WWF

REPORT

BR

2015

Amazon | Lessons Learned | Sustainability

The Brazilian Amazon:

challenges facing an effective policy to curb deforestation

Guilherme C. Abdala

Amazon | Lessons Learned | Sustainability

The Brazilian Amazon:

challenges facing an effective policy to curb deforestation

1st EDITION

Brasilia, Brazil

WWF Living Amazon Initiative and WWF Brazil

2015

Living Amazon Initiative – WWF Network

Cláudio Maretti – Leader

André Silva Dias – Strategy Coordinator - Curbing Deforestation and Fostering a Forest Economy

Denise Oliveira — Communication Coordinator

PUBLICATION INFORMATION

André Silva Dias – coordination

Guilherme C. Abdala – consultancy and main author

Gilberto Costa – editing

Denise Oliveira – revision and final version

Technical Contributions

Antonio Matamoros – Coordinator for Environmental Affairs – Amazon Cooperation Treaty Organisation (ACTO)

Cláudio Maretti – Leader of WWF Network's Living Amazon Initiative

Francisco Oliveira – Head of the Ministry of the Environment Department for Deforestation Combat Policies

Marcello Broggio – United Nations Food and Agriculture Organisation (FAO) Representative

Marco Lentini – Amazon Programme Coordinator, WWF Brazil

Mario Barroso – Landscape Ecology Laboratory Coordinator, WWF Brazil

Mauro Armelin – Superintendente de Conservación, WWF Brazil

Mauro Pires – Consultant (by arrangement with the Chico Mendes Institute for Biodiversity Conservation, ICMBio)

Cover Photo
@ Zig Koch/WWF

Maps
WWF Brazil/Landscape Ecology Laboratory

Translation
Martin Charles Nicholl

Electronic Edition
Supernova Design

Cataloging Details

A135b **ABDALA, Guilherme C.** The Brazilian Amazon: challenges facing an effective policy to curb deforestation. Brasília, Living Amazon Initiative,

2015.

68p.; il.; **21cm**.

1. Climate Change 2. Deforestation 3. Legal Amazonia 4. PPCDAm (Action Plan for Deforestation Prevention and Control in the Legal Amazon) 5. Sustainability

I. WWF Living Amazon Initiative II. WWF-Brazil III. Title

CDU 502.3 (811) =690=60

Brasilia (Brazil), January 2015

WWF Brazil

Maria Cecília Wey de Brito – CEO

Mauro Armelin – Conservation Director

Marco Lentini – Amazon Program Coordinator

Renata Soares – Communications, Marketing and Engagement Director

Cristiane Parmigiani – Communications Manager

CONTENTS

LIST OF ACRONYMS

ARPA – Programa Áreas Protegidas da Amazônia (Amazon Protected Areas Programme)

CAR – Cadastro Ambiental Rural (Rural Environmental Registration)

CENAFLOR – Centro Nacional de Apoio ao Manejo Florestal (National Forest Management Support Centre)

CDB – Convenção sobre Diversidade Biológica (Convention on Biological Diversity)

CNIR – Cadastro Nacional de Imóveis Rurais (National Rural Lands Register)

CNJ – Conselho Nacional de Justiça (National Justice Council)

DETER – Sistema de Detecção de Desmatamento em Tempo Real (Real Time Deforestation Detection System)

ECO 92 (or Rio 92) – Conferência das Nações Unidas sobre o Meio Ambiente e o Desenvolvimento (United Nations Conference on Environment and Development)

EMBRAPA – Empresa Brasileira de Pesquisa Agropecuária (Brazilian Agricultural Research Corporation)

FINAM – Fundo de Investimento da Amazônia (Amazon Investment Fund)

FNO – Fundo Constitucional de Financiamento do Norte (Constitutional Financing Fund for the Northern Region)

GGE – Greenhouse Gas Emissions

GPTI – Grupo Permanente de Trabalho Interministerial (Permanent Interministerial Working Group)

IBAMA – Instituto Brasileiro do Meio Ambiente e dos Recursos Naturais Renováveis (Brazilian Institute for the Environment and Renewable Natural Resources)

IBGE – Instituto Brasileiro de Geografia e Estatística (Brazilan Geography and Statistics Institute)

ICMBio – Instituto Chico Mendes de Conservação da Biodiversidade (Chico Mendes Institute for Biodiversity Conservation)

INCRA – Instituto Nacional de Colonização e Reforma Agrária (National Land Settlement and Agrarian Reform Institute)

INPE – Instituto Nacional de Pesquisas Espaciais (National Space Research Institute)

MAPA – Ministério da Agricultura, Pecuária e Abastecimento (Ministry of Agriculture, Livestock and Supply)

MCTI – Ministério da Ciência, Tecnologia e Inovação (Ministry of Science, Technology and Innovation)

MD – Ministério da Defesa (Ministry of Defence)

MDA – Ministério do Desenvolvimento Agrário(Ministry of Agrarian Development)

MDIC – Ministério do Desenvolvimento, Indústria e Comércio Exterior (Ministry of Development, Industry and Foreign Trade)

MF – Ministério da Fazenda (Ministry of Finance)

MI – Ministério da Integração Nacional (Ministry of National Integration)

MJ – Ministério da Justiça (Ministry of Justice)

MMA – Ministério do Meio Ambiente (Ministry of the Environment)

MME – Ministério das Minas e Energia(Ministry of Mines and Energy)

MPOG – Ministério do Planejamento, Orçamento e Gestão (Ministry of Planning, Budget and Administration)

MT – Ministério dos Transportes (Ministry of Transport)

MTE – Ministério do Trabalho e Emprego (Ministry of Labour and Employment)

OEMAS – Órgãos Estaduais de Meio Ambiente (State Government Environment Bodies)

PAC – Programa de Aceleração do Crescimento (Growth Acceleration Programme)

PAS – Plano Amazônia Sustentável (Sustainable Amazon Plan)

PAV – Programa Assentamentos Verdes (Green Settlements Programme)

PIB – Produto Interno Bruto (Gross Domestic Product)

Plano ABC – Plano Agricultura de Baixo Carbono (ABC Plan – Low Carbon Agriculture Plan)

PMV – Programa Municípios Verdes (Green Municipalities Programme)

PNDs – Planos Nacionais de Desenvolvimento (National Development Plans)

PNMC – Plano Nacional de Mudanças Climáticas (National Climate Change Plan)

PNMC – Política Nacional sobre Mudança do Clima (National Climate Change Policy)

PNRA – Plano Nacional de Reforma Agrária (National Agrarian Reform Plan)

PPCDAm – Plano de Ação de Prevenção e Controle do Desmatamento na Amazônia Legal (Action Plan for Deforestation Prevention and Control in the Legal Amazon)

PPG7 – Programa Piloto para a Proteção das Florestas Tropicais do Brasil (Pilot Plan for Brazilian Tropical Forest Protection)

PRODES – Projeto de Monitoramento do Desflorestamento na Amazônia Legal (Legal Amazon Deforestation Monitoring Project)

SUDAM – Superintendência de Desenvolvimento da Amazônia (Amazon Development Administration)

SUDECO – Superintendência de Desenvolvimento do Centro-Oeste (Central-west Development Administration)

TIs – Territórios Indígenas (Indigenous Territories)

UNFCCC – United Nations Framework Convention on Climate Change

UNICAMP – Universidade Estadual de Campinas (State University of Campinas)

FOREWORD

The Amazon supplies us with invaluable environmental services: biodiversity; the essential humidity for rain production and rainfall in central and Southern Brazil as well; climate regulation contribution; minimization of impacts from severe climate events, among others. In order to maintain those and other services provided to society by the Amazon ecosystems, it is vital to fight deforestation and forest degradation.

During the past 10 years, Brazil has been implementing a policy to fight deforestation in the Amazon; this policy made it possible to advance in protecting the largest tropical forest on Earth. The decision to start this memorable effort involved various factors, the highlight being the pressure exerted by society, which was alarmed by the pace of forest destruction. In 2004, a total of 27,772 square kilometers were destroyed, and that was the second top historical deforestation rate.

In 2014, we have achieved an 80% decrease in the deforestation rate compared to 2004. In spite of such a significant decrease, Brazil still appears at the top of the global deforestation ranking, having lost 4,571 square kilometers of forest in 2012, and 5,891 sq. km in 2013. The signs of renewed deforestation in 2014 call for immediate attention to be paid to this issue.

Nevertheless, after this significant decrease, the priority points chosen during the initial efforts to fight Amazon deforestation are no longer in the same level of priority. Presently, new approaches are needed to deal with the Amazon destruction, taking into account the spatial dispersion of deforestation and the increase of the incidence of deforestation in smaller and smaller areas, whether they are individually or collectively owned, larger or smaller properties, tenures or occupation. The multiple causes and triggers -- which include the transport infrastructure, and the energy and mining poles -- require new analysis and a bold approach, in the sense of including and actually prioritizing and implementing the integration with social programs, sustainable economic activities, and the conservation of natural spaces.

Therefore, one decade after the launching of the Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm in the Portuguese acronym), the Living Amazon Initiative and WWF-Brazil caught a glimpse of the relevance of analyzing that period, to determine which factors were crucial to the achieved success and which are the challenges to be faced next.

The above analysis is not meant to overthrow the PPCDAm implementation assessments which have previously been made; it is intended as a contribution to the debate by adding the opinion by experts and those who were directly involved in the process. It is the result of a demand which was identified in the meetings with the governmental representatives from five countries in the Amazon region, that are interested in strengthening the knowledge about the path followed by Brazil in fighting deforestation.

Brazil has the opportunity of promoting a differentiated, sustainable development, inaugurating a new era in which the natural capital of the largest and most important tropical forest in the world will be an integral part of the path towards the social, environmental and economic development of the Amazon region. Promoting a forest-

based economy, where economic activities co-exist with the forest and attribute value to it through innovative investment mechanisms and the payment for ecological services, among others, is essential to maintain the benefits provided by this unique biome.

We hope that the thoughts and recommendations in this document will arouse the interest from actors who can contribute to the continuation and advance of the fight against the deforestation of the Brazilian Amazon, in an improved and more efficient way, and become an incentive for the exchange, in both ways, with the other countries sharing the Amazon biome: Peru, Bolivia, Ecuador, Colombia, Venezuela, Guyana, Suriname and the French Guyana.

Science indicates that the Amazon is interlinked in such a way that whatever happens in one part of the biome affects all others. Therefore, WWF, through the Living Amazon Initiative and the national organizations such as WWF-Brazil, seeks to contribute to develop an integrated vision and articulated actions, which are vital to keep the region and mankind benefitting from the ecological services provided by the Amazon biome.

Enjoy your reading!

Maria Cecília Wey de Brito, WWF-Brazil's CEO
Cláudio Maretti, leader of WWF's Living Amazon Initiative

SPECIAL THANKS

To Guilherme C. Abdala, Agronomist, Ph.D. in Sustainable Development by the University of Brasilia, former director general for the Environmental Zoning and Monitoring of IBAMA (the official Brazilian agency in charge of environmental license and inspection), who was in charge of writing PPCDAm's Monitoring and Control Axial Line for Phase 1. We thank him for his effort in looking at the recent history starred by Brazil.

To the following experts: Antonio Matamoros, from the Amazon Cooperation Treaty Organization – ACTO; Francisco Oliveira, from the Brazilian Ministry of the Environment (MMA); Gustavo Chianca, from the Food and Agriculture Organization United Nations (FAO); and Mauro Pires, from the Brazilian agency in charge of biodiversity conservation - ICMBio, Portuguese acronym for Instituto Chico Mendes de Conservação da Biodiversidade. They have answered the Living Amazon Initiative and WWF-Brazil's call for contributions to this work, reviewing and participating in a workshop to discuss the theme. Their suggestions have certainly enriched this document.

WWF'S AMAZON VISION

An ecologically healthy Amazon biome which is able to maintain its environmental and cultural contribution to local population, to the regional countries, and to the entire world, within a framework of social equity, inclusive economic development and global responsibility.

EXECUTIVE SUMMARY

In 2013 the total area deforested in the Brazilian Amazon was about 76 million hectares which is already 20% of the original standing forest. The speed and volume of devastation call for policies and actions to control deforestation, preserve the environment and stimulate the sustainable use of natural resources.

The Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm) is an example of a successful government initiative in Brazil. Over the period from its launch in 2004 and up to the end of its second stage in 2011, the annual deforestation rate fell by about 77%.

In absolute figures, the area deforested every year went down from 27,772 km² in 2004 to 5,891 km² in 2013, the second lowest rate ever recorded by the National Space Research Institute (Inpe) by means of its Legal Amazon Deforestation Monitoring Project, the Prodes system.

However, that has not been a linear decrease with regular reduction in the deforestation rate, year by year. In 2008, for example, the rate increased and more recent data from the 2013 show a new setback in that highly welcome trajectory of falling rates. According to information released by the National Space Research Institute (Inpe) in September 2014, from August 2012 to July 2013, 5,891 km² of Amazon forest were cleared; an increase of 29% over the immediately preceding period.[1]

Against that background of an interrupted trajectory of falling rates, The WWF's Living Amazon Initiative makes some reflections on the decade of PPCDAm implementation endeavouring to discern successful lessons learned and make recommendations that might germinate new strategies in other contexts, as well as identifying the threats that need to be addressed and overcome to ensure that combating deforestation in the Amazon continues to be a relative success.

In short, the PPCDAm has achieved its overriding objective of reducing the deforestation rate sooner than was expected. Nevertheless it has become apparent that merely reducing deforestation in a given territory does not necessarily mean it is heading towards a context of sustainability.

This reflection on the public policies to combat the devastation of the greatest forest on Earth is conducted in the context of new challenges to environmental management in the form of the strong demands for the production of more hydroelectricity in the Amazon and the integration of the region into the logistics chains of commodities production and circulation.

1 The period of reduction in Amazonian deforestation rates (2004 to 2012) is contemporary with a set of actions unfolded and results obtained in the first two stages (2004 to 2007; 2007 to 2011) of the Action Plan for Deforestation Prevention and Control.

Main Results

The execution of the PPCDAm components was uneven and actions of command, surveillance and inspection prevailed to the detriment of those directed at land use and settlement planning and fostering sustainable production activities. One possible explanation for that situation may be the priority set on emergency measures to curb the deforestation rate.

Right from stage one the plan's global action lines were established as (a) Land use, tenure and settlement planning; (b) Monitoring and Control; (c) Fostering Sustainable Activities.

The first thematic line involves: instruments for spatial planning and management, ecological-economic zoning, land policy and governance, creation and consolidation of protected areas (including indigenous territories) and the implementation of settlements suitable for the Amazonian reality.

The results achieved by the PPCDAm along this line of action are (1) the creation of more than 50 million hectares of Federal and State Protected Areas especially in regions under high pressure from deforestation; (2) the ratification of over 10 million hectares of indigenous territories; (3) the inhibition of more than 60 thousand irregular land titles for rural properties; and (4) the geo-referencing of 25,600 rural landholdings under the aegis of the *Terra Legal* (Legal Land) Programme, among other statistics presented by the Ministry of the Environment in its document released in June 2013[2], reporting on the 3rd stage of the PPCDAm. Those results were obtained by the joint efforts of the PPCDAm and other programmes in course at the same time such as the Amazon Protected Areas Programme (ARPA).

The second thematic line of action, Monitoring and Control, embraces instruments directed at monitoring, deforestation licensing and inspection, and burning and (illegal) logging.

According to official figures this thematic line led to actions that brought in immediate results and had highly positive repercussions for the protection of the Amazon forest, such as (1) 649 inspection operations integrating the efforts of the Army, the Federal Police, the Federal Highway Police and the National Security Force, and (2) the fact that the set of inspection operations resulted in fines for offenders totalling R$7.2 billion (Brazilian reals) and led to the seizure of 864 thousand cubic metres of illegally extracted wood and embargoes placed on 600 thousand hectares of land being used for illegal activities.

Another fact that occurred in the sphere of Monitoring and Control was (3) prison sentences for over 600 people, including some government officials, convicted of crimes against the environment and public order. The surveillance activities implanted under the aegis of the PPCDAm also led to (4) auditing of forest products digital systems in five Brazilian states and (5) the training of 50 Park guards for environmental protection work in Protected Areas.

Articulated with the actions of inspection and repression is the more structuring intelligence work like (6) the creation of the "Deter" system for detecting

2 Information obtained at 4:57 pm on May 4, 2014 from the following internet address: Http://www.fundoamazonia.gov.br/FundoAmazonia/export/sites/default/site_pt/Galerias/Arquivos/Publicacoes/PPCDAm_3a_fase.pdf

deforestation practically in real time, which provides information on possible deforestation locations; and (7) the upgrading of the Prodes system.

In institutional terms the merit of the PPCDAm lies in: (8) the setting up and operation of a central coordinating body for the actions investigating environmental illegalities; and (9) the implementation of the Interministerial Committee for Combating Environmental Crimes and Offences.

Along the same line, another outstanding result was (10) the Central Bank's Resolution no 3.545/2008 determining the presentation of "documents of proof of environmental regularity and other provisos for the purposes of obtaining financing for any agricultural or livestock raising activities in the Amazon biome". In practice, that measure blocked access to public credit for any ventures involving illegal deforestation.

The third thematic line of action of the PPCDAm was that of Fostering Sustainable Production activities. According to Guilherme Abdala it was responsible for: organizing the aspects of credit, incentives for and certification of sustainable production; valuing the standing forest including its ecosystem services and the products of social-biodiversity; rural technical assistance and extension services, and scientific and technological research.

Again according to official figures of the Brazilian government, activities under the heading Fostering Sustainable Production included (1) the concession of 49 thousand hectares of public forests for forest management purposes; (2) the issuing, by states, of 533 environmental licenses for settlement projects under the aegis of the agricultural reform; (3) support for 13.8 thousand families in land management projects aimed at recuperating permanent protection areas; and (4) subsidies to the value of R$5.1 million (Brazilian reals) to maintain a guaranteed minimum price for natural rubber, Brazil nuts, Babassu and Piassava fibre.

Along this same thematic line, the PPCDAm also: (5) conducted the Arco Verde (Green Arc) operation designed to regularize the environmental legality of rural properties; (6) created the Sustainable Forest District along the BR 163 Federal Highway; and (7) achieved the enactment of the Public Forest Management Law (no 3.545/2008), the implementation of the Brazilian Forest Service and various other measures.

Programme Performance Analysis

Assessments of the Programme made by the Economic Commission for Latin America and the Caribbean (CEPAL) and the Applied Economics Research Institute (IPEA) corroborate Guilherme Abdala's findings to the effect that the performance in regard to the Command and Control axis of the Programme was indeed the most satisfactory.

There is considerable disparity in the degrees of success achieved by the three axes that the PPCDAm was structured along and it is reflected not only in the execution of their actions but also in their effectiveness. (...) The effectiveness of the inspection actions generated a greater demand from the rural producers and civil society at large for actions that would guarantee sustainable production and land management. In that sense the second axis is fulfilling its intended role and altering part of the local incentives structure to achieve alignment with PPCDAm goals[3].

3 Taken from the study released in December, 2011 "Avaliação do PPCDAm 2007-2010" (Assessment of the PPCDAm , 2007-2010) on May 3, 2014. See: http://www.cepal.org/dmaah/publicaciones/sinsigla/xml/7/45887/IPEA_GIZ_Cepal_2011_Avaliacao_PPCDAm_2007-2011_web.pdf

It is in no way desirable that emergency measures of command and control should prevail over more structuring actions such as land use and settlement regulation and stimulus for sustainable activities. Nevertheless, the results obtained by the PPCDAm were highly useful for the elaboration of the National Policy on Climate Change and for determining Brazil's stance at 15th Conference of the Parties (COP 15) to the United Nations Framework Convention on Climate Change (UNFCCC), held in Copenhagen in 2009.

