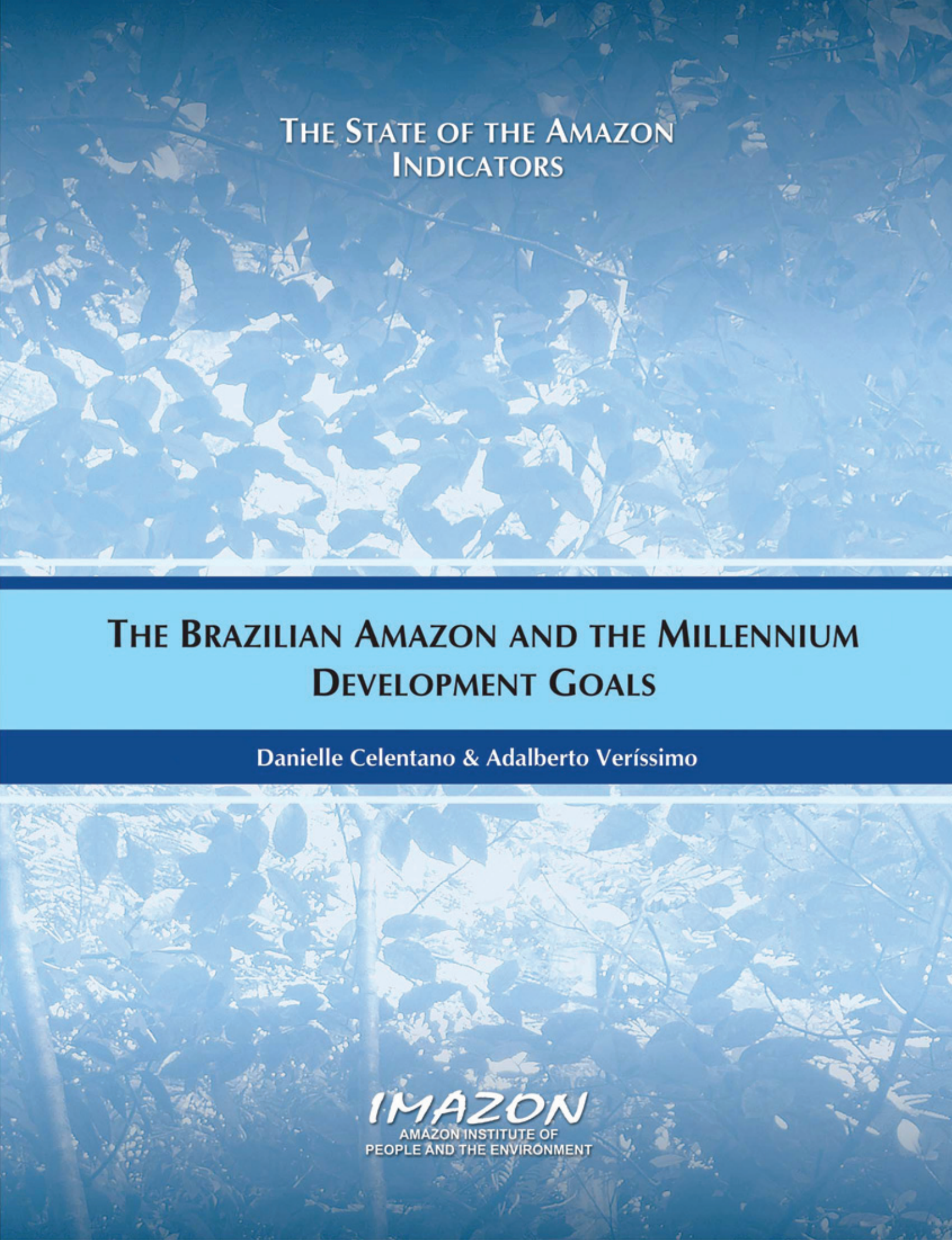




THE STATE OF THE AMAZON INDICATORS

THE BRAZILIAN AMAZON AND THE MILLENNIUM DEVELOPMENT GOALS

Danielle Celentano & Adalberto Veríssimo

IMAZON
AMAZON INSTITUTE OF
PEOPLE AND THE ENVIRONMENT

**THE STATE OF THE AMAZON
INDICATORS**

**The Brazilian Amazon and the Millennium
Development Goals**

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LIST OF ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
APA	Environmental Protected Area
Arpa	Program for Protected Areas in the Amazon
Conabio	National Biodiversity Commission
COP	Conference of the Parties
Enade	National Exam of Student Performance
Enem	National Exam of Secondary Education
Esec	Ecological Station
Flona	National Forest
Flota	State Forest
FMI	International Monetary Fund
GDP	Gross Domestic Product
HDI	Human Development Index
HIV	Human Immunodeficiency Virus
IBGE	Brazilian Institute of Geography and Statistics
Ibama	Brazilian Institute of the Environment and Natural Resources
ILO	International Labour Organization
Inep	National Institute of Educational Studies and Research
Inpe	Institute of Spatial Research
Ipea	Institute of Applied Economic Research
ISA	Socioenvironmental Institute
MCT	Ministry of Science and Technology
MEC	Ministry of Education
MF	Ministry of the Treasury
MMA	Ministry of the Environment
MS	Ministry of Health
NGO	Non-Governmental Organization
Oemas	State Environmental Agencies
Opas	Pan-American Health Organization
Parna	National Park
Pnad	National Research for Household Sample
PRIM	Project for Reduction of Infant Mortality
RDS	Sustainable Development Reserve
Rebio	Biological Reserve
Resex	Extractive Reserve
Seab	National System for Evaluation of Basic Education
SNUC	National System of Conservation Units
Sudam	Superintendency of Amazonian Development
TSE	Superior Electoral Tribunal
UN	United Nations Organization
UNDP	United Nations Program for Development
Unesco	United Nations Organization for Education, Science and Culture
WHO	World Health Organization

SUMMARY

The *Millennium Development Goals* propose by the UN established targets and indicators to measure and guide improvement in socioeconomic (poverty, education, health, gender equality, maternal and infant mortality) and environmental conditions in poor and developing regions of the world. In this *State of the Amazon*, we evaluate the evolution of these goals in the context of the Brazilian Amazon. For this, we use 17 indicators to measure the progress of the region in relation to the targets proposed for the year 2015.

In the Amazon there has been progress in relation to the majority of the indicators analyzed when comparing its situation between the years 2005 and 1990. However, in general, this improvement is still unsatisfactory and the region remains below the national average. The situation is critical in the case of poverty, of the incidence of malaria, of maternal mortality and of access of the population to water and sewer service. Furthermore, two indicators worsened between 1990 and

2005: deforested area and cases of AIDS. Advances were weak in the search for gender equality. There is still a low rate of participation of women in politics and in the labor market. Besides this, women's salaries continue to be lower than those of men.

On the other hand, access to education increased (although improving its quality remains a challenge), there is no inequality between the sexes in access to schools and there was a drop in infant mortality. Additionally, there was a considerable advance in the creation of protected areas (indigenous lands and conservation units), jumping from 8.5%, in 1990 to 42% in 2006.

In relation to the ten targets evaluated in this study, only one was reached in the Amazon (elimination of disparity between the sexes in access to education). Maintaining the slow pace of improvement, only two others could be achieved by 2015, as proposed by the UN: the guarantee of access to education and the reduction of infant mortality.

Key words: Amazon, Brazilian Amazon, Millennium Development Goals, Millennium Targets, socioeconomic indicators and environmental indicators.

PRESENTATION

The *Millennium Development Goals*, established by the UN in 2000, is a global initiative to measure and orient actions to improve social, economic and environmental conditions in which at least 50% of the world's population is found. In this initiative eight goals were defined to reverse this picture of poverty, hunger and diseases on the planet. For each goal there are targets proposed and a cluster of indicators to measure them (box 1). The *Millennium Goals* have the support of the social, environmental and artistic leadership, the leaders in a large majority of countries, multilateral agencies (World Bank, IMF) and the private sector.

In Brazil, besides the indicators proposed by the UN, Ipea has developed national indicators to evaluate the *Millennium Goals*. Despite existing reports that discuss the evolution of these objectives in the country (Ipea 2004, 2005), none addresses the situation of the states, specifically those of the Legal Amazon. In this State of the Amazon, we evaluate the *Millennium Goals* in the Brazilian Amazon with respect to targets established by the UN (figure 1).¹ It was not the objective of this study to analyze causes or to elaborate specific recommendations.

To evaluate the evolution of the *Millennium Goals* in the Brazilian Amazon (referred in the rest of the text as the Amazon),

we analyze 17 indicators (box 2). In general, the evaluation refers to the period between 1990 and 2005. The indicators presented are those proposed by the UN and by Ipea available for the Amazon and complementary others². The indicators were compared between the states of the Amazon and all of Brazil.³ At the end of each section there is an evaluation of the current situation of the region in relation to the goals proposed by the UN.⁴

Millennium Goal 8 previews the establishment of a global partnership for development. According to Ipea (2004), this goal was established to define the aid commitments of more developed countries to poorer ones, principally by reducing inequality in areas of international trade and finance, since there are diverse barriers faced by developing countries – such as trade protectionism and economic instability. The evaluation of the targets proposed by the UN refers to Brazil and thus was not addressed in a regional scope (for more details: Ipea 2004, 2005)⁵.



Figure 1. Brazilian Amazon

Box 1. Millennium Development Goals and Targets (UN).

Goal 1: Eradicate Extreme Poverty and Hunger

Target 1: Reducing by half, between 1990 and 2015, the proportion of the population with income < US\$1 /day.

Target 2: Reducing by half, between 1990 and 2015, the proportion of the population suffering from hunger.

Goal 2: Achieve Universal Primary Education

Target 3: Guaranteeing by 2015 that children in all countries, of both sexes, finish one complete cycle of study.

Goal 3: Promote Gender Equality and Empower Women

Target 4: Eliminating the disparities between the sexes in primary and secondary education, if possible by 2005, and at all education levels, no later than 2015.

Goal 4: Reduce Child Mortality

Target 5: Reducing by two thirds between 1990 and 2015, mortality in children up to 5 years of age.

Goal 5: Improve Maternal Health

Target 6: Reducing by 75%, between 1990 and 2015, the maternal mortality rates.

Goal 6: Combat HIV/AIDS, Malaria and Other Diseases

Target 7: To have halted and begun to reduce the spread of HIV/AIDS by 2015.

Target 8: To have halted and begun to reduce the incidence of malaria and of other major diseases by 2015.

Goal 7: Ensure Environmental Sustainability

Target 9: Integrated the principles of sustainable development in public policies and national programs and reversing the loss of environmental resources.

Target 10: Reducing by half, by 2015, the proportion of the people without sustainable access to safe drinking water and basic sanitation.

Target 11: Achieving, by 2020, significant improvement in the lives of at least 100 million slum-dwellers.

Goal 8: Develop a Global Partnership for Development

Box 2. Indicators used for evaluation of *Millennium Goals* in the Brazilian Amazon.

Goal 1: Eradicate Extreme Poverty and Hunger	1 Extreme poverty. Population with <i>per capita</i> monthly household income less than US\$ 1/day. Source: Ipea.
	2 Poverty. Population with <i>per capita</i> monthly household income less than US\$ 2/day. Source: Ipea.
Goal 2: Achieve universal primary education	3 Illiteracy. Percentage of the population ≥ 15 years incapable of reading or writing a simple note. Source: Ipea.
	4 Average number of years of study for the population ≥ 25 years. Source: Ipea.
	5 School attendance. Proportion of children (7 – 14 years) and youths (15 – 17 years) that frequent primary and secondary education. Source: Ipea.
Goal 3: Promote gender equality and empower women	6 Female education. School attendance (%) and illiterate proportion of the female population (≥ 15 years). Source: Ipea.
	7 Women in politics. Proportion of women in political office in the executive and legislature. Source: TSE.
	8 Economically active population. Proportion of the population (male and female) of working age that is economically active. Source: IBGE.
Goal 4: Reduce Child Mortality	9 Mortality up to 1 year of age per 1,000 live births. Source: UNDP.
	10 Mortality up to 5 years of age per 1,000 live births. Source: UNDP.
Goal 5: Improve Maternal Health	11 Maternal death during gestation or up to 42 days after its termination due to any cause related to or aggravated by pregnancy or by measures in relation to it (OMS 1997). Source: MS.
Goal 6: Combat HIV/AIDS, malaria and others diseases	12 HIV/AIDS. Rate of AIDS per 100 thousand inhabitants. Source: MS.
	13 Malaria. Rate of malaria per 100 thousand inhabitants. Source: MS.
	14 Tuberculosis. Rate of tuberculosis per 100 thousand inhabitants. Source: MS.
Goal 7: Ensure environmental sustainability	15 Deforestation. Area of annual deforestation. Source: Inpe.
	16 Protected areas. Percentage of areas protected for indigenous lands and conservation units. Sources: Ibama, Imazon 2006, ISA and Oemas.
	17 Water and sewer service. Population (%) with adequate water supply (general network with internal plumbing or by means of a well or fountain with internal plumbing) and with adequate sewer installations (bathroom for exclusive use, and with drain connected to a sewage- or rain-collection network or a septic tank linked or not to a collection network). Source: Ipea

The Amazon comprises the states of the Brazilian northern region (Acre, Amazonas, Amapá, Pará, Rondônia, Roraima and Tocantins), Mato Grosso, part of Maranhão and a small portion of Goiás (Table 1). The Amazon covers about 5 million square kilometers (59% of Brazil). In 2004, the region included a population of 22.5 million inhabitants (12% of the Brazilian population), of which 73% reside in urban areas⁶ and

21% were immigrants. In 2004, the GDP of the region was R\$ 137.9 billion (US\$ 64.7 billion), which represents only 8% of the national GDP. In 2000, the region was considered to have average human development (HDI) equal to 0.705. For the Amazon, the *Millennium Goals* represent a new form of evaluating development that is more comprehensive than evaluation by GDP and HDI.

