Novos Cadernos NAEA
v. 16, n. 2, p. 9-25, dez. 2013, ISSN 1516-6481

The evolving context of Brazil's environmental policies in Amazonia

A evolução do contexto das políticas ambientais brasileiras na Amazônia

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Resumo

O contexto das políticas ambientais brasileiras mudou de várias maneiras ao longo das últimas duas décadas, com alguns aspectos positivos para o meio ambiente e outros não. Mudanças positivas incluem a criação de um Ministério do Meio Ambiente e de um sistema de licenciamento ambiental, o aumento da organização da sociedade civil, a criação de reservas e demarcação de áreas indígena e o advento das convenções internacionais sobre o clima e a biodiversidade. No entanto, os projetos de desenvolvimento na Amazônia brasileira têm contornado as restrições ambientais de várias maneiras, e as modificações do passado e do presente no sistema estão enfraquecendo a proteção ambiental. A hostilidade atual do clima político no Brasil em questões ambientais faz com que os esforços para fortalecer as políticas ambientais sejam ainda mais dependentes de uma cuidadosa seleção de estratégias. Em Face da instabilidade, a melhor estratégia é estar preparado para as oportunidades de conservação, incluíndo o uso da ciência e tecnologia em áreas relevantes. Compreender a natureza complexa da burocracia brasileira é essencial neste processo. O valor dos serviços ambientais prestados pela manutenção da floresta amazônica poderia ser um elemento-chave para determinar o futuro da política ambiental e da floresta.

Palavras-chave

Desmatamento. Política de desenvolvimento. Serviços ambientais. Serviços ecossistêmicos. Aquecimento global. Floresta tropical.

Abstract

The context of Brazil's environmental policies has changed in multiple ways over the past two decades, some positive for the environment and others not. Positive changes include creation of a Ministry of the Environment and a system of environmental licensing, increased organization of civil society, creation of reserves and demarcation of indigenous areas, and the advent of international conventions on climate and biodiversity. However, development projects in Brazilian Amazonia have circumvented environmental restrictions in various ways, and past and present modifications to the system are weakening environmental protection. The current hostility of the political climate in Brazil in environmental matters makes efforts to strengthen environmental policies even more dependent on careful selection of strategies. Making the best of instability by being prepared for conservation opportunities is one method, as is the use of science and technology in relevant areas. Understanding the complex nature of Brazilian bureaucracy is essential in this process. The value of environmental services provided by maintaining Amazon forest could be a key element in determining the future of environmental policy and of the forest.