Historically, the inventories of greenhouse gas emissions (GGE) in Brazil have shown a preponderant participation of emissions resulting from changes in land use and that includes deforestation. In 2005, 57% of Brazil's total emissions came from that source. The panorama has changed considerably and today emissions from changes in land use patterns are only responsible for 22% of total Brazilian emission and the PPCDAm is widely recognised as being responsible for that.

The reason for the good performance in this aspect and others in the PPCDAm lies in the centrality of the plan in the government sphere and the government's effective articulation of a dozen different bodies in various ministries united in a permanent working group.

However, despite the good results and the institutional progress that has been made, there is no guarantee that the downward trajectory of deforestation rate will be resumed or that the Amazon Forest will be definitively preserved by means of sustainable economic activities some of which have already been tested by the PPCDAm.

Quite the contrary, the PPCDAm's objectives are vulnerable to contradictory movements unleashed by antagonistic forces within the government sphere itself and by a parliamentary group endeavouring to make the terms of the Forest Law more flexible, to modify and diminish protected areas and indigenous territories, to alter the mining legislation and, furthermore, to stimulate the implantation of huge infrastructure projects in the Amazon such as the construction of hydroelectric dams in areas outside the arc of deforestation, as is the case with the Tapajos River basin, and other projects foreseen in the terms of the government's Growth Acceleration Plan (PAC).

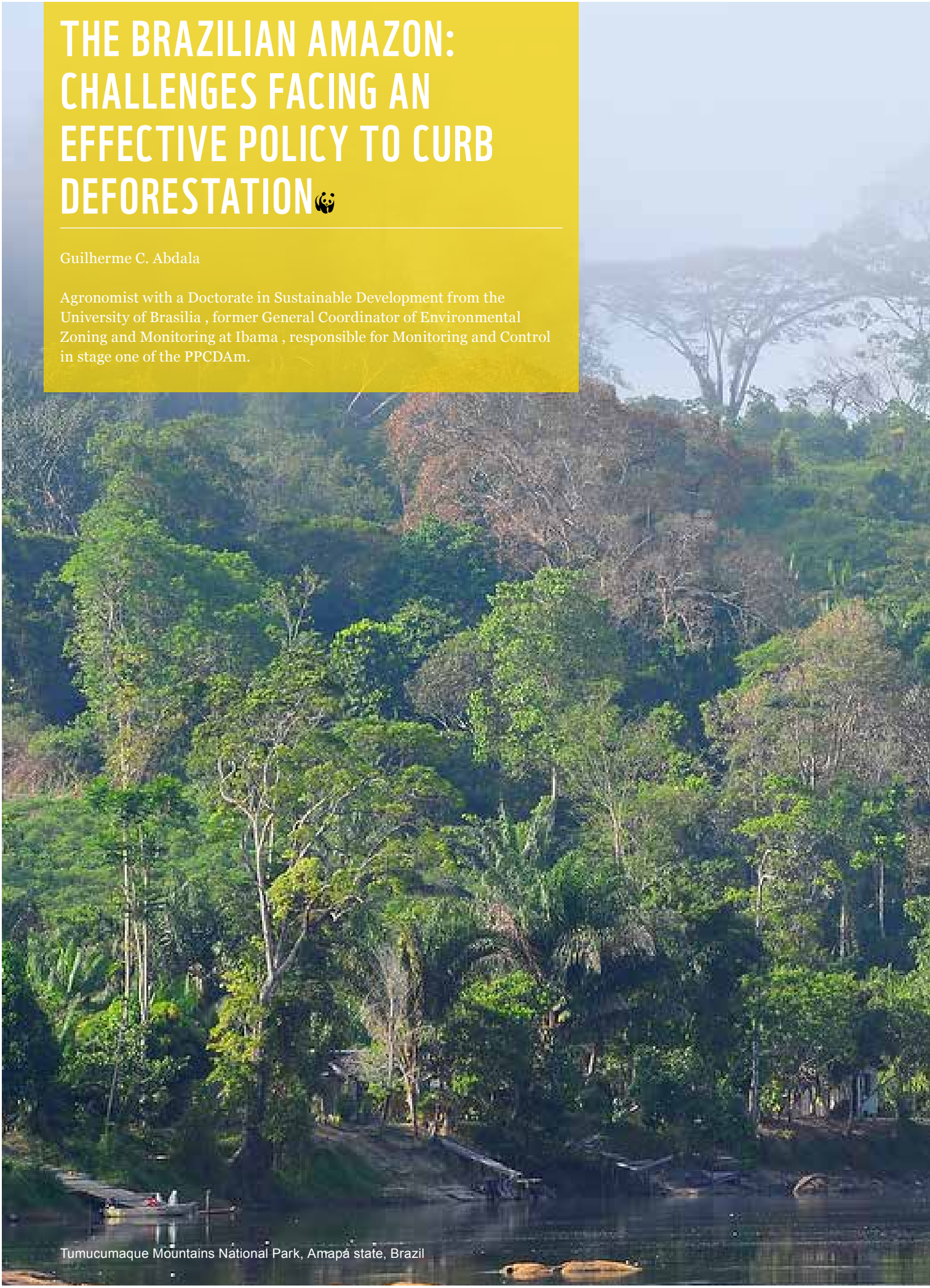
The change of scenario in regard to environmental issues that took place with the passage from the government of Luiz Inácio Lula da Silva (2003-2010) to that of Dilma Rousseff (2011-2014) and the presidential elections in Brazil in 2014 are aspects, among others, that must be taken into account when analysing the possibility of ensuring continuity of the PPCDAm.

Transposing some of the lessons learned in designing and implementing the PPCDAm to other Amazonian countries could be a good strategy for curbing deforestation in the biome as a whole. A possible collaborative agenda shared by those countries should take each one's national actions into account as well as the peculiarities of each territory and proceed to identify and exchange lessons learned in a dialogue established with regional agencies. The analysis set out in the present document is a contribution to a reflection in that light which is just as necessary as adopting a vision of sustainable development for the region that takes into account the crucial need to maintain the biome's ecological equilibrium and the ecosystem services it provides to the regional populations and to the planet at large.

THE BRAZILIAN AMAZON: CHALLENGES FACING AN EFFECTIVE POLICY TO CURB DEFORESTATION

Guilherme C. Abdala

Agronomist with a Doctorate in Sustainable Development from the University of Brasilia , former General Coordinator of Environmental Zoning and Monitoring at Ibama , responsible for Monitoring and Control in stage one of the PPCDAm.



Tumucumaque Mountains National Park, Amapá state, Brazil

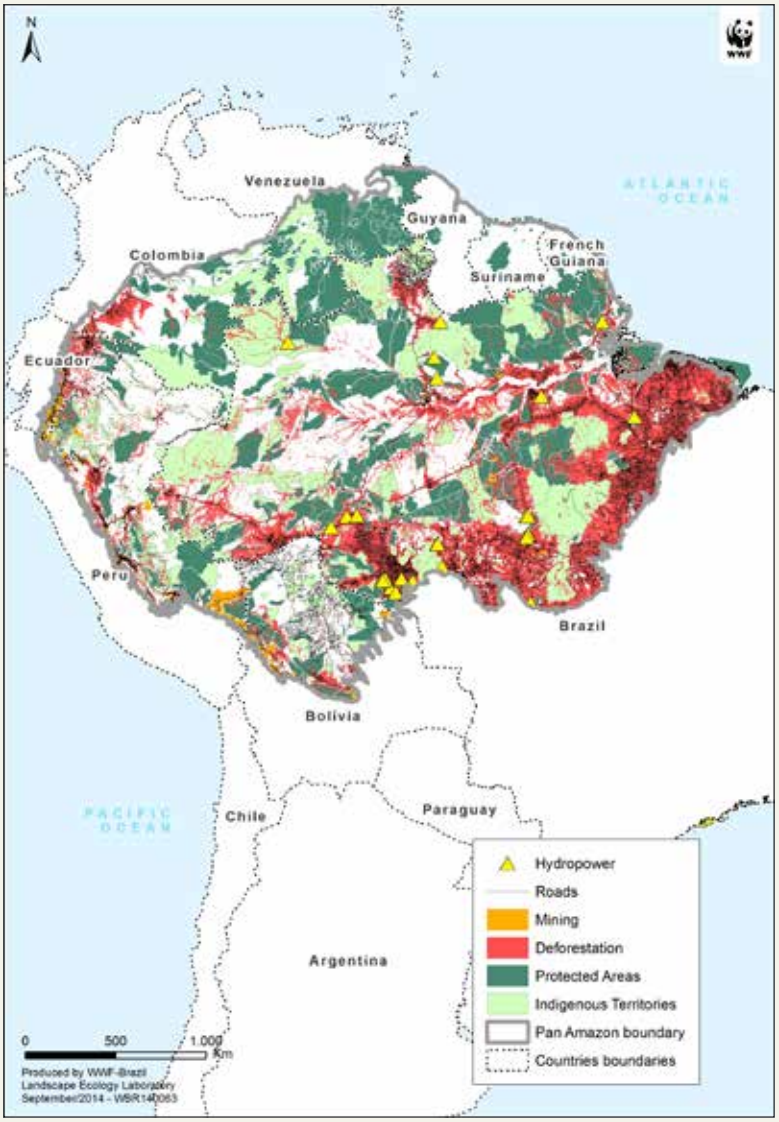
© LUCIANO CANDISANI / WWF

INTRODUCTION

Preserving the Amazon Forest is at the heart of the global ecological debate but not all the agendas are in alignment. International public opinion and political decision making in favour of environmental issues tend to oscillate, especially at times when production frontiers are in expansion, accompanying the cycles of economic growth or economic crisis.

THE GREATEST EXPANSE OF TROPICAL FOREST AND GREATEST RIVER SYSTEM ON THE PLANET ARE BOTH IN THE AMAZON BIOME. ITS 6.7 MILLION KM2 AREA EXTENDS INTO PARTS OF EIGHT COUNTRIES AND ONE OVERSEAS TERRITORY: BRAZIL, PERU, BOLIVIA, ECUADOR, COLOMBIA, VENEZUELA, GUYANA, SURINAME AND FRENCH GUIANA.

Figure 1: Soil occupation and use of natural resources in Pan-Amazon[4]



4 HIS-ARA (Hydrological Information System & Amazon River Assessment) is a project which was carried out in 2006-2008, integrating hydrological and ecological information on the Pan-Amazonian region, in order to identify priority areas for biodiversity conservation. The studies used the data from various institutions in the involved countries, such as: from Brazil: the Brazilian Ministry of Environment - MMA (protected areas), the official agency for the protection of indigenous population – FUNAI (indigenous territories), the official agency for spatial research – INPE (deforestation), the official agency for mineral production - DNPM (mining), the official agency for geography and statistics – IBGE, and the official Amazon protection system - SIPAM (basic mapping); in Colombia: the official institute for geology and mining INGEOMINAS (mining), MERIS (deforestation), IGAC (basic mapping); in Peru: MERIS (deforestation), Minister of Transports and IIRSA (highways).

While it is true that concern for the environment has become a social value incorporated to the collective imagery of several countries, nevertheless, the view that environmental considerations are largely peripheral is widely diffused and they are even seen to be factors obstructing progress that need to be refuted. That background is made worse by the low levels of institutionalization of the various preservationist and conservationist policies and the general instability of environmental governance.

In the early years of the 21st century when the world was experiencing a wave of growth and optimism, the Brazilian government, under pressure from the alarming rates of deforestation in the Amazon[5], took the initiative of engaging in an integrated planning effort involving different areas of the public sector and different administrative spheres, with the aim of implementing a new model of development founded on sustainable bases.

The main fruit of those integrated planning efforts has been the 2008 Sustainable Amazon Plan (PAS) which resulted from the signing of a term of cooperation drawn up between the President of the Republic and the nine governors of the Amazonian states and submitted to consultation with various sectors of society. It took five years to formulate the PAS but when it was ready it represented a new consensual theoretical framework, a differentiated paradigm for the settlement, sustainability and preservation of the Amazonian territory.

The PPCDAm was launched in 2004, four years before the appearance of the Sustainable Amazon Plan and in the course of time it came to perform as the operational arm of the PAS. Today the PPCDAm is in its third stage and is widely considered to be a successful plan because its implementation has been accompanied by a huge reduction in deforestation rates which hitherto had been on the increase.

PRODES Project: satellite monitoring of the Brazilian Amazon Forest

PRODES (INPE's project to monitor the Brazilian Amazon Forest through satellite images) monitors deforestation through satellite images of the clear cut deforestation in the Brazilian Amazon; since 1988, Prodes calculates the yearly deforestation rates for the Brazilian Amazon region, which are used by the Brazilian government for designing public policy. The annual rates are estimated based on the deforestation increases identified in each satellite image covering the Brazilian administrative region known as Legal Amazon.

The preliminary data presentation takes place in December every year. The consolidated data is presented during the first semester of the following year (source: INPE/PRODES). INPE is the Brazilian acronym for Instituto Nacional de Pesquisas Espaciais (National Institute for Spatial Research).

5 The Legal Amazon is an area that corresponds to 59% of Brazil's land surface and it entirely embraces eight Brazilian states (Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima e Tocantins) and part of the state of Maranhão (west of longitude 44ºW) It has a total area of 5.0 million km². The Legal Amazon concept was instituted in 1953 and its territorial limits were determined in view of the need to plan the region's economic development. The limits of the Legal Amazon have been altered several times as a result of changes in the country's political divisions Source: http://www.ipea.gov.br/desafi os/index.php?option=com_content&id=2154:catid=28&Itemid=23

Figure 2: Deforestation rates for the Brazilian Amazon (1988-2013).
Source: INPE-PRODES

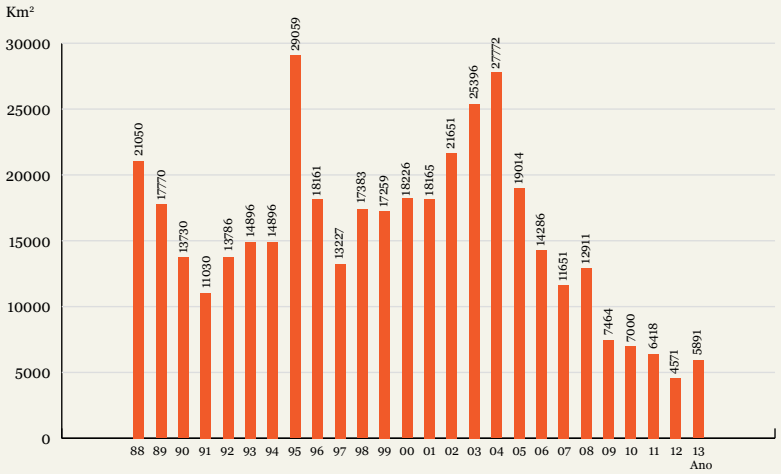
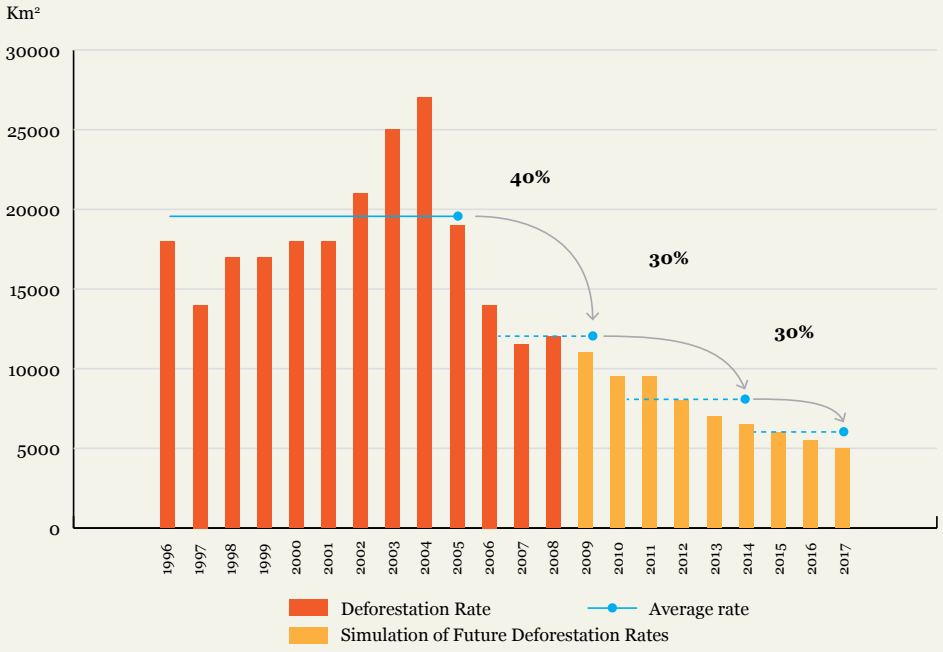


Figure 3: Deforestation reduction targets propose by the Brazilian government.
Source: PNMC



Firmly based on an unprecedented articulation of the actions of various different government bodies, from the outset the PPCDAm, in addition to its innate creativity, was able to count on the daring and sense of opportunity of public agents imbued with a strong determination to overcome any institutional, social or political hindrances.

In spite of its success, widely recognized in and beyond Brazil, capacity to sustain those results in the future is the object of concern. Even its functionality as the builder of a desirable paradigm for the PAS is also being questioned. Those doubts reappeared with the renewed increase in deforestation recently verified by the official monitoring system.

This text presents a succinct analysis of the construction and implementation of the PPCDAm and seeks to underscore aspects of how it was originally thought up, the challenges it managed to overcome and the lessons learned from it. The analysis is intended to contribute towards a reflection on the policies, strategies and techniques used by Brazil and to provide information to other Amazonian countries directed at stimulating a reduction in deforestation and environmental risks as well as encouraging practices that favour forest preservation, sustainable economic activities, the integrity of the ecosystems and the quality of life of local populations.

Rainstorm in the Tapajós River, Pará state, Brazil.

PPCDAm THE BIRTH OF POLITICAL WILL

By the end of the 1990s, the emergent idea of taking care of the Earth, ushered in by "Silent Spring", "The Gaia Hypothesis" and the Club of Rome, had become an almost universal perception of the need to devote attention to special regions of the planet like the Amazon. The environmental and ecological sciences structured on systemic approaches were destined to conceive the fundamental motivations regarding the need for special treatment to be meted to the biggest tropical forest on the planet.

Silent Spring

American biologist Rachel Carson's book was published in 1962. Its overriding merit was to take environmental issues out of the restricted niche of the scientists and broaden the discussion on the use of chemical products and environmental contamination.

The Gaia Hypothesis

Originally proposed by British researcher James E. Lovelock in 1972 as the hypothesis of the Earth's response, it was renamed at the suggestion of his colleague William Golding as the Gaia Hypothesis; a reference to the Greek goddess of the Earth – Gaia. The hypothesis is frequently described as postulating that the Earth itself is a single living organism.

The Club of Rome

The Club of Rome is a group of renowned individuals who come together to discuss a vast range of topics in the fields of politics, international economics, and above all, the environment and sustainable development. Founded in 1968 by Italian industrialist Aurelio Peccei and Scottish scientist Alexander King, it became widely known after 1972 when it published a report entitled "The Limits to Growth".

At the same time as such concepts and initiatives were emerging and taking place, Brazil was beginning to unfold economic megaprojects and launch public infrastructure, settlement and fiscal incentive policies that eventually proved to be not merely controversial, but often disastrous.

In reaction to those projects, which were largely unleashed during the period of military dictatorship[6], social movements expanded and converged in the region, fighting for the rights of the peoples of the forest. Their most expressive moment was to take place much later in 1988, in the state of Acre, with the murder of the rubber tappers' leader Chico Mendes; an event that had international repercussions.

