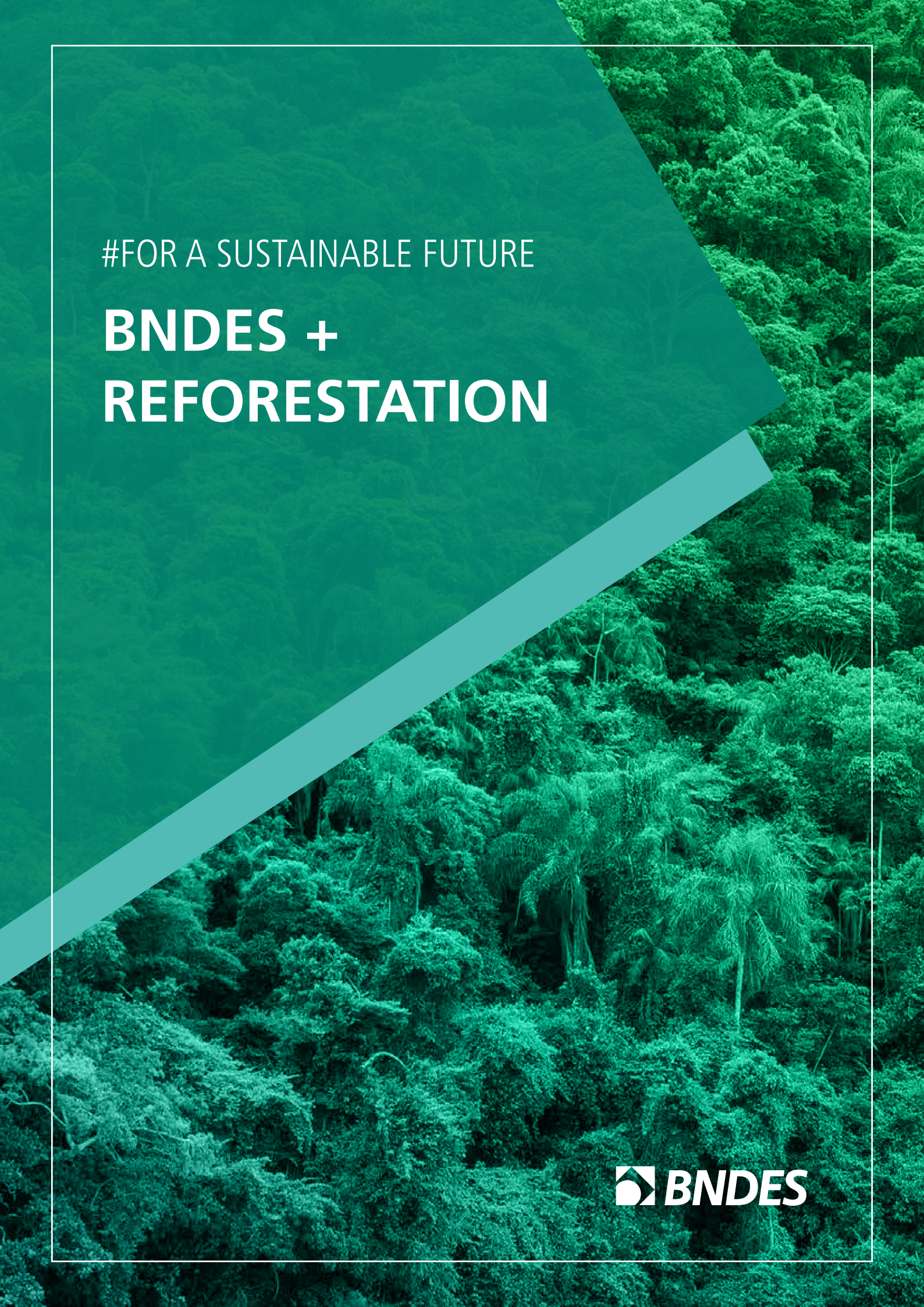


#FOR A SUSTAINABLE FUTURE

BNDES + REFORESTATION

BNDES

WHY SHOULD A DEVELOPMENT BANK SUPPORT REFORESTATION ACTIVITIES?

Reforestation activities have their economic logic traditionally associated with the expansion of industries that demand wood, such as paper and pulp. In Brazil, reforestation with an industrial focus has prioritized the planting of exotic species, such as pine and eucalyptus.

However, the planting of native species is of fundamental importance, as it contributes to increase the potential of forest biodiversity, enabling a better balance in ecosystems, and to assist in the maintenance of water resources used for energy production and the supply of cities.[1]

It should be noted that the cultivation process for many native species is still in the early stages, covering a small fraction of the territory, and needs to be encouraged. Furthermore, the cultivation of native species and the collection of seeds have synergies with the sustainable management of native forests, as these activities can take advantage of the products of the bioeconomy and of the production chain for reforestation.[2]

In addition to the economic gains, there are several positive social and environmental impacts resulting from reforestation (especially of native biomes) that justify the support and promotion of the sector, such as the establishment of the recovery production chain, including Payment for Environmental Services and the creation of new jobs. The reduction of carbon emissions and, as a result, the deceleration of the climate change process are the main impacts for society. The conservation of biodiversity, the protection of fauna, flora and watersheds, the reduction of pollution and the control of erosion and landslides are other relevant results.