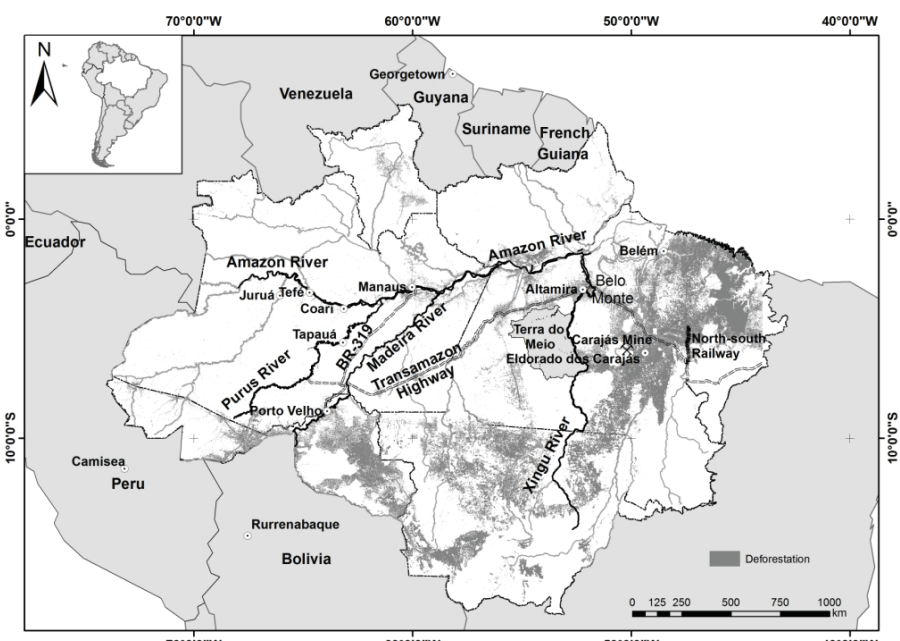
Keywords

Deforestation. Ecosystem services. Environmental services. Global warming. Rainforest. Tropical forest.

INTRODUCTION

Brazil's Amazon region has a special importance in discussions of environmental policy because of the region's cultural diversity, its biodiversity, and its role in global climate. The areas involved are often compared to Europe because the area originally covered by Amazon forest in Brazil is approximately that of Western Europe. In 1998 the deforested area surpassed the area of France, and by 2011 (Figure 1), with 756,663 km^2 deforested (BRAZIL, INPE, 2012), clearing had expanded to engulf additional areas equivalent to Switzerland, Belgium, the Netherlands and Portugal. Environmental policy changes in Amazonia affect much greater areas of tropical forest and their associated environmental services than would be the case in other countries. Because modern "development" is only now entering large areas of natural ecosystems in Amazonia, there is much greater scope for significant changes in development patterns as compared to countries where many options have already been closed. The present paper examines the evolving context of environmental policy in Brazilian Amazonia with a view to identifying opportunities and dangers in terms of the future course of development in the region.

Figure 1. Brazil's Legal Amazon region showing deforestation through 2011 and locations mentioned in the text.



1 THE CHANGING CONTEXT

1.1 ENVIRONMENTAL POLICY ADVANCES

The last decades have brought significant improvements for environmental policies, but, at the same time, much has either not changed or has changed less than might appear. Changes include:

1) Creation of the Ministry of the Environment (MMA) and state-level environmental agencies (OEMAs).

2) Consolidation of the licensing system for infrastructure projects. The Environmental Impact Study and report (EIA-RIMA) has been required for major projects since 1986. In the early years, projects that were political priories sometimes proceeded without any environmental report, in clear violation of the legal requirements. Examples include the North-South Railway and the Carajás pig-iron smelters (FEARNSIDE, 1989). Attempts to escape reporting are less frequent today, but still exist. Some are successful (such as Tucuruí-II) and some not (such as the central portion of the BR-319 Highway). The licensing system is a significant factor in forcing more attention to the environment, but the features of the system that limit its effectiveness have not changed since its inception: the influence of project proponents on the content of the reports due to their roles in paying for and supervising the studies, and the report's timing in the process after the political decision to build the infrastructure in question has, in fact, already been made and after contractors and others who stand to benefit financially from the project have been mobilized (see FEARNSIDE; BARBOSA, 1996).

3) Formation of hundreds of non-governmental organizations (NGOs), both at the grassroots level and for conducting research and lobbying. These have greatly increased the level of input from civil society in formulating environmental policy.

4) Demarcation of over 40 million hectares of indigenous areas. Although this was a requirement written into Brazil's 1988 constitution, for over a decade there was little indication that this was going to occur in practice. The demarcation significantly increases the security of indigenous peoples and reinforces their role in environmental protection and in policy debates.

5) International conventions represent a new and potentially important influence. The most relevant conventions are the United Nations Framework

Convention on Climate Change (UN-FCCC) and the Convention on Biological Diversity (CBD), both signed in 1992 at the ECO-92 "earth summit" in Rio de Janeiro. Especially the UN-FCCC, or "climate convention," may influence events through the successor to the Kyoto Protocol, which was drafted under the Convention in 1997 with its first commitment period expiring at the end of 2012. The second commitment period or a successor to the Kyoto Protocol, beginning in 2013, is expected to include avoided deforestation as a mitigation measure, and, depending on decisions such as those regarding carbon accounting, could potentially have a substantial influence in Brazilian Amazonia (FEARNSIDE, 2012a,b; 2013a).