6 In 1966 President Castelo Branco formulated the historic expression "integrate so as not to hand over" aligning the national militarist discourse to assuage fears and rumours of internationalization of the region. The phrase became an ideological keystone of the military government's (1964-1985) national security policy which materialised in the form of huge projects in the Legal Amazon such as the Trans-Amazon Highway (Brazil's third longest highway, 4,223 km long linking Cabedelo in the state of Paraíba to Lábrea in the state of Amazonas and cutting across seven Brazilian states; the hydroelectric dams of Balbina and Tucuruí; the land settlement programmes like the Polonoroeste (Integrated Programme for the Development of the Brazilian Northwest) which was executed during the 1980s with Brazilian government and World Bank funding under the coordination of the Bureau for the Development of the Central-west region - Sudeco.

In 1992, during the United Nations Conference on the Environment and Development, the ECO 92, a more robust vision of the environment emerged and academics and public opinion alike became more favourable towards an international policy agenda for the sustainable development of the Amazon.

The fight to curb the deforestation of tropical forests appeared as a top priority on the Agenda 21[7] document, the main result of the ECO 92 conference, internationally known as the Rio 92.

That same document also highlights the question of international cooperation to accelerate the sustainable development of the developing countries. The evident convergence of arguments, justifications and interests at the ECO 92 resulted in the launching of a Pilot Programme for the Protection of Tropical Forests in Brazil, the PPG7, and the first executive projects under its aegis were begun in Brazil in 1995 (See Box 1).

© ZIG KOCH / WWF LAI

Truck for animal transportation, on the MT-208 highway, in Mato Grosso state, Brazil.

7 According to the Brazilian Ministry of the Environment "The Agenda 21 can be defined as a planning instrument for the construction of sustainable societies on different geographic foundations that conciliates methods directed at obtaining environmental protection, social justice and economic efficiency. The Brazilian Agenda 21 is a participative planning instrument for the sustainable development of the country and the result of a widespread consultation of the Brazilian population. It was coordinated by the Commission for Sustainable Development and Agenda 21 Policies (CPDS), constructed in alignment with the Agenda 21 guidelines and finally delivered to society in 2002". Extracted from: http://www.mma.gov.br/responsabilidade-socioambiental/agenda-21, on May 17, 2014 (11:11 am).

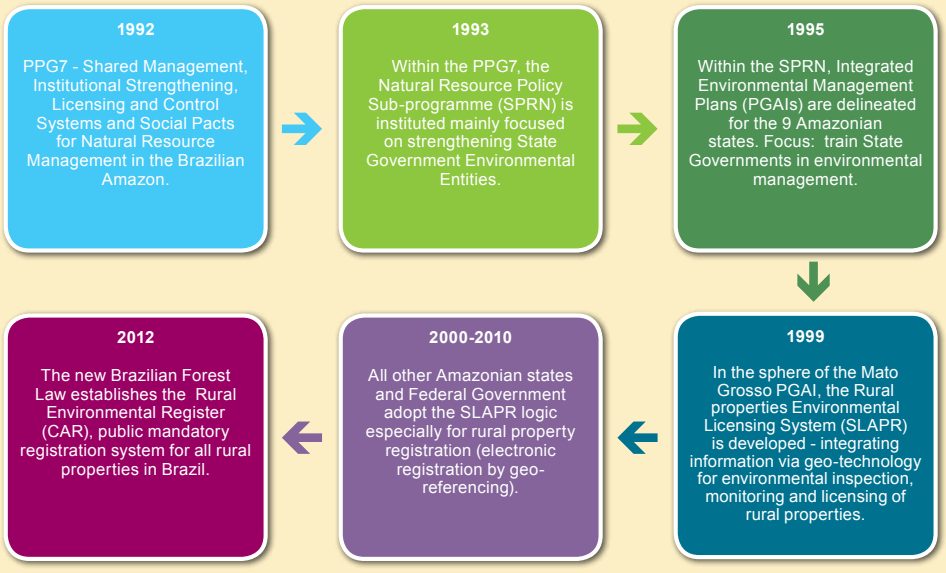
Box 1 -Pilot Programme to Conserve the Brazilian Rainforest (PPG7)

The PPG7 came into being imbued with that spirit of innovation and experiment typical of Pilot Projects. The initiative lasted for 17 years, only finalizing in 2009 and it received funding to the order of US$ 460 million invested in a variety of projects, mainly related to four strategic areas: support for sustainable production and natural resource management; the creation and expansion of protected areas including the demarcation of indigenous territories; strengthening state government environmental entities with an emphasis on decentralization of environmental and land use management; and scientific and technological research and diffusion.

In spite of the wide outreach of its components, the tangible results achieved and the valuable lessons learned as to what can or should be done and what cannot or should not, which later served as valuable orientation for many other programmes, the pilot programme was strongly criticised for addressing the issues in a fragmented manner, for the sluggishness in making funding available and generally for developing projects in a pulverized manner spread out over a territory with continental dimensions. The greatest injustice that it was inflicted on the PPG7, however, was based on a totally mistaken perception that one of its attributions was conserving natural resources in the Brazilian Amazon. That came about mainly because in 2004, when the Programme completed 10 years of its existence, Brazil and the world at large witnessed the second highest peak in deforestation rates in the history of the Amazon biome: 27 thousand km² were destroyed in a single year – an area almost as big as Belgium.

What was in evidence at that moment was in fact yet another example of the eminent paradox between the Brazilian government's development policies and its conservation policies, and that paradox, with some slight nuances of difference, persists up to today as will be discussed in more detail later.

Figure 4: Example of the legacy of the PPG7 for environmental management in the Amazon and Brazil at large: the origins of the Rural Environmental Registration
(based on, 2013)



INTEGRATION: TWO CONNOTATIONS

As stated above, the spiralling deforestation rates observed in the Legal Amazon right after the turn of the century led to demands for explanations from the Brazilian government and Brazilian society and, more importantly, clear responses designed to control them. For some time prior to that experts had been warning that authoritarian settlement, infrastructure, incentive and development plans in the Amazon were strong contributing factors, driving deforestation in the region[8].

Right from the time of the military governments' National Development Plans (PNDs) through the *Avança Brasil* (Move Forward Brazil) Programme in Fernando Henrique Cardoso Government up to the Growth Acceleration Programme (PAC) of the governments of Luiz Inacio Lula da Silva and Dilma Rousseff, and in spite of all the pro-sustainability institutional and technological progress, the geo-political tendency has always been to occupy the region as a means to integrating it to Brazil's more developed southern and central regions.

It is interesting to note that in the course of half a century of successive governments with quite different characteristics, the same idea has persisted of integrating the region, in the sense of taking it out of what is considered to be a socially and economically backward situation in which the forest is nothing more than an obstacle that needs to be overcome.

A closer look reveals that the slogans used to justify geopolitical strategies for the occupation and integration of the region have hardly changed at all and continue to revolve around: appropriating natural resources to the benefit of the dynamics of the country's macroeconomics; installing infrastructure; offering social improvements and development (and here the argument of reducing social inequality is constantly called into play) and putting an end to the chronic absence of the State in the region.

Obviously the social-political and economic contexts in the different hierarchical spheres have been transformed considerably in the course of fifty years. At each new turn in macroeconomic policy, the slogans receive discursive additions that reflect the times.

The latest version of the integration idea is the government's stance whereby the use of the Amazon's resources (generating hydroelectricity, mining and agribusiness, for example) is indispensible for Brazil's economic growth but that affirmation is voiced against a background notorious for the illegal exploitation of the land, great social and economic inequality, violence in the rural areas, glaring absence of the installations and services of the state, and ongoing modification of the environmental legislation and failure to comply with it (see Box 2).

The main observable evolution in the discourse is the introduction of the argument of sustainability which is supposedly now the condition for development. This new aspect of sustainability introduces, albeit timidly, a highly important understanding which the people of the forest have known all along but which only now has been recognised by conventional science, namely, that the forest does not, or should not represent an obstacle to development.

8 Some examples are: MARGULIS (2003); NEPSTAD et al. (2000) e WALKER & HOMMA (1996).

What needs to be called into question is the development model. Thus from being entirely absent from the discourse of the military governments to being an actual protagonist in that of the Lula government, it is the dimension of sustainability that is the basis for the criticism of contradictory or paradoxical policies of the very governments that advocate it.

In 2003, against the background of overwhelming reports of soaring deforestation rates, the federal government appointed Marina Silva as Minister of the Environment to represent the attention and consideration with which it proposed to address environmental issues and to spotlight the Amazon as a special territory. That brought to the forefront discussion of questions such as: whose responsibility is the deforestation problem? Is it the Ministry of the Environment's? Or would it be the Ministry of the Environment that needs to come up with proposals to solve the problem?

THE STANDING FOREST IS NOT AN OBSTACLE TO DEVELOPMENT.

The answer was not long in coming and it came directly in the form of a presidential decree constituting the Permanent Inter-ministerial Working Group (GPTI) charged with the task of proposing and coordinating actions designed to bring down deforestation rates in the Amazon. The GPTI was created in 2003 and as early as 2004 it launched the Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm), organizing the discussion of strategies and actions around four main lines of action: 1 – Land use and settlement planning; 2 – Environmental Monitoring and Control; 3 – Fostering Sustainable Production Activities and; 4 – Environmentally Sustainable Infrastructure.

The first bodies indicated to be represented in the permanent working group that was to be coordinated by the Civil Office of the Presidency of the Republic were:

- The Ministry of Agriculture, Livestock and Supply (MAPA),
- The Ministry of Science, Technology and Innovation (MCTI),
- The Ministry of Defence (MD),
- The Ministry of Agrarian Development (MDA),
- The Ministry of do Development, Industry and Foreign Trade (MDIC),
- The Ministry of National Integration (MI),
- The Ministry of Justice (MJ),
- The Ministry of the Environment (MMA),
- The Ministry of Mines and Energy (MME),
- The Ministry of Transport (MT), and
- The Ministry of Labour and Employment (MTE)[9].

With that measure, the upper echelons of the federal government at the time showed that they understood, or at least appeared to understand the need to align and harmonize government development and conservationist policies. At that moment the word integration received an additional connotation in the sphere of administering the Amazon territory, and it became an irrefutable necessity that the policies of the various ministries were obliged to incorporate. That does not mean the understanding came naturally or that it was smoothly assimilated by the operational spheres of government, or by various other segments of society.

9 Complementary decrees subsequently incorporated other Ministries as the GPTI expanded its work among which: The Ministry of Planning, Budget and Administration, The Ministry Fisheries and Aquiculture and the Ministry of Finance.

Box 2 – The energy issue

The need to produce more energy and maintain hydropower as the main source of electricity in the Brazilian energy matrix has brought back the construction of dams and their huge reservoirs in the forest and they are now at the heart of forest devastation in the Amazon.

The expansion of the hydroelectricity generation frontiers into the heart of the Amazon is a tremendous threat to environmental protection, including areas in the so-called deforestation crescent, but also in areas previously inviolate and up until recently protected by law or under the aegis of traditional populations.

The social and environmental risks associated to the hydroelectric projects have their origins in the directives of certain sectors of the government that are oblivious of the legislation of the conservation system and of the legal framework regulating environmental licensing.

It is worth noting that, paradoxically, it is the government's responsibility to analyse the hydroelectric projects, establish mitigation actions for the works, inspect the formation of the dam reservoir and the installation of transmission lines and eventually to penalise the executors of the work for any transgressions. In many cases the State itself is the principal partner of the venture and accordingly the party most anxious to see the works progress rapidly.

That has led to the abandonment of protective measures for conservation areas and indigenous territories and the resurgence of an atmosphere of hostile confrontation between those executing the venture and those affected by it, and there have even been reports of incidents of institutionalised violence.

In September 2014, the federal government altered the Ten-year Plan for Energy Expansion and excluded the proposal to construct dams at the site of the São Simão and Salto Augusto falls inside the limits of the Juruena National Park on the borders of the states of Amazonas and Mato Grosso, thereby guaranteeing the integrity of the park for at least the next ten years. However, it justified the decision on the basis of "the recently verified long periods required for the process of environmental licensing" and not on any consideration for social or environmental safeguards.

Building works of the dam on the Teles Pires River, in the Juruena River Basin, in Mato Grosso state, Brazil.

ECONOMIC POWER AND SYMBOLIC POLICIES

Considering the influence that economic power unquestionably has on prioritization processes of sector-orientated policies in Brazil and that such hegemonic power has not identified the standing forest as a condition for its reproduction and expansion, it is easy to imagine some kind of correlation between the growth in the Gross Domestic Product (GDP) and the increases in deforestation rates[10] (See Box 3).

The wood and protein markets (meat and grains for example) as well as the land market all tend to aggravate deforestation. Arguments based on economic rationality and on the appeal of the social functions of certain ventures have prevailed in the federal, state and municipal spheres of government decision-making[11]. In the light of the avowed intent to promote development and growth, fiscal incentives, credit concession and settlement policies as well as logistics and infrastructure support policies are all directed at favouring them.

As a result, feedback processes or situations of bi-directional causality[12] are created. As examples: more credit available for agriculture leads to more deforestation and vice versa, more deforestation, more credit for agriculture; or again, the greater the value of land the higher the rate of deforestation and the more the land is deforested the greater its value becomes; and yet again, the more infrastructure implanted the greater the deforestation and the more deforestation there is, the greater the demand for infrastructure.

The government's contradictory position is explicit: it carries out expenditure in a certain region that leads to deforestation and then embarks on new expenditure to mitigate the effects of deforestation. Furthermore the processes involved are not in alignment with the premises of sustainability and equilibrium. The peaks obtained in the GDP growth are not necessarily persistent. They are peaks associated to transformations in vegetation cover that it may not be possible to recuperate. The "boom to bust"[13] phenomenon experienced by dozens of Amazonian municipalities is a glaring example of this question. Another example is the thousands of hectares of abandoned land, degraded pastures and depleted bodies of water.

10 VARGAS, J.I.. Modelagem matemática simples do desmatamento na Amazônia. In: **Economia & Energia**, nº. 86; 2012. Disponível em: http://ecen.com/eee86/eee86p/desmatamento_amazonia.htm (acesso: dez/2013).

11 BURSZTYN, M.A. et al. Aspectos legais e institucionais da gestão ambiental na Amazônia [Legal and institutional aspects of the Amazon environmental management]. In: Sayago, D., Tourrand, J.F.&Burstyn, M. (org.). Amazônia Cenas e Cenário. Editora UnB, Brasília, 2004; p.263-294.

12 DINIZ et alli, Causas do desmatamento da Amazônia: uma aplicação do teste de causalidade de Granger acerca das principais fontes de desmatamento nos municípios da Amazônia Legal brasileira [Amazon deforestation causes: Granger causality test application regarding the main deforestation sources in the Brazilian Amazon municipal counties]. Nova Economia (New Economy), 19 (1):121-151, Belo Horizonte, 2009.

13 The expression "boom to bust" was used in a study conducted by the Man and the Environment in the Amazon Institute (Imazon) and the World Bank to describe the encroachment on the Amazon that took place at the end of the 20th century strongly marked by the intense degradation of natural resources and unsustainable economic cycles accompanied by an ephemeral increase in income and employment (boom) which precedes social collapse (with violence erupting in rural areas) economic decadence, (drops in income and employment levels) and environmental losses (devastation of resources like wood). In this regard see: SCHNEIDER, R. (et alli). "Sustainable Amazon: limitations and opportunities for rural development" In **World Bank Technical Paper nº 415**. Environment Series. Washington DC: World Bank, 2000; e CELENTANO, D. e VERÍSSIMO, A. "O avanço da fronteira na Amazônia: do boom ao colapso. In: IMAZON, Belém (PA), série **O Estado da Amazônia - Indicadores , 2007** – retirado fr: file:///C:/Users/DELL-T4300-W7/Downloads/o-avanco-da-fronteira-na-amazonia-do-boom-ao.pdf, em 14.05.2014 (10h30).

Box 3 – Deforestation and economic growth

It is important to state that there is no consensus as to the existence of a direct relation between GDP growth and deforestation of the Amazon. The Brazilian government insists that the main evidence of the PPCDAm's success was the fact that it achieved reductions in deforestation rates during periods of economic growth, and it points to the quarterly statistics des-aggregated by large sectors of activity such as "agriculture and livestock".

A more detailed accompaniment, examining the data on economic activities that tend to have an impact on the forest at municipal level and cross-referencing it with the data on local deforestation may provide elements showing that relation of economic performance to devastation is actually far more complex.

The study entitled "Deforestation and Economic Growth in Brazil: an analysis of the environmental Kuznets curve for the Legal Amazon", published in 2011 (using data for the years 2001 to 2006)) found that the graphic representation of the curve takes the form of an inverted "N". That means that deforestation goes down at low per capita GDP levels but when the GDP grows above a certain threshold it increases, only to decrease again at much higher levels" (OLIVEIRA, 2011: 734).

That same analysis found that "for a given municipality, soybean crop farming and cattle farming in the neighbouring municipalities led to an increase in deforestation for it too, whereas when the activities in the neighbouring municipalities were sugarcane growing and the extraction of non wood forest products they contributed towards a reduction in its deforestation" (IDEM).

In addition to economic activities, the study indicates that institutional performance and environmental education can contribute towards reducing devastation. "Increased productivity of the already deforested areas, institutional strengthening directed at protecting the forest and achieving greater environmental awareness through education and access to information are factors that can lead to the desired effect of a reduction in deforestation. Public policies addressing these issues are capable of reducing the height and the convexity of the relationship [curve] accelerating the process of reducing deforestation" (IDEM)[14].

Deforestation in Rondonia state, Brazil.

14 To find out more see IBGE "In 2013, the GDP grows by 2.3% reaching a total of R$ 4.84 trillion" taken from: http://saladeimprensa.ibge.gov.br/noticias?view=noticia&id=1&idnoticia=2591&busca=1&t=2013-pib-cresce-2-3-totaliza-r-4-84-trilhoes em 14.05.2014 (9h51); and OLIVEIRA, Rejane (et alli). "Desmatamento e Crescimento Econômico no Brasil: uma análise da Curva de Kuznets Ambiental para a Amazônia Legal" In: RESR, Piracicaba (SP), vol. 49, nº 03, p. 709-740, Jul/Sept. 2011, taken from http://www.scielo.br/pdf/resr/v49n3/a08v49n3.pdf, on May 14, 2014 (9:49 am)

CONFLICTS OF VESTED INTERESTS

In addition to all the economic contradictions there are the political and institutional inconsistencies in environmental governance itself. The Permanent Inter-ministerial Working Group addressing Amazonian deforestation came into being to take action in the midst of a whirlpool of vested interests of the most diverse social actors. In addition to its inherently dynamic nature and plurality,[15] especially its notable biological diversity associated to cultural and social plurality,[16] the Amazon is viewed from many different perspectives that represent very different types of approaches and attitudes. Thus Amazonian "reality" is actually a "mosaic of realities" extending across the diversity of political visions.

In simple terms, two opposing currents persist in the Amazonian political scenario which Bertha Becker[17] calls exogenous and endogenous currents. The exogenous current is the environmentally conflictive "developmental" current historically driven by the great political-economic interests that perceive the Amazon to be merely a source of natural resources. That current involves Brazilian and foreign private sector actors who seek to appropriate as much as possible of the natural resources to themselves in the shortest possible time. It is also represented by parts of foreign governments and the Brazilian federal government, like the military governments of the 1960s and 70s that sought to occupy the Amazon region by means of grandiose development programmes. It is a current essentially elitist in its posture and the interests it represents.