Table 1. Profile of the Amazon States.

States	Abbrevia- tion	Area (Thousands of km ²)	Population in 2004 ¹ (Thousands of inhabitants)	GDP in 2004 ² (Billions of R\$)
Acre	(AC)	153	632,2	3,2
Amazonas	(AM)	1.571	3.191,3	35,9
Amapá	(AP)	143	577,3	3,7
Maranhão	(MA)	264 ³	5.201,7 ³	16,6
Mato Grosso	(MT)	903	2.759,1	27,9
Pará	(PA)	1.248	6.856,7	34,2
Rondônia	(RO)	238	1.511,4	9,7
Roraima	(RR)	224	381,5	1,9
Tocantins	(TO)	278	1.283,8	4,8
Amazon		5.023⁴	22.484,3	137,9
Brazil		8.515	182.060,1	1.766,2

¹ Source: IBGE (2004). ² Source: Ipea (2007). ³ Includes only a part of the territory of Maranhão and the respective population inserted into Legal Amazon. All of Maranhão contains 331.9 thousand square kilometers, and 6.04 million inhabitants.

⁴ Includes five municipalities of Goiás State.

PRECAUTIONARY NOTE

In this document, we adopt a robust scale of analysis (only the sphere of the states), considering the Brazilian Amazon as a whole. Nevertheless, we recognize that a more detailed analysis would demand treating the region on the scale of sub-regions and municipalities. This would reveal a more accurate map of the inequalities within the states and sub-regions themselves, as well as similarities between sub-regions and municipalities of the different states. However, there is a severe limitation in the frequency of surveys and updates of municipal data in the Amazon. This hinders a comparative analysis between 1990 (baseline) and more recent years (2004 to 2006), necessary in the case of the *Millennium Goals*.

The state of Mato Grosso is an integral part of the concept of Brazilian Amazon adopted for this analysis, even though half of its territory presents characteristics (environmental and socio-economic) similar to the other states of the center-west

region. The same applies to the state of Tocantins whose savannah vegetation is distinct from forest covering dominant in all of the other Amazonian states. These factors influence the dynamic of the occupation and development of these states and distinguish them from the rest of the Amazon. Therefore, an analysis that considers only the domain of the Amazonian biome (that excludes the part of Mato Grosso occupied by savannah vegetation and the large majority of Tocantins) could reveal a different situation. For example, the forest data from Mato Grosso would tend to be closer to the rest of the Amazon. But there is a limitation to this approach, since the limits of the biome do not coincide with the borders of the states, and the municipal data are out of date.

Finally, it is notable that the statistics in the region present historic problems due to the difficulty of access and data collection. In this manner, for some indicators, it is possible to have discrepancies between years due to variations in the collection effort, as occurs in the case of the AIDS incidence rate.

Goal 1. Eradicate Extreme Poverty and Hunger

Poverty and hunger are chronic problems in developing countries. It is estimated that more than two billion persons live on less than two dollars per day in the world (UNDP 2005). On the other hand, the 500 richest persons on the planet have income greater than that of the 416 million poorest persons (UNDP 2005). To evaluate the situation of this goal in the Amazon, we utilize the following indicators: (i) percentage of the population below the line of extreme poverty in the Amazonian states and (ii) percentage of the population below the poverty line in the Amazonian states.

1. EXTREME POVERTY REMAINS HIGH

Extreme poverty (or indigence) underwent a reduction of only six percentage points between 1990 and 2005 in the Amazon (figure 2). In 1990, 23% of the population of region lived on less than US\$ 1 per day (or 25% of the monthly minimum

wage), falling to 17% in 2005. In Brazil, the reduction was one point greater (nine percentage points), falling from 20% to 11%. In the country, the northeast region has the worst index, with 24% of the population in the condition of extreme poverty in 2005.⁷

The state of Mato Grosso presents the best situation with only 6% of the population living in conditions of extreme poverty, while Maranhão presents the worst index (28%). However, extreme poverty fell 18 percentage points in Maranhão between 1990 and 2005. On the other hand, the proportion of the population in conditions of extreme poverty increased in Acre, Amazonas, Amapá and Rondônia from 1990 to 2005.

Although extreme poverty has been reduced in relative terms in the Amazon, in absolute numbers the total number of persons living in conditions of extreme poverty grew in the Amazon, rising from 3.7 million in 1990 to 3.8 million in 2005.

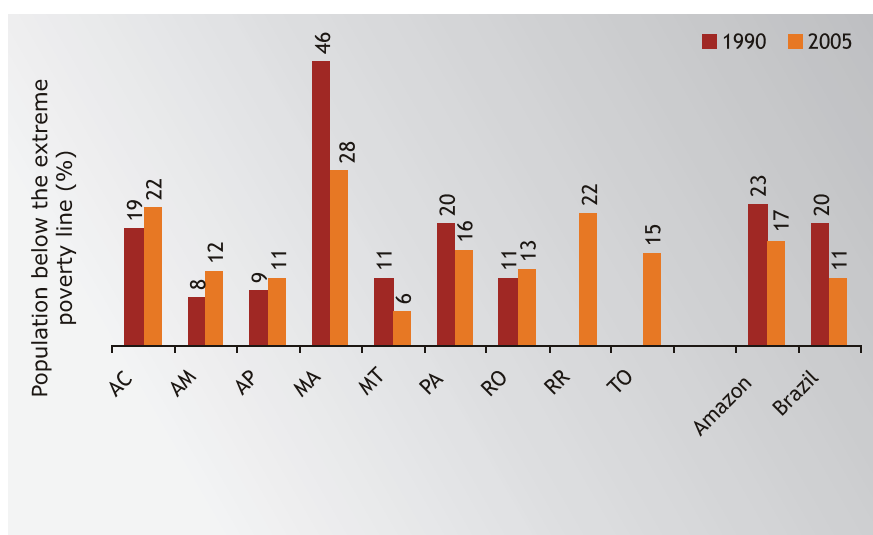


Figure 2. Population below the extreme poverty line in the Amazon (Ipea 2006a)

2. POVERTY REMAINS HIGH

The percentage of the population below the poverty line held steady between 1990 and 2005 in the Amazon: 45% of the population in the region lived on less than US\$ 2 per day (figure 3). But in absolute terms, the number of persons in the region living in conditions of poverty grew from 7.4 million in 1990 to 10.1 million

in 2005. In this period, poverty in Brazil diminished by 11 percentage points, falling from 42% to 31%.

In the Amazon, in 2005, Mato Grosso had the best situation, with 21% of the population living in conditions of poverty, whereas Maranhão presented the worst (60%). Between 1990 and 2005, poverty fell in Mato Grosso, Maranhão and Pará, while it rose in other states.

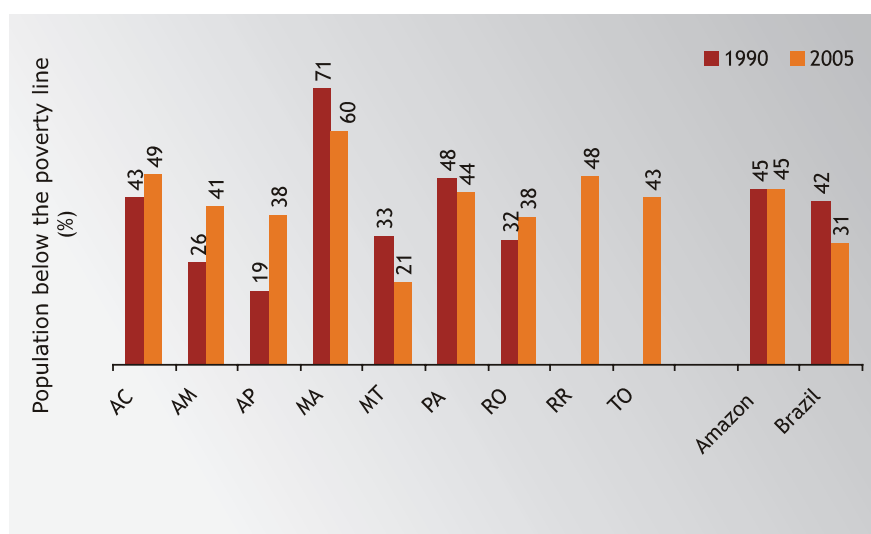


Figure 3. Population below the poverty line in the Amazon (Ipea 2006b).

Box 3. Income and well-being

Poverty needs to be evaluated in a multidimensional form, since it varies not only according to economic conditions, but also by cultural, geographic and environmental factors. Indicators that are exclusively monetary may not reflect the true well-being of the population. For this reason, poverty is an indicator that is difficult to measure directly, especially on a large scale. In the Amazon traditional and indigenous populations subsist on the forest itself and from rivers by means of extractivism (fruits, fishing or hunting). Thus the well-being of these populations depends not only on income, but also on abundance of and access to natural resources and their capacity and conditions to manage them.

Box 4. Food security is low

Food security in Brazil is a recent indicator, measured by the IBGE in Pnad⁸. According to the IBGE (2006a), households with food insecurity are those where basic alimentation is insufficient or non-existent from lack of money to buy it. In 2004, 35% of the Amazonian population lived in a domicile where there was moderate or severe food insecurity (figure 4). The situation was most severe in Roraima (52%) and Maranhão (50%).

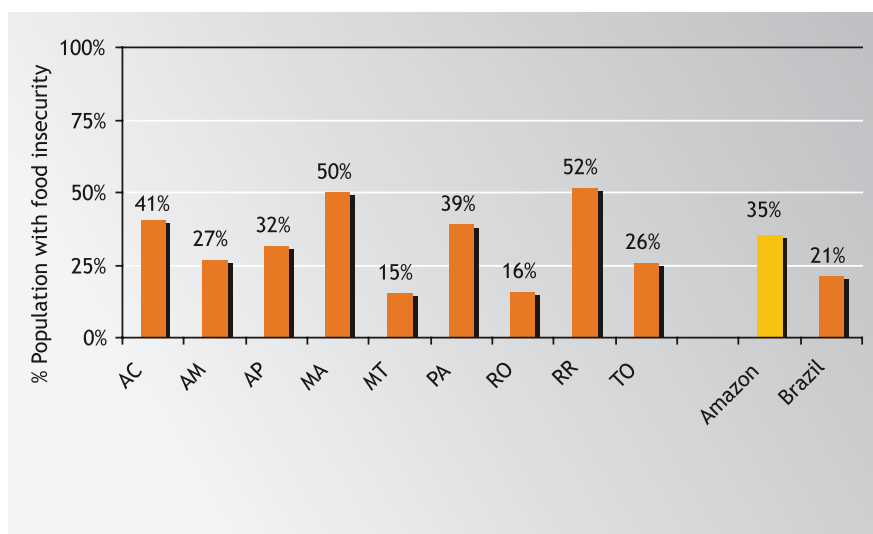


Figure 4. Population with food insecurity (moderate or severe) in 2004 in the Amazon (IBGE 2006a).

**GOAL 1 - Eradicating poverty and hunger**

- **Target 1:** Reducing by half, between 1990 and 2015, the proportion of the population with income < US\$ 1 /day.
- **Target for Brazil for 2015:** 10% of the population with income < US\$ 1 /day.
- **The Amazon in 2005:** 17% of the population with income < US\$ 1 /day.
- **Evaluation:** Maintaining the current rate of reduction, this target will be reached only in 2023. Mato Grosso already achieved this target. Maranhão, Acre and Roraima are the states farthest from this target.
- **Target 2:** Reducing by half, between 1990 and 2015, the proportion of the population suffering from hunger.
- **Evaluation:** Target not evaluated due to insufficient data. Data on food security and nutritional status in Brazil are available only for the last five years.

Goal 2. Achieve Universal Primary Education

Education is fundamental for the development of nations and for the reduction of inequalities. All the developed nations had made large investments in the formation of their human capital. On the other hand, in poor countries, children typically do not have access to schools or must work to contribute to the familial income. According to UNDP (2006), global literacy of adults rose from 75%, in 1990, to 82% in 2006. The number of children matriculating in primary education also increased in the world as a whole, but even so about 77 million children are still out of school (Unesco 2006). To evaluate the educational situation in the Amazon, we selected three indicators: (i) illiteracy rate for the population aged 15 years or more; (ii) mean number of years studying among those more than 25 years old; and (iii) school attendance (primary and secondary education).

3. REDUCTION IN ILLITERACY

Illiteracy (population ≥ 15 years of age) in the

Amazon fell from 20% in 1990, to 13% in 2005 (figure 5)⁹. In Brazil, the drop was greater (8 percentage points) in the same period, reaching 11% in 2005. Among the other regions of Brazil, the northeast had in 2005 the greatest proportion of illiteracy (15%).

Between 1990 and 2005, Roraima presented an increased illiteracy rate. The explanation for this is the inclusion of indigenous populations in the most recent IBGE censuses, which represents a more expressive contingent in Roraima. In Acre and Pará there was no reduction in illiteracy. On the other hand, in the other states, illiteracy was reduced, especially in Maranhão, where this drop was largest: 16 percentage points.

In 2004, the rural population presented a higher illiteracy rate than urban areas (IBGE 2004). In that year, 22% of the rural population in the Amazon was illiterate, versus 10% of the urban population. Maranhão and Acre had rural illiterate populations of more than 30%.

