EXECUTIVE SUMMARY . 2022

OPPORTUNITIES FOR BRAZIL IN CARBON MARKETS

ICC Brasil | WAY CARBON

COVER LETTER

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The year 2021 was certainly a milestone for the global climate agenda. The conclusion of the negotiations on Article 6 of the Paris Agreement during COP 26 represents an important step in the climate journey, although some points remain open. More than an advance in the regulation of a global carbon market, we positively saw the unprecedented engagement of the private sector, positioning itself as an increasingly relevant actor for the implementation of the commitments made.

We cannot ignore, however, that new challenges have emerged in recent months, driven by the war between Russia and Ukraine, which has put pressure on energy supplies globally. Although the current context seems to add new obstacles to the equation, we believe that this could be a new opportunity to rethink the way we produce and in fact accelerate the transition to clean energy sources and to a greener economy.

In this sense, Brazil will certainly play an even more important role in the climate agenda and must be prepared to seize all opportunities and leverage all its competitive advantages. One of the main opportunities that stand out in the country is the carbon credit market. Despite being a transition mechanism, it has the ability to encourage companies to reduce their emissions, becoming credit issuers and helping companies whose transition will take a little longer.

This year, ICC Brasil and WayCarbon joined forces once again to present the concrete potential of our country, bringing in an unprecedented way a map of the national ecosystem of the certified emissions reduction market, based on interviews with its main players. It is known this is the decade of action and that the Sharm El-Sheikh COP 27 will focus on negotiating conditions for public policies to translate into concrete and positive impacts, whether at global or local level, and we hope that the results of this publication can make it clear that, although we have already done a lot, there is still a long way to go and it can be full of good outcomes.

If in 2021 the study of economic potential for Brazil in carbon markets highlighted that the country could earn up to US$ 100 billion in revenues by 2030, having the capacity to supply up to 22% of the global demand of the regulated carbon market and 37 .5% of the global demand of the voluntary market, in 2022's edition, we identify that the potential of Brazil is to supply up to 28% of the global demand of the regulated market and 48.7% of the voluntary market by 2030, obtaining up to US$ 120 billion in revenues – a relevant increase.

We would like to take this opportunity to thank everyone who participated and contributed to the development of the study and, as with the first version of this publication, we hope that the main conclusions can provide input to negotiators, policymakers, the business community and society in general in preparation for COP 27 and other forums, fundamental to the success of the mission to ensure a future that balances economic and social development and environmental responsibility.

As the institutional representative of more than 45 million companies, in more than 130 countries, the International Chamber of Commerce (ICC) operates with a mission to ensure that businesses functions for everyone, every day, everywhere. We are the main voice of the economy in many different intragovernmental organizations – from the World Trade Organization to the UN's climate process – defending the needs of local businesses in decision making processes.

The reach of our global network allows us to define rules and patterns that enables the commerce of more than US$ 10 trillion a year. Moreover, it enables the provision of digital personalized products and services that address directly the real challenges faced by companies that operate globally.

Present in Brazil since 2014, we work to bring the private sector to the center of the international trade agenda in a sustainable way and to amplify the voice of the business community within governments and international organizations by the elaboration of projects for economic and social development and for the improvement of the business environment.

To learn more, visit **iccbrasil.org**

Established in Brazil since 2006, WayCarbon is a technology-based company and is the biggest strategic consultancy with exclusive focus on sustainability and climate change issues in Latin America. The company offer to the market a range of solutions that encompass professional experience, innovation, and technological development with the objective of transforming sustainability topics as a competitive element inside businesses.

WayCarbon is a B-Corp certified company and is reference in assessing topics such as global climate change, asset management and developing business strategies with the aim to catalyze a transition to a low carbon economy.

WayCarbon recognizes that the carbon market agenda is strategic for Brazil. Through its experience and market intelligence, it develops technical knowhow and financial innovation for the success of the implementation of such opportunity in the country, which is a clear motivation of the partnership with ICC Brazil and the deliverable of this project.

To learn more, visit **waycarbon.com**

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SUMMARY

PRESENTATION

After its publication in 2021, Opportunities for Brazil in carbon markets presents a new publication in 2022 updating the market on the topic. This study brings a new perspective on opportunities for Brazil with updates on carbon markets after the last United Nations Conference of the Parties (COP), the mapping and analysis of the national carbon market ecosystem and recommendations for the business sector and national government.

UPDATES AFTER COP 26

COP 26, which took place in Glasgow in November 2021 – brought news impacting carbon markets, both resolutions for the mechanisms of article 6 of the Paris Agreement, as well as reflections on domestic regulated markets and voluntary market.

MECHANISMS OF ARTICLE 6

OPERATION OF 6.2

Transactions will be independent across countries. In the absence of a regulatory body, transparency will be essential to guarantee the environmental integrity of ITMOs (Internationally transferred mitigation outcomes), the unit to be transacted in this mechanism. Each party must ensure that it has arrangements in place to authorize the use of ITMOs and submit an updated emissions inventory and NDC. Transactions will take place with the goal of I) achieving NDC (Nationally Determined Contributions), II) "other international mitigation purposes" or III) "other purposes". (UNFCCC, 2021a). It is understood that CORSIA (Carbon Offsetting and Reduction Scheme for International Aviation)[1] is included under other purposes of international mitigation. Also, under 'other purposes', it is understood that it is included the voluntary and domestic regulated markets. Additionally, there is no determination that the transferring country must have achieved its NDC, but it is considered risky for a country that has not yet achieved its NDC to commit to selling mitigation results. Countries such as Switzerland and Sweden have already started to establish partnerships along the lines of Article 6.2 funding projects in developing countries.

OPERATION OF 6.4

The mechanism in Article 6.4 will be operated by the Supervisory Body. As with the Article 6.2 mechanism, transactions under this mechanism will take place for the purposes of I) achieving NDC, II) "other international mitigation purposes" or III) "other purposes". The types of projects have not yet been defined, but it was determined that methodologies and the definition of the baseline of the projects should consider a benchmarking market analysis of the best technologies and that less strict criteria based on historical emissions could be used if applied at a discount. The addition of the projects must consider mitigation through activities that are not required by law (UNFCCC, 2021b).