THE AMAZONIAN "REALITY" IS COMPOSED OF A "MOSAIC OF REALITIES".

The endogenous current, on the other hand, would be represented by various local institutions engaged in the quest for a form of local development that would be self-sustaining, environmentally appropriate and based on the historical and current cultural possibilities of the forest that involve extraction of non wood forest products, aggregating value to those products with appropriate technology, and ethically regulated bio-prospecting which foresees the sharing of any eventual benefits. This latter current, in a similar way to eco-development, finds its allies among the national and international pro-environment institutions and some government bodies and agencies (part of the federal government and of foreign governments). This current tends to express more plural interests.

In the light of such polarization of the currents and the explicit disadvantage of the eco-developmental one in terms of the credibility and priority it enjoys and the support it receives from the public authorities, the question arises as to whether the creation of the GPTI to curb deforestation in the Amazon, is not falling into "the trap of symbolism". Does the government really intend to implement the GPTI's decisions? Or was the GPTI created to allow politicians to offer the internal and external publics satisfactions that are merely symbolic? In fact, when analysing the evaluations made of the environmental policies proposed for the Amazon, as early as

15 A good portrayal of the mosaic of actors and the Amazonian dynamics can be found in PASQUIS, R. et al. **As Amazônias: um mosaico de visões sobre a região** – A study conducted for the World Bank /CDS-UNB. Brasília, 2003; printed, 44p.

16 See for example: BURSZTYN, M.A. et al. **Aspectos legais e institucionais da gestão ambiental na Amazônia**. In: Sayago, D., Tourrand, J.F. & Burstyn, M. (org.). **Amazônia Cenas e Cenário**. Editora UnB, Brasília, p.263-294; KOHLHEPP, G. "Desenvolvimento sustentável na Amazônia? Dúvidas na consolidação do Programa Piloto, as recentes estratégias e a realidade amazônica". In: Coy, M. & Kolhepp, G. (org.). **Amazônia Sustentável**, Desenvolvimento sustentável entre políticas públicas, estratégias inovadoras e experiências locais. Ed. Garamond Universitária, Rio de Janeiro, 2005.

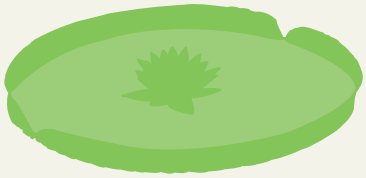
17 BECKER, B. Os Eixos de Integração e Desenvolvimento e a Amazônia [Integration and Development Axial Lines and the Amazon]. In: **Revista Território**. Ano IV, no 6, 1999, p.29-42.

the middle of the first decade of the 21st century, most researchers and thinkers had come to the conclusion that:

- government planning for the Amazon was still embracing the line of "pseudo-planning";
- quite often the proposed programmes never got beyond the stage of rhetoric;
- the connotations of the programmes were far more "symbolic" than practical;
- even the way the GPTI was created conferred some characteristics of symbolic policies on it, such as:
    - they are conceived without taking into account conflicts of values and interests;
    - they are crisis driven - essentially sporadically motivated;
    - they are formulated without paying the necessary attention to how powerful forces, especially economic forces, can affect their implementation;
    - they are launched without due concern for their real consequences but rather with the intention of coming up with a response to meet society's fluid aspirations at a given moment[18].

There can be no doubt that, at the time, the government's decision making was charged with a symbolic connotation; it was not founded on real unequivocal political motivation or will. There was no full comprehension or consensus regarding the goals to be achieved and much less as to how they were to be achieved. There was no clarity regarding its instrumental and regulatory efficiency. In addition to internal divergences, the GPTI was criticised for not favouring the participation of non-governmental organisations, social movements or the private sector. Everyone wanted to get in on the discussions and have their points of view respected and, who knows, privileged.

Nevertheless, in spite of all the risks and negative aspects, from the very symbolic connotation itself arose a relevant political-ideological role for the initiative. More than ever before, a strong base had been established in favour of eco-development for the Amazon. As it was endowed with a strong pragmatic quality at that time, some of its followers situated in strategic positions inside the government and outside it soon found ways to take advantage of it.



18 NEVES, M. "A Constitucionalização Simbólica" [Symbolic Constitutionalization]. In. LENZA, P. **Direito Constitucional Esquematizado**, SP: Saraiva, 15th edition, 2011.

ABOUT TRANSVERSAL APPROACHES AND INTERNALISATION

Two facts serve to corroborate governmental hesitancy in regard to the work of the GPTI. The first was the withdrawal of the thematic axis Environmentally Sustainable Infrastructure from the PPCDAm. Its specific sub-working group made the following statement: "investments in infrastructure tend to set in motion a strong rise in the value of land in their areas of influence even before any actual works get under way. In many cases the mere expectation of a big project's being implanted stimulates real estate speculation, illegal appropriations of public land, migrations, the opening up of new fronts of deforestation and the disorderly spatial occupation".

In other words, in the ambit of the construction of the PPCDAM, the GPTI failed to conclude the discussion and as a consequence lacked authority to emit proposals for infrastructure projects being implanted in the Amazon. The government's excuse was that because the projects in question were strategic for the development of the region and the country they were being addressed in the ambit of the Sustainable Amazon Plan[19].

The second fact was the technical assessment report on the PPCDAm which, in 2005, just one year after the plan was launched, identified one of the difficulties hampering its functioning as being "the absence of clear signs from the government as to the degree of priority attributed to the plan for the Amazon". When there are visible oscillations in the "degree of priority" the effectiveness of a policy is inevitably suffers.

Even so, in spite of the government's hesitancy, the banner of curbing Amazonian deforestation was still held high and that was very important for the process. The determination of the upper echelons of the government was expressed in various ways:

- directly, as for example when, for almost a decade, the government kept the decision making on Amazon deforestation centralised in the Civil Office of the Presidency of the Republic. That meant the effective empowerment of the policy in the hands of a strategic leadership with the power and authority to impose and make demands on others[20];
- indirectly, as for example, when, by means of its Federal Government Public Administration Plan[21]; the Ministry of Planning, Budget and Administration (MPOG) determined multi-sector directives such as "fragmentation and co-existence of concurrent and/or contradictory policies, projects or programs must be avoided", and "inter-

19 Given that the PAS is not an operational plan but a strategic plan containing a set of recommended guidelines and strategies for its implementations, the government sought to include actions specifically directed at curbing deforestation in sub-regional operational plans associated to large-scale infrastructure ventures in the Amazon, such as the Sustainable Regional Development Plan for the Area of Influence of the BR-163 federal highway (Cuiaba-Santarem) and the Xingu Sustainable Regional Development Plan associated to the construction of the Belo Monte Hydroelectric Plant. Apparently, however, there seem to have been difficulties encountered in unifying the timetables of the implantation of the works with those for promoting regional social-environmental sustainability in the ventures' areas of influence. There have been many reports of this kind of situation some of which include accounts of increased deforestation (see, for example, RAMOS, A. & LIMA, A. (2006). **Obras de infra-estrutura não garantem desenvolvimento do País**. BSB: Instituto Sociambiental, taken from: http://www.socioambiental.org/esp/ desmatamento/site/infraestrutura; BARRETO, P., BRANDÃO JR., A., MARTINS, H., SILVA, D., SOUZA JR., C., SALES, M., & FEITOSA, T. **Risco de Desmatamento Associado à Hidrelétrica de Belo Monte** (p. 98). Belém: Imazon, 2011.; FEARNSIDE, P.M. & ÇAURENCE W. F. "Infraestrutura na Amazônia: as lições dos planos plurianuais" IN. CADERNO CRH, Salvador, v. 25, n. 64, p. 87-98, Jan./Abr 2012.; BERMANN, C. . "O projeto da Usina Hidrelétrica Belo Monte: a autocracia energética como paradigma" IN: **Novos Cadernos** NAEA, v. 15, n. 1, p. 5-23, Jun 2012.

20 The power of convocation referred to concerns the prestige or authority of a body that enables it to attract, or impose the presence of decision makers situated in the upper echelons of other government bodies.

21 http://www.planejamento.gov.br/arquivos_down/seges/gestao_publica_para_uma_brasil_de_todos.pdf

-organizational integration in the form of networks formed to address cross-cutting, inter-governmental issues and with segments of civil society must be encouraged".

Underlying the MPOG recommendations in favour of a transversal and inter-organisational integration approach is its recognition of problems regarding government administration's ability to achieve development and sustainability results which in turn are related to problems of implementation deficiencies and fragmentation[22].

From the operational standpoint, the cross-cutting approach to environmental issues depends mainly on the internalization of concern for the environment on the part of the various spheres represented in the decision-making process. The PPCDAm can be typified as "an exercise in a transversal environmental approach", whereby there is a need to instil an environmental culture in several of the ministries that participate in it[23] (See Box 4).

FROM AN OPERATIONAL POINT OF VIEW, THE CROSS-CUTTING OF ENVIRONMENTAL ISSUES TOTALLY DEPENDS ON THE INTERNALIZATION OF THE CONCERN WITH THE ENVIRONMENT.

Box 4 – Comments on the internalization of environmental aspects on the part of ministries participating in the PPCDAm: evolution 2004 – 2008[24]

Ministry of Agriculture, Livestock and Supply (MAPA) – Low response to the PPCDAm. Conflictive Agribusiness interests. Possibility of improvement with the involvement of Embrapa in the aspect of natural resource research. Led to a gap in the strategic action: incentives for the recovery of degraded areas for production. Later launched its ABC Plan (low-carbon agriculture) with an associated line of credit.

Ministry of Science, Technology and Innovation (MCTI) – Strong induction of environmental agenda expansion by climate change-related issues. Monitoring work recognised internationally. Expanded monitoring system that has revolutionised environmental control in the Amazon (Deter).

Ministry of Defence (MD) – Intrinsic understanding of Brazilian natural resources potential and the need to protect them. Evolution among the interlocutors disposed to contribute to the Plan (environmental awareness). Budget inadequate to allow it to adhere more vigorously to the PPCDAm as it depends on fund transfers from Ibama to participate in joint actions. Except in emergency situations, demands prior planning for integrated inspection actions for example.

Ministry of Agrarian Development (MDA) – Low response to the Plan at the beginning. Complex agenda and social commitments. Advanced legislation in regard to social-environmental issues. Strong adherence to the strategy embodied in Federal Decree 6.321/07. Institutional effort made to overcome its two major challenges: a) agrarian reform sustainability and b) land use and tenure regularization in the Amazon region.

22 Technical officers of the MPOG involved with the PPCDAm admit that government multi-sector plans still tend to have difficulty in overcoming the problems that arise in executing them. Analyses of the problem identify the challenge as being to overcome the structural rigidity of the almost autonomous ministries in order to allow for articulations that are essential to engender a culture of participative cooperation, of negotiation and of political consensus capable of transcending the disparate sector-based visions.

23 Changing the "culture" of an instituition involves intrinsic aspects (e.g. a corporative culture) and extrinsic aspects (e.g. determinations handed down from above) which are not always "controllable" or even foreseeable. An analysis conducted in 2008, four years after the PPCDAm launch developed a succinct discussion of these aspects for the ministries involved in the GPTI (see Box 4).

24 ABDALA, G. (org.). **Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal** (PPCDAm). Evaluation document for the period 2004 to 2007. Brasilia: MMA, 2008.

Ministry of Development, Industry and Trade (MDIC) – tendency to growing comprehension of the importance of environment issues. More mature stance in mediating between public and private sectors. Adherence to strategy for capturing financial resources for the Amazon Fund and to the programme to support state government environmental agencies (Oemas).

Ministry of Planning, Budget and Administration (MPOG) – Focussed on Development (in the strict sense). Sustainability is still an innocuous term but beginning to induce dialogue and cooperation processes that may favour environmental issues. Shows real interest in contributing substantially to PPCDAm's new planning stages.

Ministry of Mines and Energy (MME) – Environment viewed as an obstacle to its ventures. Some evolution in terms of establishing dialogue, but backsliding in regard to decision making criteria and the creation of protected areas in the Amazon.

Ministry of Justice (MJ) – Increasing proximity and incorporation of social-environmental interests. Creation of state level sector-based bureaus of the Federal Police. Non-continuous efforts to demarcate indigenous territories. Boosted control actions (Arco de Fogo [Crescent of Fire] Operation).

Ministry of Finance (MF). Little proximity to the Plan at first. Absent from the debates on the Amazon issue. Significant progress in regard to official credit concession in the Amazon.

Ministry of Transport (MT) – Inexpressive participation in the PPCDAm. The Infrastructure line that was originally part of the PPCDAm was transferred to the Sustainable Amazon Programme.

Ministry of Foreign Affairs (MRE) – Inexpressive participation in the PPCDAm. Recent progress in its acceptance of the forests debate in the sphere of the Climate Convention and the discussion on the impacts of bio-fuels on the environment.

Ministry of Labour and Employment (MTE) – Recognition of the association: environmental infractions + labour infractions. Difficulty in articulating the integrated inspection strategy (different approach). Recent evolution in the aspect of establishing dialogue (Green Arc Operation).

Truck transporting logs to the saw mills in Paragominas municipal district, Pará state, Brazil.

CLIMATE CHANGE AND THE AVALANCHE OF PLANS IN BRAZIL

At the 1992 ECO 92 conference in Rio de Janeiro, more than 175 countries signed the United Nations Framework Convention on Climate Change (UNFCCC) whose overriding goal is to stabilise the concentrations of greenhouse gases in the atmosphere at levels that will avoid dangerous interference in the global climate system.

In 1994, the Brazilian National Congress issued a decree approving the Climate Convention text. In 1997, at the 3rd Conference of the Parties to the Framework Convention on Climate Change (CoP 3), Brazil signed the Kyoto Protocol, designed to regulate the Climate Convention and determine specific emission reduction targets.

In 2000 the Brazilian Climate Change Forum was created (FBMC) aimed at mobilising society for the discussion and decision making regarding the impacts of gas emissions resulting from human activities that exacerbate the greenhouse effect.

In 2007, the Brazilian government set up its Inter-ministerial Committee on Climate Change with the task of elaborating a National Climate Change Plan. In 2009, at the 15th Conference of the Parties (CoP 15) to the United Nations Framework Convention on Climate Change held in Copenhagen, Brazil made a voluntary commitment to achieving greenhouse gas emission reductions by 2020.

That commitment was officialised in the form of the National Climate Change Policy (PNMC) enacted by Law nº 12.187/2009, which not only defined the gas emissions reduction commitment but also set out the policy's principles, goals, guidelines and instruments[25].

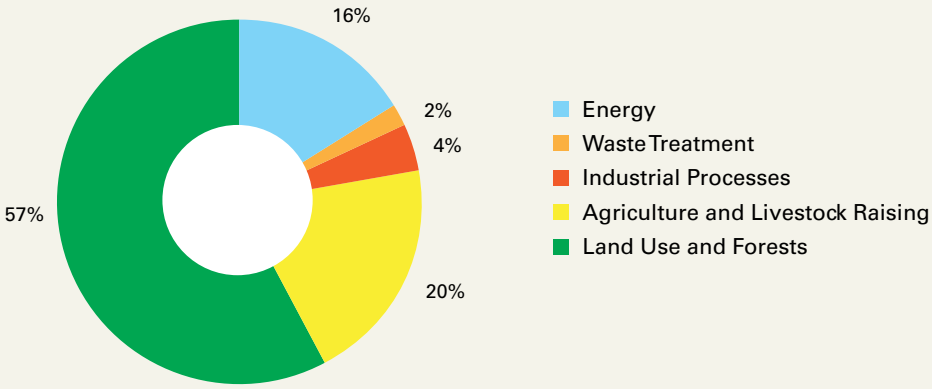
Obviously all that international articulation and its repercussions in the national sphere made a significant contribution to the decisions on internal policies targeting deforestation prevention and control in the Amazon. The fact that certain sectors of the federal government have managed to keep the flag of deforestation control flying owes much to those articulations. The PPCDAm itself, in its second version launched in 2009 highlighted the fact that the PNMC elevates the Amazon deforestation prevention and control strategies to a new threshold.

25 Metas de redução do desmatamento na Amazônia Legal até 2020 [Deforestation reduction objectives in the Legal Amazon by 2020] (source: MMA, 2013).

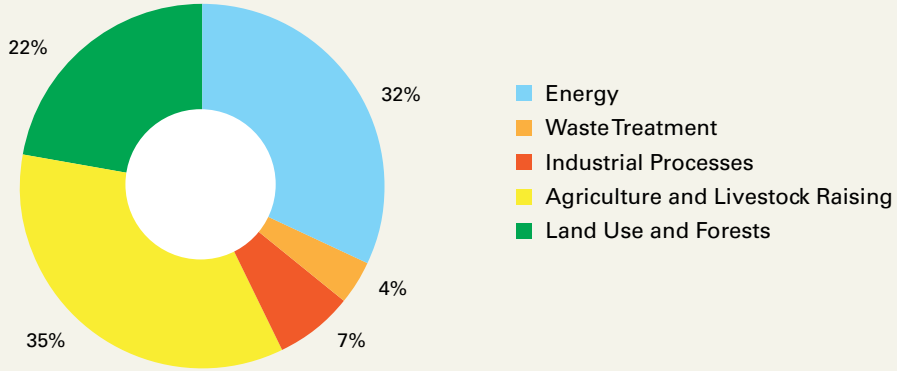
Historically, changes in land use patterns, including destruction of native forests, have been preponderant components in the inventories of Brazil's greenhouse gas emissions. In 2005, 57% of Brazil's total emissions came from that source. The panorama has changed significantly[26], however, and today changes in land use are only responsible for 22% of emissions; the credit for that mainly goes to the PPCDAm[27].

Figure 5: Emissions in CO_2eq for 2005

Source: MCTI, 2013



Emisiones in CO_2eq for 2010



In short, "climate policy" and "deforestation control policy" in Brazil are contemporaries and their original meanings derive from the same origin which was the ECO 92. Nevertheless they grew up separately in spite of sharing themes

26 Variação da participação de cada setor nas emissões de GEE no Brasil, de 2005 para 2010 [Variations of sector participation in GG emissions in Brazil from 2005 to2010]. (Source: MCTI, 2013).

27 Strangely enough, the first version of this plan made no reference to climate change whereas the 2008 PAS does, albeit timidly. The formalisation of the link between "climate policy" and "deforestation control policy" only gains a more mature configuration in 2010 with the issuing of Federal Decree nº 7.390/2010 which outlines the National Climate Change Plan and determines action plans for the prevention and control of deforestation in the Brazilian biomes shall be integrated to it.

and stakeholders common to both (MCTand MMA for example). In the early years of the 21st century they both began to come to the fore but by different routes, for different motives and involving different audiences. However, it was not long before they came together and mutually strengthened one another. It is climate change policy that provides the support for the political prioritization so necessary to the control of deforestation, while the deforestation policy, with its eminently pragmatic results, projects an image of Brazil as one of the leaders in fulfilling the international agreement on climate change. In fact, it has been the PPCDAm's results that have given the government the assurance it needed to commit itself to achieving emission reduction targets under the aegis of the Framework Convention on Climate Change.

PPCDAm MADE THE ISSUE OF DECREASING DEFORESTATION BECOME AN IMPORTANT GUIDELINE FOR PUBLIC POLICIES.

That mutual appropriation on the part of the two policies extended to their operational spheres as well. The PPCDAm emerged on the wave of a new generation of transformations in public administration introduced by the Ministry of Planning, Budget and Administration in favour of enhancing governance; transformations that involved the adoption of new practices of interlocution, transparency and social participation. In fact, at the time, a series of inter-organisational arrangements, especially inter-ministerial arrangements, were proposed by the government. They were always arrangements directed at addressing highly complex issues that embraced biophysical and subjective dimensions of reality and involved multiple actors with different interests, that is to say, social-environmental problems[28].

