

2030-2050 Vision

THE FUTURE OF FORESTS AND AGRICULTURE IN BRAZIL

**BRAZILIAN
COALITION**

ON CLIMATE
FORESTS AND
AGRICULTURE

www.coalizaobr.com.br/en

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PREFACE

AN INVITATION TO RECONNECT TO THE LAND WHERE WE LIVE

It might seem odd, but we get used to living in an environment that, often, does not bring us welfare. Our relationship with the place we live is intense and ambiguous. We leave the rural area in pursuit of our ambitions in cities, but due to affection, family, businesses or consumption of products from that area, we remain connected to it. We quickly go across rural areas through roads and by air, but it seems like less and less we have time to appreciate the landscape.

With this proposal, we would like to remind you that the place where we live has a long history of coexistence and connivance. We shape the terrain, explore forests, rivers, and mountains, cultivate the land, and build cities and roads. We master the environment and establish power relationships with the different social groups occupying it. We upset the relationships between the biological and physical components and between ourselves. But we still have not completely lost the childhood memories and stories lived in rivers, forested fields, good and varied gastronomic dives, simple parties,

good conversations, and bountiful harvests. We continue to associate rural areas to pleasurable moments, mixed with great productivity ambitions and economic accomplishments.

Over time, however, we lost track of how much we interfere with where we live. Little we realize nature's reaction to such an intervention. We know a lot about production technologies and, increasingly, their indirect effects - positive and negative. We translate this knowledge into important gains in food, energy, fiber, and other goods production. We generate wealth. However, as a society in general, we are not paying enough attention to the imbalances we cause.

Worried about dealing with the reaction nature is imposing on our well-being, in the short and long terms, a part of this society - consisting of NGOs, academia, and entrepreneurs - deepened the debates about what is necessary to do in order to resume a more harmonic relationship with the environment where we live. An impenetrable, almost secret dialect was created to discuss topics such as climate change,

greenhouse gases, deforestation, biome restoration, sustainable forest management, degraded areas, low impact agriculture, renewable energy matrix, ecosystem services, traditional peoples, income distribution and other even odder terms.

However, deep down, this technical language has a very simple goal: to promote everybody's well-being by occupying rural areas with conditions that allow to: 1) produce more and better; 2) to create value and generate benefits through forests; 3) to end deforestation; and 4) to make State public policies feasible and build aligned and integrated economic instruments.

We cannot miss this opportunity since we are all connected to nature and rural areas.

We want to provoke you to read this document with this perspective. To think about our relationship with rural areas, without losing the affection, the memories, the stories, and ambitions, but projecting wishes and aspirations for a future already knocking on our door. We want you to be able, each person in their own way, to translate the technical concepts explored in the

following pages into well-being.

We want society to widely understand and discuss the proposals presented here. Our vision is that Brazil can be the international leader in the most harmonic, inclusive and sustainable land use. Even though this is feasible, we know how much it is challenging and how much it depends on a joint effort; an effort we would like you to take part in.

Enjoy your reading!

Members of the *Brazilian Coalition on Climate, Forests and Agriculture*

INTRODUCTION

Brazil has an extensive diverse territory, a strong and competitive agriculture, an extraordinary natural capital – with high biodiversity and unique ecosystem services –, and unparalleled cultural wealth. These are attributes any country would like to have and the best conditions to lead the transformations the world needs.

The above-mentioned characteristics put the country at the forefront of the transition to a new economy based on the Sustainable Development Goals¹. However, in order to accomplish this, it is important to expand the visual field, making room for a new perspective on the opportunities to generate well-being, wealth and jobs. This means investing in innovation, science, technology, and cooperation, especially regarding sustainable forest and agriculture production models. It means to design and implement public policies and economic and financial instruments that induce and accelerate the transformations we want.

The climate changes in motion represent

humanity's biggest challenge nowadays. The intensification of climatic extreme events has a direct impact on people's lives. The extension of drought periods and increase of rainfall volume and frequency of storms, in addition to higher average temperatures in many regions, have direct effects on food and raw materials production.

In the *Brazilian Coalition on Climate, Forests and Agriculture's* view, it is possible to, not only face and mitigate these impacts, but also transform the climatic crisis in an opportunity for positive transformations. The path to achieving this is through fulfilling the commitments set by the country with actions that stimulate low carbon agriculture's development, forest-based economy, and the generation of renewable energy. At the same time, it is necessary to also reinforce legal and natural ecosystem protection's incentive instruments.

These actions depend on a new vision for land use in our country. A vision shared by all sectors

¹ Development agenda proposed by the UN: <https://bit.ly/1Po5zlk>

of society. There is no longer room to consider forest production and agriculture in dissonance to environmental conservation or to traditional peoples' and communities' rights. Food security and social inclusion will only be possible by assuring nature's protection and recovery.

In the past 40 years, the country has become an agricultural power. It went from being a food importer to becoming the third in the agricultural products exporters rank, according to the Food and Agriculture Organization of the United Nations (FAO)². This leap was possible due to a powerful combination of what was guaranteed by nature - soils fertility, water availability, climatic conditions, pollinators, and plague and disease biocontrol agents -, and productivity gains resulting from investments in research and innovation³.

Brazil is and will remain as one of the main countries responsible for food production in

the world by 2050, as well as for the production of biofuels and forest products. This is why we have great responsibilities regarding the maintenance and recovery of natural factors and social, political and economic conditions that this production depends on.

On the other hand, we are the seventh largest greenhouse gas emitter in the planet⁴, with a great part of these emissions resulting directly and indirectly from activities related to agricultural production; especially deforestation. The priority strategies to benefit food security and climatic resilience are to amplify the adoption of production practices that reduce emissions (low carbon agriculture) and adopt large-scale restoration of areas that are critical for the provision of nature services and products (timber and non-timber).

Governments, organized civil society, companies, scientists and social leaders have a

2 OECD-FAO Agricultural Outlook 2015-2024: <https://bit.ly/2C9cnVh>

3 Brazilian Ministry of Agriculture, Livestock and Supply: <https://bit.ly/2Okq2jo>

4 System for Greenhouse Gas Emissions and Removals Estimates (SEEG), 2018: <http://seeg.eco.br/>

fundamental role in building and implementing this common vision. The implementation of the Forest Code and of the actions necessary to reach the goals set for the country in the Paris Agreement [see Charts 1 and 2] demand an innovative approach to territorial and landscape planning. Integration and cooperation are decisive factors in this approach.

Reconciling public policies on environmental protection and agricultural production is the first step in this direction. Another important step is the cooperation among the different social and productive actors that interfere with the land use, territories and landscapes. The creation of dialogue environments and trust are the key to this new reality. Another step is

CHART 1: **PARIS AGREEMENT COMMITMENT**

Brazil's commitment is to reduce greenhouse gas emissions by 37% below 2005 levels by 2025 and, after that, to reduce emissions by 43% below 2005 levels by 2030. Specifically regarding land use, Brazil's NDC (Paris Agreement goals) proposes:

1. To restore and reforest 12 million hectares of multiple-use forests by 2030.
2. To restore 15 million hectares of degraded pastures and increment 5 million hectares of integrated crop-livestock-forest systems (ICLF) by 2030, as well as to strengthen the National Plan for Low Carbon Emission in Agriculture (ABC Plan).
3. To increase sustainable bioenergy's participation in the Brazilian energy matrix to approximately 18% by 2030.
4. To strengthen Forest Code's compliance.
5. Zero deforestation by 2030.
6. To compensate legal deforestation emissions.
7. To increase sustainable use of renewable energies, such as solar, wind, and biomass, excluding hydroelectric energy, to at least 23% of Brazil's electricity generation by 2030.

CHART 2: **WHY BRAZIL CAN BECOME A LEADER IN LAND USE OF THE NEW ECONOMY**

The country is a major player in the creation of innovative land use and climate change policies. This position is mostly because Brazil has:

1. The largest tropical forest area of the planet and, at the same time, the largest deforestation in the world.
2. The largest system of protected terrestrial areas of the world, although it is still fragile and threatened.
3. The highest productivity rates and volume of agricultural production of the tropics.
4. The third largest area dedicated to agriculture and livestock of the planet.
5. The highest planted forests productivity rates of the world.
6. Intellectual, technological and social capital to fight illegal deforestation, expand reforestation, manage tropical forests and massify low carbon agriculture.
7. Vast areas of degraded pasture with the potential of becoming more productive and functional.

CHART 3: **BRAZILIAN COALITION'S DIALOGUE FORUMS:**

Brazilian Coalition is organized in four Dialogue Forums responsible for debating the different subjects of the climate, forests and agriculture agenda with the extensive participation of the movement's members:

- **Agriculture and Forestry**
- **Native Forest**
- **Deforestation**
- **Public Policies and Economic Instruments**

The Forums have the goal of guaranteeing a continuous dialogue space and the monitoring of themes that are important to the actions of this agenda's stakeholders. In 2018, the focus of the Forums was the construction of this vision for the future, which had the participation of more than 130 organizations and 200 people representing businesses associations, companies, civil society organizations, academia and individuals interested in contributing to promoting a new economy.

