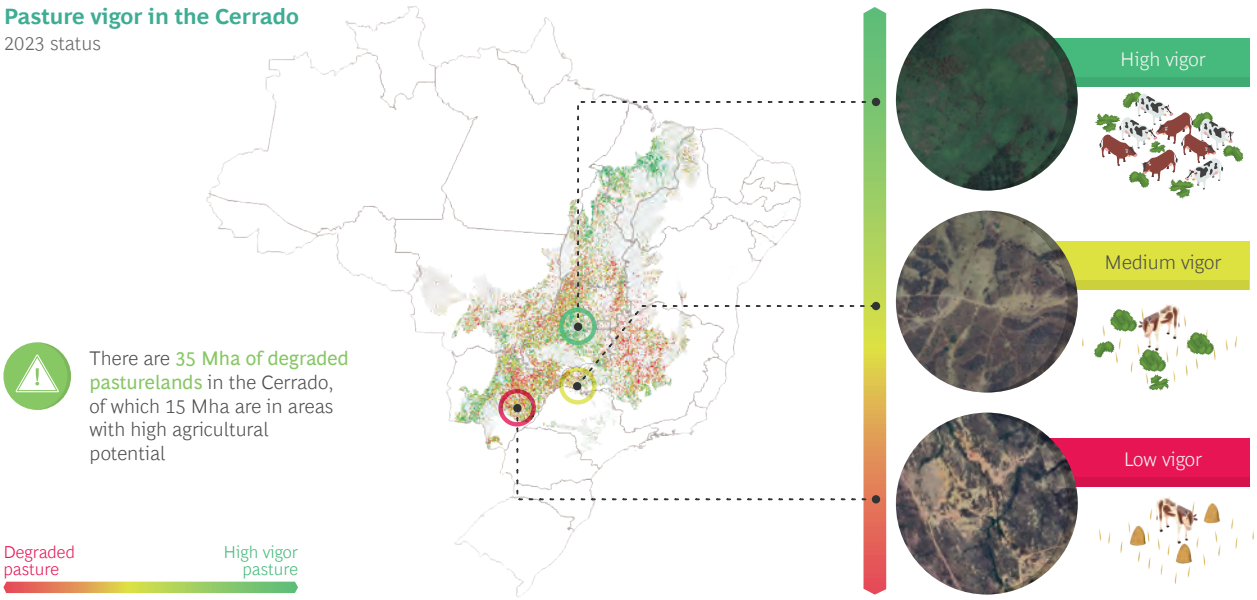
Climate change and decades of environmental strain are transforming the Cerrado into a hotter, drier landscape.

Over the past 60 years, the dry season has lengthened and intensified, with rainfall decreasing and temperatures steadily rising. Between 1961 and 2020, the region experienced measurable warming, straining water resources and complicating agricultural practices reliant on stable rainfall. These shifts threaten to reduce crop yields and livestock productivity, increasing volatility in food systems.

Wildfires, historically a natural component of the Cerrado's ecological cycle, have escalated to unprecedented levels. In 2024, fire activity surpassed historical averages. Drought and degraded land exacerbate fire intensity, destroying pasture, disrupting ecosystems, and releasing greenhouse gases, compounding environmental challenges.

Out of the Cerrado's 198 million hectares, a mere 14 million hectares (7%) are safeguarded within indigenous territories and conservation units. The remaining 184 million hectares are subject to legal conversion up to forest code limits. Current regulations permit up to 65 or 80% clearance in the Cerrado, depending on the municipality and state. 138 million hectares are legally eligible for deforestation. 69% of this area, or 95 million hectares, has already been anthropized. If production expansion continues at its current pace, an additional 43 million hectares - an area the size of Germany - could be converted by 2050, including 16 million hectares of high agricultural potential.

Exhibit 7 - Though the Cerrado plays a leading role in livestock production, not all pastures are highly productive



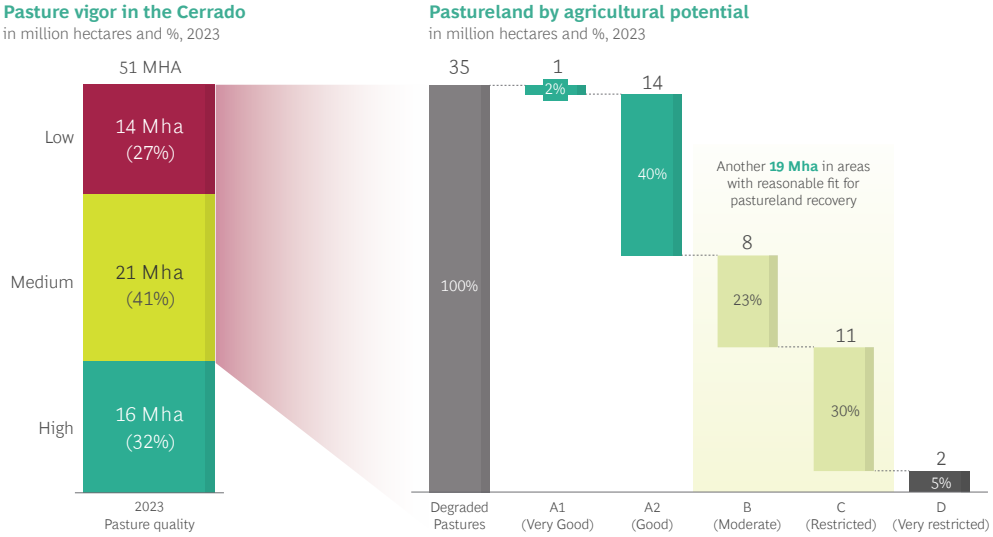
Sources: LAPIG; Landsat; Embrapa; BCG Analysis

4. Emissions according to SAD Cerrado, an alert system developed by the Amazon Environmental Research Institute (IPAM)

The Cerrado holds significant carbon reserves, estimated at approximately 13.7 billion tons of CO_2. Remarkably, up to 70% of this biomass is stored below the soil, highlighting the biome's critical role in global carbon sequestration. Across its diverse ecosystems, the Cerrado's average carbon density is equivalent to 137.3 tons of CO_2 per hectare, comparable to that of some regions in the Amazon. This makes land conversion in the Cerrado a global environmental concern, with far-reaching implications. Such deforestation directly threatens Brazil's ability to meet its commitments under the UN Climate Change Convention, undermining global efforts to combat climate change.

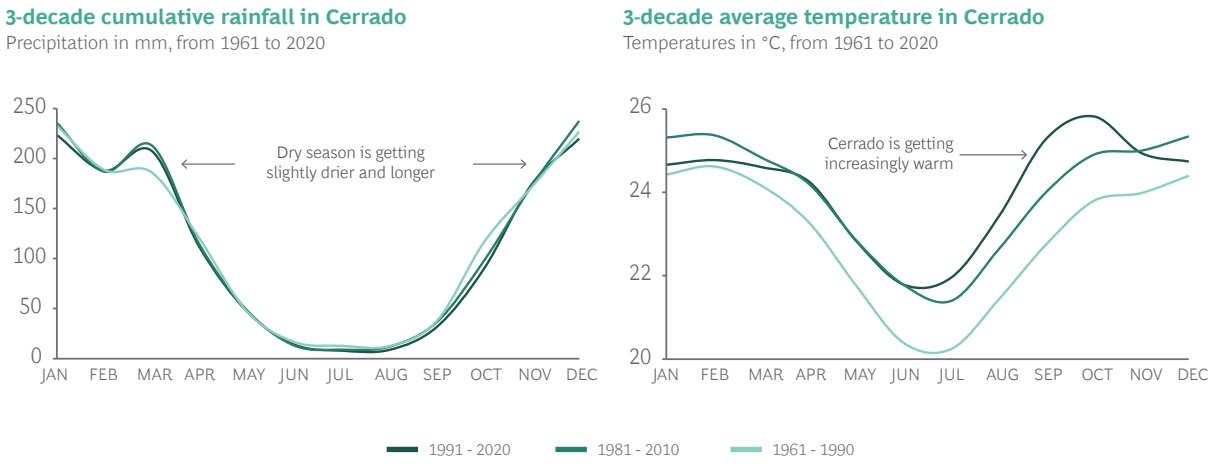
Securing this sustainable future for the Cerrado demands decisive action: accelerating the transition agenda, boosting the productivity and resilience of pastures and crops within ecological limits, and adopting land management practices that harmonize agricultural output with environmental preservation. Achieving these goals hinges on a unified commitment from all stakeholders – farmers, policymakers, businesses, and civil society – working together to protect this vital biome while fostering a more resilient and sustainable agricultural system.

Exhibit 8 - The Cerrado has 15 Mha of degraded pastureland with high agricultural potential and another 19Mha that can be recovered



Sources: LAPIG; IBGE; Landsat; Embrapa; BCG Analysis

Exhibit 9 - The biome is increasingly getting warmer and drier

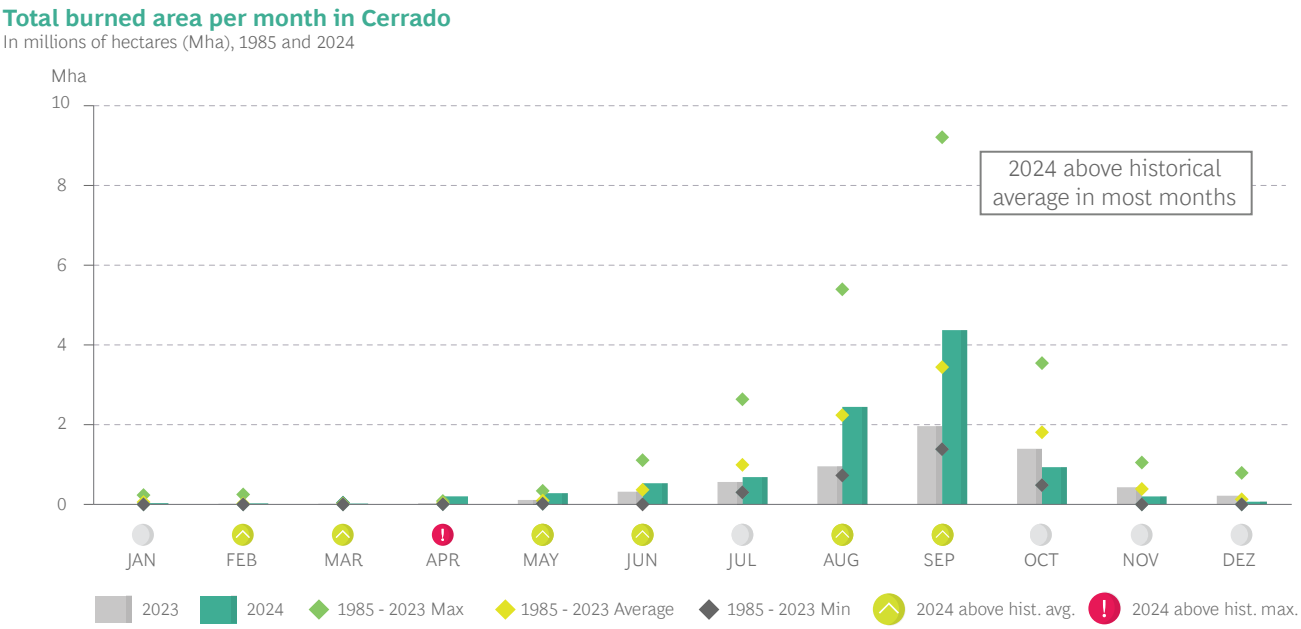


A drier and hotter climate in the Cerrado is likely to increase uncertainties in productivity and contribute to more volatility

Note: Average of all INMET Cerrado stations with data spanning six decades, based on dry-bulb temperature.

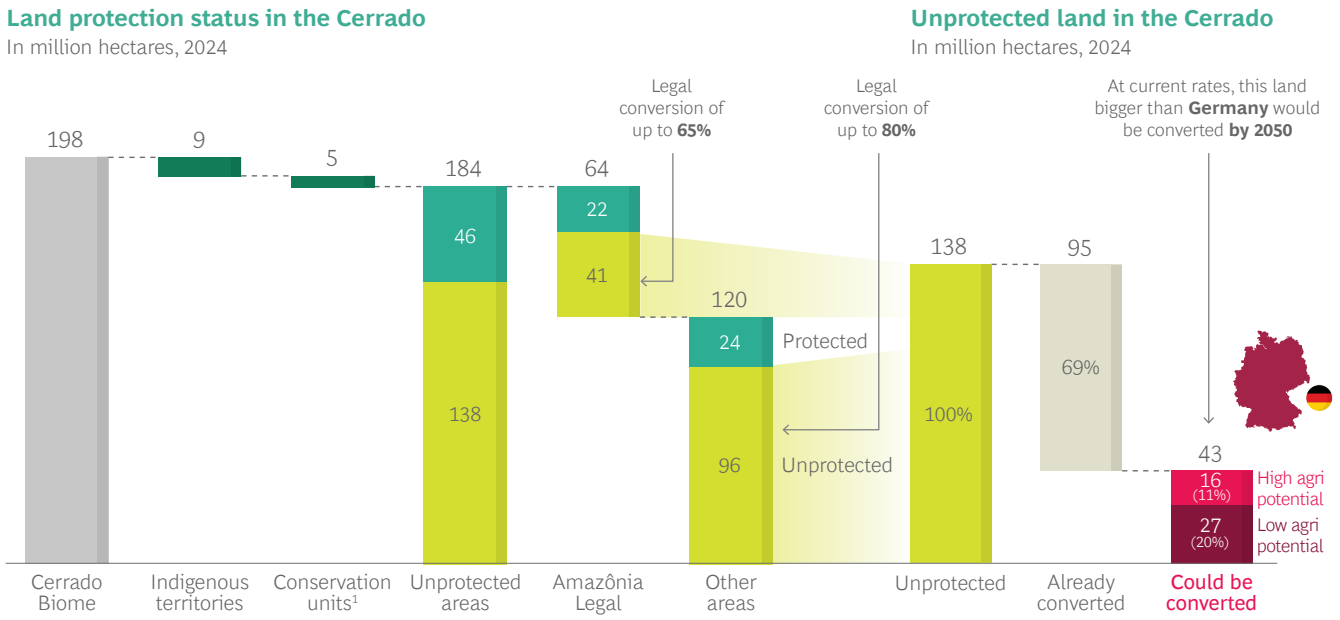
Sources: INMET; BCG Analysis

Exhibit 10 - Once part of a natural cycle, fires rates are now above historical averages and beyond natural levels



Sources: MapBiomas; INPE; BCG Analysis

Exhibit 11 - Up to 43 million hectares could still be deforested



Note: The Cerrado has 35 million hectares of degraded pastureland, with 15 million hectares (~42%) located in areas with high agricultural potential; 16 Mha potential doesn't consider exception of no legal reserve for incorporated areas before forest code in properties smaller than 4 fiscal modules; **1.** Excluding APAs (environmental preservation areas), sustainable use areas that allow the development of Agribusiness if certain criteria are met.

Sources: IBGE; Ministry of Agriculture and Livestock; FUNAI; Brazilian Forest Code; MapBiomas; United Nations; Law 12651/2012; DETER/PRODES; BCG Analysis

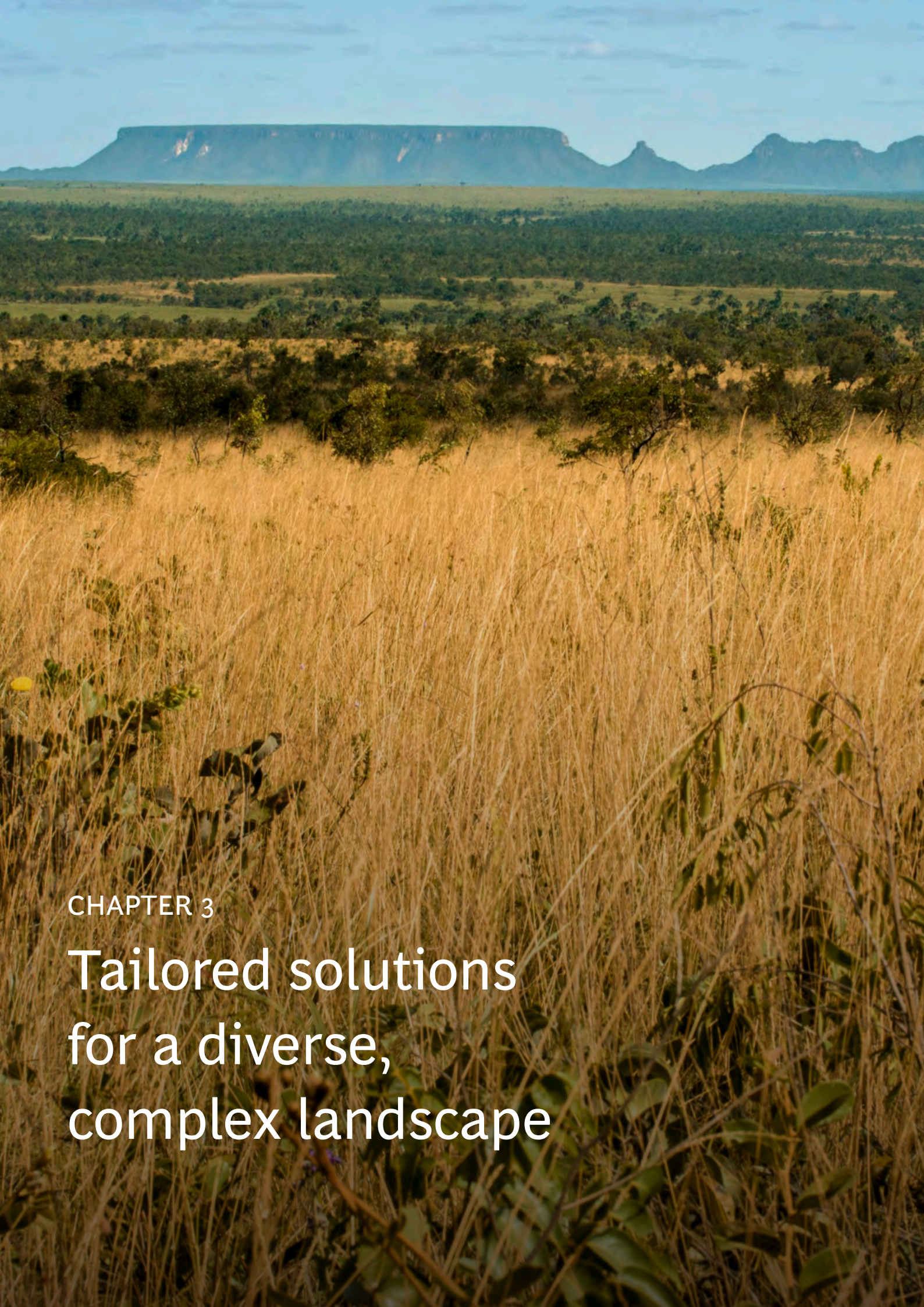
The methodology for identifying land subject to future conversion in the Cerrado integrates spatial data with Brazil's regulatory framework, specifically the Forest Code. This process begins by mapping the Cerrado biome to identify conservation units, indigenous territories, and other legally protected areas, which are excluded from further analysis. Areas designated as Environmental Protection Areas (or *Áreas de Proteção Ambiental* - APAs) and sustainable use zones are also excluded, as these regions permit limited activities, including agribusiness, under certain sustainability criteria.

Overlapping this is the Forest Code's legal reserve requirements, which define the permissible deforestation limits, according to biome and vegetation rules. These thresholds vary geographically in the Cerrado: municipalities outside the Legal Amazon can clear up to 80% of their land, while those within the Legal Amazon[5] are usually permitted up to 65%[6].

Additionally, properties smaller than four fiscal modules are removed from the analysis since these are exempt from legal reserve requirements under the Forest Code, further refining the scope to focus on legally vulnerable lands.

Current land cover, as defined by MapBiomas, is then analyzed to distinguish between savanna, pasture, agriculture, forest, wetlands and other anthropic and non-anthropic covers. This data highlights areas already converted for human use (anthropized) and those still in natural or semi-natural states. Finally, the analysis incorporates agricultural potential, using data from IBGE to classify lands based on their suitability for farming.

5. The "Amazônia Legal" or "Legal Amazon" comprises the states of Acre, Pará, Amazonas, Roraima, Rondônia, Amapá, and Mato Grosso, as well as the regions north of the 13th parallel south in the states of Tocantins and Goiás, and west of the 44th meridian west in the state of Maranhão. A portion of this geopolitical region includes the Cerrado biome.; **6.** As established by Law 12.651/2012, Article 12 requires rural properties to maintain a Legal Reserve area with native vegetation. The minimum percentages are 80% for forest areas, 35% for Cerrado areas, and 20% for grassland areas within the Legal Amazon, while other regions of the country require a minimum of 20%. However, Article 68 exempts landowners or possessors from recomposing, compensating, or regenerating vegetation to meet the percentages set forth in this law if they cleared native vegetation in compliance with the Legal Reserve requirements in effect at the time of the clearing.



CHAPTER 3

Tailored solutions for a diverse, complex landscape

The approach to regenerative landscapes

The Landscape Approach

The landscape approach is a place-based land management strategy that brings stakeholders together across sectors to achieve shared sustainability goals. It addresses the interconnectedness of land uses such as agriculture, forestry, biodiversity conservation, and urban development, seeking to balance economic growth, ecological resilience, and social well-being.

This approach goes beyond single-sector strategies by integrating diverse objectives—ranging from biodiversity conservation to agricultural productivity and livelihood security—into a cohesive framework. It requires cross-sectoral collaboration and inclusive decision-making to reconcile competing priorities and foster long-term resilience at scale.

A notable variation of this model is the jurisdictional approach, which defines landscapes based on administrative boundaries such as sub-national or national regions. This method often involves significant government participation to align policies and regulations with sustainability objectives, enabling scalable solutions.