CLEAN DEVELOPMENT MECHANISM (CDM) CREDITS

CDM project credits (CER - Certified Emission Reduction) may be used towards 6.4 as follows: if they are from projects registered, or from 2013 with pre-2021 emission reductions, they can be used only to fulfill NDCs until the year 2030 without corresponding adjustments and, in projects that have not yet issued CERs, the continuation of projects whose request for transition to 6.4 is made until 2023 and approved by 2025 is allowed, provided they are consistent with the criteria of the new mechanism (UNFCCC, 2021b). According to data extraction from the CDM project registry carried out in April 2022, there are 46 registered CDM projects that fit the above definitions, whose supply potential is 83.5 million credits. (UNFCCC, 2022a).

FEES

There will be two levies on the credits traded under the Article 6.4 mechanism: a 5% fee from the 6.4ER (6.4 Emission Reduction - unit traded in the 6.4 mechanism) intended for the Adaptation Fund and another 2% fee for overall mitigation purposes in global emissions (OMGE). For 6.2, these fees are optional (UNFCCC, 2021b).

CORRESPONDING ADJUSTMENTS

There was the acceptance of matching adjustments to avoid the possibility of double counting emission reductions. It was decided that when a country sells an amount of ITMOs or 6.4ERs, it must subtract the amount sold from the emission reductions accounted for in its NDC. In the same way, the buying country must include the quantity purchased in its NDC considering the existing rates in the mechanism(UNFCCC, 2021a). The reporting of the corresponding adjustments at the national level will happen through the Biennial Reports (starting in 2024). The corresponding adjustments do not apply to CDM and if the host country in 6.4 does not issue the letter of authorization for use for NDC or other international mitigation purposes (UNFCCC, 2021a, 2021b). Furthermore, the corresponding adjustments are optional for transactions in the voluntary market.

1. CORSIA is a global CO_2 emissions offset scheme whereby airlines and other aircraft operators will offset any increase in emissions above 2020 levels. (Aviation Benefits Beyond Borders, 2022).

NATIONAL CONTEXT

The first edition of the Opportunities for Brazil in carbon markets study analyzed the great potential of Brazil in these mechanisms and brought recommendations to the Brazilian government at COP 26 to defend the acceptance of this type of credit, cooperation to reach common ground on the need for the corresponding adjustments and support for fee equity in Article 6 mechanisms (ICC Brasil & WayCarbon, 2021). Thus, the advance of the regulation of article 6 at COP 26 was positive for Brazil.

It is important to highlight that Brazil is participating in commitments recently established in the climate agenda.

- 25 Brazilian companies joined the Business Ambition 1.5°C campaign (Science Based Targets, 2021).
- More than 100 companies, 12 cities and 4 states have signed the Race to Zero commitment in Brazil(ICLEI, 2021).
- At least nine banks operating in Brazil have already joined the Net Zero Banking Alliance initiative, committing to neutralize emissions by 2050 (FEBRABAN, 2021).

Since COP 26, Brazil has presented an update of its NDC and Decree 11,075 was signed, which proved to be an important step towards the creation of a regulated carbon market in Brazil.

NDC UPDATE

In March 2022, the Brazilian government presented its updated NDC with commitments to: reduce GHG emissions, compared to 2005, by 37% by 2025, 50% by 2030, achieve climate neutrality by 2050 and zero deforestation in 2028 (BRASIL, 2022). Moreover, it is important to call attention to the fact that this new NDC does not internalize the commitment made at COP 26 to reduce methane emissions by 30% by 2030 (Unterstel & Martins, 2022) and did not correct the methodological distortions in the change in baseline of the document presented at the end of 2020 (Romeiro *et al*., 2021). In this way, in 2022, Brazil presented an outdated NDC and without advancing in increasing ambitiously its climate commitments.

DECREE Nº. 11,075

Signed on May 19, 2022, this decree has the goal of establishing the procedures for the preparations of the Sector Plans for Mitigation of Climate Changes and to institute the National System for the Reduction of Greenhouse Gas Emissions (SINARE), to centralize recording GHG emissions, removals, reductions and offsets, and credit transactions and retirement (DECRETO No 11.075, DE 19 DE MAIO DE 2022, 2022). In this decree, the carbon credit was defined as a financial, environmental and transferable asset (DECRETO No 11.075, DE 19 DE MAIO DE 2022, 2022), a definition that differs from the PNMC, which treated it as a security (Lei 12.187. Política Nacional Sobre Mudança Do Clima - PNMC, 2009) and from PL 528, which treated it as a legal deed (Projeto de Lei PL 528/2021 Apensado Ao PL 290/2020, 2021). The methane credit and carbon stock were also defined. However, despite the signing of this decree, the creation of a regulated market in Brazil through a law is still expected.

WHAT IS EXPECTED UNTIL COP 27 AND WHAT IS NOT DEFINED YET

In June 2022, the Climate Change Conference was held in Bonn (United Nations Climate Change, 2022), when the importance and urgency of capacity building to operationalize the mechanisms of 6.2 and 6.4 was recognized (UNFCCC, 2022b). Additionally, work was requested on the definition of processes for implementing the transition of credits from the CDM to 6.4 and the functioning of this mechanism (UNFCCC, 2022c). Until the next COP, in November 2022, a greater understanding of the functioning of these mechanisms and resolutions on REDD+ (Reducing Emissions from Deforestation and forest Degradation) is expected[2]. At the national level, the definition of the Designated National Authority is expected.

Also, progress is expected in discussions regarding climate finance. As the host country of the COP 27, Egypt wants to focus on how the most vulnerable nations can obtain financing for energy transition and climate change adaptation (Machado, 2022).

GLOBAL OVERVIEW OF THE CARBON MARKETS

The carbon markets have undergone several changes over the course of 2021, with increased exposure, new international agreements, and greater private sector engagement. Thus, it is important to know the impact of this on the regulated markets and the voluntary market.

REGULATED MARKETS

Until the first half of 2022, there were 68 carbon pricing instruments, corresponding to 23% - equivalent to 12 $GtCO_2e$ - of global CO_2 emissions and representing an increase compared to 2021, when the instruments covered 21.5% of global emissions. Some countries also took important steps in 2021: Germany created its German ETS (Emission Trading System) (Dehst, 2021), Indonesia launched the basic legislation for carbon pricing (ICAP, 2022b); and Colombia came into force a law that consolidates the commitments assumed in the NDC and establishes the goal of implementing ETS by 2030 (ICAP, 2022a). As of April 2022, other 3 mechanisms have been implemented – a carbon tax in Uruguay and two subnational ETSs in the United States and Canada. Besides national initiatives, there is potential inclusion of greenhouse gas (GHG) emissions pricing in international shipping (WORLD BANK, 2022b).