Chart Notes:

Chart 1: Intended Nationally Determined Contributions (INDC) - current NDC - Brazil: <https://bit.ly/1Ru0Jm3>

Chart 2:

Item 1 - Global Forest Watch: <https://bit.ly/2J4DIIh>

Item 2 - Global Protected Planet: <https://bit.ly/2c9Hy6p>

Items 3 and 4 - Moratorium: <https://glo.bo/2SaMRnX>

Item 5 - Brazil is the second largest cellulose producer in the world, according to the Brazilian Tree Industry (Ibá): <https://bit.ly/2EcXleo>

the implementation of economic incentives aligned with the set goals.

This document presents *Brazilian Coalition on Climate, Forests and Agriculture's* vision for the future, with projections of the intended scenarios for 2030 and 2050; projections that we consider totally feasible and desirable. To design the future of land use presented here, the *Brazilian Coalition* organized itself in Dialogue Forums [read more on Chart 3], responsible for the creation of the content in this publication, which was later revised and edited by the other bodies of the movement and a redactor group⁵. Therefore, this work's final result is presented in the following four chapters. The first two directly approach activities of production, value creation and benefits generation regarding land use, conservation, restoration, and sustainable management. The third chapter approaches the most fundamental question, without which it is not possible to accomplish everything that we imagined: to end deforestation and degradation. The fourth chapter deals with analyzing how to make this developed and sustainable Brazil viable, through public policies that are innovative and that represent an agenda of the State - not of ruling governments -, and economic instruments that are integrated and sustained by these policies. Finally, the publication also brings a conclusion and next steps chapter, and a glossary of technical terms that can help the reading.

We invite you to join us in this journey; where food and biofuels production, forest-based economy, nature protection, climate change adaptation and human welfare happen synergistically and interdependently.

⁵ Final documents of each Dialogue Forum can be accessed using the following link: <http://bit.ly/2BoJOIN>
From this material, an editing and revising work was done, resulting in this publication's content.

**2030-2050 VISION
SYNTHESIS:
THE FUTURE OF
FORESTS AND
AGRICULTURE
IN BRAZIL**

Harmonic

The combination of elements connected by relationships of relevance, the absence of conflict, and agreement

"Promote a harmonic, inclusive and sustainable land use in Brazil"

Inclusive

That does not leave anybody out; that embraces and integrates

Sustainable

That satisfies present and future needs

To produce more and better through agriculture and forestry

To make State public policies feasible and build aligned and integrated economic instruments

To create value and generate benefits through native forest

To end deforestation

TO PRODUCE MORE AND BETTER THROUGH AGRICULTURE AND FORESTRY

Food and raw materials of agricultural and forest origin need to be produced using practices and models that assure low carbon emission, human welfare, ecosystem services protection and sustainable territorial development.

CONTEXT

Brazil is one of the largest producers and exporters of the world in terms of agricultural and forest products, and biofuels. The country also has opportunities to assure the population's well-being and leverage a more prosperous economy based on such resources; opportunities that help the country to increase its participation in the world market and accelerate its development, while generating jobs and income. The main challenge is to accomplish this while protecting Brazil's natural resources. In the 21st Century, agricultural production and environmental conservation need to walk together, side-by-side.

Today, agriculture is one of the main sources of greenhouse gas (GHG) emissions in Brazil. In 2016, GHG emissions by this sector were of 499 MtCO₂ eq, which corresponds to 22% of national emissions⁶. On the other hand, with a more sustainable use of the land, the sector can become an important part of the solution, contributing not only to reduce emissions but also to capture carbon from the atmosphere.

The total area occupied by agriculture in Brazil is between 240 and 280 million hectares, including native fields acting as pastures⁷. There are still other 7.8 million hectares occupied by planted forests⁸. However, there are 178 million hectares of pastures⁹ with a great proportion of areas degraded or far from their productive potential. The average meat productivity

in 2015 was of 45 kg/ha, but it can surpass 200 kg/ha in well-managed pastures¹⁰. Agriculture needs to be intensified in these areas, making it viable for the sector to increase its productivity without demanding new forested areas.

Family agriculture has a central role in the sector, being responsible for the food production of a considerable part of the population, the adoption of diversified systems, and for promoting social inclusion. The majority (84%) of rural establishments belong to family groups¹¹, representing the economic founda-

tion of 90% of the municipalities with up to 20 thousand inhabitants. In 2006, the sector produced 87% of the yucca, 70% of the beans, 46% of the corn, 38% of the coffee, 34% of the rice and 21% of the wheat in Brazil¹².

One of the main laws of the agricultural sector is the Forest Code. The Code was approved in 2012 and with its implementation is already advancing, even though it still faces some obstacles. On the Code's initial stage of implementation, almost 100% of rural properties registered for the Rural Environmental Registry (CAR - the acronym in Portuguese)¹³, which makes this system one of the main private properties databases of the world. However, the deadline for producers to register for the National System of the Rural Environmental Registry (SiCAR - the acronym in Portuguese) has been postponed multiple times

“With a more sustainable use of the land, agriculture can become part of the solution”

6 System for Greenhouse Gas Emissions and Removals Estimates (SEEG), 2018: <http://seeg.eco.br/>

7 Brazilian Annual Land Use and Land Cover Mapping Project (MapBiomas) <http://mapbiomas.org/>

8 Brazilian Tree Industry: <https://bit.ly/2EcXleo>

9 Assessing the Spatial and Occupation Dynamics of the Brazilian Pasturelands Based on the Automated Classification of MODIS Images from 2000 to 2016: <https://bit.ly/2zwQyNN>

10 Impact of the intensification of beef production in Brazil on greenhouse gas emissions and land use: <http://bit.ly/2QIHgEz>

11 Agricultural Census 2006: <https://bit.ly/2xGFVX8>

12 Agricultural Census 2006: <https://bit.ly/2xGFVX8>

13 Rural Environmental Registry (CAR): <http://bit.ly/2PrjG2l>

by bills proposed by the Congress, aiming to extend the period of the benefits predicted in law. In addition to the successive postponement of this deadline, the following steps of the Code's implementation- validation of the registry and creation of compliance plans - still have not advanced effectively, which delays law enforcement.

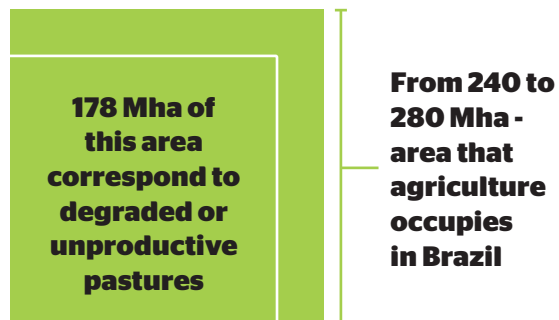
Other instruments predicted in the Forest Code, such as the Payment for Environmental Services (PES) and the Environmental Reserve Quota (ERQ), also need to be effectively implemented, since they represent incentives to environmental preservation and a way of compensating property owners for forest conservation. Agriculture and forestry provide biofuels and non-food bioproducts. Products, such as cellulose, timber, non-timber forest products, drugs, essences and cellulose nanofibers, among others, can be produced by using sustainable agricultural, forestry and native forests practices. These products, in addition to being vectors for the development of agroforestry and economic utilization of biodiversity, generate carbon stocks and replace fossil fuels or products originated from them.

In 2016, bioenergy was responsible for 30.9% of the Brazilian energy matrix, with 17.5% coming from sugarcane, 8% of firewood and charcoal, and 5.4% of lixivina (the alkaline solution obtained by leaching wood ash with water) and other renewable sources¹⁴. The great variety and lack of classification and statistics regarding bioproducts make it difficult to define their dimension and impact, with the exception of cellulose, charcoal, wood panels and laminated floors, which are responsible for an area of 7.8 million hectares of planted trees for productive purposes¹⁵. The production of these bioproducts corresponds to 5.6 million hectares of natural areas for preservation, representing a

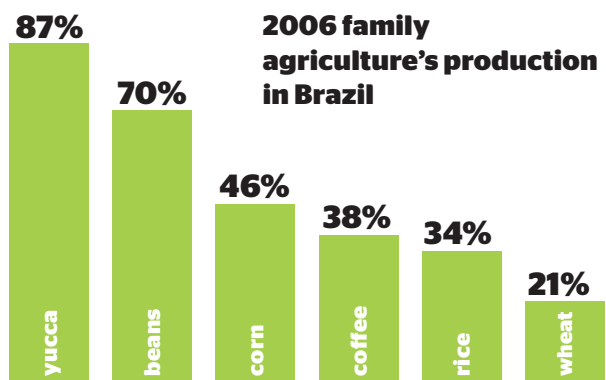
14 National Energy Balance 2017: <https://bit.ly/2Evta44>

