Amazonas REDD+ System

Proposal for a
REDD+ System in the
State of Amazonas

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NOVEMBER/2020

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The proposals presented in this document must undergo consultations with the Government of the State of Amazonas, through the State Environment Secretariat, as well as the organizations that comprise the Climate Change Forum in Amazonas (FAMC) and the State Council for the Environment (CEMAAM)

1. INTRODUCTION

As part of the regulation and implementation process of the Amazonas State Environmental Services Law (Law N.° 4.266/2015) - initial technical analyses were developed in order to assess and estimate the potential for emission reductions in the state of Amazonas, by means of the REDD+ mechanism (Reducing Emissions from Deforestation and Forest Degradation, sustainable forest management, conservation and increasing forest carbon stocks). In addition, the national and international potential for investments and financial compensation were analyzed and estimated, including through carbon markets by means of the results achieved through REDD+ initiatives in the State of Amazonas, with the expected working period reaching well into the year 2030.

Amazonas is the biggest Brazilian state with 1.5 million km² of territorial extension, 97% of this territory[1] is still occupied by native forests, with 49.9% of the forest area being within protected areas. According to the Forest Project for the Satellite Monitoring of the Brazilian Amazon developed by the National Institute for Space Research (PRODES/

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INPE), the share of forests is equivalent to more than 1.45 million km² and that makes Amazonas the state with the largest carbon stock of all when it comes to tropical forests around the world[2].

In this scenario, the state has enormous potential to generate benefits by means of payments for environmental services, especially through the REDD+ mechanism. To ensure access to these benefits, it is essential to plan a specific regulatory structure for environmental services and REDD+, in the form of an integrated monitoring and registration system. This system should make it possible to account for the results obtained from efforts to reduce deforestation. In addition, this system must have governance strategies and mechanisms that allow Amazonas to move forward with the valuation of its environmental assets, benefiting the various regions and traditional populations of the state.

The state of Amazonas was a pioneer in formulating its **State Policy on Climate Change** (PEMC-AM), instituted by Law Nº 3.135/2007. PEMC-AM was created in accordance with international agreements for the mitigation of climate change and had the following main objectives: create economic, financial and monitoring mechanisms; foster markets for Reducing Emissions from Deforestation and Forest Degradation (REDD+); encourage regional models of sustainable development; elaborate Action Plans to mitigate climate change and; create Conservation Units.

Subsequently, the state instituted the State Environmental Services Policy (Law N.° 4.266/2015), which provides for the creation of a REDD+ Subprogram within the Climate and Carbon Regulation Program (Art. 14°) and it has a legal instrument for fundraising in order to provide for socioeconomic development and the conservation of forests. The Law establishes a framework for the State Government, companies, organizations and civil society from all over the world, so that they may invest in environmental services provided by the forests of the state of Amazonas.

Aiming to connect the potential of Amazonas with important carbon markets and systems of payment for results under development, a set of rules that make up the Amazonas State REDD+ System has been structured. It involves a monitoring and accounting system, a proposal for the development of a state reference level connected to the national reference level, as well as a distribution model in order to share the benefits among different regions and actors in the state.

[1] PRODES, 2019. http://www.dpi.inpe.br/prodesdigital/prodesmunicipal.php

[2] Cenamo et al., 2014. https://idesam.org/contribuicoes-para-a-estrategia--nacional-de-redd-2-ed/ Proposal for the allocation of "U-REDD" emission reductions in Brazilian states that are GCF members

2. OBJECTIVES

The general objective of the document is to structure the State REDD+ System, making it possible for the state of Amazonas and local projects to access a new wave of investments and financial resources that are coming from carbon markets, private investments (funds, companies) and a system of "payments for results", focused on local socioeconomic development based on the valuation of the standing forest and its environmental services.

Specific objectives:

● Propose the necessary technical bases in order to structure the Amazonas State REDD+ System (SiSREDD+ Amazonas), contemplating:

● A monitoring, reporting and verification (MRV) structure for the reduction of emissions, resulting from the reduction of deforestation in the state;

● An accounting system of emission reduction units (UREDD+);

● A strategy in order to integrate SisREDD+ Amazonas with national policies and frameworks that are related to REDD+

● Models that provide for the integration of private projects into SisREDD+ Amazonas;

● A model for the allocation of emission reductions among different regions of the state.
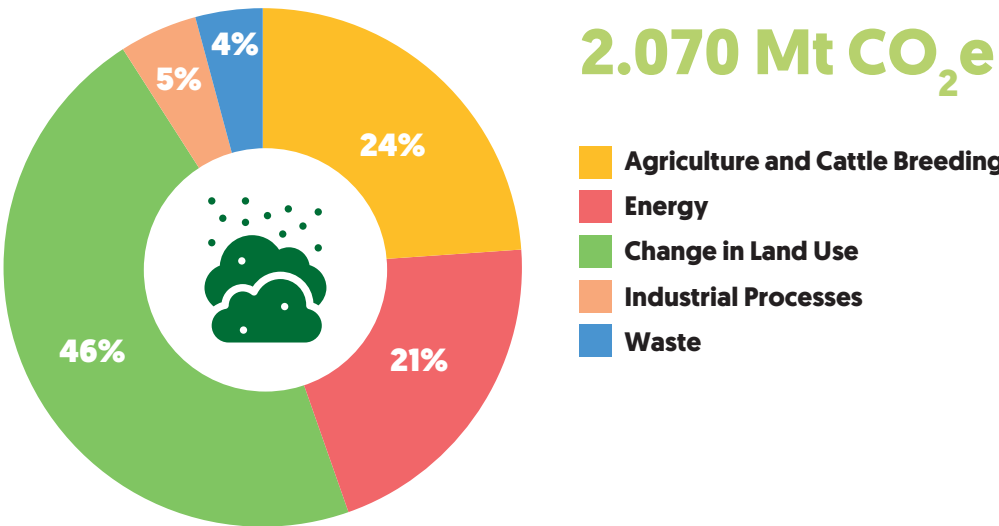
3. THE CONTEXT AND STATUS OF REDD+ IN BRAZIL

a) Profile of greenhouse gas emissions in Brazil and the role of forests

Forest ecosystems occupy approximately 30% of the Earth's surface and are immense carbon reservoirs that contain twice as much carbon as the atmosphere. Deforestation and loss of forests are responsible for approximately 24% of global greenhouse gas emissions (GHG)[3]. Thus, forest conservation is one of the most effective and one of the best benefit-cost options in order to mitigate climate change.

Considering the Brazilian scenario, the land use sector, especially the conversion of forests (deforestation) and agriculture, gains an even greater importance. The country is the 7th largest emitter of greenhouse gases in the world. In 2017 alone, Brazil emitted a total of 2,070 $MtCO_2$, with 70% of these emissions resulting from changes in land use (deforestation), agriculture and cattle breeding[4]. Deforestation alone represents 46% of these emissions, equivalent to 955 $MtCO_2$ (Figure 1).

