DECARBOOST

Catalisando Investimentos para Descarbonizar a LAC

Investment opportunities in Brazil in the key AFOLU sector

Nature Based Solutions

Centro Clima/COPPE/UFRJ

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Com o apoio do

Ministério Federal do Ambiente, Proteção da Natureza e Segurança Nuclear

com base em uma decisão do Parlamento Alemão

Implementado por:

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Introduction to Organization and Presenter

- Centro Clima was founded in 2000 through an agreement between COPPE/UFRJ and the Brazilian Ministry of Environment;
- Centro Clima has been actively participating in the development of public policies and strengthening the capacity of national and international stakeholders on climate change mitigation and adaptation at the national, state, and city levels. Among other studies, Centro Clima has been conducting several studies and projects developing long-term macroeconomic scenarios for Brazil involving stakeholders' participation
- Carolina Burle Schmidt Dubeux, Brazilian, is a social scientist, MSc. and Ph.D. in Energy and Environmental Planning from UFRJ/Brasil with a postdoc in CIRED/France. She is a senior researcher at the Centro Clima and develops emissions mitigation and adaptation studies. She is an author of the IPCC's Fifth Assessment Report, WG II, chapter 17 on the Economics of Adaptation, and reviewer of chapter 8 on Urban Systems and Other Settlements of the IPCC's Sixth Assessment Report, WG III.

Overview of Country Context

- The Brazilian focus on climate change issues started in 2007 when the government created a committee to draw up a National Climate Change Plan;
- Brazil made its first commitment to reduce GHG emissions in 2009 when presenting its NAMAs pledges to the UNFCCC.
- In September 2015, Brazil submitted its Intended Nationally Determined Contribution (iNDC) to the UNFCCC.
- In March 2022, the country presented a final version of the first NDC aiming to reduce emissions by 37% in 2025 and 50% in 2030, compared to 2005 emission levels, and indicating the long-term objective of achieving climate neutrality in 2050.
- For NDC implementation, a key priority is to increase the flow of financial resources to low-carbon investments, creating mechanisms, instruments, policies, and measures to overcome various barriers.

Approach to the research

- Centro Clima studies incorporate a solid modeling component to assess the economic and social implications of different sets of GHG mitigation measures in Brazil and bring together experts and a large number of national actors aiming to achieve net-zero in 2050.
- Based on our modeled estimates of the mitigation potential of each NAMA and the validation of barriers and instruments obtained from various stakeholders, we identified the two most attractive investment opportunities for each sector.
- As each mitigation option in the entire portfolio is NOT based on significant technological breakthrough or disruptive technology and is limited to USD 25/t CO_2, USD 45, and USD 65 in each decade, the mitigation actions selected for detail are those considered to be the most likely to be implemented from the point of view of barriers and policies needed to overcome them.

Stakeholders engaged

The methodology for building decarbonisation scenarios applied by Centro Clima in the last decade has privileged a stakeholder-driven approach, which includes the following main steps:

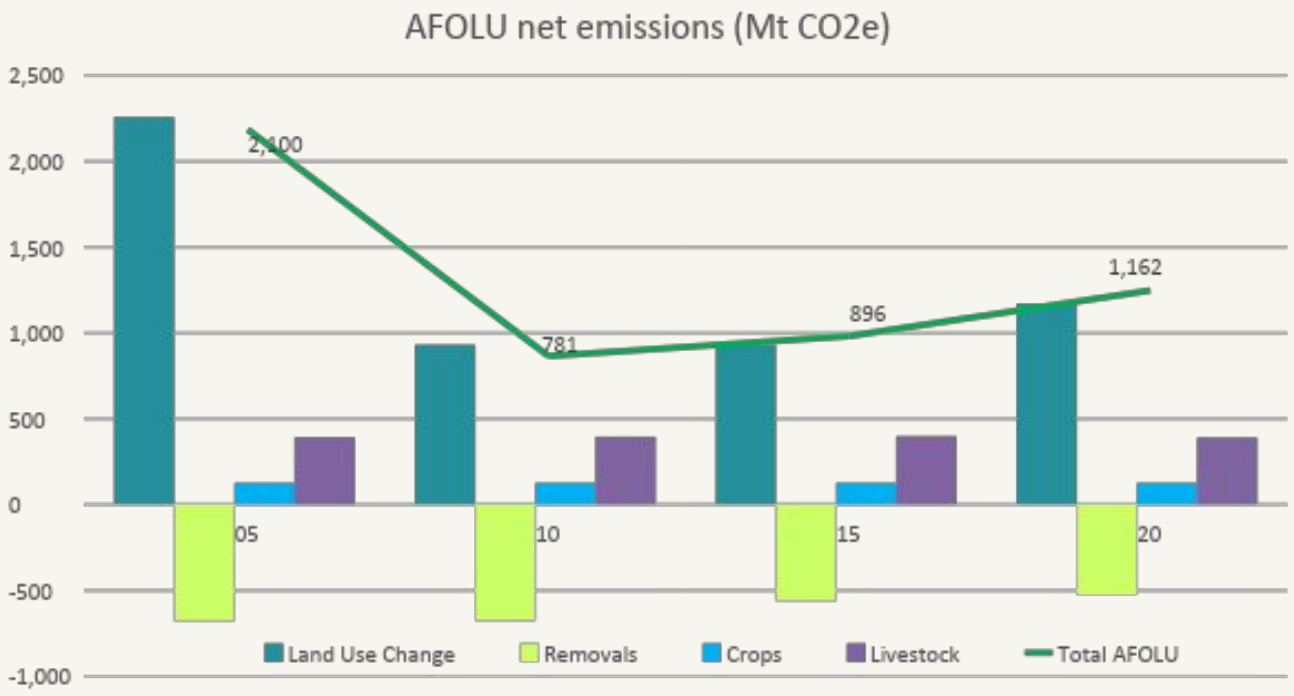
- To present, discuss, get feedback and validate assumptions and results of the initial storylines and scenarios drafted by Centro Clima for the Current Policies Scenario (CPS) and the Deep Decarbonisation Scenario (DDS)*, used in the Decarboost Project.
- To identify the key barriers to materializing the DDS and the policy instruments (both command-and-control and economic) to overcome them.

