

ENVIRONMENTAL

— FRAMEWORK —

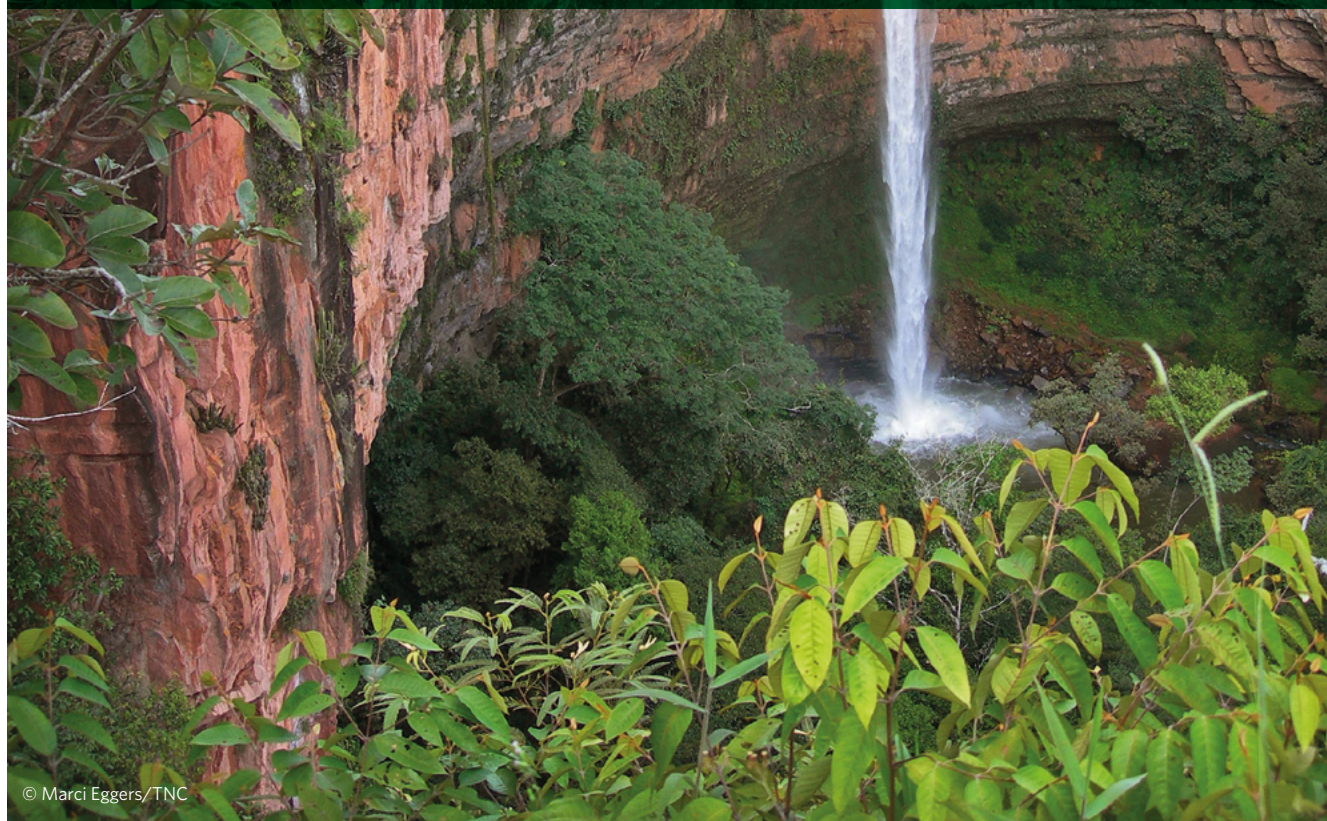
For Lending and Investing in Soy in the Cerrado

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1. Executive Summary



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Brazil is the largest producer and exporter of soybeans in the world. This valuable cash crop is produced throughout the country, but the most significant region for production is the Cerrado, which accounted for about half of Brazil's soy crop and 15 percent of global production in 2018/2019.

In addition to being one of the most important centers of food production in the world, the Cerrado is a critical region for storing carbon in its soils and native vegetation, providing water for Brazil's farms and people, and serving as home to about a third of Brazil's plant and animal life. The expansion of soy and cattle ranching has been the primary driver of habitat conversion in the Cerrado in recent decades, resulting in the loss of approximately half of the region's native vegetation.

To meet the world's growing demand for soy, it is estimated that soy cropland in the Cerrado will need to expand by 7.2 million hectares by 2030¹. The Nature Conservancy further estimates that this expansion will result in the clearing of 2.2 million hectares of native vegetation².

Currently, **the Cerrado has 18.5 million hectares of already cleared pastureland that is suitable for soy production. This represents more than double the total area needed to accommodate the projected soy expansion.** For producers, the financial returns of clearing versus expanding on pastureland are roughly equivalent³. There is also a significant, untapped potential to further increase productivity on soy farms by up to 25 percent simply by improving farming practices⁴. Consequently, it is possible to supply the growing global market for soy, while halting further conversion of native Cerrado vegetation.

1 CONAB (2019)
2 TNC (2019)
3 TNC (2019)
4 TNC (2019)



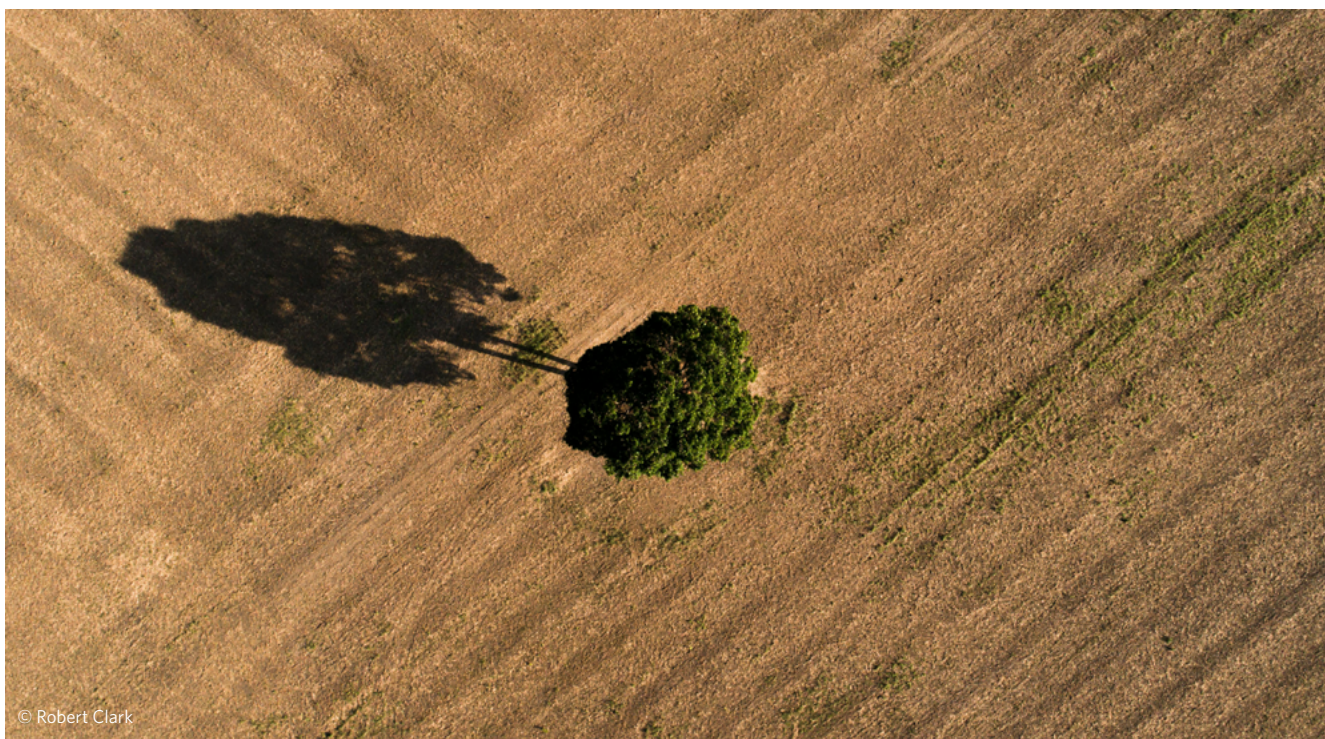
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“The financial sector can play an essential role in shifting the dynamics of soy production in the Cerrado.”

The financial sector, through credit lines and investment funds, can play an essential role in shifting the dynamics of soy production in the Cerrado. While there are large existing markets for annual crop finance in Brazil, longer-term loans are more limited. There is great potential for increasing long-term lending for producers who expand their production on pasture land, increase yields, adopt integrated crop-livestock systems, and are otherwise able to grow production without converting native vegetation. In recent years, several traders and banks have created lending programs to do this, including Bunge, Santander, Louis Dreyfus and Rabobank, and others are actively developing programs in this area. Existing products, such as annual crop finance and farmland investment funds can also be adapted to a deforestation- and conversion-free (DCF) approach.

As the pressure for deforestation-free supply chains grows both internationally and in Brazil, increasing the capital committed to DCF financial mechanisms can generate benefits for stakeholders across the soy value chain. Lenders and investors can gain reputational benefits and new business opportunities from better serving producers. Traders can create longer-term contractual relationships with farmers and improve access to markets with stricter environmental requirements. Producers can gain access to improved lending terms to expand their businesses and avoid reductions in yield losses attributed to the effects of regional deforestation⁵.

⁵ Avery S. Cohn et al. (2019)



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The Environmental Framework

“The Environmental Framework was created to guide lenders and investors in successfully expanding their environmental finance programs”

The Nature Conservancy’s Environmental Framework was created to guide lenders and investors in successfully expanding their environmental finance programs or adapting existing products to a DCF approach. It contains a consistent set of requirements and monitoring approaches that is effective in ensuring DCF production while also practical for producers and investors to implement.

The Environmental Framework is intended to support more rapid scaling of DCF mechanisms by lenders and investors seeking to promote the sustainable growth of soy production in the Cerrado, while also benefiting producers with practical, streamlined compliance requirements.

The Nature Conservancy developed the framework through extensive engagement of 120 knowledgeable individuals from nearly 40 institutions representing key stakeholders throughout the soy value chain, including traders, banks, producers, development finance institutions, academia and NGOs.



Core Requirements

The Environmental Framework requires lenders and investors to incorporate the following core environmental requirements in their financial instruments:

- **Legal compliance:** A producer must comply with the applicable laws and regulations on all properties it owns and operates, not just the farm being financed. These include valid land title and leases, compliance with the Forest Code, and specific labor and environmental regulations. The Framework offers a checklist of relevant documents and online registries to assess legal compliance.
- **Conversion-free reference date:** The framework sets January 2018 as the reference date from which there can be no additional deforestation or conversion during the period the farm receives DCF funding. The reference date represents a practical balance - ensuring that recent deforestation is not rewarded with better financing terms, while avoiding a more restrictive date that would limit the adoption by lenders and producers
- **Irrigation:** Any investments in irrigation systems must anticipate growing water stress in the Cerrado. The Environmental Framework allows financing for efficiency-improving modifications to existing irrigation systems, but prohibits installation of new irrigation systems in areas expected to experience water stress.

6 AP: all properties owned by the borrower

7 FP: financed property—property directly benefiting from loan/investment proceeds

Additional Elements

The Environmental Framework sets out five additional elements that lenders and investors can choose to incorporate into their DCF financial mechanisms to enhance conservation impact, but are not considered essential to achieve critical environmental results. This customization beyond the core requirements allows lenders and investors to manage their portfolios to meet even greater institutional ambitions for positive environmental impact or apply a more conservative approach to minimizing exposure to environmental risks.

The additional elements may be integrated as mandatory requirements of a lending or investment program or can be strongly encouraged through preferential access to the program for producers who will follow them, or through producer incentives such as lower interest rates or other more favorable financing terms. The additional elements include:

- **Cross-farm Applicability:** Applying the conversion-free reference date to all properties owned or operated by the borrower, not just the property being financed, is highly encouraged. While this requirement is difficult for many farmers to accept and is therefore not included in the core requirements, it is the most important of the additional elements for enhancing environmental impact and should be incorporated into DCF mechanisms whenever possible.
- **Spatial Prioritization:** DCF financial mechanisms can encourage investment and loan deployment in areas of the Cerrado where they can have the greatest impact in avoiding conversion of native vegetation. The guide includes a TNC list of “high conservation impact” municipalities and a tool to help users create their own prioritized list.
- **Good Practices:** DCF financial mechanisms can promote adoption of recognized management practices that improve environmental and social outcomes while reducing risk to the lender. Examples of good practices are contained in standards such as RTRS, Pro Terra and the standards established by trading companies.
- **Land Conflict:** In addition to the legal requirements governing land conflict (i.e. valid land title or a lease, and that no property overlaps with Conservation Units or Indigenous or Quilombola Lands), DCF financial mechanisms may screen for land conflict controversies, which can be monitored through the Pastoral Land Commission (CPT) database, ongoing legal procedures and media reports.
- **IFC⁸ Performance Standards (PS):** Many IFC PS components are already embedded in the Environmental Framework. Mandating full compliance with the IFC standards is at the discretion of the institutions designing the finance mechanism.

8 IFC Performance Standards, available at: https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards



Monitoring and Performance

The Framework offers guidance on monitoring the environmental requirements to assist lenders and investors in understanding capacity needs and adapting internal procedures to ensure producer compliance. The guidance outlines five steps (active origination, eligibility assessment, preparation for monitoring, annual monitoring and ongoing oversight) and includes suggested documentation and information needed for meeting each environmental requirement.

The Framework also provides specific metrics and practical measurement methodologies that lenders and investors can use to evaluate their portfolio's performance. These metrics include observable outcomes such as hectares of pasture converted to soy, as well as methodologies for estimating avoided habitat conversion and avoided carbon emissions.

The Environmental Framework includes two new public tools to assist in designing high-impact lending and investment programs and measuring results:

- The **TNC Dashboard** is a dynamic mapping tool that allows the user to review projected soy expansion dynamics to 2030, identify their own high-impact geographic priorities for lending and investing, and estimate a farm's exposure to certain environmental risks, such as projected water stress risk.
- The **TNC Carbon Benefit Calculator** estimates the avoided habitat conversion and avoided carbon dioxide emissions from expanding production on already cleared land.



A Final Note

There is a growing interest among a range of stakeholders to decouple future soy expansion in the Cerrado from deforestation and conversion of native vegetation. Emerging new lending and investment products that support producers in expanding on cleared lands and raising yields have the potential to play a key role in this transition.

The Environmental Framework offers a practical guide to help financial institutions design and implement these programs, and to finance the growing global market for soy while avoiding the conversion of an additional 2.2 million hectares of Cerrado habitat over the next decade.