2. REDD+, besides considering the reduction of emissions from deforestation and forest degradation, also considers the conservation and increase of forest carbon stocks and the sustainable management of forests.

VOLUNTARY MARKET

The emissions of credits in the voluntary carbon market grew in 2021 approximately 65% in relation to 2020 (Climate Focus, 2022). This growth would have been driven by the Forestry and Land Use projects, which grew by 139% until August 2021, compared to 2020, reaching 115 $MtCO_2e$. It can be highlighted that carbon reduction credits had a trading volume almost 10 times greater than removals in 2020 and 2021, but with prices up to five times lower. This difference can be explained by the preference of groups of investors for removal credits, besides the incentive of the SBTi – Science Based Target initiative (Donofrio *et al.*, 2021). According to information provided by Carbonext, the price of REDD+ project credits grew by about 122% in 2021, from US$ 5.73 to US$ 12.72. The prices of credits from Nature-Based Solutions (NBS) projects reached US$ 13.8 at the end of the year (OPIS, 2022).

There is also a constant difference between the number of credits issued and those retired over the years. This difference can be caused by the inefficiency of the market, the high price elasticity of credit supply and the over-the-counter trading format, for example.

Considering retired credits with beneficiary identification, the main beneficiaries are: industry sectors (41%), energy sector (33%) and services (14%)[3], but it is worth noting that more than 52% of credits do not have this type of identification.

NATIONAL CARBON MARKET ECOSYSTEM

A survey of the current market ecosystem was carried out to understand the maturity of carbon markets in Brazil. To this end, data from the literature and standards databases were used, interviews with strategic market players[4] and online research were carried out. First, market players were defined according to table 1.

Table 1 Types of activities in the Brazilian carbon market ecosystem

Type of activity	Player	Description
Supply players	Project proponent	One or more individuals or organizations that have control and overall responsibility for the project. They are the project owners. Sometimes it may be the owner of the site or the technology to be implemented in the project activity.
	Financier	Investors or financial institutions that provide capital for the development of carbon projects directly or through funds.
	Project developer	Organization that gathers information, performs the required analyses, identifies adherent methodologies and prepares the required documents for project registration.
	Implementing Partner	Company that implements the project in practice, which has the continuous work of on-site operation
	Technology Suppliers	Company that provides technology for the implementation or monitoring of carbon projects.
Demand players	Final buyer	Organization interested in acquiring credits for its own emissions offsets.
	Traders	Intermediary buyers who carry out the resale of credits taking advantage of the appreciation of credits in the market for capitalization.
	Brokers	Intermediary agents that connect final buyers and sellers, and earn commissions on sales.
Transversal players	Registration program (standard)	Also known as standard. Institution that works in the delimitation of criteria, rules and methodologies for the issuance of carbon credits.
	Third-party auditor	Company that audits project activities and their reductions or removals of GHG emissions according to the rules of the standard and methodology.
	Local community and beneficiaries	Local population, sometimes composed of indigenous and traditional populations, affected by project activities.

Source: Own preparation.

There is still the possibility of action by non-profit organizations, government institutions, political figures, law firms, among others. And note that an institution that wants to operate in the carbon market can encompass more than one type of activity.

Analyzing the project registration process and the reports of the players interviewed, it was identified that, currently, the Brazilian carbon market ecosystem has the following basic configuration, summarized in Figure 1.

3. The sector division was carried out for the credits in which the beneficiary is specified in the database.
4. Overall, 25 companies contributed to this study through interviews conducted by the WayCarbon team between April 12 and May 4, 2022.
5. Prepared by WayCarbon and published by ICC and WayCarbon on their networks, between May 2 and 31, 2022, aiming at a greater reach of the vision of market players. Another 18 companies, in addition to those interviewed, collaborated through the online research.

Figure 1 – Representative summary of the current Brazilian carbon market ecosystem

	INITIAL PROCESS				CYCLICAL OPERATION OF THE PROJECT				
PLAYERS | STAGES	**Project Design**	**Project Description Development**	**Validation Audit**	**Project registration application**	**Project implementation and operation**	**Project monitoring**	**Verification audit**	**Credit issuance**	**Final destination of credits**
Project proponent	Performs the project conception	Engages the parties and provides necessary information and evidence to the developer	Supports in the resolution of queries	Requests project registration			Supports in the resolution of queries	Requests registration of documents and issuance of credits	Sell the credits or use them internally
Financier	Provides resources for project development								
Other players	Provides legal and technical support, and discussion groups								
Project developer	Supports project design	Prepares project registration documents and shares with audit	Responds to questions and makes adjustments to project documents	Requests project registration		Collects data from implementer and technology suppliers, prepares documents for monitoring, accounts for reduced emissions, and shares with the audit	Responds to questions and makes adjustments to project documents	Requests registration of documents and issuance of credits	
Activity Implementer		Carries out the planning to implement and monitor the project			Implements, conducts and monitors the project operation				
Local communities and beneficiaries		Voices its opinion about the project design as far as it is impacted			Benefits from the planned social and environmental activities				
Third-party auditors			Audits the documentation and provides an opinion about the project				Audits the documentation and provides an opinion about the project		
Registration Programs (standards)				Processes documentation and grants or denies project registration				Processes documentation and issues credits	
Technology Suppliers					Provides technology to implement and operate the project	Provides technology to project monitoring			
Buyers (final or intermediary)									Purchases or intermediates the credits
STEP RESULT		**Project description document (PD/PDD) and calculation of emission reductions**	**Validation report and opinion**	**Project registration**		**Monitoring report and calculation of emission reductions**	**Verification report and opinion**	**Credit issuance**	**Resources and compensation of emissions**

Source: Own preparation.

REGISTRATION OF CARBON PROJECTS IN BRAZIL

Projects registered with the VCS, Gold Standard and CDM[6] in Brazil mostly have the following distribution of projects by scope: renewable energy (108), forestry (28), waste treatment (18) and livestock (15). It is worth noting that projects can present activities in more than one scope. In 2021, projects in Brazil emitted around 45.28 $MtCO_2e$ in carbon credits, of which 97.2% were registered by VCS (Gold Standard, 2022; Verra, 2022). This amount was driven by REDD+ and represents an increase of more than 200% compared to 2020 (Verra, 2022). However, as is the case internationally, the number of retired credits is smaller than the number of credits issued, which denotes an excess supply of Brazilian credits. It was considered that the prices for licensing projects vary with the methodology adopted, the generation of credits and other specificities. Entry costs added to other development costs can limit the performance of small bidders.