15 Brazilian Tree Industry: <https://bit.ly/2EcXleo>

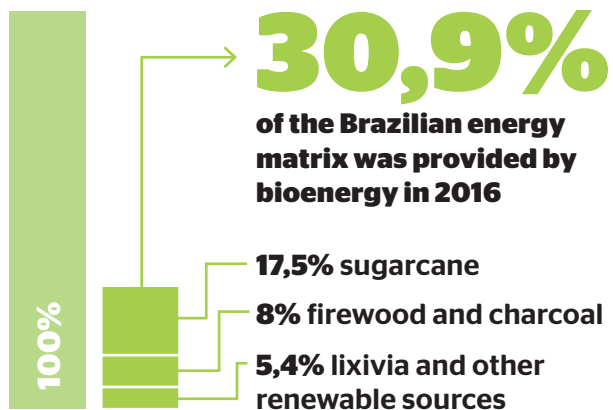
AGRICULTURAL OCCUPATION



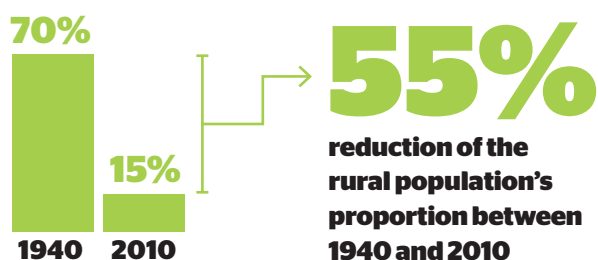
FAMILY AGRICULTURE



BIOENERGY



RURAL POPULATION



stock of 2.5 billion tons of CO₂eq¹⁶. In addition to this, there are numerous initiatives to structure new bioproduct chains, as well as to develop new chains targeting bioeconomy.

The advance of low carbon practices, both in family agriculture and agribusiness, depends on factors such as technical assistance and rural extension (Ater), technology diffusion, research, distribution logistics, and access to social infrastructure - which includes electricity, sewage networks, health, education, water, internet access, transportation, etc. -, in addition to policies and programs that stimulate low carbon consumption and production.

Even though the country is ahead in developing new technologies and shows a huge potential in this field, there are still large disparities of access to them between regions or within the same region and between production segments. The barriers to overcome these challenges include the scarce resources and policies on research and development (R&D), small integration between public and private sectors, the absence of a continuous technical assistance

program and a slow and unattractive patent concession system. Moreover, the country does not monitor carbon emissions and removal from soils, which brings uncertainties regarding Brazilian data on greenhouse gas emissions and removal.

Brazil is deficient in logistical and distribution infrastructure¹⁷. Cargo transportation, predominantly through roads, was responsible for the emission of 102 MtCO₂ eq¹⁸ in 2016. The investment in logistics and infrastructure has been falling since 2011¹⁹ and, for the agribusiness segment, the impact of logistics is equivalent to 20.7% of the cost²⁰, affecting the sector's competitiveness.

The low quality of the social infrastructure and small generation of income also stand out. These are the main reasons why the rural population migrates to urban centers. They are in the search of better living conditions. According to data from the IBGE (Brazilian Institute of Geography and Statistics), between 1940 and 2010, the rural population went from 70% to 15%²¹.

"The advance of low carbon practices depends on technical assistance and rural extension, technology diffusion, research, distribution logistics and social infrastructure"

16 Brazilian Tree Industry: <https://bit.ly/2EcXleo>

17 Brazil is 55th in the rank of Logistical Performance Index of the World Bank in 2016: <https://bit.ly/292kXbO>

18 System for Greenhouse Gas Emissions and Removals Estimates (SEEG), 2018. <https://bit.ly/2N8aPwo>

19 A stronger investment in infrastructure should be relegated to 2019: <https://bit.ly/2BWFhIN>

20 Logistics costs R\$ 15,5 bi more in two years with precarious infrastructure and urban restriction: <https://bit.ly/2HwSDhx>

21 Demographic Census 2010 (IBGE): <https://bit.ly/2KceHft>

2030 VISION



the **ABC Plan**, about the actions to mitigate and adapt to climatic changes related to agriculture at the national level, will have already significantly advanced and the **regional plans** will be in the implementation phase.



Family agriculture will be strengthened, with proper credit lines, strong support from Ater programs and public policy incentives.



The **Safra Plan**, one of the Brazilian rural producers main sources of credit, will have its portfolio totally linked to low carbon emissions practices, just as it happens currently with the Program to Reduce Greenhouse Gas Emissions in Agriculture (ABC Program). Other sources of credit to activities that impact land use and its carbon emissions will follow the same pattern.



The **area for agricultural use** will have followed a territorial planning, taking into account the demand, landscape, and environmental conservation as essential criteria.



Land ownership legalization will be consolidated, eliminating conflicts and assuring legal safety to rural producers, traditional, quilombola and indigenous communities, extractivists, and investors.



The country will have reached important results in complying with the **Forest Code** and in adopting **practices** such as degraded pastures recovery, integration of crop-livestock-forests (ICLF), agroforestry systems (AFS) and other practices that contribute to a sustainable rural production.



The **use of chemical and mineral inputs** will have been reduced and optimized, as a consequence of the adoption of soil conservation practices and integrated plague management.



The strengthening of **technical assistance and rural extension** (Ater) organizations, capacitation actions and the transfer and **diffusion of technology** will be playing an important role as vectors for these practices advancement, by using a National Program of Ater.



Investments in Research and Development (R&D) will be consolidated and technologies to develop **bioproducts** (alternatives to products from non-renewable sources) will be established in the domestic market and will forge a path for Brazil's participation and leadership in the international market.



There will be a **training network for technology specialists** of soil quality improvement and greenhouse gas emissions reduction in agriculture.



Brazil's political goals regarding **biofuels** will have been reached, with an increase of 85% of hydrated ethanol volume and 158% of biodiesel volume in the transportation energy matrix, compared to 2017. Other biofuels will have been developed through advances in R&D.



The Forest Code implementation agenda will have had advanced significantly, with the Rural Environmental Registry (**CAR**) of all properties validated and two-thirds of the ones with liabilities having their Degraded Areas Environmental Recovery Projects (**PRADA** - the acronym in Portuguese) implemented. The market of Environmental Reserve Quotas (**ERQ**) will be contributing in a relevant way for the implementation of the Forest Code, valuing properties with vegetation surplus.



Life conditions and welfare in rural areas will have significantly advanced, with universalized electricity, basic sanitation and amplified social infrastructure - especially digital networks and technologies. The migration to urban centers will be a choice, not a need. This change will result in a reversion of the current process, attracting more Brazilians to rural areas.

2050 VISION



Low carbon **productive systems** will be adopted on a large scale.



Sustainable production practices will be a rule of such systems, such as **production intensification** in degraded areas and great adoption of **ICLF** and **AFS**.



Ater and **diffusion and transfer** of low carbon agriculture's **technology** will be reaching all rural producers, through public and private institutions networks, with the support of the Technical Assistance and Rural Extension National Agency (Anater) and of the Brazilian Agricultural Research Corporation (Embrapa).



Agricultural and forestry sectors will have a relevant role in natural ecosystems **restoration** and maintenance, contributing to the establishment of ecological corridors.



The **Forest Code** will already be **implemented in all** national territory, with environmental liabilities equated and rural production fully compliant.



Family agriculture will be totally integrated into the productive system and in full adherence to low carbon technologies. This integration will guarantee social inclusion and the preservation of communities' culture, diversity, and identity.



All **degraded areas**, including pastures, will no longer be unproductive and will be contributing to the sustainable intensification of agriculture without the need to clear new areas with natural vegetation.



Greenhouse gas **emissions** related to agriculture will be drastically reduced and the **removal** through different practices on land use and forests increased. In addition, the sector will contribute not only to mitigate but also to adapt to climate change, capturing carbon from the atmosphere.



Brazil will be a global reference in the **bioproducts** industry, made from biodiversity and green chemistry inputs.



The country will be in the technology, agriculture, and forestry knowledge vanguard of the tropics, with the support of public and private investment on **R&D** targeting innovation.



The **international market** will recognize and value Brazilian products due to their sustainability attributes.



The **energy matrix** will be essentially renewable, with a high percentage of bioenergy, on both electricity and transportation matrices.



The **countryside worker will master the technologies** available to the low carbon agriculture and will be able to gain better work conditions and new income generation opportunities.

TO CREATE VALUE AND GENERATE BENEFITS THROUGH NATIVE FORESTS

Nature assets should be valued and recognized as essential for the country's development, both for their products and the ecosystem services they offer.

CONTEXT

Brazil has a large environmental heritage and the country's recent past shows that uniting agriculture and environmental conservation is possible. Between 2004 and 2012, the country was able to drastically reduce its deforestation levels²², at the same time that it increased its agricultural production²³.

Forests and other ecosystems have a fundamental role in this union since they guarantee water resources protection and play the role of a giant sprinkler in Brazilian agriculture. Moreover, agribusiness depends on climatic factors other than the rain, such as temperature and humidity.

Therefore, the commercial and sustainable use of forests is necessary both to stop the progress of deforestation and degradation and to increase agricultural areas productivity and functionality. To this end, it is necessary to strengthen natural ecosystems valuation with a focus on forest management and the sustainable use of resources, conservation, ecological restoration, and native species forestry.

