

**Norwegian University of Life Sciences**  
Faculty of Landscape and Society  
Department of International Environment and Development Studies, Noragric

**2017**

ISSN: 1892-8102

Noragric Report No. 82

# **Management regimes for REDD+**

## **An analysis of the regime in the RDS Rio Negro REDD+ pilot**

By: Arild Vatn, Suelen Marostica, Virgilio Viana and Victor Salviati



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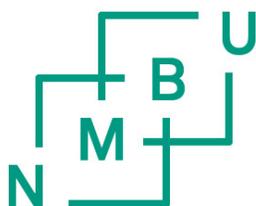
Noragric Report No. 82  
December 2017

**Department of International Environment and Development Studies,  
Noragric  
Faculty of Landscape and Society  
Norwegian University of Life Sciences**

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Vatn, Arild<sup>1</sup>, Suelen Marostica<sup>2</sup>, Virgilio Viana<sup>2</sup> and Victor Salviati<sup>2</sup>. Management regimes for REDD+. An analysis of the regime in the RDS Rio Negro REDD+ pilot.

Noragric Report No. 82 (December 2017)

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<http://www.nmbu.no/en/about-nmbu/faculties/samvit/departments/noragric>



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ISSN: 1892-8102

Photo (cover): Arild Vatn.

Cover design: Berit Hopland/NMBU

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## **1. INTRODUCTION**

This report is an output of the project 'Man and forests – an evaluation of management strategies for reduced deforestation (Mana\_Forest)', led by the Norwegian University of Life Sciences (NMBU), Norway, in partnership with Fundação Amazonas Sustentável, Brazil; Makerere University, Uganda; Sokoine University of Agriculture, Tanzania; the University of Oslo, Norway and the Woods Hole Research Center, USA. The aim of the project is to evaluate different management strategies undertaken to obtain reduced deforestation in tropical forests and hence maintain the various ecosystem services delivered. The concrete focus is on a set of so-called pilots for REDD+ (reduced emissions from deforestation and forest degradation) established in Brazil, DRC, Tanzania and Uganda. Therefore the main focus is at carbon storage, while effects on biodiversity is also included.

One component of the project is aimed at characterizing a) the management regimes – also termed governance structures – established in the REDD+ pilot areas and b) how well the REDD+ governance structures are adapted to the local situation regarding institutional and ecological conditions. This report covers the analysis of these two issues for the Brazilian REDD+ pilot in the RDS (sustainable development reserve) Rio Negro, Brazil. The analysis is undertaken in cooperation between the Brazilian and Norwegian teams.

Establishing REDD+ is a demanding process – both internationally, nationally and at local level. From an international perspective, REDD+ was originally based on the presumption that the North – i.e., countries with responsibilities to cut CO<sub>2</sub> emissions – pay the South to reduce the rates of deforestation and forest degradation (Angelsen 2008). From a subnational perspective, REDD+ was seen as a mechanism to support reduction of deforestation, poverty eradication as well as other sustainable development goals (Viana 2010). Following the Paris Agreement, REDD+ became a part of nationally determined contributions (NDCs) to reduce greenhouse gas emissions. It is performance based in the sense that payments should be founded on verified reduction in these rates – hence, a reduction in the emissions of CO<sub>2</sub>. Carbon is not an easily 'tradable' good – whether it is done through carbon markets or through other forms of payments. One needs to define who is eligible for compensation. That may typically demand clarification of property rights to forests. Next one needs to develop systems for measuring activities to reduce deforestation respectively changes in carbon stocks, when applicable. There are also issues regarding the distribution of costs and benefits between actors at different levels as well as between and within forest communities, and there is the issue of development of alternative livelihoods. All these issues are politically, socially and technically demanding.

The case of Rio Negro is characterized by the fact that it is based on a sub-national program developed by the state of Amazonas to protect forests and support development in forest communities of the state – the so-called Bolsa Floresta program. It is an early initiative that in some way preceded the international development of REDD+. It is defined to operate in different types of protected areas called conservation areas ('units') of sustainable use.

This report has the following structure. First, we describe the status of the forests and forest governance in Brazil. In this section we also present the federal REDD+ policy and the policy for REDD+ in the state of Amazonas where the RDS Rio Negro pilot is situated. Then we turn to a presentation at the state of the forest in the RDS Rio Negro and the governance structures existing before the introduction of the Bolsa Floresta program in 2009. This is followed by a section describing the changes in governance and governance structures resulting from the introduction of Bolsa Floresta. Finally, we discuss how well the new regime is fitted to existing institutional and ecological conditions.

## 2. FORESTS GOVERNANCE IN BRAZIL AND THE STATE OF AMAZON

### 2.1 The state of forests

According to FAO (2016) more than 60 % – about 5.2 million km<sup>2</sup> – of Brazil is covered by forests. They are spread over 6 biomes: Amazon, *Cerrado* (savanna), *Caatinga*, *Mata Atlântica*, *Pantanal* and *Pampa* (IBGE 2004). Natural forests constitute the largest category (92%), followed by naturally regenerated forests (7%) and lastly planted forests (1%). Table 2.1 offers an overview of the size of the various biomes in the period 1990-2010.

Table 2.1 Forest areas in Brazil 1990-2015 in km<sup>2</sup>

Forest type	Area (km <sup>2</sup> )				
	1990	2000	2005	2010	2015
<b>Biomes</b>					
Amazon	3,698,207	3,572,227	3,487,505	3,444,213	3,420,273
<i>Caatinga</i>	464,904	439,068	426,151	414,807	405,826
<i>Cerrado</i> (savanna)	891,752	798,035	751,177	713,738	692,359
<i>Mata Atlântica</i> (Atlantic forest)	225,794	222,083	220,227	218,817	217,704
<i>Pampa</i>	36,631	34,775	33,846	32,951	32,104
Pantanal	99,916	94,793	92,234	90,425	89,750
Subtotal (1)	5,417,204	5,160,981	5,011,140	4,914,951	4,858,016
Planted forest, subtotal (2)	49,841	51,759	56,203	69,730	77,357
Other wooded lands, subtotal (3)	488,092	444,692	422,570	405,322	395,353
<b>TOTAL</b>	<b>5,995,137</b>	<b>5,657,432</b>	<b>5,489,913</b>	<b>5,390,003</b>	<b>5,330,726</b>

Source: FAO (2015).

Despite continued and high deforestation rates, mainly in the 1990s, the total forest area still over 5 mill. km<sup>2</sup>. Brazil is the second largest forested country in the world, having 12% of global forest areas (FAO, 2015a). According to Table 2.1, close to 70% of Brazilian forests are in the Amazon. About half the forests are humid (dense, open and mixed) (FAO 2015).