Landscape initiatives, whether jurisdictional or ecological, typically incorporate four key elements:

1. **Defined scale.** The initiative operates within an ecological, socioeconomic, or administrative boundary, such as a watershed or jurisdiction.

2. **Multi-stakeholder governance.** Decision-making platforms include representatives from diverse sectors, with particular attention to local communities.

3. **Collective goals and actions.** Stakeholders establish long-term sustainability goals and an action plan to achieve them, encompassing social, environmental, and economic priorities.

4. **Collective monitoring.** A transparent framework is used to track progress and assess performance, ensuring accountability and measurable impact.

Regenerative Landscapes

Regenerative landscapes restore and enhance ecological systems while supporting sustainable livelihoods. Although there is no universal definition, the Action Agenda on Regenerative Landscapes (AARL) defines them as **land management approaches that integrate regenerative agriculture, conservation and restoration of ecosystems**. This approach is designed to build resilience in ecosystems and communities alike through an **outcomes-based framework**; the specific practices may differ by context.

However, regenerative landscapes extend far beyond agriculture. Efforts in non-agricultural contexts focus on restoring and enhancing ecological health in areas where food production is not a primary activity.

By encompassing both agricultural and non-agricultural systems, regenerative landscapes offer a comprehensive framework for addressing ecological challenges across diverse contexts. A landscape functions as a socio-ecological system, integrating natural and human-modified ecosystems shaped by ecological, historical, economic, and socio-cultural factors. Within a landscape, multiple land uses coexist—such as agriculture, forestry, conservation, and urban development—each managed by actors with distinct objectives.

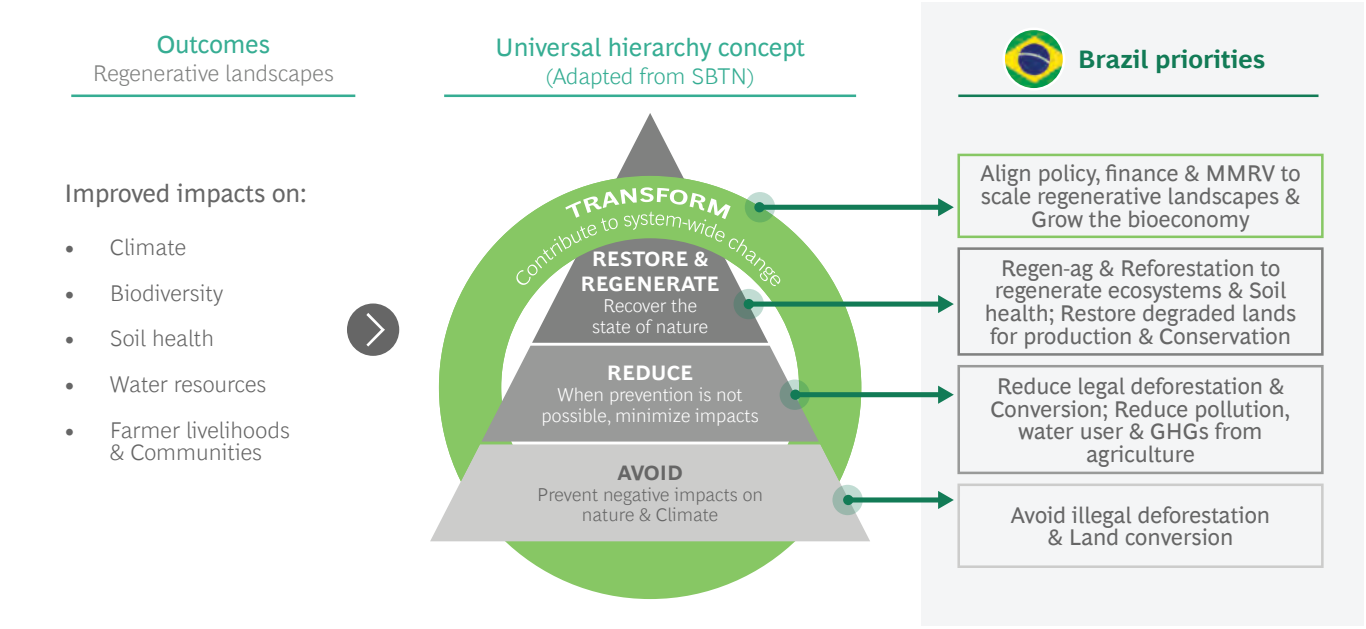
Achieving sustainability at the landscape level requires moving beyond the scope of individual plots, sectors, or stakeholder groups. It calls for an inclusive, integrated approach that aligns diverse goals to meet the needs of all stakeholders while ensuring the long-term health and resilience of the broader system.

A bioeconomy perspective to the landscapes reinforces this approach by promoting the sustainable and efficient use of biological resources to simultaneously advance economic development and ecological restoration. Rooted in the principles outlined by the G20 Initiative on Bioeconomy (GIB), bioeconomy practices focus on restoring degraded ecosystems, conserving biodiversity, and driving climate change adaptation and mitigation—all of which are essential to the success of regenerative landscapes.

By fostering innovation and entrepreneurship, bioeconomy strategies create economic opportunities within landscapes while supporting sustainable production and consumption patterns. Furthermore, they emphasize equity and inclusion, ensuring that benefits are shared fairly, particularly with Indigenous Peoples and local communities. Integrating bioeconomy principles into regenerative landscapes not only strengthens ecosystem health but also creates a circular, resilient foundation for long-term sustainability.

The landscape approach and regenerative landscapes represent a shift from fragmented land management toward holistic, integrated frameworks. They prioritize collaboration, inclusivity, and long-term thinking, offering a pathway to balance environmental restoration with economic and social progress. These approaches reflect a growing recognition that sustainable development must be grounded in the interconnections between people, ecosystems, and the land they share.

Exhibit 12 - Hierarchy of land-use priorities for Brazilian landscapes



Sources: Adapted from SBTN

Scaling regenerative landscapes requires cross-sectoral collaboration and inclusive decision-making to reconcile competing priorities and trade-offs. The concept of a hierarchy of conservation and mitigation levers is well-established as a guide for collective prioritization, investment and action in landscapes; notably, SBTN has adapted these concepts into its Action Framework. Our approach to regenerative landscapes in Brazil begins with avoiding illegal deforestation and land conversion as the necessary foundation for further action to reduce negative impacts of land-use, regenerate and restore natural and farm ecosystems, and ultimately transform the underlying systems in which all stakeholders are embedded. Progress along the hierarchy is not expected to be entirely linear, but each level must be addressed according to local contextual conditions and needs.

Regenerative agriculture and sustainable land-use

Regenerative agriculture is an essential component of the holistic landscape approach; it is a science-based form of farming that focuses on principles and solutions for working with nature while improving farmer profitability and production system resilience. It is not an ideology or trend, but a practical, adaptive method rooted in decades of research and best practices. By focusing on common outcomes including improved soil health, biodiversity, and water management, regenerative agriculture seeks to restore degraded lands while supporting agricultural productivity

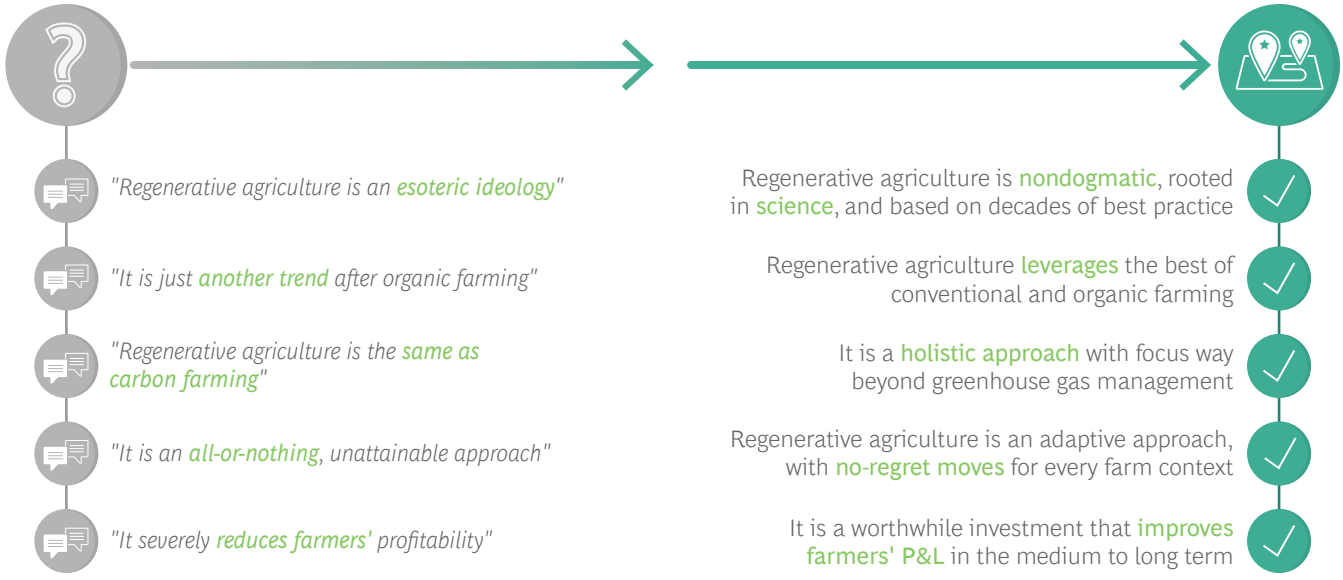
This holistic approach goes far beyond carbon farming, addressing the broader interplay between environmental, social, and economic outcomes. It reduces greenhouse gas emissions, increases carbon sequestration, and improves environmental flows, such as water infiltration and retention. These practices also mitigate water pollution and enhance cultivated biodiversity, contributing to the ecological integrity of biomes like the Cerrado. Moreover, regenerative agriculture promotes the sustainability of farming systems by aligning agricultural production with planetary boundaries.

Economically, regenerative agriculture improves soil health, minimizes reliance on chemical inputs, and reduces risks from pesticides, leading to better financial returns for farmers in the medium and long term. It is not an all-or-nothing solution but a no-regret strategy that adapts to each farm's context, offering tangible benefits without compromising productivity. For farmers, these practices enhance profitability by boosting resilience to climate variability, increasing yields, and lowering costs associated with degraded land.

Based on currently suggested definitions and input from experts and regenerative farmers, we have outlined the following four key elements of regenerative farming. These four elements are the foundation for this report's definition of "regenerative agriculture".

- Positive impact on carbon, biodiversity, and water
- Positive impact on yield resilience and farmers' economic stability
- Based on practically proven principles customized to local environments
- Focus on soil and crop health by restoring the soil ecosystem

Exhibit 13 - Five myths about regenerative agriculture busted



Sources: WWF; NABU; BCG Analysis

In the Cerrado, regenerative agriculture provides a critical pathway to combine food production with environmental preservation. Its implementation can halt further land conversion, protect the region's unique biodiversity, and support the well-being of local communities.

Beyond environmental gains, it delivers social and economic benefits by fostering greater equity, improving livelihoods, and creating more sustainable agricultural systems. Through unified efforts, regenerative agriculture can transform the Cerrado into a model of ecological and economic resilience.

This report highlights eight regenerative agriculture practices outlined in the Brazil's Ministry of Agriculture and Livestock ABC+ plan that balance technical feasibility, proven results, and practicality for implementation within the Cerrado and similar biomes. These practices are designed to enhance production, build environmental resilience, and support sustainable farming systems. By focusing on approaches that are actionable and scalable, the report underscores methods that can deliver meaningful outcomes for farmers and ecosystems alike.

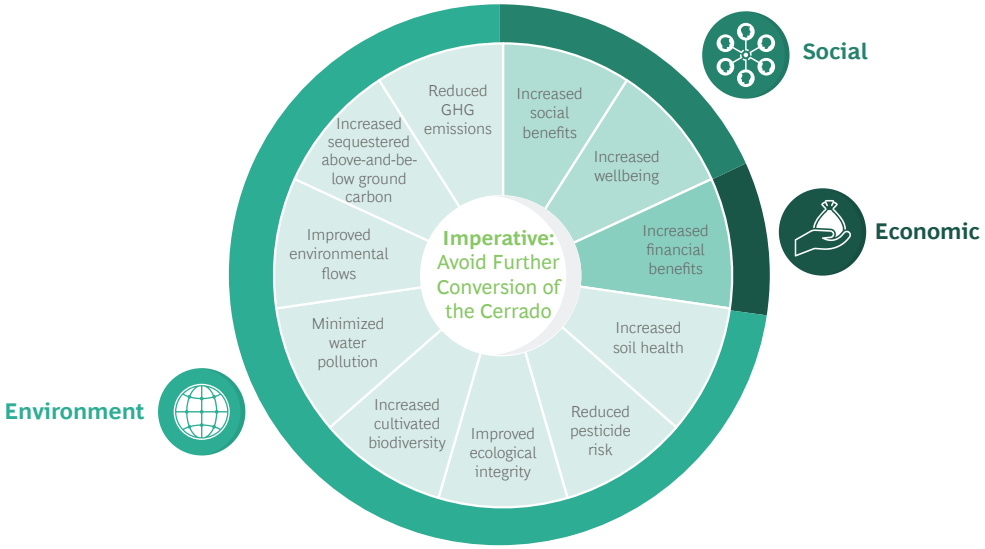
No-tillage farming is a fundamental practice that avoids plowing, keeping the soil covered in organic matter and preserving its structure. This technique minimizes soil erosion, enhances water retention, and supports the buildup of organic carbon. By reducing reliance on heavy machinery, it also cuts emissions and lowers input costs. The adoption of no-tillage farming has shown consistent improvements in crop yields while contributing to long-term soil health, making it a practical and impactful method for sustainable agriculture.

No-tillage farming is already widely adopted in Brazil, covering an estimated 33 million hectares, according to Embrapa. Because of its widespread use, the productivity gains from applying no-till in conventional agricultural areas were not quantified in this analysis, as it is regarded as a consolidated practice in the country. However, its operating costs are included in the calculations for end-state systems. Despite its prevalence, no-tillage in Brazil often falls short of fully adhering to its three foundational pillars – minimal soil disturbance, crop rotation, and permanent soil cover with mulch. Only 20% of no-tillage systems in the country are estimated to consistently follow all three principles, leaving significant room for improvement in realizing its full potential.

Improved water management encompasses techniques such as drip irrigation, mulching, rainwater harvesting, and soil moisture monitoring. These approaches help farmers optimize water use, particularly in regions like the Cerrado, where rainfall is often unpredictable, and water scarcity poses a significant challenge. Efficient water management reduces input costs, stabilizes crop production, and ensures better resilience against drought conditions, making it a key strategy for climate adaptation.

Bioinputs involve the use of natural fertilizers such as compost, manure, and other organic amendments to enhance soil fertility while reducing dependence on synthetic chemicals. Soybean inoculation can also improve plant growth through atmospheric nitrogen fixation and organic nutrient cycling, which lowers greenhouse gas emissions. Bioinputs also enhance soil microbial activity, supporting healthier and more productive ecosystems.

Exhibit 14 - Regenerative agriculture brings positive impact across ecosystem, social, and economic spheres of the Cerrado



Note: The WBCSD/OP2B regenerative agriculture framework (2024) outlines 11 cross-sectoral outcomes, aligned with major sustainability frameworks, planetary boundaries, and the UN Sustainable Development Goals (SDGs).

Sources: WBCSD

Planted forests focus on reforestation and the incorporation of silviculture systems to rehabilitate degraded lands, increase carbon sequestration, and support biodiversity. By establishing native or economically valuable tree species, this practice not only restores ecological balance but also provides opportunities for income diversification through timber and non-timber forest products. It is an effective method for combining environmental restoration with economic incentives.

Integrated systems, such as crop-livestock-forestry models, optimize the use of farmland by diversifying outputs and creating synergies between different types of agricultural production. These systems improve soil health, enhance nutrient cycling, and reduce erosion. Integrated systems also sequester carbon and contribute to biodiversity, offering a balanced approach to environmental stewardship and agricultural productivity.

Pastureland recovery focuses on the rehabilitation or reform of degraded grazing areas to restore soil health and improve forage productivity. This practice involves soil amendments, reseeding, and rotational grazing techniques to boost the quality and resilience of pasturelands. In the Cerrado, degraded pastures represent a significant opportunity for restoration, with new government programs offering targeted funding to support regenerative livestock management[7]. This has led to measurable gains in cattle production per hectare while reducing the need for further land conversion and enhancing carbon storage.

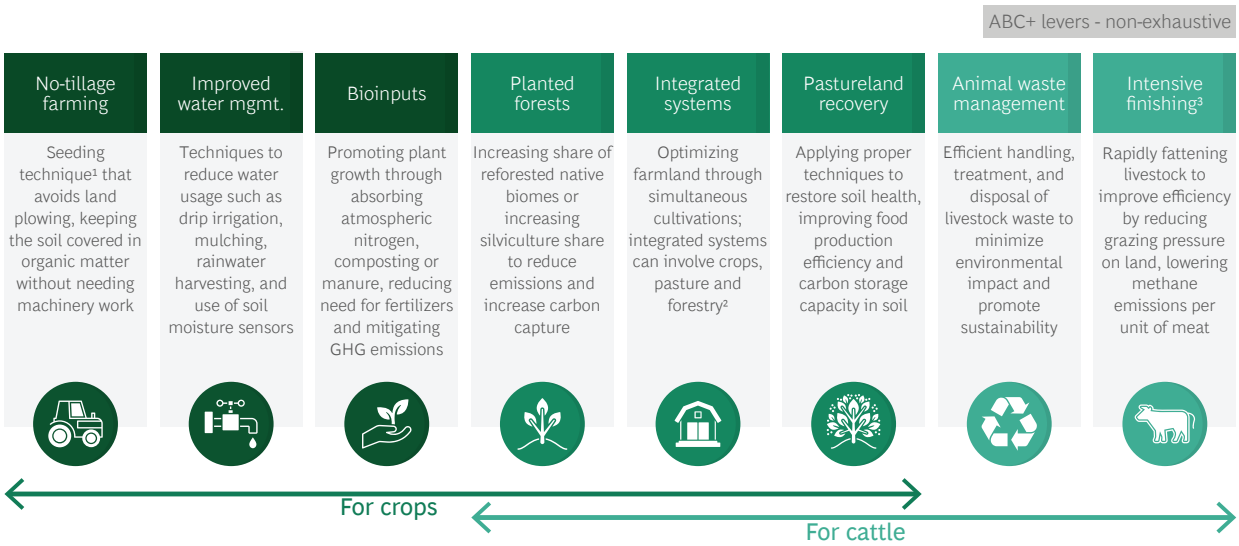
Established by Decree No. 11,814, the National Program for the Recovery of Degraded Pastures (PNCPD) capitalizes on the opportunity to intensify food production in Brazil while addressing global food and climate security. The policy is underpinned by studies from Embrapa and Banco do Brasil, which identified 40 million hectares of low-productivity pasturelands with high agricultural potential.

These studies align with the methodology outlined in this Cerrado-focused white paper, leveraging the same public databases to ensure data consistency and strategic planning. By attracting international investments and offering farmers financing at 6.5% interest rates through the Eco Invest Brasil program, the PNCPD provides a pathway to nearly double Brazil's agricultural output while safeguarding preserved areas and promoting sustainable land use.

Animal waste management promotes the efficient handling, treatment, and recycling of livestock waste to minimize environmental impacts. By converting waste into organic fertilizers, this practice reduces methane emissions and contributes to improved soil health. It also addresses pollution risks, making it an essential component of sustainable livestock systems and climate mitigation efforts.

Intensive finishing accelerates livestock fattening through feedlots or controlled environments, supplementing pasture with grains and bran, with or without confinement. This method enhances feed efficiency, reduces grazing pressure, and safeguards animal welfare while preserving land cover. By shortening grazing periods and boosting land productivity, it lowers methane emissions per unit of meat and reduces reliance on extensive pastureland, supporting ecosystem conservation and meeting productivity goals.

Exhibit 15 - Regenerative techniques can boost yields, reduce costs, and increase system resilience



1. Includes both No-Till Grain System (SPDG) and No-Till Vegetable System (SPDH); **2.** Includes both Crop-Livestock-Forest Integration (ILPF) and Agroforestry Systems (SAF); **3.** The Observatório do Clima's August 2024 NDC proposal highlights Intensive Termination as a key lever to decarbonize the livestock sector, estimating the slaughter of 7.5 million cattle by 2035, while ensuring animal welfare and resilience.

Sources: Ministry of Agriculture and Livestock ABC+ Plan; Observatório do Clima; BCG Analysis

7. Among pastureland management techniques, we have quantified intensive finishing benefits to the productivity of the recovered pastureland, which is also included in the ABC+ 2021-2030 plan as a lever to reduce emissions.

These eight practices were selected because they combine environmental benefits with economic practicality, leveraging existing government ABC+ framework and financial incentives.

Their widespread adoption demonstrates their feasibility, while measurable results prove their effectiveness in balancing agricultural productivity and ecological preservation. Together, they form the foundation for a regenerative approach that aligns with policy frameworks and farmer capabilities, paving the way for a more sustainable future.

Addressable land and economic assessment of the opportunity

The transition to regenerative agriculture in the Cerrado has been modeled through three prioritized archetypes, each with a clear set of quantified levers driving their respective business cases. These archetypes were selected to address key opportunities for land restoration and sustainable productivity.

Degraded Pastures to Regenerative Pastures (Archetype A): This transition improves pasture productivity by restoring soil structure, enhancing nutrient availability, and reducing invasive species that hinder growth. The quantified levers include soil analysis, application of soil amendments and fertilizers, subsoiling, soil management practices, invasive species control, and replanting forage species in severely degraded areas.