Brazilian GHG Emissions in 2017

2.070 Mt CO$_2$e

- **Agriculture and Cattle Breeding** — 24%
- **Energy** — 21%
- **Change in Land Use** — 46%
- **Industrial Processes** — 5%
- **Waste** — 4%

Figure 1. Brazilian GHG emissions in 2017 (Source: SEEG/OC)

[3] IPCC, 2014. Available in: https://www.ipcc.ch/pdf/assessment-report/ar5/wg3/ipcc_wg3_ar5_summary-for-policymakers.pdf

[4] SEEG, 2018. Total emissions. Available in: http://plataforma.seeg.eco.br/total_emission

Historically, Brazil's emission profile has been causally related to the dynamics of deforestation in the Amazon. In 2005, the year in which the country lost approximately 20 thousand km² of Amazon forests, national emissions reached 3.200 $MtCO_2$, with deforestation accounting for 72% of this total. Adding agricultural activities, this percentage rises to 86%. More than ten years later, in 2018, the deforestation registered in the Amazon was 7,536 km², establishing a reduction of about 60% in relation to 2005[5].

As a result of the deforestation reduction in the Amazon during the period of 2006-2019, 8.000 $MtCO_2$ weren't released into the atmosphere, that represented the largest contribution ever made by a country in order to mitigate global climate changes (Figure 2).

8.185.744.805,33 tCO²

Deforestation verified (km²) - PRODES
PNMC Baseline (km²)
PNMC Goals _x000d_(km²)
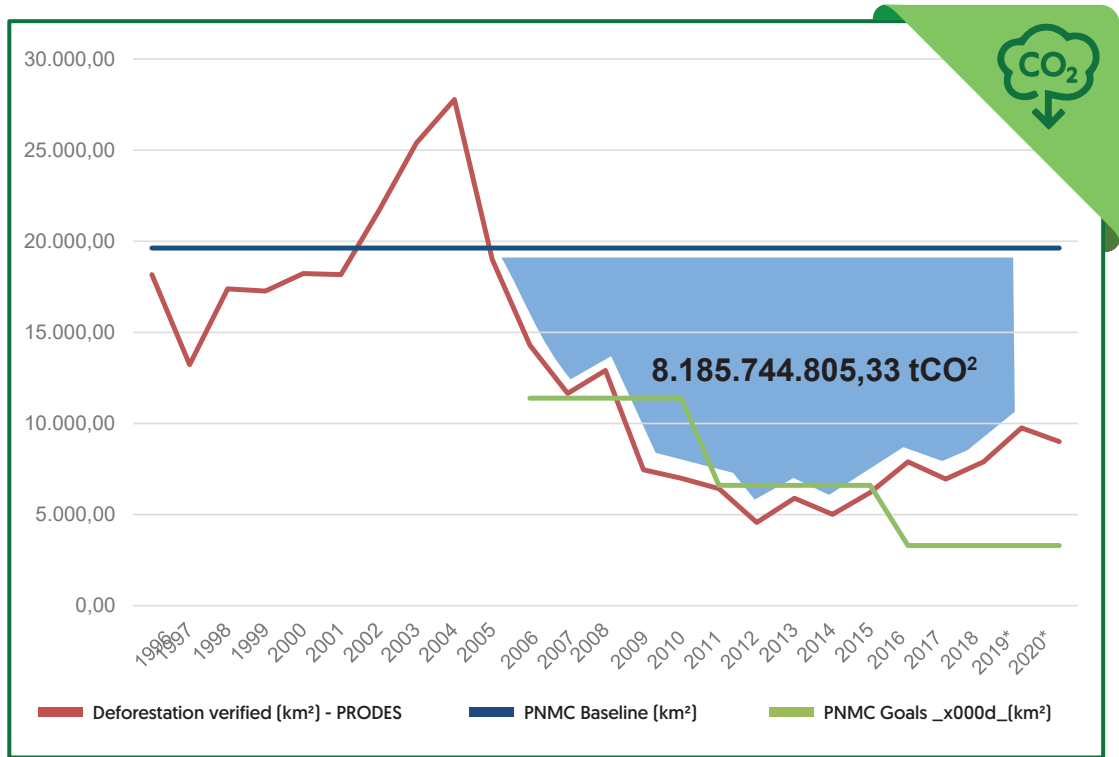
Figure 2. Emission Reductions from reducing deforestation in the Amazon between 2006-2018

[5] PRODES, 2018. Annual deforestation rates in the Brazilian Legal Amazon. Available in: http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates

From the total of 8GtCO_2 of emissions that were avoided between 2006 and 2019 in the Amazon, the state of Amazonas was responsible for preventing the emission of 89.5$MtCO_2$ in the same period, approximately 1% of the total reduction in the Amazon.
It is worth mentioning that since 2016, Amazonas has been showing deforestation above the historical baseline, thus generating an increase in the emissions in the period of 2016-2019.

From the potential for emission reductions already generated in the Amazon, Brazil managed to capitalize a total of U$ 1 billion through the Amazon Fund (the equivalent of 200 $MtCO_2$, applying the reference value of U$5/$tCO_2$ from the Amazon Fund and the GCF).

In 2019, Brazil received the first payment for REDD+ results under the UNFCCC's Green Climate Fund (GCF). This first contract referred to a reduction of 30 $MtCO_2$, with a total value of U$ 150 million (the same reference value of U$ 5/tCO2 was used). The contract was divided into two payments, the first of which is expected to be executed in 2019 amounting to U$ 96 million[6].

Several factors explain the relative low reach of Brazil in view of the potential for new funding through the reduction of deforestation in the Amazon in recent years. Among these factors, the absence of a clear regulation for REDD+ in the country stands out, limiting the country's ability to attract public and private resources linked to the carbon credit transaction, the exclusion of REDD+ as a market mechanism in international agreements (such as the Kyoto Protocol and the Clean Development Mechanism), among others.

Since 2015, the scenario of deforestation reduction has been changing and the prospect of an increase in rates of forest loss has become a trend. The deforestation verified in June 2019, of 9,762 km², was 88% higher than the one verified in the same period during the previous year[7].

In this context, it is essential that Brazil and the Amazon State governments signal their interest and commitment to reduce deforestation and obtain investments - national and international as well as public and private ones - through forest conservation and improvement of the quality of life for local populations (traditional populations and communities, indigenous peoples, rural producers, etc).

[6] Forest Trends – Ecosystem Marketplace "State of the Voluntary Carbon Markets 2019". Disponível em: https://www.ecosystemmarketplace.com/carbon-markets/

[7] G1, 2019. In June, INPE registered an increase of 88% in deforestation in the Amazon. Available in: https://idesam.org/publicacao/corsia-oportunidades-para-o-brasil-v2.pdf

b) Regulatory frameworks that have been considered for the development of the State REDD+ System of Amazonas

The methodology adopted in order to carry out this work is based on the main federal policies and regulatory frameworks on environmental services and REDD+ in Brazil and the state of Amazonas. The following were considered for the elaboration of this System proposal:

a) The National Policy on Climate Change (PNMC), Law N° 12.187/2009;

b) The National Climate Change Plan guided by Decree N° 6.263/2007;

c) The Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAM), 2016;

d) The Determined National Contribution of Brazil (the "NDCs", which are the goals that Brazil has taken upon itself in the Paris Agreement), 2015;

e) The Amazon Forest Reference Emission Level (FREL Amazônia), an instrument that the Brazilian Federal Government has submitted to the United Nations Framework Convention on Climate Change (UNFCCC), as part of the registration of Brazil as an eligible country to receive REDD+ resources under the UNFCCC[8], via the Green Climate Fund, 2016;

f) The resolutions of the National REDD+ Commission (CONAREDD);

g) The State Policy for Environmental Services in the state of Amazonas (LSA), Law N.°4.266/2015 and;

h) The State Plan for the Prevention and Control of Deforestation and Forest Fires in Amazonas - PPCDQ-AM (2020-2022) - under discussion.