In addition to their interdependent relationship with agribusiness, forests and natural ecosystems are also responsible for the subsistence of a large number of people - especially in rural areas more distant from economic and industrial centers. This subsistence is due to the provision of food, such as the acai, or the

maintenance of hunting and fishing activities²⁴, which depend on the forest's health²⁵.

Brazil is one of the largest producers of tropical timber and non-timber products in the world. Legal timber production is originated from planted and native forests. Forestry with intensive plantations, such as eucalyptus, occupy less than 1% of the national territory²⁶, but is responsible for more than 90% of all timber used for productive purposes; a percentage that has been growing over the last couple of years²⁷.

On the other hand, the production from tropical forests management, concentrated in the Amazon, has reduced by half between 1998 and 2009²⁸, due to changes in the market. It is worth highlighting that the largest part of tropical sawn timber offered in retail are from illegal sourcing, since the buying market does not value chain custody control systems, but prioritizes low prices and only a few species²⁹.

It is essential to guarantee timber's productive chain traceability, but this work needs to be recognized and considered by the consumer market. Buyers need to be conscientious of their own importance and responsibility since they represent the last link of this chain and are the main inducers of the legalization of timber production in the country. Moreover, it is necessary that the market is also open to other kinds of timber, since, currently, there is a strong

"Forests guarantee water resources protection and play the role of a giant sprinkler in Brazilian agriculture."

22 The Amazon Deforestation Calculation Program: <https://bit.ly/2ObD6DF>

23 Brazilian Agriculture's Growth and Productivity from 1975 to 2016 (Ipea): <https://bit.ly/2IkhoLy>

24 Deforestation affects fishing production in the Amazon: <https://bit.ly/2kuKWuC>

25 Amazon timber-food balance saves forest smallholder livelihoods from risk: <https://bit.ly/2PtOg98>

26 Brazilian Tree Industry: <https://bit.ly/2zJ3QXn>

27 Brazilian Tree Industry: <https://bit.ly/2zJ3QXn>

28 Amazon Forest Facts 2010: <https://bit.ly/2AnZndO>

29 Timber Exploration Monitoring System (Simex): <http://bit.ly/2hXCiYa> and Mapping of illegal timber exploration in Mato Grosso between August 2013 and July 2016: <https://bit.ly/2C5xFUk>

pressure on only a few species that present a reduced legal offer. This concentrated demand incentivizes illegal deforestation, the invasion of public areas, and all sorts of illegalities. The market needs to understand that, for every type of use, there is an infinite number of different timber species less known - native or planted - that can meet each user's demand.

Since 2006, public forests - national and state - could be granted to companies and communities for activities such as forest management, generation of non-timber products (such as extractivism), and tourism services, which are also opportunities that need to be developed better³⁰.

One opportunity to use native forests responsibly can be with Units of Conservation (UC). Today, the National System of Units of Conservation (SNUC - the acronym in Portuguese) encompasses 2,201 UC, which represents 18% of the Brazilian territory and 26% of the country's maritime area³¹. Despite UC's importance and role in reducing deforestation³², in 2013, an audit from the Audit Court of Brazil (Tribunal de Contas da União - TCU) and Legal Amazon states audit courts (Tribunal de Contas dos Estados - TCE) revealed that 96% of these areas were underexplored for research, tourism, and other activities and did not have the appropriate means for their implementation³³.

In 2018, a study showed that UC (targets of illegal deforestation in the Amazon) are the first ones to suffer from the lowering in protection status, area reduction, or even extinction, instead of being monitored better³⁴. However,

To recover
12 MILLION
hectares requires
an investment
between
R\$ 31 BILLION
R\$ 52 BILLION

to invest in conservation, an improvement and amplification of the UCs is a way to obtain economic and social returns above the amounts allocated³⁵.

Although Brazil has increasingly expanded its protected area³⁶, the threats and vulnerability of the protection system has turned the country into the largest deforester in absolute terms of the world, between the years of 2000 and 2015³⁷. Between 2004 and 2012, the country reduced Legal Amazon's deforestation rate by 80%³⁸, by combining public policies such as the creation of protected areas (units of conservation and indigenous lands), restriction of rural credits for landowners that were not following the law, and the acceleration of imposing stronger sentences.

Environmental legislation setbacks have been jeopardizing the goal Brazil set in the Paris Agreement and also the global goal of keeping average temperature increase below 2°C. In case Brazil is unable to control deforestation, other countries - and other sectors in Brazil, such as the industrial sector- will have to pay up to US\$ 5.2 trillion to guarantee the global climatic goal fulfillment³⁹.

Excessive deforestation and poor use of deforested lands generated a huge liability in

30 Public Forests Management Law (Law 11,284/2006): <https://bit.ly/2ItGVCI>

31 CMBIO: <https://bit.ly/2OZHWEr>

32 Studies stress: protected areas really protect: <https://bit.ly/2Ndp0Pp>

33 Coordinated audit in units of conservation of the Amazon (TCU): <https://bit.ly/2DJwGen>

34 Deforested conservation areas in the Amazon are losing government's protection, indicates study in the U.S.: <https://bbc.in/2OpwIS6>

35 How Much is Green Worth: The Economic Importance of Brazilian Units of Conservation: <https://bit.ly/2MMfPe2>

36 8.9 million hectares more of protected areas: <https://bit.ly/2Qjhy8T>

37 World Bank: <https://bit.ly/2xz04xD>

38 Zero deforestation in the Amazon: how and why to get there: <https://bit.ly/2kTbYfy>

39 The threat of political bargaining to climate mitigation in Brazil: <https://go.nature.com/2KYigJz>

degraded areas; areas that need to be restored for water and soil conservation, climate regulation, agricultural production, and ecosystems services maintenance. It is estimated that Brazil currently has around 50 million hectares of pastures with a very low agricultural suitability, but that could be used for conservation, through incentives that make native vegetation restoration viable⁴⁰. Moreover, more than 20 million hectares of the almost 20% of the Amazon already deforested are areas in natural regeneration process⁴¹.

Among its goals with the Climate Convention (Brazilian NDC⁴²), the country has committed to recovering 12 million hectares of forests by 2030. A study from *Instituto Escolhas*⁴³ shows that this entrepreneurship requires an investment between R\$ 31 billion and R\$ 52 billion, depending on the chosen scenario. On the other hand, the same study indicates that recovering this area would foster the creation of between 138 and 215 thousand jobs and the collection of R\$ 3.9 to R\$ 6.5 billion in taxes.

Reforestation using native species and AFS, with risk-adjusted returns, can be as attractive as agriculture and forestry⁴⁴ with pine and eucalyptus.

There are still big opportunities in native vegetation restoration, such as the recent promulgation of the Ibama fines conversion decree⁴⁵, and the creation and implementation of the National Policy and Plan for Native Vegetation Recovery (Proveg/Planaveg)⁴⁶.

Although there are many challenges to seize these opportunities, Brazil counts on collectives and institutions that have proposals and instruments to make the restoration and reforestation agenda advance and grow. More technical and financial support to rural producers can help in this endeavor.

Regarding incentives to rural producers, up until 2014, Brazil already had 2 thousand projects of payment for environmental services payment (PES) and more than 400 municipalities paying for such services. On the other hand, this corresponds to less than 10% of the Brazilian cities⁴⁷.

It is essential to remember that all these actions are also important to increase agriculture's resilience through the provision of environmental services - such as pollination and increase in water availability. Therefore, these actions should be part of Brazil's climate change adaptation strategy.

"Brazil counts on collectives and institutions that have proposals and instruments to make the restoration and reforestation agenda advance and grow."

40 Agriculture, Environmental Conservation, and the Reform of the Forest Code: <https://bit.ly/2NX5kWQ>

41 Zero Deforestation: How and why to get there: <https://bit.ly/2kTbYfy>

42 Brazilian NDC: <https://bit.ly/1RuOJm3>

43 How much does Brazil need to invest to recover its 12 million hectares of forests? <https://bit.ly/2Mlg4c4>

44 VERENA Project (Economic Valorization of Native Species Reforestation): <https://bit.ly/2Qn5iEd>

45 Decree 9.179/2017: <https://bit.ly/2iLhQKg>

46 Decree 8.972/2017: <https://bit.ly/2NeHG2l>

47 Economic Incentives to Ecosystem Services in Brazil: <https://bit.ly/2DWwpoD>

2030 VISION



Forest concessions in the Amazon and forests planted with native species will be responsible for supplying a significant part of the demand for sawn timber.



All **public forests**, which today exist without a particular use, will have an allocation determined by the State, such as the creation of units of conservation, incentive to sustainable forest management projects, and the demarcation of indigenous lands. The allocation of these lands could represent a new development opportunity for traditional and rural communities.



Programs of **payment for environmental services** will have been implemented in different Brazilian states and cities.



Native species forestry will be an economically relevant activity in the country, mainly due to the advances resulting from research and development; the Forest Code implementation; technical assistance and rural extension; climate, agriculture and environment integration policies; and the financial incentives available.