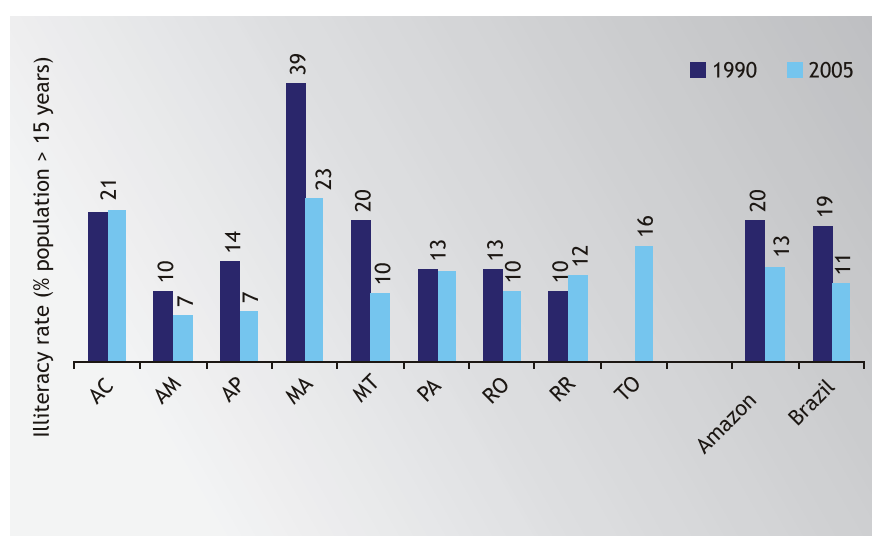


Figure 5. Illiteracy rate (% population ≥ 15 years) in the Amazon (Ipea 2006c).

4. SMALL INCREASE IN THE YEARS OF THE STUDY

In the Amazon, the mean number of years studying of the population age 25 and older passed from 4.1 years, in 1990, to 5.9 years in 2005 (Fi-

gure 6). In Brazil as a whole, it jumped from 4.8 to 6.5 years of study. In all the Amazonian states an increase was registered in the average number of years studying. In 2005, Amapá had the best situation (7.4 years of study), while Maranhão presented the worst, with only 4.5 years.

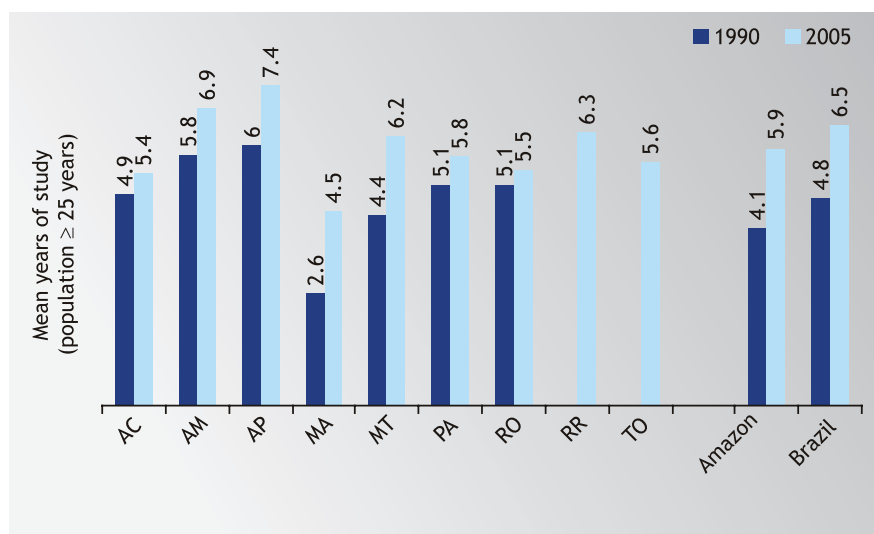


Figure 6. Number of years of population study (≥ 25 years) in the Amazon (Ipea 2006d).

Box 5. Quality of education: a challenge

Despite the efforts of the last decade to increase the number of schools and the access of the Amazonian population to education, the quality of instruction in the region is still inferior to the other regions of Brazil. This can be verified in three studies recently released by Inep, a federal agency linked to MEC. First, in Seab from 2003, the performance of students of the region (primary and secondary education) on Portuguese language and mathematics exams was 7% below the national average (MEC 2003). In Enem, a voluntary exam of mid-level instruction, the average performance of the region in 2005 was 16% less than the Brazilian average on objective tests and 7% inferior on redaction (MEC 2006a). Finally, the Enade of 2005 evaluated higher-education courses in Brazil and revealed that the Amazonian universities have, on average, marks inferior to those of other regions of the country (MEC 2006b).

5. INCREASING SCHOOL ATTENDANCE OF CHILDREN AND YOUTH

There was a rise in the proportion of children between 7 and 14 years that attend primary school in Amazon urban areas. It was 85% in 1990 and rose to 96% in 2005 (Table 2).¹⁰ In Brazil, it jumped from

84% to 97% in this period.

Relevant improvement was shown in the case of adolescents (15 to 17 years) that attend secondary school in Amazon urban areas, rising from 62% (1990) to 80% (2005). In Brazil as a whole, the evolution was similar, increasing from 56% to 82% in the same period.

Table 2. School attendance (%) of children (7 to 14 years) and youth (15 to 17 years) in the Amazon (Ipea 2006h).

States	School attendance (%) ¹			
	7 to 14 years (Elementary)		15 to 17 years (High School)	
	1990	2005	1990	2005
AC	78	93	64	78
AM	89	96	73	83
AP	85	97	55	87
MA	71	95	58	80
MT	83	96	48	81
PA	88	95	72	75
RO	89	96	65	72
RR	95	99	58	80
TO	-	97	-	83
Amazon	85	96	62	80
Brazil	84	97	56	82

¹ Does not include rural population.



GOAL 2 - Achieving basic universal education

- **Target 3:** Guaranteeing that, by 2015, children finish a complete cycle of study.
- **Brazilian Goal for 2015:** 100% of children and youth attending school.
- **Amazon in 2004:** 96% of children (7 to 14 years) and 80% of youth (15-17 years) attended school.
- **Evaluation:** The target of 100% of children attending primary school can be reached by 2010. However, if the current rate of youth attending high school is maintained, the goal of 100% would be achieved only in 2022. The other indicators evaluated (illiteracy and years of study) also improved in the region. Nevertheless, it is essential to eliminate the disparity between the urban and rural zones, to combat functional illiteracy and to improve the quality of instruction in the region.

Goal 3. Promote Gender Equality and Empower Women

For women, fundamental rights such as voting and access to education and to work were won only in the 20th Century. Despite the advances, discrimination against women persists in the world, principally in less developed countries. Data from the UN (2000) show that two thirds of the illiterate persons in the world are women; salary remuneration for women is less than that for men for the same work, and advancement of women into managerial positions is limited. Furthermore, the representation of women in politics remains unsatisfactory. To evaluate the promotion of equality between the sexes and women's autonomy in the Amazon, we selected three indicators: (i) female education (illiteracy and school attendance); (ii) proportion of women in political office; and (iii) economically active female population.

6. FEMALE EDUCATIONAL IMPROVED

The indicators of school attendance and illite-

racy show that the educational situation for females in the region is similar to that for males. Between 1990 and 2005, there was a reduction in the female illiterate population (≥ 15 years of age) from 20% to 12% in the Amazon (figure 7), while among men illiteracy fell from 17% to 14%. In Brazil, female illiteracy diminished from 19% to 11%.

In 2005, the state with the greatest female illiteracy rate was Maranhão, where 21% of women age 15 years and older illiterate. On the other hand, Amapá (6%) and Amazonas (7%) had the best results.

The school attendance of female children (from 7 to 14 years) rose from 86% in 1990 to 96% in 2005 (Table 3), while the male frequency increased from 84% to 96%. School attendance of young women (from 15 to 17 years) passed from 66% in 1990 to 79% in 2005, while the male frequency jumped from 58% to 81%. School attendance rates of women in the Amazon were similar to those of Brazil as a whole.

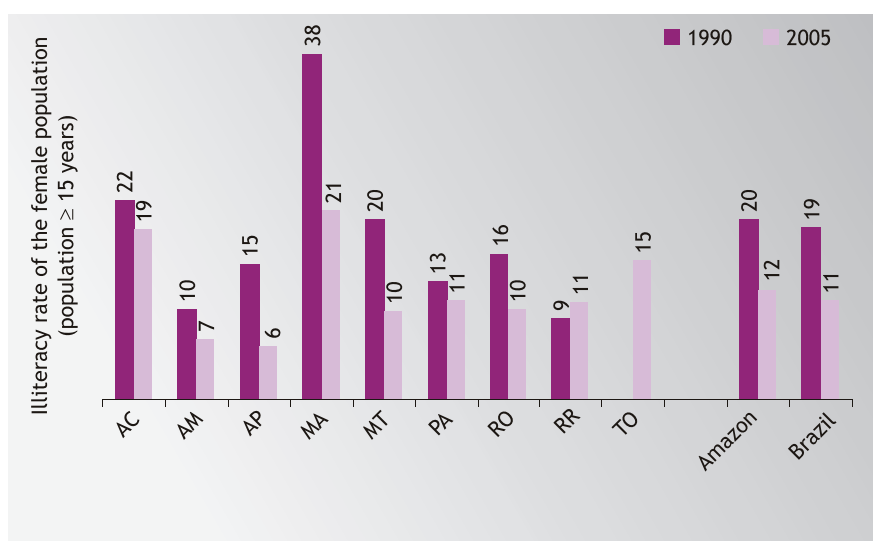


Figure 7. Illiteracy rate of the female population (population ≥ 15 years) in the Amazon (Ipea 2006c).

Table 3. School attendance (%) of children (7 to 14 years) and youth (15 to 17 years) by sex in the Amazon (Ipea 2006h).

States	School attendance (%) ¹							
	7 to 14 years (Elementary)				15 to 17 years (High School)			
	1990		2005		1990		2005	
	Female	Male	Female	Male	Female	Male	Female	Male
AC	76	80	93	93	62	67	76	80
AM	89	88	96	96	72	73	78	88
AP	86	84	97	97	78	35	88	85
MA	76	67	96	94	65	51	80	79
MT	84	81	97	96	52	44	83	80
PA	89	87	96	95	75	68	76	74
RO	89	89	97	96	66	63	71	72
RR	97	93	98	99	55	63	77	83
TO	-	-	97	97	-	-	80	86
Amazon ²	86	84	96	96	66	58	79	81
Brazil	85	83	98	97	60	53	82	81

¹ Does not include rural population.

7. NUMBER OF WOMEN IN POLITICAL OFFICE STILL LOW

The proportion of women elected to political office in the Amazon is still very low (table 4). In 1996, only 7% of municipal governments in the region were administered by women. This per-

centage increased in 2004, reaching 9%. The municipalities administered by women totaled only 4% of the Amazon population in 1996; in 2004 there was a slight improvement, up to 9%.

In January of 1995 there were only 2 women senators out of a total body of 27 Amazon federal senators. In 2007, this representation was aug-

Table 4. Proportion of women elected as mayors and deputies (state and federal) in the Amazon (TSE 2006).

States	Mayors (%)		Deputies (%)			
			Federal		State	
	1996	2004	1994	2006	1994	2006
AC	5	9	25	13	0	21
AM	3	5	13	25	4	13
AP	6	13	25	50	6	13
MA	9	10	6	6	7	17
MT	6	4	13	13	13	4
PA	6	9	18	12	12	17
RO	6	10	13	13	21	4
RR	8	27	0	25	18	13
TO	9	12	25	13	0	13
Amazon	7	9	14	16	9	13
Brazil	5	7	6	9	8 ¹	11 ¹

¹ Includes district deputies.

mented to 4 women senators. In turn, the proportion of women federal deputies from the Amazon increased from 14% in 1994 to 16% in 2006. In Brazil, this proportion rose from 6% in 1994 to 9% in 2006. For the office of state deputy, the participation of women elected in the Amazon went up from 9% in 1994 to 13% in 2006. In Brazil as a whole, this situation is worse: only 11% of deputies elected in 2006 were women.

For the office of governor, the presence of women is even more restricted in Brazil. In the elections of 1994 and 1998, only one female governor was elected, while in 2002 two were elected. In 2006, only three women were elected governors

in Brazil, one of them in an Amazonian state (Ana Julia Carepa - elected governor of Pará).

8. ECONOMICALLY ACTIVE FEMALE POPULATION STILL BEHIND

In 2000, the economically active female population in the Amazon reached 42%, while the national average was 46% (table 5). Roraima obtained the best position (49%) and Maranhão had the worst situation (38%). On the other hand, economically active male population reached 68% in the Amazon, whereas the national average was 70%.

Table 5. Economically active (%) of the working age population in the Amazon in 2000 (Ipea 2006g).

States	Economically Active Population (PEA)	
	Male (%)	Female (%)
AC	66	40
AM	65	42
AP	64	42
MA	66	38
MT	74	43
PA	67	38
RO	74	42
RR	70	49
TO	70	43
Amazon	68	42
Brazil	70	46

Box 6. Women's remuneration is unfair

Remuneration received by women is less than what men receive for the same work (figure 8). In 2004, the average monthly income of economically active women in the Amazon was 32% less than that of males (Pnad 2004). The women with little formal education (up to four years of study) received 20% less than men in the same condition, while women with more schooling (at least 12 years of study) received 33% less than men in the same category.