Increasing Brazil's soy production without further habitat conversion will require expanding on already-cleared pasturelands. Most of these pastures are currently used for relatively low-productivity cattle ranching. Raising the productivity of cattle ranching in Brazil can free up pastures for soy expansion while also supporting a growing export demand for Brazilian beef. The Nature Conservancy is developing a complementary Environmental Framework to guide lenders and investors in financing the sustainable intensification of cattle ranching in the Brazilian Amazon and Cerrado.



2. Context and Purpose of the Environmental Framework



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Soy expansion, deforestation and conversion in the Cerrado

The Nature Conservancy's Environmental Framework for lending and investing in soy production in the Cerrado offers a path to update the underlying economics of producer business decision-making, such that **establishing new soy plantations on already cleared pastureland and improving yields becomes increasingly more attractive than clearing areas of natural habitat**. Protecting the Cerrado's innate natural assets while benefiting from its vast economic potential presents an opportunity for innovative financial products that promote sustainable growth of the Cerrado's soy sector and Brazil's economy.

Brazil dominates the rankings in global soy production and exports. The country exceeded U.S. production in the 2017/2018 harvest, ran a close second to the U.S. in 2018/2019, and was the world's largest producer in the 2019/2020 harvest, with national production reaching more than 133⁹ million tons. Brazil has also been the largest global exporter of soy in recent years.

Over half of Brazil's soy production¹⁰ is concentrated in the Cerrado, accounting for approximately **15 percent of global soy production**. As of 2019, Brazilian farmers had planted more than **36.95 million hectares (Mha)¹¹** of soy, **18.2 Mha¹²** of which were in the Cerrado.

The Cerrado is also the second largest biome in South America, covering nearly one-quarter of Brazil's surface area, and home to nearly one-third of Brazil's impressive biodiversity¹³. It is the most diverse tropical savanna in the world. Despite its predominantly shrublike vegetation, its vast root systems that run beneath the soil are often compared to a massive underground forest, with the capacity to store great quantities of carbon and water. The region encompasses the headwaters of eight watersheds and three large Brazilian aquifers that are essential to the economic activities of rural communities as well as several of the country's major metropolitan regions¹⁴.

Despite its ecological importance, a mere 8.2 percent of the Cerrado is currently protected under legally declared Conservation Units. Only about 55 percent of its natural cover remains intact¹⁵, compared

9 CONAB (2020)

10 Imaflora (2017)

11 Embrapa Soja

12 Agrosatellite

13 Klink & Machado (2005)

14 CEPF (2016).

15 INPE (2015)

with 84 percent of the Amazon biome¹⁶. This distinct contrast is explained in part by the Forest Code (Law 12.651/2012), which requires landowners to set aside Legal Reserves of 80 percent of properties located in the Amazon biome, 35 percent of the Cerrado that is located in the Legal Amazon¹⁷ and 20 percent for the rest of the Cerrado.

Additionally, market dynamics over the past two decades have driven an expanding footprint for soy in the Cerrado, with both legal and illegal clearing further reducing natural habitat. While this reality is evident in all three regions of the Cerrado, it is most chronic in the MATOPIBA¹⁸ region (Table 1), where 55 percent of the 2016/2017 soy production came from areas cleared since 1999.

Table 1 - Soy production areas (2016/2017 harvest) that were native vegetation in 1999 (Mha).

Cerrado region	Hectares under soy production in 2017 that were native vegetation in 1999 (Mha)	Share of areas converted between 1999 and 2017 in the region's total soy production area
MATOPIBA	2.24	55%
Mato Grosso	1.08	12%
Southeast Cerrado	0.33	4%
TOTAL	3.65	17%

Source: TNC with data from Agroicone - Incentives for Sustainable Soy in the Cerrado (2019)

Projections by the state-owned National Supply Company (*Companhia Nacional de Abastecimento*—CONAB) within the Ministry of Agriculture show soy production in Brazil is expected to grow by 32.9 percent between 2018/2019 and 2028/2029, with a corresponding 26.6 percent increase in planted area, bringing the total area of soy production in Brazil to approximately 45.3 million hectares.

If these trends hold, the Cerrado faces a significant threat of conversion in the next decade. By 2030, soy area in the Cerrado is estimated to increase by 7.2 Mha¹⁹, with more than 2.2 Mha of that expansion occurring on natural habitat (1.8 Mha in MATOPIBA and 0.4 Mha in MT, GO, DF, and MS)²⁰. The good news is that 5 Mha of this soy expansion is expected to take place on already cleared pastures, but the **challenge lies in influencing the trajectory of those remaining 2.2 Mha of projected expansion.**

16 MMA (2020)

17 Composed by the states of Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima and Tocantins and part of the state of Maranhão.

18 MATOPIBA is the acronym of the states of Maranhão (MA), Tocantins (TO), Piauí (PI) and Bahia (BA).

19 CONAB (2019)

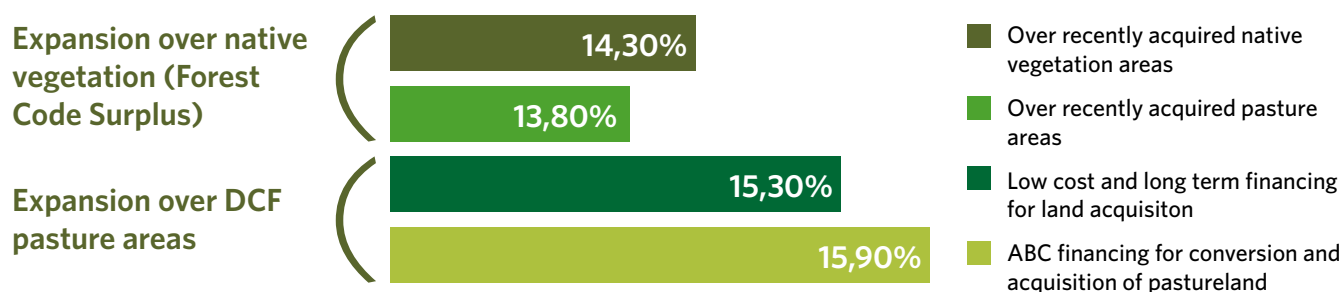
20 TNC (2019)

Meanwhile, The Nature Conservancy estimates that there are approximately 18.5 Mha of **already cleared pastureland suitable for soy** production in the Cerrado alone, **more than double** the entire 7.2 Mha area **needed to meet the projected soy expansion by 2030**.

Many of these identified suitable pastures are currently dedicated to low-productivity cattle ranching. A coordinated response by agribusinesses to repurpose pastureland to soy and intensify sustainable livestock production on the remaining pastureland has the potential to accommodate the entire expected soy expansion in the Cerrado, neutralizing the economic drivers of further conversion.

A 2019 analysis by TNC and Agroicone looking at the acquisition or rental of new properties in the MATOPIBA region shows that the choice between expanding plantations over pastureland versus clearing natural habitat has similar returns on investment for the producer. This indicates that emerging financial mechanisms, such as lower-cost and longer-term financing, could tip the scales in favor of expansion onto pastureland and help inspire a transition to a deforestation- and conversion-free (DCF) soy model in the region (Figure 1).

Figure 1 - Internal expansion return ratio by property type in the MATOPIBA²¹



The amount of capital needed for soy expansion over the next decade — estimated at more than R\$50 billion (~US\$9 billion)²² — is both a challenge and an opportunity for investors and lenders seeking to sustainably expand the sector.

²¹ TNC (2019)
²² Sitawi (2016)

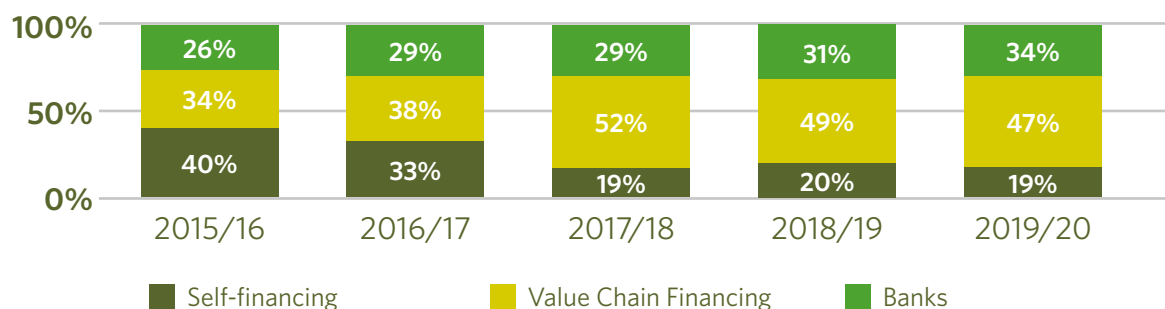
Financing and soy expansion dynamics

Historically, credit has played an important role in the development of key Brazilian agribusinesses and in the dynamics of land use for agriculture.

Examples include the sugarcane agroecological zoning (ZAE-Cana) program, in which the Brazilian Development Bank (*Banco Nacional De Desenvolvimento Econômico e Social—BNDES*) provided government-subsidized credit lines for sugarcane expansion requiring borrowers to comply with mandatory environmental guidelines²³. Likewise, the palm oil agroecological zoning (ZAE-Palma) program promotes sustainable land use for expanding palm oil production in the Legal Amazon through required environmental guidelines in the PRONAF-ECO credit line and subsidies²⁴. Lastly, the National Monetary Board (*Conselho Monetário Nacional—CMN*) passed CMN Resolution 3,545/2008, requiring banks to verify borrowers' legal and environmental compliance and paving the way for banks to require compliance with the new Forest Code (2012) to reduce financing of activities linked to illegal deforestation.

Like most commodities, soy expansion is highly influenced by financial mechanisms. Producers generally have access to three sources of financing: banks, companies in the soy value chain, or self-financing. Credit conditions on each of these sources vary depending on the use of proceeds, deal tenure, producer size and credit availability. Figure 2 - Distribution of financing sources for soy in Mato Grosso (for the past five crop years) shows the evolution of the three main sources for soy financing in the Mato Grosso region. Private lenders and investors also have a certain degree of influence on the Cerrado's soy production dynamics.

Figure 2 - Distribution of financing sources for soy in Mato Grosso (for the past five crop years)²⁵



²³ Challenges and Opportunities for Conservation, Agricultural Production and Social Inclusion in the Cerrado Biome (2016)

²⁴ The state of oil palm development in the Brazilian Amazon: Trends, value chain dynamics, and business models (2015)

²⁵ IMEA (2019)

The main soy financing categories available through financial institutions include equity investments, official rural credit lines (mainly offered by public banks) and rural credit lines with negotiable interest rates (mainly offered by private banks).

Banks usually require certain documentation from a potential borrower²⁶, such as valid property title showing land regularization, environmental licenses and valid registration in the Rural Environmental Registry (*Cadastro Ambiental Rural*—CAR). Official credit lines usually offer the lowest interest rates, varying between 1.75 percent and 10.5 percent per year, depending on the producer's size and intended use of proceeds²⁷.

Value chain finance, currently the predominant source of financing of soy production, usually comes from commodity trading or input companies in the form of annual crop finance for key production inputs—seed, fertilizer, etc. Few resources within this credit market are available for medium and long-term investments, such as land acquisition and/or land use transition from pasture to crops. These activities must often be self-financed by producers. The relative decrease in self-financing shown in Figure 2 is primarily explained by record harvests in recent years and the increased availability of third-party capital due to lower interest rates.

Beyond traditional financial instruments, traders and input manufacturers also use different types of contracts with producers to support the annual production cycle, such as²⁸:

- **Sales at “harvest term”:** inputs (e.g., seed, fertilizer, and crop protection products) are purchased and delivered at the beginning of the planting season with payment due after a crop is harvested and sold. Probability of repayment and producer loyalty are both high in this program.
- **Purchase guarantees and prepayment:** Buyers contract with a producer to acquire their future crop, a model that often includes periodic disbursements to the producer during the growing season. Prepayment contracts minimize the producers' exposure to price volatility and support operational stability.
- **Barter:** A contract in which the producer acquires inputs before planting with no financial exchange between parties, then delivers raw agricultural goods to the input manufacturer after the harvest. The input manufacturer then sells the raw product as payment for the inputs, playing an informal role as a commodity trader.

26 CMN Resolution 3,545/2008

27 Brazilian Central Bank

28 IPAM (2020)

When compared to more traditional loan products offered by financial institutions, these contracts are generally more lenient in their requirements, particularly in environmental provisions and demands for documentation. Their standardization reduces bureaucracy and simplifies negotiation processes, leading to quick closing of financing deals between producers and value chain actors.

In addition to these existing short-term financial products, there is growing interest among banks, value chain actors and farmers in longer-term lending products to finance yield improvement measures and expansion activities, given the longer-term payback on these investments. Such products can be designed to explicitly promote DCF production, with the appropriate environmental requirements and lending terms.

Table 2 - Potential uses of proceeds of DCF financial mechanisms for soy production

	Uses	Terms		
		Short (≤ 1 year)	Medium (2-5 years)	Long (> 5 years)
Crop finance	Seed purchase	x		
	Fertilizers acquisition	x		
	Labor	x		
Yield improvement	Machinery acquisition		x	X
	Technology		x	X
	Soil preparation		x	X
	Nitrogen fixation		x	X
Long-term expansion	Land acquisition			X
	Pasture transition to crops			X
Examples of financial instruments - detailed on table 3		Annual crop loans Receivables securitization (CRA)	Loans for improved practices and input use to increase yields (e.g., Rabobank example)	Loans for land acquisition and/or transitioning pastureland to soy (e.g., Bunge/Stander and LDC examples)

In addition to the traditional capital sources of banks, traders and input companies, concessional capital (usually sourced from public, philanthropic or development finance institutions) can catalyze and leverage investments from the private sector to promote sustainable economic development. Concessional capital offers more favorable financing terms, such as below-market interest rates, longer repayment terms, longer grace periods and customized amortization schedules.

When concessional capital is combined with traditional funding, “blended finance” mechanisms are created. As its use is linked to promoting development, access to blended finance mechanisms is commonly paired with social and environmental requirements, and it may also include technical assistance support for farmers. Several concessional capital groups are currently working to catalyze greater lending and investment in sustainable soy production in Brazil, including The &Green Fund, The Agri3 Fund, The Dutch Development Bank (FMO) and the Inter-American Development Bank (IDB).

In recent years, several traders and banks have created DCF lending programs, and others are actively developing programs in this area. Table 3 summarizes the status of these programs.

While the diverse range of existing mechanisms for DCF agricultural production in Table 3 includes different environmental requirements for producers, Table 4 presents how environmental provisions have been incorporated into each initiative.

