

Can green bonds finance Brazil's agriculture?

Brazil is a top agricultural producer and various financing programmes for agriculture and agribusiness have been introduced, including for low carbon agriculture. However, the use of green bonds has been limited to sustainable forestry and paper. Opportunities exist, but a more concerted effort in promoting and supporting green financing is required. Aggregation of small loans and receivables can help the market scale up.

Brazil's key role in meeting the World's growing demand for food

According to *World Population Prospects: The 2017 Revision*,¹ the world's population is projected to grow from 7.3 billion to 8.6 billion in 2030, 9.8 billion by 2050 and 11.2 billion by 2100. Most of that increase will likely come from developing countries.

FAO estimates that the supply of food and agricultural products must increase by 50% between 2012 and 2050 to meet rising demand.

It is estimated that by 2025, Brazil will have the largest food surplus in the world and South America will lead the world in regional food surplus.²

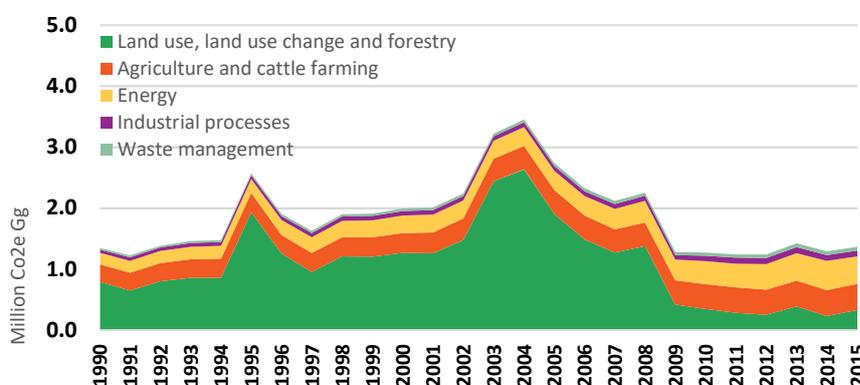
Brazilian agriculture reached 4.6% of the country's total 2017 GDP of USD 2.06tn.³ Adding agribusiness, the total contribution rises to 23.5% of 2017 GDP, according to Confederação da Agricultura e Pecuária do Brasil (CNA). In 2017, Brazilian agribusiness exports grew 13% and reached USD96bn, accounting for 44.1% of Brazil's exports.

Brazil is in the global top five ranking for several agricultural products



Source: FAO, 2016

About half of Brazil's GHG missions come from agriculture, land use and forestry, but emissions have fallen



Source: SIRENE/MCTI, 2018

In the last 30 years, Brazil achieved significant productivity gains in cereal production. However, the dynamics between specific crops and beef production are associated with deforestation in frontier areas, such as the Amazon and Cerrado biomes.

Environmental preservation forms an important part of Brazil's NDCs

Agriculture, forestry and land use account for a significant portion of Brazil's GHG emissions. Brazil's Nationally Determined Contributions (NDCs) to the Paris Agreement have a strong focus on these sectors, such as the following:

1. **Land use change and forestry:**
 - a. strengthening and enforcing the implementation of the Forest Code, at federal, state and municipal levels;
 - b. strengthening policies and measures with a view to achieving zero illegal deforestation by 2030 in the Brazilian Amazon and, by 2030, compensating for greenhouse gas emissions from legal suppression of vegetation;
 - c. restoring and reforesting 12 million hectares of forests by 2030;

- d. enhancing sustainable native forest management systems through georeferencing and tracking systems, with a view to curbing illegal and unsustainable practices;

2. Agriculture:

- a. strengthening the Low Carbon Agriculture Program (ABC) as the main strategy for sustainable agriculture development;⁴
- b. restoring 15 million hectares of degraded pasturelands by 2030; and
- c. converting 5 million hectares to integrated cropland-livestock-forestry systems (ICLFS) by 2030.