[8] MMA, 2016. Available in: http://redd.mma.gov.br/pt/noticias-principais/1031-brasil-da-um-grande-passo-na-implementacao-de-redd-e-recebera-us-96-milhoes-do-gcf

4. THE STATE REDD+ SYSTEM IN AMAZONAS: PATHS AND OPPORTUNITIES

As defined by the LSA, the REDD+ mechanism covers "reductions in greenhouse gas emissions by reducing deforestation and degradation as well as promoting conservation, sustainable forest management, maintaining and increasing stocks of measured forest carbon".

Article 14 of the LSA provides programs, subprograms and projects as instruments of the Environmental Services Management System. One of the programs planned is the **Climate and Carbon Regulation Program**: "*linked to the recovery, conservation and preservation of natural ecosystems that contribute to climatic balance and thermal comfort; mitigation of greenhouse gas emissions, conservation, maintenance and increase of carbon stocks through the development of activities for the conservation and restoration of natural and anthropic ecosystems*". As a subprogram provided by the law, the **REDD+ Subprogram**: "*aims at reducing GHG emissions from deforestation and forest degradation, carbon flow, sustainable forest management and conservation, maintenance and increase of forest carbon stocks, as well as actions towards reforestation, recovery of degraded areas and agroforestry systems, except in cases where the conversion of natural forests is envisioned*".

For the construction of SisREDD+ Amazonas and the consequent implementation of the REDD+ Subprogram in the State of Amazonas, Articles 15, 16, 17 and 18 of the LSA stand out:

ARTICLE	
15	It addresses the general objective of the Subprogram and presents paragraphs 1 and 2: the requirements regarding the voluntary state goal and baseline: **§1.** The voluntary state goal, associated with the baseline, as well as the preliminary period and commitment periods of the state goal will be defined by Decree, in line with the PPCD-AM and the emission reduction goal contained in Federal Law N.º 12.187 2009, and CEMAAM should be heard previously. **§2.** The criteria for consolidating the baseline must use scientifically validated methodologies, as well as observing the provisions of the United Nations Framework Convention on Climate Change and the federal legislation in force.
16	It presents the specific objectives of the REDD+ Subprogram: **I -** create and implement economic-financial and management instruments that contribute to environmental conservation and the reduction of GHG emissions from deforestation and forest degradation, for sustainable forest management and for the conservation, maintenance and increase of forest carbon stocks measured; **II -** create and manage mechanisms to mitigate emissions from deforestation and forest degradation; **III -** establish the needed infrastructure and instruments in order to measure, analyze and report the reduction of carbon dioxide (CO_2) emissions from deforestation and forest degradation, as well as valuing the environmental services related to the reduction of emissions, to sustainable forest management, to conservation, maintenance and increase of forest carbon stocks measured; **IV -** strengthen cooperation at different jurisdictional, municipal, state and federal levels; **V -** promote the sharing of benefits for agents of environmental services that contribute to the reduction of deforestation and forest degradation, and may them conserve, preserve and recover the capacity to provide environmental services; **VI -** create the State REDD+ Plan within 180 (one hundred and eighty) days, based on nationally and internationally recognized concepts that ensure the capacity for measurement, quantification, verification, registration and transparency, as well as the monitoring of carbon emissions from deforestation and forest degradation.
17	It establishes the criteria for registering UREDD+s obtained during periods prior to the creation of the REDD+ Subprogram
18	It establishes the connection between the criteria established by Complementary Law N.º 53/2007 regarding the allocation of resources obtained, through UREDD+s specifically for State Conservation Units.

Table 1: LSA articles that are linked to SisREDD+ Amazonas

In an integrated manner with the LSA's definitions and aiming at accessing markets and financiers that can reward positive forest conservation efforts, some definitions and structuring actions should be taken and conducted as presented below.

1. Markets or sources of financing that can be accessed by the State of Amazonas

Currently, for Amazonas to be able to access resources to forest conservation, based on the REDD+ mechanism, these are the main markets that stand out:

1) **Voluntary carbon market** (through private investments – such as companies or private funds)

2) **Pay-for-results mechanisms** (such as the REDD for Early Movers / KfW, REM Program), in

3) **Bilateral agreements** (as with California's Government)

4) **CORSIA** (Carbon Offsetting and Reduction Scheme for International Aviation).

5) **Green Climate Fund, UNFCCC** (in principle, access must occur via the Federal Government - MMA).

Despite advances in global international frameworks, such as the Paris Agreement, the regulation of associated market mechanisms (such as those defined by Article 6 of the Paris Agreement) are still pending on a number of definitions and should still take considerable time before they begin to operate. In addition to the lack of regulation of Art. 41 of the Brazilian Forest Code (Law for the Protection of Native Vegetation).

2. The potential for fundraising by the state of Amazonas based on REDD+

Initial estimates (see section 5 of this document) present an emission **reduction potential between 324.84 MtCO$_2$ and 480.1 MtCO$_2$** in the state of Amazonas, based on the REDD+ mechanism from 2016 to 2030. This would represent a potential **investment between U$ 1.6 billion and U$ 2.4 billion for the state** in this period, or about U$ 160 million/year, applying the reference value of U$ 5/tCO$_2$ of the Amazon Fund and the Green Climate Fund (GCF).

3. How will resources be accessed and who will be able to access REDD+ resources?

Access to national and international markets for REDD+ may occur in different ways, such as through the state government (via SEMA) or through local REDD+ projects and initiatives (via local actors), which follow state guidelines and/or attest the quality of activities and procedures adopted through certifications by recognized international standards (example: Verra/VCS).

Thus, it is suggested that Amazonas adopts an **integrated model for accounting and recording emission reductions**. The proposal is to present a **simplified and flexible system** that allows new actors to participate in the REDD+ mechanism in a way that is integrated with the state accounting.

The way to access the markets would be as follows:

● **State Government (via SEMA)**: The State Government is undoubtedly the actor with the greatest potential for raising national and international resources based on REDD+. As the State Environmental Policy Management Body, SEMA may seek strategic partnerships **with subnational governments** (such as the state of California, USA) or with **international financial agents** (such as the German bank KfW) for the transaction of REDD+ units generated and allocated to SisREDD+ Amazonas.

In addition, should the State certify its state system to internationally[9] recognized standards, funding opportunities may also arise through market mechanisms, such as CORSIA in the civil aviation sector, which should demand a significant volume of carbon credits for the next 15 years, and it has recently approved the Verra/VCS[10] standard as one of the credit supply standards (see section 06 of this document).