Table 4, which also reflects our interviews with implementing organizations, demonstrates that there is a convergence among current mechanisms with respect to the need for legal compliance and a reference date for zero conversion. Irrigation in areas with predicted water stress also emerged as a relevant minimum core requirement for DCF financial instruments in our conversations with stakeholders.

In parallel with these core requirements, some financial mechanisms require compliance with additional elements, such as the adoption of good agricultural practices, spatial prioritization to increase conservation in areas of greatest need, further limitations on financing irrigation, compliance with IFC Performance Standards, and expanding the scope of environmental requirements to all properties owned or operated by a producer. These additional requirements will be discussed in further detail in the next section.

A key goal of this Environmental Framework is to harmonize the environmental requirements used in various types of financial products to make it easier for lenders and investors to develop new

Table 3 – Benchmark of existing private DCF financial mechanisms for agricultural production in Brazil

Product name and responsible organizations	Description	Crop finance	Yield improvements	Long term (3 to 10 years)		Equity investments
		(<1 year)		Acquisition	Transition	
Long term financing Bunge, Santander and TNC	<ul style="list-style-type: none"> •Catalyze the conversion of pastures to soy areas through loans for the acquisition of new lands (7-10 years) and/or investment needs to increase yields in current or leased properties (3-7 years); •US\$50M committed with expectations to expand to US\$200M; •Actively seeking borrowers. 		√	√	√	
Program of long-term loans Louis Dreyfus, WWF	<ul style="list-style-type: none"> • Catalyze the conversion of pastures to soy areas through loans for investment needs in current properties (3-7 years). Acquisition of new lands not included; •First loan disbursed in Q3 of 2019. 		√		√	
Green CRA (Agribusiness Receivables Certificates) WWF and companies, partner banks	<ul style="list-style-type: none"> •Guarantees' securitization of deliveries backed by owner's assets; requires compliance with environmental terms including DCF production; •Seeking partner companies and banks. 	√				
Irupé Creditech Vision Brazil Investment and Pawa Finance	<ul style="list-style-type: none"> •Loans with discounted interest rates tied to achievement of measurable forest conservation goals; •Long term objective of USD 1B in loans 	√				
Reverte Syngenta	<ul style="list-style-type: none"> •Finances producer investments in sustainable practices, primarily focusing on restoring degraded pastures for crop expansion; •Promotes increased productivity in the short term to improve ROI (return over investment) through production practices that inhibit land and soil degradation. 	√	√	√	√	
Responsible Commodity Facility BVRio-SIM	<ul style="list-style-type: none"> • Offers financing at competitive cost for DCF production and/or restoration of Legal Reserves²⁹ ; •R\$ 200 Million available; •Seeking transaction partners. 	√				

*Norway's International Climate and Forest Initiative

** UNEP = United Nations Environment Programme

29 Average costs and terms of public rural credit lines' financing are of 8-10% and 10 months, with private alternatives commonly being more expensive and offering a shorter term (IMEA, 2019).

Table 3 – Benchmark of existing private DCF financial mechanisms for agricultural production in Brazil

Product name and responsible organizations	Description	Crop finance	Yield improvements	Long term (3 to 10 years)		Equity investments
		(<1 year)		Acquisition	Transition	
Agri3 Fund RaboBank. UNEP*, IDH	<ul style="list-style-type: none"> •Global fund to support design and deployment of financial products fostering forest conservation, restoration and/or sustainable agriculture; •Initial focus on South American and Asian countries; •US\$1B available, with approximately US\$200 Million in concessional capital; •Two transactions with individual clients in Brazil in 2019 – US\$12M for a sugar power plant and for productivity improvement on a soy farm; •Seeks to raise more concessional capital. 	√	√		√	
&Green IDH, NICFI**, Unilever	<ul style="list-style-type: none"> •Global fund offering risk reduction (first loss) mechanisms to companies and banks for investments in agricultural production that support tropical forest protection or restoration; •US\$125 M in hand of the expected US\$400 M to be capitalized; •Eligibility limited to operations in Mato Grosso and Pará states Brazil. 	√	√	√		√
Land Development Fund Confidential asset manager	<ul style="list-style-type: none"> •Acquisition and sustainable management of farms totaling 20,000 hectares and zero deforestation and conversion after 2008; •Finalizing the fund’s design and actively prospecting investors and suitable properties. 					√

Table 4 - Analysis of environmental requirements in existing private DCF mechanisms in Brazil

	Legal compliance				Defined reference date for zero conversion	Explicitly addresses irrigation practices?	Requires good agricultural practices i.e. RTRS, Pro-S, Proterra, FEAC, 3S or ISCC	Spatial prioritization (beyond restriction to a biome or state)	Requirements applicable to all properties owned/operated by the borrower/investee	IFC Performance Standards
	Valid land titles and leases	No slavery	Compliance with Forest Code ³⁰	No IBAMA embargoes						
Long term financing Bunge, Santander and TNC	√	√	√	√	√		√	√	Preferred but not required	
Program of long-term loans (Trading) Louis Dreyfus, WWF	√	√	√	√	√	√	√		√	
Green CRA (Agribusiness Receivables Certificates) WWF and companies, partner banks	√	√	√	√	√					
Responsible Commodity Facility BVRio-SIM	√	√	√	√	√					
Agri3 Fund RaboBank, IDH. Open to all banks	√	√	√	√	Date defined for each loan					Compliance by the end of the operation
&Green IDH, NICFI and Unilever	√	√	√	√	Date defined for each loan					√
Land Development Fund Confidential asset manager	√	√	√	√	√	√				
Irupé Creditech Vision Brazil and Pawa	√	√	√	√						
Reverte Syngenta, TNC	√	√	√	√	√	√	√			

30 Compliance to Forest Code: either to become eligible or at the end of the operation

products and adapt existing products to foster DCF soy expansion. This approach is also beneficial to producers, as it streamlines the process for producers to comply with DCF requirements, especially when evaluating and/or accessing more than one source of credit.

The Environmental Framework was created to guide lenders and investors in successfully expanding their environmental finance programs or adapting existing products to a DCF approach. It contains a consistent set of requirements and monitoring approaches that is effective in ensuring DCF production, and it is also practical for producers and investors to implement.

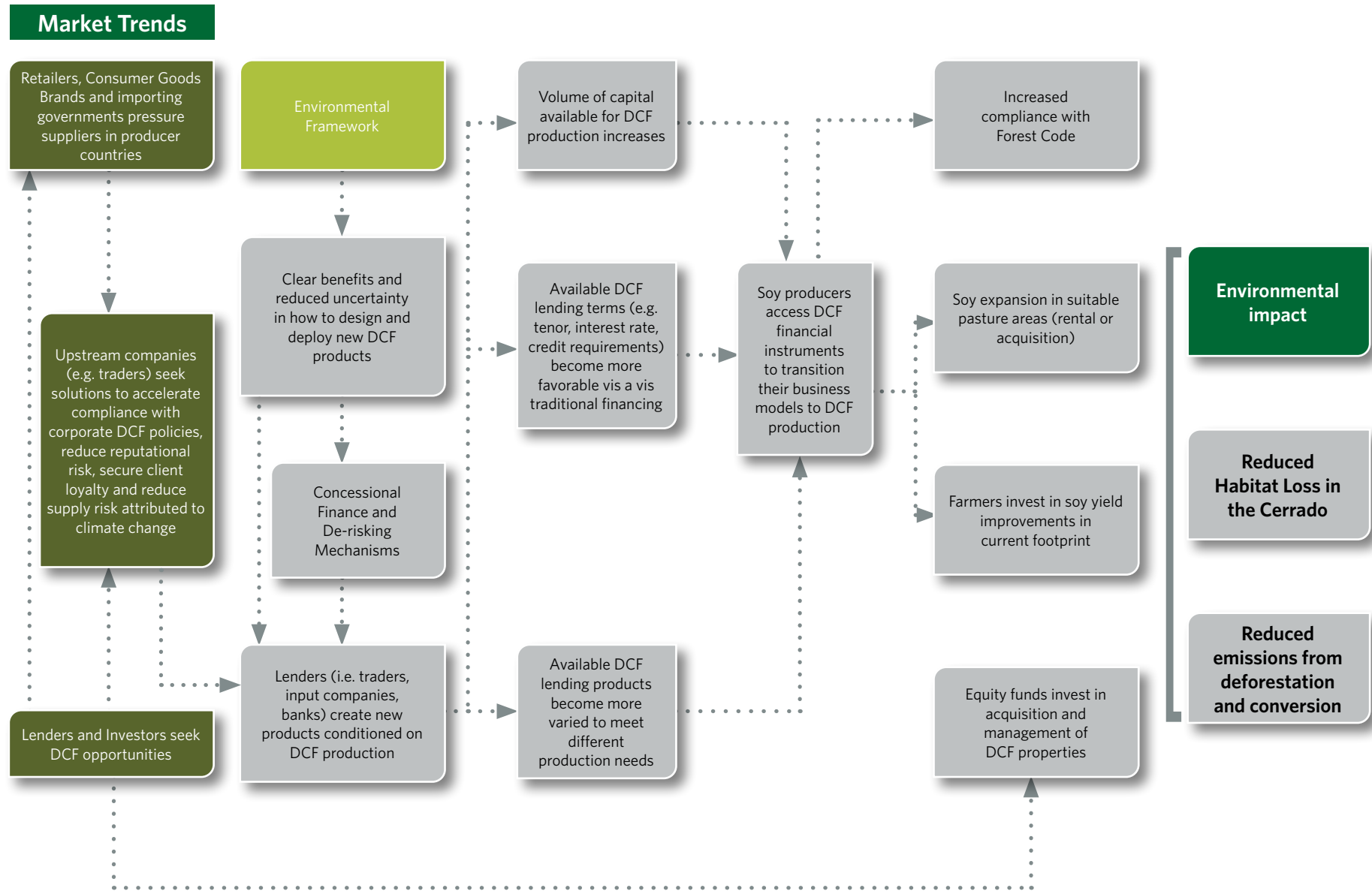
The Environmental Framework is intended to support more rapid scaling of DCF mechanisms by lenders and investors, and ultimately to contribute to a substantial reduction of habitat loss and carbon emissions in the Cerrado, as depicted in the theory of change in Figure 3.

The Nature Conservancy developed the framework through extensive engagement of 120 knowledgeable individuals from nearly 40 institutions representing key stakeholders throughout the soy value chain, including traders, banks, producers, development finance institutions, academia and NGOs.

Table 5 - Benefits of DCF financial mechanisms for the soy supply chain

Environmental Framework’s Benefits for different actors		
Soy Producers	Supply Chain Companies	Investors and Lenders
<p>Better capital conditions for expanding production with manageable environmental requirements.</p> <p>Long-term access to markets requiring progressively more-demanding environmental requirements for DCF soy.</p> <p>Reduction in productivity loss with reduced regional habitat conversion.</p> <p>Productivity gains through good agricultural and environmental management practices.</p> <p>Consistency across financial products reduces complexity in the search for financing.</p>	<p>Accelerates implementation of deforestation-free commitments and creates reputational benefits.</p> <p>Strengthens relationships with producers, including through long-term contracts.</p> <p>Enhances relationship with downstream customers who are increasingly requiring DCF soy</p> <p>Access to concessional capital, which accepts higher risk and/or lower returns to generate positive impact</p> <p>Opportunity to expand finance business</p>	<p>Access to new funding sources, such as concessional capital from de-risking funds and Developmental Financial Institutions</p> <p>New business opportunities</p> <p>Launch of new DCF financial products</p> <p>Access to new markets</p> <p>Reputational benefits linked to promoting conservation in the Cerrado</p> <p>Consistent approach to environmental requirements and monitoring</p> <p>Credible action in the “green finance” agenda</p>

Figure 3 - Theory of Change of the Environmental Framework



The role of finance in conserving the Cerrado

DCF financial products that incorporate the Environmental Framework's recommendations offer benefits to stakeholders throughout the Cerrado's soy value chain as outlined in Table 5.

Relationship to the Accountability Framework Initiative

In 2019, the Accountability Framework Initiative³¹ (AFI) released a set of common global standards and guidelines to establish, implement and demonstrate progress on ethical commitments made by supply chains in the agricultural and forestry sectors. Anchored on a set of Fundamental Principles and strengthened by a set of common definitions and terms, the AFI guides companies as they define and execute their zero-conversion commitments using accepted and appropriate terminology, and it provides detailed guidance for putting these measures into practice. The AFI is a response to continued corporate requests for clarity on supply chain expectations and calibration and alignment of their many corporate zero-deforestation commitments.

The Environmental Framework (EF) for financing DCF soy in the Cerrado was inspired in part by the AFI's multi-stakeholder consultation process and its subsequent success. In much the same way, the EF seeks to provide clear guidance to lenders and investors as they define the parameters for creating new DCF products. Access to this guidance early on provides a design roadmap and clears the way for expedited financial product development that meets appropriate environmental standards. Importantly, the EF also applies definitions and terminology used in the AFI, namely:

- Conversion: The change of a natural ecosystem to another land use (legal or not) or a profound change in a natural ecosystem's species composition, structure, or function
- Deforestation: Loss of natural forest (legal or not) as a result of (i) conversion to agriculture or other non-forest land use; (ii) conversion to tree plantations; or (iii) severe and sustained degradation

³¹ <https://accountability-framework.org/>

In addition to fostering deforestation- and conversion-free production, the Environmental Framework also supports AFI's call for a legal (including land and human rights) and low carbon global supply chain, by mandating Legal Compliance across all properties as a core requirement for financing, and providing an avoided emissions calculator to support decision-making based on modeled quantifiable effects of DCF finance mechanisms.

For those familiar with the global reach and universal commodity application of the Accountability Framework, this Environmental Framework for financing DCF soy in the Cerrado is comparable to and compatible with the AFI's detailed regional Operational Guidance, but it targets lenders and investors specifically as they develop new or adapt existing products that foster DCF soy production in the Cerrado.



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3. Environmental Requirements



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3. Environmental Requirements

The Environmental Framework includes two levels of recommendations for designing financial mechanisms to support expansion of DCF soy production in the Cerrado:

- **Core environmental requirements** that must be included for a financial mechanism to make credible claims that it is environmentally sound and fosters DCF soy production; and
- **Additional elements** whose incorporation, while optional, bring increased conservation benefits. The additional elements offer lenders and investors specific add-on options to manage their portfolios to meet even greater institutional ambitions for positive environmental impact and to apply a more conservative approach to minimizing exposure to environmental risks.

The environmental requirements laid out between the core and additional elements do not constitute an exhaustive list of potentially applicable requirements; rather, they include those that can most meaningfully contribute to a halt in habitat conversion associated with soy production.

3.1 Core environmental requirements

The three core requirements—legal compliance, conversion-free reference date, and irrigation restrictions—are described below, and Annex A provides a list of recommended documents that can be used to verify and monitor these requirements.