Financing for sustainable growth is available but is underutilised

The Brazilian agriculture and agribusiness sector has typically relied on concessional Rural Credit, through the government's Rural Credit National System (SNCR). Created in 1965, it had three key objectives, which remain valid today:⁵

1. access to funding via lower-than-market rates;

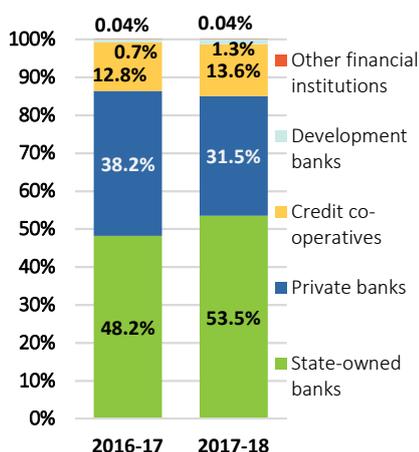
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2. legal requirements for banks to reserve a portion of their deposits for rural credit; and
3. incentives for small producers and family farmers through targeted credit lines or programmes.

Plano Safra is operationalised by SNCR and comprises policy instruments for rural credit, commercialization support and risk mitigation. In the 2017-18 season, which runs from July to June, rural credit funding disbursed via the plan came to BRL149bn (USD40bn), a 13% increase over 2016. This compares favourably against the BRL188bn available under the budget.

More than half the funding was provided by state-owned banks, with private banks providing a third of financing.

State Owned banks provide half the rural credit lending



Source: Ministry of Agriculture, 2018

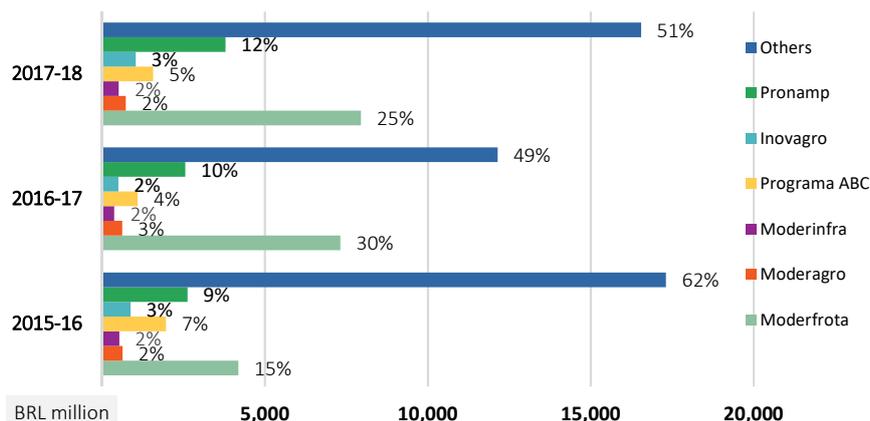
Investment represents only about 20-25% of use of proceeds, with most financing raised to cover operating expenses.⁵

Projects aimed at reducing GHG emissions typically require long-term investment. Green bonds could be used to raise debt, particularly in conjunction with the government’s ABC programme which funds Low-Carbon Agriculture. Inovagro is also relevant for sustainable agriculture as it targets productivity improvements and technological modernization.

There are, however, many programmes. This has created a complex funding environment. Their multitude makes it difficult for borrowers to understand how they work, how much funding can be raised from each and for what projects.

Since the creation of the ABC programme in 2010 through 2015, on average, only 42.8% of available funds were disbursed.

Agri-lending by main financing programme



Source: Ministry of Agriculture, 2018

The proportion has steadily risen, but low utilisation levels of programmes targeting sustainable agriculture need to be assessed and the reasons why identified in order to address them.

Two reasons are financial institutions’ insufficient understanding of asset eligibility criteria and of available credit instruments. Credit terms associated with sustainable financing are also often less attractive for producers, either due to more cumbersome application and approval processes, or more expensive rates, or a combination of such factors.