● **Local REDD+ projects and initiatives (through local actors)**: Private REDD+ projects and/or projects coordinated by local communities will be a fundamental part of SisREDD+ Amazonas. SisREDD+ can encourage the structuring of private initiatives that have the means (human and financial resources) to structure REDD+ projects, which include: alignment and consultation with affected communities, development of an action plan and formal project planning documents (e.g. PDD – Project Design Document), validating the project against the standards recognized by SisREDD+ and raising national and international resources through REDD+.

Additionally, individual (private) projects will have to go through registration processes and a registry of emission reductions generated, with SisREDD+, avoiding any risk of double counting of credits as well as maintaining the transparency and integrity of the system. Figure 3 presents a proposal for the flow of approval and the registration of projects in SisREDD+ Amazonas based on what the LSA provides.

[9] Verified Carbon Standard VCS/ VERRA, Social Carbon Standard, Climate, Community and Biodiversity Standard (CCB), Gold Standard and Verified Emission Reduction Standard (VER+) https://g1.globo.com/jornal-nacional/noticia/2019/07/04/inpe-registra-em-junho-aumento-de-88percent-de-desmatamento-na-amazonia.ghtml

[10] ICAO, 2019. Available in: http://redd.mma.gov.br/pt/pub-apresentacoes/item/82-o-que-e-redd

Figure 3: Proposal for a scheme of approval and registration of projects in SisREDD+

1. Executing agents for REDD+ projects are qualified and registered by the Management Body **(LSA Article 12)**

2. Executing agents deliver documentation to register the project (e.g.: Management Plan)

3. Management Body analyzes documents and project registration, and informs the initial number of Environmental Service Units destined to the land category

4. Executing agents carry out the development of REDD+ projects and give certifications that are approved by the Management Body

5. Environmental Service Units are registered **in the Register System** by the Management Body **(LSA Art. 19)**

It is noteworthy that in addition to the provisions of the law for recording the results obtained with REDD+ projects, it is necessary to establish the allocation system, the bodies that are responsible for its definition and the need or not for a certification (by a third party) for the reductions obtained.

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5. PROPOSAL FOR AN ACCOUNTING AND ALLOCATION MODEL OF EMISSION REDUCTION UNITS BY MEANS OF REDD+ (UREDD+)

The purpose of this session is to present a preliminary system of accounting and allocation of emission reduction units among different actors in the state of Amazonas, such as the State Government, Municipalities, Rural Settlements and Private Areas as well as Indigenous Lands, Federal and State Conservation Units. The main objective is to estimate the emission reduction potential that could be generated by the state of Amazonas by the year 2030, as well as test an allocation model that defines the "acquisition limits" among different actors within the state.

As previously presented, one of the proposals for SiSREDD+ Amazonas is that it may be simplified and flexible. Thus, the exercise below does not seek to definitely determine the potential allocation of emission reduction units. On the contrary, the proposal is to present a simplified system that allows all actors to participate in the REDD+ mechanism in an integrated manner with the state accounting.

It is reinforced that the current projects and future REDD+ initiatives developed in the state - which meet recognized certification standards (such as VCS/Verra) - should always be recognized and considered in the Amazonas Emission Reduction Accounting System, as established by Article 17 of the State Environmental Services Policy (Table 1).

a) Proposal for an accounting and allocation system of emission reductions (non-financial results)

As previously mentioned, Brazil has already submitted and approved its reference level for emission reductions in the Amazon (FREL Amazônia), within the scope of the UNFCCC. A recommendation for the development of SisREDD+ in Amazonas is that the state accounting system be integrated with national

accounting, in order to allow a clear and integrated list of efforts in order to structure the REDD+ mechanism in Brazil.

Thus, this preliminary exercise sought to establish a system for allocating the results achieved and verified by UNFCCC among the different levels of governance and territorial management in the Amazon, involving the: (i) Federal Government, (ii) states of the Legal Amazon, (iii) state of Amazonas, (iv) municipalities in Amazonas and (v) land tenure categories in Amazonas.

The proposed allocation methodology follows the agreements and assumptions already debated and validated by the states in the Legal Amazon , and also at the national level by the REDD+ National Committee (CONAREDD). The logic is based on the concept of "stock and flow", in which the stock criterion is relative to the area of conserved forest in each territory and the flow criterion represents the reduction in deforestation verified in each territory, in relation to the historical average. This methodology allows for a balanced distribution of the REDD+ results generated in the Amazon, in a given period, among different regions that present different dynamics of land use, deforestation and forest conservation.

This way, the starting point for measuring the potential of REDD+ in the Legal Amazon (and consequently, the potential of SisREDD+ Amazonas) is the application of FREL - submitted and validated by Brazil with the UNFCCC, in 2016. FREL is configured as the reference level of deforestation for the Amazon in the period of 2006-2020, based on historical rates verified in the last 10 years in the region (Figure 4).

In order to structure the SisREDD+ Amazonas, the System start date was set as January/2016. This date is justified by 2 main reasons: (i) the date of approval of the Amazonas State Environmental Services Policy (December/2015) and (ii) the definition of the Civil Aviation Organization (ICAO), in which only credits generated from 2016 on will be accepted.

Comparing the reference level (FREL) with the annual deforestation rates verified in the Amazon, it is estimated that for the period from 2016 to 2020, the **potential for generating emission reductions by reducing deforestation in the Amazon is 1.400 MtCO$_2$ (Figure 4)**, which represents a potential fundraising of US$ 7 billion[11] within the logic of the REDD+ mechanism.