In spite of those plans' effectiveness, that is, the results of their implementation, their formulation processes had already led to analytic digressions never experienced before by a good part of the members indicated to represent their organisations. That was a situation ripe for transformations. It was in the process, in the discussions, the negotiations, the inter-ministerial actions agreed on and committed to that the systemic and transversal problems came to light. It became possible to identify opportunities, instruments, tools, methodologies and locations, as well as to construct institutional and personal motivations. Institutional deficits could be overcome.

The National Climate Change lLan (PNMC) eventually followed that same course insofar as it was elaborated and conducted by an inter-ministerial committee. However, as if it were a kind of belated planning action but with a higher hierarchical standing, the PNMC was actually conceived as a composition of other sector-based and multi-sector plans already in existence or about to get underway. That is to say, the PMNC is actually an inter-organisational plan made up of other inter-organisational plans, outstanding among them being the PPCDAm, the PNMC's prodigal "cousin" already being executed.

28 PPCDAm, PAS and the Sustainable BR-163 Plan are examples of that new generation of plans formulated in the first five years of the 21st century.

As regards the PPCDAm with its tactical-operational profile, it is worth noting that insofar as it brought in successful results year after year, it fostered the elaboration of new public policies that were capable of meeting the challenges of curbing deforestation. In other words, as the PPCDAm proceeded to delineate its goals and objectives it became necessary for the government to respond with actions, initiatives and projects to solve the problem so that in the course of eight years the PPCDAm actually managed to raise the question of curbing deforestation to the status of an important directive for public policies whether they were environmental, agricultural, social, economic or industrial. In that sense, the PPCDAm congregated various public policies whose goals, directly or indirectly, contributed towards the reduction of deforestation in the Amazon.

However modern and transversal a government's administrative and managerial capacity might be, accompanying and monitoring the implementation of all those programmes, and especially evaluating their results, which involves cost/benefit analyses, efficiency, chronological adjustment, and sequencing, degree of interaction and synergy, operational choice making and levels of transparency, is indeed a Herculean task[29].

The risks of mismanagement and the consequent retrocession of the inter-organisational option were quite real. In such cases the agents prefer to get back to their conventional niches, the sectors they are used to performing in, taking with them their disbelief in the State's powers of leadership or capacity to agglutinate.

© ZIG KOCH / WWF LAI

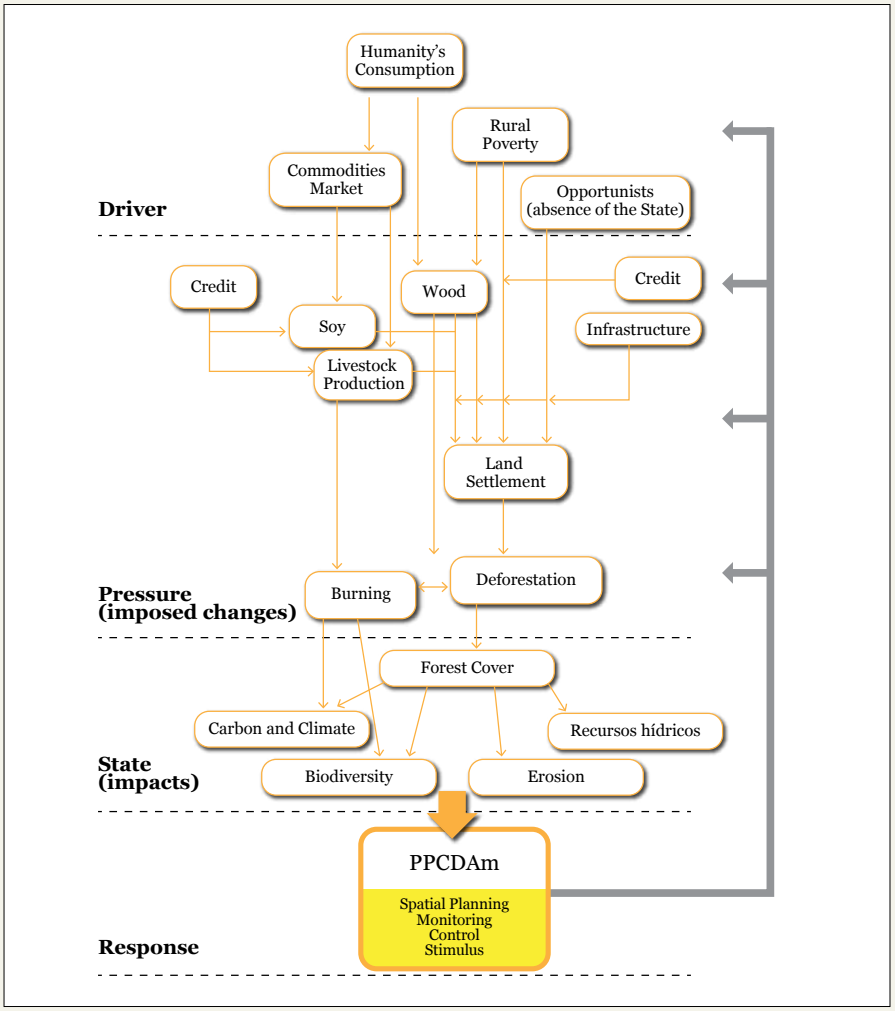
Cow herd on MT-28 highway and degraded area, in Mato Grosso state, Brazil.

29 In short, when all the programmes, plans and policies that are attached to or have an affinity with the those two plans, the PNMC and the PPCDAm are brought together, and bearing in mind that the latter plan is incorporated to the former, then we have a list whose size and complexity constitute a tremendous challenge to the structure of any contemporary government (Attachment).

DEFORESTATION AS BEING A COMPOSITE OF DIFFERENT KINDS OF DEFORESTATION

Ever since its first version was launched in 2004, the PPCDAm has been the target of questions about the dispersion and fragmentation of its actions. At the beginning, the main components identified as being the formers of a "web of the causal relations"[30] of deforestation were, to some extent approached with intervention proposals seeking a solution. However, it could be seen that there was an absence of any procedure designed to define priorities with the respective specification of prerequisites (chronological planning) so that the various actions being proposed could be planned and developed with a greater chance of achieving success. Another aspect that was unclear was the spatial conformation or dispersion of the dynamics of the inter-relations of the forces favouring deforestation. The swath of deforestation extended for almost 5,000 km.

Figura 6. Deforestation causal relations



30 Mini-model (synthesis) of the causal relations of deforestation and their links to the PPCDAm as a set of responses, systematized in alignment with the DPSIR framework (Driving force–Pressure–State–Impact–Response), see Abdala, G. 2008, op.cit

Another notorious difficulty was the government's uncertainty as to how its own workforces were structured and consequently whether they were apt for the proposed confrontations, innovations and reorganisations. The distance separating the central body formulating the Plan and the government administrators at the end of the line in the depths of the forest/continent was tremendous. That was not only literally true in physical terms but also in terms of their attributed powers of choice.[31] It was not always feasible to carry out or achieve what had been planned, whether because of operational obstacles or because of political stakeholders, corporative inertia or even the institutional or personal motives of those responsible.

Various designs of the deforestation networks and cycles have demonstrated how factors of a social, economic, environmental, political and moral order that lead to deforestation are interpenetrated, boosting or neutralizing one another and generally typifying highly complex processes. Complexity and interdependence can also be observed in the multiplicity of social actors involved in deforestation dynamics among whom are: extractive agriculturalists, loggers, smallholders, prospectors and artisanal miners, settlers, illegal land snatchers, big companies and ranchers.

Thus there are multiple processes with no spatial or temporal regularity, generating deforestation on scales that vary according to the region, state or locality. In the broadest sense, deforestation is actually made up of various types of deforestation. That means strategies to confront them need to be clear on that point and they too should vary, insofar as the contexts vary in the spatial dimension. That calls for geo-strategies: ways to act in each specific locations or region.

DEFORESTATION, IN A BROADER SENSE, IS COMPOSED OF DIFFERENT TYPES OF DEFORESTATION.

On the macro scale, the factors that lead to deforestation have their origin, directly or indirectly, in the cycles of GDP growth and in public policies such as: federal plans to expand infrastructure; settlement plans that stimulate migration; easing the criteria of public or development banks for credit concession for agriculture or livestock raising; making cheap credit available (Finam, FNO) and fiscal incentive policies (Sudam). Brazil's entrance to the world of agribusiness brought globalization into the Amazonian arena and that, alongside the changes made to the Forest Law[32], clearly shows how the federal government can actively participate in increasing deforestation.

Factors of a moral nature associated to corruption and impunity also constitute vectors of deforestation. The Amazon continues to be a space where violence, crime and corruption are extant. If strict criteria are observed, it is still difficult to decipher the correlation between deforestation and the various types of infractions that take place[33]. The lack of statistics on the illegal appropriation of public lands (false registration of title, larceny, identity fraud), dilapidation of the assets of local populations (disrespect for the rights of legitimate occupants), loss of biodiversity and environmental services (through bio-piracy or failure to comply with environmental legislation), misappropriation or embezzlement of trading, transport or investment credits (with corruption) and other illegal acts ought to be included in the economic viability analyses and counted among the costs of development. The reflection being

31 By "attributed powers of choice" we mean the extent to which power is delegated to employees lower down in the hierarchic scale enabling them to choose, arbitrate, alone or in groups, between distinct courses of action or inaction

32 There is no firm proof of the repercussions of the changes in the legislation in the increase of deforestation; the international press makes that association. See: http://mauriciotuffani.blogfolha.uol.com.br/2014/04/16/ny-times-associa-devastacao-na-amazonia-a-novo-codigo-florestal/

33 PRATES, R.C & BACHA, C.J.C. "Os processos de desenvolvimento e desmatamento da Amazônia" [Amazon development and deforestation processes] In:. **Economia e Sociedade** - Campinas, v. 20, n. 3 (43), 2011; p. 601-636.

presented here does not merely concern the Green GDP but the conventional GDP itself, which might even come to be accounted as null or even negative in some regions if certain factors were to be included in the accounting.

It was no accident that in an exercise to scrutinize the network of causal relations of deforestation undertaken by the managing committee of the PPCDAm, then in its second version of 2008, the group identified the critical causes in the midst of an immense web of problems associated to deforestation in which problems with illegal acts or with the inability to deal with them appear explicitly or implicitly in five out of every seven causes identified.

The main causes identified were:

1. Expansion of extensive (non confined) cattle raising with the implantation of pasture by big or medium sized ranchers;
2. Impunity of environmental crimes;
3. Fragility of the bodies that make up the National Environment System – SISNAMA;
4. Lack of land use definition for public lands;
5. Fragility of the processes investigating the legitimacy of land tenure documentation;
6. Practice of illegal appropriation and false registration of public land; and
7. Incipient nature of sustainable economic activities.

Box 5 – Different strategies of the states for curbing deforestation

Just as it is possible to identify more than one type of deforestation dynamics in the Amazon, so it is equally possible to point to different stages in the search for solutions. The existence of that diversity is indicative of the degree of institutionalization of environmental policy in the states and a consequence of the economic priorities of state governments and local elites benefited by their illegal occupation of large tracts of land.

The political and economic interests in each one of the nine states of the Legal Amazon may eventually be in alignment with central government's vision in regard to the need for the development of the region, but often without taking into account the question of the environment. The states of Mato Grosso and Acre represent the two extreme positions in this regard.

For over a decade now, the state of Acre has had an institutional culture ranged around its "Forest Government". There the institutions have been created and formed with a work culture that considers the generation of wealth with the forest kept standing. For them it is not so difficult to incorporate the need to develop a plan to fight deforestation because they are developing their own government policy in that sense. They have well developed governance in their management processes with greater involvement of society which takes part in councils that address local environmental issues. That improves the quality of decisions made and makes it easier to achieve the actions. Furthermore, they start off from a different level insofar as they have already elaborated, in a participative process, their ecological-economic zoning.

In Acre there is convergence of the institutional culture, a greater participative appropriation and better governance. There are deforestation problems but very different from those of a state like Mato Grosso, which has just the opposite reputation as being the "agribusiness state". This latter state has a culture of colonization (from the south of Brazil) and incentives in place associated to a policy of regional occupation and the large-scale production of agricultural commodities for export. Crop farmers in Mato Grosso are benefited by the high prices paid for the commodities they produce.

In addition to commanding one of the largest states in Brazil, the state government embraces a development model whereby the standing forest supposedly does not generate income and where cleared land is far more valuable than land with trees on it. In that light, "it is not easy to reconcile the government's interests with preservation measures". There is no process in place to involve society in these questions and, furthermore, the ecological and economic zoning has ended up being entirely disfigured so that there is no real basis for deciding how they are going to proceed. Only what lies in protected areas is being preserved and even their existence is questioned by that state's agrarian development and export-orientated model.

Dawn on the Tapajós River, Pará state, Brazil.

WHO MUST ACT WHERE, WHEN AND HOW

When the intention is to curb deforestation the dynamic, complex web of causal relations involved calls for responses that take them into account, that is to say, it calls for multiple actions synchronised and aligned in time and space. It is the causes and their respective consequences that must be attacked whether they are critical or not. At the beginning of the PPCDAm, the Brazilian government proposed that bodies and agencies with thematic affinities or similar thematic inclinations should form sub-groups to discuss and formulate strategic actions. Those sub-groups eventually became consolidated around three main Thematic Lines of the PPCDAM which up until now have served to orientate the Plan's actions and have even served as a model for other plans. Those thematic lines of action are:

- Land use, tenure and settlement planning: this includes instruments for spatial planning and management, ecological-economic zoning, land policy and governance, creation and consolidation of protected areas (including indigenous territories) and the implementation of settlements adapted to the Amazonian reality.

- Monitoring and Control: this covers instruments directed at monitoring, deforestation, licensing and inspection, and burning and (illegal) logging.

- Fostering Sustainable Production activities: this embraces organizing the aspects of credit, incentives and certification of sustainable production systems; valuing the standing forest including its ecosystem services and the products of social-biodiversity; rural technical assistance and extension services, and scientific and technological research.

In essence these thematic lines have changed very little over the ten years of the PPCDAm and that shows they were a satisfactory set of approaches to enable proper management and understanding of the respective actions. In principle there is no hierarchical distinction made among the three. All their component actions are considered to be relevant, strategic or structuring or to have priority in regard to the overriding goal of controlling deforestation in the region[34]. Nevertheless, the outreach, and especially the temporal aspects of the actions' expected results led to their being classified as either "emergency" actions or "structuring" actions with the latter requiring longer time spans to generate any lasting, effective impacts and that fact justified setting them in course immediately.

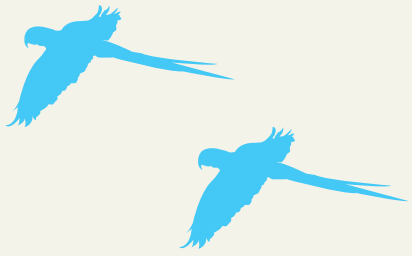
Thus it is possible to find both structuring and emergency actions within the sphere of any one of the thematic lines, all equally important and urgent. Nevertheless, there more structuring actions than emergency actions associated to the lines of Spatial Planning and Fostering Sustainability (such as sustainable forest management multipliers) whereas in sphere of the Monitoring line it was readily apparent that emergency actions were predominant (e.g. improvement of regulatory instruments associated to environmental inspection). Given the limitations of human, financial, regulatory, logistics and management resources, the government was obliged to establish priorities among the actions. That was how, in the early days of the PPCDAm, resources were largely channelled to the second line of action, that of monitoring and control.

34 For each thematic axis Actions/strategic goals are defined and within them Activities/Actions that are to be carried out identifying persons responsible for them, partners, time spans, funding sources, and indicators of results.

THE MONITORING AND CONTROL ASPECT

The Brazilian government realised that it needed to know exactly where deforestation was taking place and who was responsible for it in order to be able to counter it effectively. Refuting the extant image of an absent government was the justification for the government to place all its bets on the Monitoring and Control actions at the beginning of the PPCDAm. Among all the actions unfolded under this heading, three deserve special mention:

- Through its improvement of deforestation identification and monitoring systems and the precise selection of areas as the means to orientate the control actions based on a technological computer-based geographic information system, the Brazilian government systematized highly efficacious pioneering methodology for the spatial identification of deforestation fronts. Real-time detection (Deter) of deforestation and other sensing procedures, the treatment, interpretation and cross-referencing of satellite images and data and geo-referenced information bases made it possible to plan, optimise and implement inspection and control operations such as had never been tried before in any other region of the Earth[35].
- Intensification of investigations (intelligence services) of environmental crimes and other associated illegal actions were also conducted with due concern for the optimisation and efficaciousness of the actions. Efforts were dedicated to careful tracking of the business chain (extraction and trading) of illegal wood. Precision operations[36] of inspection and investigation were unfolded and they achieved emblematic results[37];
- Integrated environmental, labour, land tenure, fiscal and highway inspection actions were carried out based on the logic that different types of illegal acts and their respective authors tend to be associated, so the different areas with powers of inspection were called on to act together. In principle, for the lawbreakers caught in these special operations, the impacts on their illegal business tend to be significant.



35 New monitoring systems based on geomatics continue to be developed among which are the TERRACLASS and the DEGRAD systems. TERRACLASS seeks to "qualify" the deforestation detected using a dynamic assessment of land use and occupation of the deforested areas. It accompanies the use made of the areas year after year. The DEGRAD system maps areas that are in the process of being deforested where the forest cover has not yet been completely removed. In that way it anticipates the next areas that will be deforested and it also identifies situations where selective log harvesting is being carried out.

36 The term used by Marcelo Marquesini, former General Coordinator of Inspection at Ibama.

37 See the "Curupira" Operation carried out in 2005, which expedited more than 100 arrest warrants against persons involved in deforestation and trading in illegal wood, many of whom were federal and state government employees.

Figure 7: Illegal Acts associated to Environmental Crimes

Obviously making all that inspection strategy operational meant, and still means engendering management plans and that is no trivial task. Their success depends on logistics aspects (physical transportation for inspectors and technical staff, support for the camps, meals, radio-communication systems, transport for seized logs and equipment and a place to deposit them), the aspect of security and secrecy (protection in high risk situations), institutional relations considerations (understandings with municipal and state government authorities, including enhancing the sensibility of the Local Public Prosecutor's Office and local courts system), and of course, all the information and data bases needed to support the operations (satellite imagery, cross referencing data bases and reports of investigations).

In short, in addition to the high demand placed on financial, technological and logistics resources, teams need to be trained and qualified for those kinds of action. Thus the transaction costs involved were very high in the light of the changes in the size and patterns of the operations that were necessary. Furthermore, it was soon found that in spite of the good performance of many of the actions unfolded and the constant investments in technology, it was essential to continue developing and qualifying strategies and human resources because while the modus operandi of the inspection operations was being improved, so was that of the lawbreakers. It meant the improvements needed to be an ongoing process and that justified the continuing investment in monitoring and control.

The most glaring example of how the lawbreakers adapted their modus operandi was the fragmentation of deforestation into multiple small areas instead of the big areas that were easily spotted in the satellite images. Another technique was to merely degrade the forest taking out only the high value timber and leaving the areas with the appearance of being still intact. That meant radar imaging was needed to detect forest degradation activities, calling for further investment in human and technological resources.

THE LEGAL INSTABILITY OF LAND PRODUCES A FRUITFUL AND NOURISHING BROTH FOR LAND GRABBING OR STEALING.

The economic advantages of selling illegal wood and taking illegal possession of land were well worth the risks involved. Deforestation formally authorised by the government which, in principle, complies with all the legal requirements for it to be carried out, represents a minuscule part of the deforestation that takes place every year.