The figures in the table imply a rate of average deforestation of about 3% in the period 1990-2015. The highest level is found in *Cerrado*, 6% per year. The loss in absolute term has been highest in the Brazilian part of the Amazon (the so-called Brazilian Legal Amazon, BLA), while it in relative terms was highest in *Cerrado*. The loss of carbon per hectare was also bigger in the BLA than in *Cerrado*, for instance, as the latter is a savannah type landscape.<sup>3</sup> Hence, the standing stock volume of biomass in the Amazon has been estimated to be reduced by a little over 7,000 mill m<sup>3</sup> in the 20 years recorded above. In comparison, the volume lost in *Cerrado* was about 2,300 mill m<sup>3</sup>. So while the Brazilian Amazon stands for about 46% of forest area lost, the losses of biomass – as a measure of carbon losses – counted for about 65% of the total (FAO 2009).

Losses are not evenly distributed. Figure 2.1 shows the structure of deforestation in the period 2002-2008. Most deforestation is found at mid latitudes, with quite substantial pressures in the south of Amazonas/BLA. Losses have been especially large in the states of Mato Grosso and Pará, while the state of Amazonas has low losses, below the average for the country (see also Governors' Climate and Forests Task Force 2014).

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<sup>3</sup> According to FAO (2009) the volume of standing biomass in humid forests is in the order of 420 m<sup>3</sup> per ha, forested savannah the figure is about 126 m<sup>3</sup>, while wooded savannah is estimated to have a stock of only 36 m<sup>3</sup> per ha.



**Figure 2.1 Deforestation in Brazil for each biome (2002-2008).  
Source: Based on Vasconcelos (2012)**

At the same time, there was quite a substantial reduction in deforestation from 2005 – especially in the Amazon. Figure 2.2 shows the development from 2000 to 2014 in the region. 2012 represents the lowest level with a loss in the Amazon of 4,571 km<sup>2</sup>. This is down from top levels that were in the order of 25-30,000 km<sup>2</sup> per year.<sup>4</sup> An increase is, however, observed again 2013 and onwards.

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<sup>4</sup> The level in 1995 was close to 30,000 km<sup>2</sup>. No official measurements of deforestation existed before 1988. The level then was then assessed to be slightly above 20,000 km<sup>2</sup>. In the years following it seems to have gone down to below 15,000 km<sup>2</sup>, till it more than doubled in 1995 (Fearnside 2005).



**Figure 2.2 Annual deforestation in the Brazilian Amazon, 2000-2016.**  
Source: INPE (2017).

The main direct drivers behind deforestation in Brazil are expansions of cattle ranging and soybean production, and the correlation between these drivers and the deforestation is high (Gibbs et al., 2015; Nepstad et al. 2014; Godar et al 2014). In a study covering the period 2000-2005, Barona et al. (2010:7) conclude

The proximate cause of deforestation in the Legal Amazon was predominantly the expansion of pasture, and not of soybeans. However, in Mato Grosso, an increase in soybeans occurred in regions previously used for pasture, which may have displaced pastures further north into the forested areas, causing indirect deforestation there. Therefore, soybean cultivation may still be one of the major underlying causes of deforestation in the Legal Amazon.

Logging, mining, road and dam constructions are also mentioned in the literature as drivers (e.g., Barber et al. 2014; Godar et al. 2014). Road building is especially important as it opens up access to forested lands facilitating expansion in cattle ranching, soy and logging – legal as well as illegal (Fearnside 2008).

This development resulted in deforestation was politically supported. It was driven by policies encouraging settlement into forest areas dating back several decennia. Fearnside (2005) notes that the Brazilian Amazon was largely intact until the Transamazonian Highway was inaugurated in 1970. As recent as the early 2000s, government policies promoted large-scale cattle ranching, extensive soy-bean production, large scale mining as

well as occupation by small holder farmers. Acquisition of credit and formalization of land ownership was tied to proof of 'productive activities' which essentially meant deforesting land to make it available for agriculture and cattle rearing (May et al. 2011). Illegal logging was moreover rampant. It is also notable that for decennia the government has also prioritized the construction of several highways to socially and economically integrate remote forest areas of the Amazon with the rest of Brazil and to maintain territorial integrity (Presidência da República 2006). The importance of federal and state policies is also illustrated by the fact that the shift in trends towards reduced deforestation followed changes in policies mainly from 2004 and onwards.

## **2.2 Forest governance in Brazil**

Before we look at these changes, we will give a brief overview of Brazilian governance structures as well as the policies from the 1960s and forward. To the extent that the presentation goes beyond the federal level, we will concentrate on the Brazilian part of the Amazon.

### **2.2.1 Forest governance structures**

The concept of a governance structure includes both the actors involved and the existing institutional structures governing the resource – including ownership to resources and rules regarding their use and protection. Below we offer a brief overview of the main political and economic actors and the property rights structures.

Brazil is a federal state. Hence, policies relevant for forests and deforestation are defined both at federal, state and municipal levels. At the federal level forest policy is the responsibility of the Ministry of Environment and its agencies: the Brazilian Institute of Environment and Renewable Natural Resources (*Instituto Brasileiro do Meio Ambiente e Recursos Naturais Renováveis*, IBAMA) and the *Chico Mendes* National Institute for Biodiversity Conservation (*Instituto Chico Mendes de Conservação da Biodiversidade*, ICMBio). IBAMA is responsible for monitoring use and the protection of Brazilian forests, except Indian reserves that are managed by the Brazilian Foundation for Indians (FUNAI). ICMBio is responsible for the management of federal conservation units (e.g., protected areas, national parks, reserves etc.).

At state levels, there are secretaries of environment and other agencies. In Amazonas, the State Secretary of Environment for Amazonas (SEMA) is responsible for policy design and Environmental Protection Institute of Amazonas (IPAAM) is responsible for licensing and monitoring. At the municipal level, there are secretaries of environment, with varying degrees of responsibility in environmental conservation and monitoring. Cities like Manaus have strong municipal legislation and institutional frameworks.

Turning to property rights, we note that almost a third of the forests in the Brazilian Amazon are publicly owned – 27.7% of the region (Brazilian Forest Service, 2016). The rest are categorized as private forests including also land that is formally registered as owned by

communities.<sup>5</sup> The publicly owned forests are divided in different sub-categories, where some can be considered largely protected. Some of the forests where use is allowed, are managed by others than the federal government or the states. Regarding these, Unterstell (2013) divides between three types of holders of management rights of public forests – i.e., a) *Individuals*; b) *Private corporations and institutions* (forest concessions); and c) *Communities* (Federal, municipal and State Extractivist Reserves, federal and state sustainable development reserves, indigenous lands and forest areas in federal agrarian reform settlements).