The demand for credits from Brazilian projects was mainly composed of companies in the service sector, companies in the Oil and Gas sector and energy generation companies. Furthermore, the market has moved towards projects that generate socio-environmental co-benefits and their respective contribution to the Sustainable Development Goals (SDG) (VERRA, 2022).

The constant difference between emissions and retirements of carbon credits in the voluntary market can happen due to the inefficiency of this market[7], high price elasticity of credit supply[8] and the over-the-counter trading format, so that the buyer does not have enough information to base its decisions, besides having high transaction costs, making negotiations in this market difficult.

TRANSACTION POTENTIAL FOR BRAZILIAN CREDITS

Updating the proportion of **Brazilian participation in the world supply of credits** with data from 2021, following the logic adopted in the previous edition of this study, we have that: the Brazilian supply corresponds to about 12% of world emissions - Brazil emitted 45.28 $MtCO_2$ in carbon credits on the voluntary market in 2021. This percentage exceeds previous estimates, based on data from 2019, when Brazil issued an average of 3% of the world's carbon credits – and above the 10% market share considered in ICC & WayCarbon (2021). It is possible that this growth will continue to be driven mainly by NBS projects so that, while these low-cost projects are still plentiful, it is possible that the country will maintain this expressive participation in the voluntary market.

Based on the continuity of Brazil as responsible for 12% of the share of the world supply, Brazilian carbon credit emissions under Article 6.4 would be between 360 and 1,200 $MtCO_2$ per year in 2030[9]. Furthermore, it is important to consider the non-eligibility of new energy projects in the largest programs of the voluntary market since 2020, which results in a residual potential for emissions of approximately 62 $MtCO_2e$ by 2030 for the projects already registered, changing the potential of credits in the voluntary market to 3 35 $MtCO_2e$ and 973 $MtCO_2e$ in the pessimistic and optimistic scenarios, respectively. Finally, it is important to point out that for the mechanism of article 6.2, an even greater supply potential is expected in comparison with 6.4, due to the breadth of initiatives that can compose the results of emission reduction transacted. With this potential, Brazil could supply between 8.4 and 28% of the demand in the Article 6.4 mechanism, according to Edmonds *et al*. (2019), who estimates a demand of 4,300 $MtCO_2e$ in this market.

Considering the average prices of credits by project types in 2021, according to Forest Trends' Ecosystem Marketplace (2022), Brazil could obtain between 1.39 and 4.63 billion reais in 2030. Considering the price of US$ 100 per ton, a value considered by the TSVCM (Taskforce on Scaling Voluntary Carbon Markets) as necessary for a rapid reduction in emissions, the potential would be up to US$ 120 billion in 2030, against US$ 100 billion estimated at ICC & WayCarbon (2021). In this scenario of accelerated reductions, the demand for credits in the voluntary market would be between 1,500 and 2,000 $MtCO_2e$ (TSVCM, 2021), so that Brazil could offer between 22.3 and 48.7% of credits in this market.

Regarding the **demand for credits generated in Brazil in the voluntary market**, two possible scenarios can be considered:

• According to ICC & WayCarbon (2021), considering that most Brazilian companies will establish net zero targets and that residual emissions would be offset with carbon credits, the possible national demand for carbon credits is estimated at approximately **32.7 $MtCO_2e$** for 2034, according to the tool developed by Carillo Pineda *et al*. (2020)[10].

• If we consider the purchase of Brazilian credits by companies around the world, based on estimates made by TSVCM (2021), and considering that Brazil's relative share of retired credits in the world in 2021 is 7.9%, the demand for Brazilian credits would be between **15.8 and 79 $MtCO_2e$** per year in 2030.

• As for the global regulated market, Edmonds *et al*. (2019) estimates that a pricing system established to

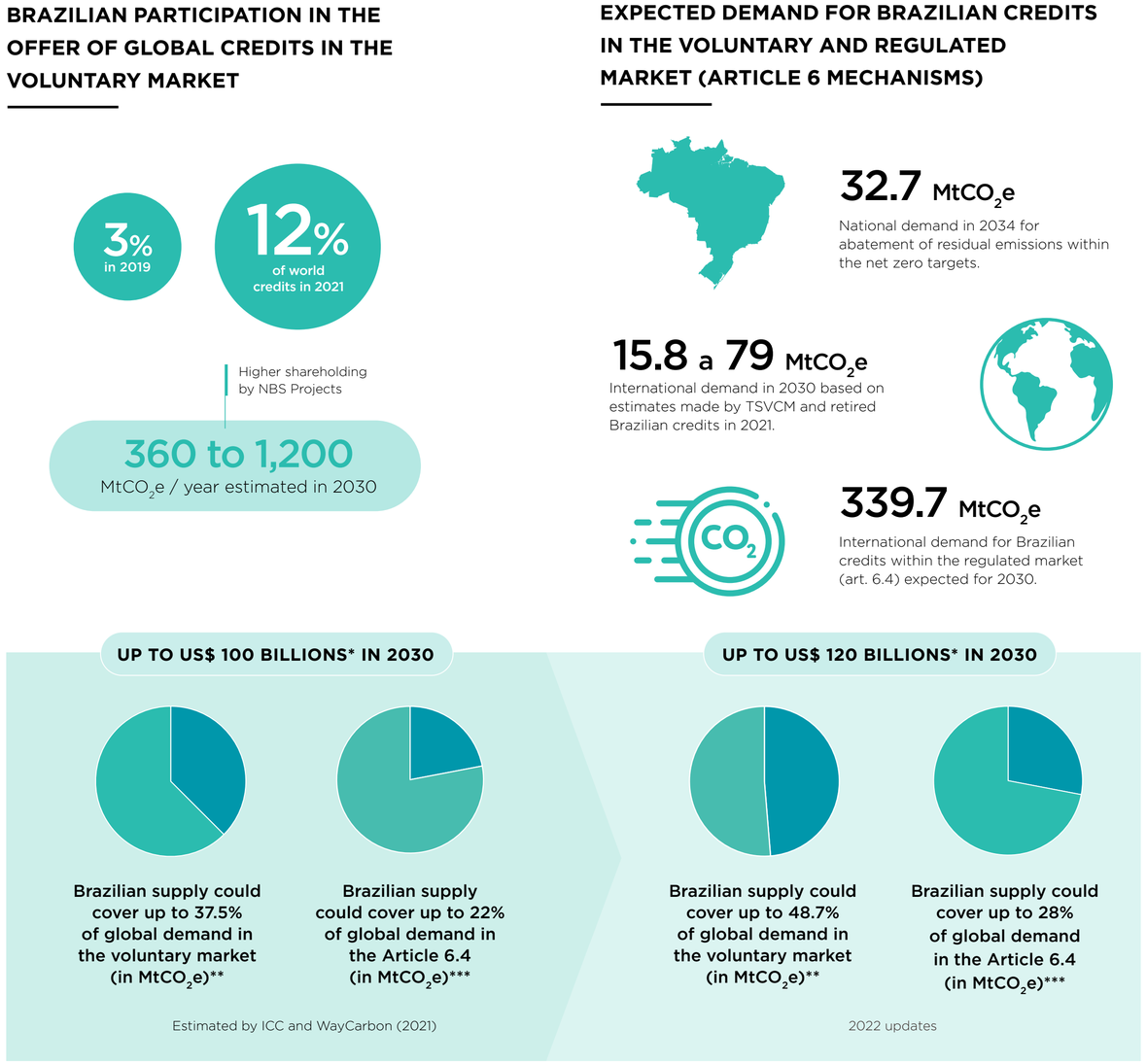
6. There is no registration of projects of the American Carbon Registry (ACR) and Climate Action Reserve (CAR) standards in Brazil and, for the CDM, projects registered after 2013 are considered..
7. Fama (1970) defines efficient markets as those in which: 1) there are no transaction costs; 2) all information is available and free of charge to market participants; 3) all agents agree on the implications of current information on pricing. These conditions are sufficient, but not necessary, to guarantee the efficiency of the market – the market can be considered efficient if a significant number of agents have access to the information and disagreements about the implications of the information will not be a problem as long as some agents do not do, so consistently better ratings than those that are reflected in prices.
8. The price elasticity of supply refers to the reaction of the quantity of a good supplied in the market to an increase in its price. A high price elasticity means that the quantity supplied reacts more than proportionally to the increase in price.
9. Note that, despite the time cuts for the transition from CDM credits to the 6.4 mechanism, it is not yet known what types of projects and methodologies can be transferred, as well as how the baseline reviews will take place within these methodologies that may undergo the CDM transition. For this reason, the amount of credits estimated for the transition between CDM and 6.4 was not added to the scenarios in order not to inflate the numbers, although there is this potential.
10. Aligned with the trajectory stipulated by the SBTI for a scenario of global warming restriction of 1.5°C.