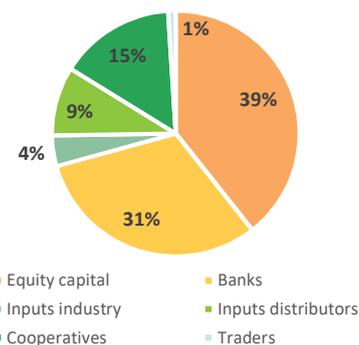
As Lopes et al. (2016) point out, several of the challenges in using Rural Credit to finance sustainable agriculture are especially relevant for small-scale producers in rural areas:

- Financial institutions are typically less inclined to lend to smaller farmers.
- Smaller producers tend to face more difficulties in preparing the required documentation to apply for credit. For example, property rights tied to land ownership are often unclear in remote areas.
- Obtaining assistance to prepare all the material required by banks is a further barrier, with public agencies often lacking the necessary knowledge and resources, and private agencies being too expensive or unavailable.
- Further, smaller producers find the length of time between applying for credit and receiving funding – which can take a year or even longer – harder to manage, as the delay can affect production cycles.

In this context, financing from suppliers, traders, processing companies, private banks, family loans and producers’ capital

has become more relevant in recent years. According to Santana and Nascimento, these alternative sources account for 72% of total rural financing.⁵ Of these, equity capital is the largest source and accounted for 39% of the total in the 2016-17 season.

Agricultural sector financing sources (2016-17 season)



Source: OCB/FIESP, 2017

Financing for this growing sector could also be sourced from the capital markets, especially for investment into sustainable practices. The use of international capital markets could help address some of the challenges faced by government programmes such as Plano Safra. International financing could, for example, lower funding costs compared to local sustainable financing, which often carries higher borrowing costs. Policy funding can be used for technical assistance, to support producers to move towards sustainable practices and in applying for credit.

Among the existing capital market instruments in Brazil, it is worth highlighting two that are focused on the agriculture & forestry sector:

1. **CRA**: Certificate of Agribusiness Receivables; and
2. **LCA**: Letter of Agribusiness Credit.

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CRA and LCAs are fixed income securities backed by receivables originating from business between rural producers, or their cooperatives, and third parties, including financing or loans for the production, processing, commercialisation or industrialisation of products, agricultural inputs or agricultural equipment.

In a CRA issuance, the company transfers its receivables to a securitisation vehicle, which issues CRA bonds and makes them available to investors. The CRA market reached BRL31.6bn (USD7.9bn) total bonds outstanding as of 30 September 2018.

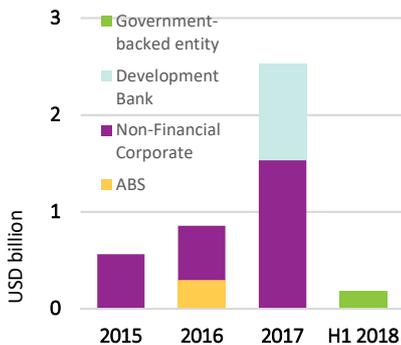
In an LCA, a financial institution issues the security. The associated receivables that provide financial backing can include rural promissory notes, Export Credit Notes (NCE), Certificate of Agribusiness Deposit / Agricultural Warrant (CDA/WA) and Rural Credit Notes (NCR). As of 30 September 2018, the LCA market stood at BRL154.2bn (USD38.6bn) total outstanding amount.

Both CRAs and LCAs offer tax income benefits for individuals and foreign investors. If the underlying projects or assets originate from sustainable agriculture practices, they could be labelled green and marketed as green bonds. Suzano issued a BRL1bn (USD295m) green CRA in 2016.

Almost half the Brazilian green bond volume comes from forestry & paper corporates

Over 60% of green bonds from Brazil were issued in 2017. Almost two-thirds (64%) of green bond issuance has come from non-financial corporates, and 38% of total issuance is from the sustainable land use sector – especially forestry-related assets.

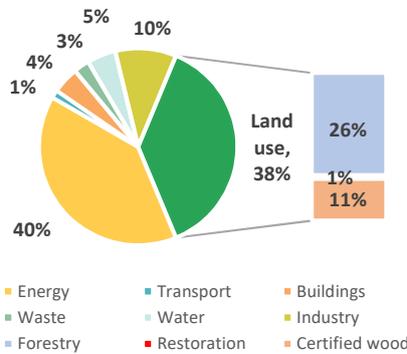
Green bonds come mainly from corporates



At 40% of cumulative issued volume to date, renewable energy is the top sector. However, uniquely for a country, at 38%,

sustainable land use is the second largest sector. Within that, forestry & paper is the largest sub-sector with a 69% share. Certified wood purchases represent 28%. The rest is slated for land restoration.