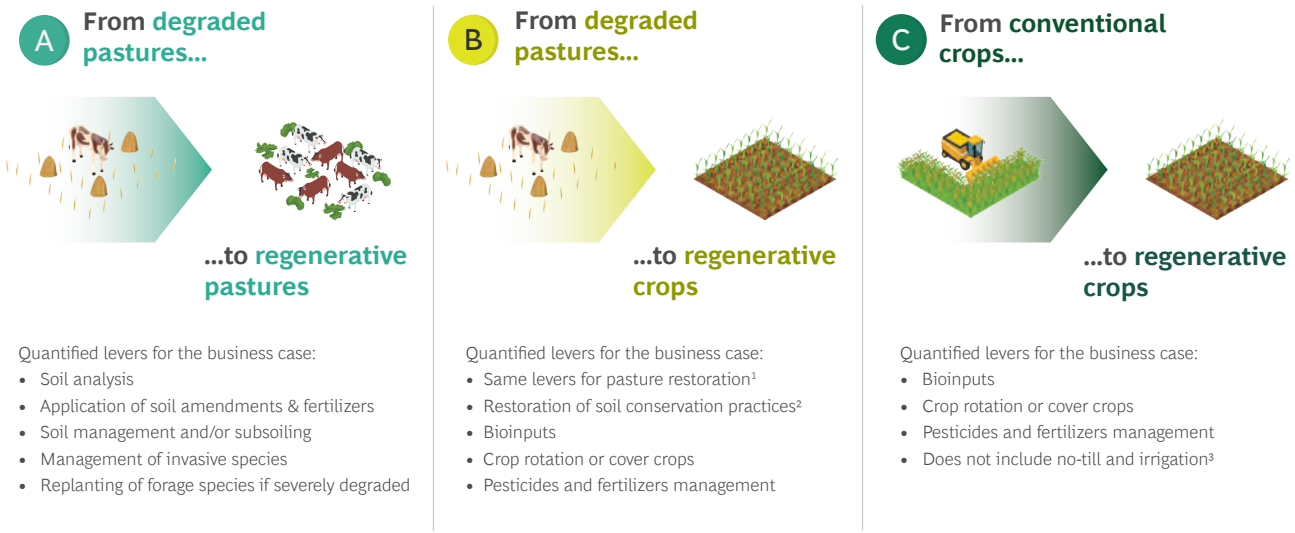
Degraded Pastures to Regenerative Crops (Archetype B): Converting degraded pastures to regenerative cropland allows for more diversified land use and higher economic returns while improving soil stability and reducing erosion. The quantified levers include soil conservation practices, bioinputs, crop rotation or cover crops, management of fertilizers and pesticides, and the application of restoration techniques from the pasture model.

Conventional Crops to Regenerative Crops (Archetype C): Transitioning existing cropland to regenerative practices enhances soil fertility, reduces chemical dependency, and supports resilient crop production. The quantified levers include bioinputs, crop rotation or cover crops, and improved fertilizer and pesticide management, excluding no-till farming and irrigation given their current widespread adoption in Brazil.

These quantified levers form the foundation of each business case, ensuring measurable financial outcomes for the farmers that further align with the regenerative agriculture objectives of soil health restoration, improved water conservation, reduced pest pressures, and increased agricultural resilience.

Several key assumptions underpin the business cases for transitioning to regenerative agriculture. Forage replanting is excluded unless pastures are classified as severely degraded, with efforts for moderately degraded areas focusing on less intensive restoration. No-till farming, though integral to regenerative practices, is quantified as part of the baseline for conventional agriculture due to its

Exhibit 16 - Three archetypes for transitioning to regenerative agriculture were identified, modeled, and quantified



Integrated systems can offer additional benefits, beyond direct financial impact, ***with less output volatility***, improved soil health, better water conservation and break in pest cycles, ***increasing resilience***

1. Except forage replanting; **2.** If pasture is severely degraded; **3.** We have not quantified opportunities coming from no-till farming from our analysis, as most conventional agricultural areas in Brazil already implement no-till practices, albeit often only partially. Likewise, irrigation is excluded due to the current use of rainfed practices for soy and corn, and because it does not fall within the scope of regenerative agriculture.

Sources: EMBRAPA; Expert Interviews; BCG Analysis

widespread adoption in Brazil, particularly for soy and corn, albeit often partially implemented. Similarly, irrigation is excluded from the scope because it is minimally used in the region's predominantly rainfed agricultural systems and because of varying water rights and availability throughout the biome. These exclusions ensure the analysis emphasizes scalable and regionally applicable regenerative practices.

All transition costs and opportunity size are calculated for each farm in the Cerrado. To be eligible to an archetype, each farm, identified by a Rural Environmental Registry (CAR), is assessed by its land use (from MapBiomas Collection 9.0), agricultural potential (from IBGE) and pasture vigor (from MapBiomas Collection 9.0). Farms currently dedicated to pastures, with high agricultural potential and moderate or low pasture vigor, can be eligible to Archetype A or B, for example. Farms dedicated to agriculture can be eligible to Archetype C.

The model then considers differences in costs, productivity and prices according to the region of the farm, its total size and current degradation levels, for each one of the eligible archetypes.

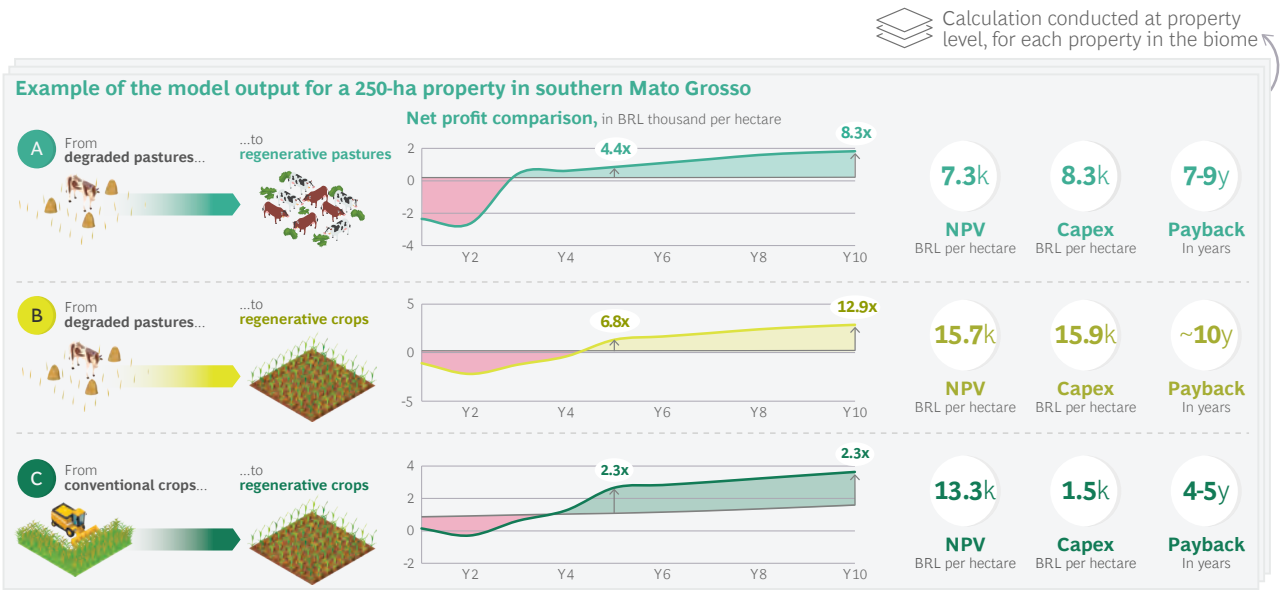
Calculations do not consider best-case-scenario for the transition, but returns for the average farm in the Cerrado, leveraging multiple sources, such as the National Supply Company (CONAB), the National Rural Learning Service (Senar), Mato-Grosso Institute of Agricultural Economics (IMEA), and Embrapa.

Our analysis reveals that transitioning to regenerative agriculture in the Cerrado can provide substantial long-term profitability, although farmers often face financial hurdles in the initial years. Calculations were conducted at the farm level across the 198 million hectares of the biome.

As an illustrative example, a 250-hectare property in southern Mato Grosso demonstrates varied payback periods and financial results depending on the transition pathway.

- **Archetype A example:** Restoring 250 hectares of degraded pastures into regenerative pastures increases net profit by 4.4x by Year 5, reaching 8.3x. The net present value (NPV) is BRL 7.3k per hectare, while capital expenditures (Capex) are BRL 8.3k per hectare, with a payback period of 7–9 years. This calculation assumes moderate degradation and focuses on less intensive restoration efforts.
- **Archetype B example:** Converting 250 hectares of degraded pastures into regenerative cropland generates a net profit increase of 6.8x by Year 5, achieving 12.9x. The NPV is BRL 15.7k per hectare, with Capex of BRL 15.9k per hectare and a payback period of approximately 10 years. This pathway offers higher returns by enabling diversified land use and crop production.
- **Archetype C example:** Transitioning 250 hectares of conventional cropland to regenerative cropping systems delivers a 2.3x net profit increase by Year 5. The NPV is BRL 13.3k per hectare, with Capex of BRL 1.5k per hectare and a payback period of 4–5 years. This transition enhances soil health and reduces dependency on chemical inputs.

Exhibit 17 - Regenerative agriculture can be more profitable in the Cerrado, but farmers face short-term challenges during transition



1. This analysis does not factor in special loan conditions for transitioning to regenerative practices, such as the reduced interest rates under RenovAgro. The reform costs considered apply to moderately degraded pastures.

Sources: EMBRAPA; Expert Interviews; BCG Analysis

This analysis excludes considerations for special loan conditions, such as the reduced interest rates offered under RenovAgro or the Ministry of Agriculture's new program for converting degraded pastures. While regenerative agriculture offers compelling financial advantages in the long term, the initial costs and delayed payback periods – particularly for degraded land restoration – emphasize the need for financial support and incentives to drive adoption at scale.

After identifying all potential archetypes for each farm, we calculated the total opportunity for the biome by considering only one archetype per farm, to avoid double counting. This process factored in projected demand for soybeans and cattle, ensuring that any supply increases from regenerative practices or pasture-to-agriculture conversions were aligned with market needs.

High-potential pastures were prioritized for conversion to regenerative agriculture until soybean demand was fully addressed. Any remaining high-potential areas were then allocated to regenerative cattle. Cost-efficiency guided prioritization, starting with reforming moderately degraded areas before addressing severely degraded ones, strictly tied to demand growth, with all other areas left unchanged. (**prioritization methodology can be seen on Exhibit 18**)

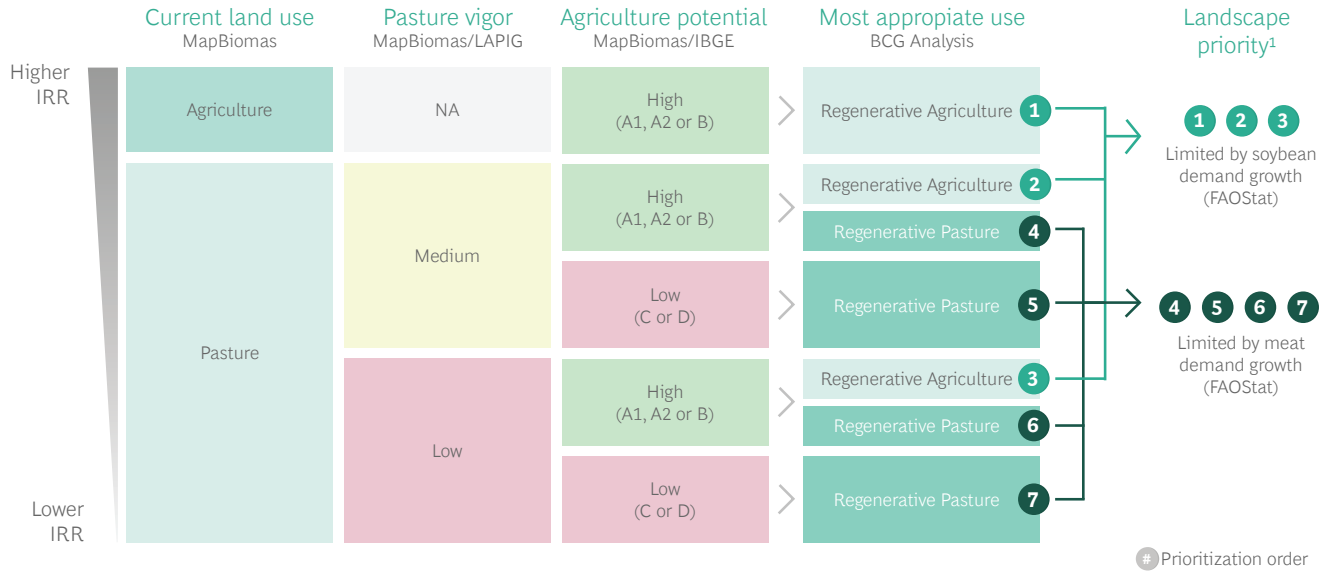
In the next section, we highlight the total value of the opportunity to transition the biome to regenerative systems.

Our study identifies approximately 14.4 million hectares of degraded pastureland in the Cerrado biome alone, at intermediate to severe levels, with potential for agricultural conversion. We applied a similar methodology to Embrapa's, published in the international journal Land in 2024, and found comparable results. The research estimates that roughly 28 million hectares of degraded pastures in Brazil could be repurposed for agriculture, excluding areas of environmental protection, indigenous territories and other protected zones.

Of this total, approximately 11 million hectares of severely degraded pastures are in regions with “Good” or “Very Good” agricultural potential, while another 18 million hectares with intermediate degradation also fall within these high-potential areas. This represents a possible expansion equivalent to nearly 30% of the country’s current grain production area, making use of previously converted land (Bolfe et al., 2024).

While these findings highlight significant opportunities for agricultural expansion, any land conversion must be accompanied by higher productivity in livestock farming to prevent pressure for further land clearing. Bolfe notes that there is scope to refine these assessments by deepening the integration of regional datasets, field validations, and economic feasibility analyses, while also advancing satellite-based mapping of pasture quality and carrying capacity across different regions.

Exhibit 18 - End-state landscape archetype methodology



Note: The team’s analysis, based on MapBiomas data, defined agriculture as classification 39 (soybeans) and pastureland as classification 15. Pasture vigor followed the MapBiomas classification, with three levels: 0 for areas not used as pasture, 1 for low vigor, 2 for medium vigor, and 3 for high vigor. Agricultural potential, as defined by IBGE, was classified as high (A1, A2, and B) or low (C and D). **1.** Landscape priority refers to the sequence established by BCG for assigning the transition archetype to each property in the Cerrado. This prioritization continues until either the projected demand (as forecasted by FAOStat through 2050) is met or land size limitations (total available land classified within the segment) are reached.

Sources: MapBiomas; IBGE; FAOStat; SICAR; LAPIG; BCG Analysis

CHAPTER 4

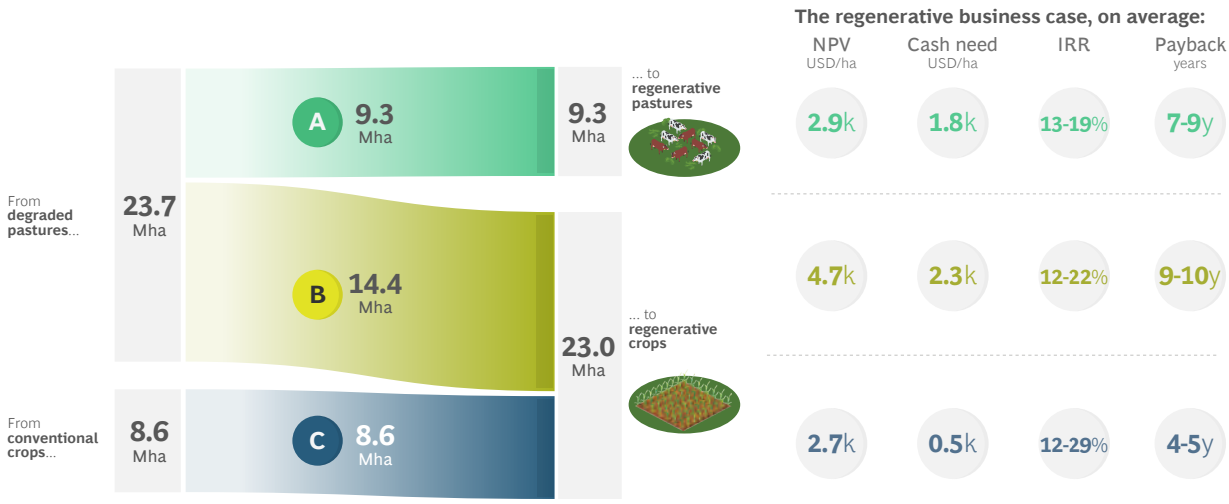
The new vision for the Cerrado

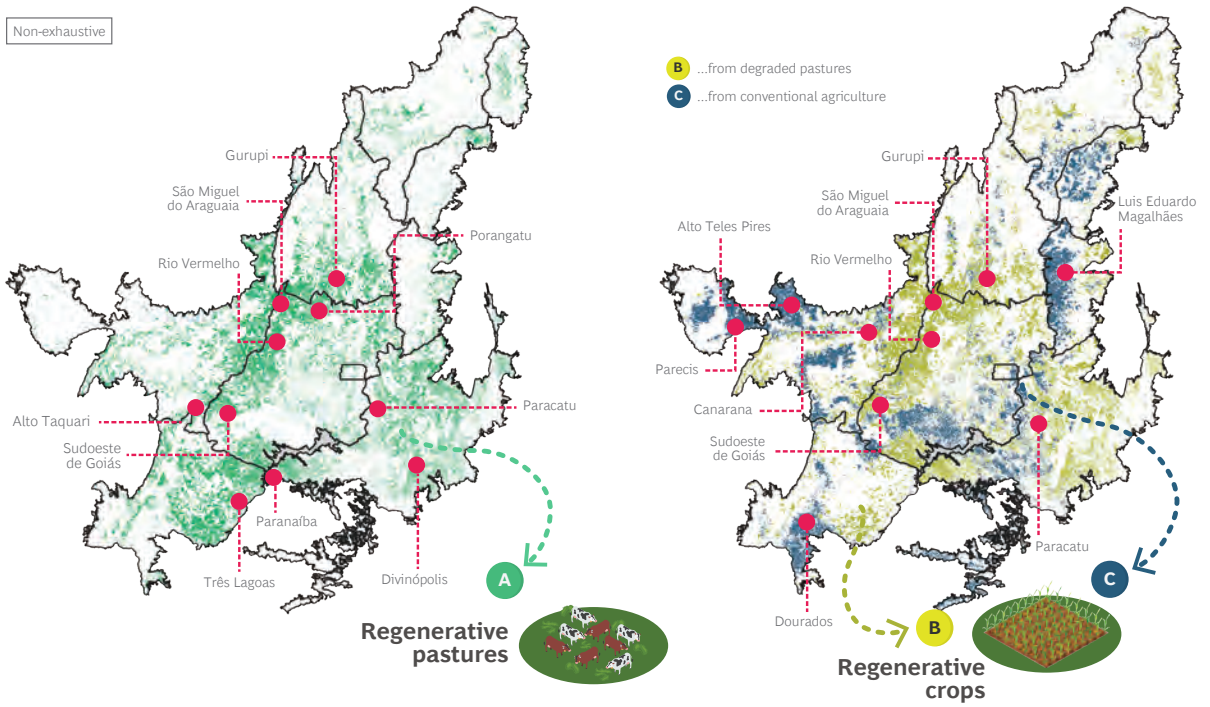
Total opportunity at stake

The total opportunity in the Cerrado spans 32.3 million hectares, offering viable business cases for regenerative landscape management across three distinct archetypes. These opportunities highlight pathways to transform degraded or conventional land into sustainable, high-performing systems.

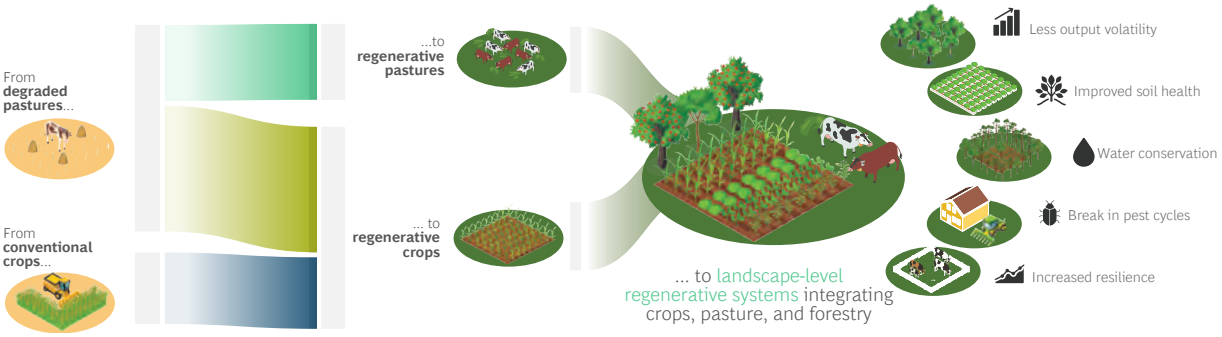
- Archetype A: Degraded Pastures to Regenerative Pastures encompasses 9.3 million hectares. This transition delivers an average net present value (NPV) of USD 2.9k per hectare, with cash needs of USD 1.8k per hectare. Internal rates of return (IRR) range from 13–19%, with a payback period of 7–9 years.
- Archetype B: Degraded Pastures to Regenerative Crops spans 14.4 million hectares. It offers an NPV of USD 4.7k per hectare, cash needs of USD 2.3k per hectare, and an IRR of 12–22%, with a payback period of 9–10 years.
- Archetype C: Conventional Crops to Regenerative Crops accounts for 8.6 million hectares. This pathway provides an NPV of USD 2.7k per hectare, cash needs of USD 0.5k per hectare, and IRRs of 12–29%, with a shorter payback period of 4–5 years.

Exhibit 19 - 32.3 million hectares present viable business cases for regenerative landscape management





Beyond the practices: Integrated, landscape-level systems are critical to achieve regeneration and ensure greater system resilience



Note: Based on projected production to meet rising demand through 2050. Average regenerative business case based on the average transition business case for each landscape in each archetype. Cash needs account for CapEx, increased OpEx, and revenue impact during the transition.