meet the countries' NDCs could cover up to 4,300 $MtCO_2e$ per year by 2030. This value would then be equivalent to the demand for credits in the 6.4 mechanism. Based on the same proportion of credits from retired Brazilian projects in the voluntary market, 7,9%, a demand of **339.7 $MtCO_2e$** for carbon credits generated in Brazil in 2030 can be envisioned.

Note that the difference between the potential supply and demand highlights the need to create a nationally and globally regulated market to give rise to the generation of credits.

Figure 2 presents a summary of transaction potentials for Brazilian credits, updating the numbers brought in the 2021 edition of this report.

Figura 2 - Summary of transaction potentials for the Brazilian credits



Source: Own preparation based on: ICC & WayCarbon (2021), Forest Trends' Ecosystem Marketplace (2022), Carillo Pineda *et al.* (2020), TSVCM (2021), Edmonds *et al.* (2019)

* Optimistic scenario using as a reference price of USD 100 dollars, considered by the Taskforce on Scaling Voluntary Carbon Markets as necessary to reach the Paris Agreement target of limiting global warming to 1.5°C. The average prices of credits by types of projects up to August 2021 in Table 5 are also considered, with the lower limit of the price range.
**Considering the demand for credits in the voluntary market of 2,000 $MtCO_2e$ in 2030 (TSVCM, 2021).
***According to the demand of 4,300 $MtCO_2e$ estimated by Edmonds *et al.* (2019) for the Article 6.4 mechanism.