3.1.1 Legal compliance

Legal compliance on all properties owned or operated by a borrower/investee is a core requirement for eligibility for DCF financing. Legal compliance includes, but is not limited to:

- **Possession of valid land title or lease:** Land grabbing and land tenure ambiguities are not uncommon in the Cerrado and may take years of court proceedings to reach a final outcome. Requiring legal documentation not only provides initial evidence that a borrower has a legal right to occupy and operate on the land, but it also may be needed for a borrower to provide collateral for a loan.
- **Consolidated labor laws:** Forced labor is still significant in Brazil, mainly in rural areas. The Ministry of Labor periodically publishes a “Labor Dirty List” (*Cadastro de Empregadores—“Lista Suja”*) of businesses that use forced labor in their production or value chains. Lenders and investors should consult both this list and other pertinent employer registries to evaluate compliance with labor laws.

- **Forest Code:** Brazil's Forest Code defines minimum areas for natural habitat preservation on all rural properties, according to their biome and conservation value. Provisions of the Forest Code are designed to maintain ecological balance, climate conditions and soil stability for long-term productivity. The elements below reference compliance with the Forest Code.
- **Rural Environmental Registry (*Cadastro Ambiental Rural—CAR*):** Producers should present the best available CAR data for their properties. Self-declared registrations are only acceptable where verified CAR is not available.
- **No illegal deforestation:** In addition to maintaining Permanent Preservation Areas, Legal Reserves, and other legally restricted areas intact, all vegetation clearance on a property occurring after July 2008 must have been previously authorized through official government-issued permits.
- **Noncompliance:** Noncompliant producers should not be immediately deemed ineligible for DCF financial mechanisms. In fact, the Environmental Framework encourages some use of proceeds to support efforts to become Forest Code compliant through a state's Environmental Compliance Program (*Programa de Regularização Ambiental—PRA*), given the positive environmental impact of moving toward compliance. These requirements must be fulfilled within a specified timeframe agreed on by the farmer and lender/investor prior to the end of the loan or investment term, and progress milestones should be incorporated into the loan agreement language. Appropriate milestones can be derived from a producer's submitted and approved Degraded or Altered Areas Recovery Project (*Projeto de Recuperação de Áreas Degradadas ou Alteradas—PRADA*). Environmental impact will be especially positive if a producer agrees to accelerate its PRADA implementation and if this accelerated plan is incorporated into the loan/investment nonfinancial covenants.
- **Water-use rights:** For properties with installed irrigation systems or with plans to install irrigation during the term of the DCF financial mechanism, producers must obtain proper permits and authorizations for groundwater use. These permits are granted by the National Water Agency (*Agência Nacional de Aguas—ANA*) in cases where a watershed extends across state boundaries, and/or from the respective state water resource authorities when the watershed is contained within a single state.
- **IBAMA embargoes:** The Brazilian Institute for the Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis—IBAMA*) publishes a list of embargoed areas and companies associated with such areas, as well as companies that have been embargoed or are

facing environmental proceedings due to illegal deforestation and other legal violations. Entities that subsequently finance, transport or commercialize products originating from these embargoed areas or companies may be held co-responsible for any illegal activities, resulting in fines and sanctions. Properties owned and operated by the farmer should generally not be subject to IBAMA embargoes; however, some amount of flexibility may be merited in cases of infractions on relatively small parcels (i.e., for machinery maneuvering) in which the borrower can demonstrate that they are in the process of being resolved.

- **ICMBio embargoes:** The Chico Mendes Institute for Biodiversity Conservation (*Instituto Chico Mendes de Conservação da Biodiversidade—ICMBio*) periodically publishes a list of embargoed properties and individuals who have caused degradation to nearby legally protected Conservation Units (*Unidades de Conservação—UCs*). In cases where the target property is within 10 km of a protected area, financial institutions and investors should verify that the property or producer has not been embargoed by ICMBio.

Legal compliance verification is an important step in guaranteeing that producers conserve and/or restore at least the minimum amount of vegetation on their properties as required under Brazilian legislation. It also minimizes exposure of lenders and investors to unforeseen expenses and reputational damages associated with fines and sanctions to which the borrower or investee may be subject in case of noncompliance.



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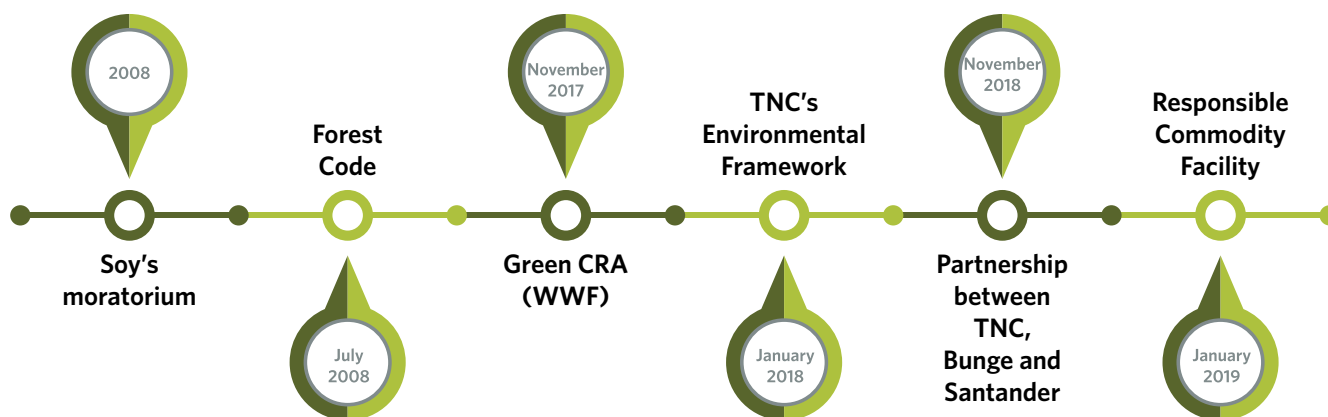
3.1.2 Conversion-free reference date

A clear reference date for conversion is one of the core requirements of the Environmental Framework. The reference date determines the **period beyond which no additional deforestation or conversion is allowed on a property benefiting from a financial mechanism. This requirement is central to the idea that financial mechanisms can be deployed to catalyze growth in the soy sector with no further loss of vegetation** in the Cerrado. The definitions used for deforestation and conversion of natural vegetation in the Cerrado should follow the AFi definitions³² of:

- Conversion: The change of a natural ecosystem to another land use (legal or not) or a profound change in a natural ecosystem's species composition, structure or function.
- Deforestation: Loss of natural forest (legal or not) as a result of (i) conversion to agriculture or other non-forest land use; (ii) conversion to tree plantations; or (iii) severe and sustained degradation.

Other initiatives have determined different reference dates, as indicated in the timeline in Figure 4. Most initiatives have set their reference date to coincide with the launch of their programs to ensure that all producers are initially compliant.

Figure 4 - Reference date of no-conversion on different initiatives:



³² As available at Accountability Framework website, <https://accountability-framework.org/the-framework/contents/definitions/>

The Environmental Framework establishes a zero-conversion reference date of January 2018 for the entire property, not only the area under soy production. The date was determined based on the following considerations:

- a. **Timing:** Identifying a date prior to the Framework's release, as opposed to in the near future, eliminates a window of opportunity for landholders to deforest or convert areas before the requirements take effect. Ideally, the reference date would precede the initiative's launch by four to five years to fully account for the well-documented time lag³³ between initial clearing—often conducted speculatively in response to expected growth in future demand—and the establishment of soy plantations. However, earlier dates could limit producer demand for financial resources conditioned to DCF requirements. January 2018 is recent enough that it avoids rewarding business-as-usual clearing while not excluding most producers and available open lands for eligibility under the Environmental Framework.
- b. **Feasibility of monitoring:** While recent technological advances allow for monitoring on any day of the year, January is an ideal reference month to reduce uncertainty about when conversion occurred. The November to February window is the rainy season in the Cerrado, in which clearing generally does not occur. While applying a January reference date also increases the probability of dense cloud cover in satellite images, it effectively causes monitoring systems to use the most recent clear image of the land available, avoiding disputes about when a parcel was converted.
- c. **Alignment with private sector commitments:** There are currently more than 64³⁴ corporate commitments to zero deforestation soy, many of which were made through the New York Declaration on Forests that called for elimination of deforestation from supply chains by 2020. A reference date of 2018 demonstrates continued commitment to achieving this goal as soon as possible, supported by financial mechanisms that foster growth and offer feasible solutions aligned with the supply chain's original ambition levels. It sends a clear signal that the financial market chooses to enable and accelerate the continued viable expansion of soy production onto previously cleared areas, without rewarding clearance attributed to land speculation. Evidence from international and institutional investors in 2020 also indicates a growing global preoccupation with deforestation in Brazil from farming activities³⁵. A January 2018 reference date, therefore,

33 Two examples are OSORIO, Raissa Macedo Lacerda. A produção de soja no oeste do Pará: a tomada de decisão do produtor rural e as características da atividade produtiva em meio à floresta amazônica, 2018; and: Gibbs, H. K., Rausch, L., Munger, Schelly, I., Morton, D. C., Noojipady, Walker, N. F. (2015³). Brazil's Soy Moratorium. *Science*, 347, 377-378.

34 <https://www.supply-change.org/commodity/soy>

35 Global investors demand to meet Brazil diplomats over deforestation

offers assurance to lenders and investors that any deforestation/ conversion in the target property occurred prior to the recent demonstrated increase in investor advocacy for deforestation- and conversion-free production.

3.1.3 Irrigation

Climate change is expected to intensify drought periods in the Cerrado, making them longer and more frequent, exacerbating water scarcity and increasing the risk of crop failure. Currently, 26 million hectares (Mha) in the Cerrado are under severe water stress, of which 4 Mha, or about 15 percent, are soy production areas. Some regions with irrigated soy production are already under critical water stress, a scenario that may be aggravated by expansion of irrigated soy production³⁶.

Brazilian law mandates that producers using irrigation systems obtain a permit from the National Water Agency (*Agência Nacional de Águas—ANA*) and/or the respective state water management agencies.

The Environmental Framework stipulates that any new investments in irrigation on a target property for DCF financial mechanisms must be deemed water efficient according to the Brazilian National Water Agency³⁷. The framework allows for financing of efficiency-improving modifications to existing irrigation systems but prohibits installation of new irrigation systems in areas expected to experience high water stress. Any new irrigation systems should be limited to properties located in regions with low or medium water scarcity. These stipulations compose the core requirement regardless of whether the new irrigation system or modifications will be financed by the DCF mechanism proceeds or other sources. Where irrigation is used, efficient systems may promote productivity gains, reduce water costs, and avoid excessive consumption of limited water resources in stress-prone regions.

As part of the Environmental Framework, The Nature Conservancy launched a dynamic tool to evaluate a target property's potential exposure to water-stress risk using data from both TNC and Brazil's National Water Agency (ANA). **TNC's Dashboard** shows vulnerability to water stress based on the gap between current water availability and irrigation withdrawals as well as the expected demand for water given projected soy expansion in a given municipality by 2030. It also provides a geographical analysis of Brazilian areas with central

³⁶ ANA (2020)

³⁷ Atlas irrigação: uso da água na agricultura irrigada / Agência Nacional de Águas. -- Brasília: ANA, 2017. Available at <https://arquivos.ana.gov.br/imprensa/publicacoes/AtlasIrigacao-UsodaAguanaAgricaturalIrigada.pdf>

Table 6 – Irrigation restrictions in the Environmental Framework:

Use of resources* for irrigation systems	Property exposure to water stress risks		
	Low	Medium	High
Efficiency upgrades to existing systems	Recommended	Recommended	Mandatory
New installations of water efficient systems	Eligible	Eligible	Ineligible

*resources include all sources of financing and is not limited to DCF mechanism proceeds

pivot irrigation systems in 2017, according to the National Water Agency³⁸. The Dashboard is a user-friendly reference tool to assess water risk in target properties for DCF financial mechanisms.

Please see Annex A for a list of recommended documents to verify and monitor adherence to the Core Requirements of the Environmental Framework—legal compliance, conversion-free reference date and irrigation restrictions.

3.2 Additional Environmental Elements

In addition to the core requirements listed above, the Environmental Framework shares five additional elements that lenders and investors can choose to incorporate into their DCF financial mechanisms to enhance conservation impact.

The additional elements, in any combination, may be integrated as mandatory requirements of a lending or investment program, or they can be encouraged through various incentives such as the following:

- **Preferential access:** Candidates who comply with these elements may receive prioritized access to DCF financial mechanisms.
- **Interest rates and fees:** Borrowing costs may be lowered when additional elements are met. This benefit may be offered upfront or through a reward system over the term of the loan, with a discount on interest rates and fees applied according to previously defined conditions.
- **Longer terms:** Offering an extended loan term can serve as a reward to producers for meeting additional environmental elements, either reflected within the initial terms of negotiation or as achieved during the mechanism's tenure.
- **Flexible repayment:** Grace periods, favorable amortization schedules and other attractive repayment terms can be applied when producers comply with additional elements.

Traders, input providers and producers are already familiar with benefit programs such as better input prices, better prices on barter contracts, premium prices on grain acquisitions, preference in logistics agreements, guarantees of production acquisition and technical assistance to instill good agricultural practices. Anecdotal evidence suggests that even creative incentives such as rewards programs and expenses-paid travel can play an important role in producer motivations to go beyond core environmental requirements. Lenders and investors, working with other actors of the value chain, can consider deploying supplemental benefit programs that are not directly associated with the financial terms of mechanism, to trigger increased producer ambition to go beyond the core environmental requirements.

The following sections present more details on each of the additional elements, including their relevance to DCF financial mechanisms and ways to integrate them into lending and investment programs.

3.2.1 Cross-farm applicability

Applying the conversion-free reference date to all farms owned and operated by the borrower can significantly enhance the environmental impact of a DCF lending program. This covers a broader number of hectares under the requirement and reduces the risk that farmers will commit to DCF on one property while continuing to convert natural habitat in other operations.

The additional compliance and monitoring efforts that cross-farm applicability entails are expected to be modest as the core legality provisions are already required across all farms, and the additional effort to monitor for habit conversion should not be substantial.

However, based on stakeholder feedback during the consultation process, mandating cross-farm applicability for the DCF reference date would, at this time, likely severely limit producer interest in the DCF financial mechanisms, unless they were coupled with significantly better financing conditions. This dynamic may change in the future as financing for DCF soy production becomes more mainstream, in keeping with evolving market demands.

Extending the conversion-free reference date to other properties owned/operated by the producer/group is the most important of the five additional elements recommended to secure and increase positive environmental impact. Lenders and investors should incorporate this provision with the appropriate farmer incentives wherever possible.