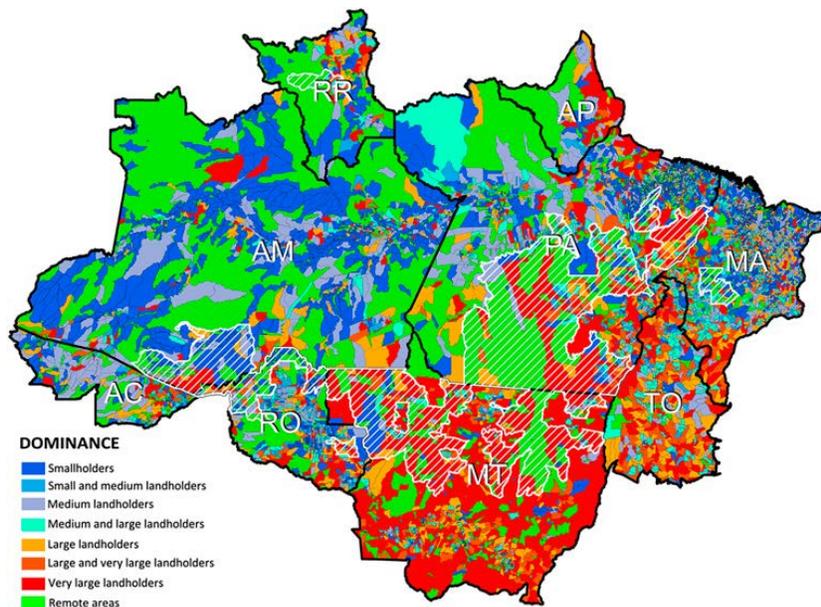
Considering the research site, Rio Negro region close to Manaus, Amazonas, there are two land categories: sustainable development reserve (RDS in Portuguese) and environmental protected area (APA in Portuguese). Both are mostly on State owned lands with management rights dedicated to community purposes (i.e., extractivist protected areas), although private land holdings are also present within both APA and RDS. An RDS is defined as an area populated by traditional communities which have their livelihood based on the sustainable use of the natural resources. Its goal is to conserve the environmental services as well as assure traditional peoples' welfare within the forest. An APA is also a type of protected land where people can live – but it is not dedicated only to traditional peoples.

While the state is the dominant forest owner, private actors dominate agriculture and hence agriculturally based deforestation. According to the Brazilian Forest Code – originated in 1965 (Law No. 4.771) and revisited in 2012 (Presidência da República 2012) – a certain fraction of private land holdings must be kept as forest. This used to be 50 % in the Brazilian Legal Amazonas (BLA). The percentage increased to 80 in 1996 and this was modified in 2012 (with several specific regulations). It has, however, been very difficult to ensure compliance (Stickler et al. 2013). Part of this is explained by lacking political will and surveillance to enforce the law (Nepstad et al. 2014). Important is also the fact that the country has been moving slowly in officially registering rural properties (Barreto et al. 2008). Hence, there is lack of clarity around land ownership in the Brazilian Amazon, implying competing claims. The situation is gradually getting better after passing the 'Public Forest Management Act' (Law no 11.284) in 2006 (Presidência da República 2006) with the launching of the program Terra Legal in 2009 as important milestones. State legislation, such as Amazonas State System of Protected Areas (in Portuguese, SEUC) and climate change legislation in 2007 also played an important role.

Figure 2.3 offers an overview of the dominant structure of private properties in the Brazilian part of the Amazon – i.e., what group of property sizes dominate in various census areas. Especially in the south and east, large landholdings dominate.

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<sup>5</sup> The area of private forests is considered as the sum of the areas of forests and woods of (private) agriculture and livestock establishments in Brazil, according to the Brazil-Agriculture and Livestock Census 1970/2006 carried out by the IBGE (Brazilian Institute of Geography and Statistics) – see Unterstell (2013).



**Figure 2.3 Dominance of actors according to the size of their properties in the Brazilian Legal Amazon**  
 Source: Godar et al. (2014)

Actor dominance by census areas in the Brazilian Legal Amazon. (BLA). Covering private land holdings with engagement in agriculture. Based on survey data from 69.9 % of the BLA. Small landholdings < 100 ha. Medium landholdings are between 100 and 500 ha. Large are between 500 and 2500 ha and very large are > 2500 ha. Census areas that lack information on property sizes are defined as remote (green in the figure). The white dashed polygons correspond to municipalities under prioritization and increased monitoring included in the federal government Critical Municipalities List. Only 14.4% of the total deforestation and 30.1 % of the total area was not accounted for in terms of actor dominance. AC, Acre; AM, Amazonas; AP, Amapá; MA, Maranhão; MT, Mato Grosso; PA, Pará; RO, Rondônia; RR, Roraima; TO, Tocantins.

### 2.2.2 Main policies until 2000

Brazilian forest policy operates in a 'landscape' on the one hand dominated by private interests on land clearing for agriculture and cattle ranching, and on the other hand protection and sustainable use of natural resources. Brazilian Forest Law defined that a certain portion of forest land should be permanently maintained as such. It also prohibited the clearing of vegetation in sensitive areas like steep slopes and along rivers and streams. In practice these rules were largely unenforced up until rather recently due to lack of political will and key investments on surveillance and sustainable landscape development (Pfaff et al. 2015; Nepstad et al. 2014). At the same time, the policies were – as we have seen – quite contradictory. According to one example, forested lands, lands with no agricultural production, are *strictu sensu* not considered 'productive land.' A change from forests to agriculture makes the land 'productive', despite often happening in unsustainable ways. Another example regards tax exemptions that according to Fearnside (2005) was a strong driver of deforestation.

The lack of enforcement was not only due to conflicting policies. It has also been very demanding to enforce protective measures given vast areas and demanding infrastructures. In this situation Brazil developed itself as a forerunner in remote sensing: the PRODES program, i.e., the Brazilian Amazon forest satellite monitoring project. Since 1988, led by the

Brazilian Space Institute (INPE), PRODES is the official data center for the Brazilian Amazon land cover<sup>6</sup>. Launching annual reports on deforestation rates and refining its methods to assess forest cover, PRODES is the most advanced forest cover monitoring in the world. Thanks to PRODES, Brazil was able to track its deforestation rate and design tailored public policies to tackle structural issues such as surveillance and modeling (Godar et al. 2014; Soares-Filho et al. 2009)

### **2.2.3 Policy changes from 2000**

Issues regarding the conflict between agro-industrial development and conservation of natural resources have been hot in Brazil – not least the developments in the Amazon (e.g., Bauch et al. 2009). The increased focus on deforestation throughout the 1990s and the debates over the rights of indigenous peoples resulted in a change in policies with strong direct and indirect implications for the forests.