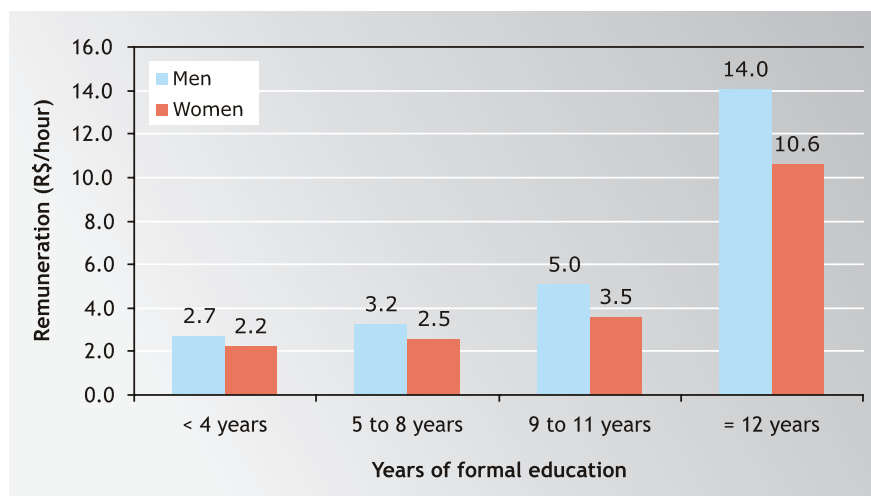


Figure 8. Remuneration of men and women in the Amazon according to number of years of formal education (IBGE 2004).



GOAL 3 - Promoting gender equality

- **Target 4:** Eliminate the disparities between the sexes in primary and mid-level / secondary education.
- **Amazon in 2004:** Goal achieved, there was no relevant disparity between the proportions of females and males (from 7 to 17 years) that attend school.
- **Evaluation:** Goal established by the UN due to ample inequality between the genders in access to education, principally on the continents of Africa and Asia. Although target 4 has been achieved in the Amazon, the other indicators evaluated reveal that the promotion of gender equality is far from being accomplished in the region.

Goal 4. Reduce Child Mortality

Infant mortality is the indicator that best captures the divergence in human development opportunities (UNDP 2005). It is estimated that 11 million children aged less than 5 years die annually in the world as victims of poverty (more than 1,200 deaths per hour) (UNDP 2005). Infant mortality is related to the socioeconomic, nutritional and sanitary conditions of the families, besides access to health. A large part of the factors that lead to infant mortality is avoidable. Specialists identified 23 preventive and curative interventions, of low cost, that could have avoided two out of three child deaths in the world in 2000 (UNDP 2005). In 1996, the Ministry of Health enacted the Project for Reduction of Infant Mortality (PRIM) to combat this problem with a larger budget and contracting of community health agents. To evaluate the infant mortality situation in the Amazon, we utilize two indicators: (i) mortality up to 1 year of age and (ii) mortality up to 5 years of age.

9. INFANT MORTALITY UP TO 1 YEAR DIMINISHES

The mortality of children aged up to 1 year in the Amazon fell from 51 to 36 deaths per one thousand live births between 1991 and 2000 (figure 9). In Brazil, this number dropped from 45 to 31 in the same period.¹¹

The worst situation in the year 2000 was in Maranhão (55 children dead per one thousand live births) and in Tocantins (44). The states with the lowest infant mortality were Mato Grosso (28), Rondônia (30) and Acre (30).

10. REDUCTION OF INFANT MORTALITY UP TO 5 YEARS

There was a drop in mortality of children aged up to 5 years in the Amazon. In 1991 there were 67 deaths per one thousand live births and, by

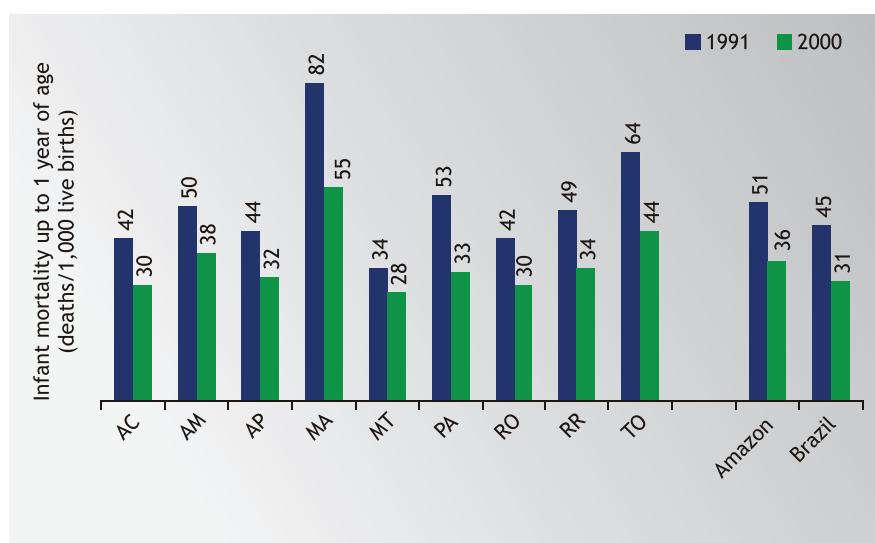


Figure 9. Child mortality up to 1 year of age (deaths/1,000 live births) in the Amazon (UNDP 2003).

2000, this number had fallen to 46 (figure 10). In this same period, throughout Brazil, the number fell from 59 to 39. In 2000, the worst situation was in the northeast, where 70 children aged 5 years or less died per one thousand live births.

In 2000, the worst index was for Maranhão with 86 deaths per one thousand live births, followed

by Tocantins (67). The two classified as the best were Mato Grosso (31) and Acre (34). More recent data from the Ministry of Health (Datasus 2006b) indicate that the mortality of children aged up to 5 years fell to 33 deaths per one thousand live births in Brazil¹².

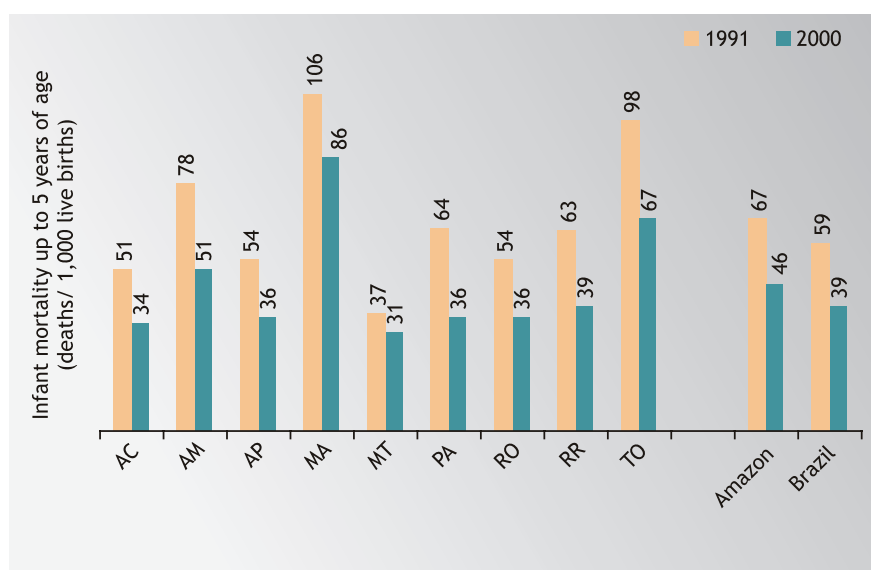


Figure 10. Child mortality up to 5 years of age (deaths/ 1,000 live births) in the Amazon (UNDP 2003).



GOAL 4 - Reduce child mortality

- **Target 5:** Reducing by two thirds, between 1990 and 2015, the mortality of children aged up to 5 years.
- **Target for Brazil by 2015:** 20 deaths/ 1,000 live births.
- **Amazon in 2000:** 46 deaths/ 1,000 live births.
- **Evaluation:** Maintaining the current rate of decrease, this target will be accomplished in 2011, except for Maranhão, Tocantins and Amazonas. More updated data must be confirmed.

Goal 5. Improve Maternal Health

Maternal mortality is directly related to poverty and obstacles in women's access to health services of good quality such as prenatal care during pregnancy and the presence of a qualified professional at the moment of delivery (UN). According to Opas (2006), maternal mortality came to be ten times less in developed countries compared to Brazil. Ninety-six percent of maternal deaths could be prevented or avoided by the medical and technological knowledge already available (Opas 2006). To evaluate this *Millennium Goal*, the indicator we utilize is the number of maternal deaths per one thousand live births.

11. MATERNAL DEATHS REMAIN ELEVATED

The number of maternal deaths per one hundred thousand live births in the Amazon rose from 57 in 1996 to 58 in 2004 (figure 11). In Brazil as a whole, the number of maternal deaths increased from 52 to 54 in the same period.

In 2004, the states with the greatest indices of maternal deaths were Maranhão and Amazonas (with 69 deaths per 100 thousand live births). Roraima and Rondônia presented the lowest indices: 17 and 10 deaths, respectively.

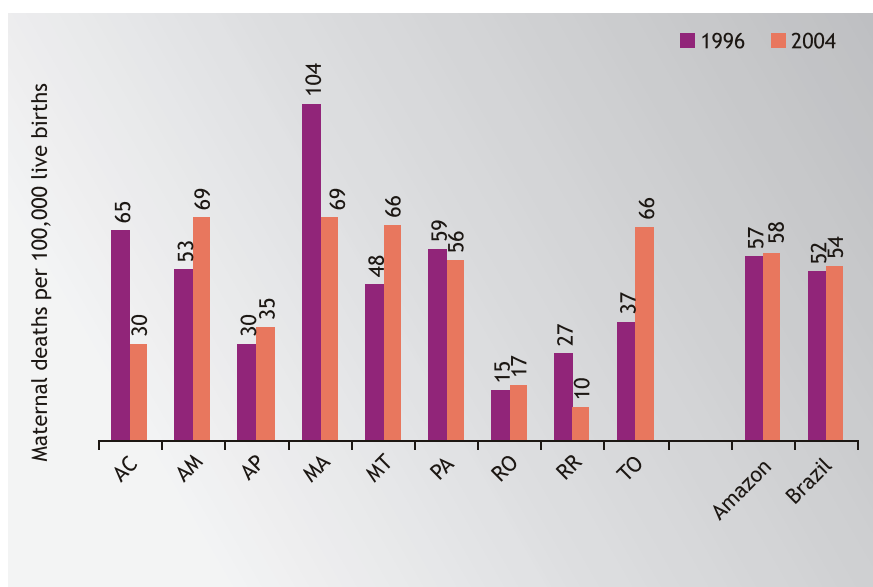


Figure 11. Number of maternal deaths per 100 thousand live births in the Amazon (MS 2006, 2006a).¹³

Box 7. The Amazonian family

In 2000, Amazonian women had an average of three children, which means one child more than the Brazilian average and one more than the regional mean for 1991. In Amapá and Amazonas mothers average four children. In the Amazon, 13% of women between 15 and 17 years already have had children. In Brazil, 8% of women in this age group, on average, are mothers. Acre is the Brazilian state with the greatest proportion of adolescent mothers in Brazil (17%). Among girls aged 10 to 14 years, 0.7% are mothers in the Amazon – a value 0.3% higher than the Brazilian average. Finally, 7% of Amazonian mothers are family heads without a partner, a value close to the Brazilian average (6%). These indicators show that the family in the Amazon is more vulnerable than the Brazilian average.

Source: UNDP (2003).



GOAL 5 - Improving maternal health

- **Target 6:** Reducing by 75%, between 1990 and 2015, the maternal mortality rates.
- **Target for Brazil by 2015¹⁴:** 13 deaths/ 100 thousand live births.
- **Amazon in 2004:** 58 deaths/ 100 thousand live births.
- **Evaluation:** There was no improvement in this indicator and if the current tendency is maintained, this target will not be achieved in 2015 for the Amazon. The only positive exception is Roraima, where the target was met in 2004.

Goal 6. Combat HIV/AIDS, Malaria and Other Diseases

The most recent years have been marked by great medical advances, in terms of medications and technologies (WHO 2006). But access to these benefits is uneven across the planet and some poor countries have half the life expectancy of rich ones (WHO 2006).

In Brazil, although health is considered a constitutional right, access to this right is uneven across the territory. In 2000, there was 0.48 physicians per one thousand inhabitants of the Amazon, while the Brazilian average was much greater: 1.16 physicians per one thousand inhabitants (UNDP 2003). In the Amazonian states, health spending totaled 13.2% (R\$ 3.9 billion) of total budgetary expenses in 2005 (MF 2006). Even so, the *per capita* public health expenses in the Amazon came to be 40% less than the Brazilian average (Sudam/UNDP 2000). Thus the Amazon faces a persistence of diseases resultant from conditions of precarious living and of low access to measures for prevention and control (MS 2003). To evaluate *Millennium Goal 6*, we employed three indicators: (i) the rate of HIV/AIDS; (ii) the rate of malaria; and (iii) the rate of tuberculosis.¹⁵

12. AIDS GROWS SIGNIFICANTLY

AIDS is a non-congenital disease caused by the HIV virus. Once HIV has destroyed defense cells, the organism is left vulnerable to other opportunistic infections and diseases. Currently there are advanced medications that permit the infected person to live for a long period without presenting symptoms. Data from the

UN (2006) show that 38 million persons live with the HIV virus in the world and, annually, about 4 million new cases are registered.