The availability of adequate financing mechanisms and well-structured projects are crucial factors for the advancement of reforestation in Brazil, especially when taking into account the need for the environmental compliance of rural properties with the Forest Code (Law 12.651/2012) and the commitment made by Brazil in the Paris Agreement (COP21) to recover 12 million hectares of forests by 2030.

MAIN GOALS OF THE BNDES IN SUPPORTING THIS SECTOR

The BNDES has played an important role in the consolidation of the forest base planted for industrial purposes[3] and has also been fundamental in supporting the native forest sector. This paper focuses on the second group.

Reforestation activities are supported by the Bank through financing, especially through the Climate Fund, which supports projects associated with sustainable forest management, forest planting with native species, including the production chain, processing and

1 The benefits of the recovery of native forest vegetation can be found in the 2017 National Native Vegetation Plan (Planaveg), available at: https://snif.florestal.gov.br/images/pdf/publicacoes/planaveg_publicacao.pdf.

2 Nunes *et al.* discuss the challenges of reforestation with native species in the Amazon. See "Challenges and opportunities for large-scale reforestation in the Eastern Amazon using native species," *Forest Ecology and Management* 466, 2020.

3 A detailed analysis of the evolution of this segment can be found in HORA, André. "Analysis of the formation of the forest base planted for industrial purposes in Brazil from a historical perspective", *BNDES Setorial* 42, September 2015.

consumption of forest products of sustainable origin, as well as the technological development of such activities. We can also highlight the non-reimbursable support offered by the BNDES through the initiatives BNDES Atlantic Forest and Ecological Restoration Focus 01/2015, both with resources from the BNDES Social Fund, as well as through the Amazon Fund.

The main goals of the BNDES's support for native forests restoration are to promote the recovery of native vegetation, to develop the production chain of inputs and/or products of the restoration and to expand the administrative, technical and scientific capacities in ecological restoration activities.

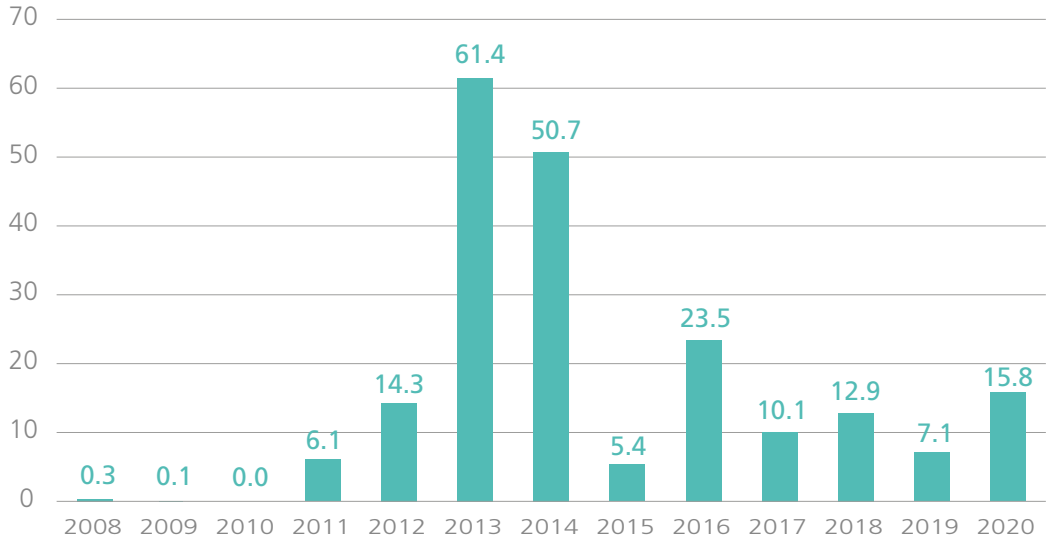
Furthermore, the BNDES has been seeking to consolidate its performance in the structuring of environmental asset projects. The concession of parks and forests contributes to the conservation and sustainable economic use of these assets.

The above objectives are in line with Brazil's commitment to achieve concrete results towards the low carbon economy for the fulfillment of the responsibilities that the country undertook in the Paris Agreement (Nationally Determined Contribution – NDC).

THE BNDES'S SUPPORT TO THE SECTOR IN THE 21ST CENTURY

Between 2008 and 2020, the BNDES disbursed BRL 207.6 million (at 2021 prices) in native forest restoration operations, with a significant concentration between 2011 and 2020 and a particular emphasis on the 2012-2014 period.[4]

THE BNDES'S DISBURSEMENTS FOR NATIVE FORESTS (BRL MILLION)



Data at August 2021 prices. Source: BNDES and IBGE.