The passing of the Law 9,985 in 2000 (Presidência da República 2000) represented in many ways a turning point. It instituted a national system for protected areas – nature conservation units. To-day there are two major groups of protected areas: full-protected and sustainable use<sup>7</sup>. Within these groups, there are 12 different types of designated protected areas – differentiated according to the specific purpose<sup>8</sup> – e.g., environmental protection area (APA), biological reserve, indigenous lands, sustainable development reserves (RDS). In August 2016 they covered altogether about 1,5 million km<sup>2</sup> (MMA, 2016) (18% of Brazil's total land surface). Only in the Brazilian Amazon, protected areas cover 27.3% (MMA, 2016). It is notable that the law restricts commercial logging in fully protected areas – the conservation units – while logging becomes allowed if a forest management plan is developed and approved by either the State or National agency, depending on the ownership status of the area. Most of these forest management projects are led by extractivist populations, such as Amazonian riverine peoples. There are also concessions to private companies in national and state forests.

Very important is also the plan to control deforestation in the Amazon (PPCDAM) from 2004 (Presidência da República 2003), the Public Forest Management Act from 2006 (Presidência da República 2006) and various actions taken by states – especially in the BLA. According to Nepstad et al. (2014), this facilitated collaboration across several ministries including the federal police and the public prosecutor's office. The capacity to detect and respond to deforestation events was increased substantially in 2004 by the launching of the DETER (Detection of Deforestation in Real Time) system – also run by INPE.

State and municipal governments have also played an important role in reducing deforestation and expansion of protected areas. Several public policy innovations were developed by

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<sup>6</sup> More at <http://www.obt.inpe.br/prodes/index.php>, in Portuguese.

<sup>7</sup> More at <https://uc.socioambiental.org/o-snuc/quadro-comparativo-das-categorias>, in Portuguese.

<sup>8</sup> A comparison table at <https://uc.socioambiental.org/o-snuc/quadro-comparativo-das-categorias>, in Portuguese.

state governments and later adopted by the federal government. This is the case of states such as Amazonas (Viana 2010; CEPAL 2007).

NGOs have also influenced the development. In 2006, Brazilian soy producers faced structural attacks led by Greenpeace. This involved to an outstanding output: a 'soy moratorium' supported by most buyers of soy in the Amazon (Gibbs et al. 2015). A similar process happened in 2009 regarding beef. It resulted in a legal process led by the Public Prosecutor's office creating a 'cattle agreement' where the largest beef processing companies agreed to not accept meat delivered from livestock holders that deforested (Nepstad et al. 2014). Both cases illustrate shifts in the engagement of public actors to strengthen law enforcement and the good result of wiser strategies to tackle deforestation drivers. Some scholars show that the decrease of the deforestation rate in the Amazon was due to these two moratorium agreements (e.g., Gibbs et al. 2016; Morton et al. 2016).

Another policy-inductive strategy was the Critical Counties program – a cooperation between the Brazilian Central Bank and the Ministry of Environment – established to suspend access to credit for farms with a high rate of deforestation. The enforcement of property law in the states of Pará and Mato Grosso was also strengthened in 2009, about the same time as resources from REDD+ started to become available.

Increased protection of land and the above regulations of credit and market chains reduced deforestation. It is notable that this happened despite a quite strong increase in relevant world market commodities prices since 2007. It is also notable that while deforestation decreased, production of soy and beef did not. Nepstad et al. (2014) document a rather stable growth in soy production from the 1990s and onwards, with a dip around 2006 due to lowered prices around that year. There has also been growth in beef production, while at a somewhat slower pace after 2006. In both sectors an increase in yields is observed – especially strong in beef production that used to be very extensive and low-tech. It is notable that this increase peaked around 2007 for beef, while continued for soy throughout the whole period. How can the overall patterns be explained? Here we cite Nepstad et al. (2014) stating:

The decline in deforestation during the “frontier governance” phase, from 2005 through 2007, was the result of several mutually reinforcing factors that decreased the demand for new deforestation, increased the risks to those engaged in deforestation, and reduced the supply of undesignated or loosely claimed forestland that is the target of land speculators. The demand for new deforestation declined through both a retraction in the area of soy production..., rapidly rising beef yields... and a sharp reduction in the size of the Amazon cattle herd... Deforestation became riskier through improved law enforcement, fines and embargos imposed on those associated with illegal deforestation..., and market rejection of deforesters through the Soy Moratorium... The supply of undesignated forestland was limited through both a rapid expansion of protected areas in active agricultural frontier zones... and delays in highway paving... The initial test of the measures implemented to slow deforestation came during the Territorial Performance phase (from 2008, authors' comment), when

soy profitability rose again and soy production increased... Demand for new deforestation did not come directly from the soy sector, however. The 50% expansion in soy production through 2013 took place entirely on land cleared before 2006... During this period, beef production remained flat as the herd was rebuilt, gradually increasing demand for new pasture. In addition to the measures already in place, the risks associated with deforestation were further elevated through the Critical County program and the Cattle Agreement of 2009 (p 1120; note that ‘...’ implies deleted references to hypotheses and documentations).

## **2.3. The introduction of REDD+ in Brazil**

### ***2.3.1 The introduction of REDD+ at the federal level***

REDD+ became an issue in international climate negotiations at the UNFCCC COP in Montreal in 2005 as introduced by Costa Rica and Papua New Guinea<sup>9</sup> and later followed up with more commitments at the COP at Bali in 2007. Sub-national initiatives became part of the international debate also in 2005, with the presentation of the first version of the Amazonas State Initiative in the Montreal COP. This state level REDD+ initiative began to be implemented as early as 2003. The Amazonas state government participated actively in the UNFCCC COPs after 2005 and also participated actively in the creation of the Governors Climate Forum (GCF), which included more than 30 sub-national governments as of 2016. In 2013, at the COP in Warsaw, discussions on a ‘REDD+ package’ – the so-called ‘Warsaw framework for REDD-plus’<sup>10</sup> – was concluded. As we have seen, Brazil had by then already started on a process to strengthen forest protection. Moreover, in 2006, the Brazilian government had introduced the idea that developing countries should be compensated for their reduced deforestation. They argued for an international fund based on voluntary donations to assure that emission reductions would be additional to those undertaken in developing countries.

As a follow up on discussions in Bali, and not least the initiative from the Norwegian government to finance reductions in deforestation in the South, Brazil created the Amazon Fund in 2008. The Fund is administered by the National Bank for Economic and Social Development (BNDES). Late 2008 the national plan for climate change was approved at the federal level. A national law – law 12,187 of 2009 – established the national policy on climate change including an aim to reduce greenhouse gas emissions by almost 40 percent by 2020. At the same time, a national fund for climate change was established. The fund is managed by the Ministry of Environment and aims at financing projects, research and entrepreneurial activities related to climate change mitigation and adaptation. In 2016 the Brazilian government issued the ‘Brazilian National Strategy for REDD+’.<sup>11</sup> Despite such a strategy has been under discussion since 2010, several NGOs and States have claimed lack of proper participation and structured consultation by MMA to design it (GCF 2014; Souza 2014).