In the Amazon, the disease rate jumped between 1990 and 2004.¹⁶ The number of AIDS cases per 100 thousand inhabitants exploded from 1.2 in 1990 to 12.4 in 2004 (figure 12). The Brazilian rate was even higher in 2004: 17 cases per 100 thousand inhabitants. Roraima and Mato Grosso were the states with the highest AIDS rates in 2004, respectively, 27 and 24 cases of the disease per 100 thousand inhabitants. In that year, Rondônia presented the lowest rate of the disease (6.7). Morbidity data (MS 2006h) indicate that in 2003 3.5 deaths from AIDS per 100 thousand inhabitants were registered in the Amazon.

13. MALARIA CONTINUES ELEVATED

Malaria is an infectious disease caused by protozoa of the genus *Plasmodium* and transmitted to man principally by insect bites¹⁷. This disease that has afflicted man since prehistoric times was

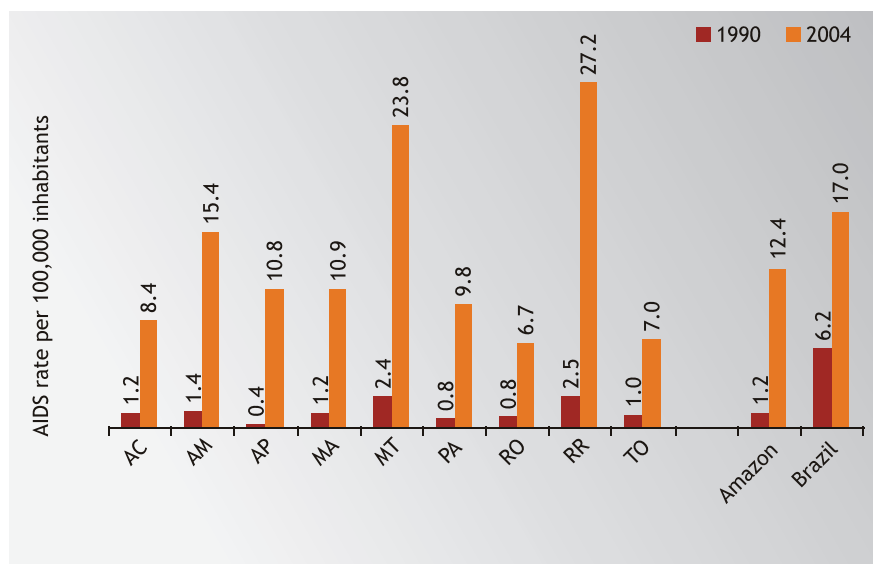


Figure 12. Rate of AIDS incidence per 100 thousand inhabitants in the Amazon (MS 2006b).

eradicated in North America, Europe, Oceania, Japan and the northern Asian mainland. However, it still persists in tropical forests of Africa, Asia and Central and South America (see box 8).

The Amazon is responsible for almost all malaria cases registered in Brazil. The states that register the most cases of the disease are Amazonas, Rondônia and Pará. The number of cases of the disease in the region fell from 546 thousand in 1990 to 459 thousand in 2004. In turn, the incidence of malaria dropped from 3.3 thousand cases per 100 thousand inhabitants in 1990 to 2 thousand cases in 2004 (figure 13). Nevertheless, considering the tendencies of the drop prior to 2004, an increase in the disease was noted in the Amazon. Between 1990 and 2002, the number of malaria cases had fallen 36% and the rate of the disease, 49%. Yet

between 2002 and 2004, the number of cases rose 32% and the incidence rate jumped 19% in the region.

In 2004, Rondônia presented the highest rate of the disease (7 thousand cases per 100 thousand inhabitants). The states with the lowest rates of malaria were Tocantins (67 cases per 100 thousand inhabitants), Mato Grosso (236) and Maranhão (239). However, it is important to highlight that these states possess a large proportion of savannah vegetation, which diminishes the conditions for proliferation of the disease.

Morbidity data (MH 2006h) indicate that in 2004 an average of 10.4 deaths by malaria were registered per 100 thousand inhabitants in the Amazon. Rondônia, Amazonas and Pará presented more than 20 deaths per 100 thousand inhabitants.

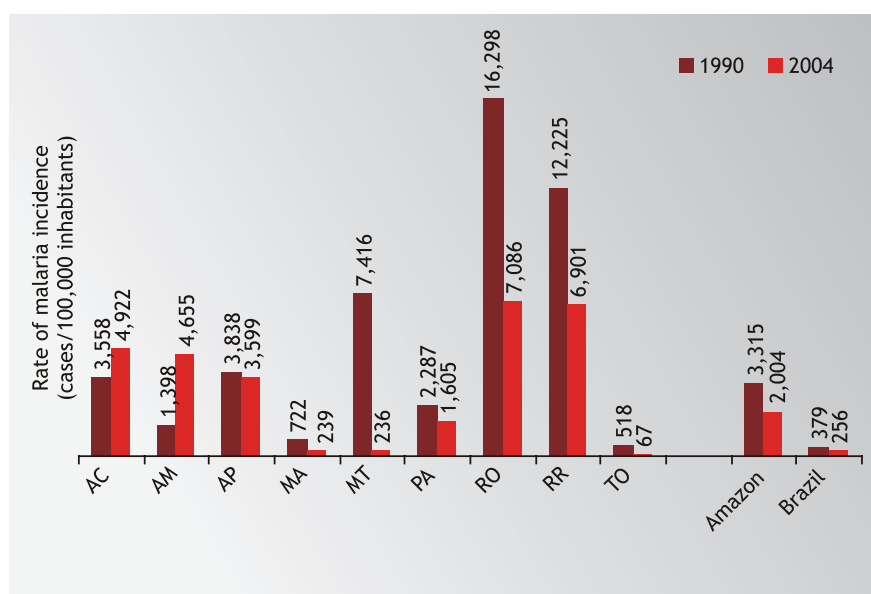


Figure 13. Rate of malaria incidence per 100 thousand inhabitants in the Amazon (MS 2006c).

Box 8. Deforestation and malaria

The cutting down of the forest and the damming of streams and rivers favor the proliferation of the mosquito that transmits malaria (*Anopheles darlingi*), which utilizes stagnant and clean water to reproduce. Two recently published studies reinforce this thesis. The first study, that utilizes data from rural settlements in Rondonia, affirms that the areas of recent deforestation present greater incidences of the disease ("frontier malaria") when compared to areas of older deforestation (Castro *et al.* 2006). The second study, conducted in the Peruvian Amazon, reveals that in areas under deforestation, the rates of vector insect bites came to be 278 times greater than in forested areas (Vittor *et al.* 2006). In fact, the incidence of malaria in Amazonian municipalities occurs with greater frequency in regions of high-intensity deforestation inflicted in recent years - such as in central-west Pará, northern Rondônia, northwest Mato Grosso and southern Amazonas (figure 14). Non-forested areas and old frontiers of deforestation present low intensity of the disease.

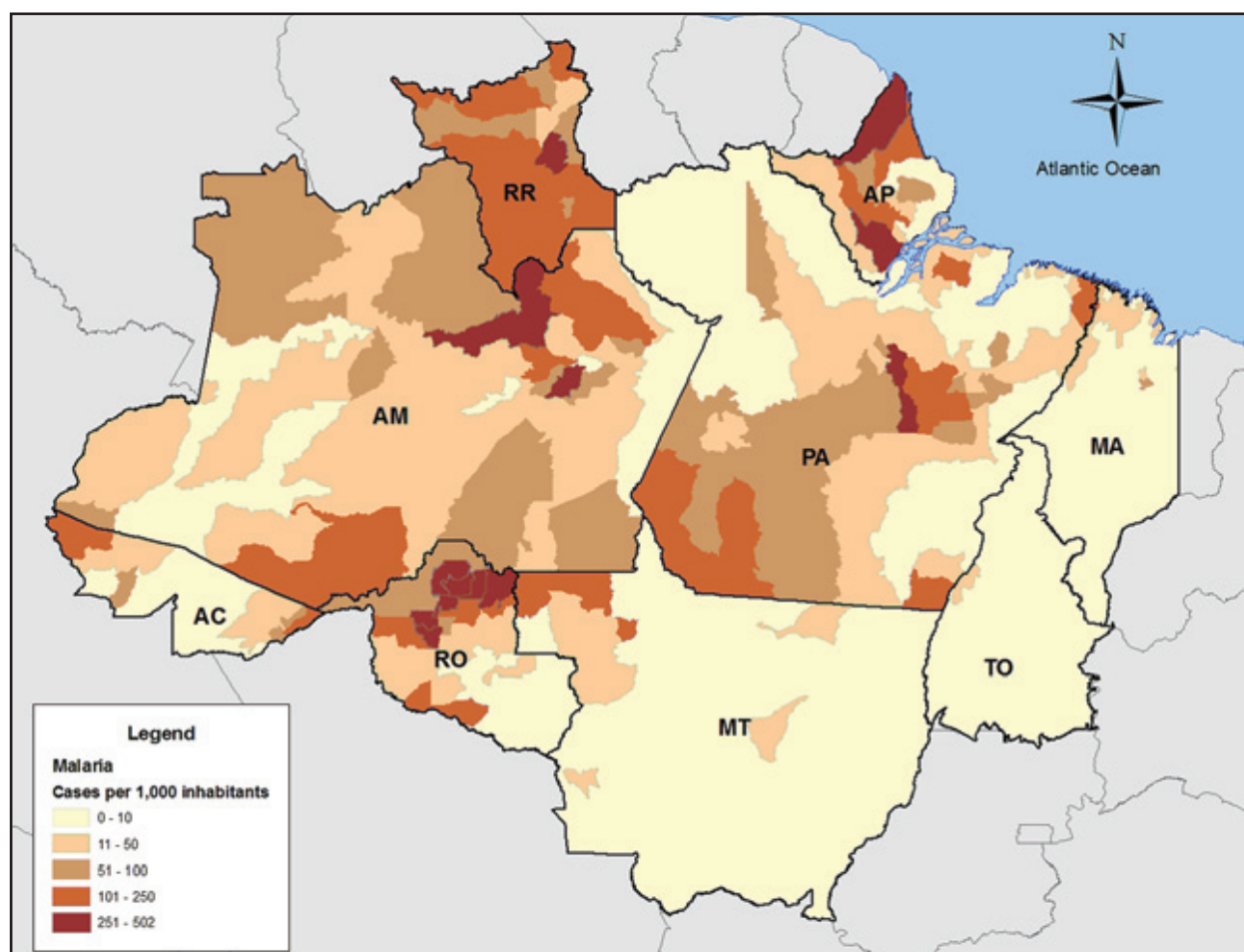


Figure 14. Distribution of malaria in 2004 in municipalities of the Amazon (MS 2005).

14. TUBERCULOSIS FALLS, BUT REMAINS ELEVATED

Tuberculosis is a curable but infectious contagious disease caused by the Koch bacillus microorganism (*Mycobacterium tuberculosis*) and transmitted through the air. According to the WHO, one third of the world population is infected by the bacillus, although only 5% to 10% of them manifest the disease. Tuberculosis is the greatest cause of deaths in the world. For this reason, one decade ago the WHO declared a global state of emergency for tuberculosis. According to the Ministry of Health, Brazil occupies 15th place among the 22 countries responsible for 80% of total cases of tuberculosis on the planet.

Although the number of tuberculosis cases registered in the Amazon has remained practically stable over the last 20 years (between 10 thousand and 12 thousand cases registered), the rate of the disease diminished (figure 15). In 1990, the disease rate was 73 cases per 100 thousand inhabitants. In 2004, this rate fell to 48.

In 2004, the state of Amazonas presented the highest rate (72 cases per 100 thousand inhabitants), followed by Pará (53) and Roraima (51). Tocantins presented the lowest rate of tuberculosis among the states (18). Morbidity data (MH 2006b) indicate that in 2003 2.3 deaths by tuberculosis were registered per 100 thousand inhabitants in the Amazon.

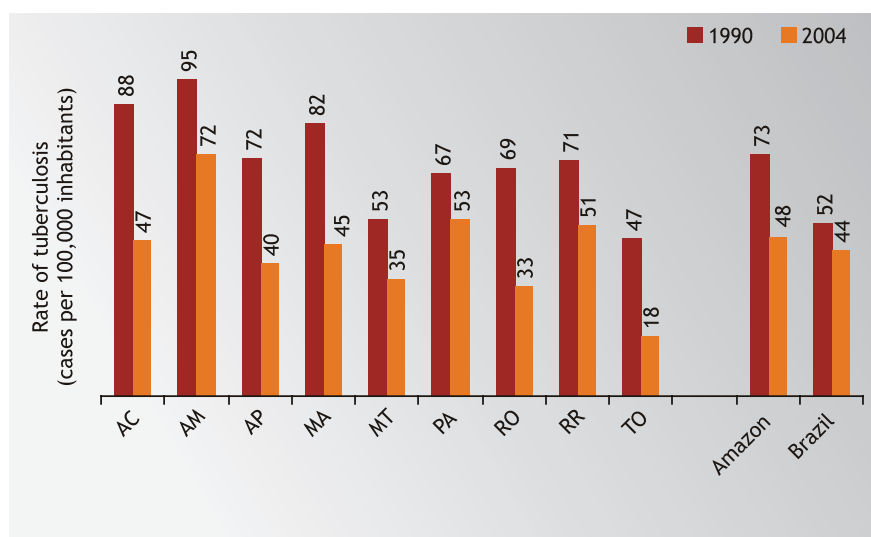


Figure 15. Rate of tuberculosis incidence in the Amazon (MS 2006d).