4 The disbursements for native forests operations started in 2008. Between 2013 and 2014, the disbursements were concentrated in the largest restoration project supported by the Bank, contracted with Suzano S.A. The amounts of Amazon Fund's support to the sector are not accounted for, as they are included within the total amounts disbursed for projects aimed at promoting sustainable productive activities.

Since 2008, certain financial instruments were developed with the intention of promoting the increase of vegetation cover with native species in Brazilian biomes, among other objectives. The following instruments stand out: the BNDES Forest Compensation Support Program; the BNDES Forest; the BNDES Atlantic Forest Initiative; the Climate Fund Program – with the Native Forests subprogram –; the Amazon Fund; and the Inova Sustainability Plan, carried out in partnership with Finep. With the operationalization of these instruments and the holding of public calls for projects, disbursements in the sector began to gain expression in 2011.

Fot the next three decades, there is an expectation of an even greater demand for financing of restoration activities and the BNDES could contribute significantly to the national restoration agenda. Therefore, the Bank has sought to develop new products and solutions to accelerate this process, such as linked loans; BNDES Crédito ASG, which links the spreads charged to the performance of sustainability indicators of the companies supported; matchfunding for forest restoration; and calls for the purchase of carbon credits.

INDICATORS OF DELIVERIES AND EFFECTIVENESS IN THE BNDES'S SUPPORT SINCE 2015

In addition to the recovery of forest areas, which is common to all projects in the reforestation sector, the BNDES has financed restoration projects ranging from the implementation of nurseries and fences and the acquisition of seeds and seedlings to the purchase of machinery, equipment and supplies, including also the support for studies and projects, training, technical assistance, and monitoring.

Between 2015 and 2020, the BNDES approved eight native forest recovery operations,[5] which correspond to the delivery of 2,283 hectares of restored area (equivalent to 2,767 soccer fields). Regarding the methodology used for the forest restoration activity, approximately 50% used the total planting method, 20% opted for consolidation, and 30% for natural regeneration.[6]

5 This study only considered the restoration of native forests, thus, the planting of eucalyptus and pine forests and the forest compensation operations of mining activities that had negative impacts on forests were not considered.

6 Forest restoration activities can use three different methods and their choice depends on certain specific criteria:

(i) Total planting: method usually chosen when the conditions of the area (presence of invasive species, compacted and/or depleted soil) require more intense restoration interventions, such as the planting of large numbers of seedlings, the transfer of seed bank from other locations, and direct sowing. It is a method predominantly used in family farms.

(ii) Enrichment-densification: method generally applied when there are regenerating individuals present. It consists of planting additional seedlings to increase the diversity and density of the area.

(iii) Conduction of natural regeneration: method applied where there are many remaining individuals and proximity to forest remnants. It consists of the removal of competing plants, combating ants and other pests, and applying methods of attracting seed dispersing fauna.

CALCULATION OF AVOIDED EMISSIONS THROUGH SUPPORTED PROJECTS

One of Brazil's main objectives with regard to the commitment made at the time of the Paris Agreement is to reduce greenhouse gas emissions by 37% by 2025 in comparison to 2005 emissions, and by 43% by 2030 compared to the same base year. To monitor the reduction of emissions, the indicator related to the capture of tons of equivalent carbon dioxide that will result from the growth of the restored forests over the next decades has been calculated. The credits from reforestation have high acceptance in the market, because in addition to carbon capture, they offer other positive externalities, such as biodiversity and water availability.

The eight operations approved in the 2015-2020 interval will contribute to the capture of 455,600 tons of CO_2 equivalent.[7]

REFORESTATION PROJECTS SUPPORTED BY THE BNDES BETWEEN 2015 AND 2020

Segment	Number of projects	Area of planted forests (hectares)	Carbon capture (tCO_2e)	Days of automobile emissions in São Paulo (SP)
Native forest	8	2,283	455,600	63

To make this information tangible, it is valid to make a comparison with a piece of daily data: the amount of carbon that will be captured with these operations is equivalent to around 63 days of car emissions in São Paulo.[8]

Finally, it is important to highlight that practically all the projects supported in the reference period are located in Atlantic Forest areas, since the public calls held for native forest recovery projects were focused on this biome. The Atlantic Forest is one of the richest biomes in the world in terms of biodiversity and, among Brazilian ones, it has been the most deteriorated throughout history by the process of anthropization.

7 The operational teams use the Climate Fund Program's Greenhouse Gas (GHG) Reduction Calculation Tool.

8 It was considered that on a typical day in 2015, the São Paulo car fleet emitted 7,253 tons of carbon dioxide equivalent in GHG emissions (based on the Institute of Energy and Environment's Inventory of Atmospheric Emissions for Road Passenger Transport in the Municipality of São Paulo, available at: http://energiaeambiente.org.br/produto/inventario-de-emissoes-atmosfericas-do-transporte-rodoviario-de-passageiros-no-municipio-de-sao-paulo).

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