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<sup>9</sup> See countries’ UNFCCC submission at <http://unfccc.int/resource/docs/2005/cop11/eng/misc01.pdf>.

<sup>10</sup> More at [http://unfccc.int/land\\_use\\_and\\_climate\\_change/redd/items/8180.php](http://unfccc.int/land_use_and_climate_change/redd/items/8180.php).

<sup>11</sup> More at <http://redd.mma.gov.br/index.php/en/legal-framework/national>, and the strategy at [http://redd.mma.gov.br/images/publicacoes/enredd\\_documento\\_web.pdf](http://redd.mma.gov.br/images/publicacoes/enredd_documento_web.pdf), in Portuguese.

Brazil is not a participant in UN REDD or the World Bank Forest Carbon Partnership Facility. Some believe that the Brazilian diplomatic position is related to internal disputes on financing and rights and duties of subnational entities (e.g., States). While the Brazilian National Strategy states only one option of financing – i.e., international donations such as from Norway and Germany to the Amazon Fund – states like Acre, Mato Grosso and Amazonas have moved to find alternative sources referring to difficulties in accessing the imposed option from the Brazilian government. In addition, there is also a debate on the percentage each actor contributing to decrease deforestation should receive. The Brazilian government claims that the decrease in deforestation is related to federal public policies and tools managed by MMA. On the other hand, Amazonian states say decreased deforestation rates are more due to State policies and activities such as expansion of protected areas. In the meantime, the Brazilian government has raised more resources for the Amazon Fund<sup>12</sup>, and Acre and Amazonas have also fundraised with both multilateral<sup>13</sup> and private<sup>14</sup> organizations.

Finally, there is an international momentum, since 2014, to highlight the importance of sub-national contributions to reduce deforestation. In addition to the well-acknowledged Governors' Climate and Forest Task Force (GCF), the German-based cooperation agency (GIZ) launched the 'REDD Early Movers Programme'<sup>15</sup> (REM) which supports 'REDD pioneers', in a result-based financing, on readiness, implementation and monitoring, reporting, and verification (MRV) – Acre is one of the very first states to be supported by it. In 2016, the State of Amazonas and FAS launched a REDD+ registry, through Bolsa Verde do Rio de Janeiro (Rio de Janeiro's Environmental Exchange, BVRIO), to retire offset of the pioneering Juma REDD+ project.

### ***2.3.2 The introduction of REDD+ in the state of Amazonas***

The REDD+ pilot that this report covers lies, as already emphasized, in the State of Amazonas. This state is in many senses a forerunner regarding climate change policies and forest protection in Brazil. For example, the amount of protected areas increased from 7 million ha in 2002 till 19 million ha in 2010 (Viana 2010). Moreover, the state launched a RED initiative at the UNFCCC COP held at Montreal in 2005<sup>16</sup>. In 2007, the state government enacted Law 3.135 (Governo do Estado do Amazonas 2007) – the first state climate change legislation in Brazil. The goal was to create instruments to enable the state to work towards conservation of forests in relation to climate change. In 2008, Amazonas was active in creating the GCF – the Governors' Climate & Forests Task Force – and support subnational initiatives across the globe.

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<sup>12</sup> More at [http://www.amazonfund.gov.br/FundoAmazonia/fam/site\\_en/Esquerdo/doacoes/](http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/doacoes/).

<sup>13</sup> More at [https://www.kfw-entwicklungsbank.de/International-financing/KfW-Entwicklungsbank/About-us/News/Newsm-Details\\_20353.html](https://www.kfw-entwicklungsbank.de/International-financing/KfW-Entwicklungsbank/About-us/News/Newsm-Details_20353.html).

<sup>14</sup> More at <http://news.marriott.com/2016/09/amazonas-state-set-new-standard-brazil-presentation/>.

<sup>15</sup> More at [https://unfccc.int/files/cooperation\\_and\\_support/financial\\_mechanism/standing\\_committee/application/pdf/rem\\_wfc\\_09\\_15\\_final.pdf](https://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/rem_wfc_09_15_final.pdf).

<sup>16</sup> It was called the 'Amazon Initiative' and reflect the fact that the first 'D' in REDD – deforestation – was the main focus early on.

Except for the establishment of the Amazon Fund, the REDD+ process has been slow at the federal level. According to May et al. (2011:75) states/sub-national levels were filling a “policy vacuum at the federal level regarding the specific architecture and intergovernmental coordination”. Moreover, these authors state that “REDD+ strategies have responded to policy development by subnational authorities in collaboration or independently of major national or international NGO initiatives regarding policies for environmental conservation and sustainable development.” Modifying institutions and creating new organizations was necessary, and consequently done by the state governments.

Two core elements of this policy in the State of Amazonas is the State Plan for Climate Change (law 3,135/2007) and the Conservation Units (UCs) system – SEUC in Portuguese – established through the State law 57/2007. The first established the overall framework and related programs to address climate change, and the latter created the strategy to conserve and manage protected areas.

Amazonas used to have two integrated organizations to address climate change and conservation unit management: the State Climate Change Center (CECLIMA) and the State Conservation Units Center (CEUC) – both created in 2008. The Law 3.135/2007 mandated the State of Amazonas to support the establishment of a non-profit foundation “whose purpose is development and administration of the Programs and Projects on Climate Change, Environmental Conservation and Sustainable Development and manage environmental services and products, as defined in this law....” (Governo do Estado do Amazonas 2007: Article 6). This foundation – Amazonas Sustainable Foundation (FAS) – was created in February 2008 (SDS 2009). FAS has the objective of improving the quality of life of the local populations and the conservation of forests in the state-owned UCs, as well as implementing the Bolsa Floresta Program.

The motivation for creating FAS as an independent organization was to have an actor with the capability to implement long-term programs in forest communities in an efficient and transparent way and do so independently from partisan politics. As a non-governmental organization, FAS also had the advantages of avoiding bureaucratic inefficiencies of governmental institutions and attracting private funding. The organization is governed by a board of administration including equal representation for government, academia, civil society and business (Viana 2014).

FAS received two initial donations of R\$ 20 million<sup>17</sup> each: one from Bradesco Bank and the other from Amazonas State Government. In addition, the Bradesco Bank has donated an average of R\$ 10 million yearly since 2008. FAS has raised funding from over 100 private and international donors, including the Amazon Fund R\$ 19.3 million (2010-2015), plus R\$ 31.5 million (2016-2018). Coca-Cola (R\$ 20 million), Samsung Brazil (R\$ 3.8 million, 2011-14, plus R\$ 5.2 million 2014-17), and Marriott International (USD 2 million) have become partners as well as other institutions such as UNICEF, UNEP and UNDP<sup>18</sup>.