Box 9. Dengue and Leishmaniosis

Dengue and leishmaniosis are the other diseases that have high incidence in the Amazon (table 6). Dengue is a viral disease transmitted by a bite from the mosquito *Aedes aegypti*, and may manifest as the classic or hemorrhagic form (this can be very severe). It is a grave public health problem in the tropics, where environmental conditions are favorable for breeding of this mosquito. Prevention occurs through eradi-

cation at the reproduction sites of the mosquitos and by use of mosquito nets and repellents. In 2004, 92 cases per 100 thousand inhabitants were registered in the Amazon, while the Brazilian average was much lower (35).¹⁸ The states most affected by the disease in that year were Acre (697) and Amapá (463).

Leishmaniosis is provoked by parasites of the genus *Leishmania* and transmitted by mosquitos of the genus *Flebotomineos*. Tegumentary leishmaniosis is the most common in Brazil, especially in forest regions. In 2004, 87 cases per 100 thousand inhabitants were registered in the Amazon, while the Brazilian average was a mere 16 cases. The states with the highest incidence of the disease in that year were Acre (246) and Amapá (210).

Table 6. Rates of dengue and leishmaniosis in the Amazon in 2004 (MS 2006ef)

States	Cases per 100 thousand inhabitants	
	Dengue	Tegumentary Leishmaniosis
AC	697	246
AM	29	72
AP	463	210
MA	24	52
MT	82	138
PA	71	79
RO	190	141
RR	117	42
TO	107	43
Amazon	92	87
Brazil	35	16



GOAL 6. Combat HIV/AIDS, Malaria and Other Diseases

- **Target 7:** To have arrested and begun to reduce the propagation of HIV/AIDS by 2015.
- **Amazon in 2004:** 12.4 cases of AIDS per 100 thousand inhabitants.
- **Evaluation:** The rate of the disease has increased in the region and if the current trend were to continue, the target will not be reached in 2015.
- **Target 8:** To have arrested and begun to reduce the incidences of malaria and other severe diseases by 2015.
- **Amazon in 2004:** > 2 thousand cases of malaria and 48 cases of tuberculosis per 100 thousand inhabitants.
- **Evaluation:** Although the incidence of malaria and of tuberculosis had diminished between 1990 and 2004, these diseases persist at elevated rates. Besides this, the region has a very high incidence of dengue and tegumentary leishmaniosis.

Goal 7. Ensure Environmental Sustainability

Environmental sustainability is the capacity to sustain ecosystems in the face of human interference, guaranteeing the necessities for the present generation without affecting supplies for future generations (UN). The predominant form of development in modern society is not sustainable, which occasions severe environmental problems, the most prominent of which are the destruction of forests, the loss of biodiversity and the pollution of the waters and air. One of the consequences in nature of human activity is the acceleration of global warming; resulting from the emission of greenhouse gases (IPCC 2007). The limits of the utilization of natural resources and the necessity of altering the mode of production and consumption by humans are at the center of the principal debates over development.

In the Amazon, deforestation has already removed 17% of the original forest. Furthermore, extensive areas of the Amazonian biome harbor forests that are impoverished and degraded by burning and predatory logging. According to Barreto *et al.* (2005), 47% of the Amazonian biome was under some type of human pressure in 2002, with 19% of the pressure being consolidated (deforestation, urban centers and rural settlements) and 28% under incipient pressure (measured by heat foci).

Expenses for environmental administration represented only 0.3% (R\$ 96 million) of the public budget of the Amazon states in 2005¹⁹ (MF 2006). In contrast, budgetary ex-

penses applied to the environment in all of Amazon was eight times less than corresponding spending by the state of São Paulo (southeast of Brazil) in 2005 (MF 2006).

To evaluate *Millennium Objective 7*, we use three indicators: (i) deforested area; (ii) percentage of protected areas; and (iii) environmental sanitation (access of the population to adequate water supply and sewer installations).

15. DEFORESTATION CONTINUES TO BE HIGH

Deforestation in the Amazonian biome rose from 10% in 1990, reaching 17% in 2005 (figure 16). Between 1990 and 2006, the area deforested annually remained elevated (figure 17). On average, the deforested area increased from 16 thousand square kilometers in the 1990's to approximately 20 thousand square kilometers between 2000 and

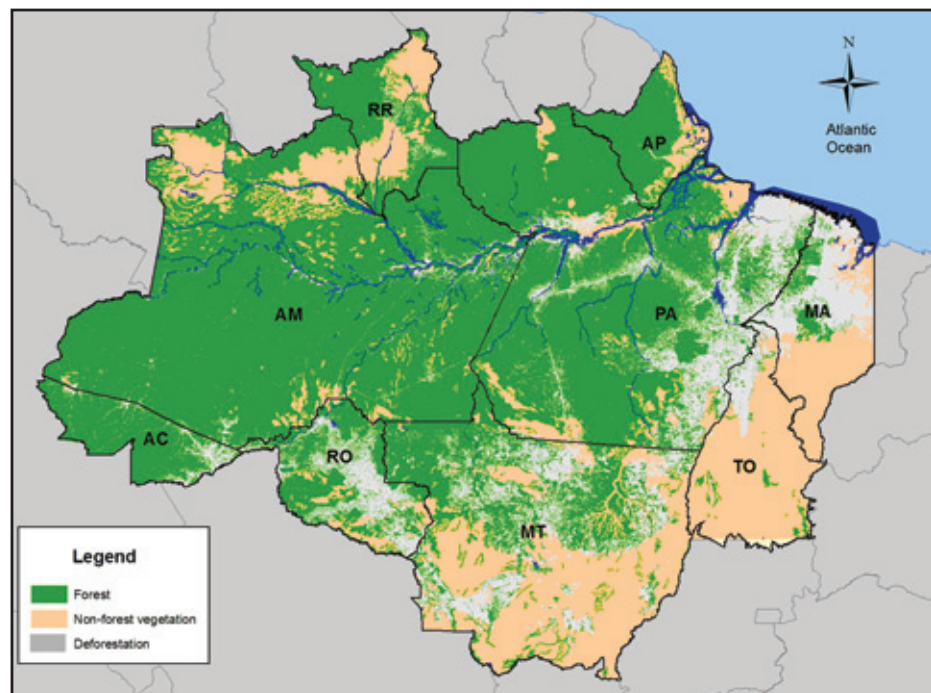


Figure 16. Vegetation in the Amazon (IBGE 1997 and Inpe 2005).

2006. The greatest deforestation registered in the Amazon occurred in 1995 (29.1 thousand square kilometers). In 2004 the second greatest deforestation in the history of the region was registered – 27.4 thousand square kilometers. In 2005, the deforested

area was 18.8 thousand square kilometers, which represents a drop of more than 30% in relation to the prior year. In 2006, an even more relevant fall in deforestation in the Amazon was registered (13.1 thousand square kilometers) (table 7).

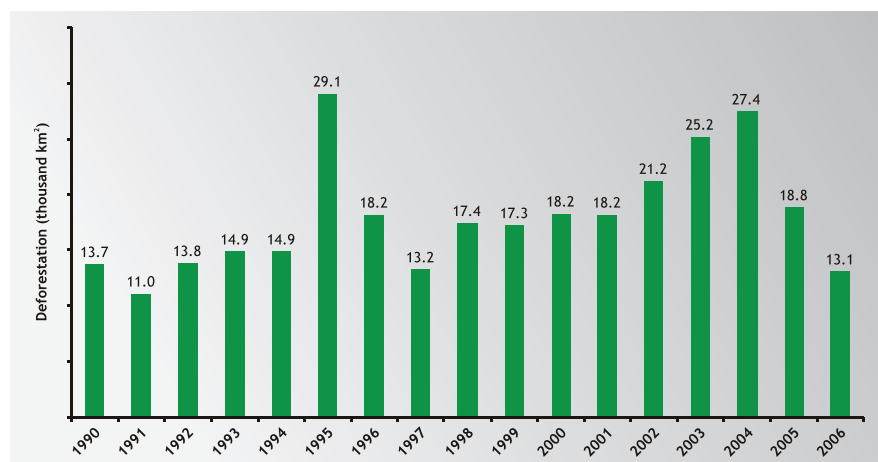


Figure 17. Deforested area between 1990 - 2006 in the Amazon (Inpe 2006)²⁰.

Table 7. Area deforested in 1990 and 2005 in the Amazon (Inpe 2006).

States	Area deforested (km ² /year)	
	1990	2005
AC	550	541
AM	520	752
AP	250	33
MA	1.100	922
MT	4.020	7.145
PA	4.890	5.763
RO	1.670	3.233
RR	150	133
TO	580	271
Amazon	13.730	18.793

Box 10. Public policies and sustainable development

Target 9 of the *Millennium Goals* suggests the incorporation of sustainable development principles into public policies. Recent years have seen advances in the establishment of environmental laws and policies in Brazil with relevance to the Amazon. Among these, the following should be highlighted:

- **National Environmental Policy (Law 6.938/81).** Makes environmental licensing obligatory for enterprises or activities that have the potential to pollute or degrade (hydroelectric plants, highways, mines, waterways etc.) among other directives;
- **Environmental Crimes Law (9.605/98) and Decree 3.179/99.** Previews penal and administrative sanctions derived from behaviors and activities damaging to the environment;
- **National System of Conservation Units – SNUC (9.985/2000).** Establishes criteria and norms for the creation, implantation and management of conservation units;
- **Provisory Measure 2.186-16/01.** Provides dispositions on genetic patrimony and access, and the protection of and access to traditional knowledge and distribution of benefits;
- **Biosecurity Law (11.105/05).** Defines norms of security and mechanisms enforcement of activities that involve genetically modified organisms.
- **Public Forests Management Law (11.284/06).** Regulates the management of forests in public areas (federal, states and municipalities), creates the Brazilian Forest Service as a regulatory agency and the National Forest Development Fund.

The establishment of legislation favorable to the adequate use of natural resources and to environmental protection is important, but its implantation still is a challenge. For example, the Environmental Crimes Law has not been effective in protecting the Amazonian forests and its inadequate application impedes the effective combating of illegal exploitation of forests by logging businesses and disfavors reparations for environmental damage (Brito and Barreto 2005).

16. INCREASE PROTECTED AREAS

Protected areas are strategic for the conservation of the Amazon rainforest. In Brazil, these areas are divided into conservation units and indigenous lands.²¹ In turn, the conservation units are classified as nature reserve (Parnas, Rebio, Esec etc.) or production reserves (Flo-nas, Resex, RDS etc.). Protected areas represent an efficient manner of combating deforestation and conserving the forests.

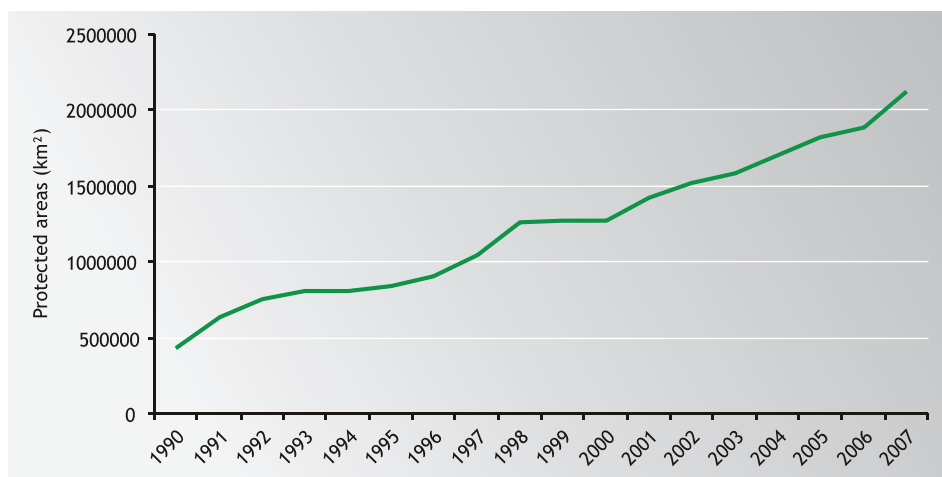


Figure 18. Creation of protected areas between 1990 and 2007 in the Amazon (Imazon 2006, ISA 2006, Ibama 2006 and Oemas).

The proportion of protected areas has increased considerably in the Amazon in recent years, passing from 8.5% in 1990 to 42.1% (2.1 million square kilometers)²² in 2006 (figure 18) (Ribeiro *et al. in press*). Of this total, 20.5% are indigenous lands and 21.1%

are conservation units. Furthermore, there is 0.5% consisting of military areas (figure 19). Meanwhile, recent studies demonstrate that some protected areas of the Amazon are being illegally deforested (Ribeiro *et al. 2005*; Nepstad *et al. 2006*; Ferreira 2006).