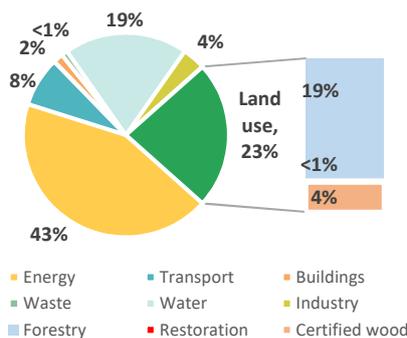
38% of green bond proceeds are allocated to land use



The largest green bond issuer is Suzano (4 deals, USD1.2bn), but Fibria and Klabin have also issued green bonds with allocations to sustainable land use.

In addition to labelled green bonds, Climate Bonds tracks bonds from issuers who generate at least 75% of their revenues from sectors aligned to the Climate Bonds Taxonomy, which is used to screen labelled green bonds. We use the term “climate-aligned bonds” to describe the universe of green bonds and bonds issued by climate-aligned issuers.

23% of climate-aligned bonds fund land use



Brazil’s climate-aligned outstanding bonds total USD11.3bn, whereby green bonds account for USD4.1bn, or 37%. The energy sector accounts for 43% of the outstanding amount, followed by land use at 23% and water at 19%.

Sustainable land use is represented overwhelmingly by forestry, with 80% of the sector’s outstanding bond volume. The only climate aligned issuer we identified is Klabin. It has USD1.6bn outstanding from 4 bonds, including its green bond.

Sustainable land use is dominated by forestry in the global green bond market, but there are two sustainable agriculture examples. In October 2018, Mexican state-owned agriculture development institution Fideicomisos Instituidos en Relación con la Agricultura (FIRA) issued a MXN2.5bn (USD129m) green bond to finance sustainable agriculture and land use projects. Indonesia’s Tropical Landscape Finance Facility raised funding in February 2018 for a sustainable rubber plantation, smallholder plots for a range of crops and reforestation of degraded land.

To support market development and promote high standards, Climate Bonds is finalising sector criteria for forestry, land use, protected agriculture and bioenergy.⁷

Investment opportunities in agriculture and forestry

Larger corporates such as Raízen and Bunge, which already issues CRA ABS deals, has yet to follow Suzano’s and Klabin’s lead in green bonds. While more issuance from corporates would be welcome – whether in bond or securitisation format – the greatest opportunities for scaling up the market reside with lenders, which provide financing to the agriculture and agribusiness sectors.

Banks can raise capital for sustainable agriculture lending through green bonds. Securitization can be applied by both larger corporates and financial institutions to aggregate financing for a set of projects with technologies in the agriculture and forestry sector⁸ that focus on meeting Paris Agreement goals: up to a 2°C rise in global temperatures, with efforts to achieve 1.5°C. Suitable sectors include:



Eco-efficiency activities, processes and technology:

- Energy efficiency in agricultural production, through the use of more efficient tractors, the use of sustainable biofuels⁹ in agricultural machinery, improvements in irrigation, greenhouses isolation, low carbon lighting in poultry houses and distributed renewable electric energy generation, for instance;
- Composting for agricultural residues treatment;
- Biogas generation from agricultural residues.



Soil health technologies

- Biofertilizers: subproducts of organic matter biodegradation that have neutral GHG emissions effect;
- Localized fertilization: mapping of areas with fertilization needs;
- Biological nitrogen fixation through the use of specific bacteria for each type of culture;
- Degraded pasture recovery areas through the use of leguminous plants to re-establish soil fertilization;
- Zero-till agricultural systems, used to avoid emissions from soil carbon stock and to reduce erosion.



Sustainable sugarcane production

- Field renovation to reduce tractor depreciation and provide fuel savings;
- Bagasse-fuelled cogeneration to jointly produce energy and power, thus reducing GHG emissions;
- Biogas generation from vinasse for use in fleet and industrial processes and energy generation;
- Bonsucro, which assures social and environmental practices.



Forest management

- Zero deforestation production, ensuring native forest conservation areas larger than required by the Brazilian Forest Code;
- Restoration, regeneration and forest management of native species in the Amazon, Atlantic, Cerrado, Caatinga, Pampa and Pantanal biomes.
- Sustainable exotic forests: certified eucalyptus¹⁰ and pine are the most relevant species, with rapid growth and high carbon stock when mature.



