

Amazon Regional Assistance Framework 2008-2011
World Bank Group

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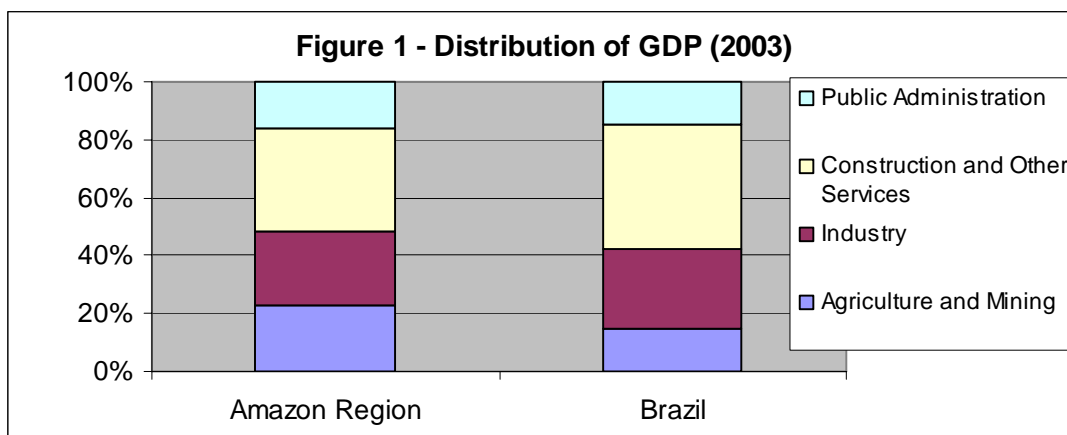
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ABBREVIATIONS

ADA	Amazon Development Agency (former SUDAM)
ARPA	Amazon Region Protected Areas project (GEF)
BASA	Amazon Bank
BNDES	National Economic and Social Development Bank
CONAMA	National Council for the Amazon
CPS	Country Partnership Strategy
EMBRAPA	Brazilian Agricultural Research Corporation
ESW	Economic and Sector Work
FINAM	Financial incentives program for the Amazon
FLONA	National Forest
FNO	Constitutional Fund for the North Region
FUNAI	Foundation for indigenous peoples
GEF	Global Environment Facility
GTA	Amazon Working Group
GTI	Inter-ministry Work Group
HDI	Human Development Index
IBAMA	National environmental protection agency
IBGE	Brazilian Institute for Statistics and Geography
ICMS	Tax over Products and Services
IDB	Inter-American Development Bank
IFC	International Finance Corporation
INCRA	National Land Reform Institute
IPI	Tax over Industrialized Products
MIGA	Multilateral Investment Guarantee Agency
MMA	Ministry of Environment
MNI	Ministry of National Integration
NTFP	Non-Timber Forest Products
PAS	Sustainable Amazon Plan
PMSS	Modernization Project for the Sanitation Sector
PNAD	National Household Survey
PPA	Federal multi-year investment plan
RESEX	Extractive Reserve
RDS	Sustainable Use Reserve
RFPP	Pilot Program for the Conservation of the Brazilian Rain Forest
SEBRAE	Brazilian Agency for Support to Small Entrepreneurs
SIVAM	Amazon Surveillance System
SUDAM	Superintendence for Amazon Development
SWAp	Sector Wide Approaches
TAL	Technical Assistance Loan

I. EXECUTIVE SUMMARY

Brazil is home to several sensitive biomes, most notably the Amazon, and balancing economic development with conservation remains an on-going challenge. With a population of 24 million, the Amazon region accounts for 13 percent of Brazil’s population, compared to a GDP share of 7 percent. The population is less urban (roughly 68 percent as compared to 80 percent nationwide, according to IBGE), and the services sector is less developed. The GDP share of the agriculture (including forestry) and mining sectors (totaling almost one-quarter together) is considerably higher than in the rest of Brazil. Manufacturing is relatively well developed (one-quarter of GDP), but concentrated in very few areas and on par with industry’s GDP share nationally (see Figure 1 below)



Over 1975-2005, the Amazon region’s GDP grew at more than double the national rate (7.2 percent vs. 3.3 percent) and export growth was even higher. In Pará (the largest state in the Amazon region in terms of population and GDP), 35 percent of GDP is export oriented (2004). Still, the overall Human Development Index (HDI) level for states in the Amazon region is roughly 10-15 percent below the average for Brazil as a whole, with the notable exception of Amazonas and Mato Grosso. The main indicator which brings the HDI down is that of income (as opposed to education or other social welfare indicators). Across the states in the Amazon region, per capita income varies widely, from roughly 50 percent of the national average in Acre, Pará, Roraima, Tocantins, and Maranhão to 70 percent in Amapá and Rondônia and to 80-100 percent in Amazonas and Mato Grosso. Overall, 45 percent of the population lives below the poverty line.

Economic activity is very unevenly divided. Much of the region’s economic wealth is generated in: a) the Carajás triangle between Belem (PA), São Luis (MA) and Marabá (PA) with a concentration of mining, hydroelectricity, aluminum smelting, and port activity; b) the Manaus industrial pole whose Free Trade Zone produces a wide variety of consumer goods for domestic consumption and export; and c) the Arc of Deforestation, stretching from eastern Pará to Acre, which involves cattle ranching, timber extraction and small-scale as well as large-scale agriculture (it partially overlaps with “a” above)

The indigenous population amounts to approximately 200,000 people. There are over 200 known ethnic groups surviving in the area, with close to 170 indigenous languages still spoken, reflect the region's rich cultural diversity.

Occupation of the Amazon by non-indigenous peoples was substantially accelerated by government in the early 1960s with the building of federal roads and hydroelectric dams, the encouragement to migration, organized (public and private) settlements, land concessions, tax incentives and institutional credit. This process relied on substantial government support through the 1980s, mainly in the states of Mato Grosso, Rondônia, Pará and Maranhão.¹ Government support was reduced significantly in the early 1990s, although the tax incentive scheme FINAM², and settlement schemes promoted by INCRA remained. Overall, the process not only resulted in massive land clearing, mainly for livestock, but also stimulated the growth of cities in the region and the appearance of new towns along the agricultural frontier.

Amazonian ecosystems provide national and global services as a major carbon sink, as a home to major biodiversity, as a producer of freshwater and other aquatic ecosystem services, and as a regional climate regulator. The Brazilian Amazon forest covers over 4.1 million km² and harbors, at least 2.5 million species of insects, tens of thousands of species of plants, 2,000 fish species, 950 birds and 200 mammal species, offering some of the greatest biodiversity in the world. The Amazon rainforest plays a major role in influencing local and continental climate. The evapo-transpiration is responsible for about half of the rainfall generated from the region, which falls as far south as São Paulo. Mounting evidence from climate change models estimate an a decrease of forest cover as low as 40 percent of the original area over the next 30 to 50 years Most models, however, consider original vegetation cover without considering the annual deforestation. Despite the resilience of forest ecosystems, there may be a point of “no return” after which forest dieback could occur.

Deforestation averaged about 16,700 km.² per year from 1991 – 2001, increased to an average of 24,600 km² per year from 2002-2004 and has decreased to 14,000 km² in 2006 (figure 2). Of the original forest cover, nearly 18 percent have been cleared by 2006. Cattle ranching is the most significant land use in those areas (over 70 percent) while, at least, a quarter of this area is not in use. Carbon emissions from deforestation represent about 70 percent of Brazil's total annual emissions which currently ranks as the fourth largest annual carbon emitter in the world.

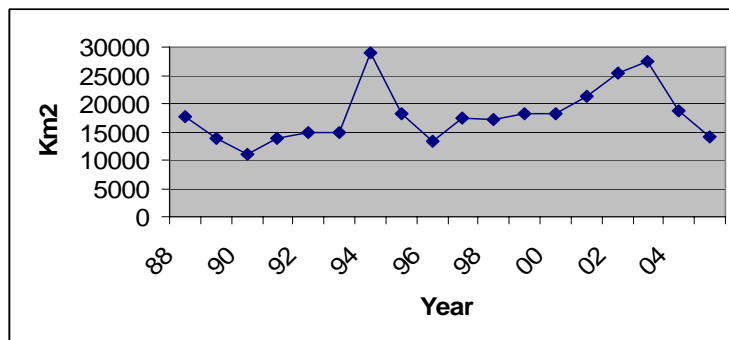
Over 25 million cubic meters of roundwood is harvested every year in the Amazon. While logging moves generally ahead of the agricultural frontier, it is not considered as a driving force of deforestation per se, but as a factor that facilitates access to forests and

¹ The Bank supported the occupation (road paving, agricultural development, health services and indigenous groups protection) through loans for the POLONOROESTE program in the first two states, for the mining and transport complex of Carajás in Pará, and an early settlement project in Maranhão.