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<sup>17</sup> The value of 1 USD was about 1.80 R\$ in 2008.

<sup>18</sup> More at <http://fas-amazonas.org/parceiros/>, in Portuguese.

FAS runs three programs: Bolsa Floresta, Education and Health, and Innovative Solutions. The Bolsa Floresta Program is a state public policy, created in 2007 (law 3,135), focused at combating climate change and poverty among the traditional and indigenous population who live within state UCs in Amazonas. The Education and Health program, created in 2013, aims at improving public education and health for forest communities living in state UC<sup>19</sup>. The Innovative Solutions program, created in 2015, fosters innovation and sustainable development within FAS for the benefited communities – encompassing forest monitoring, scientific development, technical partnerships, international cooperation, fundraising, public policies agenda and innovative projects such as Google Street View in the Amazon.

It is notable that in 2015, the Amazonas government had a political setback and changed its climate change-related organizations. The State Secretary of Environment and Sustainable Development (SDS) was redesigned as ‘State Secretary of Environment’ (SEMA, in Portuguese) losing key components of the sustainable development agenda<sup>20</sup>. In addition to that, SEMA has lost several staff and faced severe budget cuts. Both CEUC and CECLIMA were extinguished and replaced by a single Department of Climate Change and Conservation Units (DEMUC, in Portuguese).

### **3. INTRODUCING REDD+ IN THE RDS RIO NEGRO**

A field study was developed on the results of the Bolsa Floresta program at RDS Rio Negro. We will describe the state of the forest in the area, the governance structures existing before the establishment of Bolsa Floresta and finally the aim and structures of Bolsa Floresta. The program can be described as a combination of payment for environmental service and integrated conservation and development program. It is partly financed by the Amazon Fund.

#### **3.1 The state of the forest in RDS Rio Negro**

The RDS Rio Negro is located in the municipalities of Manacapuru, Iranduba and Novo Airão, some 50 km northwest of Manaus – the capital of the State of Amazonas – see the map in Figure 3.1. The RDS is divided in three regions (Polo 1, Polo 2 and Polo 3) including altogether 19 communities (villages). The size of the reserve is about 1 030 km<sup>2</sup> and the distance from the north-west to the south-east along the river is approximately 75 km. The RDS was established in 2009 by Amazonas State Government, through a consultation process which included local forest communities, government, academia and civil society.

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<sup>19</sup> More at <http://fas-amazonas.org/educacao-na-floresta/>.

<sup>20</sup> More at <http://g1.globo.com/am/amazonas/noticia/2015/03/melo-anuncia-mais-mudancas-na-estrutura-do-governo-do-amazonas.html>, <http://amazoniareal.com.br/governador-do-amazonas-reduz-em-88-verba-da-area-ambiental/>, in Portuguese.

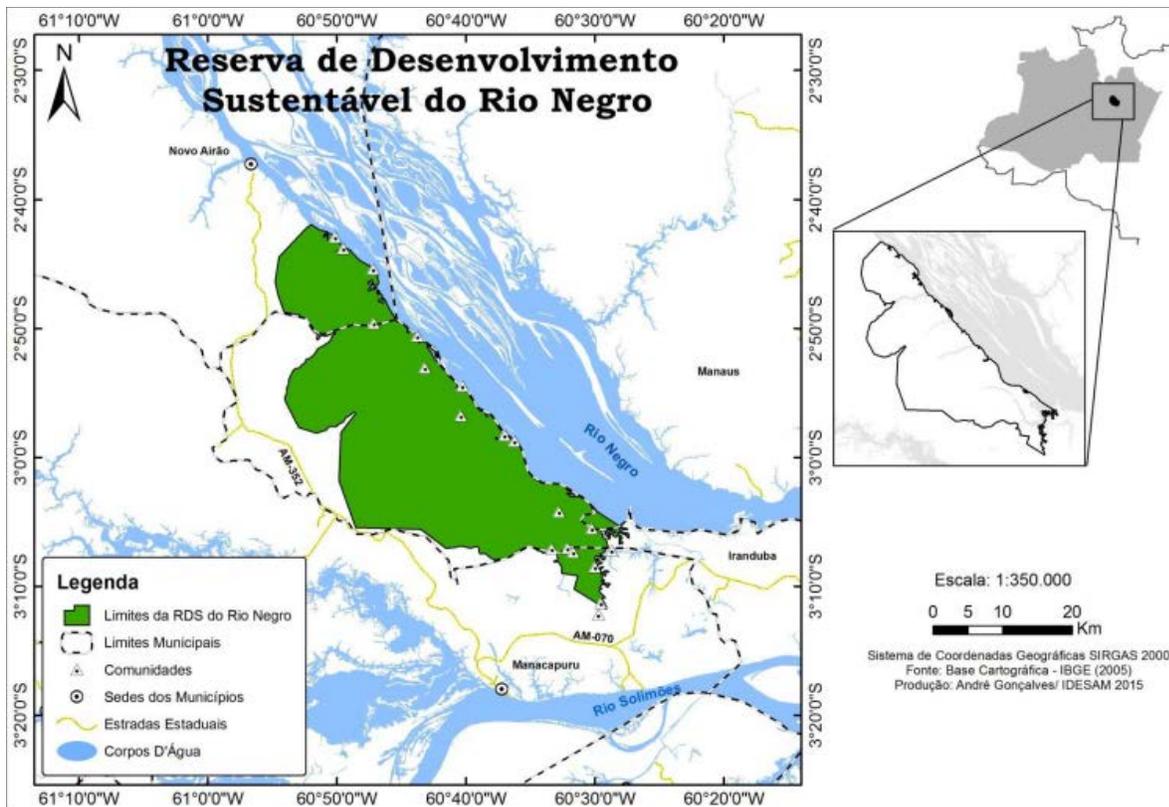


Figure 3.1: Map of the RDS Rio Negro with villages in white (Source: SEMA, unpublished)

RDS Rio Negro has six main forest types (RADAMBRASIL, 1978): the dominating emergent canopy low-land dense ombrophylous (87% of the reserve's land territory), pioneer formation with farming influences (4%), secondary vegetation without palm trees (3%), *campinarama* without palm trees (2%), low land dense ombrophylous (2%), and others (2%) (SEMA, unpublished); IBGE 2012).

The area has two major drivers of illegal deforestation and degradation: land clearing agricultural expansion (Ramos 2015) and logging (Scabin 2010). Since 2011, with the inauguration of the 'Rio Negro bridge', connecting Manaus to the state road AM-352, deforestation rates in RDS has increased (PRODES, 2016). Some scholars have linked the direct influence of the bridge to this increase (e.g., Ramos 2015).

