Financial Opportunities for Brazil from Reducing Deforestation in the Amazon

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Executive Summary

Many new opportunities are emerging in voluntary and compliance carbon markets for REDD+ (Reducing Emissions from Deforestation and Forest Degradation) credits. In this policy brief we focus on opportunities linked to the LEAF Coalition (Lowering Emissions by Accelerating Forest finance). We quantify the size of the opportunity from reducing deforestation in the Legal Amazon in U.S. dollars, and provide a roadmap of policy and regulatory changes, and actions, required to seize this opportunity.

The framework for REDD+ was adopted at COP 19 in Warsaw in 2013. Since then, donor countries have made the bulk of results-based payments for REDD+ in bilateral or multilateral agreements with host countries (e.g., Amazon Fund). This has had the effect of limiting REDD+ payments. However, it is expected that the financial flows for REDD+ will (and must) rise significantly with increased interest from the private sector either directly or through public-private partnerships.

LEAF Coalition (Lowering Emissions by Accelerating Forest finance)

The LEAF Coalition is a public-private partnership to provide results-based payments for high-environmental and social integrity credits from reducing carbon emissions from tropical deforestation and degradation (REDD+) at national or large subnational "jurisdictional" scales. The governments of Norway, the United States and the United Kingdom, and a group of major private companies, launched LEAF in April 2021. At COP 26 in Glasgow in November 2021, the Coalition announced it had grown to include 19 companies and had already mobilized US $1 billion in financing, representing the largest-ever public-private effort to protect tropical forests. LEAF continues to attract corporations and governments who are interested in buying high-quality REDD+ credits. Thus, the financing available for forest jurisdictions that achieve emissions reductions and removals is expected to grow.

What is the size of the opportunity?

Brazil has a competitive advantage on supplying high-quality forest carbon credits. Ending deforestation (illegal and legal) in the Brazilian Amazon in 10 years (2022-2031) could generate revenues in the magnitude of at least US $18.2 billion by 2031 through voluntary and compliance carbon markets at a floor price of US $10 per ton of CO_2 as guaranteed by LEAF. Prices may rise further. If prices rise to US $15 ton of CO_2 in the 2027-2031 period, revenues can reach US $26 billion. Moreover, forest restoration (carbon removals) can lead to opportunities for additional generation of credits.

What policy and regulatory changes are needed to seize this opportunity?

1. Rapidly reducing deforestation and forest degradation is an essential condition.
2. Brazil's federal government and states should engage as fully as possible with the LEAF Coalition in partnership with the Interstate Consortium for Sustainable Development of the Legal Amazon, which signed a MOU at COP 26 with the Emergent Forest Finance Accelerator, acting as the administrative coordinator of LEAF.
3. A letter of support is needed from Brazil's federal government to the Architecture for REDD+ Transactions (ART) authorizing states to issue and transact forest carbon credits without corresponding adjustments (e.g., under LEAF pathways numbers 1, 2, and 3) and potentially with corresponding adjustments (e.g., under LEAF pathway number 4) – see actions 6 and 7.[1]
4. The federal government in collaboration with Indigenous communities and organizations should allow Indigenous territories to be aggregated into subnational accounting areas to issue and transact forest carbon credits without corresponding adjustments (e.g., under LEAF pathways numbers 1, 2, and 3) and potentially with corresponding adjustments (e.g., under LEAF pathway number 4) – see actions 6 and 7.
5. A new resolution from the National Commission on REDD+ (CONAREDD) is needed to allow calculating emissions reductions for results-based payments aligned with the LEAF Coalition guidelines, using the corresponding crediting level for the respective crediting period, and to authorize carbon sequestration credits through forest restoration and reforestation as well as high forest, low deforestation (HFLD) credits from jurisdictions.

[1] LEAF pathways 1, 2 and 3 do not require corresponding adjustments. Pathway #1 refers to sovereign contributors providing results-based payments (RBPs) to a national or subnational host jurisdiction. Pathway #2 refers to private buyers providing RBPs to the host jurisdiction. Pathway #3 refers to private buyers providing RBPs to the jurisdiction and taking ownership of emissions reductions credits, while the underlying emissions reductions remain on the accounts of the host country and buyers must transparently communicate in any claims they are making that their purchases of credits are supporting achievement of the host country's NDC. Pathway #4 requires corresponding adjustments. Private buyers provide RBPs to the jurisdiction and take ownership of emission reductions credits (e.g., for use in compliance markets such as CORSIA) where the host country agrees not to count the underlying emissions reductions in reporting progress towards its NDCs.