² Administered by SUDAM, the constitutionally mandated FNO fund administered by Banco da Amazonia.

provides capital for clearing. Due to the unmanaged nature of most logging, local boom-and-bust cycles of exploration are the result, forcing the migration of the industry from exhausted sub-regions to virgin forests, and undermining economic and social stability of the population. Only a small fraction of timber is coming from managed forests but areas of certified forests have reached over 3 million ha in less than 10 years.

Figure 2: Annual Amazon Deforestation



Recent developments in the Amazon highlight positive shifts towards the creation and implementation of protected areas and indigenous land. The government efforts, supported by the Amazon Region Protected Areas program (ARPA), co-financed by the World Bank, resulted in the creation of 22.3 million ha of protected areas since 2000, while the state of Pará created 4.2 million ha as proposed in its macrozoning. The federal government also regularized another 40 million hectares of indigenous lands. Through the support of the Pilot Program, the rights of indigenous people to about 18 percent of the Amazon have been ensured. Considering that roughly two-thirds of Brazilian CO₂ emissions are caused by deforestation, the creation and consolidation of protected areas has likely contributed to Brazilian efforts to fight climate change.

Bank Experience in the Region. Of the nine state governments, the Bank has been or is currently involved with Acre, Amapá, Amazonas, Mato Grosso, Maranhão, Pará, Rondônia and Tocantins. (The Bank has never dealt directly as a lender with Roraima.) With Amazonas, lending occurred only briefly in the late 1980s (an agricultural project). The current project in Amazonas was negotiated in December 2007.

Over the past decade, the Bank worked with, donor countries, the federal government and all nine state governments in the preparation of the Rain Forest Pilot Program. The Bank also prepared specific projects with different states such as Amazonas and Pará in the case of Provárzea, and Amazonas in the case of Ecological Corridors. Amazonian states have also been beneficiaries of PROSANEAR and of a federal Amazonas Health Project (malaria control). The current GEF Amazon Region Protected Areas project (ARPA) covers the states of Acre, Amazonas, Amapá, Pará, Rondônia, and Mato Grosso. The AquaBio GEF Project focuses especially in the states of Mato Grosso, Pará, and Amazonas. The Pará Integrated Rural Development project has started in 2007. The Bank approved an additional financing of the PROÁGUA project to support water resources

management activities throughout the country, including the Amazon states. The Bank is also currently preparing a multi-sectoral project with the state of Acre with substantial focus on sustainable resource management.

The focus of all these efforts in the Amazon have been on: (i) strengthening the governance and building capacity, especially on environmental issues, (ii) creating and maintaining protected areas and indigenous lands, and (iii) developing methods to sustainably manage existing natural resources.

The Amazon Protected Areas Project - ARPA is considered an example of institutional arrangement and a model of operational support to the management of protected areas. ARPA's financial resources are not disbursed through the government but through an NGO (Brazilian Biodiversity Fund - FUNBIO). Such an arrangement improves the project's operational capacity, due to FUNBIO's greater flexibility in comparison with the government and to management innovations devised by FUNBIO. This type of institutional arrangement is innovative in large-sized projects and will be replicated in new projects by the Brazilian government (i.e. National Biodiversity Mainstreaming and Institutional Consolidation Project, involving the Brazilian Environment Ministry, *Caixa Econômica Federal* and FUNBIO). In the end of 2007, FUNBIO made an agreement with the state of Rio de Janeiro to develop a state environmental compensations fund and to set up a program to support the state's protected areas, which will be based on ARPA's experience

The Sustainable Amazon Plan. In May, 2003, President Lula met with the governors of the North region and a number of ministers to approve guidelines for a "Sustainable Amazon" program. Development of the program was delegated to the Ministry of National Integration, with the Ministry of Environment serving as secretariat. The resulting Sustainable Amazonia Plan (PAS) sets out six objectives for the Amazon area: i) reduction of rural poverty and an increase in social protection, ii) continued reduction in the structural deforestation rate; iii) improvement of basic services, especially in rural communities; iv) designing major infrastructure projects which address social and environmental aspects while supporting regional and national growth, v) improving Amazonia's provision of global environmental services (biodiversity, carbon sink, water cycle); and vi) supporting indigenous and traditional communities' ways of life.

To support the Government of Brazil's efforts to achieve sustainable development of the Amazon, the World Bank as prepared the Amazon Partnership Framework (APF) as an integral part of the CPS. The spirit of the APF is that it provides well-defined principles which would govern the response of the Bank to requests for Bank partnership in this region. In thematic focus, this framework highlights the need to promote a balanced view between environmental/ social and economic objectives. It also accentuates the importance of a balance between "command and control" actions with those that provide positive incentives for sustainable activities.

The APF has two sets of objectives based on the Bank's experience and capacity and the full objectives of the Government's *Programa Amazonia Sustentável (PAS)*.

- a. **At the national / global level the aims are to:** i) stabilize Amazonia's contribution to nature conservation and global environmental services, and ii) contribute to the national energy grid, logistics corridors, and flow of other natural resources and goods within the context of sustainable regional development.
- b. **At the Brazilian Amazon level the aims are to:** i) increase access to basic services for the population living in the Brazilian Amazon. ii) ensure employment and economic growth through sustainable use of resources, and iii) improve participatory processes in planning and implementation of large programs.

The engagement with the federal and state levels in pursuit of these objectives would be through the following themes targeted through Bank operations and AAA work. The requests from State Governments in the Amazon is growing and is likely to grow further as a result of the articulation of the AFP. In all cases engagement with the States will follow the general rules for Bank engagement. That is, the Bank will engage only when the proposed program is identified in the State's Fiscal Adjustment Program (PAF). Indicative operations which might materialize in this CPS period are described below.

- i) **Substantial scaling-up of land administration focused activities through state level projects (Pará Integrated Rural Development, Mato Grosso Natural Resources Management)** as well as through a federal level project (**Amazonia Cadastre** with INCRA). In this area, the Amazonia Regional programmatic ESW series will build on the Land Administration ESW (FY07) through investigation of options for implementation of land regularization and cadastre and improved observance of legal reserve requirements.
- ii) **Increase emphasis on integration of mitigation and adaptation to climate change through coverage in the Amazon Regional programmatic ESW and other narrower ESW focused on climate change in Amazonia** (e.g., avoided deforestation, Amazonia dieback). Support the development of mechanisms to promote payments for deforestation reduction and payments for environmental services. Project support at the federal and state levels could come through the Forest Carbon Partnership Facility for reduced emissions from deforestation and land degradation.
- iii) **Increase conservation and protection of biodiversity and the protection of indigenous communities of at state and federal levels** through the continuation of ARPA (GEF) beyond the current first phase, expansion and/or consolidation of state protected areas as component of sector wide state loans, and support at the federal level for FUNAI in strengthening the management and protection of indigenous lands. These areas could benefit from any mechanisms to promote payments for deforestation reduction and payments for environmental services.
- iv) **Promote sustainable use of natural resources through state level projects** for improved productive chains in forest (timber and non-timber resources) and fisheries

management (Pará, Amazonas, Acre), for strengthening of the Forest Service and the forest concession system in public forests, and for engagement with IFC of large-scale sustainable forest management businesses (benchmark setting for environmental and social responsibility for business in this area). These areas could also benefit from any mechanisms to promote payments for deforestation reduction and payments for environmental services.