1.2 ENVIRONMENTAL POLICY SETBACKS

The above list of environmental policy developments with the potential to contribute to containing deforestation and maintaining environmental quality needs to be viewed in the context of much more powerful changes on the other side – speeding deforestation. The net effect is hardly encouraging, given that the area deforested over the 1990-2011 period totaled 317,918 km^2, an area larger than Spain and Portugal together (as compared to the original area of Brazil's Amazon forest, which is roughly the same as that of Western Europe). The plans and projects for roads and other infrastructure set in motion processes that will drive deforestation for decades in the future. The roads include major highways such as the BR-319 (Manaus-Porto Velho), which would open central and northern Amazonia to the actors and processes of the Arc of Deforestation (FEARNSIDE; GRAÇA, 2009).

A key part of the impact of the BR-319 is the plan for a series of side roads leading from the main highway to each of the municipal seats along the Madeira and Purus Rivers. One of the roads would cross the Purus River at Tapuã and continue to Coarí, Tefé and Juruá. This would open the large block of forest in the western part of the state of Amazonas. The EIA for the BR-319 claims that these roads are not planned by the federal government (UFAM, 2009: Vol. 1, p. 58). However, the National Department of Transport Infrastructure (DNIT) website continues to display a map of planned roads indicating these routes (BRAZIL, DNIT, 2002). In October 2009 the Minister of Transportation began claiming that no side roads would be built. Unfortunately, there is little reason to believe that such a promise would be kept. No institutional mechanism exists for taking on a commitment not to build specific infrastructure projects.

There is a clear parallel with what NGOs refer to as the "institutional lie" with respect to the Xingu River dams planned upstream from the Belo Monte Dam (FEARNSIDE, 2012c). The credibility of the electrical sector in this regard is very low given the history of past cases in parallel situations where promises of this type are made and later broken (see FEARNSIDE, 2006). There is little reason to believe that events in the highway sector are different.

Brazil's activity in building infrastructure in other Amazonian countries has increased rapidly in recent years. Major projects built with Brazilian money (from BNDES) and Brazilian construction firms include the road known as the "Highway to the Pacific" in Brazil or the "Transoceanic Highway" in Peru. Brazil is preparing to build six dams in Peru to produce electricity for sale to Brazil: Inambari (2000 MW), Sumabeni (1074 MW), Paquitzapango (2000 MW), Uru-bamba (940 MW), Vizcatan (750 MW) and Chuquipampa (800 MW) (DOUROJEANNI, 2009; VEJA, 2010). At least ten other such dams are in the pipeline, although the total number is indeterminate. There are two such dams to be built in Bolivia, one in Ecuador and one in Guyana. Various other projects are underway, such as the Rurrenabaque road in Bolivia, the Georgetown road in Guiana, and pipeline projects in Peru and Ecuador. Petrobrás exploits oil and gas in Peru (with a controversial major expansion planned in the Camesea area in the biodiversity hotspot in the Madre de Dios basin), as well as similar operations in Bolivia and Ecuador (*e.g.*, LEROY; MALERBA, 2005; FINER et al., 2008). Brazil is now finding itself in the same situation as that for which the United States was criticized for years: building environmentally destructive projects abroad that would not meet environmental standards at home. These countries have less requirements for licensing and measures to avoid environmental and social impacts than does Brazil.