6. A new or modified law or regulation is needed to determine that emissions reductions, sequestration, and HFLD credits from national or subnational jurisdictions can generate transferable carbon credits both without and potentially with correspondent adjustments.
7. The federal government needs to define a timeline and regulation for when and how other countries or companies can use REDD+ credits to meet their obligations under the UNFCCC and other international mitigation purposes (e.g., CORSIA[2]), and other purposes (e.g., voluntary transactions). In the case such credits are authorized by Brazil, the country would need to subtract these traded carbon credits from its emissions account to avoid double counting in reporting progress towards its own nationally determined contribution (NDC), as determined in the Paris Agreement.

LEAF Coalition[3] (Lowering Emissions by Accelerating Forest finance).

The LEAF Coalition is a public-private partnership to provide results-based payments for high-environmental and social integrity emissions reductions from reducing carbon emissions from tropical deforestation and degradation (REDD+) at large geographical, or "jurisdictional"[4] scales, with a minimum guaranteed price of US $10 per ton of CO2. The governments of Norway, the United States and the United Kingdom, and a group of major private companies, launched LEAF in April 2021. At the COP 26 meeting, the Coalition announced it had grown to include a total of 19 companies and had mobilized US $1 billion in financing, representing the largest-ever public-private effort to protect tropical forests. LEAF partners view this commitment as a starting point and recognize that a compliance market for REDD+ will be needed to reach scale. LEAF continues to attract corporations and sovereign governments as members who are interested in joining the coalition as buyers of high-quality REDD+ credits. Thus, the financing available for forested jurisdictions that achieve emissions reductions and removals is expected to grow. Transactions through the LEAF Coalition must be done in compliance with The REDD+ Environmental Excellence Standard (TREES), developed by the Architecture for REDD+ Transactions (ART)[5].

In 2021 LEAF opened a call for proposals for jurisdictions to express interest in participating in transactions of emissions reductions verified under the ART-TREES standard with the members of the coalition. The participating companies and governments offered a minimum guaranteed price of US $10 per ton of emissions reductions for the first round of LEAF, with potential for higher prices for jurisdictions if market demand increases. Eight Brazilian states (Acre, Amapá, Amazonas, Maranhão, Mato Grosso, Pará, Roraima and Tocantins) submitted proposals and

[2] CORSIA is Carbon Offsetting and Reduction Scheme for International Aviation
[3] https://leafcoalition.org/
[4] In the context of the Brazilian Amazon jurisdictional means country (national) or states (subnational), or a set of Indigenous lands.
[5] https://www.artredd.org/trees-2-0/

completed an initial technical screening. In April 2022, LEAF opened a new call for proposals which could be an opportunity for other Brazilian states as well as for the federal government to participate with an expression of interest at the national level.

The LEAF Coalition will purchase TREES credits that are generated starting in 2022. Under ART-TREES, the crediting level is a five-year average of emissions from deforestation, which must then readjust downward every five years after the first year of crediting. For the crediting period starting in 2022, the 2017-2021 average emissions from deforestation will serve as the baseline.

In addition to purchasing agreements for reductions as of 2022, earlier vintages of credits can be generated under TREES and sold to buyers outside of the LEAF initiative. This is the pathway that Amapá, Maranhão, and Tocantins are pursuing, which use 2011-2015 as the initial reference period, since in 2020 they submitted Concept Notes to ART, which is the first step in certifying emissions reductions under ART-TREES. In such cases, the start of the first crediting period can go back up to four years from the calendar year of the submission of the TREES Concept Note.

Any credits that are generated for subnational accounting areas will need to eventually nest within a national system no later than 2030. ART encourages national level accounting areas wherever possible.

A unique aspect of TREES is that it allows a pathway for jurisdictions that qualify as high forest, low deforestation (HFLD) to generate credits. Rather than generating credits based only on emissions reductions, HFLD credits are generated for maintaining consistently high volumes of forest carbon stock and very low deforestation rates. Certain subnational accounting areas within Brazil can specifically benefit from this option. For example, Indigenous Territories with forest area over 2.5 million hectares or groups of Indigenous Territories, which do not have to be contiguous, can be considered subnational accounting areas that qualify for HFLD status. Brazil's national government can submit a proposal that includes such an Indigenous subnational accounting area, which would generate HFLD credits, and the payments and benefit sharing could be distributed equitably with Indigenous People. Pathways to generate HFLD credits are not currently available under any other standard besides TREES.