Since mid-2015 SEMA has been developing a management plan for RDS Rio Negro. This document addresses both legal and illegal activities within the area as well as designs a conservation and sustainable development strategy. The conclusion of the document is planned to be by early 2017. In late 2016 SEMA approved a management plan for RDS Rio Negro. This document addresses both legal and illegal activities within the area as well as designing a conservation and sustainable development strategy.

### **3.2 Governance and governance structures before the implementation of Bolsa Floresta**

The area is sparsely populated. In 2016 there were 791 households with a population of about 2,500 people living in the RDS Rio Negro (SEMA, unpublished). Mostly ‘caboclos’ (traditional population and miscegenation of Indians and European and African descendants) inhabit the reserve. The education level is low. On average each person has attended three years of school while 2/3 has only 2 years or less of formal education (Vatn et al. 2013).

Most of the area is owned by the state, except private lands, established before the creation of the RDS and areas used by local communities, which have land use rights. Communities perceive that they own the land around their houses and the agricultural plots. Land per family – for agriculture, gardens, houses – is typically small (less than 2 hectares in average). In a study undertaken in 2010, about 21 % stated that they have no agricultural land. Close to 70 % of those having such land stated that they held land less than 2 hectares. It is notable that there were also some that had more than 10 ha – about 15 % of those having land for agriculture (Vatn et al., 2013).

In 2015, SEMA and the State Procurement Office started discussing with key stakeholders about the property rights and rights of use of the RDS’s lands. This is still an ongoing discussion with two proposals in place: individual ownership for each recognized forest family or communitarian ownership for each recognized community. The RDS has a formal grassroots association (ACS), which represents the interest of local communities.

Communities in the RDS have three major income generation activities: tourism, timber production (legally managed and illegal) and agriculture. In addition to that, wages and remittances are also very important source of income. Average yearly household income in 2010 is estimated to be around 3,000 USD (Vatn et al. 2013).

The area was an environmental protection area (APA) from 1995 to 2009. Formally, there is not much difference between the APA or RDS status. The major difference is that government presence is stronger in RDS. Historically, there was an informal system on social arrangement in the RDS area at the community level. With the creation of the RDS, a new general association (for all communities of the reserve) was created and formalized. The general association (ACS) elects a president and board of directors. Community associations, however, are mostly informal. There is a reserve council (*conselho gestor* in Portuguese), chaired by SEMA, which is in charge to make management decisions.

It is important to highlight state-owned reserves have three spheres of decision-making: community-level with informal presidency and board, a formal association at the reserve-level elected by the communities, and the reserve’s council chaired by SEMA with formal obligations under both state and federal laws.

Part of the APA was turned into the Puranga Conquista RDS in 2009, under the legal framework of Law 3.355/2008 (Governo do Estado do Amazonas 2008a). Communities were given certain use rights as defined by the legislation for the RDS. However, there is no management plan specific to the Puranga Conquista RDS (The Rio Negro RDS has a management plan since 2016). It is

notable that communities inside and outside the RDS are under the same legislation in regard to timber production. Communities may cut timber for own use – e.g., buildings, canoes/boats – but also for small scale ecotourism and wood crafts. They may also engage in commercial logging if a forest management plan is developed and approved by the Environmental Protection Institute of the Amazonas State (IPAAM, in Portuguese) – see also Box 3.1. Such plans are typically made for each community and define the amount of timber that can be harvested without reducing the volume of standing forests in the long run. Harvests are then allowed both in primary and secondary forests. The volumes defined depend on the status of the forest and the species found.

**Box 3.1: Forest management plans**

The forest management plans are licenses the government of the State of Amazonas grants communities in Amazonas state to legally manage forests for timber production. Most of these licenses are valid for two years. These plans have a set of rules aimed at the protection of the environment e.g. limiting the extraction of certain species, protecting special habitats, etc. They also define the maximum allowed timber volume to be extracted (in m<sup>3</sup>).

Area of the property (ha): 500,0	Municipality: Iranduba
Total area of the Plan (ha): 500,0	Community: Carão
Authorised area for exploration (ha): 22,4	Transcript/registration: ---
Total area for management (ha): 436,04	Property registration number: CDRU no. 0666
Area of the field (ha): ---	Technical responsible: Priscillia Adriano Silva
Maximum extraction intensity (m <sup>3</sup> /ha): 16,51	CREA/AM No.: 14.431-D
Total number of authorised trees: 91	Total volume authorised (m3): 373,31

Based on Silva (2014)

The specifications of each plan depend on the area of the community and the area intended for the plan. In the License L.O. No. 379/06-02, for example, considering the area intended for the plan is 500 ha and the area for actual management is 436,04 ha, community of Carão has a permit to cut up to 91 trees, with a maximum intensity of 16.51m<sup>3</sup>/ha, having a total yearly volume of 373,31 m<sup>3</sup> authorised harvest.

**3.3 The changes in governance and governance structures following the implementation of Bolsa Floresta**

The aims of the Bolsa Floresta program (BFP) are to (i) improve the quality of life of traditional people and (ii) reduce deforestation and forest degradation. The BFP offer rewards for the maintenance of environmental services provided by tropical forests in state protected areas in Amazonas. Cash payments are one of many elements of the program that

also covers education, health, income generation, livelihood enhancement and developments of local organizations.

The decision to join Bolsa Floresta or not is made at the household level. Each household – mostly (85%) represented by the female head – is invited to attend in an open workshop for prior and informed participation. At the end of this workshop, a voluntary agreement to participate in the program can be signed if the participant agrees to:

1. Follow the rules of the reserve's management plan;
2. Maintain the size of the agricultural areas no larger than the one registered at the beginning of the BFP in the community, growing crops in open areas of secondary forests, not advancing in primary forest areas;
3. Having children attending schools;
4. Use fire prevention practices such as firebreaks in agricultural areas.

The program was introduced in the RDS Rio Negro in 2009 – a few months after the establishment of the reserve. It includes the following standard components (FAS 2016a):

1. *Bolsa Floresta Familiar* – BFF – or Family Component:  
It is a monthly payment of R\$ 50 (R\$ 600 yearly) to the mother/female head of each family. The payment is done using debit cards. Eligibility for payment demands signing a voluntary agreement (see also Section 3.2).
2. *Bolsa Floresta Associação* – BFA – or Association Component:  
It is an annual grant for the associations of communities in the UCs. It is an average of R\$ 63 per family per year managed directly by the general association. Its goal is to strengthen social organization, building capacity, and training local leaders.
3. *Bolsa Floresta Renda* – BFR – or Income Generation Component:  
It is an investment allowance for economic activities that are legal, such as timber, essential oils, fruit and nuts, fisheries, community-based tourism and others. The average yearly payment per family is R\$ 308, which is done directly as investments, not as cash transfers. These resources are used for the purchase of equipment, training and other investments to support income generation activities.
4. *Bolsa Floresta Social* – BFS – or Social Component:  
It is an investment allowance focused towards supporting improvements in education, health, communications and transport. Each participating family accounts for an average payment of R\$ 61 per year, which is done directly as investments, not as cash transfers.