3.2.2 Good practices

Good Practices (GP) are a set of principles, norms and technical recommendations related to the production, processing and transportation of inputs and products that seek to manage the main environmental and social (E&S) risks of each operational phase of agricultural production. There are existing standards that address this, such as RTRS, Pro Terra and proprietary standards established by trading companies. The Nature Conservancy has published guidance on Good Agricultural Practices and Water Management to help producers implement best practices, with additional recommendations available in the pocket guide for the rural producer³⁹.

Adopting GPs demonstrates a producer's commitment to protecting the environment and well-being of workers involved in agricultural production while mitigating a producer's exposure to significant E&S business risks. Such risks include deforestation/conversion of natural habitats in agricultural lands with biodiversity impacts; disturbance of preserved or protected areas; greenhouse gas emissions from burning and changes in land use; land tenure and land conflicts; violations of indigenous and Quilombola communities' rights; poor working conditions; soil erosion; deforestation; and surface and groundwater pollution.

Certifications or other evidence of Good Practices may reduce typical environmental risks associated with soy production and strengthen a producer's internal governance practices. It also serves as a useful proxy for gauging compliance with local regulations, especially those that cannot be verified remotely and require site visits, such as employee working conditions.

³⁹ Both the Good Practices and Water Management and the pocket guide for the rural producer are in Portuguese.

Implementation of Good Practices can be verified through two nonexclusive approaches:

- The producer is certified by recognized institutions whose environmental requirements are aligned with the financial mechanism's strategy. The cost of certification under this alternative is borne by the producer. Commonly known Good Practices certifications include RTRS, ISCC, ProTerra and 2BSvs, among others.
- The lender or investor, or a specialized third party contracted by the financier, assesses evidence of a producer's implementation of Good Practices, but full certification is not required. This approach can ensure compliance with the GP approach at a lower cost than full certification processes.

Stakeholders involved in the consultation process indicated that, whichever approach is incorporated into the DCF financial mechanism, the certification or assessment methodology used should be disclosed and transparent, allowing for independent verification.

Although stakeholders who participated in the consultation process recognized the benefits derived from Good Practices, they also indicated that the associated costs of compliance, monitoring and verification are significant, making it a niche market in Brazil. **Requiring GPs as a core requirement, either up front or during investment tenure, would likely considerably limit the pool of eligible producers. This could constrain overall deployment of DCF financing, perhaps to the point where the positive environmental impact achieved through requiring Good Practices would be significantly smaller than the conservation benefit that would be achieved by not requiring GPs as part of the Core Requirements. Therefore, the Environmental Framework lists Good Practices as an additional environmental element.**

3.2.3 Land conflicts

The land management system in Brazil is complex, with 11 federal agencies sharing responsibilities with numerous state and municipal partners regarding land governance. This complexity puts the Brazilian system in 64th place on the International Property Rights Index (IPRI)⁴⁰ that compares land and property rights among countries. The uncertainty brought by the Brazilian legislation regarding land rights is exacerbated by several factors, including under-resourced government agencies tasked with monitoring and

40 <https://internationalpropertyrightsindex.org/about>

enforcement of property rights; limitations to the official real estate registry; and lack of an authoritative, integrated database of public and private lands, all of which leads to conflicts over land use⁴¹. This reality puts the burden of demonstrating and verifying the absence of land conflicts on both producers and investors/lenders. Even when a property has all relevant documents in order and past conflicts are seemingly resolved, land possession and use may still be called into question. Investors face significant financial risks from the potential interruption of soy production and reduced value of the land pledged as collateral.

The gravest consequence of the insecurity such complexity brings is land-related conflicts⁴². In 2019, there were 931 documented instances of such conflicts in Brazil, an increase from 2018 and 2017, which had 868 and 882 conflicts, respectively⁴³. More than 100 conflicts occurred in the Cerrado in 2019⁴⁴. Land conflicts are an indication of social and environmental risks that may impact the investment decisions of rural producers, investors and lenders.

The Environmental Framework recommends lenders and investors verify that target properties are:

1. Associated with a valid land title or lease and comply with environmental regulations as part of the core requirement of legal compliance, paying particular attention to ensuring there is no overlay of the property or CAR registration with indigenous communities (indigenous reserves and their territorial domains), Quilombola lands or Conservation Units; and
2. Not the subject of recent or ongoing land conflict disputes, as reported through the Pastoral Land Commission (*Comissão Pastoral da Terra—CPT*) database⁴⁵, updated annually.

As association with land conflicts poses a substantial reputational risk to producers, lenders and investors, and including a land conflicts mitigation requirement in financing mechanisms offers a greater degree of protection to investors and lenders that a target-property will not become involved in such disputes. The Environmental Framework also recommends that DCF financial mechanisms consider conducting an additional and less formal due diligence on the producer and target property regarding land conflicts, such as simple internet searches, reviewing any disclosed developing legal procedures, media research, and deeper probing on any revealed controversies around the producers and/or the property's past involvement in rural conflict.

41 CPI (2016)

42 CPI (2016)

43 Comissão Pastoral da Terra (2019)

44 Developed by TNC, Agroideal is a free, online territorial intelligence tool that supports decision-making in purchases and investments in the soy and beef sectors, offering a combination of economic, social and environmental information. www.agroideal.org

45 <https://www.cptnacional.org.br/cedoc>

Details for verification and monitoring of compliance with this environmental requirement are available in Annex A—Due Diligence Documentation for Core Environmental Requirements and Annex B—Design and Due Diligence Documentation for Additional Environmental Elements.

The Environmental Framework recommends that lenders and investors use remote monitoring tools to analyze the target property's geographic location and its exposure to land conflict risk, considering its proximity to indigenous lands (indigenous reserves and territorial domains), Quilombola lands and Conservation Units or any other region that justifies a deeper case-by-case analysis. Google Maps and [Agroideal's](#) socio-environmental tools are credible sources for evaluating overlap and proximity risks to aid lenders/investors in the monitoring process without excessively burdening the producers.

Lenders and investors should also consider adopting criteria for mandatory land conflict risk mitigation measures, such as generating spaces for dialog and actions that improve the relationship with local communities.

The stakeholder consultation process confirmed that a significant share of soy lenders and investors already integrate, to some extent, land conflict risk into their standard eligibility screenings, commensurate with each institution's risk tolerance. For example, to address the risk of financing properties bordering traditional communities or indigenous properties, some institutions require a target property be a minimum distance from such areas.

Given the complexity of the land management system in Brazil, the wide spectrum and circumstances of possible land conflicts, and feedback during the consultation process, it is impractical to try to classify the nature and severity of all potential land conflicts that may arise and to address them distinctly within the Environmental Framework. Therefore, the Environmental Framework suggests that beyond the legal requirements, Land Conflict provisions be considered an additional environmental element for DCF financing of soy expansion, and the framework **encourages lenders and investors to incorporate the land conflict risk parameters directly into their standard screening process to verify legal compliance and avoid involvement with land conflicts.**

3.2.4 Spatial prioritization

Soy production and expansion dynamics in the Cerrado vary by region, resulting in different financing needs and environmental impacts by location. **Lenders and investors can use spatial prioritization to target regions of the Cerrado where a DCF financial mechanism will increase positive environmental impacts or minimize unintended negative impacts.**

In these formative early days of DCF soy financing mechanisms, lenders and investors can maximize their conservation impacts by directing investments to regions that meet a combined set of criteria, where there is (1) a **high risk of future conversion** of natural vegetation to soy, (2) **sufficient suitable pasture for soy expansion**, (3) an **attainable soy yield** on those pastures would make production **economically viable**, and (4) **soy already being produced**, so as not to generate unintended pressure for direct or indirect conversion in newly established production regions. The Environmental Framework recommends targeting properties in production areas that meet these conditions.

During the consultation process, stakeholders indicated that there were downsides to limiting the areas of eligibility through spatial prioritization when seeking clients and investees, such as excluding producers with ideal profiles because the target property is not in a high conservation impact region; potential ineligibility of areas that would allow the investor/lender to reduce exposure to crop-failure risk; and potential ineligibility of areas where investors and lenders have already established client relationships.

However, most stakeholders shared that they would be interested in incorporating voluntary spatial prioritization into the design of their DCF financial mechanisms, highlighting that investors/lenders should have flexibility to determine which criteria to consider and where to prioritize.

Therefore, the Environmental Framework encourages spatial prioritization as an additional environmental element due to its potential to maximize the positive environmental impact of a DCF financial mechanism. Financers with more ambitious institutional goals regarding avoided emissions through their lending and investment programs should steer DCF soy mechanisms toward farming operations in targeted regions of the Cerrado that have been screened for specific conservation and agronomic criteria. Likewise, the terms of the mechanism could offer better financial conditions for loans and investments in those priority areas, to further encourage adoption.

The Environmental Framework recommends applying the below criteria to identify “high conservation impact” municipalities through spatial prioritization.

1. Potential productivity: Areas with potential soy productivity of at least 2.5 tons per hectare. This indicator represents the average attainable productivity (kg/ha) in the municipality, considering both areas currently under soy production as well as pastures on which soy could expand. This indicator was developed by Embrapa Agricultural Informatics and is publicly available via Agroideal:
2. Pastureland suitable for soy: Cleared areas that are not currently under annual row crop production but present favorable agronomic characteristics such as terrain slope and altitude, distance to rivers, and average rainfall in harvest period, indicating suitability for soy production⁴⁶. This indicator was further refined so that it only counts parcels of continuous pasture that are a minimum size of 2,000 hectares, to avoid totaling fragmented pasture areas in the municipality where soy expansion to those pastures would not reach a minimum viable scale for production.
3. Areas of high risk of conversion: Areas with a high risk of loss of natural habitat attributed to projected conversion to soy production by 2030. This indicator is based on the results of an analysis run by TNC, Embrapa and Agrosatellite titled “Scenarios of Sustainable Soy Expansion”⁴⁷ that identifies pastures and natural habitat projected to be converted to soy by 2030, based on past trends of expansion⁴⁸. Deforestation risk is based on the projection of at least 500 hectares of natural habitat loss within each counted pixel⁴⁹. DCF finance mechanisms will have a more immediate impact in at-risk locations⁵⁰.
4. Areas with consolidated soy production: Expanding soy in new areas and creating new soy production zones may inadvertently increase pressure for both direct and indirect deforestation and conversion of natural habitat. This risk can be reduced by directing financial resources to properties located in regions that already have at least 2,000 hectares of planted soy. These regions already have consolidated infrastructure for soy commercialization, such as input distributors and logistics and transportation networks; producers seeking to expand soy onto pastures can reap the

46 Data from The Nature Conservancy, Mapbiomas and Agrosatellite.

47 “The Nature Conservancy, “Cenários de expansão sustentável da soja no Cerrado,” Agroideal, 2020, <https://soja.agroideal.org/br/> (accessed Oct. 19, 2020).

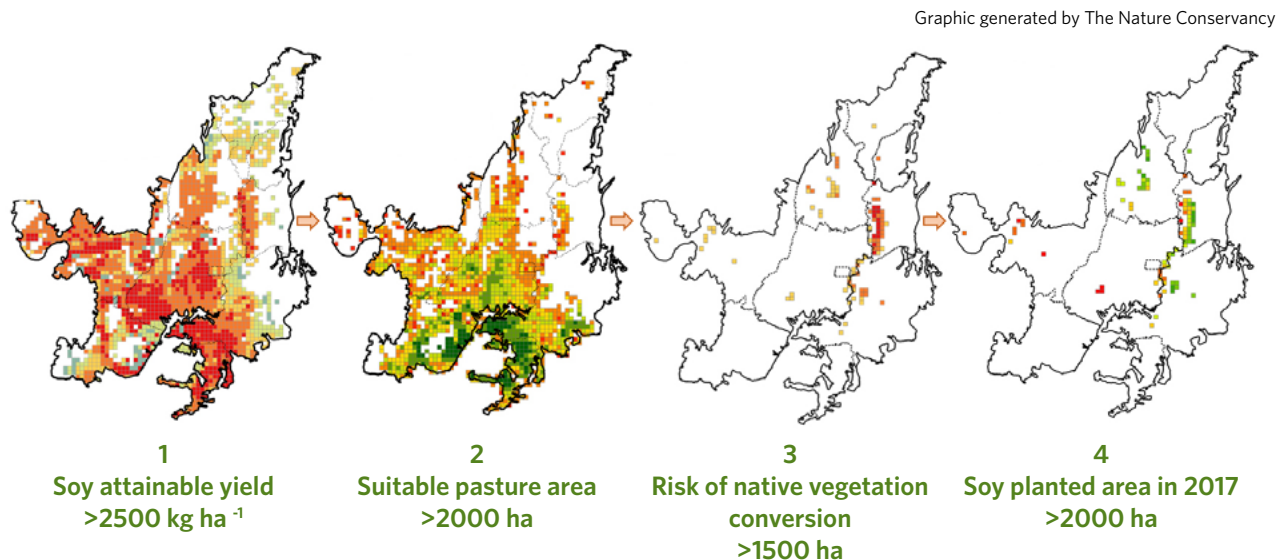
48 Mapbiomas (2019)

49 Each pixel represents a square area of 27 x 27 kilometers = 2700 hectares.

50 It is important to note that, while directing resources to areas of high risk of conversion brings significant conservation additionality to DCF financial mechanisms in the near term, as the scale of DCF financing expands over time it may become increasingly impactful to expand investment in a broader range of pasturelands, regardless of risk of nearby conversion of surplus Legal Reserves. Increasing investment in pasturelands in consolidated areas with low deforestation and conversion risk will be an important part of the longer-term solution for the Cerrado.

benefits of lower transaction costs to produce and sell soy in consolidated areas. Agrosatellite has made spatialized data on the 2017/2018 harvested soy area available for consultation⁵¹.