- v) **Re-occupy degraded areas with sustainable agricultural, ranching and forestry activities would be targeted first under the Amazon Regional programmatic ESW** by examining potential policies to promote changes in the official lending system for rural development (such as BASA and BNDES). ESW would also cover ways to implement the provisions of the Forest Code for flexible implementation of legal reserve requirements in formally zoned areas and through trading of reserve requirements and private easements among landholders. Bank engagement would be primarily at the state level, with IFC engaging few large-scale agribusinesses established behind the forest frontier in areas already deforested, again aiming at setting benchmarks for environmental and social responsibility. At the federal level, one aim will be to respond to a request from the Ministry of Agriculture to support a program to promote the sustainable use of the already deforested areas outside indigenous land and protected areas. This program would take into account the different zoning exercises been done for the region, and any estimate local/regional climate change.
- vi) **Improve Public Services for Human Development through state level projects.** Extreme dispersion of the rural population makes provision of social services and infrastructure (roads, waterways and telecommunications) difficult and costly. In urban areas, increased migration has caused a strong imbalance between demand and supply for basic services. Thus, state projects in the Amazon would tend to adopt an integrated approach to human development, quality of life and environmental sustainability (e.g., Acre, and Alto Solimões in Amazonas). Components should include health, education, sanitation and social protection.
- vii) **Support Balanced Infrastructure Development.** Infrastructure services such as access to energy, roads maintenance, improvement of waterways safety, and product storage capacity are essential to reach new enterprises and attract investments which lead to adding value to production and increasing job opportunities. The GOB is applying a new approach in the region around the BR-163 highway to ensure that any planned infrastructure also consider environmental and social sustainability. The Bank is engaged in this process through the PPG7 but would seek to deepen its engagement through federal (MAPA) and state (Mato Grosso and Pará) projects aimed at more organized regional development of infrastructure and related economic activities. Support through TA would aim at integrate states' regional development, environmental management, and public infrastructure strategies through economic-ecological zoning and appropriate economic incentives and regulatory instruments. If assessments done through this TA process demonstrate

that particular infra-structure projects make sense in terms of economics, finance, governance, and environment and social impact, the Bank could engage. IBRD financing might focus on governance, institutional strengthening, and environmental, social and regional development, while IFC and MIGA might support the private project developers.

In all cases where the Bank has engaged (for example in the approved projects for the states of Amapa, Para and Amazonas) or is engaging (for example the Acre project) the governments have promoted communication with and participation by stakeholders and information dissemination and disclosure.

II. INTRODUCTION

This assistance framework paper seeks to outline contributions that the World Bank can make to support more sustainable development of the Brazilian Amazon and is an input to the 2007-1010 Country Partnership Strategy (CPS). As an initial foundation, the framework paper draws on the Government of Brazil's recent Sustainable Amazon Plan (PAS, 2006) which has laid out a broad strategy for sustainable development in the Amazon region. (Its objectives are stated in Box 1 below.) In thematic focus, this framework paper highlights the need to promote a balanced view between environmental/social and economic objectives. It also accentuates the importance of a balance between “command and control” actions with those that provide positive incentives for sustainable activities.

Box 1 - Objectives of the Government of Brazil's Sustainable Amazon Plan (PAS)

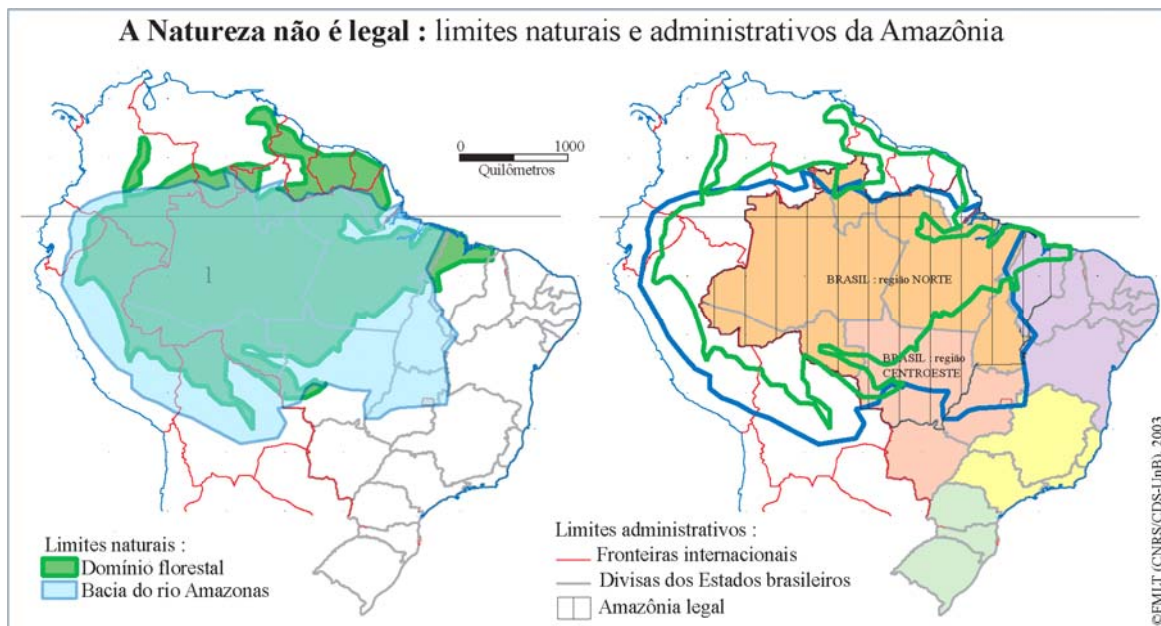
- Facilitate **sustainable economic production** with innovative technologies, stimulating employment and generating income, and improving competitiveness in regional, national and international markets;
- Strengthen **social inclusion and citizenship** through participatory processes of managing public policy, transparency, social control, and better access to social services;
- Implement and maintain transportation, energy and telecommunications **infrastructure** in support of sustainable development that is linked to land management, maximizing socio-economic benefits and minimizing negative environmental impacts;
- Establish a **new standard of financing** in the region towards generating employment and income, reducing social inequalities, promoting the sustainable use of natural resources, and incorporating scientific knowledge into economic activities; and
- Promote **environmental and land use management**, with emphasis on regularizing land tenure, negotiating socio-environmental conflicts, creating and consolidating conservation and indigenous areas, improving instruments for monitoring and control, and, where necessary, reorienting productive activities.

In addressing the thematic and cross-thematic constraints in its assistance program for the Amazon, the Bank will need to place increased emphasis on wide stakeholder ownership of projects and programs, and be included in the dialogue of those stakeholders considered “averse” to certain policies. For each program or project with a particular stakeholder at a given administrative level, there will need to be a well considered strategy to involve other stakeholders and levels of government. The targets in this regard should be to promote a gradual consensus on the “rules of the game” for development and conservation in the Amazon as a basis for coherent policy-making, and to create political leadership to conduct such a process.

III. BRIEF BACKGROUND

Setting. The Amazon, as defined by law in Brazil, covers nine states and comprises about 5.1 million square km, of which about 80 percent is actually forest area. The remainder is mainly “Cerrado” - various types of savanna woodlands and grasslands. According to the Brazilian Institute for Statistics and Geography (IBGE), in 1996, 76% of the region was public land - including about 28% in protected areas and indigenous lands, leaving the remaining 48% unassigned.

Figure 1: Natural and Administrative Borders of the Amazon

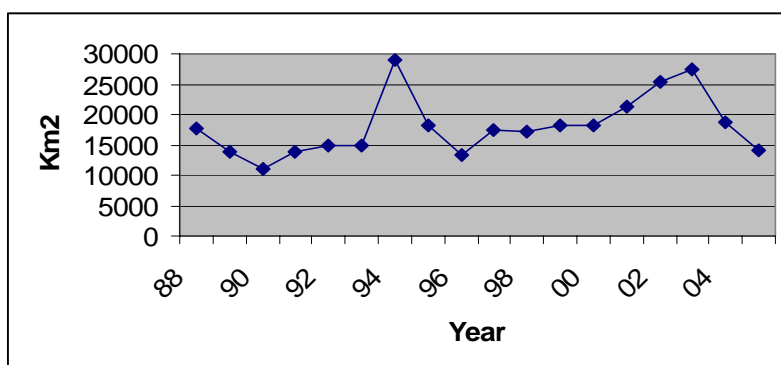


The Amazon rainforest plays a major role in influencing local and continental climate. The evapotranspiration is responsible for about half of the rainfall generated from the region, which falls as far south as São Paulo. Mounting evidence from climate change models indicate an increase of the temperature over the next 30 to 50 years and a decrease of forest cover as low as 40% of the original area. Most models, however, consider original vegetation cover without considering the annual deforestation. Apart from the clear impact of biodiversity, the 2005 drought in the region may have served as a window to observe the possible impacts of climate change in the local population. During the drought, rural communities had no access to clean water and to fish, which is their main source of daily protein (50% to 67% of daily intake).

Deforestation averaged about 16,700 km² per year from 1991 – 2001, increased to an average of 24,600 km² per year from 2002-2004 and has been decreasing to 14,000 km² in 2006 (figure 2). Of the original forest cover, nearly 18% have been cleared by 2006 below the historical average (77-06) of 18,200 km² per year. Cattle ranching is the most

significant land use in those areas (over 70%) while, at least, a quarter of this area is not in use. Carbon emissions from deforestation represent about 70% of Brazil’s total annual emissions which currently ranks as the fourth largest annual carbon emitter in the world.