2 WHO'S IN CHARGE OF PUBLIC POLICY?

Public policies in Amazonia are obviously contradictory in many cases. The government attempts to control deforestation with fines at the same time that it promotes deforestation though settlement projects, agricultural financing, roadbuilding and land-tenure criteria. Much of this is explained by the fact that the government is not a monolithic block, but instead is composed of many agencies with different purposes. The federal government alone is composed of 38 ministries or ministerial-level agencies, which is probably a world record. These ministries struggle with each other for budget allocations and presidential

favor. The struggle for funding is continuous, rather than being confined to the budget-formulation process, because Brazil has a system of "*contingenciamento*" (placing in contingency status) that would appear very strange to anyone not familiar with the country. The budget is approved before the beginning of the fiscal year, but the funds allotted to each ministry are given out in small installments. Usually, towards the middle of the year, the government discovers that it does not have enough money to honor the promises made in the annual budget. It therefore places some of the budget items in contingency status, meaning that they get no money until such time as sufficient tax revenues have been collected to pay for them. When money does materialize later, which is not always the case, it is often released in the final days of the fiscal year, in which case the bureaucratic procedures needed to spend the money are such that much of it must be returned to the national treasury unspent. This system means that the ministries must fight among themselves over which programs will be put in contingency status and which will go forward as planned. The Ministry of the Environment is by no means the most powerful, and therefore not only has a smaller budget but is more likely to see its funds put in contingency status.

Given the plethora of conflicting signals, one might well wonder who is in charge of public policies for Amazonia. The Superintendency for the Development of Amazonia (SUDAM) promoted large cattle ranches from its creation in 1966 until a 1991 policy change discontinued fiscal incentives for ranching (but multiple exceptions continued: see FEARNSIDE, 1990). Financing of environmentally destructive developments such as sawmills and pig-iron plants continued after the change. SUDAM was abolished in 2002 as the result of a corruption scandal, but was recreated as the Agency for the Development of Amazonia (ADA) in 2003. The National Institute for Colonization and Agrarian Reform (INCRA) has been a major actor in establishing settlements for small farmers. While in the 1970s INCRA was responsible for bringing colonists to settlement areas such as those on the Transamazon Highway, it has since been almost exclusively reactive, confining its role to "regularizing" land claims by illegal squatters.

In June 2007 a new ministerial-level position for "strategic affairs" was created especially for Mangabeira Unger. The new minister was charged with thinking about long-range issues, especially with regard to Amazonian development. By a presidential decision, the "Sustainable Amazonia Plan" (*Plano Amazônia Sustentável*, or PAS) was taken away from the Ministry of the Environment and transferred to the new ministry. A series of suggestions were floated, ostensibly only as a discussion exercise. Most notable was a proposal

to divert water from the Amazon Basin to semi-arid Northeastern Brazil. The practical barriers to such a scheme caused it to wither, but this was not the case for another pet project with far-reaching consequences: the legalization of illegal land claims in Amazonia.

In 2009, Provisional Measure (MP) 158, widely known as the "*MP da grilagem*" ("landgrabbers' provisional measure"), was approved by the National Congress as Law No. 11,952. The measure allows legalization of claims up to 1500 ha in area. The objective is to legalize 67 million hectares, an area half the size of the state of Pará. This is the area controlled by INCRA in Amazonia that is still "without destination" (BRAZIL, INCRA, 2009, p. 17). Most important, the measure creates the expectation among invaders of all sizes that future "legalizations" will also take place, and that those who invade public land today have a good chance of obtaining a legal title in the future. This is a step back in the much-needed transition to eliminate land invasion as a means of obtaining land tenure in Amazonia (FEARNSIDE, 2001). Shortly after his land-tenure legalization scheme was passed by the congress, Mangabeira Unger quit his post. The strategic affairs ministry continues to exist, but with less influence.

Various ministries and other sectors of the government have open conflicts over environmental policies. The ministers of environment and agriculture clash regularly over the issue of the Forestry Code and over whether sugar cane should be allowed to be planted in Amazonia (mostly for biofuel). Recently the executive branch has sought to limit the authority of the Public Ministry (under the Ministry of Justice) in environmental matters. The executive branch has also recently moved to restrict the actions of the Union Court of Accounts (TCU) in investigating expenditures for major infrastructure projects such as Amazonian highways. The political climate in the legislative branch is also subject to dramatic swings, as illustrated by the contrast between the strong environmental clauses approved in the present Brazilian constitution in 1988 and the current dominance of the "ruralist block" (representatives of large landholders) in dismantling Brazil's Forest Code.