Figure 5 - Selection maps for high conservation impact areas, priority municipalities according to suggested criteria



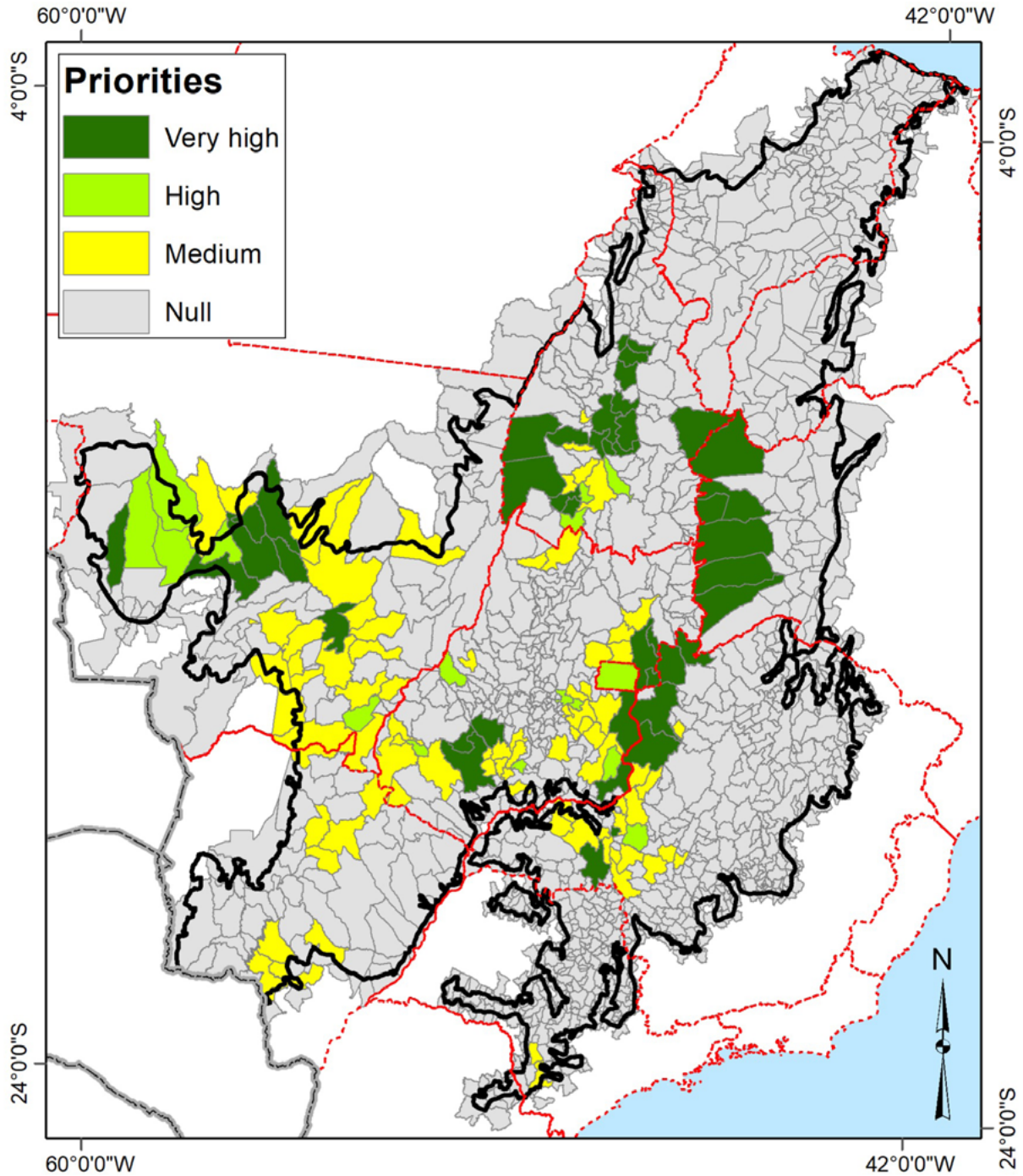
When the above criteria have been considered, TNC's Environmental Framework **suggests directing resources to one of the 139 municipalities depicted in the map in Figure 6**, and listed in Annex C—High Conservation Impact Areas, to **maximize economic and conservation impacts** catalyzed through DCF soy financing and investments. Municipalities have been classified into three priorities based on the third parameter of natural habitat conversion risk. Very high priority municipalities have a risk of natural habitat conversion to soy greater than 1,500 hectares by 2030. High and medium priority municipalities face a risk of greater than 1,000 hectares and greater than 500 hectares, respectively, of natural habitat conversion to soy in the next decade. Logically, the lower the priority, the less opportunity within a municipality to induce additional conservation benefits through DCF financing or investments in soy expansion.

Interpreting datasets and combining the above criteria to then make rational decisions in directing resources for DCF soy expansion is a complex exercise. As part of the Environmental Framework, **The Nature Conservancy has launched a dynamic map and visual tool to support lenders and investors in both evaluating potential environmental risks and prioritizing where to direct resources that promote DCF expansion of soy. The TNC Dashboard** compiles data from remote sensing and other relevant environmental and

⁵¹ RUDORFF et al. (2015)

agronomic datasets covering the entire Cerrado, allowing the user to filter municipalities by criteria or see the full profile of any individual municipality. Where data are available at pixel level (27 x 27 km), TNC has set minimum thresholds for a pixel to be considered relevant in assigning filterable characteristics to an entire municipality.

Figure 6 - High conservation impact areas



Graphic generated by The Nature Conservancy

3.2.5 IFC Performance Standards

The Environmental and Social Performance Standards (PS) put forth by the International Finance Corporation (IFC) outline responsibilities for managing environmental and social risks in various sectors⁵² and assume customized E&S management of each project. Some financial institutions have adopted the PS as part of their standard lending and investment practices and use them to assess project suitability and borrower/investee capacity to implement them. They require compliance with local legislation as well as defining policies and procedures to manage social and environmental risks, both in general and to specifically mitigate identified risks and impacts related to business operations.

However, the stakeholder consultation process indicated that the IFC PS are not broadly applied in soy production and crop expansion financing in Brazil and are primarily only required to access resources linked to international institutional investors and development banks. Additionally, the organizations consulted indicated that compliance with the IFC PS would generate significant additional costs to develop internal procedures necessary for compliance with IFC's recommendations.

A comparative analysis conducted by Sitawi for TNC indicates that most IFC PS relevant for soy production are already covered by the core requirements and additional environmental elements recommended in the Environmental Framework. Table 7 identifies in detail how the requirements of the EF contribute to compliance with the Performance Standards and where gaps exist to achieving full PS compliance.

The IFC Performance Standards are considered an additional element of the Environmental Framework.

⁵² IFC Performance Standards

Table 7 – Comparison between the TNC Environmental Framework requirements and the IFC Performance Standards criteria

IFC Performance Standards	Environmental Framework core requirements	Environmental Framework additional requirements	Requirements of PS not addressed in EF
PS #1 - Assessment and Management of Environmental and Social Risks and Impacts	Mitigation of social and environmental risks through compliance with environmental and labor legislation	Improvement of social and environmental performance through Good Agricultural Practices	Formalized policies and management systems of social and environmental risks
PS #2 - Labor and Working Conditions	Slave labor verification Compliance with labor legislation	Good practices present additional items, depending on standard used	No-discrimination policies Work risk minimization Improvement of employee-employer relationship
PS #3 - Resource Efficiency and Pollution Prevention	Forest Code and environmental legislation compliance Reference date for deforestation (greenhouse gases) Irrigation (water efficiency)	Good Agricultural practices (if they include hazardous waste management, minimize waste and management of chemical inputs and run-off)	-
PS #4 - Community Health, Safety, and Security	Not applicable as it is not related to environmental requirements, as per the EF scope		
PS #5 - Land Acquisition and Involuntary Resettlement	Legal compliance with land conflict laws and regulations	Avoidance of land conflict disputes Good Practices involve community engagement	Explicitly offers guidance on creating community engagement and communication channels
PS #6 - Biodiversity Conservation and Sustainable Management of Living Natural Resources PS	Forest code and compliance with environmental legislation No-conversion reference date	Spatial prioritization Good Practices	Specific biodiversity management plan for endemic species and explicit avoidance of alien species
PS #7 - Indigenous Peoples	Land title or lease Forest code and compliance with environmental legislation	Lack of land conflict disputes	Culturally appropriate sustainable benefits and opportunities for indigenous people
PS #8 - Cultural Heritage	Not applicable as it is not related to environmental requirements, as per the EF scope		

*IFC PS criteria met in each financial product adopting the TNC Environmental Framework recommendations may vary according to the Good Practices standard adopted as reference.



4. Monitoring and Verification

4. Monitoring and Verification

Once a lender or investor has determined the environmental requirements (core and additional) it will include in the DCF financial mechanism, it must then operationalize appropriate monitoring and verification procedures.

According to the definitions set out in the Accountability Framework, the monitoring and verification process must be ongoing so that investors and lenders can continually assess producers' compliance, performance and progress on commitments under the DCF financing agreement.

Monitoring refers to the systematic collection of data on specific indicators to evaluate and document how implementation is progressing, and which targets are being met. Verification uses data from monitoring to evaluate and confirm compliance with requirements established in the funding mechanism.

Monitoring and verification begin before a lender or investor disburses funding—to determine property and producer eligibility—and continue throughout the tenure of the transaction. Table 8 lays out the requirements by transaction phase. Note that some of the Core Environmental Requirements, namely full compliance with the Forest Code, are not required for immediate eligibility and can be satisfied during the loan or investment term; likewise, other Core Environmental Requirements such as valid environmental licenses for soy production can only be verified after a producer has made the land acquisition or investment.

Most traders and banks already require producers to provide documents related to environmental compliance. To maximize efficiencies, the EF suggests applying a five-step monitoring process that is largely consistent with mainstream monitoring and verification procedures used by financial and nonfinancial institutions involved in lending and investing in the soy value chain. The steps are described in more detail in Figure 7 and below:

Figure 7 - Monitoring and verification flow



Step 1: Identify target locations and producer profiles.

As with any financial product, the lender or investor should define a strategy for targeting and recruiting producers to participate in its DCF-soy production financial mechanism. This should identify the ideal producer profile for uptake in addition to defining credit and environmental eligibility requirements for producers to access DCF resources. Additionally, lenders and investors seeking to maximize the positive environmental impact of the financial mechanism should use spatial prioritization to define target regions for deployment as part of the first step in the Monitoring and Verification process; this is also discussed in the Spatial Prioritization section of the framework. With these criteria defined, lenders/investors can begin active prospecting of potential producers. Producers with highly attractive profiles meeting not only the minimum requirements but also additional environmental elements should be considered for preferential access to the mechanism and/or advantageous credit conditions, as outlined in the Additional Environmental Elements section.

Step 2: Determine producer and target property eligibility.

As lenders and investors promote DCF-soy expansion mechanisms in target regions and to specific producer profile segments, potential candidates and the properties to be financed will emerge. Both farmers and target properties will need to be vetted against the core environmental requirements and any additional environmental elements the lender/investor has deemed necessary or desirable to include.

Target property eligibility:

In general, it is simple to determine initial eligibility by analyzing a property's exact location, using information from a georeferenced identification document for the target property. This information can be obtained from:

- Rural Environmental Registry (*Cadastro Ambiental Rural—CAR*) number;
- Vector files with the spatial location of the property; or
- Land Management System (*Sistema de Gestão Fundiária—SIGEF*) certificate

With any one of these documents, the lender/investor can evaluate the property's exact **location** for pre-deal eligibility in both core environmental requirements and additional environmental elements,

as laid out in Table 8. While not required, lenders can also use this information to further confirm suitability for soy expansion in the general region of the property, using tools such as Agroideal.org⁵³.

Rather than prescribing the use of CAR or SIGEF, TNC illustrates the differences between them. SIGEF, which is a lengthy and expensive process, is a government-issued certificate that serves as evidence that the property and title are in order. CAR is a self-declaratory process that geo-references the property's polygon. Because due diligence is a process with many checkpoints, the Environmental Framework considers CAR an appropriate instrument.

Producer Eligibility

Verifying farmer eligibility is more complex, as the core environmental requirements mandate legal compliance of a producer and of all properties owned or operated by the producer and related parties.

Verification begins with the farmer disclosing the names and taxpayer identification numbers—Natural Persons' Registry number (*Cadastro de Pessoas Físicas—CPF*) and/or National Registry of Legal Entities number (*Cadastro Nacional da Pessoa Jurídica—CNPJ*) of all related parties. Related parties are defined as:

- Business partners: Legal business partnerships related to soy production, such as joint ventures or joint-owned businesses
- Informal economic groups: Informal business partners who jointly sell soy beans, purchase inputs, sign for loans or undertake other commercial activities that would indicate they work together on a commercial basis
- Spouses or children whose names are on the title of the property, regardless of whether or not they are active in or responsible for the operations or running of the property

The farmer must also disclose the location of all rural properties that the farmer and/or the identified related parties own, hold or operate by providing a CAR, vector files or SIGEF certificates (as mentioned above). Farmers should also provide adequate documentation to demonstrate that those rural properties are operating legally. Lenders and investors can prepare candidates (and related parties, if applicable) for this process by sharing a list of acceptable evidence to demonstrate eligibility; Annex A provides a detailed list of relevant documentation that can be used to conduct due diligence on producers, related parties, and their rural operations.

53 Agroideal does not provide individual property data; rather, it aggregates regional information at a useable scale of pixels of 27 square kilometers.

The list of disclosed properties with associated documentation is also a key input for verification in cases where a lender/investor chooses to require cross-farm applicability of other core and/or additional environmental elements to ensure greater conservation impact, such as the conversion-free reference date. Equipped with this information, a lender/investor can use publicly available databases such as CAR databases, Mapbiomas, Deter, and others to confirm that a candidate producer's broader operations align with the financier's ambitions for positive environmental impact.

Step 3: Prepare for monitoring and verification.

Once a suitable property has been identified and a producer's eligibility for DCF-financing has been determined, the terms and process for environmental compliance, monitoring and verification should be incorporated into the relevant financing agreements. Terms should clearly address aspects such as:

- Frequency and notice of onsite visits
- Post-loan eligibility requirements as outlined in Table 8, including a schedule of milestones for compliance. This is especially relevant in instances where the target property or related properties are not in full compliance with the Forest Code at the time of financing, and/or where the lender or investor has determined that fulfilling additional environmental elements will trigger better terms.
- Systems to be used to collect and track relevant information
- Procedures and sanctions for infractions and noncompliance with environmental requirements
- Other responsibilities of each party during the process of monitoring, verification and accountability

In practical terms, the Environmental Framework seeks to maximize the use of existing practices, systems and remote sensing tools to ease adoption of monitoring components and reduce associated operational costs; some of the requirements are likely already captured in lenders' and investors' current screening processes. Nevertheless, it is important that lenders and investors of DCF soy mechanisms review their monitoring capabilities to ensure they have adequate capacity to assess a farmer's compliance with environmental requirements. Capacity to conduct screening for environmental compliance verification and monitoring can be built directly into a lender's current capacity, or elements can be outsourced to third parties, given that most of the systems and tools to evaluate compliance are publicly available.

It is important to have an initial detailed property diagnosis, including photos, satellite images and an onsite visit, to serve as a baseline for assessing future performance with the environmental requirements and additional environmental elements. Several databases exist to support monitoring and verification processes, providing secure, accurate and up-to-date information and data about target properties and potential producers, which are listed in Annex A.

Furthermore, as with other terms of financing, lenders and investors should clearly lay out procedures and penalties for noncompliance with the environmental requirements, as binding clauses within the agreements. Clauses can address details such as acceptable remedy periods when infractions occur as well as the penalties for various infraction types, such as interest rate increases, acceleration of loan repayment and, ultimately, the invocation of default provisions.