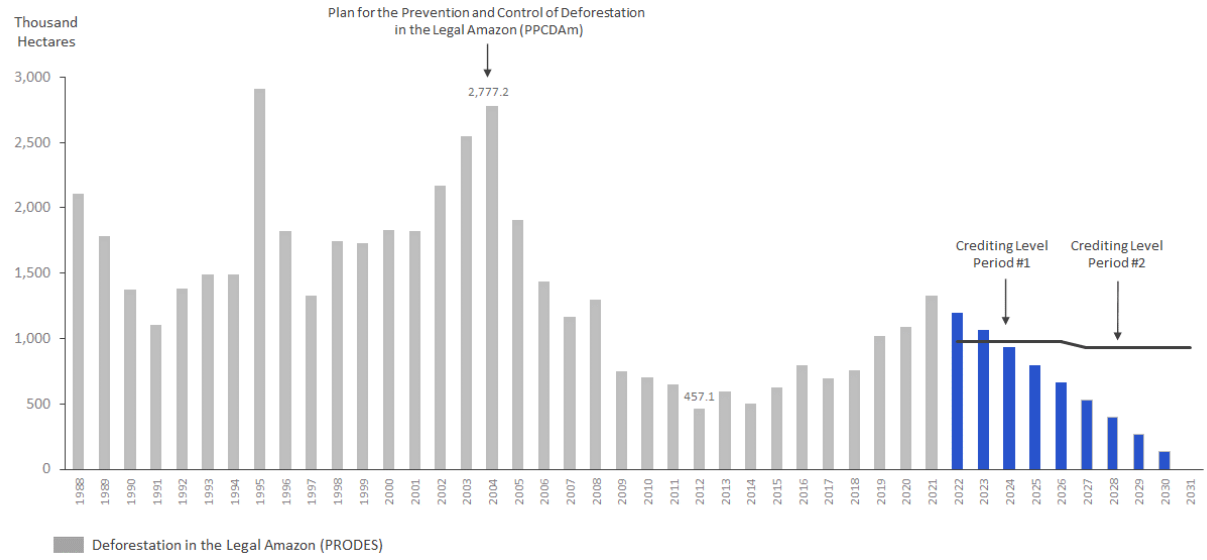
What is the size of the opportunity?

In this section we provide a ballpark estimate of the potential value of carbon credits from REDD+ from the Brazilian Legal Amazon, following the ART-TREES 2.0 guidelines (Architecture for REDD+ Transactions-The REDD+ Environmental Excellence Standard) used by the LEAF Coalition.

Step 1: Suppose Brazil ends deforestation in 10 years, by 2031. Starting from 2021 deforestation figure (1,323.5 thousand hectares), apply a 10% reduction per year to end deforestation in 10 years. For example, deforestation in 2022 is equal to 1,323.5 thousand hectares * (1 – 0.1) = 1,191.2 thousand hectares. In 2023, deforestation is equal to 1,323.5 thousand hectares * (1 – 0.2) = 1,058.8 thousand hectares and so on until it reaches zero in 2031.

Step 2: Calculate a 5-year historical average of emissions from deforestation as the baseline. From 2017 to 2021, deforestation in the Legal Amazon averaged 973,960 hectares as shown by the crediting level line for period #1 (2022- 2026) in Figure 1. From 2022 to 2026, deforestation in the Legal Amazon would average 926,450 hectares as shown by the crediting level line for period #2 (2027-2031) in Figure 1.

Figure 1: Deforestation in the Brazilian Amazon, Crediting Levels and Crediting Periods



Source: INPE - National Space Research Institute.

Step 3: Calculate the emissions reductions in each year compared to the crediting level. We use as a first proxy the difference between deforestation rates and the crediting level in each year. Cumulative avoided deforestation for both crediting periods amount to 3.85 million hectares.[6]

Step 4: The 3,848,330 hectares of avoided deforestation are equivalent to 2.14 gigatons of CO2e of emissions reductions (3,848,330 hectares * 151.6 tons of carbon per hectare * (44/12) tons of CO_2 per ton of carbon) (MMA, 2018).