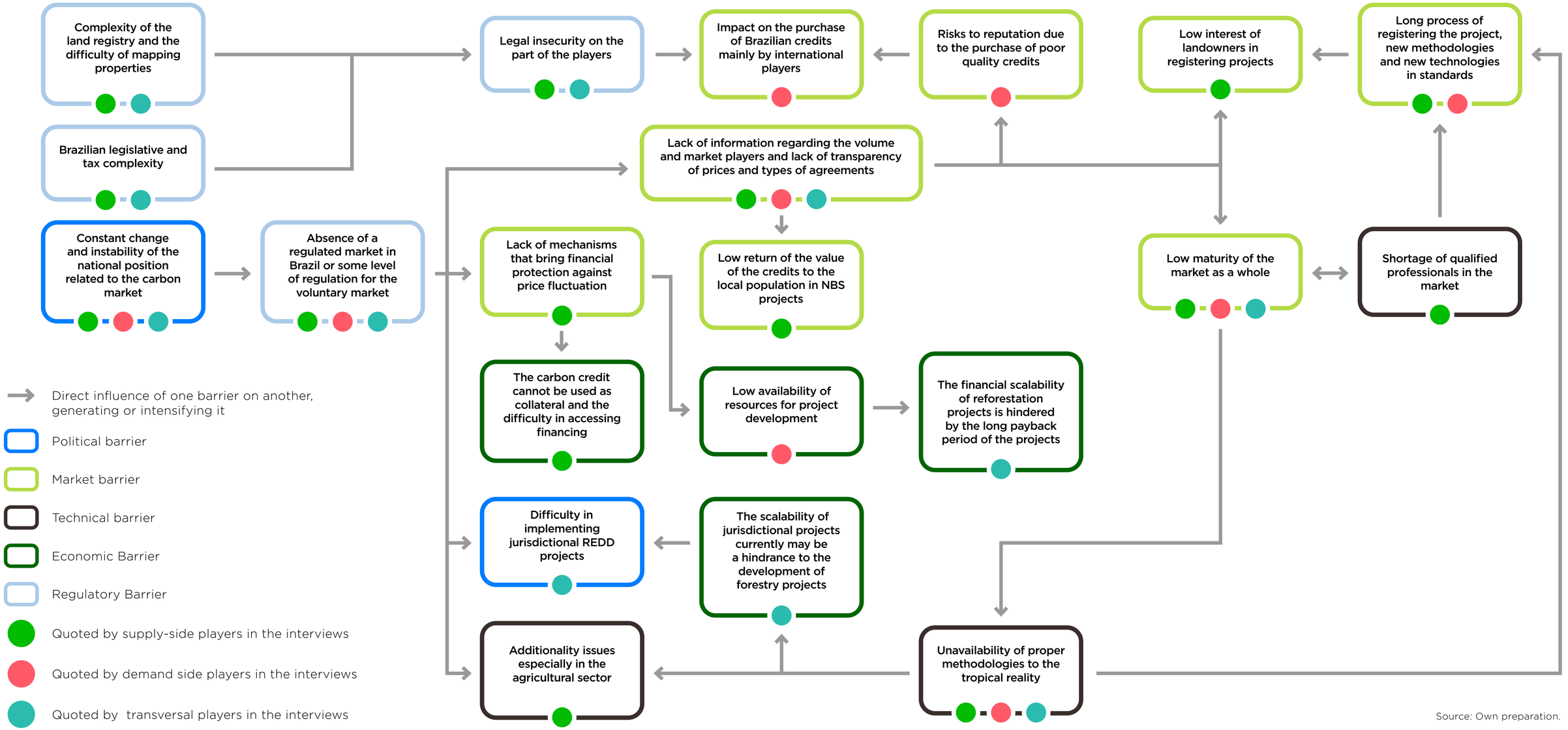
NATIONAL ECOSYSTEM ASSESSMENT

From the survey of the national carbon market ecosystem, there is a need to analyze what barriers need to be overcome so that the estimated transaction potential can approach being effective and what opportunities for action exist in the market today.

BARRIERS TO ACTING IN THE CARBON MARKET IN BRAZIL

Contributing to and corroborating the various barriers known in the literature, 22 difficulties to acting in carbon markets were raised in interviews with market players. It was identified that these barriers can interact, given that the functioning of any market is dependent on several simultaneous factors. For example, the lack of a good institutional framework can affect the availability of information, as well as predictability and the formation of expectations. Figure 3 presents not only the barriers but also their connections.

Figure 3 - Barriers to action in the carbon market and their interconnections



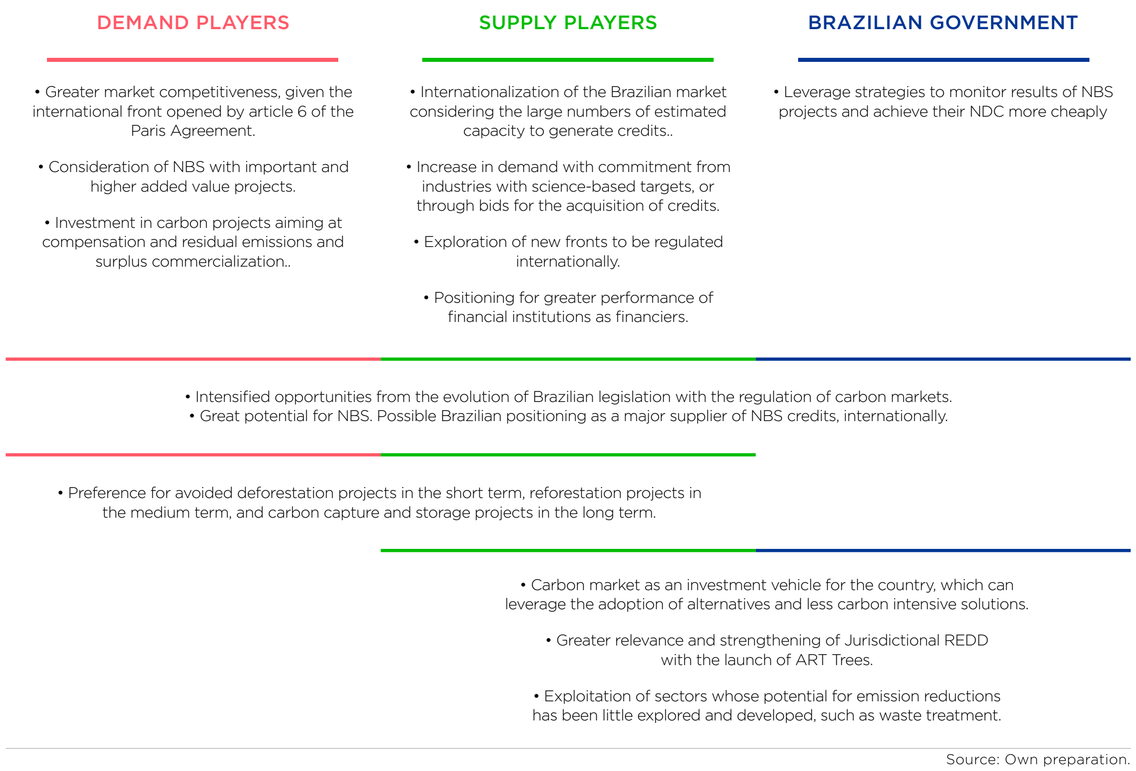
Source: Own preparation.

OPPORTUNITIES TO OPERATE IN THE CARBON MARKET IN BRAZIL

In the previous year's study, the potential of the agriculture, forestry and energy sectors to act in the mechanisms of Article 6 and in the voluntary market was indicated. In an update for this year, the greatest potential of the Article 6.2 mechanism in relation to Article 6.4 is highlighted. After the experiences with the pilot projects of the mechanism of Article 6.2, the Brazilian government has the opportunity to define possible types of projects and partnerships for the transfer of ITMOs, considering that types of generation projects that are easier to implement should not be considered so as not to hinder the achievement of its NDC.

Besides the opportunities related to the sectors, Figure 4 lists the opportunities to act in the carbon market mentioned in the interviews and in the form, detailing the type of player who will have the opportunity.

Figure 4 – Opportunities for demand-side players, supply-side players, and the Brazilian government



Source: Own preparation.

RECOMMENDATIONS AND KEY MESSAGES

Recommendations that have the potential to overcome presented barriers, seize opportunities and boost the national market are presented.

FOR THE BRAZILIAN GOVERNMENT

It is imperative that the Brazilian government take a stand and act urgently in accordance with the following guidelines:

FEDERAL EXECUTIVE BRANCH

1 It is essential that Brazil, in its regulatory role, supported by ministries and sectors, as defined by decree 11,075, develop and publish specific planning to fulfill its NDC and commitments to zero illegal deforestation and methane reduction.

2 Given the planning for compliance with the NDC, the Executive, mainly through the Ministry of Economy (ME), Ministry of the Environment (MMA) and Ministry of Foreign Affairs (MRE), must establish its strategy for selling credits through the Article 6 mechanisms considering using more complex types of projects in the mechanisms and their potential as a major supplier of NBS credits.