Step 4: Participate in annual monitoring and reporting.

Throughout the duration of the contract, it is important that the lender or investor conduct annual monitoring of the farmer and properties to confirm compliance with the environmental requirements.

Previously collected and accurate data about the relevant properties, farmers and their related parties make consulting public databases to conduct remote monitoring relatively straightforward. Monitoring evaluations may also include periodic onsite visits, with the lender or investor determining the frequency and scope in agreement with the farmer.

In addition to annual and other scheduled reviews, alert systems are now available that can automatically make lenders and investors aware of noncompliance events at the time they occur. Mapbiomas Alerta and DETER Cerrado are both able to provide conversion alerts with reasonably high accuracy. The Environmental Framework recommends using alert systems that have demonstrated high accuracy rates so that all parties are aware of infractions quickly, without having to wait up to a year between annual reviews. This will allow the process of resolving infractions to proceed on a timely basis. The Environmental Framework also recommends that onsite visits be triggered when remote monitoring alerts or analyses indicate noncompliance, to confirm and better assess the situation.

Lenders and investors should prepare annual reports assessing each financed producer and associated property's production performance and overall compliance with the Environmental Framework requirements. The report should include, but not be limited to, basic information on the loan/investment status, such as total disbursements compared to the disbursement schedule;

loan repayment vis-à-vis debt service schedule (if applicable); any issues regarding disbursement, repayment or compliance with other conditions; assessment of core environmental requirements and additional environmental elements; and a basic environmental impact assessment (as described in section 5, Evaluating Performance). The scope should include quantitative and qualitative metrics of progress related to contractually agreed terms of compliance, monitoring methodology, data sources and, if relevant, details of any independent verification process.

Step 5: Use ongoing oversight.

Banks and investors can adaptively manage a DCF financing program for success when they have an overview of their portfolio performance. A roll-up analysis of the individual monitoring and verification described previously can provide insights into the efficiency of the DCF program. Such oversight can diagnose the extent to which the program is complying with environmental requirements, identify recurring barriers or trends in implementing the environmental monitoring protocols, identify any gaps in achieving the lender's/investor's environmental goals, and justify adjustments to improve the DCF-financial mechanism's environmental performance.

Oversight can be conducted by an appropriate partner organization, such as an NGO with experience in this area, or lenders and investors can contract third-party reviewers to conduct external evaluations, such as those described in the Green Bond Principles of the International Capital Market Association:

- **Second-party opinion (SPO):** External independent institutions with expertise in environmental and soy production matters may analyze adherence to the Environmental Framework. The SPO may be publicly disclosed by the institution applying the EF.
- **Certification:** If there is enough demand, certifying bodies may identify an opportunity to develop verification and oversight services based on the Environmental Framework.

Table 8 – Monitoring and verification requirements by transaction phase:

Phase	Reach	Core Environmental Requirements	Additional Elements
Eligibility Pre-Loan	All farms owned or operated by borrower	<ul style="list-style-type: none"> • No outstanding IBAMA sanctions/ embargos on the candidate producer or target property • No overlapping with Conservation Units and/or Indigenous Territories • CAR registration • No slave labor • Soy Moratorium compliance if the property is in the Legal Amazon 	<ul style="list-style-type: none"> • Cross-Farm Applicability': the reference date for no-conversion (January 2018) should be applied to all properties
	Financed property only	<ul style="list-style-type: none"> • No conversion of native vegetation after the reference date (January 2018) • Attention to predicted water stress • Evidence of undisputed land title 	<ul style="list-style-type: none"> • Located in a High Conservation Impact Area • No Land Conflicts associated with either the candidate producer or the target property, as registered in the CTP database or evidenced in other due diligence
Requirements Post-Loan	All farms owned or operated by borrower	<ul style="list-style-type: none"> • Continued compliance with pre-loan requirements • Valid environmental licenses and permits • Legal and Forest Code compliance 	<ul style="list-style-type: none"> • No conversion of native vegetation on other properties owned or operated by the producer
	Financed property only	<ul style="list-style-type: none"> • No conversion of native vegetation on the property during financing tenure 	<ul style="list-style-type: none"> • Continued compliance with specific additional elements pre-deal requirements • Valid environmental licenses and permits • Continued lack of Land Conflicts • Evidence of applying Good Practices • Compliant with applicable IFC Performance Standards



5. Evaluating Performance

5. Evaluating Performance

The Environmental Framework suggests a set of environmental and production metrics that lenders, investors and other stakeholders can use to monitor performance and manage for desired impacts. The metrics can be used to evaluate performance at a portfolio level and on an individual transaction basis. The framework also indicates estimated values that would suggest good environmental performance, given parameters for soy production in the Cerrado.

The metrics suggested in Table 9 are not exhaustive. Lenders and investors can adapt or complement them with other relevant indicators to evaluate the financial mechanisms' performance.

While offering relative parameters for "good" performance per US\$1 million investment, the Environmental Framework does not require that DCF soy expansion mechanisms, or the producers who contract them, meet specific performance targets. Rather, it leaves that assessment and determination to individual lenders and investors.

The suggested indicators are related to components of the previously presented Theory of Change. In the Environmental Framework consultation process, stakeholders confirmed that the suggested metrics are reasonable and manageable to monitor. As part of the Environmental Framework, The Nature Conservancy developed quantitative tools that support calculating and monitoring DCF financial mechanisms' impacts on avoided conversion (ha) and avoided emissions (tCO₂): the **TNC Dashboard** and **TNC Carbon Benefit Calculator**.

Table 9 - Suggested metrics for DCF financial mechanisms

Metrics	Methodology	Unit	Estimated Potential value per US\$ 1 million disbursed
Total volume of resources that are applying the EF as guidance	Sum of loan and equity amounts conditioned to EF requirements	USD/BRL	-
Total on-farm DCF soy production and production area	Annual changes informed by the producer to the investor	Tons	Approximately 850 tons, considering a yield of 3 tons per hectare
		Hectares	Approximately 285 hectares where land is acquired and transitioned to soy, considering average land acquisition cost of US\$2,000 per ha and cost of \$1,500 per hectare to convert pasture to soy
		Tons/hectare	For yield improvement projects, minimum productivity increase of 20% on tons of soy per hectare
Total area of native vegetation conserved or restored on financed property: <ul style="list-style-type: none"> • To meet legal requirement • Above legal requirement 	CAR and PRADA in base year + annual monitoring (i.e. Mapbiomas).	Hectares	-
Total pastureland transitioned to soy production	Annual change informed by the producer to the investor and/or verified by remote monitoring	Hectares	Total pastureland area acquired or rented that was transitioned to soy
Avoided conversion	Area of financed pastureland expansion multiplied by the estimated rate of expansion of soy on native vegetation through 2030 in the municipality (or micro region) according to TNC's Dashboard	Hectares	Average avoided conversion is approximately 30%, applied to hectares of pastureland transitioned to soy above.
Avoided carbon emissions	Estimated avoided conversion multiplied by the average carbon stocks for the municipality. This calculation is automated by TNC's Carbon Benefit Calculator .	tCO ₂ eq	Average avoided emissions of approximately 13,000 tCO ₂ /hectare. Values will be higher when land acquisition is not financed.

As mentioned in the Spatial Prioritization section, the **TNC Dashboard** is a dynamic and spatially explicit tool that can be used to assess certain indicators relevant for investing in DCF soy expansion, such as potential soy productivity (kg/ha), area of soy production (ha), pastureland suitable for soy (ha), water availability (m³/sec), and estimated rate of soy expansion onto natural habitat through 2030 in each municipality (or microregion) of the Cerrado. The avoided conversion of a DCF financial mechanism that adopts the Environmental Framework's recommendations can be estimated as the product of the financed DCF soy expansion in each location and the estimated rate of natural habitat conversion under a business-as-usual (BAU) scenario in the corresponding municipalities⁵⁴. The **TNC Carbon Benefit Calculator** builds on this calculation to then estimate avoided carbon dioxide emissions that can be credibly attributed to expanding soy production onto already open pastures, as a condition of DCF financing.

For example, according to TNC's soy expansion model, by 2030, soy cropland area in the city of Luís Eduardo Magalhães in Bahia is expected to expand by 94,143 hectares, of which 66 percent will occur over natural habitat and 34 percent will occur over pastureland. If a producer accesses DCF-conditioned financing and expands soy cropland area exclusively over acquired pastureland, that producer is directly altering the expected expansion pattern of that specific municipality. In this example, if the producer acquires 1,000 hectares of pastureland to transition to soy production, the calculator would assume that the producer is avoiding conversion of 66 percent or 660 hectares of natural habitat. In Luís Eduardo Magalhães, one hectare of natural habitat stores an average of 83 tons of CO₂; in this scenario, avoided emissions benefit attributed to the DCF finance mechanism is estimated at 55,187 tons of CO₂.

The formula used in the calculation is:

$$\text{Avoided Emissions} = (\text{Soy-Exp}) * (\text{Conv-\%}) * \text{ACS} (\text{CO}_2)$$

(Soy-Exp)—Area of pastureland transitioned to soy: The amount of pastureland that has been or will be transitioned to soy production, where rental or acquisition was financed by a financial mechanism applying the Environmental Framework. This input should be provided by the user.

(Conv-%)—Conversion pattern: The conversion rate over natural habitat according to TNC's 2030 soy expansion model.

ACS—Average carbon stock (CO₂): The average tons of carbon prestored in a hectare of natural habitat suitable for soy in each

⁵⁴ The Nature Conservancy, "Cenários de expansão sustentável da soja no Cerrado," Agroideal, 2020, <https://soja.agroideal.org/br/> (accessed Oct. 19, 2020).

municipality. This is the amount of CO₂ that would be released into the atmosphere if one hectare of natural habitat was cleared.

For the average carbon stock in native vegetation, the calculator considers land suitable for soy, based on Agrosatellite analysis⁵⁵, ACS includes the average above-ground carbon stock for each Cerrado municipality, with an upward adjustment of 20 percent to incorporate the estimated carbon storage in roots, calculated by Baccini through a combination of remote sensing and field data⁵⁶. The average carbon emissions of the Cerrado natural habitat suitable for soy is 155 tons CO₂/hectare.

Since the methodology of the TNC Carbon Benefit Calculator is based on a predictive model of expected proportions of soy expansion over pasture and natural habitat, the exact measurements of avoided conversion and emissions may vary in the coming years.



55 Agrosatellite (2014)
56 Baccini et al. (2012)



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Annex A - Due Diligence Documentation for Core Environmental Requirements

Table 10 presents a compilation of documents to verify and monitor producers' compliance with the core environmental requirements for DCF soy financing mechanisms.

Table 10 – Recommended documentation for compliance with core environmental requirements

Environmental requirement	Document	Information availability	Commentary
Compliance with environmental legislation	Rural Environmental Registry (CAR - Cadastro Ambiental Rural)	Provided by producer	Registration receipt or, if available, validated CAR
	Environmental Commitment Term (TCA - Termo de Compromisso Ambiental)	Provided by producer	-
	Recovery Plan of Degraded Areas (PRAD - Plano de Recuperação de Áreas Degradadas)	Provided by producer	-
	Proximity to Conservation Units, Indigenous Lands and Quilombola Lands	Provided by producer	-
	Grant of water use rights	Provided by producer	If necessary
	Environmental License	Provided by producer	If necessary
	Clearance permits authorizing removal of vegetation after July 2008 (Autorização de Supressão)	Provided by producer	If necessary
	License for the use of agricultural and road machinery	Provided by producer	If necessary
	IBAMA's embargoes	Publicly available ⁵⁷	-
	ICMbio's embargoes	Publicly available ⁵⁸	Relevant in case the property is within 10km from protected area
	State environmental organ's embargoes	Publicly available	Competence varies according to the property's location
Municipal environmental organ's embargoes	Publicly available	Competence varies according to the property's location	
Land tenure	Certificate of Registration of Rural Real Estate (CCIR - Certificado de Registro de Imóveis Rurais)	Provided by producer	-
	Proof of Registration of the Territorial Institute (ITR - Declaração do Imposto sobre a Propriedade Territorial Rural)	Provided by producer	-
	Certificate of Deed of Entire Content of the Rural Real Estate	Provided by producer	-
	Negative Certificate for Debts of the Rural Real Estate (CNDIR - Certidão Negativa de Débitos do Imóvel Rural)	Provided by producer	-
	CNPJ Card registration and Cadastral Situation of Legal Entity	Provided by producer	If applicable
	Registered or Notarized Lease, Partnership or Lending Agreement	Provided by producer	-
	Location of farms in relation to Land Conflicts Database	Publicly available ⁵⁹	E.g.: Pastoral Land Commission database (CPT - Comissão Pastoral da Terra)

Table 10 – Recommended documentation for compliance with core environmental requirements

Environmental requirement	Document	Information availability	Commentary
Compliance with labor legislation	Social security website confirms that all employees are properly registered, and all relevant insurance is in place	Self-declaration of compliance by the producer	-
	Declaration of the General Register of Employees and Unemployed (CAGED – Cadastro Geral de Empregados e Desempregados)		-
	Certificate of Negative Labor Debts (CNDT – Certificado de Débitos Trabalhistas Negativos)	Provided by producer	-
	Negative Certificate of Labor Lawsuits (Certidão Negativa de Processos Trabalhistas)	Provided by producer	-
	Regularity Certificate of CRF-FGTS	Provided by producer	-
	Insurance evidence (INSS)	Provided by producer	-
	“Slave Labor Dirty List”	Publicly available ⁶⁰	-
Conversion free reference date	Remote Monitoring System	Publicly available	<u>E.g.: Mapbiomas⁶¹, DETER⁶²</u>
	On-site visits	Lander/investor’s responsibility	-
Irrigation limitations	Water use rights/permit	Provided by producer	If necessary
	Water stress regional evaluation – TNC Dashboard	Publicly available	If applicable
	Engineering project for the irrigation system	Provided by producer	If applicable
	Evidence of efficient water consumption	Provided by producer	If applicable

57 <https://servicos.ibama.gov.br/ctf/publico/areasembargadas/ConsultaPublicaAreasEmbargadas.php>58 <https://www.icmbio.gov.br/portal/infracoesambientais/areas-embargadas?id=4004:mapa-tematico-e-dados-geoestatisticos-das-ucs>59 <https://www.cptnacional.org.br/publicacao/download/41-conflitos-no-campo-brasil-publicacao/14195-conflitos-no-campo-brasil-2019-web>60 https://sit.trabalho.gov.br/portal/images/CADASTRO_DE_EMPREGADORES/CADASTRO_DE_EMPREGADORES.pdf61 <http://alerta.mapbiomas.org/>62 <http://terrabrasilis.dpi.inpe.br/app/map/alerts?hl=pt-br>