At least 20% of each terrestrial, coastal, and maritime ecosystem in all biomes will be protected as **integral protection units of conservation**.



The National Plan for Native Vegetation Recovery (**PLANAVEG**) will be fully implemented.



Agroforestry systems will be producing food, fibers, and biofuels in large-scale.



Resources from **public and private financing, and national and international donations and investments** for conservation will be increased, through new economic mechanisms and corporate policies on climate change mitigation and adaptation.



The country will have **restored or reforested at least 12 million hectares** of degraded areas, according to the commitment made in the Brazilian NDC, and will become a world reference in promoting large-scale restoration .



Research & Development on natural resource use, conservation and restoration will be part of companies and public authorities investments, consolidating the foundation for a strong bioeconomy.



Illegal exploration of forests will be residual. As a result, forests will be less susceptible to fire and degradation, which will contribute to reducing their vulnerability to drought and human risk to respiratory diseases associated with forest fire.



The valorization of forests and environmental conservation for the population's welfare and for the sustainable development of the country will be recognized by the different sectors.



Brazil will have developed a strategy with **forest fire**, guaranteeing more protection to forests.



Information regarding the source and tracking of forest products will be known by the market, which will increasingly value the transparency of these chains and will be open to new timber species.

2050 VISION



Brazil will count on a **forest economy based on native species**. **Public forest concessions** will be fully implemented in all areas suitable for this activity and **forests planted with native species** will reach at least 5 million hectares with economic purpose, and cultivated and managed with technology and precision.



Environmental services payment programs will be present in all national territory and will become the reference to make investments.



Conservation and the sustainable use of the recovered natural ecosystems will be recognized as economic pillars of the country.



Brazil will be the largest destination for nature **tourism** of the world.



The **Brazilian area of conserved, restored, planted and managed forests will have been expanded** to beyond the minimum established in the legislation.



The extension of **restored and reforested areas** will reach 20 million hectares, going beyond the commitments set by Brazil in the Bonn Challenge and NDC.



The **offer and demand for forest products like timber, fiber, food, seeds, and others** will represent a growing market.



New forest products and more efficient technologies to use environmental resources will have already been created from public and private investments in **Research & Development**.

TO END DEFORESTATION

Deforestation should be eliminated from productive chains and will become a thing of the country's past.

CONTEXT

The largest portion of deforestation⁴⁸ in Brazil is still a result from illegal activities⁴⁹. For this reason, the country cannot restrict itself to future deadlines to end illegal deforestation, such as the one established in the Brazilian climate goal (“zero illegal deforestation by 2030”), but should adopt a “zero tolerance” to illegal deforestation. For this purpose, it is necessary to put into practice policies and strategies that allow fighting against illegality. On the other hand, it is also necessary to create incentives to stimulate producers to preserve forested areas in their properties that, according to the legislation, could be cleared. Such incentives include, for example, compensating landowners that voluntarily waive their legal right to deforest. In this sense, economic compensation mechanisms need to be created, perfected and implemented through comprehensive national and sub-national public policies⁵⁰.

Despite the significant reduction in deforestation within the last decade, especially in the Amazon⁵¹, high rates of native vegetation suppression continue in all biomes⁵². In particular, *Cerrado* lost 236 thousand km²⁵³ between 2000 and 2015. Native vegetation’s conversion in this biome already exceeds what is happening in the Amazon⁵⁴. In general, deforestation contributes to 51% of

"The largest portion of deforestation in Brazil is still a result from illegal activities."

national GHG emissions⁵⁵.

Native vegetation’s destruction still occurs because of land grabbing, the lack of land ownership legalization, and the expansion of extensive livestock, in addition to infrastructure project⁵⁶. Indirect causes, however, are related to the insufficiency of the current illegality prevention system, political signs unfavorable to forest protection, and the absence of robust mechanisms of environmental conservation valorization.

To keep forests preserved means to guarantee a higher availability of water to all uses, including the maintenance of a proper

rain regime, local or regional agricultural production⁵⁷, and even the generation of electricity and the provision of water. For this reason, we can state that forests have an intrinsic value, often times unat-

tainable, but that needs to be definitely recognized as a fundamental contribution to the planet’s sustainability.

The combined effect of climate change and deforestation leads to drastic changes in regional and local climate, causing a high mortality of trees and increasing the chances of wildfires to occur. In the Amazon, greenhouse gas emissions from degradation are already higher than those from deforestation⁵⁸.

Moreover, the continuation of deforestation, combined with global climate change effects, could cause many vast areas to become

48 The term deforestation here applies to all Brazilian biomes and it is known as “native vegetation suppression”.

49 Scientific data related to land use reveal where Brazil needs to focus to fight against deforestation and increase its productivity: <https://bit.ly/2jHH09C>

50 These items are detailed in the Economic Instruments and Public Policies chapters, respectively.

51 Achieving zero deforestation in the Brazilian Amazon: What is missing?: <https://bit.ly/2Rg4uCk>

52 Brazilian Forest Service: <https://bit.ly/2IOE6M1>

53 Between 2000 and 2015, deforestation at Cerrado was higher than in the Amazon: <https://bit.ly/2y4NwVr>

54 Between 2000 and 2015, deforestation at Cerrado was higher than in the Amazon: <https://bit.ly/2y4NwVr>

55 Brazilian emissions increase 9% in 2016: <https://bit.ly/2y7zsXt>

56 Achieving zero deforestation in the Brazilian Amazon: What is missing?: <https://bit.ly/2Rg4uCk>

57 Agricultural expansion dominates climate changes in southeastern Amazonia: the overlooked non-GHG forcing: <https://bit.ly/2QhB0mg>

58 Tropical forests are a net carbon source based on aboveground measurements of gain and loss: <https://bit.ly/2mlyVse>

inappropriate for agricultural and forestry production⁵⁹, for hydropower production⁶⁰ and for supplying industries and cities with water. It would also increase the desertification rate in semi-arid regions⁶¹ and reduce the availability of water in rural and urban areas. Therefore, it can be stated that deforestation threatens the Brazilian population's current and future welfare.

Part of the fight against illegal activities is the creation of a policy to allocate public areas with native vegetation. In the Amazon alone there are almost 65 million hectares of public forests⁶² still not destined for a specific use. This massive area is currently at the mercy of land grabbers. More than 30% of the deforestation of the region in 2017 occurred in those areas⁶³. However, according to the public forests management law, these areas should remain public and preserved, independently of them being state or federal. The destination of these areas for conservation, sustainable forest management, or to indigenous and other peoples could drastically reduce deforestation rates at the Amazon and curb land grabbing. This was evidenced from 2004 to 2009, when 24 million hectares of protected areas were created in the region⁶⁴, helping to reduce the loss in forest cover by 70%⁶⁵.

Despite this scenario, Brazil has advanced its technologies to combat deforestation and to monitor biomes⁶⁶. The country is internationally recognized for its technology and knowledge in the field of remote sensing, from both the government and other stakeholders from society. The data regarding this monitoring is made available to national and international society in a

From 2004 to 2009,

24 MILLION
hectares of protected
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loss in forest cover by **70%**

transparent way.

This means that illegal deforestation can be tracked, but it is still necessary to increase results obtained from monitoring. Native vegetation suppression authorizations issued by the states and federal government, for example, need to be standardized and presented in a single system that is capable to provide producers and consumers with the necessary information to verify if the products being purchased are legal - allowing them to have more influence over the system.

On the other hand, the absence of appropriate policies and mechanisms that pay forest conservation and the sustainable exploration of natural resources precluded the recognition of many stakeholders' efforts to reduce deforestation in the Amazon in the past few years.

If there is a surplus of native vegetation in private properties, in relation to the minimum percentage required by the Forest Code, deforestation is legal. Otherwise it is illegal. This surplus, according to legislation, can be cleared, but only as long as government authorizations are issued. However, the policy to fight deforestation needs to include the maintenance of such

59 Climate challenges and opportunities in the Brazilian Cerrado: <https://bit.ly/2P1At7T>

60 The Forests of the Amazon and Cerrado Moderate Regional Climate and Are the Key to the Future: <https://bit.ly/2PjmygM>

61 Climatic characteristics of the 2010-2016 drought in the semiarid Northeast Brazil region <https://bit.ly/2PIPyc2>

62 No man's land in the Brazilian Amazon: Could undesignated public forests slow Amazon deforestation? Land Use Policy: <https://bit.ly/2Rfv6DJ>

63 No man's land in the Brazilian Amazon: Could undesignated public forests slow Amazon deforestation? Land Use Policy: <https://bit.ly/2Rfv6DJ>

64 Role of Brazilian Amazon protected areas in climate change mitigation: <https://bit.ly/2y4R7MR>

65 Deforestation in the Amazon and the importance of protected areas: <https://bit.ly/2lu67sm>

66 Mapbiomas: <https://bit.ly/2ydWJV9>; PRODES: <https://bit.ly/2lu4f2P>; TerraClass: <https://bit.ly/2a1U737>

surplus by creating economic incentives for rural landowners who keep these forests standing.