All components are implemented and developed with both public and private organizations as partners. Together the components represent an annual investment of R\$ 1,090 yearly per family – between 450-550 USD. From 2012 to 2016, Bolsa Floresta invested R\$ 623,642 yearly in its components (FAS, 2017) in the Rio Negro RDS. Hence, in September 2016 there are 694 families (2,256 people) benefiting from Bolsa Floresta (FAS, 2017)

The Bolsa Floresta program implies a change both in actor and institutional structures. Regarding actors, the main change is the strengthening of general associations. This has empowered community level associations, including the training of their local leaders and young leaders. Bolsa Floresta implies moreover an expansion of general participation among households. Meetings are organized at all levels: community, polo (or sector) and reserve. These participatory planning and evaluation meetings, facilitated by FAS, aim at discussing allocation of funds of 3 components: Association, Income and Social.

The most important regulations regards timber exploitation. It is regulated by the general state legislation and the reserve's management plan. In the case of RDS Rio Negro, 88% of households had joined the Bolsa Floresta Program by 2016. Note that FAS has no rules defining a minimum nor a maximum number of signatories to establish the program in a particular reserve.

A core aspect of the Income component has been the social learning associated with sustainable activities such as forest management plans, community-based tourism, handcrafting, fishing etc. At the RDS Rio Negro, sustainable community-based timber exploitation is a key activity. In 2016 FAS supported 10 new management plans, involving 9 communities and 92 families, with the expected output of 1,048 m<sup>3</sup> of processed logs – from 2,994 m<sup>3</sup> of timber. This provided a total of gross income of BRL 471,002 or BRL 5,125 per family (FAS 2017). In addition, upcoming FSC certification, may provide more income to communities involved.

The Bolsa Floresta program is a state wide program, and the rules regarding the program are largely the same across the whole state. They were originally developed within the State's Secretariat of Environment (SEMA, former SDS) during 2006-2007 (Viana 2010). Since then, they have been revised by the Annual Meeting of Community Leaders, which occurs twice a year. In addition, FAS and SEMA have periodic meetings to assess results and challenges of the program. FAS considers the uniform structure as necessary for efficient management of the program as well as in preventing conflicts among different communities if different payment schemes were to be implemented. One of the substantive changes made is the introduction of flexibility regarding allocation of funds between the BFR and BFS components (Viana 2013).

As already mentioned, there were changes in public policies and a weakening of the environmental policies at the state government level since 2010, and more severely after 2015. The impacts of these changes could have been greater if it was not for the activities of Bolsa Floresta supporting communities.

### **3.4 Adaptation of the REDD+ regime to existing institutional and ecological conditions**

#### ***3.4.1 Adaption to existing institutional conditions***

As the Bolsa Floresta program is developed to strengthen the aims and functioning of the protected areas of the state of Amazonas, adaptation to existing institutional conditions was explicitly dealt with in the creation of the program. It adds some restrictions to the rules of the RDS regarding resource use. Nevertheless, it mainly represents a way to supplement local incomes through cash payment plus non cash benefits (investment in sustainable income generation and improving social infrastructure and empowering social organizations). These cash and non-cash benefits comprise the concept of PBF as a payment for environmental service program. Average income per household per month increased 60% from 2011 to 2015 – i.e., 91% and 101% of the national wage, respectively (Action Institute, unpublished report; Viana et al. in prep.<sup>21</sup>).

Another positive impact is the strengthening of the reserve's association. Before Bolsa Floresta, the association was an informal organization – with no support and investments. From 2010 to 2014 Bolsa Floresta helped the RDS association to formalize itself, promote capacity building for its leaders regarding setting up accountability reports, design fundraising projects and administer an annual budget with several sources. This has enabled the association to acquire funds from other sources. FAS also supports the associations in assessing key indicators, budgets and governance. This assessment is made in partnership with SEMA.

#### ***3.4.2 Adaption to ecological conditions***

Comparing 2010 with 2016, the deforestation drivers have changed. Nowadays there is less pressure from illegal deforestation for timber. However, there is much more pressure for illegal land grabbing (*grilagem*) near the roads, with associated deforestation and forest fires. Due to the strengthening of the RDS grassroots association, internal drivers, e.g., illegal timber extraction, were reduced. Nevertheless, external drivers, such as land grabbing, have increased.

According to PRODES (2016), the deforestation rate in the RDS has decreased by 6% from 2010 to 2015. Nevertheless, considering 2014 and 2015, the deforestation increased 40%. Therefore it is quite important to enhance public policies on surveillance, and controlling illegal invasion and land grabbing.

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<sup>21</sup> All data related to the independent survey pool carried out at RDS Rio Negro will be published by ACTION INSTITUTE and Viana et al. papers and reports are under elaboration.

## **4. CONCLUSION**

In this report, we describe the general context of drivers of deforestation, policies and institutional frameworks for the Brazilian Amazon. We describe the management regime of the Bolsa Floresta program (BFP) as applied in the RDS Rio Negro in the State of Amazonas, Brazil. BFP in RDS Rio Negro is a REDD+ pilot and was established in 2009. The BFP was established in 2008 by the state and focused on reducing deforestation and strengthening the livelihoods of people living in protected areas. It followed the State Plan for Climate Change and the system for Conservation Units created the year before and being the basis for an expansion of the protected areas in the state. The BFP is led by FAS – the Amazonas Sustainable Foundation – also created in 2008.

When joining the BFP, each household agrees – among others – to follow the rules of the reserve’s management plan and maintain the size of the agricultural areas no larger than the one registered when the BFP was introduced in the community, hence, not advancing into primary forest areas. This contract releases a series of monetary transfers: a) monthly payment to the mother/female head of each family; b) two sets of payments to the community regarding both income generation activities and a social program (education, health, transport etc.); c) a grant for an association of the communities. Taken together these payments are about R\$ 1,100 per family and year. Bolsa Floresta has supported local income generation activities like timber harvesting, tourism, handicraft etc. Logging is allowed if it is according to an approved management plan.

From the above we note that establishing the REDD+ pilot has demanded some changes in institutions – i.e., the rules regarding use of forest resources and forestland, while most of these follow from general state laws and rules for the RDS. There is also a change in the organizational structure as BFP ensures the establishment of a reserve wide association and a strengthening of community organizations. There is no change in the property rights structure. The land is continued to be owned by the state, with land use rights granted to communities.

The establishment of the association seems important for empowering the communities and has also facilitated participation in the development of the content of the BFP and its system of payments. While local management skills have been increasing as an effect of BFP, there is a need to increase the support to local association management. This will enable them to further expand fundraising to complement the Bolsa Floresta program.

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