Figure 2: Annual Amazon Deforestation

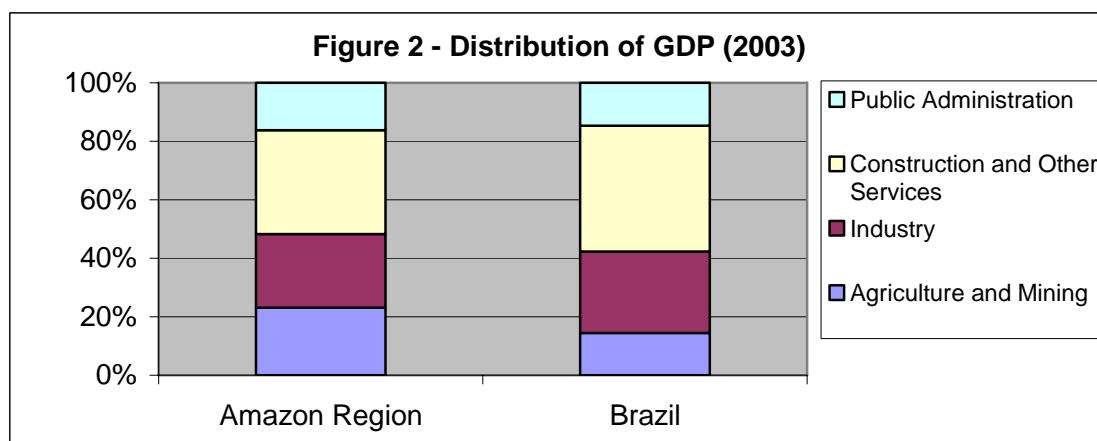


Over 25 million cubic meters of roundwood is harvested every year in the Amazon. Most of it comes from deforestation (clear-cutting, legal and illegal) with only a small fraction coming from approved forest management plans. On the other hand, areas of certified forests have reached over 3 million ha in less than 10 years.

With a population of 23 million, the Amazon region accounts for 13% of Brazil’s population, compared to a GDP share of 7%. The population is less urban (roughly 68% as compared to 80% nationwide, according to IBGE), and the services sector is less developed. This is because the GDP share of the agriculture (including forestry) and mining sectors (totaling almost one-quarter together) is considerably higher than in the rest of Brazil. Manufacturing is relatively well developed (one-quarter of GDP), but concentrated in very few areas and on par with industry’s GDP share nationally (see Figure 2 below).

Over 1975-2005, the Amazon region’s GDP grew at more than double the national rate (7.2% vs. 3.3%) and export growth was even higher. In Para (the largest state in the Amazon region in terms of population and GDP), 35% of GDP is export oriented (2004). Still, the overall Human Development Index (HDI) level for states in the Amazon region is roughly 10-15% below the average for Brazil as a whole, with the notable exception of Amazonas and Mato Grosso. The main indicator which brings the HDI down is that of income (as opposed to education or other social welfare indicators). Across the states in the Amazon region, per capita income varies widely, from roughly 50% of the national average in Acre, Para, Roraima, Tocantins, and Maranhão to 70% in Amapá and Rondônia and to 80-100% in Amazonas and Mato Grosso. Overall, 45% of the population lives below the poverty line.

The region's energy matrix consists of hydropower, thermoelectric and natural gas. Brazil's available hydroelectric potential is concentrated mainly in the Amazon region (43% of country's total) as it has harnessed only 36% of its capacity, while all other regions in the country have used more than 75% of their potential (hydroelectric energy is responsible for 77% of the energy matrix in Brazil, and the country's hydroelectric potential is calculated including those plants whose cost is less than \$1500/kW.) Natural gas reserves in the region represent 15% of the country's total.



Development Pattern. Occupation of the Amazon by non-indigenous peoples was substantially accelerated by government in the early 1960s with the building of federal roads and hydroelectric dams, the encouragement to migration, organized (public and private) settlements, land concessions, tax incentives and institutional credit. This process relied on substantial government support through the 1980s, mainly in the states of Mato Grosso, Rondônia, Pará and Maranhão.³ Government support was reduced significantly in the early 1990s, although the tax incentive scheme FINAM⁴, and settlement schemes promoted by INCRA remained. Overall, the process not only resulted in massive land clearing, mainly for livestock and grazing, but also stimulated the growth of cities in the region and the appearance of new towns along the agricultural frontier.

Nevertheless, economic activity is very unevenly divided in spatial terms. Much of the region's economic wealth is generated in: a) the Carajás triangle between Belem (PA), São Luis (MA) and Marabá (PA) with a concentration of mining, hydroelectricity, aluminum smelting, and port activity; b) the Manaus industrial pole whose Free Trade Zone produces a wide variety of consumer goods for domestic consumption and export; and c) the Arc of Deforestation, stretching from eastern Pará to Acre, which involves cattle ranching, timber extraction and small-scale as well as large-scale agriculture, especially soybean production and, more recently, cotton. (it partially overlaps with "a")

³ The Bank supported the occupation (road paving, agricultural development, health services and indigenous groups protection) through loans for the POLONOROESTE program in the first two states, for the mining and transport complex of Carajás in Pará, and an early settlement project in Maranhão.

⁴ Administered by SUDAM, the constitutionally mandated FNO fund administered by Banco da Amazonia.

above) While logging moves generally ahead of the agricultural frontier, it is not considered as a driving force of deforestation per se, but as a factor that facilitates access to forests and provides capital for clearing. Due to the unmanaged nature of logging, local boom-and-bust cycles of exploration are the result, forcing the migration of the industry from exhausted sub-regions to virgin forests, and undermining economic and social stability of the population.

Bank Experience in the Region. Of the nine state governments, the Bank has been or is currently involved with Amapá, Amazonas, Mato Grosso, Maranhão, Pará, Rondônia and Tocantins. The Bank has never dealt directly as a lender with Acre or Roraima. With Amazonas, lending occurred only briefly in the late 1980s (an agricultural project). The current project in Amazonas is expected to be negotiated in October 2007.

Over the past decade, the Bank worked with the federal government and all nine state governments in the preparation of the Rain Forest Pilot Program, and more intensively with different while preparing specific projects such as the states of Amazonas and Pará during in the case of Provárzea and Amazonas in the case of Ecological Corridors. Similarly, all states participate in the 2nd National Environment Project through their environmental agencies. Amazonian states have also been beneficiaries of PROSANEAR and of a federal Amazonas Health Project (malaria control). The current GEF Amazon Region Protected Areas project (ARPA) covers the states of Acre, Amazonas, Amapá, Pará, Rondônia, and Mato Grosso. The AquaBio GEF Project (focusing especially in the states of Mato Grosso, Pará, and Amazonas) became effective recently. The Pará Integrated Rural Development project has been approved by the Board in December 2006, and the multi-sectoral Alto Solimões Project has been appraised with Amazonas. The Bank has also recently approved an additional financing of the PROÁGUA project to support water resources management activities throughout the country, including the Amazon states.

The Sustainable Amazon Plan. In May, 2003, President Lula met with the governors of the North region and a number of ministers to approve guidelines for a “Sustainable Amazon” program. Development of the program, which later became the Sustainable Amazonia Plan (PAS), was delegated to the Ministry of National Integration, with the Ministry of Environment serving as secretariat. The PAS document consists of two volumes: a diagnostic of the Amazon and strategy; and a compendium of federal and state programs (existing and proposed) organized according to the five themes. The diagnostic consists of an analysis of regional dynamics, economically productive activities, infrastructure, and social issues. The PAS proposes objectives, suggests specific approaches for three macro-regions in the Amazon, and identifies issues of institutional coordination and financing.

To support the Government of Brazil’s efforts to achieve sustainable development of the Amazon, the World Bank’s assistance framework for the Brazilian Amazon consists of five thematic focus sections detailed here.

IV. MAIN OBJECTIVES AND OUTCOMES

This Framework has two sets of objectives based on the Bank’s experience and capacity: the need of the region and the full objectives of the government’s *Programa Amazonia Sustentável*).

At the national / global level:

- Stabilize Amazonia’s contribution to nature conservation and global environmental services.
- Contribute to the national energy grid, logistics corridors, and flow of other natural resources and goods within the context of sustainable regional development.