Annex B - Design and Due Diligence Documentation for Additional Environmental Elements

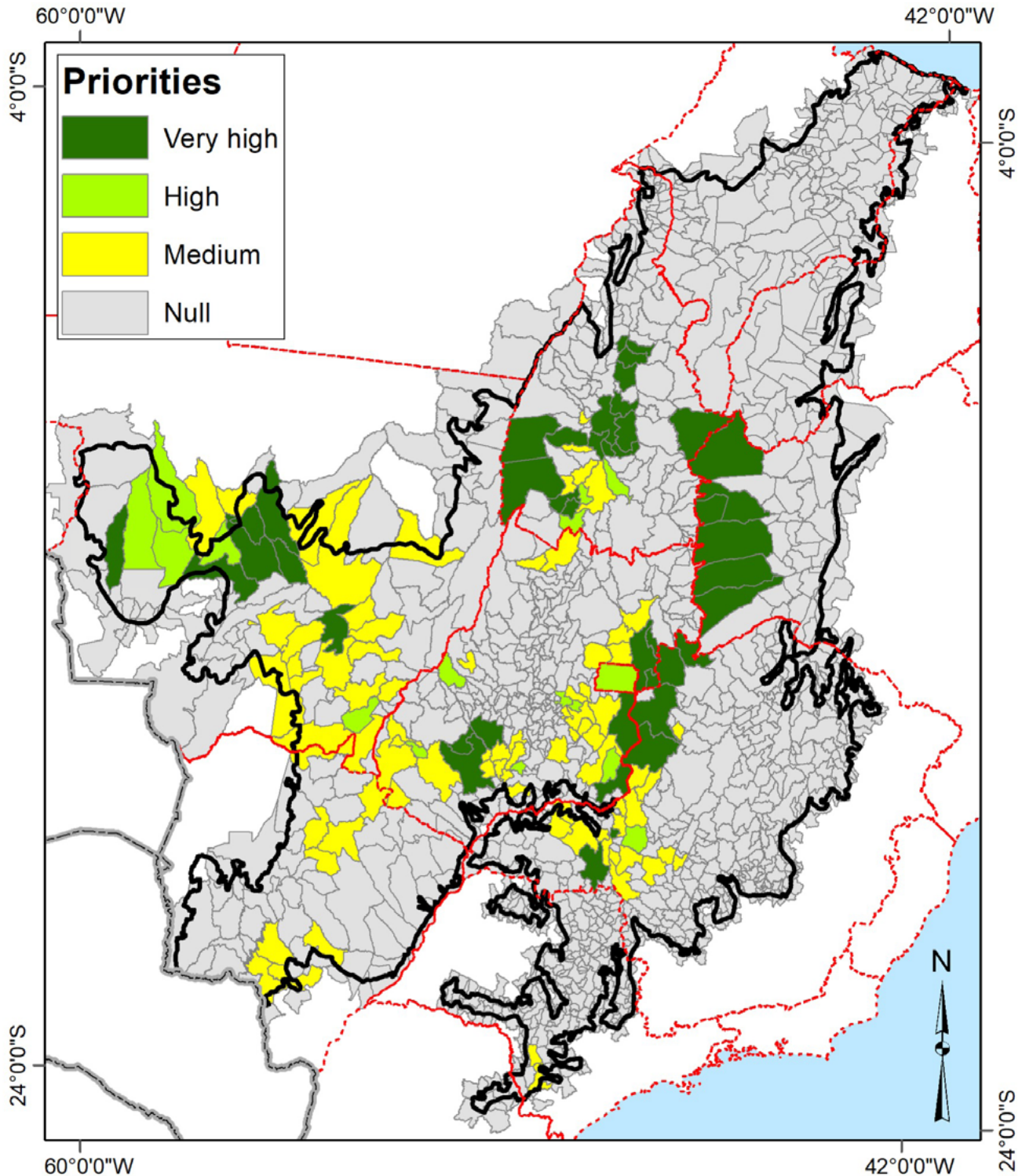
Table 11 presents a compilation of documents and information sources that can be used to define additional environmental elements and to verify and monitor compliance.

Table 11 - Recommended documentation for definition, compliance with additional environmental elements

Environmental requirement	Document	Information availability	Commentary
Land Conflicts	Judicial trials associated with land conflicts	Provided by producer & Publicly available	If applicable E.g.: Pastoral Land Commission database, Jusbrasil
	News monitoring	Publicly available	Frequency to be determined
Spatial Prioritization	TNC Dashboard	Publicly available	-
Good Practices	GAP certification	Provided by producer	-
	Third-party audit of compliance with certification criteria	Provided by producer	E.g.: RTRS, ISCC, 3S, ProTerra
IFC Performance Standards	Policies and internal procedures	Provided by producer	-
	Third-party assessment of compliance with PS	Provided by producer	-
Cross-farm applicability	Evidence of cross-farm compliance to the applicable core and/or additional environmental requirements		

Annex C - High Conservation Impact Areas - Priority Municipalities in the Cerrado

Figure 8 - Visual representation of high conservation impact areas



Graphic generated by The Nature Conservancy

Table 12 - High conservation impact areas list

STATE	MUNICIPALITY	CATEGORY
TOCANTINS	ALVORADA	Very high priority
TOCANTINS	BOM JESUS DO TOCANTINS	Very high priority
TOCANTINS	BREJINHO DE NAZARE	Very high priority
TOCANTINS	FIGUEIROPOLIS	Very high priority
TOCANTINS	FORMOSO DO ARAGUAIA	Very high priority
TOCANTINS	IPUEIRAS	Very high priority
TOCANTINS	LAGOA DA CONFUSAO	Very high priority
TOCANTINS	MATEIROS	Very high priority
TOCANTINS	MONTE DO CARMO	Very high priority
TOCANTINS	PEDRO AFONSO	Very high priority
TOCANTINS	PORTO NACIONAL	Very high priority
TOCANTINS	SANTA RITA DO TOCANTINS	Very high priority
TOCANTINS	SILVANOPOLIS	Very high priority
TOCANTINS	PALMAS	Very high priority
TOCANTINS	TOCANTINIA	Very high priority
TOCANTINS	TUPIRAMA	Very high priority
BAHIA	BARREIRAS	Very high priority
BAHIA	CORRENTINA	Very high priority
BAHIA	FORMOSA DO RIO PRETO	Very high priority
BAHIA	JABORANDI	Very high priority
BAHIA	LUIS EDUARDO MAGALHAES	Very high priority
BAHIA	SAO DESIDERIO	Very high priority
MINAS GERAIS	BURITIS	Very high priority
MINAS GERAIS	FORMOSO	Very high priority
MINAS GERAIS	PARACATU	Very high priority
MINAS GERAIS	ROMARIA	Very high priority
MINAS GERAIS	UBERABA	Very high priority
MINAS GERAIS	UNAI	Very high priority
MATO GROSSO	CAMPOS DE JULIO	Very high priority
MATO GROSSO	DIAMANTINO	Very high priority
MATO GROSSO	LUCAS DO RIO VERDE	Very high priority
MATO GROSSO	NOVA MUTUM	Very high priority
MATO GROSSO	PRIMAVERA DO LESTE	Very high priority
MATO GROSSO	SANTA RITA DO TRIVELATO	Very high priority
MATO GROSSO	SORRISO	Very high priority
GOIÁS	CABECEIRAS	Very high priority
GOIÁS	CATALAO	Very high priority
GOIÁS	CRISTALINA	Very high priority
GOIÁS	FORMOSA	Very high priority
GOIÁS	MONTIVIDIU	Very high priority
GOIÁS	PARAUNA	Very high priority

STATE	MUNICIPALITY	CATEGORY
GOIÁS	RIO VERDE	Very high priority
GOIÁS	VILA BOA	Very high priority
TOCANTINS	SAO VALERIO	High Priority
TOCANTINS	SUCUPIRA	High Priority
TOCANTINS	TALISMA	High Priority
MINAS GERAIS	PATROCINIO	High Priority
MATO GROSSO	ALTO GARCAS	High Priority
MATO GROSSO	BRASNORTE	High Priority
MATO GROSSO	CAMPO NOVO DO PARECIS	High Priority
MATO GROSSO	SAO JOSE DO RIO CLARO	High Priority
MATO GROSSO	SAPEZAL	High Priority
GOIÁS	ANAPOLIS	High Priority
GOIÁS	CAMPO ALEGRE DE GOIAS	High Priority
GOIÁS	GAMELEIRA DE GOIAS	High Priority
GOIÁS	MONTES CLAROS DE GOIAS	High Priority
GOIÁS	PEROLANDIA	High Priority
GOIÁS	VICENTINOPOLIS	High Priority
DISTRITO FEDERAL	BRASILIA	High Priority
TOCANTINS	CARIRI DO TOCANTINS	Medium Priority
TOCANTINS	CRIXAS DO TOCANTINS	Medium Priority
TOCANTINS	GURUPI	Medium Priority
TOCANTINS	NOVA ROSALANDIA	Medium Priority
TOCANTINS	PEIXE	Medium Priority
MINAS GERAIS	ABADIA DOS DOURADOS	Medium Priority
MINAS GERAIS	COROMANDEL	Medium Priority
MINAS GERAIS	DOM BOSCO	Medium Priority
MINAS GERAIS	GUARDA-MOR	Medium Priority
MINAS GERAIS	IBIA	Medium Priority
MINAS GERAIS	INDIANOPOLIS	Medium Priority
MINAS GERAIS	MONTE ALEGRE DE MINAS	Medium Priority
MINAS GERAIS	MONTE CARMELO	Medium Priority
MINAS GERAIS	NOVA PONTE	Medium Priority
MINAS GERAIS	PERDIZES	Medium Priority
MINAS GERAIS	RIO PARANAIBA	Medium Priority
MINAS GERAIS	SACRAMENTO	Medium Priority
MINAS GERAIS	SANTA JULIANA	Medium Priority
MINAS GERAIS	SAO GOTARDO	Medium Priority
MINAS GERAIS	TUPACIGUARA	Medium Priority
MINAS GERAIS	UBERLANDIA	Medium Priority
MINAS GERAIS	VAZANTE	Medium Priority
SÃO PAULO	ITAI	Medium Priority

STATE	MUNICIPALITY	CATEGORY
SÃO PAULO	ITAPEVA	Medium Priority
MATO GROSSO DO SUL	BANDEIRANTES	Medium Priority
MATO GROSSO DO SUL	CAMAPUA	Medium Priority
MATO GROSSO DO SUL	COSTA RICA	Medium Priority
MATO GROSSO DO SUL	DOURADOS	Medium Priority
MATO GROSSO DO SUL	MARACAJU	Medium Priority
MATO GROSSO DO SUL	NOVA ALVORADA DO SUL	Medium Priority
MATO GROSSO DO SUL	PONTA PORA	Medium Priority
MATO GROSSO DO SUL	SAO GABRIEL DO OESTE	Medium Priority
MATO GROSSO DO SUL	SONORA	Medium Priority
MATO GROSSO	ALTO ARAGUAIA	Medium Priority
MATO GROSSO	CAMPO VERDE	Medium Priority
MATO GROSSO	CANARANA	Medium Priority
MATO GROSSO	CHAPADA DOS GUIMARAES	Medium Priority
MATO GROSSO	GENERAL CARNEIRO	Medium Priority
MATO GROSSO	GUIRATINGA	Medium Priority
MATO GROSSO	ITIQUIRA	Medium Priority
MATO GROSSO	JACIARA	Medium Priority
MATO GROSSO	JUSCIMEIRA	Medium Priority
MATO GROSSO	NOVA UBIRATA	Medium Priority
MATO GROSSO	NOVO SAO JOAQUIM	Medium Priority
MATO GROSSO	PARANATINGA	Medium Priority
MATO GROSSO	POXOREO	Medium Priority
MATO GROSSO	SANTO ANTONIO DO LESTE	Medium Priority
MATO GROSSO	SANTO ANTONIO DO LEVERGER	Medium Priority
MATO GROSSO	TAPURAH	Medium Priority
MATO GROSSO	TORIXOREU	Medium Priority
MATO GROSSO	NOVA MARINGA	Medium Priority
GOIÁS	ABADIANIA	Medium Priority
GOIÁS	ACREUNA	Medium Priority
GOIÁS	AGUA FRIA DE GOIÁS	Medium Priority
GOIÁS	ALEXANIA	Medium Priority
GOIÁS	BOM JESUS DE GOIAS	Medium Priority
GOIÁS	BONOPOLIS	Medium Priority
GOIÁS	CHAPADAO DO CEU	Medium Priority
GOIÁS	EDEIA	Medium Priority
GOIÁS	INDIARA	Medium Priority
GOIÁS	IPAMERI	Medium Priority
GOIÁS	JATAI	Medium Priority
GOIÁS	LEOPOLDO DE BULHOES	Medium Priority
GOIÁS	LUZIANIA	Medium Priority

STATE	MUNICIPALITY	CATEGORY
GOIÁS	MINEIROS	Medium Priority
GOIÁS	ORIZONA	Medium Priority
GOIÁS	PADRE BERNARDO	Medium Priority
GOIÁS	PIRACANJUBA	Medium Priority
GOIÁS	PLANALTINA	Medium Priority
GOIÁS	PORANGATU	Medium Priority
GOIÁS	PORTEIRAO	Medium Priority
GOIÁS	PORTELANDIA	Medium Priority
GOIÁS	SANTA FE DE GOIAS	Medium Priority
GOIÁS	SANTA HELENA DE GOIAS	Medium Priority
GOIÁS	SANTO ANTONIO DA BARRA	Medium Priority
GOIÁS	SAO JOAO D'ALIANCA	Medium Priority
GOIÁS	SAO MIGUEL DO PASSA QUATRO	Medium Priority
GOIÁS	SILVANIA	Medium Priority
GOIÁS	TURVELANDIA	Medium Priority
GOIÁS	VIANOPOLIS	Medium Priority

Authors & Contributors

Baggio, Giovana
Barroso, Mario
Baumgarten, Leandro
Brito, Melissa
Dib, Grazielle
Ferrari, Beatriz
Fishbein, Greg
Fraga, Isadora
Garcia, Edenise
Horta, Anna Lucia
Leao, Aline

Lopes, Erik
Mangueira, Julia
Penteado, Gabriel
Pereira, Osvaldo José
Pimentel, Gustavo
Pinto, Flavia
Pitta, Mariana
Rolim, Caroline
Sales, Josi
Spuri, Rodrigo
Vieira, Izabela

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Almeida, Marcelo

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For more information, please visit [this link](#), or contact:

Greg Fishbein, Director for Agriculture Finance
gfishbein@tnc.org

Anna Lúcia Horta, Business and Investment Officer
anna.horta@tnc.org

Gabriel Penteado, Business and Investment Specialist
gabriel.penteado@tnc.org

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