[6] If deforestation is higher than the crediting level, then emissions reductions are equal to zero

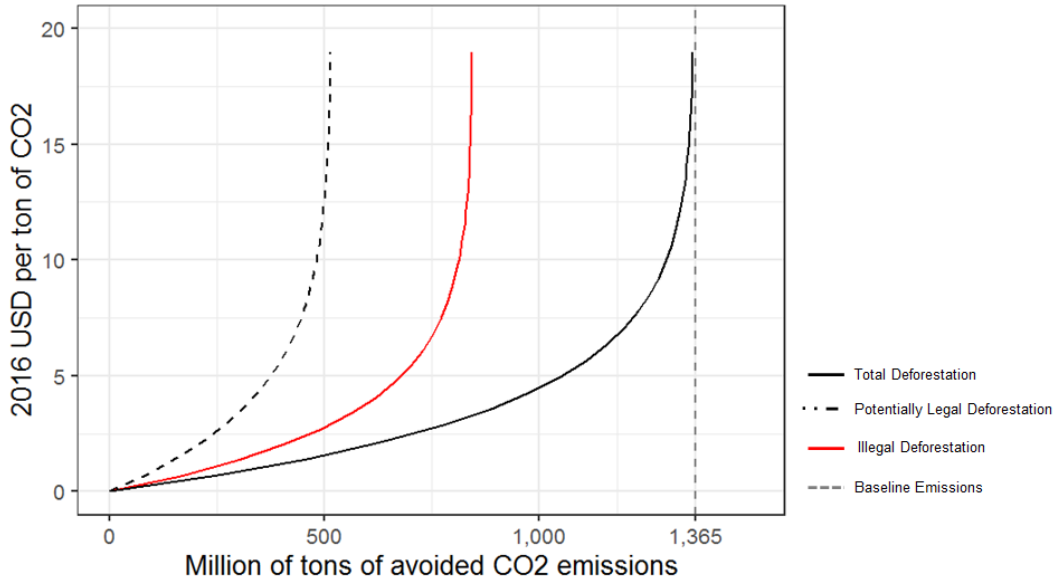
Step 5: Following ART/TREES 2.0 guidelines, setting aside 10% of emissions reductions as a protection against leakage[7] and 5% as a buffer pool against reversals, we obtain 1.82 gigatons of CO_2e (2.14 * 0.85) – the maximum tradable carbon credits from emissions reductions.

Step 6: At a floor price of US $10 per ton of CO_2, we obtain **US $18.2 billion** (1.82 gigatons of CO_2e * US $10 per ton of CO_2).[8]

Step 7: Considering a price of **US $15 per ton of CO_2** for the second crediting period, we obtain **US$ 26 billion** (255 $MtCO_2e$ * US $10 per ton of CO_2 + 1,563 $MtCO_2e$ * US $15 per ton of CO_2).

Ending deforestation (illegal and legal) in the Brazilian Amazon in 10 years (2022-2031) could generate **revenues** in the magnitude of at least **US $18.2 billion by 2031** through voluntary and compliance carbon markets at a floor price of **US $10 per ton of CO_2** as guaranteed by LEAF. Prices may also rise further. Forest restoration (carbon removals) can lead to opportunities for additional generation of credits.

Figure 2: Marginal Abatement Cost Curve for the State of Mato Grosso through 2030



Source: Pietracci et al. (2022)

To seize this opportunity, Brazil needs to begin curbing deforestation immediately. A study from Pietracci et al. (2022)[9] for the state of Mato Grosso indicates that it is possible to reduce up to 1 gigaton of CO_2 at an opportunity cost **below US $5 per ton of CO_2** as shown in Figure 2.

[7] Leakage deductions can range from 0% to 20% depending on the amount of forestland included in the country's submission to ART. Considering that the Legal Amazon has between 25% to 65% of the forestland in Brazil, a 10% deduction must be applied to account for potential leakage.
[8] The stream of revenues has not been discounted by an interest rate.
[9] Pietracci et al., 2022. Here Today, Here Tomorrow: Opportunity Cost of Avoiding Deforestation in Mato Grosso, Brazil.

Considering other Legal Amazon states, the opportunity costs may be similar or even lower for another 1 $GtCO_2$.

What policy and regulatory changes are needed to seize this opportunity?

First goal is to rapidly reduce deforestation and degradation in the Brazilian Amazon. This is an essential condition for generating forest carbon credits.

Second, Brazil's federal government and states should engage as fully as possible with the LEAF Coalition in partnership with the Interstate Consortium for Sustainable Development of the Legal Amazon, which signed a MOU at COP 26 with the Emergent Forest Finance Accelerator, acting as the administrative coordinator of LEAF.

Third, provide a letter of support from the federal government to the Architecture for REDD+ Transactions (ART) authorizing states to issue and transact forest carbon credits without corresponding adjustments (e.g., under LEAF pathways numbers 1, 2, and 3) and potentially with corresponding adjustments (e.g., under LEAF pathway number 4) – see actions 6 and 7.