At the Brazilian Amazon level:

- Increase access to basic services for 23 million people living in the Brazilian Amazon.
- Ensure employment and economic growth through sustainable use of resources.
- Improve participatory processes in planning and implementation of large programs.

The main outcomes expected from a comprehensive portfolio aimed at these objectives are summarized in box 2.

Box 2 Main Outcomes

- Rural poverty decreased and social protection increased
- Structural reduction in deforestation rate continued
- Basic services improved specially to the rural community
- The design of major infrastructure projects addressing social and environmental aspects and supporting regional and national growth
- Provision of Amazon’s global environmental services maintained or improved (biodiversity, carbon sink, water cycle).
- Indigenous and traditional communities supported in their ways of living.

V. CROSS-CUTTING ISSUES

There are three main constraints to achieve the state objectives; (i) land administration, (ii) governance and (iii) climate change. Although support to these areas will be done concurrently with the other components of the Framework, continuous improvement on these two issues are necessary for the long-term sustainability of the program.

IV.1 LAND ADMINISTRATION AND MANAGEMENT

Central Problem. Conflicts over land and natural resources in the Amazon are frequent and date back to European settlement in the region. As with any open frontier where government presence is weak, uncertain land tenure and property rights are common. In this unstable situation, investment in the sustainable use of natural resources is low, and land speculation, illegal occupation, violation of indigenous territories and a variety of violent conflicts over land rights are widespread.

Despite the Brazilian Constitution and Civil Code containing innovative mechanisms to administer land rights, the legislation is of limited scope and confusing, and its enforcement mechanisms and institutions are weak. Federal and state governments also face the triple challenge of aligning agrarian reforms with various national and sub-national laws while simultaneously enforcing poorly defined property rights and developing sustainable uses for natural resources. More often than not, government initiatives for the Amazon are not developed in an organized fashion; rather they tend to be conflicting initiatives indicating a severe lack of coordination among government entities.⁵ Clarity and security of land tenure are important for several reasons: sustainable development is more likely to occur where tenure is secure and smallholders are well protected, licensing and control of economic activities require knowledge about the rightful owners of land, and setting aside public land for conservation purposes is effective when the legal process is less laborious and lengthy.

In rural areas, clear land rights contribute to improve land stewardship and sustainable management, thereby improving livelihoods and the development of economic activities such as forestry, agro-forestry, agriculture, cattle-ranching, mining, tourism and recreation. Similarly, clarification of property rights in urban areas, where illegal settlements have proliferated in inappropriate areas such as wetlands, makes it easier to provide urban services and infrastructure, collect taxes and fees, protect public health, and prevent environmental degradation. Clearer land rights will also contribute to balanced regional growth, as intensification of land uses in already cleared areas should contribute to improving market linkages for products – a longstanding challenge in the Amazon.

⁵ For example, investment support to both waterways and highways, though they may be just 100 km apart.

Since 1999, the National Agrarian Reform and Colonization Institute (INCRA) has engaged in a set of programs aimed at re-surveying in the Amazon, with special attention to focus areas such as the BR 163 (the Federal highway linking Mato Grosso to central Para). State governments and municipalities have also carried out work in relation to the creation of conservation units and zoning, but the scale of these efforts is limited.

Previous attempts at “macro-zoning” have proved ineffective due to the lack of viable incentives and the lack of enforceable property rights to undergird the zoning plans. If clear property rights can be documented, the series of new measures and planning tools now available under Brazilian law (designed to make spatial zoning effective for channeling and managing economic activity and maintaining critical natural resources) can be used to build an effective region-wide strategy.⁶ Making zoning incentives compatible will also require a clear set of rules for the development of new areas for agricultural and timber exploitation. The new Forestry Law is a major step in this direction, rewarding private enterprises for concession management which adheres to zoning.

While pointed in the right direction, these efforts are relatively small in relation to the size of the problem. They also tend to be poorly coordinated, and are not part of a broader strategic vision of sustainable development for the region, tending to fall within the narrow focus of the ideologically charged land reform discourse or as a direct response to public outrage over high-profile violence in specific areas.

While the Bank cannot address the full spectrum of land management and administration issues, it intends to address them strategically, and with increasing focus. This effort will draw on the experience acquired over the past twenty years with its targeted work on land management in the Amazon. In loans to the states of Mato Grosso and Rondônia, state land tenure regularization, cadastre and zoning exercises were carried out, providing insight both in terms of best practice to be mainstreamed and in highlighting mistakes to be avoided. Within the context of the Pilot Program to Conserve the Brazilian Rain Forest (PPG7), as well as in GEF and IDF operations, the Bank, in collaboration with its international partners, has supported work on regularizing conservation units and floodplains, and improving the legal framework for the regularization of *quilombola* lands, as well as ecological-economic zoning (ZEE) in all Amazon states. Since Brazil has a relatively strong legal framework for the regularization or legalization of indigenous lands, the Bank, through its project and the PPG7, has also been able to make a significant contribution to legalizing indigenous lands in the Amazon (in Rondônia and Mato Grosso, Bank projects contributed to regularizing 100% and 95% of all indigenous lands, respectively).

⁶ This is already underway with Bank support with the creation of a spatially linked set of protected areas, anchored by the provisions of the Federal protected area system under the Amazon Region Protected Areas Project

This focus is now being intensified through a land administration study in the Amazon (completed in June 2007) that already provides a clear picture of poorly functioning land and property institutions. An \$11 million land administration component in the Pará Integrated Rural Development Project also aims to help define the right approach for improving land administration in the state of Para and implementing state-level zoning. Currently, the Rain Forest Trust Fund is also finalizing a \$4.7 million digital cartography project to fill gaps in the Amazon's digital map database.

Proposed Actions. Substantial scaling-up of land administration focused activities is warranted if the Amazon is to forge the necessary linkages between property rights and the management of the Amazon's land for economic and environmental goals. The Bank is an ideal partner to realize such a vision with key partners and champions in the Brazilian government and civil society⁷, and a coordinated, regional strategy.

- Modernizing the outmoded system of *cartorios* (deeds registries) in which duplication and fraudulent data are easily admissible, by supporting the introduction of a cadastral database system with unique parcel numbering and spatial description for each property and administrative district;
- Substantially scaling up the financial and human resources needed for accelerated support to land regularization activities aimed at identifying and reclaiming public lands and giving secure titles to legitimate occupants (individuals, indigenous groups, *quilombo* communities, and conservation units), and reducing the incidence of *grilagem*;
- Strengthening licensing, monitoring and control of land use activities (primarily rural), using modern technology for mapping, surveillance and information management to support a more realistic and enforceable land planning system for riverine communities, protected areas and indigenous areas;
- Promoting zoning (in those areas into which the agricultural frontier is moving) as a participatory process to assess the trade-offs and negotiate sustainable land use alternatives at the state and municipal level;⁸ and,
- Supporting the definition of the potential allocation (use) of the 40-45% of public land that is not yet assigned to any use.

⁷ The Bank's history of major land administration initiatives worldwide, and particularly in middle-income countries such as Russia, Thailand and Turkey, has supported long-term commitments which deal in an integrated and holistic manner with the inter-linked policy, legal, institutional and technological components of modern land administration.

⁸ Improved zoning plans also require a coherent policy framework including: i) implementation plans; ii) implementation mechanisms (positive and negative incentives, e.g. "command-and-control" and economic instruments) to promote least-cost compliance; iii) monitoring and enforcement procedures for appeals and modifications; and, iv) procedures for compensating the "losers".

IV-2 GOOD GOVERNANCE AND INSTITUTIONAL DEVELOPMENT

Central Problem. Good governance matters for sustainable development. Governance is enhanced when competent institutions allow for good performance of the following functions: picking up signals, balancing interests, and executing agreements.

Development policies for the Amazon have been traditionally marked by centralized models of governance. Government has seldom informed or consulted with its citizens during the preparation and implementation of the region's public policies. Public institutions often lack transparency and suffer from a severe lack of technical capacity and financial resources. In addition, the challenges associated with establishing unambiguous land ownership rights are further exacerbated by poor and uncoordinated law enforcement.

The four elements adverse to good governance and competent institutions in the Amazon are:

- 1) Federal institutions that have nationwide guidelines inadequate to the concrete needs of local realities;
- 2) Sub-national governments equipped with weak institutional structures that generally operate dissociated from the national policies and from the needs of local constituencies;
- 3) Low levels of civil society organization resulting in limited power to pressure government for more information, participation and transparency; and,
- 4) A vast territorial dimension and a complex mosaic of competing and conflicting interests over natural, financial, technological, infra-structure and institutional resources that impairs good governance practices across the whole region.
- 5) A federal lending system based on constitutional funds, which would adequately consider environmental and social criteria.