3 It is important that the Inter-ministerial Committee on Climate Change and Green Growth takes responsibility for the regulated and voluntary carbon markets.

4 Brazil, through the ministries, mainly the MCTI, and through the state governments, should strongly encourage and support the development of methodologies that consider the country's climate reality, through the allocation of funds for the development of studies, or training from the market.

5 It is important for the federal government to provide the state governments with clear definitions on jurisdictional projects and procedures for their implementation through a well-structured and publicly available guide.

6 The MRE should follow the COP 27 discussions on the inclusion of REDD projects.

FEDERAL LEGISLATIVE BRANCH

1 Effectively establish a regulated carbon market in Brazil through a law. Therefore, it is up to the Brazilian legislative branch, with the support of the executive branch, to move in this direction.

2 2. Promote the potential for economic development, social equity, and ecological balance that carbon markets offer. It also should:

2.1. Promote the development of less carbon-intensive technologies and the professional development in this field.

2.2. 2.2. Ensure the protection of indigenous peoples, quilombola communities, traditional communities, and primary producers. Moreover, ensure that

they also participate in the elaboration of carbon projects and receive due recognition and compensation.

2.3. Provide environmental and human rights safeguards..

3 It is important to prioritize processes related to land regularization and other regulatory barriers to enable the implementation of projects and to advance the proper implementation of the Forest Code to support the mapping of properties that can potentially host carbon projects.

4 4. Take advantage of the preparation towards a regulated market in Brazil initiated by the Decree to enable several important institutional measures for the good operation of the carbon markets:

4.1. Definition of the legal nature of credit in laws.

4.2. Definitions on the performance of SINARE, considering access and integration with other systems such as SIRENE and data transparency. Furthermore, it is important to ensure the incorporation of an intersectoral architecture that allows monitoring of the mitigation outcomes of all programs and public policies related to the progress of the various sectors towards the targets set by the NDC.

4.3. It is extremely important to ensure that the guidelines provided by the ministries are laid out in a clear and direct way, to allow due monitoring of the emission reductions and removals promoted, as well as the transaction of ITMOS and corresponding adjustments.

4.4. Bring in the new regulations and sector trajectories to be determined to achieve the NDCs, besides clear indications about the additionality of the projects.

STATE GOVERNMENTS

1 To take advantage of the benefits that can result from jurisdictional programs at the state level, the state governments should strengthen their technical staff, for example on the topics of carbon markets, REDD+, and Jurisdictional REDD+.

FOR THE PRIVATE SECTOR

For the private sector as a whole, with the aim of strengthening the national market and supporting its maturation process, this study makes the following recommendations:

1 Support the simplification of credit transaction processes in the voluntary market and defend the adoption of digital technology for MRV and carbon credit certification processes with voluntary programs.

2 Actively contribute to periodical publications prepared by entities experienced in the subject.

Supply-side players have a critical role in making the country's credit supply potential practical and ensuring the quality of the credits produced. They also have great opportunities as the market grows. Therefore, specific recommendations have been prepared:

1 Establish partnerships with other market players with the intention of strengthening and cooperating for the maturation of the market, valuing transparency and fair return to the landowner and local communities involved in the project.

2 Include and increase the visibility of the participation of local, indigenous, and traditional populations directly affected in discussions on the elaboration of projects in the forestry sector.

3 Invest in projects that generate co-benefits, generating resources for people, communities and small producers.

4 Investments in NBS designed to ensure the greatest possible benefit in terms of sustainability and regeneration, as well as minimizing social and environmental damage, prioritizing projects involving the planting of forests, due to Brazil's potential in this regard and the relatively low abatement cost and considering the potential increase in demand from the commitment of industries to science-based targets and the requirement of such initiatives for carbon capture and removal.

5 Take advantage of opportunities for action in new international mechanisms as done with CDM.

6 Ensure that GHG removals and emission reductions are implemented not only in forestry projects, but also in projects of other scopes that have been little explored nationally, such as projects that apply carbon storage and sequestration technologies to industrial processes and the GCC (Global Carbon Council), a voluntary market mechanism that continues to generate credits through renewable energy-related activities in Brazil.

7 Support professional development and the increase of scientific knowledge in the area by promoting debates, courses, and seminars.

To support the growth of this market and take advantage of the best opportunities to offset emission and to achieve net zero targets, the **demand-side players** should prioritize the following:

1 Commit to long-term agreements to purchase carbon credits.

2 Expand its operations in the market by proposing and financing projects.

3 Give preference to projects that provide socioeconomic co-benefits and generate income and wealth for peoples, communities, small producers.

4 Expand efforts to reduce and remove GHG emissions by investing in technological development and innovation.

5 Establish partnerships that make viable new technologies for reducing emissions and removing GHG from the atmosphere.

Since the process of generating carbon credits plays an essential role in the voluntary market, the **registration programs** must follow the Brazilian market development. For this purpose, this study brings the following recommendations:

1 **Pay attention to the speed of its processes, considering since the review of methodologies to the operation of the registration platform.**

2 **Carry out harmonized reporting with other registration programs** to ensure data comparability.

3 **It is also suggested the preparation of methodologies focused on the national climatic characteristics, mainly, ensuring adherence to the wide range of possibilities in projects in the forestry and agricultural sectors.**

As carbon markets are constantly evolving, to follow this evolution, we recommended to carry out new studies yearly in the area of carbon markets in Brazil.

REFERENCES

Aviation Benefits Beyond Borders. (2022). CORSIA explained. Aviation Benefits. https://aviationbenefits.org/environmental-efficiency/climate-action/offsetting-emissions-corsia/corsia/corsia-explained/

Lei 12.187. Política Nacional sobre Mudança do Clima—PNMC, no. 12.187 (2009). http://www.mct.gov.br/index.php/content/view/315733.html

BRASIL. (2022). *FEDERATIVE REPUBLIC OF BRAZIL - Paris Agreement—NATIONALLY DETERMINED CONTRIBUTION (NDC)*. https://unfccc.int/sites/default/files/NDC/2022-06/Updated%20-%20First%20NDC%20-%20%20FINAL%20-%20PDF.pdf

DECRETO No 11.075, DE 19 DE MAIO DE 2022, (2022) (testimony of Diário Oficial da União BRASIL). https://www.in.gov.br/web/dou/-/decreto-n-11.075-de-19-de-maio-de-2022-401425370

Carillo Pineda, A., Chang, A., Faria, P., & SBTi. (2020). *FUNDAMENTOS PARA ESTABELECER METAS DE ZERO EMISSÕES LÍQUIDAS COM BASE CIENTÍFICA NO SETOR EMPRESARIAL*. CDP. https://sciencebasedtargets.org/resources/files/Net-Zero_Full-Paper_Portuguese-from-Portugal.pdf

Climate Focus. (2022). *Voluntary Carbon Market Dashboard*. https://app.powerbi.com/view?r=eyJrIjoiNGI5ZDY-1ZWUtZGU0NS00MWRmLWFkNjQtMTUyYTMxMTVjYWQyIiwidCI6IjUzYTRjNzZkLWI2MjUtNGFhNi1hMTAzLW-Q0M2MyYzIxYTMxMiIsImMiOjI9&pageName=ReportSection68c2510fa4171bdf82a9

Dehst, D. E. (2021). *National Emissions Trading System*. 2.