Sources: MapBiomas; FAOStat; IBGE; EMBRAPA; BCG Analysis

The Cerrado has the potential to become a global beacon for regenerative landscapes, with a transformative opportunity that spans environmental, economic, and social dimensions. Transitioning anthropic land into regenerative systems could generate over USD 100 billion in net present value (NPV), unlocking significant economic returns for stakeholders.

The transition in the Cerrado is expected to generate up to US$20 billion in annual GDP increase for Brazil by 2050, equivalent to nearly 0.9% of the country's economic output in 2023.

More than 43 million hectares of standing natural areas within the Cerrado could be conserved, preserving critical biodiversity and ecosystem services. Additionally, regenerative practices could mitigate and sequester over 140 million tons of CO_2 equivalent, contributing meaningfully to global climate goals. This transition could also directly impact more than 400,000 farmers, enhancing livelihoods and fostering resilient agricultural systems across the biome.

Driving meaningful change across the Cerrado requires a landscape-level approach that integrates diverse stakeholders, innovative technologies, and scalable solutions. This approach focuses on addressing systemic challenges through coordinated efforts, ensuring sustainable practices are adopted at farm, ecosystem and landscape level, integrating regenerative agriculture and ecosystem restoration and conservation – maximizing economic and environmental outcomes.

Key elements include program management, enabling data-driven decision-making through data and KPI insights and analytics, and leveraging government grants and incentives alongside capital financing to support transitions. Supply chain traceability ensures accountability, while farmer activation and engagement, combined with agronomy expertise, equips producers with the tools to implement regenerative practices. Globally recognized claims certification and verification mechanisms further reinforce market confidence in sustainable practices.

Collaboration across value chain members is central, fostering partnerships that align with regional goals. Investments in infrastructure development, integrated technology solutions, and community representation strengthen the foundation for long-term impact. This comprehensive framework enables the Cerrado to achieve sustainable agricultural transformation while balancing productivity, environmental stewardship, and community well-being.

Exhibit 20 - The Cerrado can become a lighthouse on regenerative landscapes

Total opportunity could reach up to...

100+
USD billion in NPV
by transitioning anthropic land into regenerative landscapes

43+
million hectares
of standing natural areas in the biome that could be conserved

140+
million tCO_2e
in mitigation and sequestration potential considering business plan levers

400+
thousand farmers
that could be impacted by the transition in the biome

Note: Total opportunity size base on theoretical limits of regenerative agriculture in the Cerrado, balanced by soybeans and beef demand and supply.

Sources: MAPA; EMBRAPA; SICAR; FAO; BCG Analysis

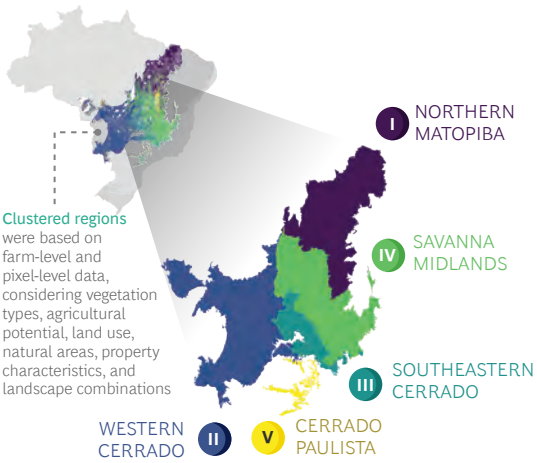
Opportunity breakdown by Cerrado's distinct regions

The 32.3Mha opportunity isn't equally distributed across all Cerrado regions. This vast biome encompasses a diverse range of natural formations, from grasslands to savannas and dense forests, spanning latitudes from 2°S to 24°S – nearly the full range from the equator to the Tropic of Capricorn.

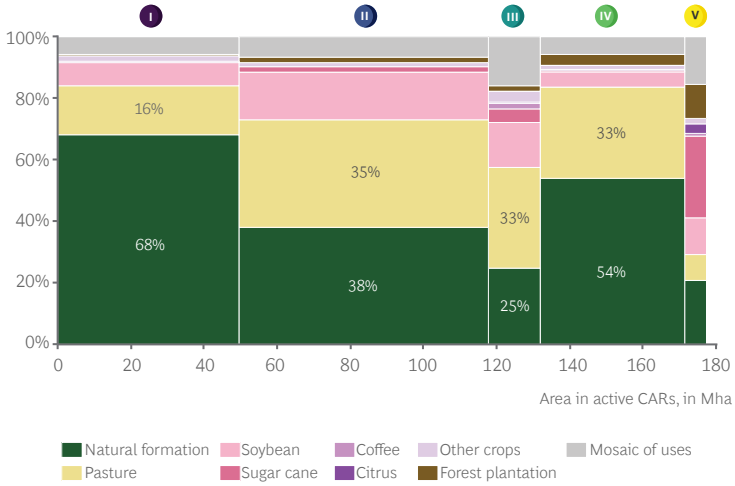
The Cerrado includes areas with original vegetation, pasturelands, and farmland dedicated to crops like soybeans, maize, sugarcane, coffee, and staples, as well as urban zones. Its agricultural potential and pasture productivity vary significantly across regions. Effectively recognizing land-use patterns and accounting for this heterogeneity is critical for designing tailored, region-specific solutions.

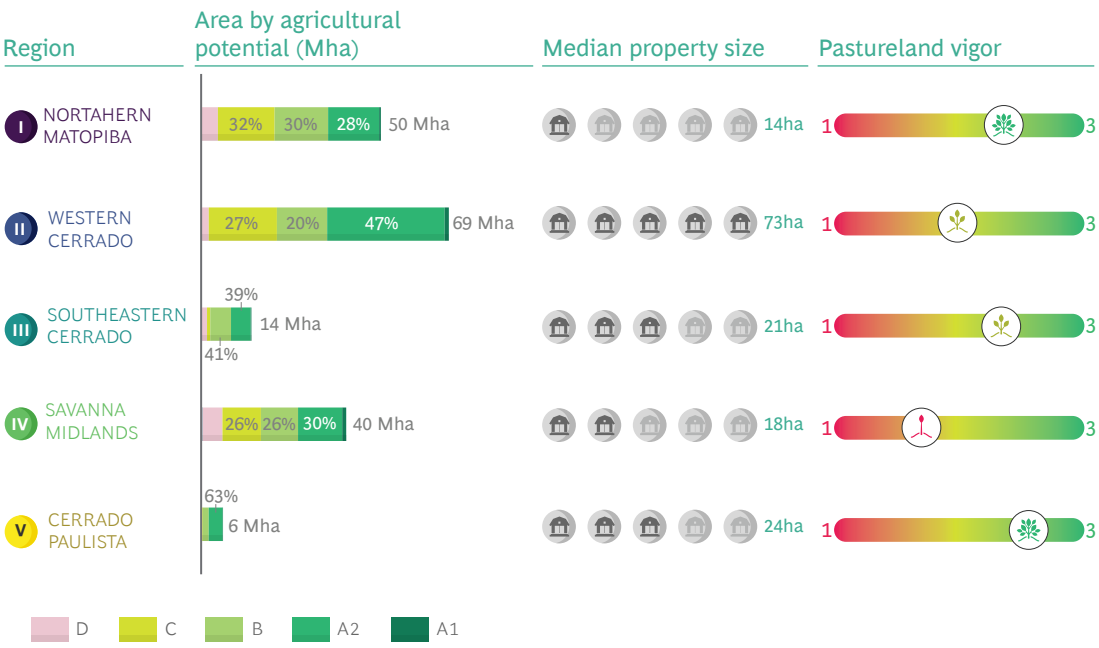
Exhibit 21 - The Cerrado can be divided into five regions with different land use patterns and potential associated with them

...with economies at varying stages of development and use by region, in Mha and %



...with economies at varying stages of development
Land use by region, in Mha and %





Note: Urban and water areas combined do not exceed 1% in any region and are therefore excluded from the percentages shown in the chart on the right. Considers only regions inside valid and active Rural Environmental Registry (CAR).

Sources: ICMBio; IBGE; MapBiomas; SICAR; BCG Analysis

To identify these patterns, BCG applied a clustering algorithm to all farms within the Cerrado. State-level Rural Registries (CAR) were consolidated into a single spatial database, incorporating property size, status, and location, and joined with multiple public pixel-level spatial datasets, including:

- Land Cover (MapBiomas Collection 9.0)
- Pasture Vigor (MapBiomas Collection 9.0)
- Natural Agricultural Potential of Land (IBGE)
- Natural Vegetation (IBGE)
- Biomes (IBGE)

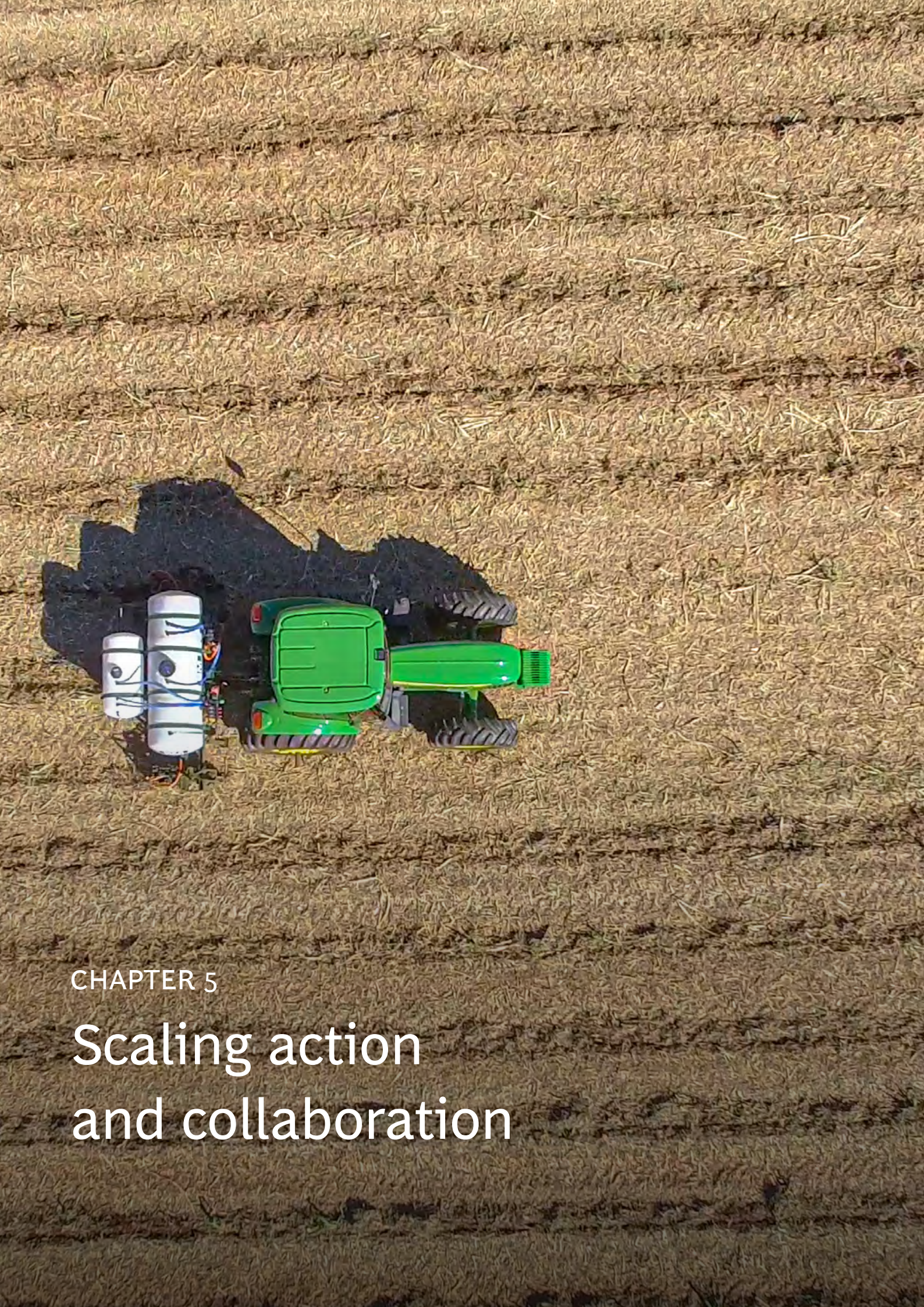
The analysis focused on active CARs within the biome. Ranges were normalized and properties were clustered using the k-means method into five groups. To ensure spatial continuity, results were aggregated by IBGE-defined microregions, aligning clusters to the most common farm cluster within each microregion.

This analysis identifies five key Cerrado regions, displaying high diversity in property profiles, agriculture potential and remaining natural vegetation. This classification provides deeper insights into the biome's dynamics and opportunities. By tailoring strategies to the specific needs and strengths of each region, stakeholders can unlock significant economic and environmental benefits:

- The Northern Matopiba Region stands out for its remaining natural formations along its agricultural activity. While 68% of the area remains dedicated to natural vegetation, the primary crops include soybeans, maize, and seed cotton. This region is characterized by many small farms, with a median size of 14.2 hectares, and more than half of its pastures exhibit high vigor. With 3.7Mha available for reform or conversion, the region represents an investment opportunity of US$4.8 billion, yielding a net present value (NPV) of BRL 12.7 billion.
- The Western Cerrado is the agricultural powerhouse of the biome, producing most of its soybeans, maize, and seed cotton. Over 15% of the region's area is agriculture, and it supports a massive cattle population exceeding 50 million. Farms there are larger than average, with a median size of 72.8 hectares. Despite its importance, 76% (18Mha) of pastures are classified as moderately or severely degraded. The investment opportunity is substantial, with 16.9Mha of reformable land offering an NPV of US$55.8 billion, requiring US$27.8 billion in cash investment.
- In the Southeastern Cerrado, 25% of the area is dedicated to agriculture, with key crops including soybeans, coffee, sugarcane, and staple crops. This region also supports a large poultry population, with over 133 million chickens. The region boasts significant natural agricultural potential, but 54% of its pastures show signs of degradation. With 2.8Mha available for reform or conversion, the region presents a business opportunity valued at US$12.3 billion in NPV, with a cash investment need of US$5.2 billion.
- The Savanna Midlands region is marked by a high share of land covered by natural formations (53%) and pastures (29%). Its agricultural output is smaller but diversified, focusing on staple crops alongside soybeans and maize. However, 81% of its pastures show some level of degradation. Much of the land has low agricultural potential but could be transformed into regenerative pastures. The region holds 8.4Mha of land suitable for reform, representing an NPV of US$35.9 billion, with a cash requirement of US$16.1 billion.
- The Cerrado Paulista region features a varied agricultural landscape, with sugarcane and oranges as the primary crops. Over 37% of its land is dedicated to agriculture, surrounded by high pastureland vigor and proximity to urban centers. While smaller in scale, this region has 0.5Mha available for reform or conversion, offering an NPV of US$1.9 billion and requiring US$0.7 billion in investment. Its high agricultural potential makes it a relatively small, but concentrated opportunity.

The Cerrado's five distinct regions underscore the biome's immense potential for sustainable development, economic growth, and environmental preservation. Each cluster offers unique opportunities, from restoring degraded pastures to expanding high-value agricultural practices.

While the investment potential is clear, widespread adoption of these solutions is far from straightforward. The next chapter will explore the critical challenges that must be addressed to ensure a sustainable and inclusive transformation of the Cerrado biome. (**Further details for each Cerrado region and their potential can be found at the Annex I**)



CHAPTER 5

Scaling action and collaboration

Challenges to widespread adoption

Scaling regenerative agriculture in the Cerrado presents three primary challenges: activating farmers, financing the transition, and verifying practices and outcomes. These challenges are deeply interconnected and require a comprehensive understanding of the barriers faced by farmers, who are central to this transformation.

Activating Farmers. Encouraging farmers to adopt regenerative agriculture involves significant social, financial, and technical hurdles. Many farmers are hesitant to move away from conventional methods that have been practiced for decades and are seen as lower-risk and more familiar. Regenerative practices often demand a shift in mindset, prioritizing long-term imperatives like improved soil health and resilience to drought and other climate impacts, over immediate productivity gains. For many, this change is perceived as uncertain and disruptive.

Farmers, particularly smallholders, often lack access to the technical expertise and trusted advisors needed to guide them through the transition. Many are isolated from networks that could provide critical information or support. Even when resources are available, challenges such as language barriers, varying education levels, and the absence of tailored outreach programs make it difficult to effectively reach all farmers. Skepticism about the economic viability of regenerative agriculture and cultural attachment to traditional farming practices further amplify the resistance to change.

Financing the Transition. Transitioning to regenerative agriculture requires substantial upfront investments in soil restoration, bioinputs, equipment, and training. For small and medium-sized farmers operating on tight margins, these costs can be prohibitive. Compounding this challenge is the delay in financial returns. Farmers often experience a temporary decline in profits during the early years as soil health improves and ecosystems stabilize. This medium-term income gap discourages adoption, especially for those with limited cash flow or financial reserves.

Traditional lending institutions frequently perceive such transitions as risky, making credit either inaccessible or costly. Without affordable financing options or financial buffers, many farmers are unable to take on the perceived risks associated with regenerative practices, even if the long-term benefits are compelling.

Verifying Practices and Outcomes. Even when farmers adopt regenerative practices, proving the implementation and effectiveness of these efforts is a complex and resource-intensive process. Verification often requires advanced digital tools, remote sensing technologies, and on-site audits. For smallholders, the cost and administrative burden of compliance can be overwhelming, effectively excluding them from accessing premium markets or incentive programs tied to verified sustainable practices.

The absence of standardized metrics and protocols for regenerative agriculture exacerbates the issue. Farmers are often left navigating fragmented systems with inconsistent requirements, which increases their administrative workload and creates confusion.

For those without the necessary resources or knowledge to manage these systems, achieving verification can feel unattainable, limiting their ability to access certification or market premiums.

These challenges – rooted in lack of trust, financial constraints, and complex verification requirements – represent significant barriers to scaling regenerative agriculture in the Cerrado. However, by addressing these issues through interconnected solutions and collaboration, it is possible to scale regenerative programs in the biome.

In the next section, we will explore actionable strategies to overcome these obstacles, enabling farmers, stakeholders, and the entire value chain to unlock the full potential of regenerative systems. Without tackling these challenges head-on, the widespread adoption of regenerative agriculture will remain out of reach.

Exhibit 22 - Three fundamental challenges to tackle and achieve scale

Activating farmers

There are significant social, cultural and technical challenges in reaching, persuading and empowering farmers to adopt regenerative agriculture

Financing the transition

There are upfront costs and medium-term profit declines for farmers and commodity traders engaged in the transition to regen ag not felt by the downstream companies and consumers demanding change

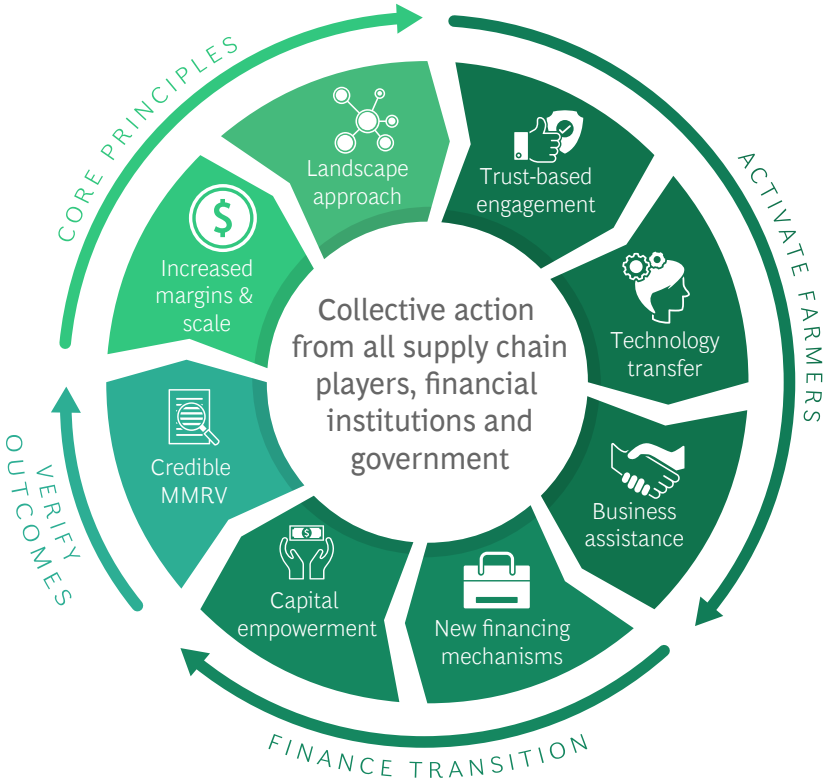
Verifying practices & outcomes

While farmers and society benefit in the long-run, direct benefit to private companies is only realized when they can validate that certain practices have occurred - and they can trace themselves to them

To enhance long-term sustainability of regenerative practices, it is essential to integrate them with a cohesive landscape management and implement them at scale across the Cerrado

Sources: WBCSD; World Economic Forum; BCG Analysis

Exhibit 23 - A clear path to scale is now in sight



Sources: WBCSD; BCG Analysis

Engaging producers in the Cerrado

Farmers must be at the heart of regenerative landscape adoption. Any effective transition model must reflect their perspectives, addressing their concerns, expectations, and ambitions. Earning their trust requires a deep understanding of their mindset and a clear commitment to engagement and empowerment. Providing effective technology transfer and tailored business support equips farmers with the knowledge and tools necessary for this shift. Demonstrating the tangible benefits of regenerative practices—both in profitability and resilience—is essential to driving adoption and scaling implementation.