National institutions are characterized by their sectoral diversity and lack of coherence. This is true for ministries and agencies, but perhaps somewhat less so for laws, and can be exemplified by the dichotomy between environmental policies on one hand, and transport, energy and agricultural policies on the other. Most federal institutions (with the exception of IBAMA, FUNAI and INCRA) are heavily concentrated in the state capitals, but have little presence in the interior. Similarly, the reach of the law tends to decline substantially with distance from urban centers.

Despite these challenges, recent developments in the Amazon highlight positive shifts in stakeholder interest to enhance the quality of governance in the region. Clear examples are:

- Federal Government: for the first time in history a government-led initiative - the PAS - uses a participatory approach to build a common vision and a sustainable development strategy for the Amazon;

- State and Municipal Governments: established social accountability mechanisms, such as the municipal councils, as well as on-going consultation and dissemination processes. This change is due in part to the federal government's conditionality for the transfer of social funds to local governments, and in part to the increased levels of awareness among local constituencies.
- Civil Society: several institutions from the private sector, academia and organized civil society, such as GTA and COIAB, are better organized and proactive in monitoring the region's public policies.

Proposed Actions. A wide range of lending and non-lending instruments are being applied by the Bank to help Brazil adopt good governance practices. However, there remains a critical gap for more systematic testing of what works and what doesn't, for making this knowledge easily available, and for reaching out to isolated groups and individuals. To address this gap, the Bank will support the Government of Brazil in the undertaking of the following actions meant to strengthen the capacity of public institutions to improve governance in the region:

- Mainstream good governance, social accountability and empowerment dimensions, mechanisms and tools in the Bank's portfolio by supporting government-led initiatives to promote institutional strengthening of key organizations such as IBAMA, FUNAI, INCRA, Labor offices, ADA and SUDAM. Whenever possible, these actions should seek the decentralization of roles to local chapters. It is recommended that all operations in the region include specific components to address these issues.
- Through an ESW and subsequent TALs, support the analysis and implementation of a division of roles and responsibilities vis-a-vis environmental and other land use issues amongst the three levels of government, aimed at increasing the effectiveness and efficiency of the existing governance structure and mechanisms.
- Identify non-environmental public (and private, third sector) institutions which would benefit from institutional strengthening - e.g. State Planning Secretariats, State Tax Departments, State Courts, State Assemblies, Ministérios Públicos Estaduais, State Health Departments, SME Incubators, SEBRAE, Social Networks, among others.
- Enhance policy dialogue with civil society, the private sector and public institutions facilitating participatory programs to promote good governance, enhance transparency and curb corruption. Develop specific activities to empower traditionally excluded peoples, such as extractive communities, Quilombolas, and indigenous communities in Bank projects. Include the private sector in partnership with IFC.
- Catalyze an objective dialogue between government and the private sector on policy changes needed to improve governance and attract investment in the region, with a view to promoting sustainable growth and thus reducing poverty. ESW work can be used as a potential instrument.
- Tailor state-level good governance approaches according to each state's characteristics, e.g., political will to support sustainable development, implementation

capacity, economic conditions, concentration and location of poverty and socio-environmental issues.

- Create an institutional basis for screening and validating technological knowledge, dissemination of knowledge and skills, and training of professional staff for replication of successful regulatory and enforcement practices.
- Through an ESW and subsequent TALs, support the analysis and implementation of the potential use of the constitutional fund managed by the federal Bank system to promote environmentally, socially and economically sustainable activities.

IV-3 CLIMATE CHANGE

Central Problem: current Climate Change models indicate that the Amazon would be severely affected with about 40% becoming much dryer and tending on becoming savannas. This would cause an impact on the population, specially the rural one, as there are more directly dependent on the natural resources. Existing policies and programs do not consider measures to promote adaptation to the climate change specially in terms of land and natural resource use and water supply for agriculture, human consumption and energy within and outside the region.

More recently there has been an increased awareness of the contribution of the deforestation to the Climate Change and the potential mitigation measures that could be taken without affect the long term sustainable development of the region.

Proposed Actions. The World Bank is establishing several mechanisms such as the Frost Carbon Partnership Fund which could support the development of ESWs and pilots aimed at adaptation and mitigation activities.. The Bank is also well positioned to promote the exchange of lessons learned with other Amazonian countries or which are in similar situation (i.e Congo, Indonesia Papua New Guinea)

- Low Carbon Study, Adaptation ESW, Amazon forest dieback forecast, and TAL to support better modeling of CC including interaction with deforestation and water cycle and its adoption by government planners
- Take into account CC model forecast while planning other operations in the region; to include adaptation activities whenever possible
- Support the preparation of the REDD by the federal government
- In partnership with the federal government, support the development of state-level pilot mechanisms to compensate for reduced deforestation

VI. REGIONAL VIEW OF THE LANDSCAPE FOR CONSERVATION AND USE OF NATURAL RESOURCES

The approach for promoting increased conservation and stabilizing the global environmental services provided by the region while promoting economic activity based on sustainable use of natural resources needs to be tailored to three very different landscapes across the Brazilian Amazon: (i) Public land under strict protection (such as national parks, ecological stations and biological reserves) and indigenous land, (ii)

forested areas (public or private) for sustainable use of forest resources, and (iii) areas already deforested (almost all of which are claimed to be private).

V.1 STRICT PROTECTION: PROTECTED AREAS AND INDIGENOUS LANDS

Central Problem: Amazonian ecosystems provide national and global services as a major carbon sink, as a home to major biodiversity, as a producer of freshwater and other aquatic ecosystem services, and as a regional climate regulator. The Brazilian Amazon covers over 4.1 million km² comprising 23 eco-regions and is home to the largest terrestrial biological diversity in the world. Uncertainty about the true environmental impacts of rain forest degradation, and the potential for significant changes in local and global climate and other environmental services provided by primary forest, call for caution with regard to the extent of deforestation allowed. Despite the resilience of forest ecosystems, there may be a point of “no return” after which forest dieback could occur. In this respect, a network of protected areas, especially those aimed at strict protection (parks, biological reserves, ecological stations) in combination with the indigenous land (as mandated in the constitution) could significantly contribute to the maintenance of the original forest.

Recent developments in the Amazon highlight positive shifts towards the creation and implementation of protected areas and indigenous land. The government efforts, supported by the Amazon Region Protect Areas program (ARPA) resulted in the creation of 12.5 million ha of strict protection protected areas, while the state of Pará created 4.2 million ha as proposed in its macrozoning. The federal government also regularized another 40 million hectares of indigenous lands. Through the support of the Pilot Program, the rights of indigenous people to about 18 percent of the Amazon have been ensured.

Proposed Actions

- Support the continuation of ARPA beyond this first phase creating new areas ahead of the agricultural frontier, thus achieving the goal of creating a network of protected areas in 50 million ha.
- Support the expansion and/or consolidation of state protected areas, as a component of sector wide state loans (possibly blended with grant funds from donors).
- Through an ESW and subsequent TALs support the development of mechanisms to provide a long-term sustainable stream of funds for the maintenance of protected areas.
- A federal loan (possibly blended with grant funds from donors) to ensure the management and protection of indigenous lands.
- Through an ESW and subsequent TALs, support the development for the piloting of the avoided deforestation mechanism, specially at state level, in collaboration with the Bank’s Forest Carbon Facility and the Global Forest Alliance.

V.2 FORESTS OUTSIDE STRICT PROTECTION PROTECTED AREAS AND INDIGENOUS LANDS

Central Problem Most of the forest outside strict protected areas and indigenous lands is unassigned public land which is the prime target of illegal and unsustainable harvest of forest resources, as well as land grabbing. Brazil has also a network of sustainable use protected areas. The main ones are the Extractive Reserves (RESEX) and Sustainable Use Reserves (RDS) mainly for community management and the National Forests-(FLONAS). However, very few RESEX and RDS are currently managing their resources and no FLONA is under full operation.

The most promising forest resource, with good domestic and reasonable export markets as well as substantial employment prospects, is sustainably-harvested timber. With over 100 commercially valuable tree species in the region, the Amazon provides 25 million m³/year of timber, of which 65% is for the domestic market. The current tendency is to decrease general lumber consumption and increase hardwood exports. In general, fisheries significantly supply national markets and are the major source of protein in rural communities. The value and the exploitation of non-timber forest products (NTFP) is increasing, especially ingredients for cosmetics and specialty foodstuffs. However, in all cases, there is little or no local added-value through processing.

