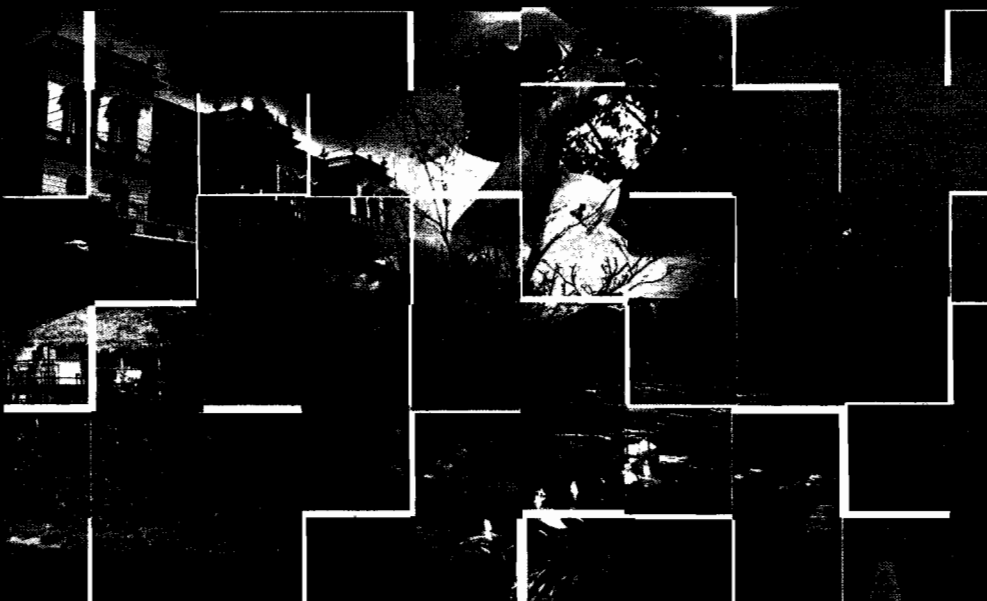


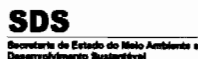
Environmental and sustainability assessment of the State of Amazonas

Conclusions and recommendations



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2014-10

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Summary

The Environmental and Sustainability Assessment of the State of Amazonas reports on the extent to which the state's environmental goals are being achieved. This appraisal looks at environmental conditions, the pressures on the environment and the responses that the public and private sectors have come up with in their effort to attain the objectives of environmental protection and sustainable use of natural resources. In order to step up the pace of the state's advance towards achieving environmental goals in a context of sustainability, 35 recommendations based on policy objectives are proposed and discussed. One of the most important features of the assessment methodology used is the emphasis placed on integrating environmental, economic and social concerns within the conceptual framework of sustainable development.

The State of Amazonas boasts high levels of nature conservation and biodiversity. Environmental pressures exist, however, especially in the south with the advance of the agricultural frontier and a number of plant and animal species are affected. The state's environmental policy, set out in the Green Free Trade Zone Programme, has many notable features, including a long-term development model based on incorporating scientific and technological knowledge into the state's natural resources. Mention should also be made of other features, such as the strong encouragement given to the creation of conservation units and the examples of grass-roots participation in the design and implementation of environmental programmes. The work carried out on the Coari-Manaus gas pipeline is an outstanding case.

There are some major challenges too. The development model needs to be consolidated, maintaining current policy directions while strengthening human and financial resources available to environmental institutions to enable them to fulfil their ever-expanding commitments. It is also important to persevere with vertical coordination (between the federal Government and the municipalities), horizontal coordination (with other government departments) and cooperation with the key development stakeholders: rural and indigenous communities, civil society, the private sector, universities and research centres.

Foreword by the Government of the State of Amazonas

The conclusion of the first phase of the Environmental and Sustainability Assessment in Brazil is a source of great pride for the State of Amazonas. This assessment, conducted by the Economic Commission for Latin America and the Caribbean (ECLAC) using methodology developed by the Organisation for Economic Co-operation and Development (OECD), is a strategic contribution to the programme for sustainable development of Amazonas, generally referred to as the Green Free Trade Zone.

Placing a government policy before an independent body such as ECLAC for its appraisal was a bold move. First, because it was the first time in the world that this was being done at the subnational level. Second, because the results of an independent assessment are unpredictable. Fortunately, this boldness has paid off: the assessment that has been produced is of a high technical and scientific calibre. The results of this study will play a fundamental role in refining the set of public policies designed to promote conservation of the environment and sustainable development of Amazonas.

We should like to express our appreciation to ECLAC for the excellent study produced on Amazonas. Special mention should be made of the individual efforts of the coordinators and specialists who made up the ECLAC and Amazonas Government work teams. The financial contribution and technical support of the German Agency for Technical Cooperation (GTZ) were crucial elements in the success of this initiative. Special thanks are also due to the Brazilian Association of State Environmental Agencies (ABEMA), the Amazon Cooperation Treaty Organization (OTCA) and the representatives of the Governments of Minas Gerais, Pernambuco and Paraná for their collaboration in this effort. Their participation has given greater scope to this pioneering initiative.