Between 2005 and 2016, as a consequence of the reduction of the Amazonian deforestation, the country stopped emitting six billion tons of carbon dioxide (6 GtCO₂) into the atmosphere, when compared to average emissions from 1996 to 2005. This is equivalent to almost three years of Brazilian GHG emissions (according to 2016 levels)⁶⁷.

This was considered the largest reduction in emissions ever accomplished by a single country in the world. The deforestation avoided certainly represents an important asset and should be considered as leverage to new investments in the country. The cost of this asset can be estimated by using the reference value of US\$ 5/tCO₂ adopted by the Amazon Fund⁶⁸. In this case, if we consider only the reductions in emissions from Amazon's deforestation between 2006 and 2015, the country's reduction in emissions would have, as a comparison, a cost of approximately US\$ 30 billions⁶⁹.

In this sense, we need to quickly prosper in our efforts to strengthen mechanisms that financially reward developing countries for their results in reducing emissions from deforestation and forest degradation, while considering the roles of sustainable management, conservation and increase of carbon storage in forests - known as REDD+ - and payment for environmental services (PES). The sources of resources for

these mechanisms should come from different financial options (donations, Climate Convention instruments, the market, etc.).

In addition to this, despite recent signs of the destruction of forests resuming, Brazil still finds itself in a privileged position: it is the country with the largest area with tropical forests in the planet, forests in public areas under State protection, or reminiscent in rural properties. However, policies and instruments in effect need to be perfected and strengthened to bring governance to deforestation and reduce it to residual levels. They should also be perfected so that Brazil and its products have national and international recognition of their prominent role in the low carbon economy and global climate regulation.

An inhabitable planet in the future will have to be a result of the appropriate balance between the different types of land use. Landscapes will be sustainable by maximizing the functional integrity (carbon cycles, nutrients, biological diversity, and water) of native ecosystems and by minimizing the negative effects of activities that demand deforestation or that degrade the environment. This way, it is up to the country and Brazilian society to find the means to value the assets that represent the Brazilian's biggest environmental good. In a warming world, the maintenance and valorization of forests will represent a greater chance of socio-environmental and economic prosperity to next generations.

"Between 2005 and 2016, as a consequence of the reduction of the Amazonian deforestation, the country stopped emitting six billion tons of carbon dioxide into the atmosphere."

67 System for Greenhouse Gas Emissions and Removals Estimates (SEEG), 2018: <https://bit.ly/28JSVSk>

68 Amazon Fund. 2011 Activities Report: <https://bit.ly/2ReQdpw>

69 Considering obtained and reported results at the Info Hub Brazil: <https://bit.ly/2DCjYgs>

2030 VISION



Illegal deforestation will be a thing of the past. Illegality will no longer represent a risk to Brazilian biomes and people, and the country will be working towards **eliminating deforestation in general**.



Payment for environmental services (**PES**) mechanisms and avoided emissions compensation (**REDD+**) will be consolidated and operating in large-scale - in all biomes and in national and sub-national levels.



Productive chains will be free from illegal deforestation, in all biomes, and be based on the use of a diversified range of timber species and on origin traceability.



Agricultural and forestry activities that seek to eliminate deforestation from their production will benefit from **credit and tax exemption policies** as incentives to conservation.



There will be **total and active transparency of the data** that help control deforestation, such as vegetation suppression authorizations issued by competent agencies and timber source traceability systems. High-quality information will also allow for the evaluation of ecosystem's recovery states and the transformation of degraded areas in productive or protected areas.



There will be more **integration between state Ecological-Economic Zoning (EEZ)**, making it possible to identify and classify different land uses according to their agricultural aptitude and productive potential, as well as point to fundamental areas for conservation.



All **public forests** will have their allocation defined, contributing to keeping the forest standing.



Control actions will be more efficient, with the government providing total support to responsible agencies, and the intensive use of remote sensing technologies. Society will be prepared, aware and equipped with media on field for real-time complaints of situations of noncompliance with the law, collaborating with immediate actions from the authorities.



The **tax system** and **market-based instruments** will favor sustainable activities that do not demand deforestation or implicate in degradation.

2050 VISION



Deforestation will be finally eliminated from all Brazilian biomes.



Land use planning and land ownership legalization for the entire national territory will be complete, guaranteeing legal security for all.



Every **agricultural and forestry expansion** will take place in areas already cleared.



Sustainable agricultural, forest and industrial activities with low carbon emissions, such as agroforestry systems (AFS), integration of crop-livestock-forest (ICLF), and native vegetation recovery will have been implemented in 100% of the properties.



Environmental and ecosystems **degradation** resulting from the agricultural activity will have been contained.

TO MAKE STATE PUBLIC POLICIES FEASIBLE AND BUILD ALIGNED AND INTEGRATED ECONOMIC INSTRUMENTS

The set of laws and public policies will have to be fully strengthened and will be integrally met, guaranteeing legal security to all, transparency, and inclusive and participative territorial governance. Credit and economic instruments will be integrated into and aligned with these public policies.

CONTEXT

The sustainable use of the land in Brazil needs to be understood and to become a State agenda, i.e. continuing and long-term. To make the vision here projected viable, it will be necessary to implement many public policies and create economic instruments integrated and aligned with such policies that go beyond the topics of climate, forests, and agriculture. The goal of this process is to foster more development and welfare by providing means that allow the extinction of deforestation and degradation while promoting the increase and improvement of agricultural production. In addition to its socio-environmental benefits, the concept of sustainability has to be tied to a business and economic logic. It is necessary to search for triggering channels to make this possible.

Among the financial instruments to be considered to reach a low carbon and sustainable economy in the fields of agriculture and forestry are: bank loans; emission of green bonds by publicly-traded anchor companies; investment in stocks or equity that take into account socio-environmental impacts; impact investing focused on generating positive environmental or social impacts; an agricultural insurance that takes into account environmental impacts in defining prizes' coverage and value; and the mechanisms of carbon market in Brazil and abroad. Relevant economic instruments will be also necessary to promote supply chain and research and development (R&D) monitoring to overcome technological and scale bottlenecks in a low carbon economy. Credit concession should also consider the impact degree of an activity or enterprise,

with positive impacts benefiting from more favorable credit conditions in comparison with negative impact activities - the ones that could result in deforestation or fossil fuels exploitation.

In our current scenario, there is a series of mechanisms able to leverage a low carbon economy, such as: the Safra Plan, REDD+, Payment by Results, PES, Ecological ICMS, the federal bill aiming to create the National Policy of Environmental Services, the regulation of Forest Code's Article 41 that predicts an incentive program and the establishment of an Environmental Services Market, the Clean Development Mechanism, and the transition to Article 6 of the Paris Agreement.

However, the existing mechanisms still do not provide the efficiency, transparency, and legal security necessary to attract large, medium or small investors, either because of the absence of regulation - which leads to offer and demand unpredictability -

"The concept of sustainability has to be tied to a business and economic logic."

or of the creation of bureaucratic obstacles that make processes less efficient and swift. In addition, new instruments are also necessary. According to the Brazilian Forest Service (2018), national forest sector is responsible for 3.5% of the Gross Domestic Product and for 7.3% of the country's total exportations, generating approximately 7 million jobs⁷⁰. By amplifying this analysis to the restoration and reforestation sector, there is the potential of consolidating a modern forest production and recovery industry in the country. With annual investments of up to R\$ 3.7 billion/year by 2030, up to 215 thousand jobs would be created and R\$ 6.5 billion in taxes would be collected, removing up to 3.22 GtCO₂⁷¹. If the value added from forest environmental services

70 National Forest Inventory: <https://bit.ly/2NfDCPV>

71 How much does Brazil have to invest to recover its 12 million hectares of forests? <https://bit.ly/2Mlg4c4>

valuation is integrated with all the previous numbers, this sector will possibly be pointed as the main inducer of the low carbon development currently desired by global society.

However, it will only be possible to make large-scale native forests planting viable if we expect a sustainable exploration of timber and non-timber products. In order to reduce these chain costs and increase the range of supply for family production, we need to assure a demand for these products, feasible regulations that do not implicate in legal insecurity to producers, and structure a demand capable of dealing with logistical problems. It is also important to highlight the possibility of fiscal incentives to forests plantation for timber and non-timber uses, specifically for natives, in a better regulated model.

Brazilian economy will increasingly use new technologies - such as the one that allowed the creation of the *bitcoin* and *blockchain* - that provide transparency, traceability, and credibility to assets to be marketed.

According to the National Energy Balance (2017), the transportation sector is responsible for approximately 60% of the petroleum products consumption in the country⁷². For this reason, eliminating fossil fuels (petroleum and coal) subsidies, and adopting carbon pricing and instruments that lead to other energy sources, such as biofuels or electricity, are essential. The reduction in consumption of petroleum products also requires investments in alternative modes of transporting road cargos, as well as in passenger transportation systems that substitute the use of individual transportation.

It is also necessary to effectively implement and consolidate the carbon pricing mechanism predicted in the National Biofuels Policy (RenovaBio), by issuing and buying decarbonization titles, also known as CBio. This is a

7 MILLION

jobs are created by the national forest sector, which is responsible for 3.5% of Gross Domestic Product and for 7.3% of the country's exportations.