The current unsustainable production and harvesting methods cause significant social problems including displacement of persons, high degree of informality leading to reduced coping potential and sometimes to indentured labor circumstances, exposure to physical risks, etc. Moreover, they have significant negative environmental impacts, such as soil erosion, overfishing, and, of course, deforestation. Furthermore, the associated productive chains do not maximize economic output nor create as much employment as it would occur if the focus were on greater value added parts of the production chain and sustainable production. Currently, revenue is mainly from the materials produced with little processing, such as sawn boards.

The challenge is to make the economic activity based on the sustainable use of natural resources more profitable than the economic alternatives based on land use change such as ranching. This would encourage the maintenance of the forest rather than its removal, also contributing to maintenance of the national and global public services provided by the Amazon forest ecosystems. Therefore, these forested areas could also benefit from a mechanism to compensate for avoided deforestation, as an additional source of revenue.

Recent developments in the Amazon highlight positive shifts and examples that can be scaled up to promote a significant increase of sustainable use of natural resources. The Pilot Program has developed and tested several successful pilots on fisheries, timber and non-timber management. The Pilot Program has also trained thousands of technicians and professionals on applying the methods and techniques develop in such pilots. The Government of Brazil has recently passed the Public Forest Law and created the Forest Service, which together should support the establishment of forest concession in

FLONAs and other public forest. The new legislation also transfers to states the responsibility to provide authorization for clear cutting or for forest management in private areas.

Proposed Actions

- Support state level projects for sustainable forest and fisheries management focusing on the use of private forest land and the state forests. These projects should also include a component for improving the entire productive chain, and a component for strengthening the related state agencies (as presented in the good governance section).
- TA to support creation and implementation of state RESEX and RDS in the next phase of the Pará and Amazonas loans.
- Support a federal loan (blended with funds from donor partners) for strengthening of the Forest Service and the forest concession system in public forests ahead of the moving frontier to reduce free access and to stimulate sustainable forest management. Support the development of the forest concessions system with auctions of maximum transparency and competitiveness, and involve municipalities and local communities in monitoring of compliance.
- Support a federal loan (blended with funds from donor partners) to promote the community forest and fisheries management in RESEX and RDS.
- Engage through IFC support, with large-scale sustainable forest management businesses, thus setting a benchmark of environmental and social responsibility for business in this area of the Amazon.
- ESW on economic instruments that could provide incentives for sustainable natural resource management. For example, provide tax incentives for sustainably harvested timber (e.g., through modification of IPI or ICMS) or promote branding of sustainable products.
- ESW to identify local and regional constraints to the establishment of “value-added” enterprises in the region.

V.3 DEFORESTED AREAS

Central Problem. Increasing the effective economic use of areas already clear-cut and consolidating the agricultural frontier while decreasing the pressure for new deforestation are key challenges. Over the last 25 years, cattle ranching and large-scale farming, especially soybean production, have rapidly expanded in the Amazon. About 18% of the Amazon has been deforested, at an average rate of 23,000 km² over the past four years (2003-2006). Pastures account for over 70% of the deforested area, and soybean and other agricultural commodities expansion seem to be displacing ranching northwards from the Cerrado (savanna) and into the forest. In addition, wasteful and unsustainable agricultural practices, such as poor pasture management, contribute to the expansion of the deforested areas without an equivalent increase in agricultural area. About 165,000 km² of cleared forests, or 25% of all deforestation recorded in the region, have been abandoned to secondary growth or grassland after less than ten years of use.

Apart from ranching and annual crops, the deforested areas can also be used for forestry that can further decrease the pressure on native forests, such as plantations for plywood or charcoal for iron smelters. Another use that seems to be expanding in the region is the plantation for biofuels, such as palm oil. Meanwhile, several communities have been implementing successful agro-forestry systems, although value adding processing activities are still weakly developed.

There are three main challenges to promote sustainable agriculture (including ranching, forestry and agroforestry). First, unclear land rights discourage investments in long-term sustainable practices. This is more detailed discussed in section V.1. Second, the degraded areas require specific techniques to rehabilitate the soil fertility. EMBRAPA and other agencies have developed several such techniques, but farmers may not have enough access to them or not enough capital to apply them. Finally, most farms are not in compliance with the environmental law, specially the Forest Code, which requires that each farm maintains 50-80% of the property forested. Furthermore, many farmers do not follow the labor law, leaving their workers without basic social protection coverage (health and unemployment insurances, etc.). Thus, all support to promote sustainable agriculture should include the land administration, environmental and labor aspects.

Proposed Actions: The actions proposed below focus on:

- A SWAp to support development of a government program that encourages re-occupation of the degraded areas with sustainable agricultural, forestry activities (for cellulose, plywood sectors or for energy for the metallurgy sector) or community agro-forestry;
- ESW on the allocation of public resources for rural development in the region so as to promote changes in the official lending system (such as Banco da Amazonia and BNDES) to support an increase in the efficiency, impact, and sustainability of these expenditures (in conjunction with actions proposed on section IV.2- Governance);
- ESW on possible Government policy reform to increase the cost of deforestation to private agents through taxation or fees, thereby giving incentives for the use of cleared (“degraded”) land;
- ESW and subsequent TA for the state to implement two provisions of the Forest Code which allow for: (a) lowering legal reserve ratios where zoning provides an acceptable justification for doing so, from an environmental and economic viewpoint; and, (b) trading of reserve requirements and private easements among landholders with different interests and in different environmental situations, promoting the contiguous location of legal reserves;
- A SWAp to develop sustainable agricultural practices (including ranching, forestry and agro-forestry) designed to intensify the use of already deforested areas, helping to reduce pressure to expand into forested areas. Such program should also increase a strong dissemination and extension program.

- Engage through IFC support, with few large-scale agribusinesses established behind the forest frontier, thus setting a benchmark of environmental and social responsibility for business in this area of the Amazon.
- Facilitate, through grant support (IBRD & IFC), the development a set of guidelines for sustainable agriculture acceptable to the industry and civil society.

VII. IMPROVED PUBLIC SERVICES FOR HUMAN DEVELOPMENT

Central Problem The main hurdle to enhancing human development in the Amazon is access to public services and greater economic opportunities. Extreme dispersion of the rural population makes provision of social services and infrastructure (roads, waterways and telecommunications) difficult and costly. In urban areas, increased migration has caused a strong imbalance between demand and supply.

The rural poor spend considerable time and money traveling to urban centers with health and education facilities. The Amazon also has the lowest percentage of rural households with electricity, the lowest density of paved roads and the lowest access to telecommunications and to the Internet in all of Brazil. The basic problem with improving access to public services is finding better ways to extend these services in such a sparsely populated region. Existing challenges for enhanced human development in the Amazon region are defined by the heterogeneous composition of the region's population, historical and current migration and urbanization patterns, differential poverty rates and the actual provision of education and health services in urban and rural space.

Both rural and urban poor in the Amazon region today have better access to public services and job opportunities than the previous generation. In terms of household services, 69% of residences in the region have piped water, 9% are connected to a sewerage system and 24% have solid waste collection. Nevertheless, progress is not homogeneous: the gap between the poor and rich has grown, and the numbers of urban poor have increased dramatically. Indigenous groups have reaped insufficient reward from economic development, and rural inhabitants in remote headwaters remain essentially cut off from social services and outside employment opportunities. Finding better ways to extend educational and health care services, as well as logistical infrastructure services to the poor, is essential if any improvements in human development are to be made in the Amazon.

Currently, 70% of the region's 23 million residents are urban dwellers. However, these emerging urban centers naturally lacked the capacity, revenue and public infrastructure services to respond to the influx of new residents. Moreover, unlike earlier migration patterns, urbanization now derives from either intra-regional or rural/urban movements, rather than from movements from other regions. Another important recent demographic trend is that roads, rather than rivers, are increasingly becoming the source of attraction for the new urban settlers. The municipalities along the Belém-Brasília, Porto Velho-Rio Branco and Santarém-Cuiabá roads are those whose population is growing the fastest.