[11] Applying the reference value of U$5/tCO2 of the Amazon Fund and GCF

Figure 4: Potential for generating emission reductions from reducing deforestation in the Amazon, between 2016-2020 (Source: Idesam)
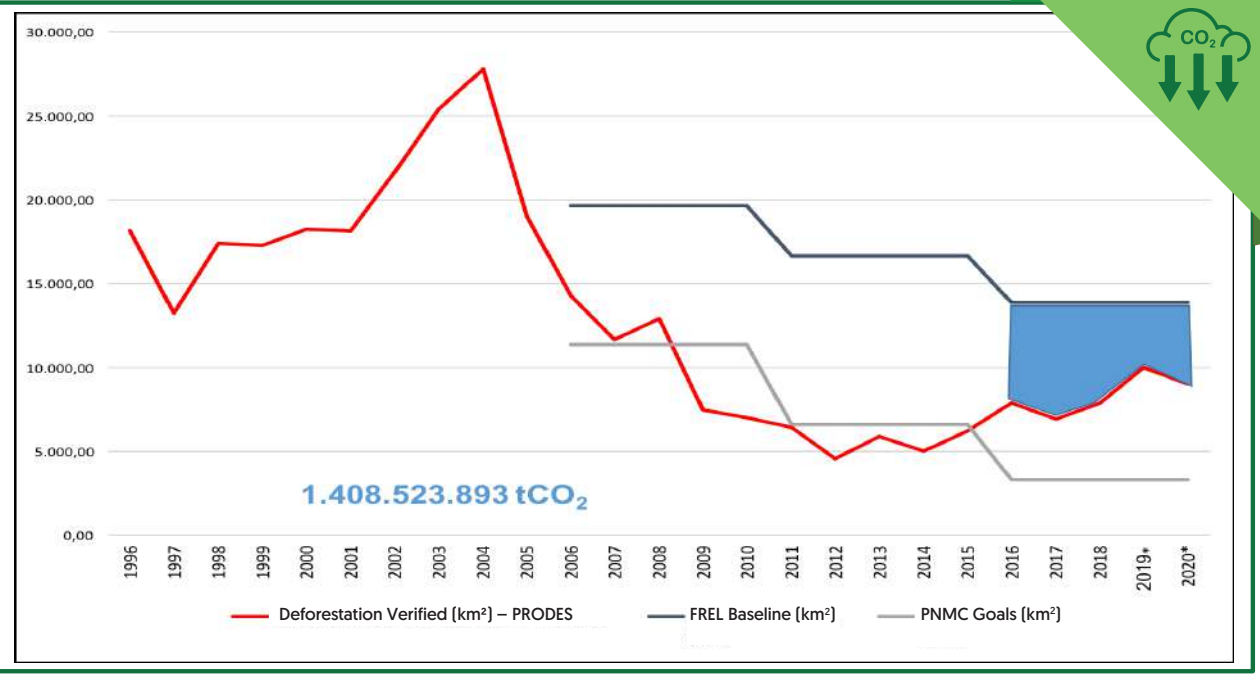
Brief "rational" of Figure 4:

• Red line (verified deforestation – PRODES): It represents the annual deforestation rates in the Amazon, published annually by the PRODES/INPE System

• Dark blue line (FREL baseline): It represents the reference scenario for deforestation in the Amazon between 2006-2020, calculated from historical deforestation rates in the region

• Gray line (PNMC Goals): It represents the goals of the National Plan for Climate Change to reduce deforestation in the Amazon by 80% in 2020, compared to the historical average that has been calculated (1996-2005)

In addition, in order to expand the estimate of the potential for reducing emissions from deforestation in the Amazon between 2021-2030, the following exercise was carried out:
1. For the baseline, FREL Amazônia was projected for the period 2021-2030, considering the historical rates of deforestation in the Amazon verified by the PRODES/INPE system (2006-2020).

2. For the projection of future deforestation, two scenarios were adopted:
a. Compliance with the Brazilian NDC goal in eliminating illegal deforestation in the Amazon by 2030 was assumed, that currently represents 95% of the total deforestation seen in the biome (Figure 4).

b. In an effort to project deforestation from 2021 to 2030, in a more conservative and realistic manner considering last year's value of deforestation monitoring in the Amazon in 2019 (9,720 km²), a conservative scenario of a 15% reduction in current deforestation was assumed to be achieved until 2022 and, for the following years, (2023 to 2030), a reduction of 15% per year was assumed, reaching the goal proposed by NDC in 2030.
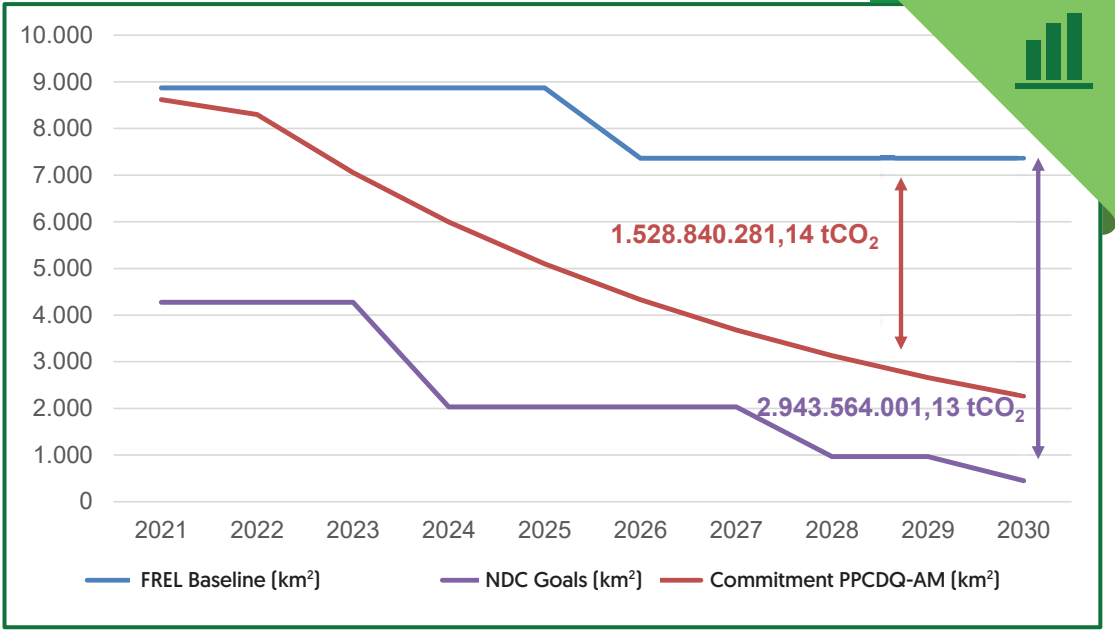
Figura 5: REDD+ generation potential by means of the reduction of deforestation in the Amazon between 2021-2030, considering two projection scenarios (Source: Idesam)

Based on these 2 criteria (reference level and projected reduction in deforestation for the Amazon until 2030 by the NDC targets or PPCDQ-AM targets) the potential for reducing emissions in the Amazon between **2021-2030** was estimated in the order of **1.500 to 2.900 MtCO$_2$**.

Adding the results obtained in Figure 4 (2016-2020) – of 1,400 MtCO$_2$ – and Figure 5 (2021-2030) – it adds up to **a total potential in emission reduction from 2.900 to 4.300 MtCO$_2$ for the Amazon between 2016-2030**.

Applying the REDD+ logic of seeking financial compensation for results obtained with the reduction of deforestation in the Amazon, the potential of 4.300 MtCO$_2$ would represent a real possibility of **raising funds for the Amazon in the order of U$ 20 billion, between 2016 - 2030**. In this way, there is an enormous investment potential to be captured by the Amazon and the state of Amazonas, within the logic of REDD+.

b) The REDD+ Potential for the Amazon

As presented, this initial proposal for a REDD+ accounting system for the state of Amazonas engenders an integrated accounting model between the federal level and the states of the Amazon, where a potential of 2.900 to 4.300 $MtCO_2$ was generated for the period from 2016 to 2030.

This integrated monitoring model could solve problems such as "leaks", which is deforestation that eventually migrates from one region to another, as well as "non-permanence", which occurs due to unexpected deforestation. With a single monitoring system for the entire Amazon, any deforestation in any state would be detected and discounted from the potential to generate emission reductions in a given period - allowing greater accuracy in the results achieved and reported.