BCG surveyed over 1,350 farmers, with 790 across the Cerrado, covering advanced agricultural regions in southern São Paulo as well as emerging farming areas in northern Piauí and Tocantins. The study explored their views on sustainability, regenerative practices, technology adoption, and the factors influencing change, as well as their outlook on the future.

The survey included farmers with varying levels of technological sophistication, representing both smallholders and large-scale producers of crops and cattle across diverse Cerrado regions. It highlighted how farmers' perspectives and challenges are shaped by their specific contexts and operational realities.

To ensure representative results, we applied a statistical weighting methodology, aligning the respondent data with the Brazilian 2017 Census distribution. This approach follows extrapolation and confidence interval guidelines to accurately reflect Brazil's agricultural landscape.

Cerrado farmers remain largely optimistic about their own operations, though confidence in the broader agricultural sector is more limited. When asked about their farm's future through 2030, 80% expressed optimism, while 70% believe their production in 2025 will surpass 2024 levels, reinforcing a strong belief in individual resilience and growth potential. In contrast, 60% feel optimistic about the future of Brazilian agriculture over the same period.

However, this optimism coexists with concerns over both climate risks and operational and macro-economic challenges. Prolonged droughts are the most pressing issue, cited by 95% of respondents, followed closely by input costs (94%), sales prices (93%), interest rates (93%), and fuel/energy prices (92%). Climate change was noted by 89% of farmers, while 87% expressed concern about increasing pest pressures.

Notably, although drought and price volatility are invariably linked to climate change, farmers make this connection less directly. Climate change as a concern ranks lower than immediate financial pressures, suggesting it is perceived as a broader, less immediate factor. In contrast, floods remain the least concerning issue, with only 34% of respondents expressing worry. These findings highlight a dual reality: while farmers are hopeful about their own businesses, they remain acutely aware of the environmental and economic challenges.

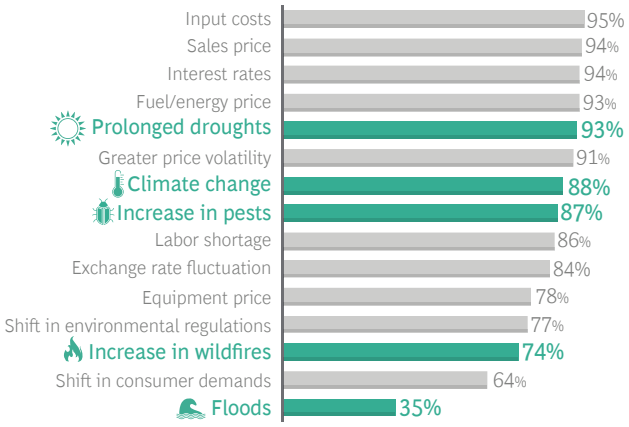
Exhibit 24 - Farmers in the Cerrado are optimistic about their future, but wary of financial threats and climate risks

Farmers are more optimistic about their own operations than the agricultural sector as a whole

Percent of respondents that agree with the affirmations below

Farmers in the Cerrado are most concerned about cost and revenue pressures while also concerned with droughts

Percent of respondents concerned with topics with highlights to climate change effects[1] [2]



1. Among the topics below how much are you concerned with?; **2.** Do you have any specific concerns about climate change affecting your production?

Sources: BCG Survey with Cerrado Farmers (N = 378, January 2025); BCG Analysis

Sustainable Practices Awareness and Adoption

The adoption of sustainable agricultural practices among Cerrado growers reveals a clear gap between awareness and implementation, particularly for practices with adoption below 35%. The most widely adopted are no-till farming (98%), pasture and crop rotation (94%), and biofixation of nitrogen (78%). Irrigation stands out in terms of willingness to adopt, with 40% of respondents expressing interest. For practices with adoption below 30%, there is clear potential for increased uptake—particularly for production traceability (25%), intensive grazing (14%), and animal waste management (12%)—as many growers either express willingness to adopt or remain unaware, with unawareness reaching up to 50% in some cases. However, the proportion of respondents unwilling to adopt certain practices underscores potential roadblocks to large-scale implementation.

Cattle ranchers demonstrate lower awareness and adoption rates compared to growers, with notable variations by practice. The most widely adopted technique is pastureland recovery (82%), reflecting a strong emphasis on land restoration. Intensive grazing follows at 40%, indicating moderate adoption compared to other sustainability practices. Notably, 29% of ranchers adopt pasture and crop rotation, aligning closely with the 27% of surveyed ranchers who also identify as growers—suggesting that those with mixed operations are more familiar with this practice.

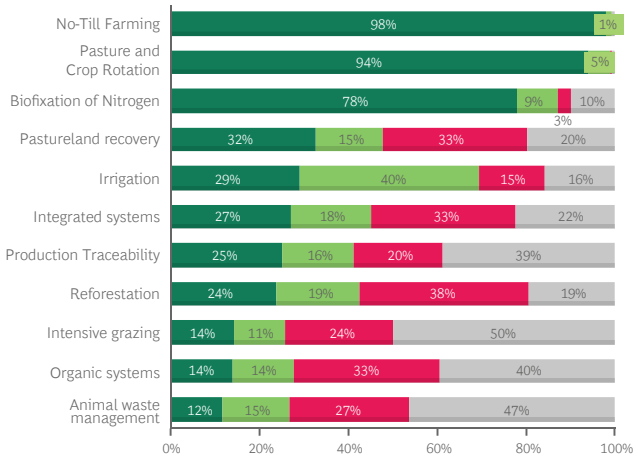
However, adoption of other sustainable practices remains low: reforestation (23%), production traceability (22%), and integrated systems (21%) see limited uptake despite a portion of ranchers expressing willingness to adopt them. Certain techniques, such as animal waste management (17%), organic systems (10%), and irrigation (8%), remain largely unfamiliar to most ranchers, with more than half lacking awareness. Despite this, willingness to adopt remains notable for some practices, with 27% expressing interest in irrigation, 19% in production traceability, and 15% in integrated systems.

Overall, cattle ranchers continue to lag behind growers in both awareness and adoption of sustainable practices, reinforcing the need for targeted education and technical support within this group. While widely recognized techniques like no-till farming, pasture rotation, and pastureland recovery enjoy high adoption, many impactful sustainability practices remain underutilized due to limited familiarity or reluctance to adopt. Bridging this gap through education and outreach will be critical, particularly for lesser-known but high-impact practices across both production systems.

Exhibit 25 - Although practices like no-till farming are widely adopted, there's room to raise awareness and confidence in some practices

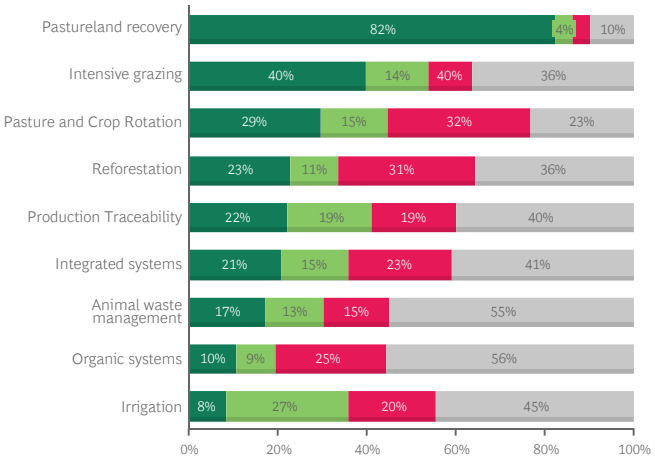
Adoption of sustainable practices by Cerrado Growers

Percent of respondents by knowledge and adoption[1,2]



Adoption of sustainable practices by Cerrado Cattle Ranchers

Percent of respondents by knowledge and adoption[1,2]



I adopt it | I don't adopt it, but would be willing to do it | I don't adopt it, and wouldn't be willing to do it | I don't know it

1. Among the practices below, which ones do you know?; **2.** And which of these do you adopt?

Note: 33% of Growers are also ranchers and 27% of Ranchers are also Growers

Sources: BCG Survey with Cerrado Farmers (N Growers = 166, N Ranchers = 140, February 2025); BCG Analysis

Farmers' perceptions of sustainable practices play a defining role in shaping adoption decisions. The sentiment matrix, based on rankings from growers and cattle ranchers, reveals a strong correlation between perceived farm benefits, sustainability impact, and adoption rates. Practices that farmers view as both highly beneficial to their operations and impactful for sustainability tend to see the highest adoption. Conversely, those perceived as offering limited direct returns, either economically or environmentally, remain underutilized. Bridging this gap requires targeted efforts to enhance awareness, demonstrate tangible benefits, and provide practical support for adoption. The findings highlight the need for a more nuanced approach that aligns sustainability efforts with farmers' operational realities and financial priorities.

For growers, the most widely adopted practices—No-Till Farming, Pasture and Crop Rotation, and Biofixation of Nitrogen—are also ranked highest in both farm benefits and sustainability impact. These solutions are recognized not only for their environmental advantages but also for their contribution to productivity, soil health, and resilience to climate variability. Their strong positioning in the upper-right quadrant of the matrix underscores their alignment with farmers' immediate operational priorities. These practices are well understood, require limited additional investment, and provide clear returns in terms of efficiency and resilience. While Biofixation of Nitrogen ranks among the top three most adopted practices, it remains positioned on the border between quadrants B and C, indicating an opportunity to enhance its perceived impact and further drive adoption rates.

In contrast, practices such as Organic Systems, Integrated Systems, and Production Traceability remain less adopted, largely due to a lower perceived return in both sustainability and direct farm benefits. These practices, despite their long-term advantages, are often seen as costly, complex, or less immediately relevant to core farming objectives.

Cattle ranchers' views on sustainable practices reveal a distinct pattern in adoption. The sentiment matrix highlights a clear concentration of adoption in a single dominant practice—pastureland recovery—while many other solutions remain underutilized due to lower perceived returns in farm benefits and sustainability impact.

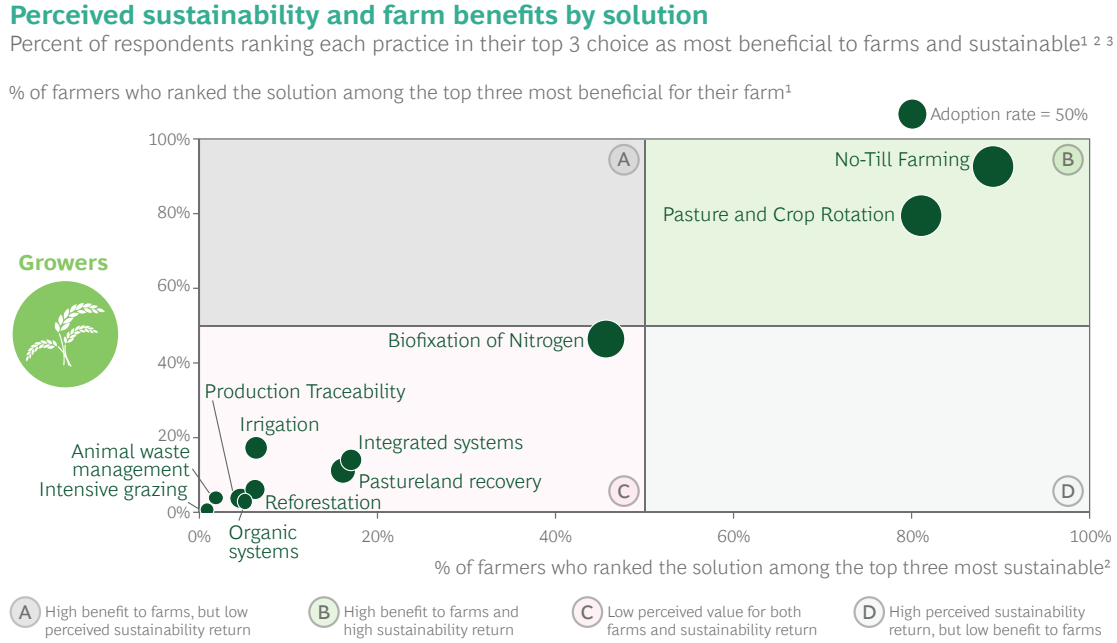
Pastureland recovery stands out as the most widely adopted and highly rated practice among ranchers. Positioned in the upper-right quadrant of the matrix, it is recognized for delivering both strong sustainability outcomes and direct economic advantages, including improved soil fertility, enhanced forage availability, and higher stocking rates. Its widespread adoption reflects ranchers' emphasis on productivity-driven sustainability, where environmental practices are embraced primarily when they align with economic viability.

Conversely, other sustainable practices, including pasture and crop rotation and irrigation, exhibit lower adoption rates among ranchers compared to their popularity among growers. While these practices are acknowledged for their potential benefits, their perceived complexity, costs, and longer payback periods hinder broader uptake. This suggests a need for targeted interventions that emphasize their economic advantages, demonstrate successful case studies, and provide technical support to encourage adoption.

Even less adopted are solutions such as animal waste management, organic systems, and irrigation, which remain clustered in the lower-left quadrant of the matrix. These practices, despite their potential to improve sustainability outcomes, are often perceived as costly or difficult to implement within traditional cattle ranching models. Production traceability and reforestation also see limited adoption, suggesting that their benefits are either not well understood or not immediately relevant to ranchers' operational priorities.

This highlights the need for more compelling value propositions, clearer economic incentives, and targeted knowledge transfer to drive wider adoption of practices for both ranchers and growers. Influencing adoption requires more than promoting sustainability credentials; it demands demonstrating profitability, resilience, and efficiency gains. Tailored outreach, financial mechanisms, and peer-driven success stories can help shift perceptions and accelerate the adoption of underutilized but high-impact practices.

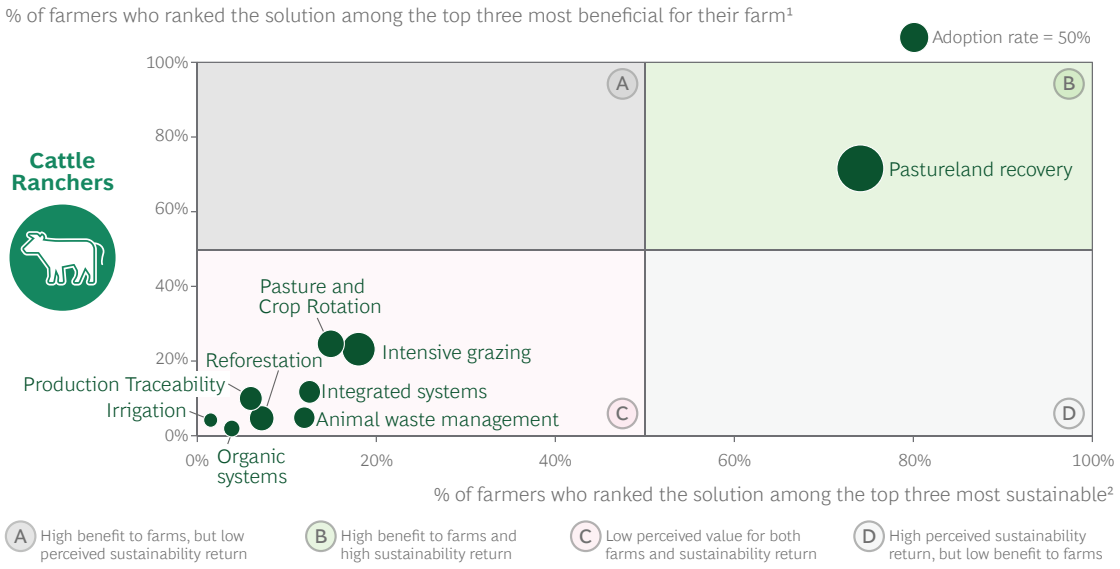
Exhibit 26 - Cerrado growers who perceive solutions as sustainable also see them as the most beneficial for their own operations



1. Among the sustainable practices you adopt, what practices bring most benefits to your farmer?; **2.** Among the sustainable practices you adopt, what practices you consider more impactful to sustainability return?; **3.** The percentages represent the proportion of respondents who selected the practices among their top 3 choices, divided by the total number of respondents

Sources: BCG Survey with Cerrado Farmers (N Growers = 166, February 2025); BCG Analysis

Exhibit 27 - Cattle ranchers in the Cerrado recognize the benefits of pastureland recovery but show limited interest in alternative techniques



1. Among the sustainable practices you adopt, what practices bring most benefits to your farmer?; **2.** Among the sustainable practices you adopt, what practices you consider more impactful to sustainability return?; **3.** The percentages represent the proportion of respondents who selected the practices among their top 3 choices, divided by the total number of respondents

Sources: BCG Survey with Cerrado Farmers (N Ranchers = 140, February 2025); BCG Analysis

Barriers to Adoption

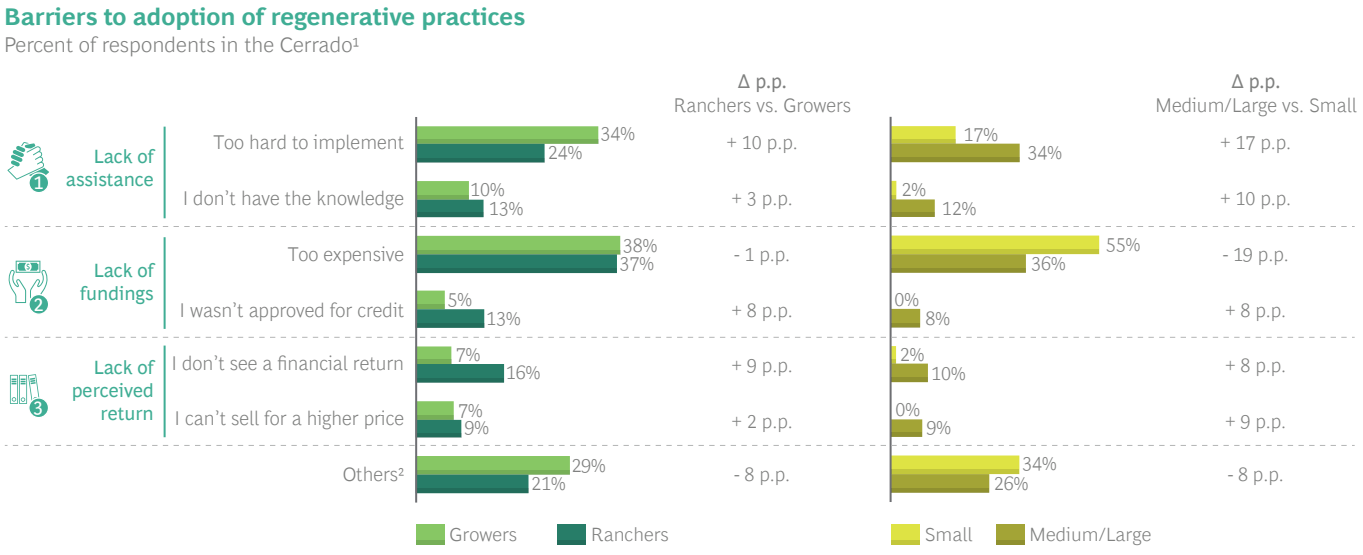
The adoption of regenerative practices in the Cerrado is primarily constrained by two key barriers: limited technical assistance and financial constraints. Among ranchers, 24% reported that implementation is "too hard," compared to 34% of growers, reinforcing operational complexity as a major challenge. While knowledge gaps exist—13% of ranchers and 10% of growers cite a lack of knowledge—the most immediate constraints remain implementation and funding, making it difficult for farmers to even consider more advanced practices. Bridging these fundamental barriers is essential to unlocking broader adoption.

Funding constraints remain a significant obstacle, with 37% of ranchers and 38% of growers citing high costs as a key barrier. However, access to credit is less frequently mentioned, with 13% of ranchers and 5% of growers reporting financing rejections. This suggests that while credit availability is not the primary issue, the perceived affordability of regenerative practices remains a challenge.

Barriers also vary by farm size. Cost concerns are the most significant challenge, particularly for smallholders, with 55% citing high costs compared to 36% of medium and large farms. However, implementation is perceived as a greater challenge among medium and large farms, with 34% reporting difficulty, compared to 17% of smallholders. Additionally, while small farmers focus on immediate barriers such as cost and implementation, medium and large-scale farmers highlight other challenges, including knowledge gaps (12% vs. 2%) and the ability to sell at a higher price (9% vs. 0%). This suggests that larger operations have a more in-depth awareness of sustainability practice issues beyond the fundamental obstacles to adoption.

Beyond these core barriers, other constraints have also emerged as another obstacle. Lack of perceived returns remains a substantial concern, with 16% of ranchers—more than double the rate of growers (7%)—expressing skepticism about financial benefits. Additionally, 21% of ranchers and 29% of growers cite other structural challenges, such as geographic limitations and restricted access to resources. Also, the lack of interest and limited autonomy in farm decision-making also hinder adoption. These findings reinforce the need for targeted initiatives to address both structural and perception barriers. Overcoming these challenges will require tailored interventions to enhance technical assistance, improve financial accessibility, and strengthen market integration—particularly for small-scale producers, who face compounded difficulties in adopting sustainable practices.

Exhibit 28 - Technical assistance, capital and return perception are the three barriers to widespread adoption of regenerative practices



1. Why haven't you adopted [sustainable practice] on your property yet?; **2.** The "Others" category includes barriers such as geographic limitations, restricted resource access, property constraints, lack of interest, and limited autonomy in farm decision-making.

Sources: BCG Survey with Cerrado Farmers (N = 247, February 2025); BCG Analysis

Credit utilization

The survey indicates that most producers in the Cerrado are familiar with credit, with 55% of respondents currently using it, 24% having used it in the past but not currently, and 21% stating they have never used it. Large-scale producers show the highest familiarity, with 62% currently using credit and only 19% never having used it. In contrast, small-scale producers lag slightly behind, with 48% using credit and 24% having never accessed it. Credit usage is also more prevalent among growers (63%) than ranchers (41%), reinforcing the trend that agricultural producers tend to engage more with financial mechanisms than livestock producers.