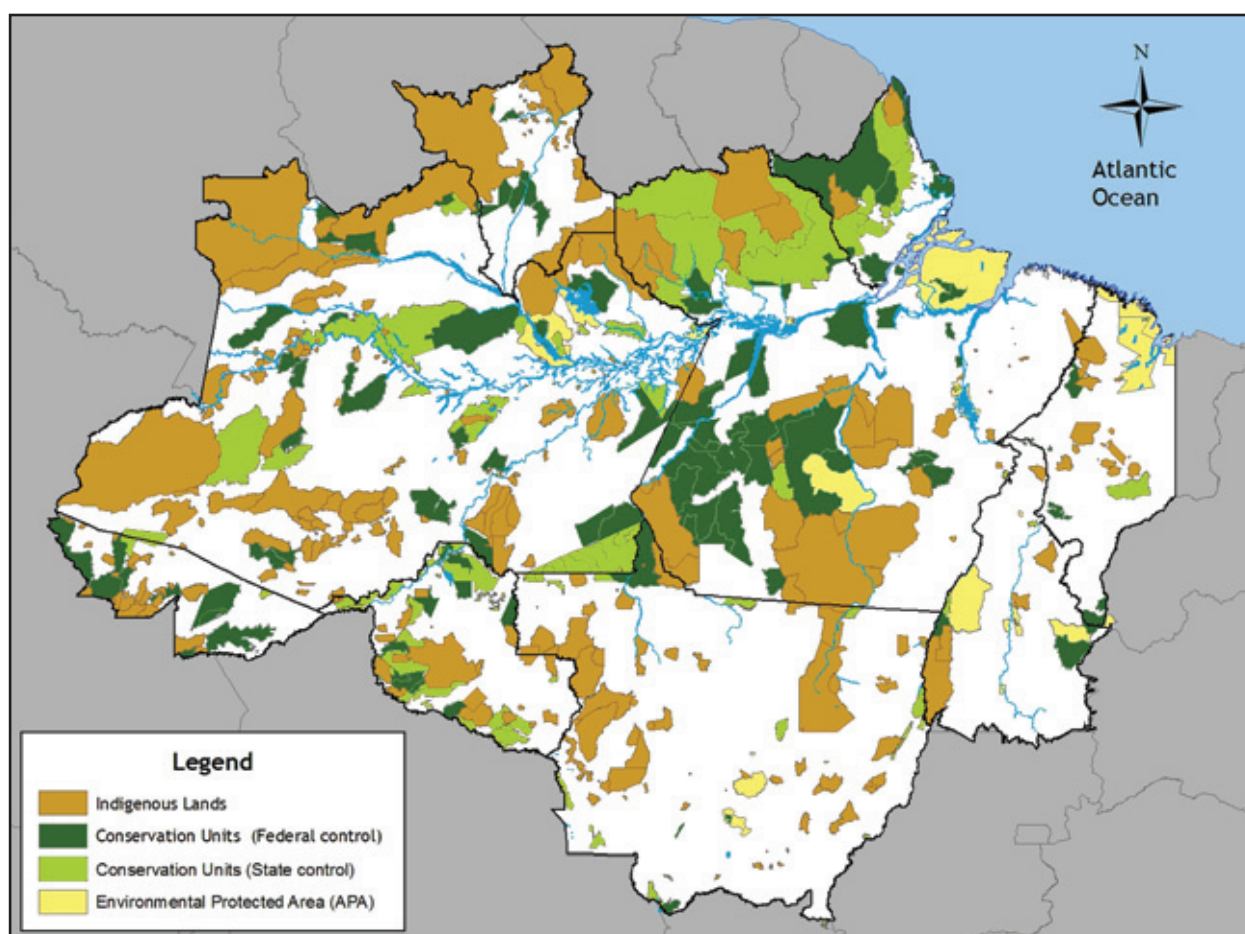


Figure 19. Protected areas in 2006 in the Amazon (Imazon 2006, ISA 2004, Ibama 2006 and Oemas).

Box 11. The Amazon and the greenhouse effect

The greenhouse effect results from the accumulation of certain gases in the atmosphere, mainly carbon dioxide (CO₂), which impedes the return of a portion of solar rays to the atmosphere, thus provoking global warming. After the industrial revolution (1750) there was an significant increase in the accumulation of CO₂ in the atmosphere, resulting principally from the burning of fossil fuels. It is estimated that the temperature of the planet has already increased by 0.7°C in the last century and will rise even more over the coming decades. Some of the possible consequences include: polar melting, rise in sea level, droughts and severe floods.

In 1997 the Kyoto Protocol²³ was established, which proposed goals to diminish the greenhouse gas emissions by 5% (from the 1990 baseline) in developed countries. Beyond this, the protocol also establishes three flexibility mechanisms to facilitate the process of reducing emissions: (i) Joint Implementation; (ii) Trading of Emission Credits; and (iii) the Clean Development Mechanism²⁴ (CDM).

Brazil is known for its “clean” energy matrix. The emission of CO₂ as a function of the burning of fossil fuels represents 25%, which is little compared to other countries (MCT 2004). In 1994, Brazil emitted an estimated 1.03 billion tons of CO₂ into the atmosphere and 75% of these emissions were caused by deforestation, forest burning and soil (MCT 2004). Deforestation of the Amazon contributes much to Brazil’s CO₂ emissions. Only in 1994 (when deforestation added up to 14.9 thousand square kilometers), was this activity responsible for the emission of 429 million tons of CO₂ (MCT 2004). The diminution of the rate of Amazonian deforestation is the main alternatives for Brazil to reduce its CO₂ emissions.

Recent studies show that deforestation contributes 20% of global greenhouse gas emissions and that reducing deforestation is the least expensive way to diminish CO₂ concentrations in the atmosphere. For this reason, mechanisms to provide financial compensation for “avoided deforestation” have been proposed in national and international discussions. In addition to decreasing carbon emissions, avoiding deforestation also conserves the tropical forest and its biodiversity.

17. SMALL IMPROVEMENT IN SANITATION

In the Amazon, the percentage of the population that lives in domiciles with adequate water supply increased from 48% in 1990 to 68% in 2005 (Table 8). In turn, in Brazil, in 2005, 88% of the population on average had access to this service. The Amazon presented the worst national indices in 2005. In northeast Brazil, 72% of the population benefited from this service in 2005. Among the Amazonian states, Acre (50%) and Maranhão (52%) presented the worst water supply indices. On the other hand, Amapá presented the best result (91%).

The percentage of the population that lived in urban domiciles with adequate sewer installations in the Amazon increased from 33% in 1990 to 48% in 2005 (Table 8). The worst sewer coverage

in the region was in Tocantins (22%), while the best situation was in Roraima (74%). In Brazil, in turn, 67% of the Brazilian population had access to this service in 2005. The Brazilian regions with the worst sewer coverage were the northeast (44%) and the central-west (44%). However, despite the increase in sewer coverage systems, according to Ipea (2004), only 1/3 of sewage collected in Brazil receives treatment, a fact that should be addressed in national public policies. In the Amazon, 11.7 million persons live in residences without sewage collection. According to the WHO, for every R\$ 1 spent on basic sanitation, there is a future economic return of at least R\$ 5 in public health (medicines or hospital treatments) (MS 2006g). However, only 0.8% of Amazonian state budgets were applied to sanitation in 2005 (MF 2006).

Table 8. Population (%) in 1990 and 2005 residing in domiciles with adequate water supply and with adequate sewer installations in the Amazon (Ipea 2006 ef).

States	Population that lived in domiciles with			
	Adequate water supply (%)		Adequate sewer installations (%)	
	1990	2005	1990	2005
AC	49	50	37	39
AM	80	80	53	51
AP	92	91	49	56
MA	22	52	15	47
MT	58	90	26	44
PA	57	61	41	53
RO	68	86	55	48
RR	72	81	64	74
TO	-	76	-	22
Amazon	48	68	33	48
Brazil	71	88	51	67



GOAL 7. Ensure Environmental Sustainability

- **Target 9:** Incorporating the principles of sustainable development in public policies and national programs and inverting the loss of environmental resources.
- **Evaluation:** Laws and other policy instruments were created in recent years to promote sustainable development. Nevertheless, deforestation in the region has already reached 14% of the Amazon and 17% when considering the biome. The good news is that 42% of the region is legally protected. Other more specific targets were proposed for the region:

Deforestation:

Conabio established a goal to reduce Amazonian deforestation by 75% (in relation to deforestation 2002/2003) by 2010. To accomplish this goal, the area deforested must fall to 6.2 thousand square kilometers. However, some scientists and environmentalists support an immediate moratorium prohibiting deforestation, considering that there are many areas already deforested that are not being exploited economically. According to Brazilian law, up to 20% of a rural property in the Amazon forest can be deforested while forest covering must be maintained on the remaining 80%.

Protected areas:

Conabio established a goal of 30% of the Amazon being protected as a Conservation Unit by 2010. (21.1% was protected as a Conservation Unit in 2006). To achieve this goal it will be necessary to create another 445 thousand square kilometers of new Conservation Units.

The goal of the **Arpa** Program is to support the creation of 90 thousand square kilometers of Conservation Units of Integral Protection by 2007 (goal surpassed by 60%) and a total of 285 thousand kilometers by 2012. Besides these goals, Arpa expects to support until 2012, the creation of 90 thousand kilometers of Resex and RDS - a goal almost accomplished (92%).

PNF (2000) established as a goal the creation of 500 thousand square kilometers of Flonas and Flotas by 2010. Despite the advance in recent years, to reach the goal, a shortfall of 241 thousand square kilometers remains.

- **Target 10:** Reducing by half, by 2015, the proportion of the population without permanent and sustainable access to potable water and basic sanitation.
- **Brazilian Target for 2015:** 83% of the population with access to adequate water supply and 77% with adequate sewer installations.²⁵
- **The Amazon in 2005:** 68% of the population with access to adequate water supply and 48% with adequate sewer installations.
- **Evaluation:** The access of the population to water and sewer service in the Amazon improved. But at the present rate, Millennium target 10 will be reached only in 2018 for water and in 2032 for sewer service.
- **Target 11:** By 2020, to have achieved significant improvement in the lives of at least 100 million inhabitants of currently degraded areas.
- **Consideration of the goal:** This is a global goal and applies principally to countries where the levels of slums surpass 50% of the urban population. According to UNDP (2003), 4% of the Brazilian population lived in domiciles considered substandard²⁶ in the year 2000, while in the Amazon this index was 3%.

CONCLUSION

The *Millennium Goals* have obtained some advances in the Amazon, but the region continues to lag behind the national average in most of the 17 indicators evaluated – except in the participation of women in politics and in the rate of AIDS. Comparing the historic evolution of

the 17 indicators evaluated, the majority improved between 1990 and the most recent date of evaluation (in general, 2005) (Table 9). However, in many cases this improvement remains unsatisfactory, as in the case of malaria incidence and of the access of the population to water and sewer service.

Table 9. Status of the *Millennium Goals* indicators in the Amazon

Legend: ● Worsened ● Stable ● Improved²⁷

Goal	Indicators	Amazonia	Brazil
1	Extreme poverty	●	●
	Poverty	●	●
2	Illiteracy	●	●
	Years of formal study	●	●
	School attendance	●	●
3	Female education ¹	●	●
	Women in politics ²	●	●
4	Mortality up to 1 year	●	●
	Mortality up to 5 years	●	●
5	Maternal death	●	●
6	HIV/AIDS	●	●
	Malaria	●	●
	Tuberculosis	●	●
7	Deforestation	●	●
	Protected areas	●	●
	Water and Sewer	●	●

¹ Average between illiteracy and attendance in primary and secondary school.

² Average of women elected to the different offices (mayors, senators and deputies).

Of the ten targets evaluated in this study, only one was achieved in the Amazon (elimination of disparities between the sexes in education) and two others may be reached by 2015, as suggested by the UN (figure 20). The targets to be met are concentrated in the area of education and child mortality, which reflects the greatest effort of governments in ensuring basic universal education for children and adolescents in the region.

Among the Amazonian states, Mato Grosso has already achieved three Millennium targets, Maranhão has reached two, while Pará, Amapá, Roraima and Tocantins met one target. On the other hand, Acre, Amazonas and Rondônia still have

not attained any target established by the UN (figure 21).

In a general evaluation of the situation with regard to indicators of the *Millennium Goals*, Mato Grosso was classified the best²⁸. This state presents indicators for income, education and health that are better than those of the other states. At the bottom of the most recent ranking of states were Acre and Maranhão, although Maranhão improved in all indicators evaluated in this study except the rate of AIDS. The ranking of the states was: Mato Grosso (1st), Amapá (2nd), Pará (3rd), Amazonas (4th), Rondônia (5th), Roraima (6th), Tocantins (7th), Acre (8th) and Maranhão (9th).

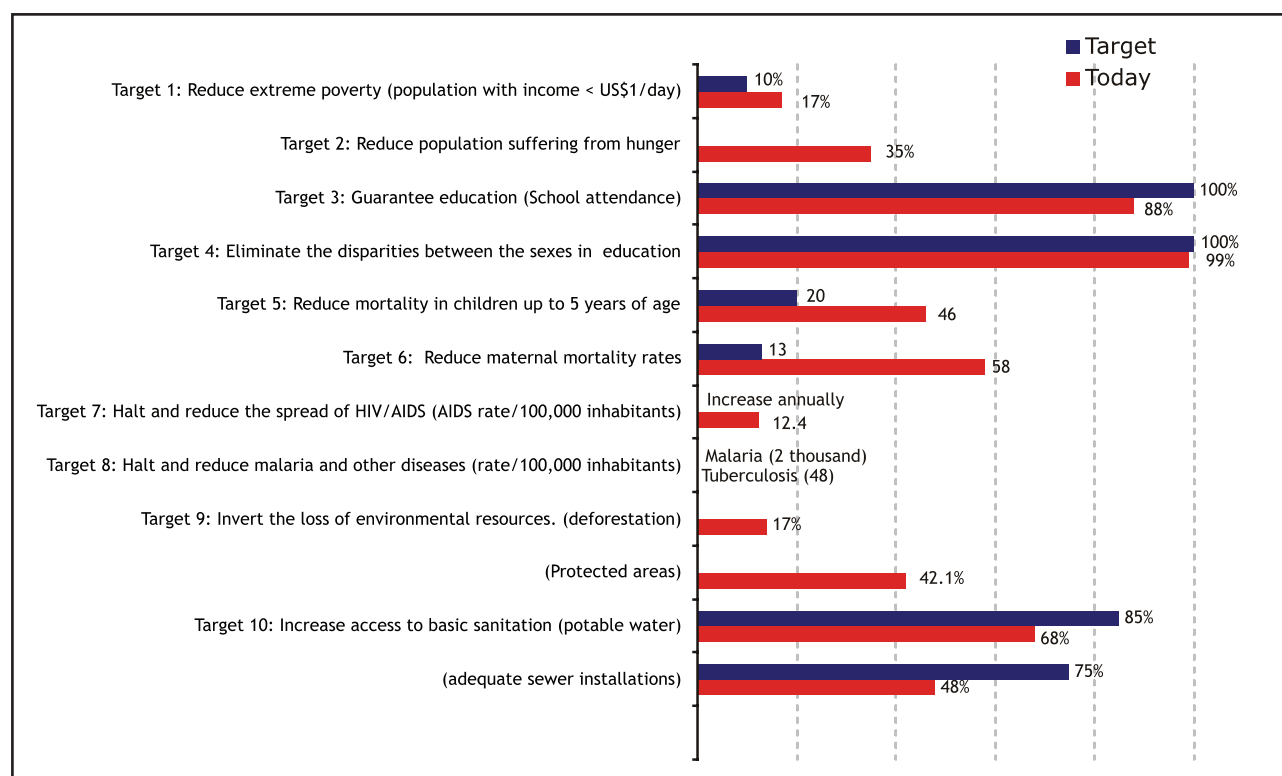


Figure 20. Status of millennium targets in the Amazon.