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Fourth, the federal government in collaboration with Indigenous communities and organizations should allow Indigenous territories to be aggregated into subnational accounting areas to issue and transact forest carbon credits without corresponding adjustments (e.g., under LEAF pathways numbers 1, 2, and 3) and potentially with corresponding adjustments (e.g., under LEAF pathway number 4) – see actions 6 and 7.

Fifth, a new CONAREDD[10] resolution is needed to allow calculating emissions reductions for results-based payments aligned with the LEAF Coalition guidelines, using the corresponding crediting level for the respective crediting period, and to authorize carbon sequestration credits through forest restoration and reforestation as well as HFLD credits from jurisdictions.

Sixth, a new or modified law or regulation is needed to determine that emissions reductions, sequestration, and HFLD credits from national or subnational jurisdictions can generate transferable carbon credits both without and potentially with correspondent adjustments.

Seventh, the federal government needs to define a timeline and regulation for when and how REDD+ credits can be used by other countries or companies to meet their obligations under the UNFCCC and other international mitigation purposes (e.g., CORSIA), and other purposes (e.g., voluntary transactions). In the case such credits are authorized by Brazil, the country would need to subtract these traded carbon credits from its emissions account to avoid double counting in reporting progress towards its own NDC, as determined in the Paris Agreement.

Regulatory Framework

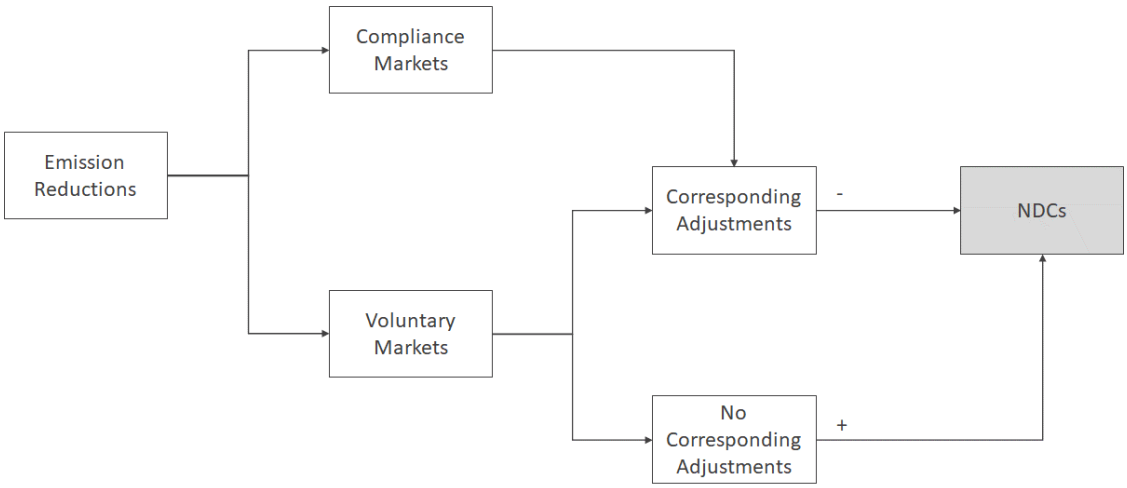
Figure 3 shows the three tracks Brazil can opt for regarding results-based payments for REDD+:

- Sell forest carbon credits on compliance markets **with** corresponding adjustments to avoid double counting of emission reductions.
- Sell forest carbon credits in voluntary markets **with** corresponding adjustments towards the achievement of its own NDC.
- Sell forest carbon credits in voluntary markets **without** corresponding adjustments towards the achievement of its own NDC.

While carbon credits without corresponding adjustments may seem more attractive at a first glance, transactions with corresponding adjustments will most likely command a higher price.

[10] MMA, 2018. Brazil's submission of a Forest Reference Emission Level (FREL) for reducing emissions from deforestation in the Amazonia biome for REDD+ results-based payments under the UNFCCC from 2016 to 2020. Brasília, DF. http://redd.mma.gov.br/pt/comissao-nacional-para-redd

Figure 3: Three Tracks for Forest Emissions Reductions in Compliance and Voluntary Carbon Markets with or without Corresponding Adjustments.