The primary barriers to credit adoption are related to perceived risk and the inherent challenges of taking on debt. Among those avoiding credit, 34% cite high interest rates as a key concern, while 25% express fear of incurring debt. Lack of access also presents significant obstacles, with 16% pointing to high guarantee requirements, 9% identifying the approval process as too time-consuming, and 7% reporting that payment conditions are unsuitable. Structural issues, such as financial institutions being too far away or respondents not being eligible for credit, were cited by only 3% and 4%, respectively.

A smaller but noteworthy barrier is lack of knowledge, with 4% of respondents stating they are unaware of available financing options. However, lack of necessity also plays a major role in non-adoption: 24% of respondents report they do not currently need financing, and 27% prefer to self-finance using their own resources. Additionally, 15% state they are simply not interested in accessing credit.

Overall, the data underscores that while credit is widely used across the Cerrado, its adoption is influenced by scale, with larger producers more likely to participate. Barriers such as high interest rates and fear of debt disproportionately impact smaller producers, alongside logistical and informational gaps. Addressing these challenges through tailored credit products, education on financing options, and simplified processes could expand access and alleviate concerns, particularly for smaller-scale farmers and ranchers.

This BCG Survey with Cerrado farmers highlights the critical need for high-quality technical assistance, particularly for medium and small-scale producers. Additionally, patient and accessible financing mechanisms are essential to facilitate this transition.

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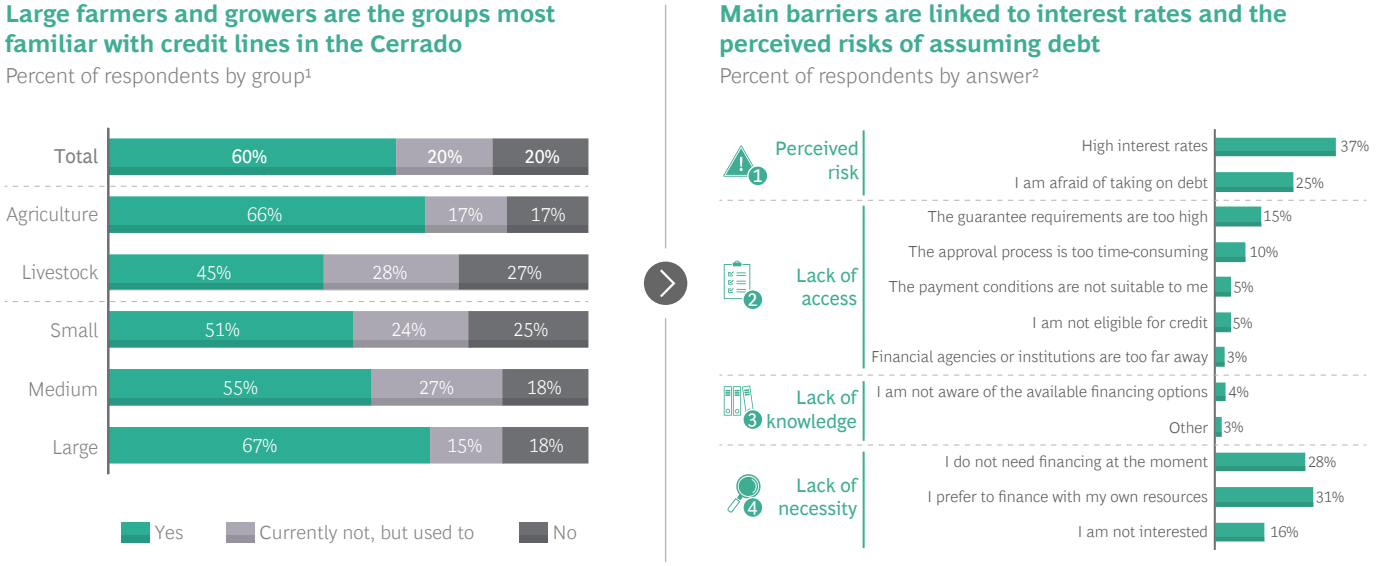
Exhibit 29 - Most producers are familiar with credit, but those who avoid it are wary of its inherent risks



1. Do you use financing for your property (loan, credit, barter, etc.)?; **2.** If not: Why don't you use it?

Sources: BCG Survey with Cerrado Farmers (N = 742, January 2025); BCG Analysis

Funding the transition

Transforming the Cerrado into a global benchmark for regenerative agriculture presents a US$55 billion investment opportunity through 2050, reaching up to US$3.3 billion annually. With nominal internal rates of return (IRR) averaging 19%, this capital would close the financing gap, mitigate risks, and accelerate the adoption of regenerative practices across the biome.

Funding the transition will require a combination of private capital (at market rates), subsidized credit (below market rates), and concessional financing. Given the varying returns on investment across Cerrado farms and the typical blend of concessional and private capital , an initial estimate of the required investment mix has been developed. The proposed allocation includes 43% commercial credit (US$24 billion), 48% subsidized credit (US$26 billion), and 9% concessional funding (US$5 billion).

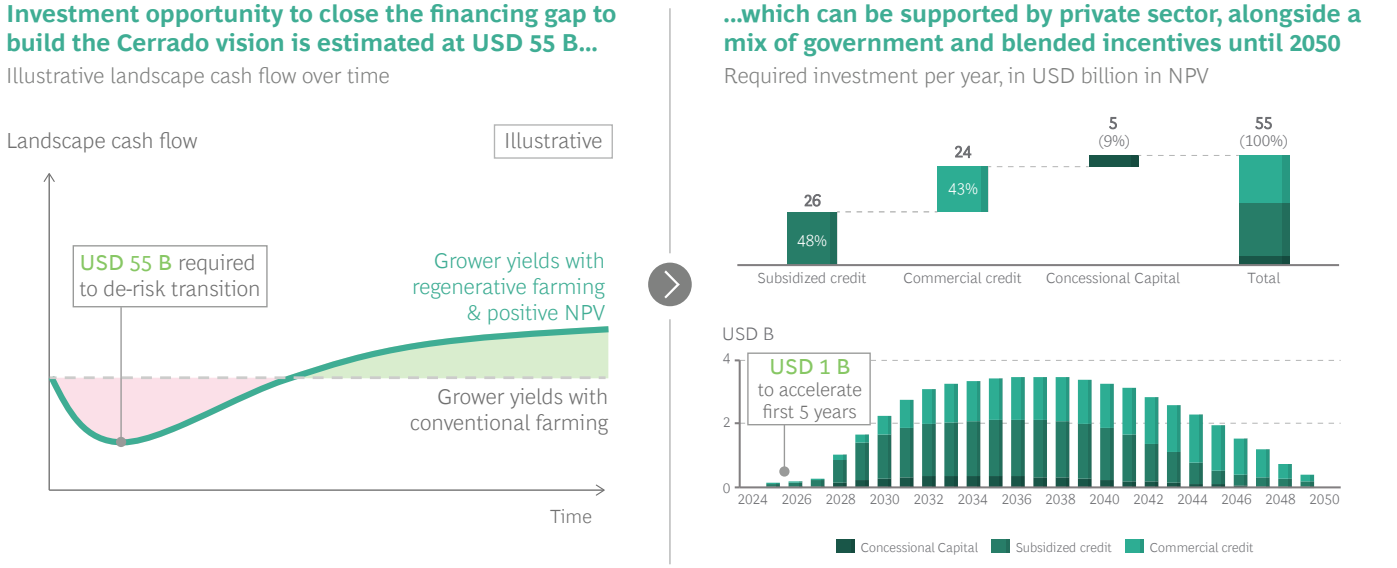
Early-stage concessional funding is particularly crucial. An estimated US$1 billion will be required in the first five years to de-risk investments, attract private sector involvement, and unlock additional financial instruments to support the transition.

Over time, the transition generates positive cash flows as regenerative farming practices stabilize, leading to improved grower yields and long-term profitability. By strategically blending commercial and subsidized financing with concessional capital, the Cerrado can overcome initial financial hurdles, creating a scalable model for sustainable agriculture while unlocking significant environmental and economic benefits.

Concessional and incentivized credit will play a crucial role in engaging producers. The BCG survey with farmers in the Cerrado highlighted that many producers, particularly smaller farmers, avoid taking credit. Key reasons include high interest rates (33% of respondents) and concerns about incurring debt (31%).

Innovative financing mechanisms must be deployed to address upfront costs and medium-term income gaps. Capital empowerment through grants, low-interest loans, or blended finance solutions can make the transition financially viable for farmers. Coupled with increased margins from sustainable practices, these mechanisms will enable farmers to reinvest in their operations and expand regenerative systems over time.

Exhibit 30 - Total investment opportunity to transition the Cerrado into a regenerative lighthouse can reach US$55 billion



Note: For every dollar deployed through concessional capital mechanisms until 2030, it is assumed that US$2 to US$5 of private capital attached through financial instruments

Sources: Ministry of Agriculture and Livestock; TNC; WWF; BCG Analysis

Driving collaboration among actors

The Cerrado stands at the threshold of a transformative shift toward regenerative agriculture, supported by a robust foundation of policies, programs, and technical expertise. The current framework includes key elements such as regulatory guidelines, financial incentives, technical support, and research initiatives, creating an enabling environment for sustainable land use. These tools provide farmers with the resources needed to adopt regenerative practices while aligning agricultural productivity with conservation goals. However, achieving scale requires more than these foundational components – it demands coordinated action and engagement from all stakeholders.

To build on this foundation, a collective effort is needed to balance the Cerrado's production, environmental, and social priorities. Farmers, financial institutions, corporations, civil society organizations, and research institutions each have a distinct role in embedding regenerative agriculture into the region's future. Stakeholders must work together to overcome systemic barriers, pool resources, and implement actionable solutions that ensure an equitable and efficient transition. This collaboration will be essential in advancing the Cerrado toward a sustainable agricultural model that addresses today's challenges while protecting its long-term potential. The following sections explore the current landscape, and the critical roles stakeholders will play in this transition.

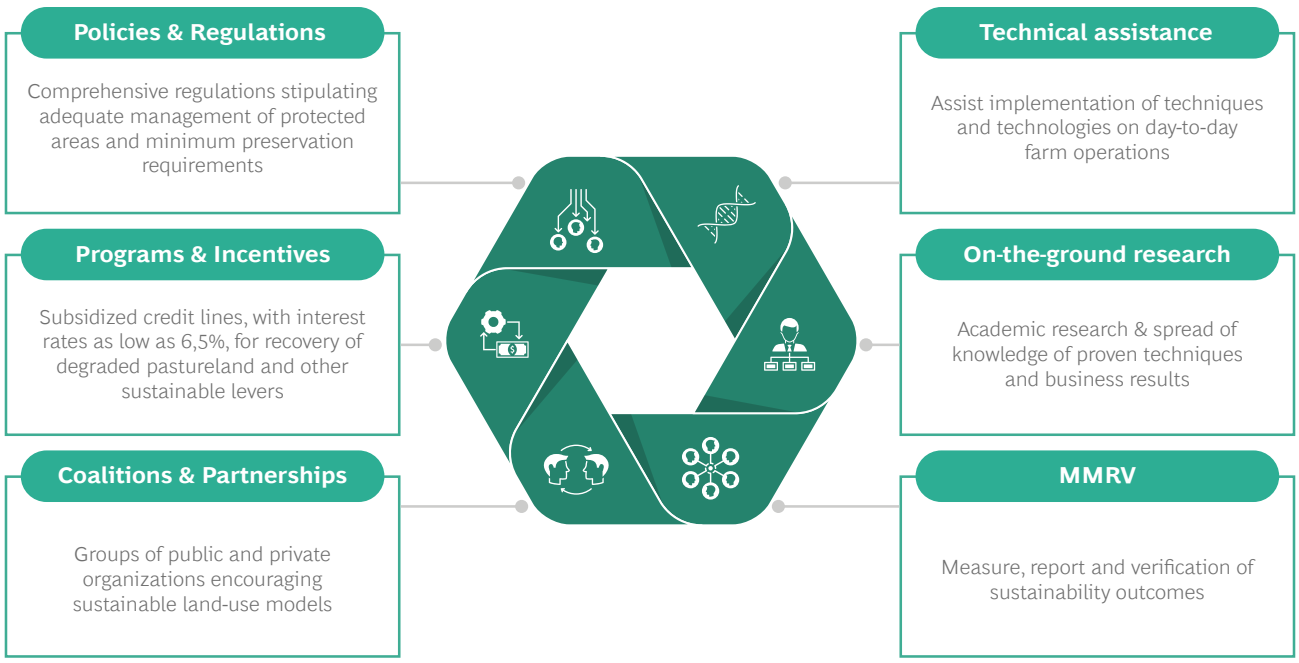
Programs to scale regenerative agriculture in the Cerrado can be built on a strong foundation of policies, incentives, partnerships, and research, creating a cohesive ecosystem that drives sustainable land use practices. These components work together to ensure farmers have the resources, guidance, and support they need to adopt regenerative techniques effectively.

Policies and Regulations. Brazil's regulatory frameworks, notably the Forest Code, provide clear mandates for managing protected areas and define minimum preservation standards. These policies play a vital role in aligning regenerative agriculture with national environmental objectives, offering farmers a structured, actionable framework for sustainable land use and stewardship.

Programs and Incentives. Brazil has established an extensive array of incentives and support programs to bolster its agricultural sector. These initiatives address critical areas such as financing, insurance, price stabilization, and sustainability, underscoring the nation's commitment to innovation, livelihood protection, and the long-term resilience of its farming systems.

Technical Assistance. Technical assistance organizations are instrumental in providing technical support, assisting farmers with the implementation of regenerative techniques and technologies in their daily operations. Agronomists play a key role, offering hands-on guidance to ensure that farmers can adopt and maintain practices that enhance soil health and productivity.

Exhibit 31 - Landscape programs can be built upon a solid ecosystem and a foundation of policies and solutions



1. Law 12651/2021; **2.** National Program for the Conversion of Degraded Pastureland

Sources: BCG Analysis

On-the-Ground Research. Research institutions and universities are vital in conducting academic research and disseminating proven techniques and business results. Their work ensures that farmers have access to evidence-based strategies, enabling them to make informed decisions and reduce risks associated with innovation.

Coalitions and Partnerships. Collaboration between public and private organizations, are crucial to encourage the adoption of sustainable land-use models. Initiatives like the Action Agenda on Regenerative Landscapes (AARL), launched at COP28, exemplify this approach, bringing together over 35 participants to mobilize US$6 billion in regenerative agriculture investments. Notable projects include the Landscape Accelerator Brazil (LAB), an AARL initiative aimed at transforming the Cerrado, and the Sustainable Landscapes Partnership, which focuses on financial incentives, technical support, and capacity-building to curb soy-driven land conversion in the region. These partnerships create synergies that amplify the impact of individual initiatives, aligning stakeholders toward shared objectives.

Measurement, Monitoring, Reporting, and Verification (MMRV). Establishing credible monitoring, measurement, reporting, and verification (MMRV) systems is critical to ensure transparency and accountability. These systems must provide robust data to validate environmental and social outcomes while enabling access to premium markets and incentive programs. Scalability will depend on standardizing metrics and fostering interoperability across regions and supply chains. Robust MMRV systems, supported by credible organizations, ensure that sustainability outcomes are tracked and verified. This transparency builds trust across the supply chain, allowing stakeholders to validate environmental and social benefits while accessing premium markets or incentive programs tied to regenerative practices.

At the beginning of the transition, capturing full regenerative product benefits may include connecting upstream and downstream players directly to guarantee proper product traceability to value chain companies and consumers, ensuring full separation of conventional and regenerative products. As MMRV systems mature and standardize, the supply chain can gradually migrate to larger scale logistics and further benefit from the economics of the supply chain.

By integrating these components, programs can create an enabling environment for regenerative agriculture, ensuring that technical expertise, financial resources, regulatory frameworks and regenerative products demand to work together to drive meaningful change in the Cerrado.

The concerted effort required

Transitioning the Cerrado into a sustainable model of regenerative agriculture requires a collective effort across multiple stakeholders. Each player has a critical role in balancing production, environmental restoration, and social priorities. Effective collaboration is essential to ensure an efficient and impactful transition that meets the region's unique challenges.

Public Sector. The public sector plays a foundational role by strengthening regulatory frameworks, improving MMRV systems, and offering targeted incentives for sustainable practices. Accelerating the review and regulation of land through initiatives like CAR (Rural Environmental Registry) can facilitate the adoption of regenerative systems. Additionally, developing comprehensive land-use plans will ensure alignment between conservation and agricultural production goals.

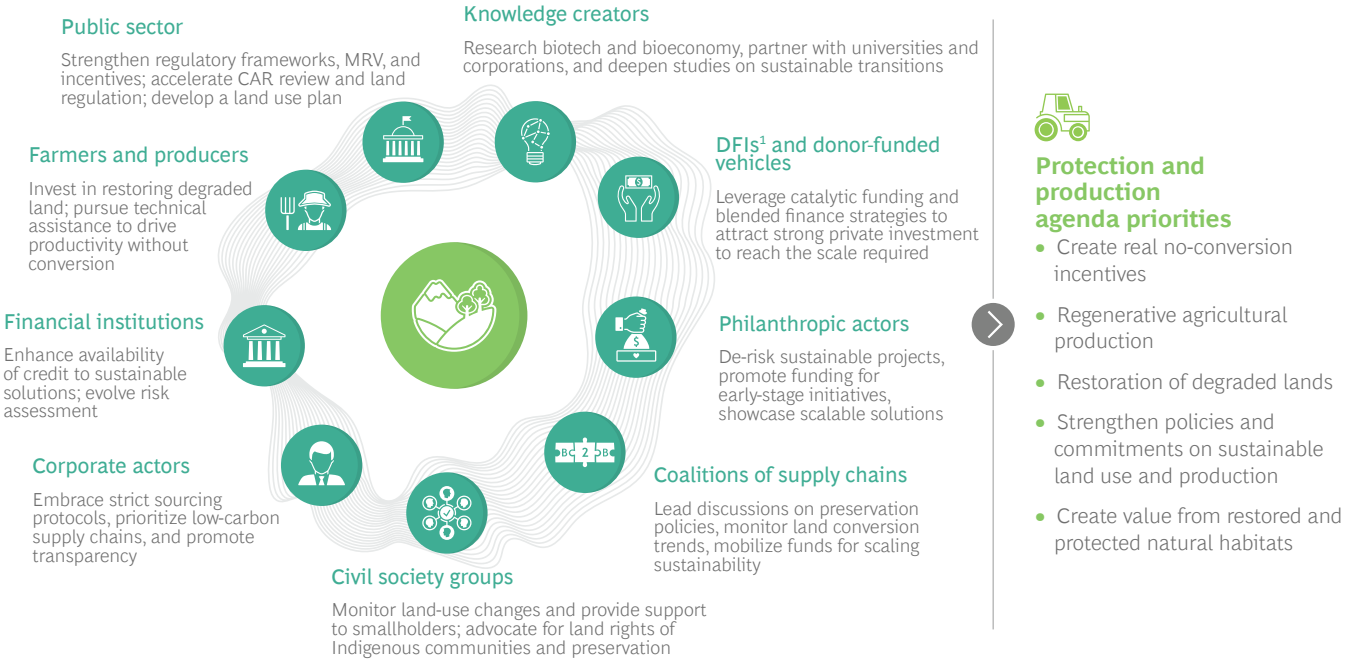
Farmers and Producers. Farmers are at the heart of this transformation. Their role involves investing in the restoration of degraded lands and adopting regenerative practices to increase productivity without further land conversion. Access to technical assistance is crucial to enable farmers to implement soil restoration, bioinputs, and efficient crop rotations effectively. Smallholders require tailored support to navigate the technical and financial demands of this transition.

Financial Institutions. Financial institutions must enhance the availability of credit tailored to sustainable solutions while evolving risk assessment frameworks to de-risk investments in regenerative agriculture. This includes offering preferential loan terms, reduced insurance premiums, and incentivized financing tied to environmental performance. Aligning financial products with the needs of regenerative agriculture will unlock resources for farmers to make necessary investments.

Corporate Actors. Corporations can drive change by adopting strict sourcing protocols that prioritize low-carbon and sustainably produced goods. Promoting transparency across supply chains and aligning with sustainability goals ensures that regenerative practices are incentivized and rewarded. Collaboration between buyers, processors, and retailers is key to driving market demand for sustainably produced agricultural products.

Civil Society Groups. Civil society organizations play a critical role in monitoring land-use changes, advocating for the rights of Indigenous communities, and providing support to smallholders. By raising awareness and fostering collaboration, these groups bridge gaps between farmers, policymakers, and financial actors. Their efforts ensure that the transition to regenerative agriculture benefits vulnerable populations while maintaining biodiversity and ecological integrity.

Exhibit 32 - All stakeholders play important roles to balance production, environmental, and social priorities in the Cerrado



	What?	How?	Who?
Economic	Provide support to access public funding	Subsidized advisory on available programs and sign-up assistance	Financial Services (FS), Farm Advisors
	Offer reduced insurance premiums	Incentivized regenerative farming with insurance that encourages adoption	Financial Services
	Offer preferential loan terms	Integrate farmer's environmental performance in bank's risk evaluation	Financial Services
	Help tenants farm regeneratively	Integrate sustainability requirements and incentives into agreements	Landowners
	Ensure market price transparency for crops	Create farmer accessible platforms for data sharing	Advisors, Processors (PR), Suppliers (SP)
Knowledge	Up-skill on farm reps	Provide training for agronomists and work with institutions to upskill farmers	Manufacturers (MF), Suppliers, Advisors
	Support adoption of enabling technology	Subsidize technology and training; develop community ownership models	Manufacturers, Suppliers, Advisors
	Establish and promote demo farms	Identify suitable farms to partner with, sponsor, and/or participate in demos	Manufacturers, Suppliers
	Support peer-to-peer farmer networks	Support established & new networks with funding and expertise	MF, SP, PR, Retailers, Advisors
	Provide simple information and signposting	Share key information through demo farms, peer-to-peer networks, leaders	MF, SP, PR, Retailers, Advisors
Value chain	Create secure contracts for farmers	Build contract security & flexibility (e.g., long-term options with built-in reviews)	MF, SP, PR, Retailers, Landowners
	Align performance metrics to environmental goals	Review individual performance measures so they are driving RegenAg	Manufacturers, Suppliers, Advisors
	Repurpose existing requirements of farmers	Review standards and identify opportunities to remove outdated requirements	PR, SP, Manufacturers, Retailers
	Help consumers understand the benefits	Raise consumer awareness about the benefits of crops grown regeneratively	Manufacturers, Retailers
	Design products that enable regenerative farming	Design products that use key ingredients from regenerative farming rotation	Manufacturers, Retailers

1. Development Finance Institutions

Sources: World Economic Forum; Sustainable Market Initiative; WBCSD; BCG Analysis

Knowledge Creators. Universities, research institutions, and private-sector innovators are essential for advancing biotechnology and bioeconomy solutions tailored to the Cerrado. Partnerships between academia and corporations can deepen research on sustainable transitions, create new technologies, and provide farmers with the tools needed to scale regenerative practices effectively.