The potential of consolidating a forest production and recovery industry until 2030 is:

215 THOUSAND

new jobs

R\$ 6,5

billion reais collected in taxes

3,22

GtCO₂ removed from the atmosphere

central initiative for the success of this policy, which proposes recognizing the potential of biofuels decarbonization through a system with market pricing and stimulating the biofuels producer to search for higher energy and environmental efficiency.

The public policies necessary for these mechanisms to operate will be able to count on a State that goes beyond its current role, that is capable of regulating the boundaries between public and private and assuring transparency in the decision-making process. The advances in digital technologies, the increasing access to the Internet and the monitoring capacity of society agents, and the generation of data (big data) will increasingly support the government's actions in this field.

The access to this information can also allow for a more efficient process of land use and occupation planning. Transparency, traceability, and selectivity will be factors that will increasingly influence the market and consumers.

⁷² National Energy Balance, 2017: <https://bit.ly/2Evta44>

Based on the information available, the consumer may show companies, producers, and investors the value of a low carbon economy, and may also individually contribute to reducing global emissions. A healthy and low carbon diet, for example, can be encouraged through public policies that enable the access to product information.

Among the most relevant public policies on land use are the National Environmental Policy, the National Climate Change Policy, the Forest Code, the Paris Agreement [read more on Chart 1, page 8], the Nagoya Protocol, the *RenovaBio*, and the Sustainable Development Goals (SDG). The implementation of these policies is a key element to promote the harmony between production and conservation, as well as monitoring programs such as Brazilian Amazon Rainforest Satellite Monitoring Project (Prodes), that contributes to government's inspection activities.

Many other public policies are being built and need to be monitored by society, such as National REDD+ Strategy, the National Plan on Climate Change Adaptation, the National Policy on Payment for Environmental Services (PES), among others. Regarding territorial planning, there is still an opportunity to implement mechanisms like the Ecological-Economic Zoning (EEZ), an important tool for public

policies on conservation and sustainable use of natural resources. Moreover, the Environmental Licensing law, regarding the environmental impacts of human activities, is being revised and will have part of its rules redefined. However, the main bottleneck for territorial planning in Brazil still is the lack of land ownership legalization, which is also one of the leading causes of illegal deforestation and of a great part of the conflicts regarding

"The main bottleneck for territorial planning in Brasil still is the lack of land ownership legalization, which is also one of the leading causes of illegal deforestation."

land possession and the challenges in implementing public policies for agriculture. It is essential to implement mechanisms that mediate land ownership conflicts, identifying relevant technical data and allowing the balanced participation of all stakeholders from the public and private sectors affected or responsible for these issues.

Brazil should also explore opportunities related to bioeconomy.

To this end, policies for research and economic development and incentives will be necessary. With regulatory milestones that allow the productive sector to advance towards a more renewable activity, the country will have everything necessary to become a great bioeconomy power.

The current context points out the need to search for a fair and equitable economy, supported by public policies and economic instruments that act as transformation inducers, towards a new economy.

2030 VISION



The **financial market and economic instruments** focused on sustainable practices in all sectors, as well as these mechanisms monitoring and evaluation, will have been structured.



There will be a **Unique Rural Property Registry** in Brazil, integrating the inventories from Incra, Federal Revenue, and Environment and Agriculture Ministries, allowing for more transparency, traceability, and legal security to all.



Payment for environmental services (**PES**) mechanisms will be fully consolidated and operating in large-scale.



Every state will have the Agro-Ecological Zoning (**AEZ**) and Ecological-Economic Zoning (**EEZ**) implemented.



Brazil's access to **carbon pricing instruments and market mechanisms**, at the national level and within the scope of the Paris Agreement, will have been consolidated.



A **national plan** with clear and objective guidelines for **agricultural production's growth** will be established, advising about each area's potential and productive vocation based on their zoning.



All public and private **financial concession** for agribusiness and family agriculture will be conditioned to social and environmental performance criteria.



RenovaBio will be fully implemented and other regulatory milestones and programs that stimulate investments will reinforce bioenergy's agenda.



The low carbon economy will develop without compromising the maintenance of the **fiscal balance**, reducing **investment risks** and favoring an **integration** of the natural, social and human **capitals**.



Water resources management will be tied to programs of environmental services payment and preservation incentive, guaranteeing the rational availability and distribution of water for all purposes.



Social and environmental externalities will be contemplated in the country's economic system.



Environmental licensing will be fully recognized by all segments of society as a transparent and efficient instrument that guarantees legal security to all and socio-environmental heritage's protection.



Brazil will have met the goals set in the **Paris Agreement** - considering also the increase in ambition predicted for 2020 - with a strong impact on emissions reduction.



Brazilian **logistics** of distribution and access will be among the 20 most efficient of the world in terms of time, cost, emission, and distribution, and with its outflow and storage infrastructure well established.



Land ownership legalization will have been established, through a process with all the involved parties participation, eliminating conflicts and assuring legal security to all - rural producers, traditional communities (indigenous, quilombola, and extractivists), and investors.



Geographic information systems will be publically available, allowing crossing spatial data to generate analysis, anticipate risks, and increase the scientific support of public and private policies based on this information.

2050 VISION



Brazil will be one of the main **world destinations of investments** on low carbon economy and biodiversity.



Research, financing, public policies, and the market will stimulate a **competitive, sustainable, and inclusive production and consumption system**, which will result in an increase in the quality of life and nature protection.



Mechanisms that generate positive impacts will be increasingly more used, such as green bonds, avoided emission compensations (REDD+), carbon market's mechanisms, and payment for environmental services (PES).



Brazil will be **leading by example** in the global process of reducing carbon emissions and will be recognized as one of the main nations to contribute to climate change mitigation and adaptation efforts.



In addition to acting as a regulator, the **State will have the role of a competitiveness incentivizing agent** and will cooperate by working in synergy with the productive sector and civil society, generating incentives and guidelines for the sustainable and competitive development of the country.



A **healthy and low carbon diet** will be incentivized through public policies and the Brazilian consumer will have access to information in order to make a better decision about his or her food.



Bioeconomy will be the strategic focus of public policies. It will be based on regulatory milestones, fostering programs, and market instruments that boost the production of renewable and biodegradable products.



Brazil will assure the complete protection of **water resources**, the result of an already consolidated forest protection. Water consumption by agriculture will be the most efficient in the world.



Environmental legislation will not only be used as a command and control instrument of territorial occupation, but also an instrument to bring traceability, transparency, and comparative advantages to the country in international trade.



The country will have a **Logistic National Plan** capable of continuously stimulating its competitiveness and reducing its dependence on road transportation and fossil fuels.

CONCLUSION AND NEXT STEPS

The vision for the future proposed by the *Brazilian Coalition* has many challenges but is feasible, since it is based on real assets and, mostly, on mechanisms and actions already tested and in progress. What will guarantee its effectiveness is society's capacity, together with the many sectors (rural producers, financial, sector, academia, civil society organizations, and government), to obtain the necessary mobilization to turn currently pilot experiment practices into dominant practices and to implement what currently are projects and needs by taking advantage of the opportunities being given to the country. The future desired for Brazil depends on its capacity to plan the occupation of its 8.5 million km² territory. This planning is essential, for example, to break occupation patterns such as the Amazon's, which has been driven by large infrastructure projects with high environmental costs. The country also needs to guarantee the fulfillment of its international commitments, such as the Paris Agreement [read more on Chart 1, page 8]. Brazil is the seventh largest emitter in the world⁷³ and needs to show that it is capable of promoting its development without compromising the planet's climate and food security. This is Brazil's commitment to humanity in the 21st Century. Land use needs to be at the heart of debates about development in the country. In order for

"Land use needs to be at the heart of debates about development in the country."

this to happen, it is necessary to have clarity about what one wants to achieve. This vision for the future of the *Brazilian Coalition* attempted to shed light on that: where we dream to be in 2050 through the eyes of representatives from the agribusiness, environmental defense entities, and academia. This common vision represents a road of opportunities in which all will be contemplated.

Producing more and better, creating value from forests, ending deforestation, making State public policies viable, and building aligned and integrated economic instruments are this future's pillars and, now, the *Brazilian Coalition* starts to structure an action plan that will lead us to it.

In this regard, the movement has already begun a debate with its members about some macro-indicators [see a preview on Chart 4, page 38] that will be detailed in goals and actions. All these elements will be released with transparency for society to follow and presented to the Brazilian government as the movement's proposal for the future of land use in the country. The *Brazilian Coalition* is dedicated to searching for tangible ways to make the dream designed for 2030 and 2050 viable. All stakeholders interested in making this dream come true are invited to join the over 180 members of our movement!