The sociology of the Brazilian bureaucracy was studied by Steven Bunker (1979), who compare it to the resolution of land conflicts between poor squatters and large landholders in the almost-feudal society in the interior of Northeastern Brazil. Government agencies traditionally stand aside while these groups fight on the ground, and only after one side has won does the government step in to grant land title to the victor.

Calls have often been made for speaking with one voice, especially with respect to environmental policies. Brazil's presidents have frequently shown their displeasure when ministers publically express different viewpoints. However, the tendency to stifle disagreement is dangerous. Differences between agencies in the environmental area and those building infrastructure are natural. If differences are to be settled in secret and only a unified position is made public, the environment would lose in almost every case, as the Ministry of the Environment is obviously not the most powerful ministry. The danger is best illustrated by the history of nuclear power in the United States. There the Atomic Energy Commission was created shortly after World War II to both promote and to regulate nuclear energy. Literally thousands of near accidents happened outside of the public view until the Three Mile Island accident in 1979. After that incident, the functions were divided into two agencies, a separate Nuclear Regulatory Agency being responsible for safety regulation. Since then differences have been public and the record has been very much better.

3 STRATEGIES FOR IMPROVEMENT

3.1 MAKING THE BEST OF INSTABILITY

Individual policy makers, politicians and political administrators are very temporary. Each change creates both risks and opportunities. For example, the change in the state governorship in 1999 in Acre brought a clear shift to more environmental concern under the administration of Jorge Viana, as did the change of government to Eduardo Braga in Amazonas in 2002. However, swings can also go in the other direction.

This form of temporary opportunity means that it is important to be able to quickly take advantage of favorable political environments when they occur: to "run with ball when you have it." Biologists will recognize this as an "r-selected" strategy (MacARTHUR; WILSON, 1967). An r-selected strategy is also indicated in situations of chaos or lack of authority—a situation that sometimes prevails in parts of Amazonia. Rapid evolution, both biological and in terms of social innovations, occurs in these situations (GUNDERSEN; HOLLING, 2002).

Often opportunities for environmental and social advances in Amazonia have been associated with tragic events. Examples include the Chico Mendes assassination in 1988 leading to creation of extractive reserves, the El Dourado dos Carajás massacre in 1996 leading to a restarting land reform, and the assassination of Dorothy Stang in 2005 leading to creation of a mosaic of reserves in the Terra

do Meio. These measures represent an opportunistic implementation of plans that had been drawn up in the years before these triggering events took place, but the plans had been stalled and not transformed into active projects. Being prepared to take advantage of opportunities is therefore a key part of following an r-selected strategy.

It should be remembered that the same sort of situation applies on the other side. Examples include the moves to quickly force approval of hydroelectric dams following the electricity shortage (*apagão*) of 2001, and the pressure to speed approval of the Belo Monte Dam following the windfall provided by an incident in which the chief ELETROBRÁS engineer for Belo Monte was cut with a machete during an indigenous demonstration against the dam in Altamira in May 2008.

3.2 SCIENCE & TECHNOLOGY

Science and technology are essential sources of information for formulating environmental policy. Brazil has made notable progress in deforestation monitoring (BRAZIL, INPE, 2012). However, several clear discrepancies have never been resolved (FEARNSIDE, 1993; FEARNSIDE; BARBOSA, 2004). It is also important that there be independent groups working in the same area of deforestation monitoring. The work of the Institute for Man and Environment in Amazonia (IMAZON) has been filling this role (see: http://www.imazon.org.br/novo2008/index.php?). Recent advances in remote sensing interpretation are expected to allow civil society to play a much greater role in the near future in assuring that ground truth matches the findings obtained by satellite, an initiative that involves both NGOs and Google (TOLLEFSON, 2009).