DFIs and Donor-Funded Vehicles. Development finance institutions (DFIs) and donor-funded vehicles can mobilize catalytic funding to attract private capital at scale. Leveraging blended finance strategies will help bridge the investment gap and ensure that critical early-stage projects receive the funding needed to showcase scalable solutions.

Philanthropic Actors. Philanthropic organizations can play a pivotal role by funding early-stage projects and de-risking sustainable initiatives. Their support enables the demonstration of successful models, which can be scaled by private and public sector investments.

Coalitions of Supply Chains. Supply chain coalitions are instrumental in leading discussions on preservation policies, monitoring land conversion trends, and mobilizing funds to scale sustainability initiatives. These coalitions bring together stakeholders across the value chain to align goals and implement actionable strategies.

The current state of play

Programs to scale regenerative agriculture in the Cerrado can be built on a strong foundation of policies, incentives, partnerships, and research, creating a cohesive ecosystem that drives sustainable land use practices. These components work together to ensure farmers have the resources, guidance, and support they need to adopt regenerative techniques effectively.

Current Policy Framework

Brazil's agricultural sector is supported by a robust framework of national and subnational laws and policies that establish clear guidelines, promote sustainability, and drive innovation across the industry. These regulations address a broad range of objectives, from improving financial mechanisms and conserving natural resources to fostering technological advancements and mitigating climate change. Together, they provide a solid legal foundation for sustainable development in agriculture while ensuring alignment with environmental and socio-economic goals.

At the national level, the Agricultural Policy Law (Lei 8.171/1991) lays the groundwork for Brazil's agricultural strategy, defining key priorities such as rural credit, agricultural insurance, minimum pricing mechanisms, and research incentives. This law serves as a comprehensive guide for policymakers and stakeholders, ensuring consistency in decision-making across the sector. Similarly, the Forest Code (Lei 12.651/2012) is a critical piece of environmental legislation, regulating the preservation, restoration, and sustainable use of native vegetation on rural properties. It underscores the importance of balancing agricultural productivity with ecological conservation, a recurring theme in Brazil's agrarian policies.

Financial policies have also been instrumental in advancing the agricultural agenda. The Rural Credit Law (Lei 4.829/1965) governs rural credit operations, defining modalities for investment and marketing credit to ensure access to financing for farmers. Additionally, the Cédula de Produto Rural (CPR), established under Lei 8.929/1994, introduced a private credit instrument that allows farmers to secure financing by committing future delivery of agricultural products or their monetary equivalent. The Agribusiness Credit Letter (LCA), created under Lei 11.076/2004, has emerged as a vital mechanism for funding agricultural activities. By allowing financial institutions to issue securities linked to agribusiness credit rights, the LCA channels capital into the sector while offering attractive tax incentives for individual investors. This mechanism has been instrumental in modernizing Brazil's agriculture, providing farmers with the resources to invest in cutting-edge technologies, inputs, and sustainable practices.

Environmental and sustainability policies are at the core of Brazil's agricultural framework. The National Program for the Conversion of Degraded Pastures, established under Decreto 11.815/2023, provides financial incentives and technical guidance to transform degraded areas into productive systems that align with environmental goals. Meanwhile, the National Environmental Services Policy (Lei 14.119/2021) promotes direct financial incentives for conservation and restoration activities, formalizing mechanisms to reward environmental stewardship. Climate resilience is further addressed through the National Climate Change Plan (Lei 12.187/2009), which sets guidelines for reducing greenhouse gas emissions and addressing climate challenges through targeted adaptation measures.

The ABC+ Plan, officially launched as the Sectoral Plan for Climate Change Adaptation and Low Carbon Emission in Agriculture (2020–2030), builds on the success of its predecessor, the ABC Plan (2010–2020). Now well underway, ABC+ promotes the consolidation of Brazil's agriculture around sustainable, productive, and resilient systems. Key objectives of the plan include recovering 30 million hectares of degraded pastures, implementing no-tillage systems on 12.5 million hectares, integrating production systems across 10.1 million hectares, and planting 4 million hectares of forests. Additionally, it prioritizes the use of bio-inputs on 13 million hectares, the treatment of 208.4 million cubic meters of animal waste,

and the expansion of irrigated systems by 3 million hectares. These initiatives represent a significant step forward in reducing greenhouse gas emissions and enhancing the sustainability of Brazil's agribusiness sector. In addition, the National Policy for the Promotion of Agri Precision and Livestock modernizes agricultural and livestock practices by encouraging the adoption of advanced technologies, while the National Bioeconomy Strategy prioritizes renewable biological resources, bio-inputs, and local community inclusion in the bioeconomy.

Subnational laws and policies further enrich this framework by tailoring solutions to local contexts. Many states have adopted their own policies to promote regenerative agriculture and sustainability. For example, Rio Grande do Sul has implemented policies aimed at incentivizing agroecology and regenerative farming practices. These regional efforts ensure that national policies are effectively implemented and adapted to the unique environmental and socio-economic conditions of different regions across the country.

This comprehensive legal and policy ecosystem underscores Brazil's commitment to fostering a sustainable and resilient agricultural sector. By integrating environmental conservation, financial innovation, and local adaptation, these laws and policies provide a cohesive foundation for balancing agricultural productivity with ecological and social responsibility.

Current Programs and Incentives

Brazil has developed a comprehensive system of incentives and support programs to strengthen its agricultural sector, addressing various aspects of farming, from financing and insurance to price stabilization and sustainability. These initiatives reflect the country's commitment to fostering innovation, protecting livelihoods, and enhancing the sector's long-term resilience.

Some federal incentives operate outside the scope of the Plano Safra program but remain critical in advancing agricultural goals. The National Land Credit Program (PNCF) provides small-scale farmers with access to land, enabling rural development and supporting family farming. Similarly, RenovaBio promotes the adoption of biofuels by incentivizing their production and consumption, aligning with Brazil's broader sustainability and energy goals.

At the heart of Brazil's agricultural financing system is Plano Safra, a cornerstone program offering diverse credit lines tailored to the varying needs of farmers. Programs such as Pronaf and Pronamp provide critical financial support to small-scale family farmers and medium-sized rural producers, enabling investments in productivity, technology, and livelihoods.

Other initiatives under Plano Safra focus on specialized needs, such as Proirriga, which supports investments in irrigation and protected cultivation systems to improve water efficiency and climate resilience. Infrastructure development is supported by the PCA Program, which finances the construction and expansion of agricultural warehouses, helping reduce post-harvest losses.

For modernization, Moderagro and Moderfrota provide credit for upgrading agricultural practices and acquiring modern machinery, respectively, enhancing both sustainability and efficiency. Furthermore, innovation is a key focus, with programs like Inovagro, which finances the adoption of advanced technologies, and Prodecoop, which strengthens cooperatives to improve their market competitiveness.

Finally, programs like the PNCPD, aimed at converting degraded pastures into sustainable productive systems, illustrate Brazil's dual commitment to agricultural advancement and environmental restoration.

Complementing Plano Safra, the Brazilian Development Bank (BNDES) offers additional financing options that align with broader sustainability and innovation goals. BNDES Finem – Meio Ambiente supports projects focused on environmental preservation, while BNDES Crédito Rural provides credit for agricultural activities, enabling investments in infrastructure, equipment, and inputs. Specialized credit lines, such as BNDES Crédito Cerealistas, cater to the needs of cereal production, while BNDES Pronovena focuses on innovative agricultural ventures, ensuring that financial resources are available for forward-looking initiatives.

Beyond federal efforts, subnational governments contribute through targeted incentives. Regional financing funds, such as FNE, FNO, and FCO, promote development in specific regions with favorable terms for agricultural producers. State-level tax incentives, including ICMS reductions, further encourage sustainable agricultural practices by lowering costs for farmers. These subnational measures demonstrate how localized support can complement national programs.

To stabilize markets and ensure fair returns for farmers, Brazil has implemented several price and supply incentives. Programs like PEP, which provides a premium to buyers or cooperatives, ensure that agricultural products are purchased at fair prices.

The Federal Government Purchase Program (AGF) intervenes in the market when prices fall below minimum thresholds, offering critical support to farmers during price fluctuations. For family farmers, PROP guarantees minimum prices for their products, reducing financial risks and ensuring stability for smaller operations.

Insurance incentives play a vital role in mitigating the risks inherent in agricultural activities. The PSR – Subsidy Program for Rural Insurance Premiums helps farmers manage risks by subsidizing insurance costs, making coverage more affordable and accessible. Similarly, Proagro offers comprehensive insurance for agricultural activities, protecting farmers against financial losses caused by unforeseen events such as extreme weather. These programs are essential for safeguarding investments and ensuring the financial resilience of farmers across the country.

In sum, Brazil's multi-tiered framework of incentives provides critical support for farmers, addressing their financial needs, mitigating risks, stabilizing markets, and promoting sustainable practices. By combining federal, subnational, and sector-specific initiatives, this system creates a robust foundation for agricultural development and long-term resilience.

Exhibit 33 - Incentives and regulatory framework for farming and farmer support in Brazil

Non-exhaustive

1. To fund production costs and facilitate the sale of goods.; **2.** To acquire assets and enhance rural infrastructure.; **3.** Pronaf's budget has been independent of Plano Safra since the 2023/24 annual review.; **4.** National Bank for Economic and Social Development (BNDES).; **5.** LCAs are tax-free for individual investors, making them a compelling investment option. **Note:** Plano Safra also considers Plano Safra da Agricultura Familiar

Sources: Brazilian Government and State Departments; BCG Analysis

Scaling individual efforts

Engaging key stakeholders across the value chain is key to unlock the potential of regenerative landscapes in the Cerrado. Effective scaling hinges on structured collaboration and efficient interfaces among farmers, businesses, programs, and ecosystems. This approach involves three core pillars:

- 1. Economic Interventions. Economic levers include providing farmers with access to public funding, reduced insurance premiums, and preferential loan terms. Transparency in crop pricing is another critical component, ensuring farmers have access to accurate market data to make informed decisions. Landowners can also integrate sustainability requirements into tenant agreements to drive regenerative farming practices.

  Economic interventions are essential to reduce financial risk for farmers and incentivize adoption. Preferential loan terms, integrated with environmental performance metrics, can further de-risk regenerative practices, making credit more accessible and affordable for farmers.

- 2. Knowledge and Training. Building technical capacity is essential for scaling regenerative landscapes. Training programs for agronomists and farm representatives, along with the establishment of demonstration farms, can help farmers learn and adopt new practices. Knowledge interventions aim to equip farmers with the tools and expertise necessary to implement regenerative systems. Demonstration farms, established by manufacturers and suppliers, serve as practical examples, showcasing the benefits of regenerative agriculture and sustainable
  land use.

  Clear and simple information, disseminated through demonstration farms, peer networks, and educational materials, ensures farmers can access the guidance they need to adopt sustainable practices.

- 3. Value Chain Realignment. Aligning value chains with regenerative goals requires secure contracts for farmers, performance metrics tied to environmental outcomes, and market designs that reward sustainable production. Raising consumer and industry awareness about the benefits of regenerative products can drive demand and reinforce market incentives.

  Aligning the value chain with regenerative goals is essential to create an enabling environment for farmers. Repurposing outdated requirements for farmers is another critical step, with processors and retailers leading efforts to review and update standards. Additionally, designing products that incorporate ingredients from regenerative farming systems creates direct market value, reinforcing the economic case for sustainability throughout the value chain.

Transforming the Cerrado into a global model of regenerative agriculture and sustainable land use requires a unified strategy combining economic, environmental, and social priorities. Financial systems must de-risk adoption for farmers, while knowledge-sharing ecosystems build the capacity for innovation. Corporate alignment of value chains, supported by clear policies and strong consumer engagement, will reinforce the market case for sustainability.

By integrating these efforts, stakeholders can turn individual initiatives into a coordinated movement, securing the future of the Cerrado while advancing global sustainability goals.

Conclusion

The Cerrado holds the potential to become a global model for regenerative landscapes, showcasing how to effectively balance agricultural productivity, environmental preservation, and social equity. This transformation demands coordinated action from all stakeholders, leveraging the insights, partnerships, and investments outlined in this report. Programs rooted in strong policies, innovative financing mechanisms, technical expertise, and collaborative frameworks are already creating the foundation for this shift. Yet, scaling these efforts to their full potential requires ambitious, focused action.

The Action Agenda on Regenerative Landscapes (AARL), launched at COP28, is leading the charge by uniting over 35 participants and catalyzing investments of USD 6 billion in regenerative agriculture and sustainable land use. These efforts span 300+ projects across 110 countries, 80 commodities, and over 280 million hectares globally. Building on this momentum, the AARL is advancing its mission through the Landscape Accelerator – Brazil (LAB), a groundbreaking initiative focused on transforming the Cerrado into the world's first regenerative biome.

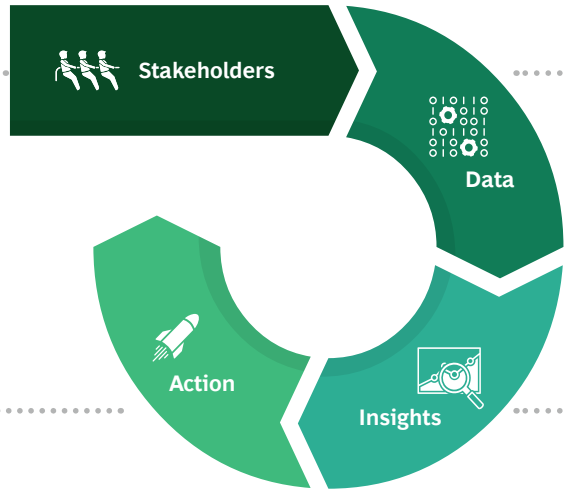
The LAB program serves as a collaborative platform, bringing together financial institutions, input providers, consumer-facing companies, agri-traders, producers, and civil society organizations – in a sprint towards COP30 in Belém. This initiative builds on established efforts like the Soft Commodities Forum, the Sustainable Landscapes Partnership, the Forest Investor Club, and The Nature Conservancy's longstanding work in Brazil. By identifying shared challenges and pooling resources, LAB aims to aggregate and amplify ongoing efforts in the Cerrado, addressing systemic constraints and unlocking new opportunities for public-private collaboration, scaled investment and innovation.

As the LAB begins its work in the Cerrado, it provides a blueprint for scaling regenerative landscapes worldwide. By focusing on transparency, stakeholder engagement, and catalytic investments, this program underscores the power of collective action in driving meaningful, scalable change. We invite agri-food value chain players, local governments, financiers, NGOs, and other stakeholders to join these efforts, helping to position the Cerrado as a global lighthouse for regenerative landscapes, agriculture, and sustainable land use.

AARL is a step change to unlock scale

The Action Agenda on Regenerative Landscapes launched at COP28 is working to achieve at-scale systems change in Regenerative landscapes through four elements:

Ambitious and curated group of participants from across the food & ag value chain



Global data platform of landscape efforts in a 'clean room' to identify partnerships needed to reach scale

AARL Accelerators at-scale landscape programs to translate ambition into action and provide a blueprint for a global scale-up of regen ag

Repository of knowledge and experience for tackling roadblocks to systems change in each landscape

The Landscape Accelerator in Brazil (LAB)

Ambition Accelerate the transformation of Brazilian landscapes, starting in the Cerrado and the Amazon, towards a fully regenerative future

Outcomes	**Public policy** underpins the transition	**Blended finance** activates the transition	**Cost-effective MMRV** enables the transition
COP30 objectives	**Prioritized policy imperatives:** National and sub-national levels	**Public-private financing stack** and roadmap for scaling investments	**Aligned set of metrics** to support regen scale-up + case studies demonstrating successful models and barriers
COP30 stretch objectives	Specific policy asks Key policy announcement(s)	Unlock transition financing Setup a sustainable financial vehicle	Detailed MMRV guidance specific to Brazilian landscapes Piloting key MMRV solutions
Foundation: Transition plans	**Biome-specific action plans to scale regenerative landscapes for Cerrado and Pará (Amazon)** • Systems-based diagnostic of opportunities & barriers to scaling regenerative landscapes • Transition plan including initial recs: Policy, financing, MMRV		

Process

Advocacy
- Engage with public & private decision makers to advance objectives at COP30 & beyond

Dialogue
- Multi stakeholder workshops to build consensus & advance deliverables

Research
- Evaluate the landscape
- Understand farmer motivations & needs
- Propose initial recommendations

Sources: Action Agenda on Regenerative Landscapes; WBCSD; BCG Analysis

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Glossary

AARL	Action Agenda on Regenerative Landscapes
BCG	Boston Consulting Group
CAR	*Cadastro Ambiental Rural*, Brazil's Rural Environmental Registry
CEBDS	*Conselho Empresarial Brasileiro para o Desenvolvimento Sustentável*, the Brazilian Business Council for Sustainable Development
DCF	Deforestation and Conversion Free
GHG	Greenhouse Gases
GM	Genetically Modified
ICLFS	Integrated Crop-Livestock-Forestry Systems
IRR	Internal Return Rate
LAB	Landscape Accelerator – Brazil
MAPA	Brazil's Ministry of Agriculture and Livestock
MATOPIBA	Region within the Cerrado, covering the states of Maranhão, Tocantins, Piauí and Bahia
NbS	Nature Based Solutions
NPV	Net Present Value
PES	Payment for Ecosystem Services
SBTN	Science Based Targets Network
SCF	Soft Commodities Forum
WBCSD	World Business Council for Sustainable Development

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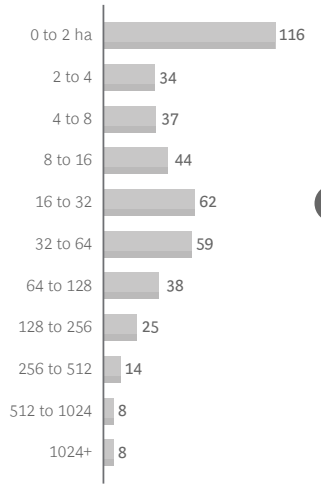
ANNEX

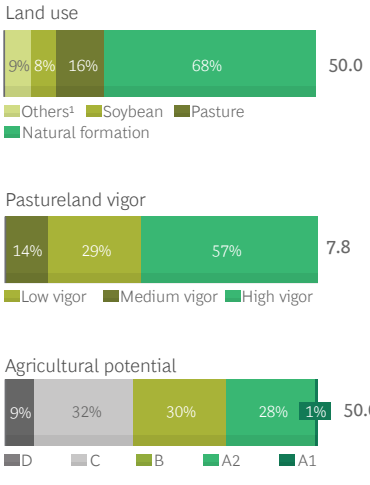
Cerrado Cluster Deep-Dive

NORTHERN MATOPIBA

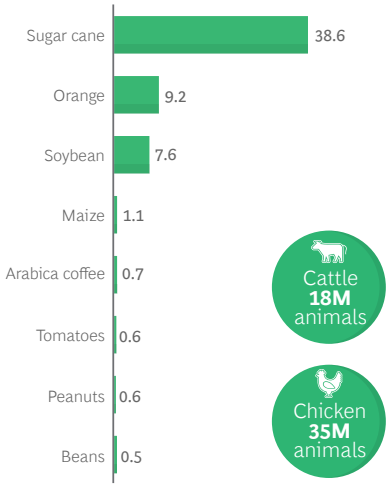
Property by size
in thousands



Land profile
in percentage and million hectares



Main agricultural products by value
in BRL billion, 2023



Note: Agricultural production considers the total output of all municipalities with areas in the cluster; Agri Potential doesn't consider Bodies of water and Cities.
1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

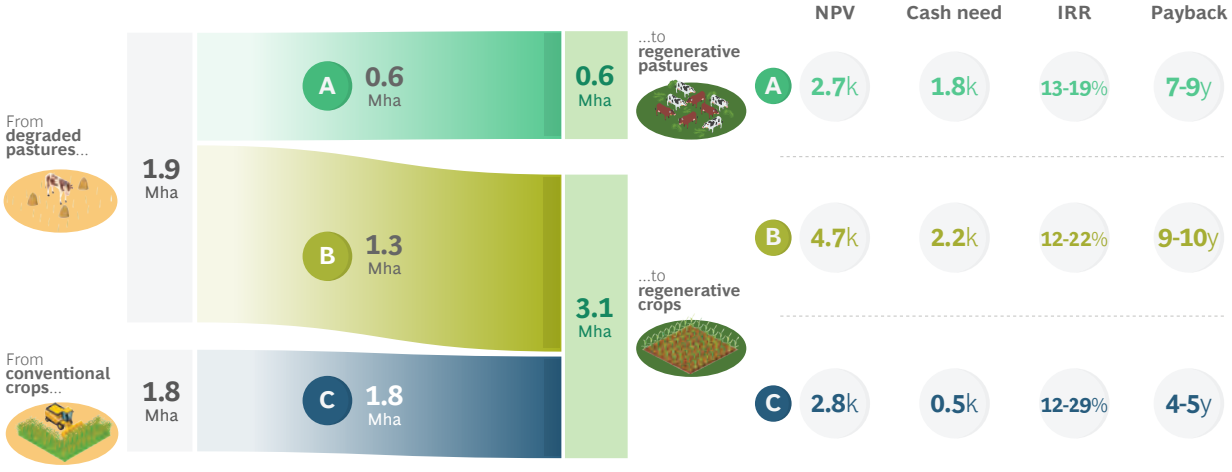
Opportunity at stake to transition to regenerative systems
in million hectares