To sum up, Brazil expends large sums to "pressure" economic agents involved in land occupation and logging to operate within the field of legality but it has not yet discovered a formula to "attract" them to legality. The transaction costs (bureaucracy) involved in legalising such activities are heavy because they require a lot of time and money and so it is more advantageous to carry on operating illegally in spite of all the risks associated to doing so[38].

THE SPATIAL PLANNING LINE (LAND USE, SETTLEMENT AND TENURE)

Once it knew where deforestation was occurring, it was up to the Brazilian government not only to identify whoever was responsible for it but also to find out who owned the land where it was happening, that is to say, whether the land had been attributed any kind of land-use status such as being a protected area or an indigenous reserve. However, the government proved to have serious difficulty in addressing this latter aspect right away. In fact, for most of the areas where deforestation was being identified by the monitoring actions, it had no answer at all. What came to light was an embarrassing fragility of the Brazilian authorities who were incapable of referencing vast tracts of Brazil's Amazonian lands.

Actually the government had been aware of that vulnerability for some time. In 2003, when the Permanent Inter-ministerial Working Group of the PPCDAm was being formed, the government launched the second versions of its National Agrarian Reform Plan (II PNRA) whose original version dated back to 1985. At the time it formally admitted that there was "an absence of public information and of a consistent registration base preventing the Brazilian State from exercising dominion over the entirety of national territory". Thus the government recognised the prevalence of illegality and judicial instability in regard the regularisation of land use and tenure.

The situation in the Amazon was even worse and the region was formally identified as one of the main sites of deforestation. The lack of legal stability in regard to land holding was a great stimulus to illegal occupation and registration, that is, stealing land. It is worthwhile noting that in such illegal occupation, the first step to be taken to demonstrate rights over the land was actually to clear the vegetation. To this day that concept of proof of occupation rights permeates the Brazilian land tenure

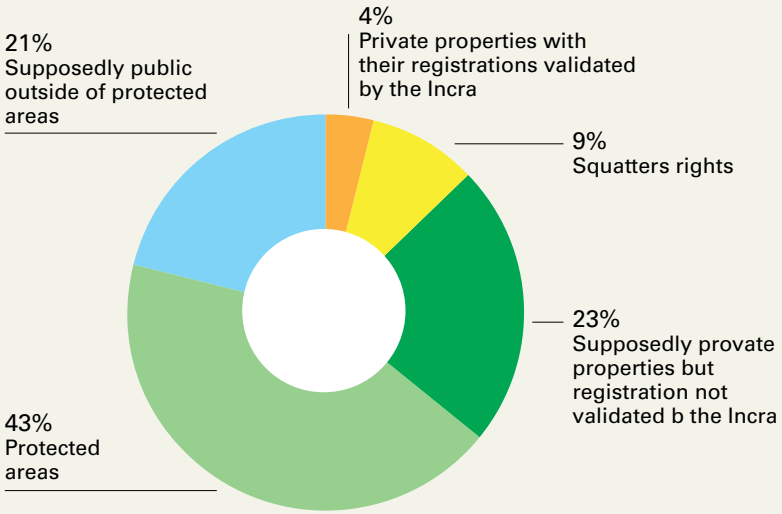
38 "The message that is passed to the rural areas is that whoever gets there first and opens it up (the forest) will be benefited. It is just like a gold rush". Daniel Azeredo, prosecutor of the Republic in the state of Pará; in the November 24, 2013 issue of the Correio Braziliense

doctrine[39]. Areas that have been "improved" that is to say that no longer have trees on them, tend to be worth more than those with standing forest. That situation makes illegal occupation and registration a highly fruitful venture because, in addition to the bonus of "acquiring" new land, the act of deforestation enhances its value and the illegal occupant has further gains from the sale of wood. On many occasions the State proved to be not only permissive but, intentionally or not, it actually fostered the process.

Land grabbing

Land grabbing ("grilagem") is carried out based on practices such as: selling the same piece of land to several buyers; reselling a public land property registry document to a third party as if it were legally offered for sale through a bidding call process; falsifying land demarcation, demarcating a much larger area than that which was originally acquired, through fake documents attesting the enlarged area; falsifying or adulterating land property registry documents and various certificates; incorporating public land into private property; selling land property registry documents referring to areas which do not correspond to them; selling public land to private or third parties, including lands in indigenous territories or belonging to traditional communities, and protected areas created for environmental protection; reuniting lands on both sides of main federal highways, which were formerly distributed in small plots to farmers as part of the actions derived from the rural land reallocation policy (known as the agrarian reform), and then selling those reunited lands to become large cattle ranches; and, more recently, selling public land through the internet, acting as if they were their rightful owners, using false documentation. For reference, check Loureiro & Pinto (2005).

Figure 8: Legal situation of Amazonian lands
Source: Imazon, 2011



39 Property rights acquired by means of land use conversion encourage the continuation of the deforestation cycle. In this regard, see: SANT´ANNA, A.A & YOUNG, C.E.F. "Direitos de propriedade, desmatamento e conflitos rurais na Amazônia" In: **Economia Aplicada**, v. 14, 3, 2010; 381-393.

Ever since the days when Brazil was an empire, normative confusion, lack of coordination, contradictory policies and operational incapacity have been the hallmarks of land tenure regulation in Brazil. It has been a trajectory marked by the variation of vested interests, government bungling and the real tendency to concentration of lands in the hands of the dominant class. Curiously enough, in the final decades of the 20th century and the early years of the 21st, the legacy of that unfortunate past directed apparently convergent interests to the Amazon. They were: a) to occupy or define the destination of the "unoccupied" lands and b) to relieve the pressure of the clamour for land coming from innumerable landless families in the south and northeast of Brazil.

The set of actions proposed in the 2nd National Agrarian Reform Plan (PNRA) reflect that tendency and it was partially accommodated in the PPCDAm's Spatial Planning line. The same line also opportunely appropriated another policy that was emerging at the time, associated to the global Convention on Biological Diversity (CBD). In Brazil, it took the form of the National Biodiversity Policy (Decree nº 4.339 dated August 22, 2002). Thus in regard to the aspects of preventing and controlling deforestation, this thematic line was noted for the following Brazilian government proposals:

- Land tenure regularization and fighting "grilagem": efforts were made to accelerate processes defining the situation of public lands; alienate public lands in critical regions; regularize the rights to the land of squatters and smallholders occupying small to medium-sized tracts of land by quantifying, locating, revising and concluding registration of the land. It was planned to update the National Rural Registration System including geo-referencing of all properties in the so-called Arc of Deforestation (setting the goal as 100% of the properties duly registered in three years);

- Demarcation and ratification of indigenous territories: declaration, demarcation, surveying and/or ratification processes involving indigenous territories were accelerated, including the process of removing any third parties that might be occupying such lands;

- Implementation of the Agrarian Reform Policy throughout the Legal Amazon; under the aegis of the PPCDAm it was planned to recuperate and consolidate the agrarian reform's settlement projects providing them with permanent technical assistance and capacity building for all families in such settlements. It was also planned to provide support by giving settlers with access to credit and implanting production and social infrastructure in the settlements;

- Effectuating the creation of protected areas: in accordance with the pretensions of the National Biodiversity Policy, around 25 million hectares were destined for conservation in the categories of sustainable use or strict protection protected areas in the first few years of the PPCDAm.

IN SPITE OF THE ACKNOWLEDGED DEGREE OF RELEVANCE AND THEREFORE OF THE PRIORITY ATTRIBUTED TO LAND REGULATION IN THE AMAZON, 10 YEARS AFTER THE PPCDAm EFFECTIVE RESULTS ARE STILL INCIPIENT.

In spite of the importance widely attributed to it and the priority given to regularizing land tenure and land use status in the Amazon, after 10 years of the PPCDAm, the effective results of this line of action are merely incipient. The institutional and procedural complexity involved in consolidating regularization processes, (an unfortunate legacy of the past) serve to explain the sluggishness but in no way diminish the generalised dissatisfaction with the persistent scenario of depredation of the natural heritage, the unfair and often violent illegal appropriation of Amazon land conducted by practitioners of "grilagem" and the tendency to concentration of lands in the hands of the few.

In spite of the moroseness which suggests a very long timeframe for the full achievement of the objectives, there is some expectation that there will be a significant acceleration in the rate of obtaining results insofar as some of the programme's essential intermediary stages, such as the geo-referencing of the land areas, have been steadily nearing completion.

Illegal deforestation and logging in Rondonia, Brazil.

Nevertheless, new legal means and articulations have been sought to address the problem. One such is the Rural Environmental Registration (CAR) created by the enactment of Law nº 12.651 in 2012. It consists of an inventory of geo-referenced information that is obligatory for all rural properties in Brazil. Although the registration is not specifically designed for tenure regulation purposes[40], it does contain one highly important reference in its records which is the exact geo-referenced location of the rural landholdings as declared by their proprietors or those with squatters' rights over them.

In April 2014, the federal government's National Settlement and Agrarian Reform Institute (Incra) nominated representatives to form an inter-ministerial working group charged with the Qualification of Land Tenure Governance in Brazil. The working group acts along three lines: the development of tools to improve land tenure governance, the interface between the environmental registration and the public lands registry system, and the designation of (land) functions in the public interest. Altogether the group is comprised of representatives of 21 government bodies among which are some ministries, the Incra, the National Justice Council (CNJ), the State University of Campinas (Unicamp), the Brazilian Geography and Statistics Institute (IBGE), the Brazilian Institute for the Environment and Renewable Natural Resources (Ibama), the Federal Revenue Bureau and the Brazilian Agricultural Research Corporation (Embrapa)[41].

Rubber sheets drying in a community house in Ciganas Park, in the municipal county of Feijó, in Acre state, Brazil.

40 The Rural Environmental Registry (CAR) is an instrument of fundamental importance to enabling the regularization of the environmental situations of rural properties and lands occupied by squatters. It consists of identifying and registering geo-referenced information on each area such as the delimitation of Permanent Protection Areas, Legal Reserve Areas, remaining stands of native vegetation, rural areas with consolidated occupation, areas of social interest, all for the purpose of delineating a digital map based on which the values of the areas are calculated for defining the respective environmental diagnosis.

41 Source: Instituto de Registro Imobiliário do Brasil (IRB) (Brazilian Real Estate Registration Institute). http://www.irib.org.br/html/noticias/noticia-detalhe.php?not=3721. (consulted in September, 2014).

Parallel to that, Inter-ministerial decree nº 369 (Ministries of the Environment and Agrarian Development) dated September 4, 2013, set up the Technical Chamber for the Destination and Regularization of Federal Public Land in the Legal Amazon, with the task of improving procedures to determine land use definition and regularization of areas of land with no specified land use category pertaining to the federal government, thereby contributing towards curbing illegal deforestation in the region.

In regard to the legal settlements, the only reference to them in the PNRA for the Legal Amazon in the form of a specific action under the heading of land use and tenure regularization was in the first version of the PPCDAm in 2004. In the subsequent versions of 2010 and 2013, the agrarian reform settlements are addressed under the heading of Fostering Sustainable Activities and mainly considered in the light of environmental licensing. This came about because in the PPCDAm assessment report of 2008 there was much concern expressed at the increasing deforestation taking place in the settlements. That ongoing situation actually led the Office of the Public Prosecutor to move a public civil action in the courts against the Incra in 2012. The legal action induced the Incra to launch its Green Settlements Programme (Programa Assentamentos Verdes – PAV) in 2013.

PROTECTED AREAS NOT ONLY FULFIL THE FUNCTION OF CURBING DEFORESTATION, THEY ALSO PROTECT AREAS OF HIGH BIOLOGICAL VALUE SHELTERING ENDEMIC SPECIES AND FRAGILE ECOSYSTEMS

Often the deforestation in settlements is the result of the disparities among the various initiatives foreseen under the aegis of the PNRA. The initiatives are supposed to be complementary to the “creation” of the settlements themselves and among them are technical assistance initiatives and above all initiatives for the implantation of infrastructure to provide support for production and commercialisation. The families receive their plots of land alright, but they do not have the means of production and commercialization and that includes adequate knowledge of sustainable agricultural, forestry and livestock raising practices. Being relegated to the harsh conditions of mere subsistence they fall easy prey to loggers and speculators interested in the natural resources, wood and land.

In regard to controlling deforestation, the most worthy actions under the heading of Land Use and Settlement has undoubtedly been the creation and ratification or consolidation of protected areas and indigenous territories, at least for the short term. In the first stage of the PPCDAm (2004 to 2007) the Amazon experienced a veritable wave of federal and state Protected Areas creation in the categories strict protection and sustainable uses[42]. They were created in zones under various degrees of pressure from human activities and brought in readily apparent results in terms of curbing deforestation[43].

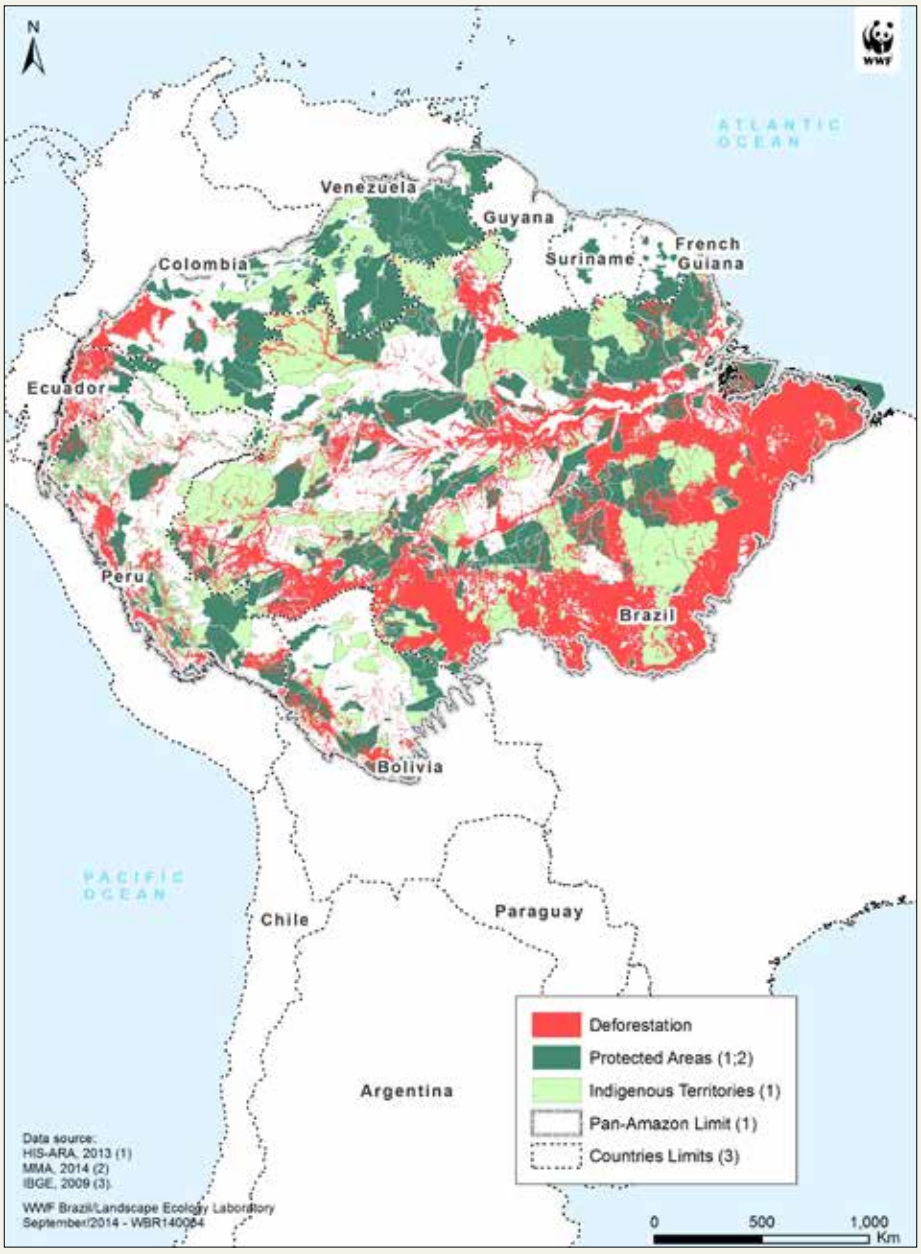
Protected Areas not only fulfil the function of curbing deforestation, they also protect areas of high biological value sheltering endemic species and fragile ecosystems. They represent part of the process of defining land use before and after human occupation and are especially effective in avoiding or combating the hidden pressures from the nefarious processes of “grilagem”.

There is a big gap, however, between creating protected areas and managing them. A recent audit conducted by the Federal Accounts Courts shows that only 4% of Protected Areas are efficiently managed and have the necessary management plans implemented, land tenure regularization processes underway and the staff and material resources to maintain them properly.

42 Evolução da criação de UCs na Amazônia [Evolution of PA creation in the Amazon] (source: ARPA, 2012).

43 Áreas protegidas na Amazônia Legal e o deslocamento do desmatamento [Protected Areas in the Legal Amazon and the displacement of deforestation] (Imazon, 2011).

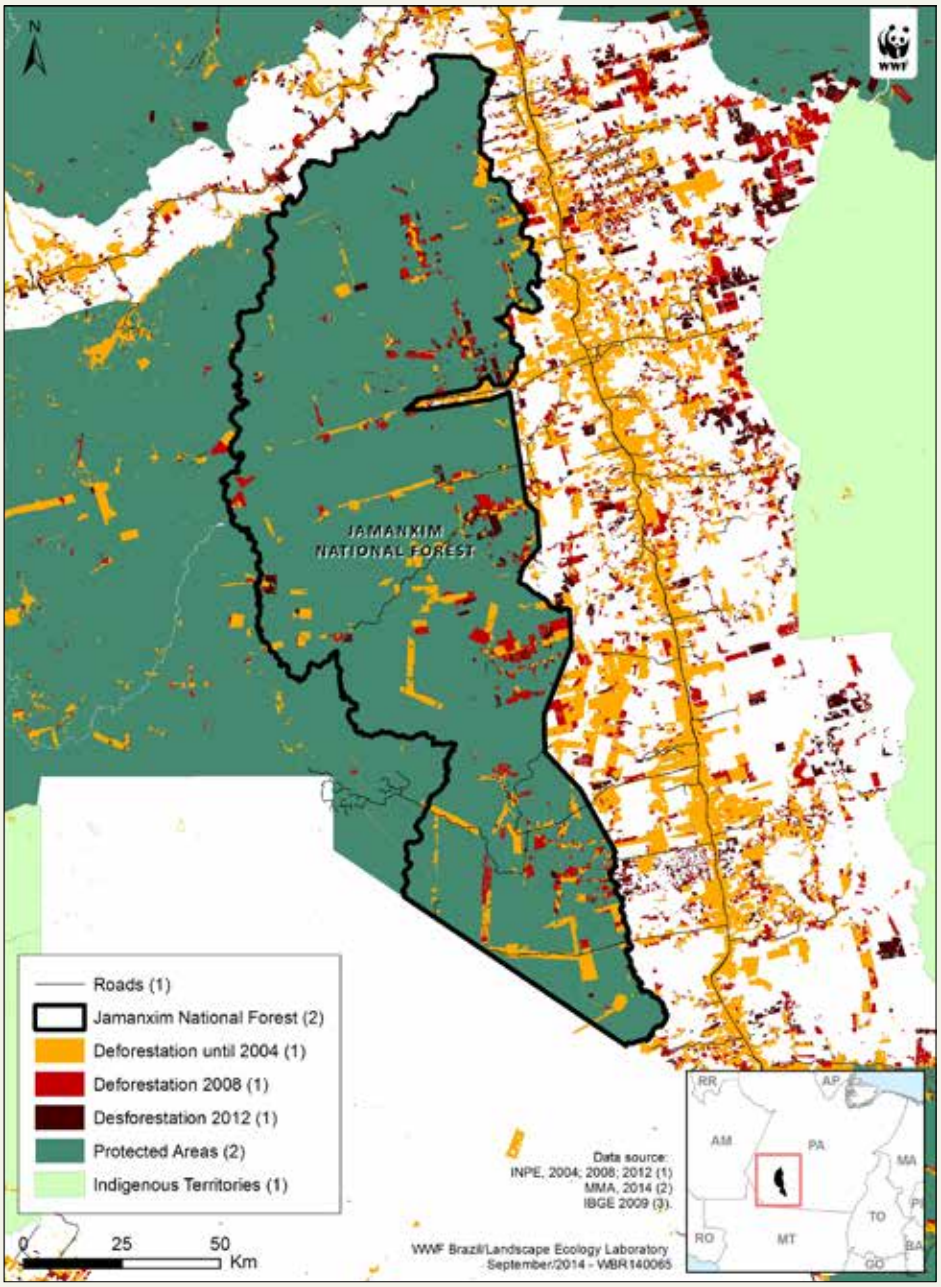
Figure 9: - Protected areas, indigenous territories and deforestation in the Pan-Amazonia.
Source: WWF-Brazil/Landscape Ecology Laboratory.