* *Developed within the scope of the DDPBBICS project*

Overview of sectors evaluated

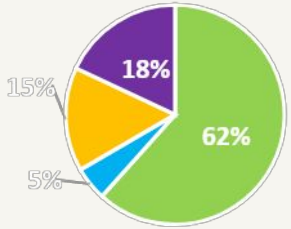
- Brazil is a forest country with nearly 500 million hectares (60% of its territory) of natural and planted forests
- The agricultural area is about 230 million hectares
- Curbing deforestation and promoting large-scale forest restoration are Brazil's main mitigation measures to reduce GHG emissions.
- Most deforestation is associated with impunity for environmental crimes, illegal grabbing of public land, and low traceability of the agricultural supply chain.
- On the other hand, non-designated areas, permanent protection areas, and rural areas that are deforested or lack vegetation coverage represent an opportunity for the expansion of reforestation and forest restoration in Brazil.

AFOLU Net Emissions

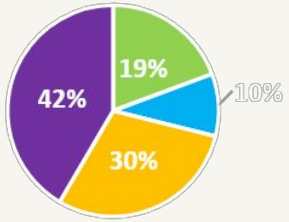


Share of AFOLU subsectors in total emissions

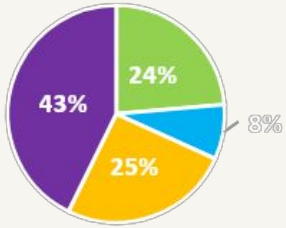
2005 = 2562 MtCO2e



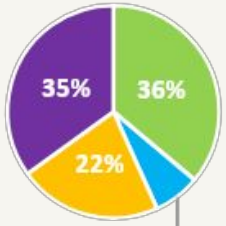
2010 = 1334 MtCO2e

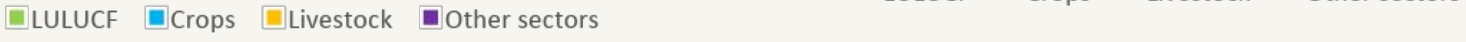


2015 = 1564 MtCO2e



2020 = 1785 Mt CO2e





Selected Investment Opportunities

- Investment Opportunity 1- Restoration of native forests in the Amazon and Atlantic Forest biomes

This activity can harvest **4 billion t CO_2eq** in 30 years by restoring 27 million hectares of native forest. Restoration in public areas will add 14.5 Mha and 12.5 Mha to farms by 2050. The **instruments** to promote reforestation are the Forest Concession Process for public areas and the Forest Code enforcement for farms.

Total investment (USD 2015) = 120,1 billion

Total OPEX (USD 2015) = 71,7 billion

Total CAPEX (USD 2015) = 48,4 billion

Average Cost (US$/t$CO_2$e): Restoration in public areas: 2021-2030 = $24.17 ; 2031-2040 = $28.14; 2041-2050 = $30.73

Restoration in private areas: 2021-2030 = $7.70 ; 2031-2040 = $8.36; 2041-2050 = $8.51

Revenues come from carbon credits and payment for environmental services programs but are not estimated.

Funding sources: National and multilateral development banks and organisms (Amazon Fund, Green Climate Fund, Global Environment Facility)

Business model: Public-private partnership (PPP) and business-to-business (B2B)

Selected Investment Opportunities

❑ **Investment Opportunity 2** Reforestation with commercial species to supply biomass for wood pellets, briquettes and chips

This activity can harvest **9,3 Mt CO_2eq in 30 years** by establishing forest plantations with commercial species to supply biomass for wood pellets, briquettes, and chips in an area of 5.8 million hectares by 2050 (in the South, Southeast, and Northeast regions). The **benefits** are (i) generation of carbon stocks and (ii) provision of sustainable biomass energy sources to replace non-renewable biomass and fossil fuels, (iii) job creation. The available lands are characterized as pastures/fields. These areas will likely keep the same use in the absence of this project activity.

Enabling conditions: Facilitating the export of wood pellets, briquettes, and chips from planted forests; tax incentives to companies; increased demand for biomass by power plants.

Total investment (USD 2015) = 52,2 billion

Total OPEX (USD 2015)= 48,2 billion

Total CAPEX (USD 2015) = 4,0 billion

Average Cost (US$/$tCO_2e$): 2021-2030 = $16.58; 2031-2040 = $ 40.53; 2041-2050 = $ 61.39

Revenues come from the wood products (estimated) and carbon credits (not estimated)

Funding sources: the National Forest Development Fund (FNDF), the Greenhouse Gas Emission Reduction Program in Agriculture (ABC Program), and the National Support Program for Medium Rural Producers (Pronamp).

Business model: Public-private partnership (PPP) and business-to-business (B2B)

Conclusion

Brazil has numerous low-cost investment opportunities, mainly in AFOLU, contributing to net zero by 2050. There are already many policies in place that can contribute strongly to facilitating such investments. However, some of them need improvements, which are already identified in great part.

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Catalysing Investment to Decarbonise LAC

Thank you

Gracias

Obrigado

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