Research progress has traditionally been dominated by institutions such as the National Institute for Research in Amazonia (INPA) and the Emilio Goeldi Museum (MPEG), and by major research projects such as the Large-Scale Atmosphere-Biosphere Experiment in Amazonia (LBA) and the Biological Dynamics of Forest Fragments Project (PDBFF). NGOs such as IMAZON and the Institute for Research and Environment in Amazonia (IPAM) provide a new and healthy source of competition with traditional government institutions in this area.

Government priorities in science and technology emphasize fields such as biomedical research, genomics and nanotechnology. However, for providing information relevant to Amazonian environmental policy, much of what is needed from science is much more low-technology in nature, being based on

observations in the field and on understanding local cultures and traditional knowledge (FEARNSIDE, 2010). Even for more-traditional data collection in science, much of what is needed in Amazonia remains to be done using simple tools such as spring balances and tape measures.

Not yet incorporated into policy is the value of the environmental services of the forest (such as water cycling) and the nearness of the threat posed by climate change killing the forest itself. Unfortunately, science and technology are often totally ignored in Amazonian policy making when the results are inconvenient (FEARNSIDE, 1986).

4 ENVIRONMENTAL SERVICES AS A BASIS FOR PUBLIC POLICY

Over the course of two decades the idea of "environmental services" has risen from a novelty to a household word (FEARNSIDE, 2008a). There have been many gains in the science and in the policy areas related to payment for environmental services, but the consideration of environmental services still does not affect decisions such as building of destructive infrastructure. Environmental concerns need to be a central part of the decision on building the projects at all, and not just an addition of complementary measures to minimize impacts. A clear example is the inconsistency between the proposed re-opening of the BR-319 Highway and the National Policy for Climate Change (PNMC) announced in 2008 (BRAZIL, CIMC, 2008). The highway would put in place a force for deforestation that will speed clearing and greenhouse-gas emissions for decades, making it much more difficult to reduce deforestation as expected under the PNMC.

The place of environmental services in Amazonian development depends heavily on the scale involved. This scale depends on the place of forest maintenance in mitigation under the United Nations Framework Convention on Climate Change (UN-FCCC). The Brazilian foreign ministry's current opposition to carbon credit that is "fungible," or exchangeable against emissions from fossil fuels, greatly limits the scale of potential monetary flows from this source to Amazonia. Funds for voluntary payments for environmental services will be much more limited if industrialized countries take on major commitments under the formal agreement.

The interests of different countries in the climate negotiation inherently diverge. One need only put oneself in the shoes of a politician in Europe. For example, if a group of environmentalists were to go to a French politician and

demand that France spend, say, 5% of its gross domestic product on fighting global warming, the reply might be that this would be fine if spent on building factories for wind turbines and photovoltaic panels, retooling French auto plants to produce ecological cars, etc. All of this would produce income and jobs in France. If the solution were to take this money and send it to Brazil to stop deforestation it would do nothing for the economy of France. Even if the climatic benefit were triple or more for spending money on containing Brazilian deforestation, European countries (and European-based NGOs) would oppose it. Because mitigation exclusively "at home" is much more expensive, this means that these countries would not agree to the deep cuts in emissions that would be needed to avoid impacts such as savannization Amazonian forest. Brazil has to fight for its interests, which are inherently different from those of European countries (FEARNSIDE, 2012a). Brazil's interests are also different from those of China and India, which have explosively expanding fossil-fuel-based economies.

This author has argued that Brazil must be the leader in promoting tropical forest maintenance for mitigation and in pressing for deep cuts in emissions worldwide (*e.g.,* FEARNSIDE, 2009). So far, the Brazilian Ministry of Foreign Affairs (MRE) has adopted a strategy of trying to be the "last one on the streetcar," as it would be said in Brazil. For example, only in 2009 did Brazil lend its support to a 2ºC limit on temperature increase over pre-industrial levels, after over 100 countries had already endorsed this limit.