Another controversy involving protected areas concerns their supposed infringement on initiatives and ventures directed at the country's social and economic development. Depending on the government of the moment's central interests, which are inevitably moulded by the political, social and economic forces in play at the time, a government directive determining the creation of Protected Areas at one time may be completely overtutned at another and the government may then act to suppress areas formerly designated for conservation. That is happening right now in Brazil and the results may well prove to be disastrous in terms of controlling deforestation.

Figure 10: – Jamanxim National Forest and the deforestation pressure

Source: WWF-Brazil/Landscape Ecology Laboratory.



Example of a deforestation pressure created by the expectation of decrease in the area of Jamanxim National Forest, in Pará state.

THE THEMATIC LINE - FOSTERING SUSTAINABLE ACTIVITIES

In spite of its strong inclination towards unfolding deforestation combat and control measures, the PPCDAm was also conceived as a means to unfold preventive action and other more durable and effective actions that would put the region on course to achieve the long awaited sustainable development paradigm; a paradigm whereby generating income, employment and human well-being can be achieved without the need to destroy new areas of primary forest.

The logic underlying the thematic line Sustainable Activities was structured to address the sustainability of both already cleared areas and areas still covered with standing forest:

In the case of already deforested areas it was considered that:

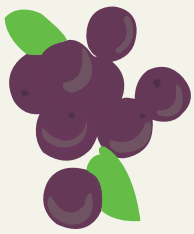
- agriculture and livestock production on all scales should be based on sustainable models avoiding territorial mobility with predatory exploitation which exhausts the available production factors like soil fertility and then moves on;
- they should be the object of recuperation and their reinsertion in the production agenda. In 2004 when the PPCDAm was launched, it was estimated that there were 16 million hectares of land already deforested, degraded and abandoned in the Brazilian Amazon.

In the case of areas still covered by forest, it was determined that:

- extractive activities should be stimulated and valued by intensifying the good use made of non-wood forest assets and the so-called socio-environmental products of biodiversity (structuring production and trading chains);
- wood should be harvested in a sustainable manner using the techniques of good well-planned forest management with special attention to the forest's potential for reproducing itself *ad infinitum*.

To successfully achieve the above situations it was agreed that it was necessary to:

- diffuse and disseminate appropriate production technology by means of capacity building and technical assistance provision (ATER);
- carry out research to close gaps in technology and production methods;
- implement infrastructure to support various production and commercialisation chains;
- create or optimise lines of credit to support various production segments.



An analysis of all three stages of the PPCDAm together shows that, overall, the line of action Fostering Sustainable Activities was the one that generated most initiatives in comparison with the other two (see preceding figure). Outstanding among those actions have been:

- **Public Forest Management:** efforts were made to develop and implement capacity-building and qualification in sustainable forest management (including community-based forest management plans) and to make forest management more widely known. The Brazilian Forest Service and the National Forest Management Support Centre (Cenaflor) were instituted. The process for granting public forest concessions was regulated, opening up possibilities for the controlled exploitation by private companies and communities of forest (wood and non-wood) resources;

- **Implementation of a sustainable agriculture policy for the Legal Amazon:** making every effort to articulate departments of agriculture in the state governments, a discussion was conducted to formulate and implement programmes promoting differentiated forms of agriculture in the Legal Amazon that took into account the region's geographic, environmental, economic and social peculiarities. Large scale investments were made in training and capacity building for farmers and rural extension personnel in good agricultural and livestock production practices. Endeavours were made to stimulate cooperativism and unfold the necessary inter-institutional articulations or facilitations, and to strengthen production and commercialisation chains. Agricultural and livestock production ventures were encouraged to get in line with the environmental regulations. Models were designed to increase productivity and income based on the sustainability of already deforested areas and including their recuperation, the rational management of the land and diversification and rotation of crops and livestock.
- **Optimisation of economic instruments:** fiscal incentives, financing and credit: in consonance with the promotion of the sustainable agriculture policy for the Legal Amazon, lines of credit for financing investments and production costs were remodelled (e.g. Prodefruta, Moderagro, Prodeagro, Moderinfra, Prodecoop, Proleite, Moderfrota). The policy of Minimum Price Guarantees was adapted to the Amazonian reality and so was the policy for the acquisition of food products produced by family-based agriculture. New lines of credit, not only for the recuperation of areas (PRORecuperação) but also to provide incentives for alternative forms of production such as reforestation with species for energy production (PROPFlora), Similarly ne funds were established to provide alternative means of financing such sustainable ventures in the region: Amazon Fund, Climate Fund, National Forest Development Fund.
- **Research and development of sustainable production models for the biome:** here the focus was on supporting science, technology and innovation projects directed at achieving social inclusion and development in the Amazon. Various lines of research were financed in the areas of sustainability for conventional crop and cattle farming ventures and alternative production and commercialisation chains (e.g. organic products and socio-biodiversity products).

In spite of being the thematic line that presented the highest number of planned actions, Fostering Sustainable Activities turned in the poorest performance in terms of the results it actually achieved in the ten years of the PPDCAm that are being assessed here. In the course of the various evaluations of its efficiency in regard to deforestation as such (investment X results), it was even questioned as to whether this thematic line was in fact a relevant component of the plan because while it must be admitted that its actions compose an admirable sustainable development agenda, they do not have any direct bearing on deforestation control.

The enormity of the demand, the vast scale of the Amazon territory, the complexity of the theme itself, the limited resources and the poor visibility of the results (as they are largely long term results) were all contributing factors leading to that questioning of validity of the Fostering Sustainable Activities line as a component of the plan to combat deforestation. Actually the question is more crucial than that because it transcends a simplistic approach that merely contemplates achieving the tactical-operational objectives that the PPCDAm was planned around. It is this line that confronts, in a qualified manner, the exogenous current of "development at any price" referred to by Becker (2005, op. cit.). Similarly, it in is this line that the pragmatism and feasibility of execution of the very directives appointed by the Sustainable Amazon Plan find their echo insofar as they underscore the need to change the socio-political, economic and institutional paradigm extant in the region.

Questioning the line of Fostering Sustainable Activities means questioning the viability of the PAS itself because, given the current scenario of state policies, it is the only one capable of taking them out of the sphere of mere symbolic inspiration and gradually drawing them closer

to factual reality. If the Fostering Sustainable Activities line were to be removed from the PPCDAm, then the latter would cease to function as the operational right arm of the PAS. Accordingly, being well aware of the limitations of the control and command actions in regard to curbing forestation in the long term, the idealizers and administrators of the PPCDAm, despite the clash resulting from the polarization of the positions of developmentalists and conservationists, insisted on intensifying actions directed at stimulating activities considered to be sustainable, even though there was little prospect of obtaining visible evidence, in the short term, of the effectiveness of those actions.

Curiously enough, in terms of perceptible results, the Fostering Sustainable Activities line actually distinguished itself by **not** fostering certain activities and that was actually achieved by a non-budgeted initiative. The GPTI did not have to expend much to negotiate the enactment of Decree no 6.321/2007, which established a list of municipalities where the deforestation situation was critical, to be edited annually by the MMA, which would identify the priority target areas for PPDCAm actions. Among other provisions, that decree determined that official federal credit agencies should not approve credit of any kind for properties with environmental or land tenure irregularities.

Thus **not** fostering rural activities with doubtful sustainability was actually a highly valuable strategy embodied in that decree and it led to a series of complementary norms[44] and regulations included in National Monetary Council's Resolution no 3.545/2008 (CMN/ Banco Central do Brasil). Brazil's central financial agency deliberately joined the fight against illegal deforestation and that, in turn, had an interesting consequence at municipal level that had not previously been achieved by any other PPCDAm line of action. It triggered the joint efforts of rural proprietors and local public authorities to get their municipalities off the Ministry of the Environment's blacklist.

THE ACQUISITION OF PRODUCTS FROM EMBARGOED AREAS IS NOW A CRIME.

Thus in various Amazonian municipalities pacts were made among government, civil society and private initiative entities in favour of compliance with environmental objectives that would render them eligible for rural credit once more; that is, get them off the blacklist. The state of Para appeared as a leading exponent of such articulations insofar as in 2011 it launched its Green Municipalities Programme (*Programa Municípios Verdes* - PMV), which, despite the enormous challenges it still has to overcome, represents an outstanding, daring and innovative proposal to share and decentralise environmental management among the federal, state and municipal spheres with a particular focus on curbing deforestation and fostering sustainable local development.

From sources of financing, attention passed to the questions of those production chains which are recognised drivers of Amazonian deforestation. This happened more particularly after the regulation of the Environmental Crimes Act which resulted from Federal Decree no 6.154/2008. It made the acquisition of products originating from embargoed areas a crime. In other words, all the agents that were links in the production and commercialization of such products were liable to be questioned or even held legally responsible. The production chains of meat and of charcoal for iron smelting were particularly affected in this respect.

On the other hand, it is under the heading of Fostering Sustainable Activities that initiatives promoting alternative production chains can be found, that is to say initiatives associated to those socio-biodiversity products that were proposed to generate income from the standing forest. However, although there has been progress reported, the repercussions of those initiatives on deforestation rates has been almost imperceptible. In spite of their importance for traditional communities and consequently for controlling

44 Norms associated to Federal Decree nº 6.321/2007: MMA Edict nº 28/08; CMN/BACEN Resolution nº 3545/08; MMA Edict 96/08, In INCRA nº 44/08; In MMA nº 01/08.

deforestation in those communities' areas, the value of the production extracted from the forest in those conditions does not amount to more than 0.2% of the GDP of the Legal Amazon municipalities[45]. The main setback to most of those chains does not seem to lie in the production chains but in the trading chains, or more specifically in the dimension of the demand side.

Other initiatives that have made significant progress but which are still finding it difficult to bring in effective results are those designed to stimulate and disseminate Sustainable Forest Management. There has been progress in the legislation and the regulatory aspects but it is apparently the costs of transaction, which the government is not entirely prepared to bear, that is making it difficult to achieve the respective goals. As an example, the Brazilian Forest Service was instituted by the enactment of Law nº 11.284/2006, but seven years later we still find the following among the actions defined for the PPCDAm: "Define the institutional model for the Brazilian Forest Service, making it compatible with the implementation of the Public Forest Management Law, in order to enhance governance over forest areas destined for production/management"[46]. In other words, the SFB is an entity still in search of an identity.

FOREST CONCESSION POLICIES UNDERSTAND THE COMMUNITY AREAS AS A SPACE FOR SOCIAL AND CULTURAL SYSTEMS REPRODUCTION

The programme for granting public forest concessions to private sector entities, whether they be family based or corporative, for the exploitation of the forest based on sustainable exploitation models is also progressing, but hesitantly. On the one hand, the concession granters (state or federal governments) consider that most of the companies that operate current predatory forms of forest exploitation are not apt to comply with the conditions of sustainable management-based concession contracts due to their lack of properly qualified personnel and of administrative, technological and operational infrastructure. On the other hand, the concessionaires (businessmen) point to the lack of infrastructure in the concession areas, the pending, unsolved land tenure conflicts, the high value charged by the concession granters for each cubic metre of wood harvested and the technical specifications in the contract terms[47]. In their view (the concession holders) the original concession model and the original public tendering process documents were designed and drawn up by professionals with little or no experience of the reality in the field: they are mainly agronomists specialising in forestry but qualified and trained in southern and central Brazil, comfortably installed in their air-conditioned offices and who have never trudged their boots through the Amazon mud.

Other family-based or community-based concession holders associated to traditional populations who are potential clients or stakeholders of the forest concession projects vociferate a similar set of complaints regarding the proposed concession model insofar as it calls for administrative–bureaucratic qualifications that lie far beyond the real capacities of such communities. In other words many of the local populations, historically effective forest managers themselves and present in areas subject or liable to concession do not have the conditions to organise themselves or qualify themselves to an extent that would make them eligible to compete in the tendering processes in the form that they have been prepared to date. What is more disturbing, is that is that it is glaringly apparent that the forest concession policies are devoid of a broader comprehension of the areas occupied by such communities as spheres in which the reproduction occurs of socio-cultural systems that have co-evolved with the natural environment surrounding them.

45 See "Avaliação do PPCDAm 2007-2010" (released December 2011). http://www.cepal.org/dmaah/publicaciones/sinsigla/xml/7/45887/IPEA_GIZ_Cepal_2011_Avaliacao_PPCDAm_2007-2011_web.pdf.

46 PPCDAm 3

47 GUENEAU, S. & DRIGO, I.G. Interações entre regulação pública e privada: a influência da certificação florestal privada sobre a renovação da ação pública na Amazônia brasileira [Interactions of public and private regulation: private forest certifications's influence on public action renewal in the Brazilian Amazon]. In: CARNEI RO, M. S., NE TO, M.A. & CASTRO, E. M. R. (org). Sociedade, floresta e sustentabilidade [Society,Forest and Sustainability]. Instituto Internacional de Educação do Brasil; NAEA, Belém, 2013; p.17-42.

RECOMMENDATIONS TO IMPROVE ACTIONS COMBATING DEFORESTATION IN THE BRAZILIAN AMAZON

This analysis of the successes achieved and the challenges facing the Action Plan for Deforestation Prevention and Control in the Legal Amazon (PPCDAm) makes it possible to reflect on the process as a whole. There now follows a set of nine recommendations based on the lessons learned in Brazil which may serve as examples and stimulate other Amazonian countries to face the deforestation problem.

RECOMMENDATION 1

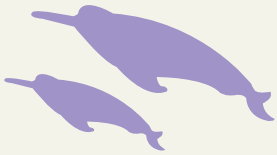
Keep attention focussed on deforestation and stimulate the political will to prevent and combat it. The political will to confront deforestation tends to vary according to the level (local regional or national) and to oscillate according to the succession of political, economic and social contexts.

The constitution of the Permanent Inter-ministerial Working Group (GPTI) by the Presidency of the Republic in 2003 was evidence of a strong political will to face the problem in an integrated manner and bring down the Brazilian Amazon deforestation rates. One year after the GPTI was set up, the Action Plan for Deforestation Prevention and Control in the Legal Amazon was launched (PPCDAm) and for almost a decade the federal government maintained the decision making on Amazon deforestation control centralised in the Civil Office of the Presidency of the Republic with its strategic leadership and power to demand; a clear sign of the political priority attributed to combating deforestation.

RECOMMENDATION 2

Take up the challenge and encourage and promote integrations. Integration can take place in various dimensions.

To promote cooperation and integration, thereby avoiding overlapping, duplication, disputes and waste of resources, it is essential to be very clear as to who is working where and with what. Thus horizontal integration (among entities) and vertical integration (among programmes and projects) need to be encouraged in the bid to obtain more efficient and effective results with better cost/benefit ratios. In the case of temporal integration, what is important is to plan the sequence of the actions carefully. Territorial integration demands the confluence or combination of various actions in the same territory and the definition of regulatory instruments even when the actions are being unfolded in such a vast biome.



RECOMMENDATION 3

Plans drawn up in the sphere of the federal government need to increasingly involve agents and actors situated much nearer to the problems on the ground so that they can be effective protagonists. State and municipal spheres of government need to be activated to ensure that internalization and integration really do take place. Decision makers, however, must

have a clear idea of the costs and time involved so that the appropriation process and the drawing closer of the respective spheres can be more effective.

The corporate sector and civil society must be stimulated and involved in the sustainable development plans. It is essential to provide for long-lasting improvements in business and in well-being for these two segments otherwise the tendency will be for them to lose interest and drift away.

Promoting sustainability on the ground inevitably requires a careful and creative articulation of the "governance trilogy", that is, the public authorities, the private sector, and civil society, but their participation must be developed according to the peculiarities and specificities of each region. Standardised "how to do it" manuals for such processes are not always useful.

RECOMMENDATION 4

Investigate and decipher as far as possible the chains of causal relations involved in deforestation in order to orientate specific planning directed at specific situations in preventing and combating deforestation. Who must act where, when, how and why are possible references and they need to be examined in the light of the varied contexts of deforestation. When the intention is to curb deforestation the dynamic complex web of causal relations involved calls for responses that take them into account, that is to say, it calls for multiple actions, synchronised and aligned in time and space.

RECOMMENDATION 5

It is important provide incentives for legality and to combat institutional and regulatory fragilities that open the way for impunity or that suggest the possibility of future amnesties for illegalities practiced in the past or the present. Rewarding, offering advantages, opening markets, certifying or accelerating authorisation processes for those that maintain themselves within the bounds of legality or that wish to perform within them seems to be a promising pathway to take but it is, as yet, largely unexploited in the sphere of those entities responsible for control. What is needed is to prepare such bodies to perform better in identifying, valuing and intervening in the spaces that separate the legal from the illegal. Actions that constitute "a shove towards legality" based on the command and control activities are only really effective when accompanied by measures and actions that constitute an "attraction to legality" based on programmes of incentives, cutting out excessive bureaucracy and guaranteeing markets to those that make the decision to adhere to the regulations in force.

BUSINESSMEN AND CIVIL SOCIETY MUST ALSO BE ENCOURAGED AND ENGAGED IN SUSTAINABLE DEVELOPMENT PLANS.

RECOMMENDATION 6

Pay careful attention to costs and guarantee the provision of financial resources to support integrated and inter-organisational action. The costs of bringing about changes in institutions' modus operandi are not always taken into account in inter-organisational planning. The mere emission of a directive on the part of the higher echelons of a given body does not mean it will be appropriated by the lower echelons and guide their performance; in other words it will not necessarily be put into effect. Administrators need to be aware that transforming the way institutions perform is not only costly but takes a lot of time and effort.

Planning and qualifying the necessary institutional and human resources disposed to perform their functions *in loco*, that is, at the current and future sites where deforestation is taking place, is still the biggest challenge facing the promotion of proper environmental management or even of making sure the State makes its presence felt as an overriding authority.

In addition to the big drain on financial, technological and logistics resources, it is essential to have well qualified, well-trained teams to carry out the actions.

RECOMMENDATION 7

Persistently stimulate and intensify the formation and consolidation of production chains considered to be sustainable, including those related to agricultural products, forest extraction products and the products of socio-biodiversity. Weak links in such chains must be vigorously addressed whether they are related to production problems or commercialisation problems or both.

RECOMMENDATION 8

Implement and constantly seek to improve forest cover monitoring systems thereby making abundant updated information available to society as a whole. This provides valuable support to qualify government decision-making and enable social watchdog control.