Following the allocation logic determined by the existing policies[14] and regulations (stock-flow methodology), from the **2.900 - 4.300 $MtCO_2$** that will potentially be generated between 2016-2030 in the Amazon biome (depending on the projection scenario used for 2021-2030), 40%[15] will go to the Federal Government (for the development of inspection, monitoring and other strategic plans aligned with the environmental theme), and the other 60% will be distributed among the states of the Legal Amazon.
The proposal is that the distribution among states takes place considering the balance among the areas of forest conserved by each state (stock) and the deforestation reductions verified in each period (flow) (Figure 6).
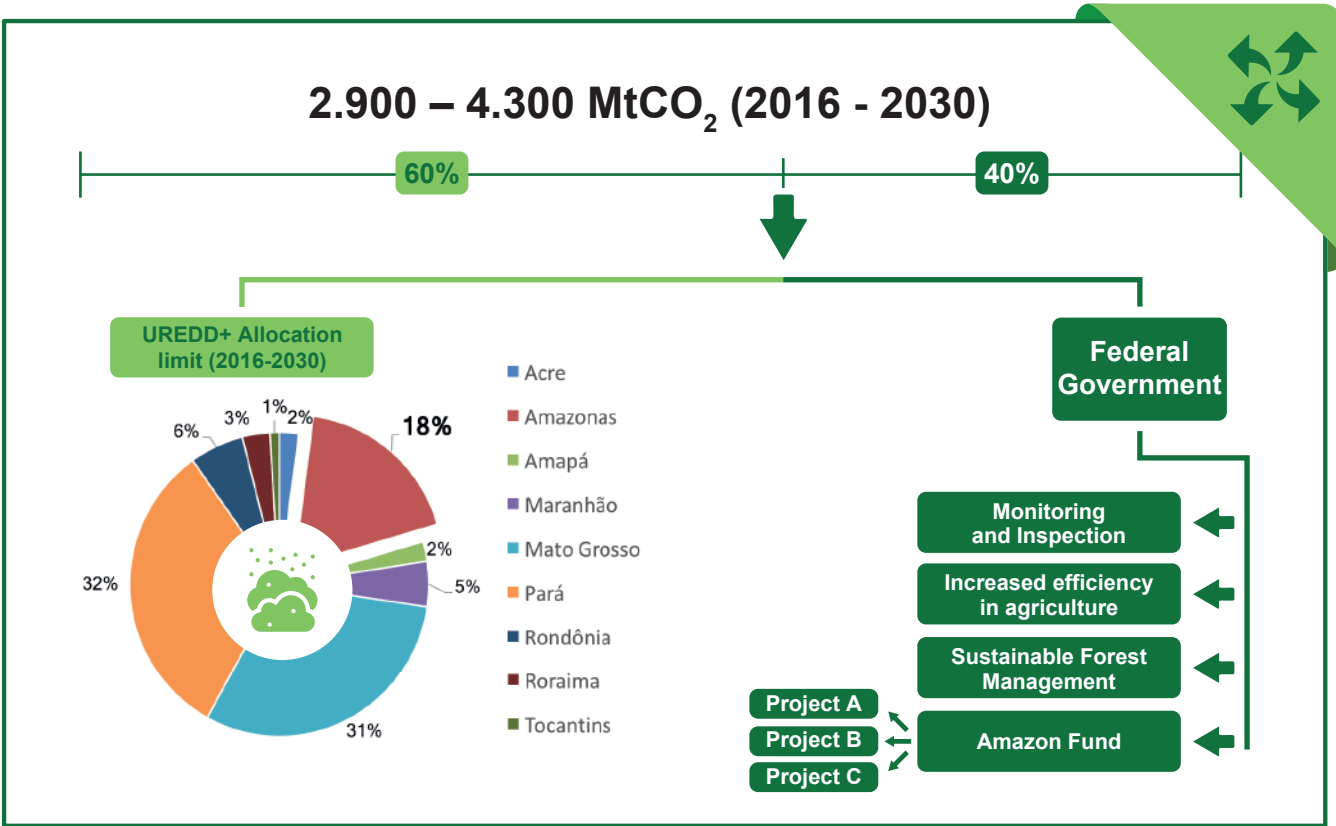
Figure 6: Proposal for the distribution of funding limits by REDD+, Federal Government and Amazonian States (Source: Idesam)

[14] https://imazon.org.br/imprensa/%20mapbiomas-alerta-aponta-que-%20-95-dos-desmatamentos-detectados-no-pais-em-2019-nao-foram-%20-autorizados/
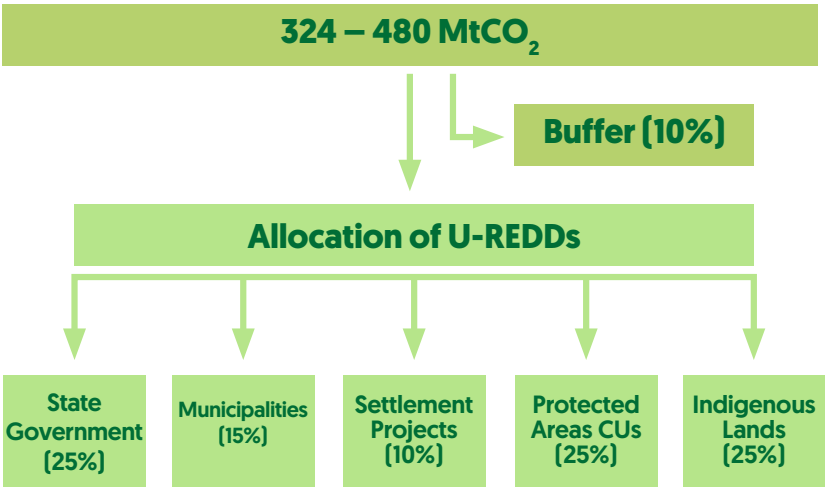
[15] Resolution 06 – CONAREDD+

Considering only the emission reduction allocation among the states of the Amazon, 18% of the emission reduction units would be allocated to Amazonas (following the stock-flow methodology), which represents a **potential from 325 to 480 MtCO$_2$ when it comes to REDD+ for the state of Amazonas in the period of 2016-2030**.

Using the reference value for the Amazon Fund of U\$ 5/tCO$_2$, the volume of emission reductions estimated for the state of Amazonas **may generate the potential for raising an amount of U\$ 1.6 - 2.4 billion for the State** in the period of 2016-2030.

It is noteworthy that these investments would be additional to the existing investments, whether public or private, and could be used to leverage new business models oriented towards sustainability, such as in the area of rural production, forest management, recovery of degraded areas, extractive chains, family farming and socio-biodiversity products, among many other possibilities connected to rural development and the reduction of emissions from deforestation.

Once the allocation "ceiling" has been defined, or the limit for raising funds via REDD+ for the state of Amazonas, the next step would be to propose a division of the "REDD+ units" between the Technical System Reserve (Buffer)[16] and the State Government (via SEMA), aiming at the development of REDD+ projects (proposed by public or private entities) in protected areas, and the land tenure categories: municipalities, settlement projects, protected areas and indigenous lands (Figure 7).