Brazil has yet to take a position on the definition of "dangerous" climate change in terms of a concentration of greenhouse gases. This limit will be negotiated as required by Article 2 of the UN-FCCC, which requires that greenhouse gas concentrations not provoke "dangerous interference with the climate system." A concentration of 400 ppmv CO_2-equivalent implies only an 80% chance of staying within a 2ºC maximum increase over pre-industrial temperatures, while 350 ppmv would be the limit for 90% certainty (HARE; MEINSHAUSEN, 2006). There may even be a need to hold warming to less than 2ºC to avoid the threat to Amazon forest from drought and fire. Current emissions trends can be expected to push these factors beyond critical "tipping points" well before the end of the current century (COX et al., 2004, 2008; MALHI et al., 2008; NEPSTAD et al., 2008; NOBRE; BORMA, 2009). The next few years are critical in efforts to contain global warming below 2ºC, especially the emissions level by 2020 (ROGEL et al., 2013).

Much less threat to the Amazon forest is indicated by a new version of the Hadley Center model in 2013, which incorporates the effect of increased CO_2 in increasing tree growth and reducing water loss (COX et al., 2013;

GOOD et al., 2013; HUNTINGFORD et al., 2013). This good news is tempered by the possible effects of the models not having included negative consequences of higher CO_2, such as greater stimulation of growth of lianas as compared to trees (FEARNSIDE, 2013b). The models also still omit the critical issue of increased frequency of forest fires in response to a dryer and hotter climate. The Hadley Center authors warn that the new result "does not invalidate the HadCM3LC dieback projection. Indeed, the latter remains a possible scenario of dangerous climate change, which requires further understanding" (GOOD et al., 2013).

The fact that Brazil's first national inventory of greenhouse gas emissions (BRAZIL, MCT, 2004) systematically underestimated emissions undercut efforts to bring global warming under control (FEARNSIDE, 2008b). The second inventory (BRAZIL, MCT, 2010) avoids some of the major underestimates of the first inventory for the portion of the emission coming from deforestation. However, some of Brazil's key emissions, such as methane from hydroelectric dams and carbon dioxide from logging in the Amazon forest, are simply omitted. If emissions are underestimated, then the total amount of emission that needs to be reduced in the world will be underestimated, and the commitments made in international negotiations will be insufficient to avert grave impacts in places like Amazonia.

5 CONCLUSIONS

The Environmental Impact Study (EIA-RIMA) is still only token, but the system must be fixed rather than abandoned. The EIA-RIMA needs to be part of the decision on overall execution of the project, rather than a last-minute hurdle that can only result in adding measures to minimize the impacts when a project that is already decided upon is implemented.

Environmental services can serve as a guide to policy. The economy in Amazonia must be reoriented to be based on maintaining forest rather than destroying it. Environmental services include biodiversity maintenance, water cycling and carbon storage, but currently it is carbon that is best positioned to affect monetary flows on a scale and with a rapidity that could change the course of events in Amazonia. Brazil has a key role to play in international negotiations on this issue because this country has the least-expensive mitigation option (avoided deforestation) and because Brazil is one of the countries with the most to lose from continued global warming, including a substantial risk of losing the Amazon forest to the impacts of drought and fire.

6 ACKNOWLEDGMENTS

I thank Conselho Nacional do Desenvolvimento Científico e Tecnológico (CNPq: Proc. 305880/2007-1; 304020/2010-9; 573810/2008-7; 575853/2008-5) and Instituto Nacional de Pesquisas da Amazônia (INPA: PRJ13.03) for financial support. This discussion is updated from a part of a presentation at the Conference on Environmental Policy, Social Movements, and Science for the Brazilian Amazon, University of Chicago, 5-6 November 2009, Chicago, Illinois, U.S.A. (http://amazonia.uchicago.edu/). I thank P.M.L.A. Graça for useful comments.

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Texto submetido à Revista em 11.07.2013
Aceito para publicação em 11.10.2013