Based on technological installations using computer-based geographic information systems not only can deforestation be detected in real time but other remote sensing procedures, treatment and cross-referencing interpretations of satellite images, and geo-referenced databases make it feasible to carry out planning, implementation and optimisation of command and control operations as well as a series of other actions designed to stimulate and foster sustainability.

RECOMMENDATION 9:

Develop strategies to ensure that no territorial spaces are left without due referencing of occupation or definition of land-use category. The most undesirable scenario for the control of deforestation in a given region is when there is a lack of information on land use and occupation which makes it the persistent target for the work, perpetuation and prosperity of “grileiros”, invaders or crooked opportunistic loggers. Unoccupied lands or public land with no formal land-use designation, land with no information on occupation or occupied land but with tenure not formally recognised and other lands that have had their land-use designations altered are among the champions in terms of deforestation.

ATTACHMENT

PLANS, POLICIES AND PROGRAMMES RELATED TO DEFORESTATION AND CLIMATE CHANGE IN BRAZIL

Policies, Plans or Programmes - The following compose or are associated to the PPCDAm

- Plano Amazônia Sustentável – PAS (Sustainable Amazon Plan);
- Plano de Desenvolvimento Regional Sustentável para a Área de Influência da BR 163 (Plano BR 163) (Sustainable Regional Development Plan for the Area of Influence of the BR 163 Federal Highway);
- Plano de Desenvolvimento Regional Sustentável do Xingu – PDRS Xingu(Sustainable Regional Development Plan for the Xingu);
- Plano Nacional de Promoção das Cadeias de Produtos da Sociobiodiversidade – PNPSB (National Plan to Promote Socio-biodiversity Product Chains);
- Política de Garantia de Preços Mínimos para Produtos da Sociobiodiversidade – PGPM-Bio (Guaranteed Minimum Price for Socio-biodiversity Products Policy);
- Política Nacional de Gestão Territorial e Ambiental das Terras Indígenas – PNGATI (National Indigenous Territories Environmental and Land Use Management Policy);
- Programa Agricultura de Baixo Carbono – ABC (Low-carbon Agriculture Programme);
- Programa Áreas Protegidas da Amazônia – ARPA (Amazon Protected Areas Programme);
- Programa de Apoio à Conservação Ambiental – Bolsa Verde (Envronmental Conservation Programme – Green Allowance)(part of the Brazil Free from Extreme Poverty Plan);
- Programa de Manejo Florestal Comunitário e Familiar – PMFC Community and Family-based GForest Management Programme);
- Programa de Regularização Ambiental – PRA (Environmentl Regularisation Programme);
- Programa Nacional de Fortalecimento da Agricultura Familiar – PRONAF (National Programme to Boost Family-based Agriculture);
- Programa *Terra Legal* (Legal Land Programme)

The following compose the PNMC (National Climate Change Policy):

- Plano de Ação para a Prevenção e Controle do Desmatamento na Amazônia Legal – PPCDAm (Action Plan for Deforestation Prevention and Control in the Legal Amazon);
- Plano de Ação para a Prevenção e Controle do Desmatamento e das Queimadas no Cerrado – PPCerrado (Action Plan for Deforestation and Burning Control in the Cerado);
- Plano Decenal de Expansão de Energia – PDE (Energy Expansion Ten-year Plan);
- Plano para a Consolidação de uma Economia de Baixa Emissão de Carbono na Agricultura (Plan for the Consolidation of a Low-carbon Emissions Economy in Agriculture);
- Plano de Redução de Emissões da Siderurgia (Iron and Steel Production Emissions Reduction Plan);
- Plano Setorial de Mitigação da Mudança Climática para a Consolidação de uma Economia de Baixa Emissão de Carbono na Indústria de Transformação (Climate Change Mitigation and Low-carbon Emissions Economy Consolidation Plan for the Transformation Industry Sector);
- Plano de Mineração de Baixa Emissão de Carbono - Plano MBC (Low-carbon Emission Mining Plan);
- Plano Setorial de Transporte e de Mobilidade Urbana para Mitigação da Mudança do Clima – PSTM (Climate Change Mitigation Plan for the Transport and Urban Mobility Sector);
- Plano Setorial da Saúde para Mitigação e Adaptação à Mudança do Clima (Climate Change Mitigation and Adaptation Plan for the Health Sector).

REFERENCES

ABDALA, G. (org.). *Plano de Ação para Prevenção e Controle do Desmatamento na Amazônia Legal* – PPCDAm (Brazilian Amazon Deforestation Prevention and Control Action Plan). Assessment document. 2004-2007. Brazilian Ministry of the Environment (MMA), Brasilia, 2008.

ARAÚJO, E., MARTINS, H., BARRETO, P., & LIMA, A. C. 2013. *Áreas Protegidas da Amazônia Legal com mais Alertas de Desmatamento em 2012-2013* (Brazilian Amazon Protected Areas with a higher number of Deforestation Warnings in 2012-2013). Instituto do Homem e Meio Ambiente da Amazônia (IMAZON). Belém, Pará state, 2013, 32p.

ASSUNÇÃO, J., GANDOUR, M. & ROCHA, R. *Crédito Afeta Desmatamento? Evidência de uma Política de Crédito Rural na Amazônia* (Does credit affect deforestation? Evidence of a Rural Credit Policy in the Amazon). Climate Policy Initiative, Climate Policy Assessment Center, PUC Rio de Janeiro Catholic University, 2013. (Executive Summary)

BARRETO, P., BRANDÃO JR., A., MARTINS, H., SILVA, D., SOUZA JR., C., SALES, M., & FEITOSA, T. *Risco de Desmatamento Associado à Hidrelétrica de Belo Monte* (Deforestation Risk Associated to the Belo Monte Hydropower Plant). Belém: IMAZON, 2011. 98p.

BECKER, B.K. *"Os Eixos de Integração e Desenvolvimento e a Amazônia"*(Integration and Development Axial Lines and the Amazon). In: Revista Território (Territory Magazine).Year 4, # 6, 1999, p.29-42.

BERMANN, C. "*O projeto da Usina Hidrelétrica Belo Monte: a autocracia energética como paradigma*" (Belo Monte Hydropower Plant Project: the energy autocracy as the paradigm). IN: Novos Cadernos NAEA (NAEA New Notebooks), v. 15, #1, p. 5-23, 2012.

BRAZIL. Ministério do Planejamento, Orçamento e Gestão. Secretaria de Gestão (Brazilian Ministry of Planning, Budget and Management, Management Department). *Gestão Pública para um Brasil de todos: um plano de gestão para o Governo Lula/Secretaria de Gestão Publica* (Public management targeting Brazil for all: a management plan for Lula's Administration/ Management Department). Brasília: MP, SEGES, 2003. 30p.

BURSZTYN, M.A, BURSZTYN, M. & ASSUNÇÃO, F.N.A. *Aspectos legais e institucionais da gestão ambiental na Amazônia* (Legal and institutional aspects of the Amazon environmental management) In: SAYAGO, D., TOURRAND, J.F. & BURSTYN, M. (org.). *Amazônia Cenas e Cenário* (Amazon scenes and scenarios). Editora UnB (publisher: University of Brasilia), Brasília, p.263-294, 2004. 382p.

CAPRA, F. A Teia da Vida – *Uma nova compreensão científica dos sistemas vivos* (The web of life – new scientific understanding of living systems). Editora Cultrix (publisher). São Paulo. 2006.

CARSON,R. *Primavera Silenciosa* (Silent Spring). Ed. Melhoramentos (publisher), São Paulo, 2ª ed., 1962. 305p.

CELENTANO, D. & VERÍSSIMO, A. *O avanço da fronteira na Amazônia: do boom ao colapso* (The expansion of the frontier in the Amazon: from boom to collapse). In: IMAZON, Belém (PA), 2007. 44P. Series *O Estado da Amazônia -Indicadores* (The State of the Amazon series – indicators), #2) – from: http://www.imazon.org.br/publicacoes/o-estado-daamazonia/o-avanco-da-fronteira-na-amazonia-do-boom-ao, accessed on May 14, 2014 at 10:30 AM.

DINIZ M.B.; OLIVEIRA Jr., J.N.; NETO, N.T. & DINIZ, M.J.T. *Causas do desmatamento da Amazônia: uma aplicação do teste de causalidade de Granger acerca das principais fontes de desmatamento nos municípios da Amazônia Legal brasileira* (Amazon deforestation causes: Granger causality test application regarding the main deforestation sources in the Brazilian Amazon municipal counties). *Nova Economia* (New Economy), 19 (1):121-151, Belo Horizonte, 2009.

FEARNSIDE, P.M. & LAURENCE W. F. "*Infraestrutura na Amazônia: as lições dos planos plurianuais*" (Infrastructure in the Amazon: lessons learned from the long term plans. CADERNO CRH (CRH Notebook), Salvador, v. 25, #64, p. 87-98, Jan/April 2012.

GUENEAU, S. & DRIGO, I.G. *Interações entre regulação pública e privada: a influência da certificação florestal privada sobre a renovação da ação pública na Amazônia brasileira* (Interactions between public and private regulation: the influence of private forest certification on the renewal of public action in the Brazilian Amazon). In: CARNEIRO, M. S., NETO, M.A. & CASTRO, E. M. R. (org). Sociedade, floresta e sustentabilidade (Society, Forest and Sustainability). Instituto Internacional de Educação do Brasil -IEB; NAEA, Belém, 2013; p.17-42. 129p.

IBGE "*Em 2013, PIB cresce 2,3% e totaliza R$ 4,84 trilhões*" (In 2012, the GDP increases 2.3% and totals R$ 4.84 trillion) at http://saladeimprensa.ibge.gov.br/noticias?view=noticia&id=1&idnoticia=2591&busca=1&t=2013-pib-cresce-2-3-totaliza-r-4-84-trilhoes, accessed on May 14, 2014 at 9:51 AM.

KOHLHEPP, G. *Desenvolvimento sustentável na Amazônia? Dúvidas na consolidaçãodo Programa Piloto, as recentes estratégias e a realidade amazônica* (Sustainable development in the Amazon? Doubts concerning the Pilot Program consolidation, recent strategies and the Amazonian reality). In: COY, M. & KOLHEPP, G. (org.). Amazônia Sustentável, Desenvolvimento sustentável entre políticas públicas, estratégias inovadoras e experiências locais (Sustainable Amazon, sustainable development among public policies, innovative strategies and local experience). Ed. Garamond Universitária, Rio de Janeiro, 2005. 332p.

LOUREIRO, V.R. & PINTO, J.N.A. *A questão fundiária na Amazônia* (The land issue in the Amazon). Estudos Avançados (Advanced Studies), 9 (54), 2005, p.77-98.

MARGULIS, S. *Causas do desmatamento da Amazônia Brasileira* (Deforestation causes/drives in the Brazilian Amazon). 1st ed. Brasilia: World Bank, 2003. 100 p.

MEADOWS, D.H.; MEADOWS, D. L.; RANDERS, J. & BEHRENS III, W. (1978). *Limites do Crescimento: Um Relatório para o Projeto do Clube de Roma sobre o Dilema da Humanidade* (Growth limits: a report to the Club of Rome Project regarding Humanity's Dilemma). Editora Perspectiva, 2nd Edition, 1978. 200p.

MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO – MCTI (the Brazilian Ministry for Science, Technology and Innovation), Secretaria de Política e Programas de Pesquisa e Desenvolvimento – SEPED (Research and Development Policy and Programs Department), Coordenação Geral de Mudanças Globais de Clima – CGMC (Global Climate Change General Directory). *Estimativas anuais de emissões de gases de efeito estufa no Brasil* (Yearly estimates of greenhouse gas emissions). Brasilia, 2013. 80p.

MINISTÉRIO DO MEIO AMBIENTE (Brazilian Ministry of the Environment) (2009). *Plano de Ação para prevenção e o controle do desmatamento na Amazônia Legal* (PPCDAm): 2ª fase (2009-2011) Rumo ao desmatamento ilegal zero / Ministério do Meio Ambiente e Grupo Permanente de Trabalho Interministerial (Brazilian Amazon Deforestation Prevention and Control Action Plan – PPCDAm: Phase 2 (2009-2011) – Towards zero illegal deforestation/Brazilian Ministry of the Environment and Inter-Ministries Permanent Working Group). Brasília, MMA, 2009. 170p

MINISTÉRIO DO MEIO AMBIENTE (Brazilian Ministry of the Environment) (2013). *Plano de Ação para prevenção do desmatamento na Amazônia Legal* (PPCDAm): 3ª fase (2012-2015) pelo uso sustentável e conservação da Floresta / Ministério do Meio Ambiente e Grupo Permanente de Trabalho Interministerial (Brazilian Amazon Deforestation Prevention and Control Action Plan – PPCDAm: Phase 3 (2012-2015) for forest sustainable use and conservation/ Brazilian Ministry of the Environment and Inter-Ministries Permanent Working Group). Brasília, MMA, 2013. 174p.

NEPSTAD, D, CAPOBIANCO, J. P., BARROS, A. C., CARVALHO, G., MOUTINHO, P. LOPES, U. & LEFEBVRE, P. *Avança Brasil: os custos ambientais para a Amazônia* (Go forward Brazil: the Amazon environmental costs). Gráfica e Editora Alves, Belém, 2000. 24 p.

NEVES, M. *A Constitucionalização Simbólica* (Symbolic Constitutionalization). Ed. Martins Fontes – WMF, 3rd edition, São Paulo, 2011, 288p.

OLIVEIRA, R., ALMEIDA, E., FREGUGLIA, R.S. & BARRETO, R.C.S. *Desmatamento e Crescimento Econômico no Brasil: uma análise da Curva de Kuznets Ambiental para a Amazônia Legal.* (Deforestation and Economic Growth in Brazil: analysis of the Kuznets environmental curve in the Brazilian Amazon). Revista de Economia e Sociologia Rural (Rural Sociology and Economy Magazine) , Piracicaba, São Paulo State, vol. 49, # 03, p. 709-740, 2011.

PASQUIS R.; NUNES, B.; LE TOURNEAU, F. M.; MACHADO, L. & MELLO, N. A. *As Amazônias: um mosaico de visões sobre a região* (The Amazons: a mosaic of visions for the region)- a study made for the World Bank/the University of Brasilia (UnB)/ Sustainable Development Center (CDS). Brasília, 2003, 44p.

PIRES, M.O. *O Cadastro Ambiental Rural: das origens às perspectivas para a política ambiental* (The environmental recording/registry of rural lands: from the origins to the prospects of environmental policy), Conservation International in Brazil, Brasília, 2013. 44 p.

PRATES, R.C & BACHA, C.J.C. "*Os processos de desenvolvimento e desmatamento daAmazônia*"(Amazon development and deforestation processes). Economia e Sociedade (Economy and Society). Campinas, v. 20, # 3 (43), 2011; p. 601-636.

RAMOS, A. & LIMA, A. (2006). *Obras de infra-estrutura não garantem desenvolvimento do País* (Infrastructure works do not ensure the country's development). Brasilia: Instituto Socioambiental (Social & Environmental Institute), at http://www. socioambiental.org/esp/ desmatamento/site/infraestrutura.

SANT´ANNA, A.A & YOUNG, C.E.F. "*Direitos de propriedade, desmatamento e conflitos rurais na Amazônia*" (Property rights, deforestation and rural conflicts in the Amazon). In: Economia Aplicada (Applied Economy), v. 14, 3, 2010; 381-393.

SCHNEIDER, R. (et alli). "*Sustainable Amazon: limitations and opportunities for rural development*", in World Bank Technical Paper nº 515. Environment Series. Washington DC: World Bank, 2002.

VARGAS, J.I.. *Modelagem matemática simples do desmatamento na Amazônia* (Simple Mathematical Modeling of Amazon Deforestation). In: Economia & Energia (Economy & Energy), # 86; July/Sept. 2012. Available at ttp://ecen.com/eee86/ eee86p/desmatamento_amazonia.htm (accessed in Dec. 2013).

VERÍSSIMO, A., ROLLA, A., VEDOVETO, M., & FUTADA, S. de M. (2011). *Áreas Protegidas na Amazônia Brasileira: avanços e desafios* (Protected areas in the Brazilian Amazon: progress and challenges. Belém /São Paulo: IMAZON and ISA. 87p.

WALKER, R. T. & HOMMA, A. K. O. "Land use and land cover dynamics in theBrazilian Amazon: An overview". In: Ecological Economics, #18, p. 67-80., 1996.

LAW ACTS, DECREES AND RESOLUTIONS

BRAZIL (2002). Decree # 4,339, on August 23, 2002. Diário Oficial da União (the Brazilian government official gazette), Executive Power, Brasilia, DF (Federal District), August 23, 2002. Section 1, page 2.

BRAZIL (2006). Law Act # 11,284, on March 2, 2006. Diário Oficial da União (the Brazilian government official gazette), Legislative Powers, Brasilia, DF, March 3, 2006. Section 1, p.1 (original publication).

BRAZIL (2007). Decree # 6,321, on December 21, 2007. Diário Oficial da União (the Brazilian government official gazette), Executive Power, Brasilia, DF, on December 21, 2007. Section 1, p. 12 (Extra Edition).

BRAZIL (2008). Resolution # 3,545, on March 3, 2008. Diário Oficial da União (the Brazilian government official gazette), Banco Central do Brasil (Brazil's Central Bank), Brasilia, DF, March 3, 2008. Section 1, p.27.

BRAZIL (2008). Decree # 6,514, on July 23, 2008. Diário Oficial da União, (the Brazilian government official gazette), Executive Power, Brasilia, DF. July 23, 2008. Section 1, p. 1.

BRAZIL (2009). Law Act # 12,187, on December 30, 2009. Diário Oficial da União (the Brazilian government official gazette), Legislative Powers, Brasilia, DF, December 29, 2009. Section 1, p. 109. (Extra Edition).

BRAZIL (2010). Decree # 7,390, on December 20, 2010. Diário Oficial da União (the Brazilian government official gazette), Executive Power, Brasilia, DF. December 10, 2010. Section 1, p. 4.

BRAZIL (2012). Law Act # 12,651, on May 28, 2012. Diário Oficial da União (the Brazilian government official gazette), Legislative Powers, Brasilia, DF, May 28, 2012. Section 1, p. 1 (Original Text).

BRAZIL (2014). Administrative Decree # 165, on April 3, 2014. Diário Oficial da União (the Brazilian government official gazette), Executive Power, Brasilia, DF, April 4, 2014. Section 2, p.62

Forest in the Juruena River Basin, in Mato Grosso and Amazonas states, Brazil.

This publication has been produced with support from Sky which is working alongside WWF to help save one billion trees in the northwestern Brazilian state of Acre, as part of the Sky Rainforest Rescue project.

THE BRAZILIAN AMAZON: CHALLENGES FACING AN EFFECTIVE POLICY TO CURB DEFORESTATION

EXTENSION

Deforestation went from 27,772 sq. km in 2004 to 5,891 sq. km in 2013.

TOTAL AREA

Protected areas and indigenous territories emissions Deforestation went from 27,772 sq. km in 2004 to 5,891 sq. km in 2013. Around 76 million hectares were deforested in the Brazilian Amazon up to 2013; this is the equivalent to 20% of the original cover.

PROTECTED AREAS AND INDIGENOUS TERRITORIES

Important to stop deforestation.

EMISSIONS

In 2005, 57% of greenhouse gas emissions were caused by land and forest use. In 2010, the percentage was 22 %.

Why we are here

To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

www.wwf.org.br

WWF-Brasil: SHIS EQ QL 6/8, Conjunto E – CEP 71620-430, Brasília, DF – (55 + 61) 3364-7400