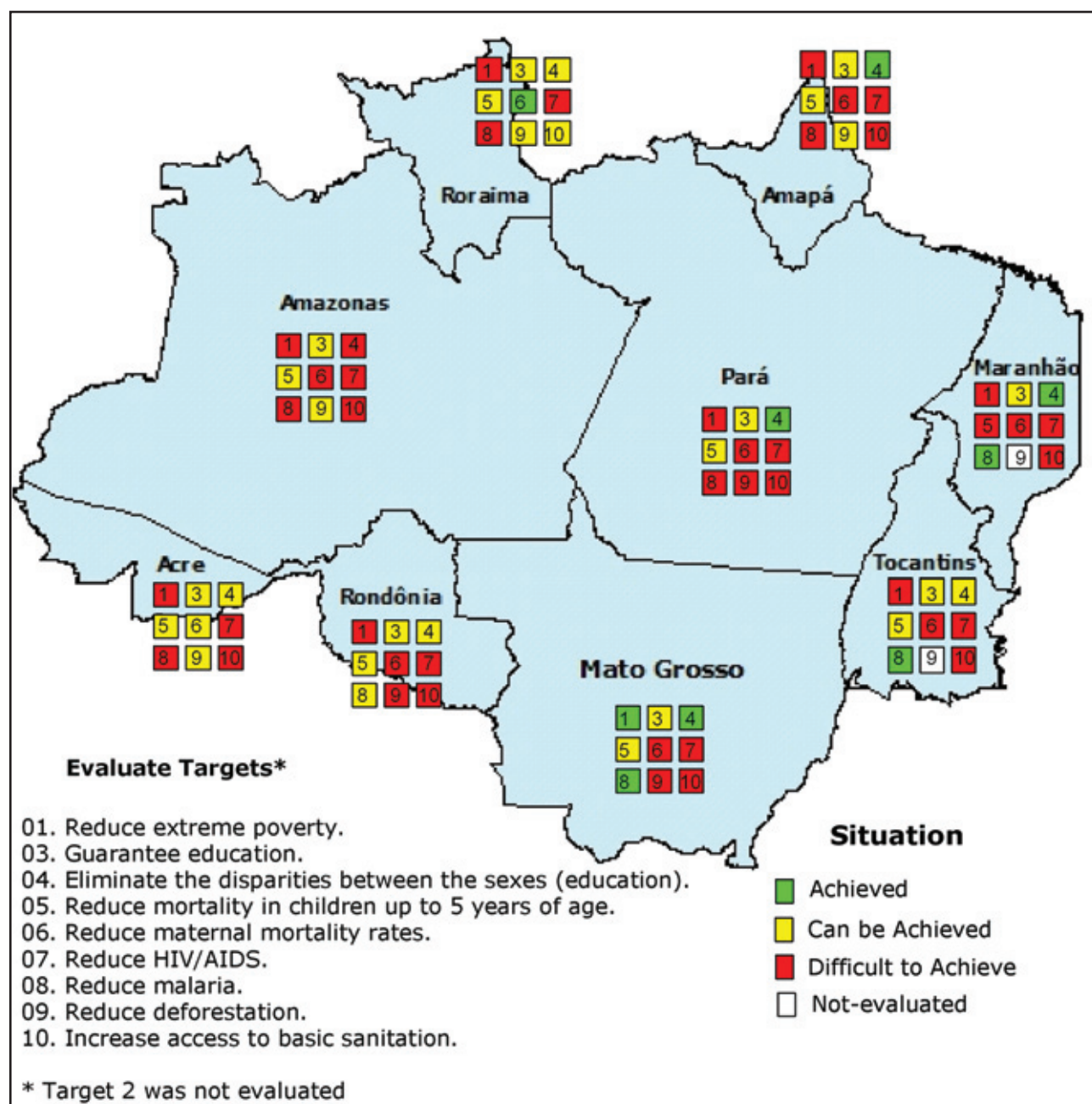


Figure 21. Status of Millennium Goals among the States in the Amazon.²⁹

The Amazon is known internationally for its abundance of natural resources. These resources are being utilized in a unsustainable manner, which is represented by the high rates of deforestation. At the same time, poverty and severe health problems, such as malaria and tuberculosis, persist in the region. Women participate little in politics and are disfavored in the labor market. Maternal deaths re-

mained high and the access of the population to basic sanitation is insufficient.

The good news is that access to education increased (although its quality still faces challenges), women have equality in education and infant mortality fell. Environmental indicators presented a mixed picture: the number of protected areas in the region increased significantly, but defores-

tation continues to be elevated. Furthermore, laws were established to promote the sustainable use of natural resources.

The *Millennium Goals* have the merit of establishing baselines for a discussion on the benefits expected from sustainable development for the Amazon. But it is necessary to amplify the

facts and the debate on these objectives in the Amazon that until now have been treated in a peripheral manner. We hope that the publication of this report might contribute to initiating a more robust cycle in the debate on how to advance in implanting these objectives and goals in the Amazon.

KEY SOURCES

About...	Where...	
Millennium Goals	Ipea	www.ipea.gov.br
	ONU	www.pnud.org.br
		www.un.org
Poverty	ONU	www.undp-povertycentre.org
Education	MEC	www.inep.gov.br
		http://portal.mec.gov.br
	Unesco	www.unesco.org
Health	Aids	www.aids.org.br/
	MS	http://portal.saude.gov.br
		www.aids.gov.br
	OMS	www.who.int/en
Amazon & Environment	Amazônia	www.amazonia.org.br
	Ibama	www.ibama.gov.br
	Imazon	www.imazon.org.br
	Inpa	www.inpa.gov.br
	Inpe	www.inpe.br
	Ipam	www.ipam.org.br
	ISA	www.socioambiental.org
	MMA	www.mma.gov.br
	MPEG	www.museu-goeldi.br
	Naea	www.ufpa.br/naea
Data	IBGE	www.ibge.gov.br
		www.sidra.ibge.gov.br
	Ipea	www.ipeadata.gov.br
	MS	www.saude.gov.br/svs
		www.datasus.gov.br
	ONU	www.pnud.org.br/atlas
		http://unstats.un.org

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NOTES

- ¹ The objective of this report is to highlight the situation of the Amazonian states and to compare them to each other and to the rest of the country. It was not the object of this study to highlight racial inequality. However, we advise readers that, as in the other regions of the country, the black, mixed and indigenous populations presents socioeconomic indicators inferior to those of the white population (Undp 2003).
- ² **Data:** The indicators utilized in this work are public and official secondary data, available on the internet or in reports and publications. This work evaluates a limited number of indicators.
- ³ **Analyses:** All data are on a statewide scale, except those referring to elected mayors (TSE) which are municipal and were summed by state. As most of the indicators are aggregated on a statewide scale, for the purpose of the analyses, we inserted the whole of the state of Maranhao and excluded the state of Goias. The values presented referring to the Amazon are: (i) mean state values weighted by population of those states during the years in question (Indicators: 1, 2, 16 and Chart 4); (ii) arithmetic mean of state values (3, 4, 5, 6, 8, 9, 10, 11 and Charts 5, 6 and 7); or (ii) absolute values obtained by the sum of the states presented in absolute form, in proportion to or as a function of the number of inhabitants (7, 12, 13, 14, 15, 17 and Chart 9). The Map of Malaria (Figure 12) presents municipal data and classes of values defined manually. The maps of the study were formulated with the software ArcGis 9.
- ⁴ **Evaluation:** Considering that the Millennium Goals are proposed for countries, the evaluation of targets, presented at the end of each section and in the conclusion, refers to the evaluation of indicators for the region compared to the expected value for Brazil (calculated from the baseline of national values and UN goals). The projections presented in evaluation of targets are based on the simple premise of maintaining rates of indicator evolution referent to the prior consolidated period, considering in this manner maintenance of the population growth rate. We must warn that improvement in data collection efforts in some states can underestimate the progress in some of the indicators evaluated.
- ⁵ With the exception of Target 18 (Access to new technologies of information and communications), the population that lives in domiciles with telephones in Legal Amazon increased from 9% in 1990 to 24% in 2000 (Undp 2003). However, the region trailed 13 percentage points behind the Brazilian average in 2000 (37%). In 2000, only 4% of the population of Legal Amazon possessed a computer in their domiciles. On the other hand, the Brazilian average was higher: 10%. More recent research from IBGE (2005) indicates that, in 2004, on average, 16% of Brazilian domiciles and 7% of Legal Amazon domiciles had computers.
- ⁶ In this study we utilize the official IBGE urban/rural classification, but specialists warn that the criteria employed by the IBGE can underestimate the rural population in Brazil (Veiga 2002).
- ⁷ We must caution that the poverty indices utilized (% of the population) does not reflect the density of poverty (number of poor persons/km²).
- ⁸ Beyond this study, the IBGE has two recent studies referent to alimentation of the population, in the scope of Research on Familial Budgets: (i) "Household food acquisition *per capita* -Brazil and Great Regions" and (ii) "Analysis of household food availability and nutritional status in Brazil" (<http://www.ibge.gov.br/>).
- ⁹ Among the literate population in 2005 (87%), it is estimated that 15% were composed of functional illiterates, that is, persons that know how to read and write simple things, but have limited abilities and comprehension difficulty.
- ¹⁰ School attendance in rural areas had an imbalance of 2% in primary education and 15% in secondary education, as much in Brazil as the average in the Amazonian states (IBGE 2004).
- ¹¹ More recent estimates from the Ministry of Health (Datusus 2006a) indicate that the mortality de children aged up to 1 year may have fallen to 24 deaths in Brazil and to 26 deaths, on average, in the Amazonian states (unconfirmed rates).

- ¹² Data for the states were not available.
- ¹³ Maternal mortality was calculated from data for maternal deaths and live births (per occurrence).
- ¹⁴ We consider the year 1996 as the baseline, due to unavailability of data for prior years.
- ¹⁵ The population (especially rural) in the Amazon has little access to specialized exams and hospitals. For this reason, the number of cases of diseases registered is probably underestimated.
- ¹⁶ Expressive increase in the number of cases may be the result of greater number of number of exams performed in the region. In 1990, statistics on AIDS were incipient and did not constitute a basis for precise comparison.
- ¹⁷ Malaria is also transmitted by blood transfusion and the sharing of infected syringes and needles.
- ¹⁸ The rate of dengue in the region is probably underestimated, since many sick persons do not receive exams due to lack of access and/or knowledge.
- ¹⁹ Excludes expenses for basic sanitation.
- ²⁰ Annual rate refers to the period from August of that year to July of the following year. Therefore, "2006 deforestation" refers to "deforestation 2005-2006". The estimate for 2006 is preliminary.
- ²¹ Quilombolas (slave-refuge) and military areas are also classified as protected areas.
- ²² Includes about 23 thousand square kilometers of APAs
- ²³ The Kyoto Protocol began in earnest on February 16, 2005, after ratification by Russia during the 10th Conference of the Parties (COP) in 2004 in the city of Buenos Aires.
- ²⁴ Mechanism that permits industrialized countries (Annex I) to finance projects aiming at reduction of emissions in the countries of Annex II, received in exchange for carbon credits.
- ²⁵ Target in relation to 1990.
- ²⁶ Domiciles located in substandard clusters. That is, disordered occupation, without title to land or property, also designated by "informal settlements" such as slum (Undp 2003).
- ²⁷ We evaluate the improvement, worsening or maintenance of state indicators with 1990 baseline. We consider worsened or improved values those with at least 10% difference from the original value from the year of reference (1990). A difference less than 10% was considered maintenance. In cases in which there were no indicators available for the year of reference (1990), we utilize the adjacent values.
- ²⁸ Ranking of states. For comparative ends, we classify states according to their indicators. Initially, we classify each most recent indicator evaluated from 1 (best) to 9 (worse), permitting ties. We calculate the arithmetic mean of the group of indicators that compose each Millennium Goals. Finally, we calculate the average classification of Millennium Goals by proceeding with a general classification.
- ²⁹ Situation of targets evaluated by state: In green, the targets already achieved. In yellow, the targets that may be reached within the time proposed. In red, the targets that will be difficult to meet. The projections presented in the evaluation of targets are based on samples premised on maintaining rates of evolution of indicators referent to the prior consolidated period, considering in this manner maintenance in the rate of population growth. Methodology of cartography based on L'Atlas 2006 (Monde Diplomatie).

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