12.7 USD B — **Total opportunity NPV** in this clustered region

4.8 USD B — **Investment opportunity** required to transition

1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

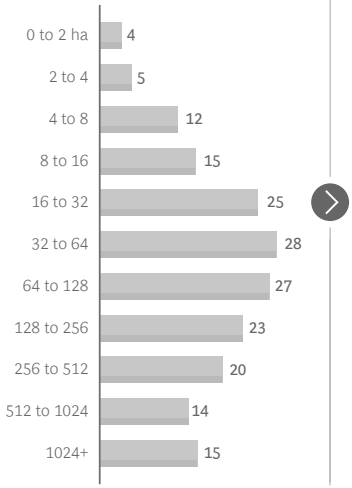
Total transition opportunity in the Northern MATOPIBA
in millions of hectares



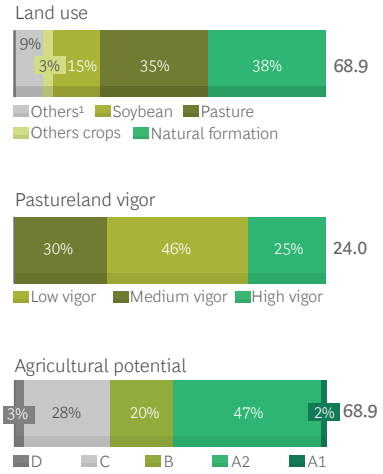
Note: Based on projected production to meet rising demand through 2050. Average regenerative business case based on the average transition business case for each landscape in each archetype. Cash needs account for CapEx, increased OpEx, and revenue impact during the transition.
Sources: MapBiomas; FAOStat; IBGE; EMBRAPA; BCG Analysis

WESTERN CERRADO

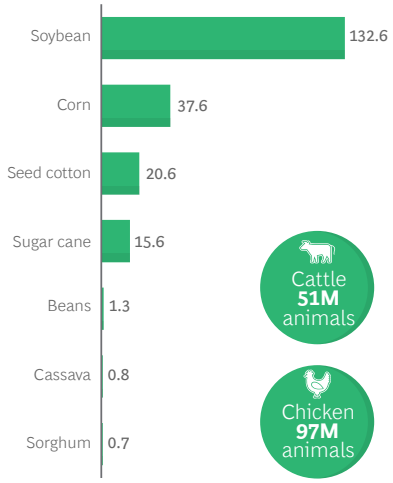
Property by size
in thousands



Land profile
in percentage and million hectares

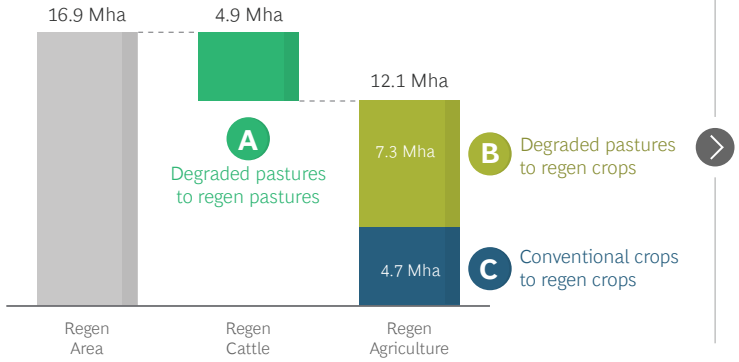


Main agricultural products by value
in BRL billion, 2023



Note: Agricultural production considers the total output of all municipalities with areas in the cluster; Agri Potential doesn't consider Bodies of water and Cities.
1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

Opportunity at stake to transition to regenerative systems
in million hectares

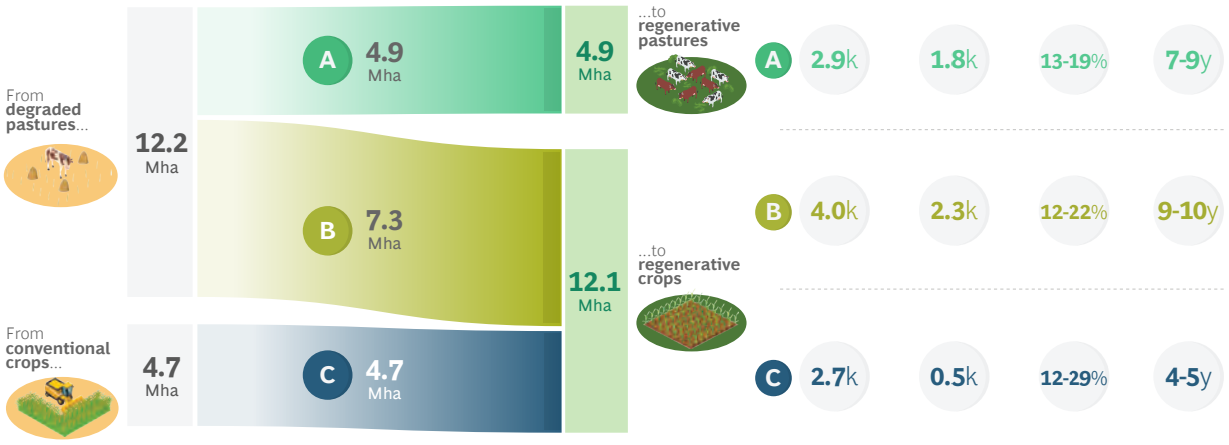


55.8 USD B — **Total opportunity NPV** in this clustered region

27.8 USD B — **Investment opportunity** required to transition

1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

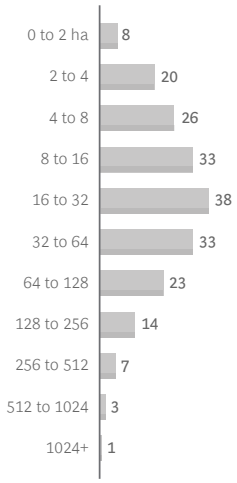
Total transition opportunity in Western Cerrado
In millions of hectares



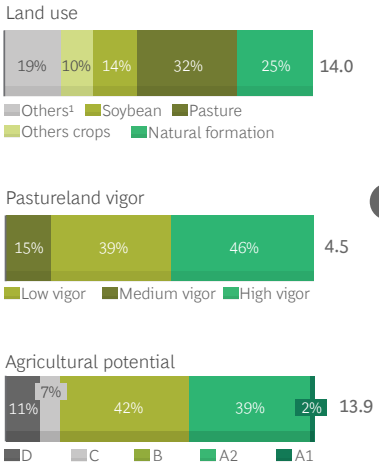
Note: Based on projected production to meet rising demand through 2050. Average regenerative business case based on the average transition business case for each landscape in each archetype. Cash needs account for CapEx, increased OpEx, and revenue impact during the transition.
Sources: MapBiomas; FAOStat; IBGE; EMBRAPA; BCG Analysis

SOUTHEASTERN CERRADO

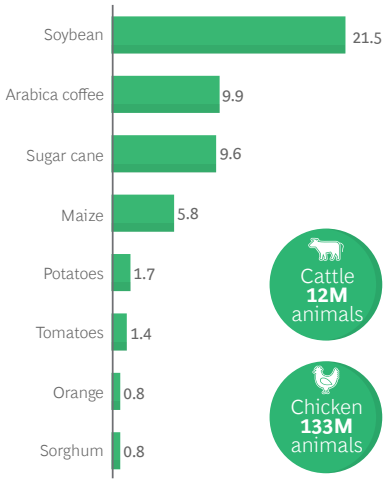
Property by size
in thousands



Land profile
in percentage and million hectares

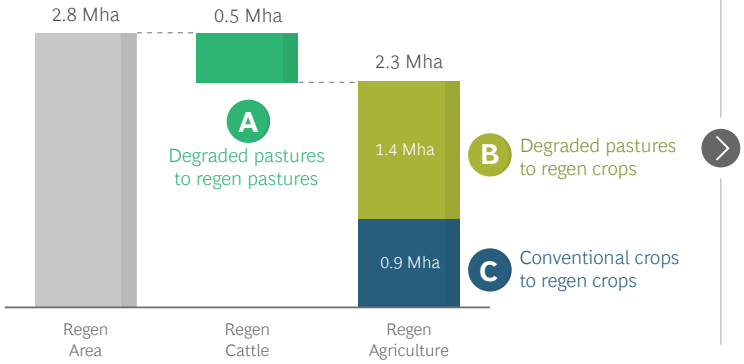


Main agricultural products by value
in BRL billion, 2023



Note: Agricultural production considers the total output of all municipalities with areas in the cluster; Agri Potential doesn't consider Bodies of water and Cities.
1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

Opportunity at stake to transition to regenerative systems
in million hectares

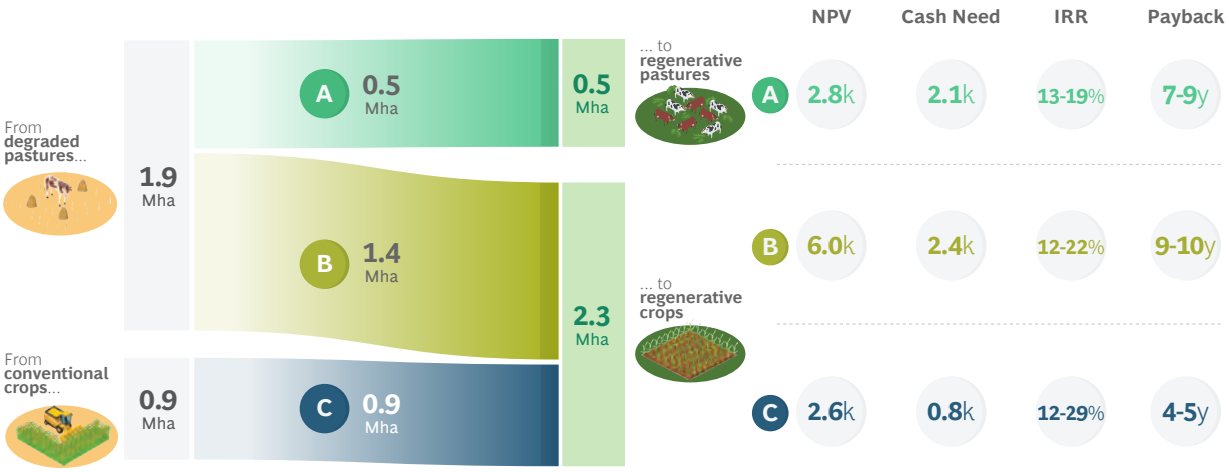


12.3 USD B — **Total opportunity NPV** in this clustered region

5.2 USD B — **Investment opportunity** required to transition

1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

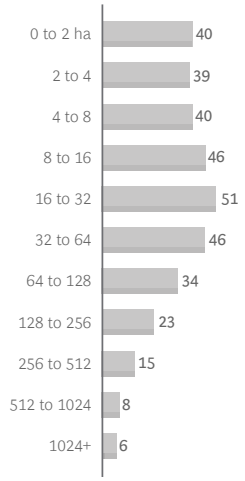
Total transition opportunity in Southeastern Cerrado
In millions of hectares



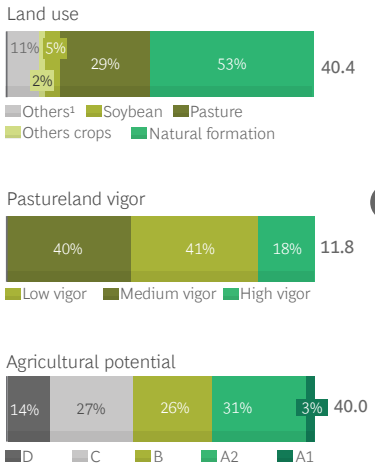
Note: Based on projected production to meet rising demand through 2050. Average regenerative business case based on the average transition business case for each landscape in each archetype. Cash needs account for CapEx, increased OpEx, and revenue impact during the transition.
Sources: MapBiomas; FAOStat; IBGE; EMBRAPA; BCG Analysis

SAVANNA MIDLANDS

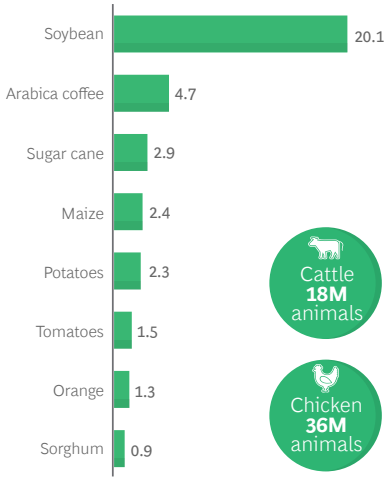
Property by size
in thousands



Land profile
in percentage and million hectares

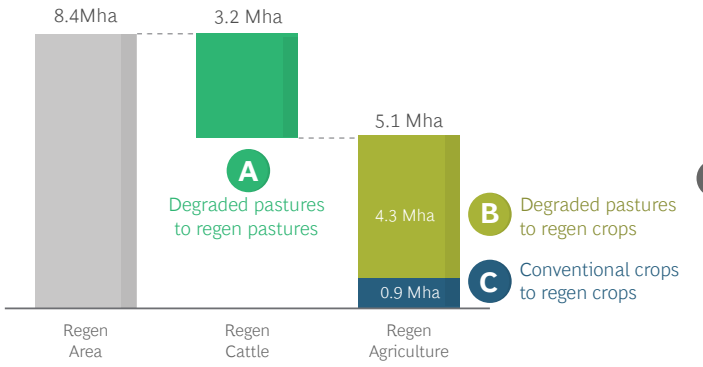


Main agricultural products by value
in BRL billion, 2023



Note: Agricultural production considers the total output of all municipalities with areas in the cluster; Agri Potential doesn't consider Bodies of water and Cities.
1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

Opportunity at stake to transition to regenerative systems
in million hectares

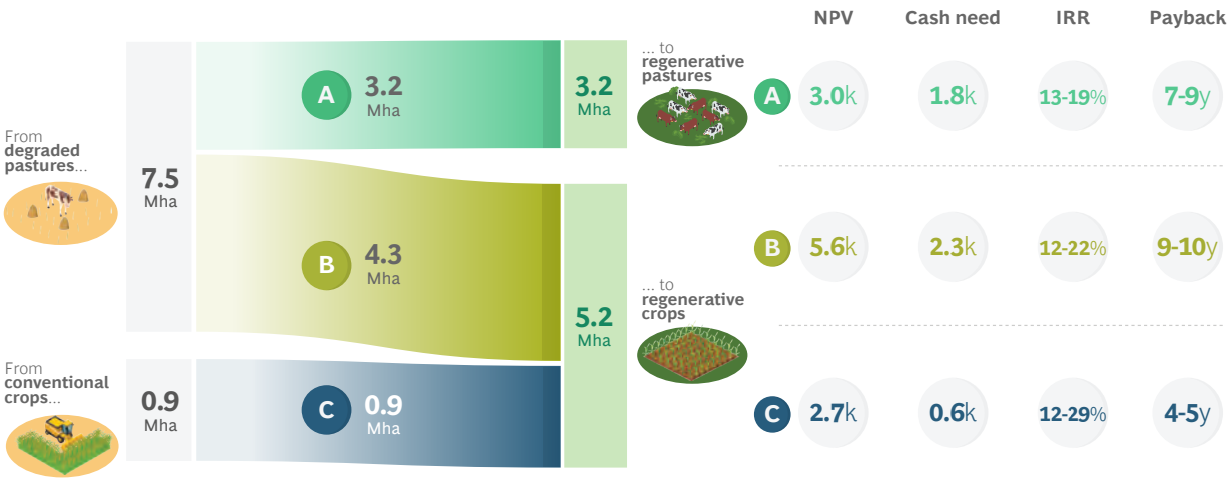


35.9 USD B — **Total opportunity NPV** in this clustered region

16.1 USD B — **Investment opportunity** required to transition

1. All other anthropic uses
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

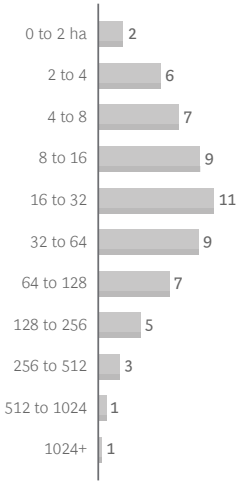
Total transition opportunity in Savanna Midlands
In millions of hectares



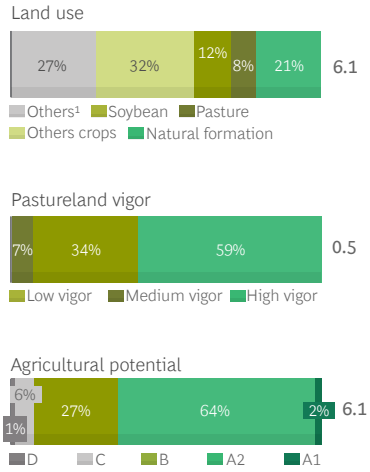
Note: Based on projected production to meet rising demand through 2050. Average regenerative business case based on the average transition business case for each landscape in each archetype. Cash needs account for CapEx, increased OpEx, and revenue impact during the transition.
Sources: MapBiomas; FAOStat; IBGE; EMBRAPA; BCG Analysis

CERRADO PAULISTA

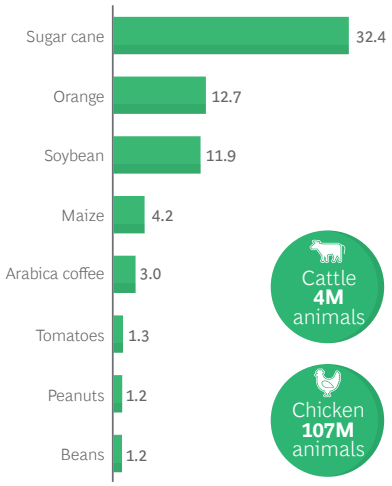
Property by size
in thousands



Land profile
in percentage and million hectares

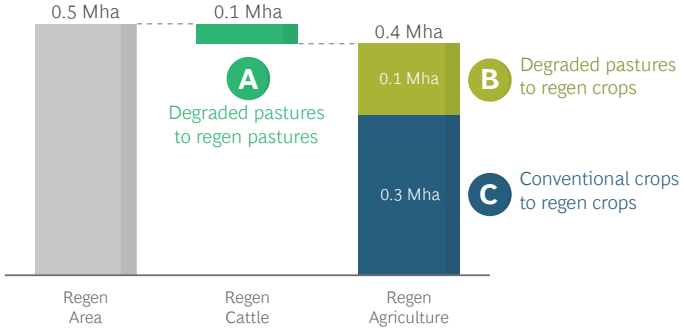


Main agricultural products by value
in BRL billion, 2023



Note: Agricultural production considers the total output of all municipalities with areas in the cluster; Agri Potential doesn't consider Bodies of water and Cities.
1. All other anthropic uses.
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

Opportunity at stake to transition to regenerative systems
in million hectares

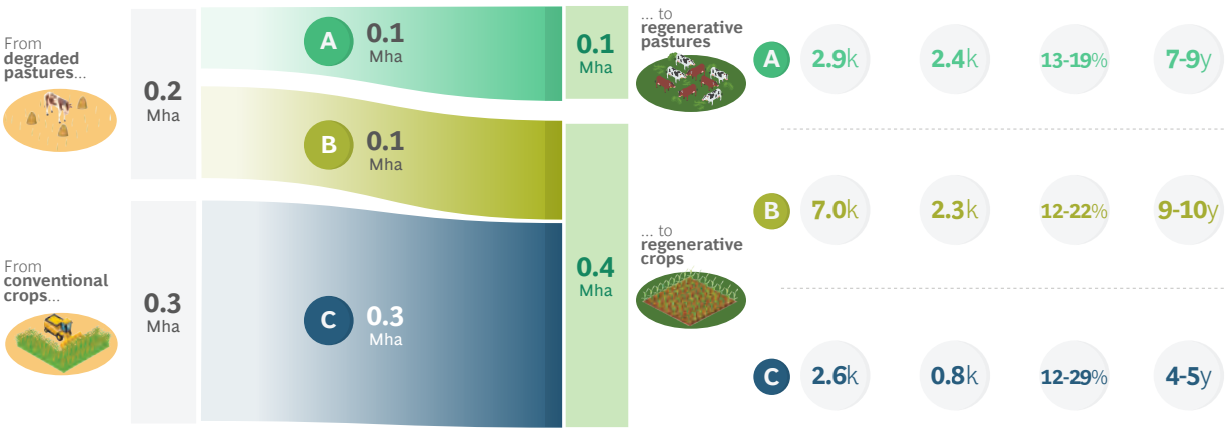


1.9 USD B
Total opportunity NPV
in this clustered region

0.7 USD B
Investment opportunity
required to transition

1. All other anthropic uses
Sources: IBGE; MapBiomas; SICAR; BCG Analysis

Total transition opportunity in Cerrado Paulista
In millions of hectares



	NPV	Cash Need	IRR	Payback
A	2.9k	2.4k	13-19%	7-9y
B	7.0k	2.3k	12-22%	9-10y
C	2.6k	0.8k	12-29%	4-5y

Note: Based on projected production to meet rising demand through 2050. Average regenerative business case based on the average transition business case for each landscape in each archetype. Cash needs account for CapEx, increased OpEx, and revenue impact during the transition.
Sources: MapBiomas; FAOStat; IBGE; EMBRAPA; BCG Analysis

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