Figura 7: Allocation model for the State Government and land tenure categories in the State of Amazonas (Source: Idesam)

Potential for the allocation of U-REDD+ in Amazonas (2016 – 2030)

324 – 480 MtCO$_2$

Buffer (10%)

Allocation of U-REDDs

| State Government (25%) | Municipalities (15%) | Settlement Projects (10%) | Protected Areas CUs (25%) | Indigenous Lands (25%) |

The distribution between the State Government (25%) and the Municipalities (15%) sought to maintain the percentage of 40% as proposed at the national level (Figure 6), and the percentage for the land tenure categories, Settlement Projects, Protected Areas, Conservation Units and Indigenous Lands was defined considering the area of forest remaining in each land tenure category of the state in the year 2018.

Open point: Due to the difficulties in working with the current base of the Rural Environmental Registry, it was not possible to estimate, at this moment, the remaining forest area in the private properties of the State of Amazonas.

It is noteworthy that the present proposal for allocation among categories does not interfere with the provisions in the Complementary Law N°. 53/2007, referred to in the Article 18 of the LSA. According to paragraph 3 of Article 50 in the LC 53/2007: *"In the case of payment for environmental services, environmental resources, environmental products and forest products, the application in the respective Conservation Unit will be made in a portion not less than 50% (fifty percent) of the amount collected, and the remainder will be invested in the other Conservation Units and in SEUC's implementation activities, including Damping Zones, as determined by its Management Body, always respecting the provisions of § 1 of article 49 of this law."* **The allocation proposal presented for SisREDD+ Amazonas does not define the use of resources raised by emission reductions within each category, but rather an allocation limit, so that they are not opposed to the allocation of resources within the Conservation Units as provided by the LC 53/2007.**

The need for the proposed allocation system to be flexible is also reinforced, so that it may allow adjustments to the allocated volumes according to the development of the LSA implementation.

6. POTENTIAL ANALYSIS OF DEVELOPING CARBON MARKETS AND FUNDRAISING SOURCES FOR REDD+

This section seeks to present the main market opportunities for developing REDD+, with a view to financing the results verified in terms of reducing emissions in the state of Amazonas. Among the main market mechanisms in development, there are: the Paris Agreement (Article 6º of the respective document), the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) and the Global REDD+ Program for pioneers (REM/KfW).

Paris Agreement and Brazilian NDC

In December 2015, during the 21st United Nations Conference on Climate Change (COP 21), a new global climate agreement, called the Paris Agreement, was created. The agreement introduced new measures to combat climate change and reduce global warming in 2° Celsius by the end of the century.

The agreement was a historic moment because it brought 195 nations together into a global commitment for the first time, in order for them to concentrate their efforts to mitigate climate change as well as unleashing actions and investments for a sustainable future, with low emission development and climate resilience. Article 6 of the agreement provides for cooperative actions among countries and the transfer of mitigation results among nations, encouraging a global carbon market.

To join the agreement, the nations - called Parties in the Climate Convention - were invited to present their own commitments to reduce greenhouse gas emissions (GHG) in a way that would make it possible to limit the increase in the average global temperature by 2°C. In this way, each country presented its own targets, called "nationally determined contributions" (NDC) according to its own capabilities.

[17] http://www.itamaraty.gov.br/images/ed_desenvsust/BRASIL-iNDC-portugues.pdf

The Brazilian NDC[17] indicates a 37% reduction by 2025 and a 43% reduction by 2030 in the country's total emissions, in relation to the total emissions that occurred in 2005. In order to reach these goals, Brazil committed itself to:
• Zero illegal deforestation in the Amazon by 2030;
• Recover 15 million degraded pastures;
• Restore and reforest 12 million hectares of forests by 2030.
The Paris Agreement provides, in Article 6, for the structuring of international financing mechanisms and a carbon market, called the Sustainable Development Mechanism - SDM.

The aforementioned article of the Paris Agreement is not yet fully regulated and the main rules related to the eligibility of carbon credits, that means, mitigation activities and options will be considered, as well as definitions of registration protocols and systems, monitoring, among other points, all of which are still open. Therefore, Article 6 was scheduled to correspond to one of the main points of the negotiations at the UN climate change meeting, COP 25, in Madrid, however, the negotiations were postponed to the following year.

The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)

The Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) is the world's first sector market mechanism in addition to the Paris Agreement, that is aimed at offsetting emissions from the international civil aviation sector. The program proposes to limit the sector's emissions to 2020 levels, the so-called "post-2020 carbon neutral growth". This means that any increase in emissions from the sector, beyond the established limit, will have to be compensated.

As of January 2019, 72 countries had committed themselves to voluntarily participate in CORSIA since its pilot phase (from 2021), which represents 70% of activities related to international aviation. Brazil has not yet adhered to the agreement, having committed itself, for the time being, to participate only in the mandatory phase, starting in 2027.

CORSIA's global carbon market is expected to generate a demand for carbon credits in the order of US$ 12 billion in the first commitment period (2021-2035)[18]. Brazil's adherence to CORSIA and the inclusion of the REDD+ mechanism would be a great opportunity to solve the national challenge of meeting goals to reduce deforestation, through resource flows through the REDD+ mechanism and the transaction of environmental services.

[18] Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA/ICO): challenges and opportunities. / Pedro Soares; Mariano ColiniCenamo. São Paulo: IDESAM, 2018. https://idesam.org/corsia-icao-oportunidades-e-desafios-para-o-brasil

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REM Program - REDD+ for pioneers

The Global REDD+ program for pioneers, REDD for Early Movers (REM), was launched in 2012 during the Rio+20 Conference and is coordinated by the German Development Bank (KfW) to promote sustainable development for the benefit of farmers, indigenous and extractive communities, with their own resources and those of other donor countries. The REM/KfW Program works only under a "pay-for-results" mechanism, what means that payments depend on the annual delivery of verified results (ex-post) in order to reduce deforestation and GHG emissions.

Currently, the states of Acre and Mato Grosso are already participating in the program. In 2012, Acre was the first state in Brazil to raise international funds through the "pay-for-results" logic. The state has signed agreements that today amount to more than EUR 42 million with the KfW bank and EUR 26.8 million with the UK's BEIS, as compensation for the results of emission reductions coming from deforestation verified, in phases I and II of the REM program. Mato Grosso, after regulating its REDD+ law (State Law No. 9,878), in 2013, became part of the program and closed the first contract, also with the KfW bank, in the amount of EUR 17 million, and with BEIS in the amount of EUR 26.8, within the logic of "payments for REDD+ results"[19]. These figures translate into 14,8 $MtCO_2$ reduced emissions for Acre and 6,4 $MtCO_2$ for Mato Grosso[20].

The states of Acre and Mato Grosso have adopted different approaches on how to manage REM Program resources. While Acre incorporated the resources into the State Treasury (and developed priority programs and policies for forest conservation and promotion of the standing forest economy), Mato Grosso opted to contribute the resources to an independent organization, FUNBIO, and structured a state initiative with goals and priority programs aimed at reducing deforestation and increasing agricultural productivity as well as cattle breeding, the Produce, Conserve and Integrate (PCI) Program.