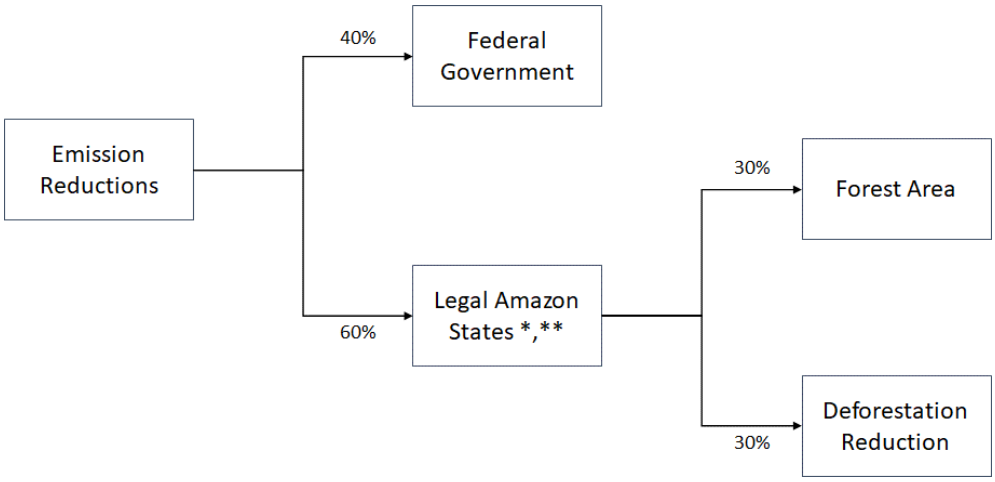
+ Can be used towards Brazilian NDC
– Cannot be used towards Brazilian NDC

Brazil needs to introduce a new or modified law or regulation to determine that emissions reductions, sequestration, and HFLD credits from national or subnational jurisdictions can generate transferable carbon credits both without and potentially with corresponding adjustments.

Results-based payments and donations for REDD+ without corresponding adjustments

The National Commission for REDD+ (CONAREDD) Resolution 6 from 6 July 2017 determines the criteria for calculating emissions reductions up to 2020, and for allocation of emissions reductions between the federal government and legal Amazon states according to Figure 4.

Figure 4: Criteria for Allocation of Emissions Reductions Between the Federal Government and Legal Amazon States.



* Acre, Amapá, Amazonas, Mato Grosso, Maranhão, Pará, Rondônia, Roraima, Tocantins.
** Minimum of 2% per state.

CONAREDD Resolution 6 also states that such emissions reductions cannot be transferred internationally and do not affect national accounting towards meeting Brazilian NDCs.

CONAREDD Resolution 3 from 22 July 2020 recognizes the voluntary carbon market for forest credits. The voluntary market does not generate a carbon credit that can be used by a country or company in compliance carbon markets.

Brazil needs a new CONAREDD resolution allowing to calculate emissions reductions for results-based payments to match with the ART-TREES guidelines to accommodate for LEAF funding, i.e., based on a five-year historical average and authorizing for carbon sequestration through reforestation and high-forest, low-deforestation (HFLD) credits from jurisdictions.

Such result-based payments or donations would not require corresponding adjustments of the underlying emissions reductions which could be used towards the achievement of Brazilian NDC.

Results-based payments for emissions reductions with corresponding adjustments

Federal Decree 8,576 from 26 November 2015 created the National Commission for REDD+ (CONAREDD). This decree was revoked by Federal Decree 10,144 from 28 November 2019.

The original Federal Decree in its Articles 6 and 7 stated that REDD+ results-based payments would not generate carbon credits or rights of any kind (Article 7) and could not be used

directly or indirectly by other countries to meet their mitigation commitments under UNFCCC (Article 6).

Federal Decree 10,144 from 28 November 2019 has revoked both articles, opening the possibility that REDD+ results-based payments generate transferable carbon credits and that those might be used by other countries to meet their NDCs.

Yet, Brazil needs to define a timeline and regulation for when other countries or companies can use REDD+ credits to meet their obligations under the UNFCCC and other international mitigation purposes (e.g., CORSIA), and other purposes (e.g., voluntary transactions). Brazil must subtract these traded carbon credits from its own inventory of emissions reductions to avoid double counting towards its own NDC – as determined in the Paris Agreement.

This option should be taken with specific impact studies considering the evolution of carbon markets and land use and forest sectors towards the future regime of Articles 6.2 and 6.4 of the Paris Agreement.

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About Amazônia 2030
The Amazônia 2030 project is an initiative by Brazilian researchers to develop a sustainable development plan for the Brazilian Amazon. Our objective is for the region to be able to reach a higher level of economic and human development and achieve the sustainable use of natural resources in 2030.

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