73 System for Greenhouse Gas Emissions and Removals Estimates (SEEG): <https://bit.ly/2EgtZB9>

CHART 4: ACTION PLAN'S INITIAL MACRO- INDICATORS:

Legenda:

- Agriculture and Forestry
- Native Forest
- Deforestation
- Public Policies
- Economic Instruments

Low Carbon Agriculture (LCA)

- Levels of GHG emissions and removal from agriculture and forestry⁷⁴ ■
- Area of degraded pasture⁷⁵ ■
- Land use and cover⁷⁶ ■
- The agricultural policy that includes LCA ■ ■
- Agricultural credit operating under socio-environmental and low carbon criteria ■ ■ ■ ■
- Increase in low carbon agricultural and livestock productivity in areas already cleared ■ ■ ■ ■
- Access to carbon valuation mechanisms within the scope of agriculture and forestry ■ ■ ■

Family Agriculture

- Socio-economic indicators⁷⁷ ■
- Percentage of LCA agricultural credit destined to family agriculture ■ ■

Low Carbon Emissions Productive Chain

- Valorization and facilitation of timber productive chains, especially those enabled by forests concessions ■ ■ ■
- The engagement of raw-materials consumer market in searching for productive chains free from deforestation in all biome ■ ■ ■
- Participation of bioenergy in the Brazilian energy matrix⁷⁸ ■
- Volume metrics and revenue of a list of already monitored bioproducts ■

Research, Technical Assistance, and Extension

- Public and private investments in sustainable agriculture and forestry R&D ■ ■
- Part of rural producers covered by technical assistance initiatives and technology transfer ■ ■
- Part of the Brazilian population covered by Monitoring, Report and Verification mechanisms (MRV) ■ ■ ■

74 From national inventories/ System for Greenhouse Gas Emissions and Removals Estimates - SEEG/ ABC's Monitoring Platform from the Brazilian Agricultural Research Corporation - Embrapa.




75 Image Processing Laboratory and Geo-LAPIG.

76 MapBiomass, Agricultural Atlas.






77 Family agriculture producer's revenue, per capita income.

78 Discriminated regarding the electricity and transportation matrixes.



**Distribution and Access
Logistical Infrastructure**




- The continuous investment plan in low carbon emissions infrastructure for production's outflow and storage 
- Participation of low carbon emission sources in the logistics 
- Landscape planning in agricultural production 

**Job, Income, and Social
Infrastructure Generation**


- Rural area's per capita income 
- Educational level 
- Employment level 
- Quality of rural life indicator 
- Rural areas HDI equal or higher than from urban areas 

**Conservation, restoration, reforestation,
and forest management**



- Deforestation levels in all biomes 
- Policies implemented to uptake and channel resources for the conservation of forests and the expansion of native vegetation's protection areas in all biomes⁷⁹ 

- Area of native vegetation under official protection⁸⁰ 
- Restoration and forestry with native or exotic species⁸¹ 
- 5 million hectares of forests planted with natives with economic purposes, cultivated and managed with technology and precision 

Sustainable Use of Natural Resources

- At least 70% of timber demand met by 40 million hectares of forests concessions in the Amazon and by 5 million hectares of forests planted with native species 

Natural Ecosystems Valorization

- At least 50% of the states and 25% of the municipalities in Brazil with payment for environmental services programs implemented 
- The increase of the amount of producers and traditional communities being paid for the conservation, sustainable use, and restoration of natural ecosystems 

79 Public resources: Amazon Fund, REDD+, green fiscal transfers, tax incentives/disincentive, reorientation of tax expenses, taxation of activities requiring high degrees of deforestation, credit programs subsidized for sustainable activities, etc. Private resources: Brazilian carbon market and Environmental Reserve Quota (ERQ) market, as well as private funds.

80 In particular: indigenous lands and traditional communities; units of conservation of integral protection and sustainable use (including national production forests).

At least 20% of each terrestrial, coast, and marine ecosystem in all biomes protected with integral protection units of conservation until 2030.

81 12 million hectares of degraded areas restored and reforested by 2030 and 20 million by 2050.

GLOSSARY

A

ABC Plan: Low Carbon Agriculture Plan (ABC Plan) is the Sectorial Plan of Climate Change Mitigation and Adaptation for a Low Carbon Emission Economy in Agriculture of the Brazilian government.

ABC System: Productive systems that promote the reduction of emissions.

Agroforestry Systems (AFS): Agricultural crops consortiums with arboreal species that can be used to restore forests and recover degraded areas.

B

Bioeconomy: Gathers all sectors of the economy that use biological resources (living beings), with a focus on sustainability and technology.

Bioproducts: Non-food products of agricultural, forestry and native forest origins, such as cellulose, timber and non-timber forest products, drugs, essences and new products that can replace fossil fuel-based ones.

Brazilian NDC: Nationally Determined Contributions refer to the GHG reduction targets set by countries in the Paris Agreement, signed by Brazil.

C

Carbon removal from soil: Soils naturally store carbon, but agricultural soils have a large deficit due to its intensive use. There are many ways to increase carbon in soils. Planting cover crops when the fields are empty can extend photosynthesis over the year, sequestering approximately half a ton of CO₂ per acre

per year. The use of fertilizers can improve yields while its carbon content is being stored in the soil. Scientists are also working to create crops with deeper roots, making them more resistant to drought, while depositing more carbon into the soil.

Climate Convention: United Nations Framework Convention on Climate Change (UNFCCC), an international environmental treaty that aims to stabilize greenhouse gas concentrations in the atmosphere resulting from human actions. Brazil is one of the signing countries.

E

Ecosystem services: Benefits that people obtain directly or indirectly from nature through ecosystems, in order to make life on Earth possible.

Environmental Reserve Quota (ERQ): The Forest Code demands that every rural property in national territory maintains a percentage of its area with native vegetation cover called legal reserve. Environmental Reserve Quotas are titles that represent an area of natural vegetation cover in a property that can be used to compensate the lack of a legal reserve in another property.

E

Forest Code: The law 12,651, of 2012, establishes rules to protect native vegetation in areas of permanent preservation, legal reserves, restricted uses, forest exploration, and related matters.

G

Global climate goal: World effort to keep the

average temperature of the Earth from increasing more than 2C°. Currently, the main instrument in this regard is the Paris Agreement.

Greenhouse gases (GHG): Are the gases that absorb a part of sunray and redistribute them as radiation in the atmosphere, heating up the planet in a phenomenon called greenhouse effect. The main GHG are CO₂, CH₄, N₂O, O₃, halocarbons, and water vapor. Currently, the high emission of these gases by human activities is causing global warming.

Greenhouse gas removal: Activities that reduce the presence of greenhouse gases in the atmosphere, such as planting trees since they store carbon during their growth.

I Integration of Crop-Livestock-Forestry

(ICLF): System that aggregates in the same property different production systems, such as grains, fibers, meat, milk, and agro-energy. That way, it allows the diversification of the property's economic activities and minimizes the risks of loss caused by climatic events or market price falls.

Legal deforestation: Carried in areas of native vegetation of private lands that are not included in the Forest Code's protection rules.

Low carbon economy: The one that improves production processes to reduce the energetic impact on the environment and greenhouse gas (GHG) emissions.

Native forest: According to the Law 11,428, of December 22nd, 2006, natural or native forests are defined in Brazil as predominantly ligneous vegetal formations - arboreal or arbustive-arboreal -, as well as the successor

phases of these formations, as long as they are constituted by naturally occurring species. In Brazil, the examples are The Amazon Rainforest, Atlantic Forest, Mata dos Cocais and Araucaria Moist Forest.

Native vegetation's conversion: Deforestation.

P

Paris Agreement: Agreement celebrated during the 21st Conference of Parties (COP-21) of the Climate Convention in 2015. Brazil is one of the signing countries.

Payment of Environmental Services (PES): Transfer of resources (monetary or otherwise) to those who help to keep or produce environmental services, such as water conservation.

Public areas allocation: The occupation of large regions of the country - especially in the Amazon - happened from the occupation of public lands, causing land ownership chaos that led to deforestation. A 2008 study from the Institute of Man and Environment of Amazon (Imazon - the acronym in Portuguese) showed that 32% of the lands in the region did not have their property defined. The allocation of these areas by the government (federal or state) is a fundamental condition for the governance in the region.

R

REDD+: Incentive developed in the scope of the Climate Convention to financially reward developing countries for their results in reducing greenhouse gas emissions from deforestation and forest degradation, considering the roles of conservation and the increase of forest carbon storage and sustainable forest management.

Regenerative economy: The economic system that values the Sun and the Earth, considered “original capital goods”. The standard economic theory postulates that it is possible to regenerate goods or consume them until they become scarce. On the other hand, the regenerative economy postulates that, by taking into account the economic value of original capitals (Earth and Sun), it is possible to restrict access to these original capital goods to avoid their scarcity.

Rural Environmental Registry (CAR): Electronic registry created by the 2012 Forest Code mandatory to all rural properties. It creates a strategic database to control, monitor, and combat the deforestation of forests and other native vegetation types in Brazil. The database is also used for the environmental and economic planning of rural properties.

S

Social infrastructure: It refers to public equipment capable of meeting society’s demands in education, health, and basic sanitation.

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BRAZILIAN COALITION

ON CLIMATE
FORESTS AND
AGRICULTURE

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