Certified crop management

- Bonsucro: sustainable sugarcane production;
- Round table on responsible soy (RTRS): responsible production, processing and commercialisation of soy;
- Better Cotton Initiative (BCI): cotton sustainable production;
- Forest Stewardship Council (FSC): forestry responsible production;
- Programme for the Endorsement of Forest Certification (PEFC): sustainable forest management, certification system of choice for small forest owners;
- Rainforest Alliance: sustainable agriculture, social responsibility and integrated pest management of avocado, cattle, cinnamon, coffee, palm oil, potatoes, tea, cocoa, and bananas production;
- Fair Trade: sustainable production of crops and products (banana, coffee, cocoa, cotton, cane sugar, flowers, plants, honey, dried fruit, fruit juices, herbs, spices, tea, nuts and vegetables), associated with poverty alleviation as a sustainable development goal;
- Brazil Organic Product: governmental certification for organic production of a variety of agricultural products.



Protected agriculture¹¹

- PVC film or glass greenhouses, shade houses, systems for closure/isolation;
- Automation of irrigation, precision fertilizer and other chemical use;
- Non-soil substrates as well as dedicated infrastructure and support facilities such as computer and sensor controlled drip irrigation and micro-aspersion systems;
- Air and light control systems;
- Hydroponic systems.

Conclusions and policy considerations

Given the scale of Brazil's agricultural sector and its clear need for financing, why are no green or indeed unlabelled bonds from climate-aligned issuers being issued?

Capital market financing may not be economically feasible for small- to medium-size producers. However, the scale and composition of current lending to this sector suggest there is an opportunity for sustainable investment to be scaled up via aggregation. CRA receivables ABS, a tried and tested structure, can be used to bundle smaller revenue streams (agricultural credit rights) and use them as collateral for green ABS bonds sold to domestic or international investors.

Banks can use green bonds to raise funding and/or free up balance sheet capacity for new lending and agribusiness financing. National and multilateral development banks can act as a catalyst for market growth, e.g. by providing risk guarantees or leverage via bespoke investment funds.

In addition, tackling the obstacles that make it difficult or prevent producers, especially small ones in rural areas, from receiving financing is crucial. Streamlining the credit application, approval and disbursement process, ensuring credit terms for sustainable agriculture are either the same or even better than for traditional practices, providing enough capital for producers to obtain technical assistance, and adequately training staff at rural banks and public and private agencies appear of particular importance.

Through collaboration between global and local stakeholders to develop robust but flexible standards, increase technical knowledge of sustainable practices, and improve lending processes, the international green bonds market could no doubt be a powerful vehicle to address the barriers discussed and boost funding for sustainable agriculture in Brazil.

Endnotes: 1. United Nations, 2017, <https://population.un.org/wpp/Publications/>. 2. OECD and FAO, 2016, <http://www.fao.org/3/a-i5778e.pdf>. 3. World Bank Data Bank, 2018. 4. The ABC Plan encompasses recovery of degraded pastures; integration of cropland-livestock-forest and agroforestry systems; zero tillage; biological fixation of nitrogen; planted forests; treatment of animal waste; and adapting to climate change. 5. "Rural Credit in Brazil: Challenges and Opportunities in Promoting Sustainable Agriculture", Lopes et al., 2016, <https://web.bndes.gov.br/bib/jspui/handle/1408/9518>. 6. "Statistics and Data on Agricultural Economy", Ministry of Agriculture, 2018. 7. See <https://www.climatebonds.net/standard/available-soon>. 8. "The coolest bonds", SITAWI, 2018, <https://www.sitawi.net/>. 9. Sustainable biofuels, as per the Climate Bonds Taxonomy, are biofuels that provide at least 80% GHG emission reduction compared to a fossil fuel baseline and are sourced from sustainable feedstock. 10. Eucalyptus has high carbon absorption and low water consumption per biomass produced, but plantations must be sustainably managed to avoid soil degradation and local biodiversity reduction. 11. See <https://www.climatebonds.net/standard/protected-agriculture>