[19] Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA/ICO): challenges and opportunities. / Pedro Soares; Mariano Colini Cenamo. São Paulo: IDESAM, 2018. https://idesam.org/corsia-icao-oportunidades-e-desafios-para-o-brasil

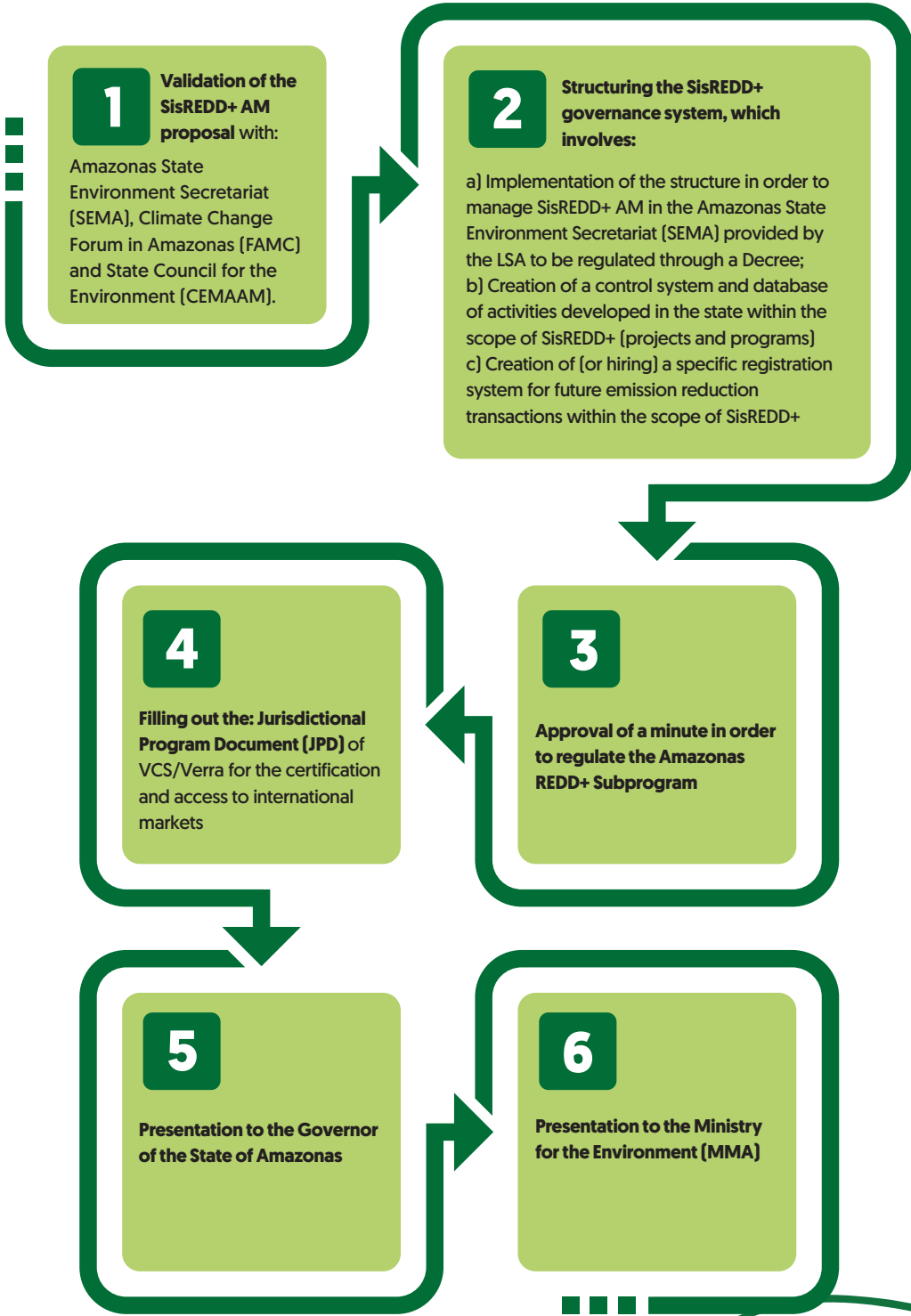[20] http://redd.mma.gov.br/en/infohub

7. FINAL CONSIDERATIONS AND NEXT STEPS IN ORDER TO BUILD THE AMAZONAS REDD+ SYSTEM

Environmental services are key assets to enable new economic models that combine local development and the reduction of emissions in states and regions of the Amazon. The valuation of these services goes through, first, the structuring of a monitoring and reporting system of the results achieved, as well as a benefit distribution mechanism that recognizes and rewards different actors that contribute to the conservation of forests and to the promotion of sustainable productive activities.

Next steps in order to regulate the Amazonas REDD+ System:

1 **Validation of the SisREDD+ AM proposal** with:

Amazonas State Environment Secretariat (SEMA), Climate Change Forum in Amazonas (FAMC) and State Council for the Environment (CEMAAM).

2 **Structuring the SisREDD+ governance system, which involves:**

a) Implementation of the structure in order to manage SisREDD+ AM in the Amazonas State Environment Secretariat (SEMA) provided by the LSA to be regulated through a Decree;
b) Creation of a control system and database of activities developed in the state within the scope of SisREDD+ (projects and programs)
c) Creation of (or hiring) a specific registration system for future emission reduction transactions within the scope of SisREDD+

4 **Filling out the: Jurisdictional Program Document (JPD)** of VCS/Verra for the certification and access to international markets

3 **Approval of a minute in order to regulate the Amazonas REDD+ Subprogram**

5 **Presentation to the Governor of the State of Amazonas**

6 **Presentation to the Ministry for the Environment (MMA)**

ACRONYMS AND ABBREVIATIONS

CEMAAM State Council for the Environment

COP Conference of the Parties

CORSIA Carbon Offsetting and Reduction Scheme for International Aviation

FAMC Amazonian Forum on Global Climate Change, Biodiversity and Environmental Services

FREL Forest Reference Emission Level

FUNBIO Brazilian Fund for Biodiversity

GCF Governors' Climate and Forests Task Force

GHG Greenhouse Gases

INPE National Institute for Space Research

JPD Jurisdictional REDD+ Program Document

LC Complementary Law

LSA Environmental Services Law

SDM Sustainable Development Mechanism

MMA Ministry for the Environment

MRV Monitoring, Reporting and Verification

NDC Determined National Contribution

UN United Nations

PEMC-AM Amazonas State Policy on Climate Change

PNMC National Policy on Climate Change

PPCDAM Action Plan for the Prevention and Control of Deforestation in the Legal Amazon

PPCDQ-AM State Plan for the Prevention and Control of Deforestation and Forest Fires in Amazonas

PRODES Satellite Monitoring of the Brazilian Amazon Forest

REDD+ Reducing Emissions from Deforestation and Forest Degradation, sustainable forest management, conservation and increasing forest carbon stocks

REM REDD+ REDD Early Movers

SEMA Amazonas State Environment Secretariat

SiSREDD+ AM Amazonas State REDD+ System

CU Conservation Unit

UNFCCC United Nations Framework Convention on Climate Change

UREDD+ Unit for Reducing Emissions from Deforestation and Forest Degradation, sustainable forest management, conservation and increasing forest carbon stocks

VERRA/VCS Verified Carbon Standard