Meanwhile, more than half of the region's population has less than four years of formal schooling and the illiteracy rate among the adult population is 19%, compared with a national average of 13%. The Amazon has the lowest enrollment rate in child care (children aged 0-3) facilities amongst all Brazilian regions: 94% are not enrolled (compared to only 18% in the South). Children in the Amazon region have the lowest school enrollment rates amongst all Brazilian states: 42% of those aged 4-6 years; 5% of those aged 7 -14; and 21% of those aged 15 -17 are not enrolled. In the Amazon, girls have a lower enrollment rate than boys, the inverse of the national trend. And, when compared to other regions, the Amazon has the greatest proportion of children aged 7-14 who cite the absence of schools close to their homes, lack of transportation or lack of vacancies in existing schools as reasons for not going to ⁹school. In rural areas, there is a basic lack of schools. However, there are schools in urban areas, and the challenge is the quality of the education provided.

Life expectancy in the Amazon region has steadily improved and infant mortality has steadily decreased. However, despite great strides made over the last 10 years - in part supported by the Bank's VIGISUS I project - the region still suffers from an unacceptably high incidence of malaria, leprosy, dengue, hepatitis, tuberculosis and leishmaniasis. Diarrhea remains a major threat to infants. Debilitating parasitic diseases are major causes of morbidity. The extent to which the high incidence of transmissible disease hampers development is an open question, but studies show that diseases such as malaria and TB are strongly correlated with lower productivity.

In rural areas there is also a high proportion of residents with inadequate access to water and sanitation infrastructure and, therefore, with high exposure to health and natural disaster risks owing to the high cost of infrastructure in the context of lower density of the population settlements (and their high geographic dispersion).

Proposed Actions

- State loans adopting an integrated approach to human development, quality of life and environmental sustainability as in the Alto Solimões Development Project and in the Clara Multi-Sector Social Inclusion Development Project. Components should include health, education, sanitation and social protection. In rural areas, efforts to safeguard parks and natural reserves must continue but should be set within a broader framework to improve living standards across the region. In more populated cities, such as Manaus and Belem, activities should also address the issues of unemployment among youth, teen pregnancy, and drug use.
- Add a focus on the Amazon region within the broader framework of the proposed Human Capital Programmatic ESW. This addition would help the Government and the Bank to identify tangible short-term opportunities and longer-term cost-effective strategies to promote stronger and broader formation of human capital. This ESW

⁹ PNAD 2004. IBGE.

would focus on two pillars: (1) the Early Opportunities and Prevention pillar (quality social services for the youngest population) will analyze the “early” levers that create the right conditions and readiness for further skill development; and (2) the Knowledge and Innovation for Competitiveness pillar, which will examine Brazil’s macro and micro environment for knowledge generation and innovation, and propose key policy levers that Brazil can adopt to overcome obstacles for improved use and adaptation of technologies and innovations in order to foster growth and competitiveness.

- All Bank projects in the Amazon should contribute to education, formal or informal, support market-based training and capacity building, and insist on educational values.
- Engage in a policy dialogue with the Ministry of Education, which is planning the creation and consolidation of nine new university centers in the states of the North, to assist in the definition of fields and contents of this expansion and to make the knowledge generation process proper and adequate to the educational needs of the Amazon.
- Strengthening the Bank’s support for Brazil’s Family Health Program to also include the program in smaller municipalities and in rural areas, beyond the current support to municipalities with more than 100,000 inhabitants. This is a Program to improve primary health care by providing a comprehensive range of preventive and curative health care services delivered by a team comprised of health professionals and several community health workers.
- Support VIGISUS II to: (a) reduce mortality and morbidity from communicable and non-communicable diseases and exposure to risk factors associated with ill health, and (b) improve the health outcomes of especially vulnerable groups including indigenous populations and Quilombo communities.

VIII. BALANCED INFRASTRUCTURE DEVELOPMENT

Central Problem. The Amazon region's needs for infrastructure investments are partially a function of its interactions with the rest of Brazil and the world. The available hydropower potential in the Amazon (64% of total effective potential currently unused) is crucial for the country's medium to long term economic development. In addition, the region is a key supplier of wood, beef, semi-processed iron, etc. In this context, the Amazon needs well maintained (and in many cases improved) transport infrastructure (waterways, railroads, major highways, ports, etc.) and new hydropower plants. Inside the region, the needs of the population dictate improvements in infrastructure that can provide a stronger foundation for employment expansion and increase in value-added to local production through lower transport costs, improved availability of electricity and telecommunications services, and adequate availability of water and sewage facilities.

The lack of basic logistical infrastructure hampers development of the local and regional economy. The region is a net exporter of raw materials with few value-added activities. Infrastructure services such as access to energy, roads maintenance, improvement of waterways safety, and product storage capacity are essential to reach new enterprises and attract investments which lead to adding value to production and increasing job opportunities for local residents. To date, logistical infrastructure in the Amazon has been implemented without explicit strategic planning for balanced regional and national development, and has not reflected sufficient consideration of its social-environmental impacts. This has further aggravated land speculation, rural emigration, and deforestation and disorganized land occupation.

The existing infrastructure challenges in the Amazon can be classified in two broad categories. First, there is the lack of an integrated regional policy to ensure that infrastructure projects are designed to promote economic growth, alleviate poverty and foster environmental conservation. Secondly, sustainable solutions synchronized across the different levels of government for the provision of energy, transport, water supply, and communication services are also needed.

More than one million people in the region currently have no access to electricity. Meeting the needs of the unnerved will involve bringing some of them into the national electricity grid (in the big cities and larger towns) and replicating the innovative solutions for provision of off-grid energy (in the small towns and other smaller settlements). Since 2004, the Government has been targeting this challenge through the *Luz Para Todos* ("Electricity for All") Program which aims to provide electric power to rural communities in all states as a means of social inclusion.

For the capacity generating expansion to become a reality, each project must go through a complex environmental licensing process. Neither the effectiveness of this process in ensuring positive environmental (and social) outcomes nor the efficiency of the process is

assured (a Bank-coordinated study is currently examining these two outcomes of the licensing process.)

The region shows great potential for multimodal transportation alternatives, especially to assist in exporting mining and agricultural products. The lack of government support to develop these transportation alternatives has constrained transport of output as well as hampered increased production in both sectors. The road network is small and is concentrated in the states of Mato Grosso, Maranhão and Pará, totaling 241,000 km of which only 9% is paved (11,300 km federal, 9,200 km state and 1,900 municipal). The railroad network is extremely small, totaling a mere 1,669 km distributed among six railroad systems. Waterways in the region (around 20,000 km) are the most extensive transportation mode, with good conditions for navigating, particularly during the rainy season. However, port equipment is obsolete, poorly maintained and insufficient in attending growing regional export demands. Consequently, there is a strong demand for new ports in strategic locations.

Lastly, the enormous potential for sustainable tourism in the region is also constrained by the lack of transport and sanitation infrastructure noted above.

Historically, the large infra-structure projects established in the Amazon, did not consider their role in the sustainable regional development. Recently, there has been an innovative experience that may indicate a way forward. Once the federal government announced its intention to pave the BR-163 highway (Cuiaba, MT to Santarem, PA) land grabbing, deforestation and social conflict increased in the area around the road. As a response, the federal government suspended its plans and created an interministerial committee (GTI) with 13 ministries to develop a sustainable development plan for the region to be affected by the road (over one million km²). As part of the government's efforts to balance infrastructure development and conservation, this process used several tools which enabled moving environmental and social scrutiny upstream allowing for the early consideration of alternative land uses, zoning, improvements in the regulatory framework, and expanded stakeholder consultation in the elaboration process. This resulted in the Sustainable Development Plan for the BR-163 area which has components ranging from organizing land tenure to promoting forest management and organizing small scale gold mining.

Proposed Actions

- SWAp to support the expansion of *Luz para Todos* in the Amazon region.
- Support, through grant funds, an analysis of the likely impact of climate change on the regional water cycle, and proposal of an adaptation plan for the rural population, agriculture, and hydroelectric and waterway potential.
- ESW and subsequent TA to analyze the different regional planning tools being used by different government agencies (such as Integrated Environmental Assessments, Strategic Environmental Assessments, Watershed Plans, Environmental and Ecological Zoning) seeking their integration in a broader planning framework.

Support the state level TAs and loans to effectively integrate their regional development, environmental management, and public infrastructure strategies through economic-ecological zoning and appropriate economic incentives and regulatory instruments for sustainable development.

- ESW to analyze the potential use of waterways in the Amazon; evaluate and propose a multimodal transport system for the region.
- TA to improve better planning, bidding, regulation and consultation regarding major infra-structure in the Amazon.
- If assessments demonstrate that particular infra-structure projects make sense in terms of economics, finance, governance, and environment and social impact, the World Bank Group could engage. IBRD financing might focus on governance, institutional strengthening, and environmental, social and regional development while IFC and MIGA might support the private project developers.