Donofrio, S., Maguire, P., Myers, K., Daley, C., & Lin, K. (2021). *Markets in Motion. State of the Voluntary Carbon Markets 2021—Installment 1*. https://app.hubspot.com/documents/3298623/view/251152947?accessId=fd91dd

Edmonds, J., Forrister, D., Leon, C., de Clara, S., & Clayton, M. (2019). *The Economic Potential of Article 6 of the Paris Agreement and Implementation Challenges*. Https://Openknowledge.Worldbank.Org/Handle/10986/33523. https://openknowledge.worldbank.org/handle/10986/33523

Fama, E. F. (1970). Efficient Capital Markets: A Review of Theory and Empirical Work. *The Journal of Finance, 25(2)*, 383–417. https://doi.org/10.2307/2325486

FEBRABAN. (2021, October 26). FEBRABAN discute a atuação do setor financeiro na agenda climática no Café com Sustentabilidade. *FEBRABAN*. https://febraban.org.br/noticia/3699/pt-br

Forest Trends' Ecosystem Marketplace. (2022). *The Art of Integrity: State of the Voluntary Carbon Markets 2022 Q3 Insight Briefing*. https://www.ecosystemmarketplace.com/publications/state-of-the-voluntary-carbon-markets-2022/

Gold Standard. (2022). *The Gold Standard*. Gold Standard. https://www.goldstandard.org/

ICAP. (2022a). *Emissions Trading Worldwide – International Carbon Action Partnership (ICAP) Status Report 2022*. 240.

ICAP. (2022b, March 29). *Indonesia establishes the legal framework for a domestic emissions trading system*. https://icapcarbonaction.com/en/news/indonesia-establishes-legal-framework-domestic-emissions-trading--system

ICC Brasil, & WayCarbon. (2021). *Oportunidades para o Brasil em mercados de carbono* (https://www.iccbrasil.org/media/uploads/2021/09/27/oportunidades-para-o-brasil-em-mercados-de-carbono_icc-br-e-waycarbon_29_09_2021.pdf; No. 1). ICC Brasil e WayCarbon. https://www.iccbrasil.org/media/uploads/2021/09/27/oportunidades-para-o-brasil-em-mercados-de-carbono_icc-br-e-waycarbon_29_09_2021.pdf

ICLEI, G. locais pela S. (2021, August 4). Fechando o Ciclo de Ambição com a Race to Zero no Brasil: Um aquecimento para a COP26. *ICLEI*. https://americadosul.iclei.org/fechando-o-ciclo-de-ambicao-com-a-corrida-ao-zero-no-brasil-um-aquecimento-para-a-cop26/

Machado, N. (2022, August 1). Financiamento climático de países ricos ainda abaixo dos US$ 100 bi. *Epbr*. https://epbr.com.br/financiamento-climatico-de-paises-ricos-ainda-abaixo-dos-us-100-bi/

OPIS. (2022). *Carbon Market Report | Credit Prices | OPIS. OPIS*, A Dow Jones Company. https://www.opisnet.com/product/pricing/spot/carbon-market-report/

Projeto de Lei PL 528/2021 Apensado ao PL 290/2020, no. PL 528 (2021). https://www.camara.leg.br/proposicoesWeb/prop_mostrarintegra?codteor=2030309

República Federativa do Brasil. (2022). *Nationally Determined Contribution (NDC)*. https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/Brazil%20First/Updated%20-%20First%20NDC%20-%20%20FINAL%20-%20PDF.pdf

Romeiro, V., Genin, C., & Felin, B. (2021). Nova NDC do Brasil: Entenda por que a meta climática foi considerada pouco ambiciosa. *WRI Brasil*. https://wribrasil.org.br/pt/blog/clima/nova-ndc-do-brasil-entenda-por-que-meta-climatica-foi-considerada-pouco-ambiciosa

Science Based Targets. (2021). *Status report: Business ambition for 1.5°C responding to the climate crisis*. https://globalcompact.at/wp-content/uploads/2021/11/status-report-Business-Ambition-for-1-5C-campaign.pdf

TSVCM. (2021). *Scaling Voluntary Carbon Markets: The Final Report | White & Case LLP*. https://www.whitecase.com/publications/alert/scaling-voluntary-carbon-markets-final-report

United Nations Climate Change. (2022). Bonn Climate Change Conference—June 2022. *UNFCCC*. https://unfccc.int/SB56#sessions

UNFCCC. (2021a). *Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement—Advance unedited version*. https://unfccc.int/sites/default/files/resource/cma3_auv_12a_PA_6.2.pdf

UNFCCC. (2021b). *Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement—Advance unedited version*. https://unfccc.int/sites/default/files/resource/cma3_auv_12b_PA_6.4.pdf

UNFCCC. (2022a). *CDM Projects Research*. https://cdm.unfccc.int/Projects/projsearch.html

UNFCCC. (2022b). *Guidance on cooperative approaches referred to in Article 6, paragraph 2, of the Paris Agreement and in decision 2/CMA.3*. teste. https://unfccc.int/event/sbsta-56#eq-34

UNFCCC. (2022c). *Rules, modalities and procedures for the mechanism established by Article 6, paragraph 4, of the Paris Agreement and referred to in decision 3/CMA.3*. https://unfccc.int/event/sbsta-56#eq-34

Unterstel, N., & Martins, N. (2022). *NDC do Brasil: Avaliação da atualização submetida à UNFCCC em 2022*. https://www.politicaporinteiro.org/wp-content/uploads/2022/04/Analise-NDC-2022_V0.pdf

VERRA. (2022). Climate, Community and Biodiversity Standards Search Page. *Verra*. https://registry.verra.org/app/search/CCB

Verra. (2022). *Verra Landing page*. https://registry.verra.org/

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