Latin America faces a huge challenge in terms of developing instruments for the formulation and implementation of public policies adapted to the environmental and socio-economic realities of the region.

Its chances of success depend largely on our ability to tackle the problems head-on. To do this, we need independent assessments carried out by institutions, which, like ECLAC, are serious and have a high degree of credibility. We hope that this initiative will encourage other states and Latin American countries to commission independent appraisals with a view to continually upgrading their public policies.

The State of Amazonas is aware of its role in the global context of climate change. We can be part of the solution to many problems, for example in reducing greenhouse gases. We are doing all in our power, and are approaching the issue resolutely and with professionalism. In terms of the principle of common but differentiated responsibilities, we are, however, convinced that in order to overcome the huge challenges facing us it is necessary to broaden partnerships. This study demonstrates the importance of inter-agency partnerships for refining environmental and sustainability policies. We now have the challenge of building broader partnerships at the subnational, national and international level in order to implement the valuable recommendations made by the ECLAC team.

Eduardo Braga
Governor of the State
of Amazonas

Virgilio Viana
Secretary for the Environment
and Sustainable Development

Foreword by ECLAC

The Environmental and Sustainability Assessment of the State of Amazonas is the result of the collaboration between the German Agency for Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit - GTZ), the Government of the State of Amazonas in Brazil and the Economic Commission for Latin America and the Caribbean (ECLAC), with support from GTZ and funding from the Federal Ministry for Economic Cooperation and Development (BMZ).

For this initiative, ECLAC adopted the methodology used by the Organization for Economic Co-operation and Development (OECD) in its assessments of the environmental performance of its member countries. This is the second time that ECLAC has used this method, the first being the Environmental Performance Review of Chile, which was conducted in conjunction with OECD in 2005. Since in this case the subject of the assessment was not a whole country but rather a subnational territory, it meant that the Environmental and Sustainability Assessment of the State of Amazonas was a pioneering activity, and as such it was necessary to make a number of modifications to the methodological framework.

The Environmental and Sustainability Assessment of the State of Amazonas takes into account the extent to which the latter has fulfilled its environmental goals and its commitments within the Federation. It is an analysis of the state of the environment, the pressures on the environment and the actions being taken by the public and private sectors to attain environmental protection goals and sustainable use of natural resources. With these policy goals in view and mindful of conditions prevailing in the state, the experts propose and discuss a number of policy recommendations designed to improve environmental performance and sustainability. One of the most important features of this methodology is the emphasis placed on integrating environmental and social concerns, based on the conceptual framework of sustainable development.

ECLAC views this methodology as a valuable tool for furthering environmental policies and coordinating it with economic and sectoral

policies, the objective being to achieve more coherent public policies in different areas. We therefore hope that it will be useful for promoting the sustainable development of a region like the State of Amazonas, which is so emblematic of the need for conservation of the environment.

ECLAC wishes to express its gratitude to the Government of the State of Amazonas, in particular the Department for Sustainable Development (SDS), for enabling it to access information, organizing the field work of our specialists and arranging meetings with the most important stakeholders of the state in the area of environmental sustainability. ECLAC also wishes to thank the National Environment Commission of Chile (CONAMA) for the technical support provided for the field work; the Amazon Cooperation Treaty Organization (OTCA), the Brazilian Association of State Environmental Agencies (ABEMA) and the representatives of the States of Pernambuco, Minas Gerais and Paraná for their participation in the peer review. The comments of the President of ABEMA included in the report were particularly valuable and deserve special recognition.

José Luis Machinea
Executive Secretary of ECLAC

Foreword by the Federal Ministry for Economic Cooperation and Development of Germany

This publication is the fruit of the cooperation between the Government of the State of Amazonas, the Economic Commission for Latin America and the Caribbean (ECLAC) and the German Agency for Technical Cooperation.

Policy measures designed to tackle the major challenges to the global environment and sustainable development must, increasingly, be regional in scope, since environmental problems do not stop at the border between countries. In this regard, the joint initiative of the Government of the State of Amazonas, ECLAC and German Development Cooperation proved to be innovative and significant, since the method for assessing environmental performance developed by the Organization for Economic Co-operation and Development (OECD) and already successfully applied in its member States was adapted to the specific conditions of the Amazon region. Based on a holistic approach, this method incorporates ecological, economic and social objectives and facilitates comparisons with experiences in other countries. In applying it to the State of Amazonas, it was not used merely at the regional level. It was also applied as an instrument for sharing information, practical examples and assessments. This study suggests that strategies advanced as solutions and implemented as part of environmental protection policy in the State of Amazonas could, once the relevant recommendations have been taken into account, become a model for other Brazilian states or other countries facing similar challenges.

The Ministry for Economic Cooperation and Development of the Federal Republic of Germany views sustainable development as a cross-cutting task for all fields of policy and supports measures geared to implementing a coherent sustainable development policy. It acts at different political levels for the conservation of the Amazon rainforest within the framework of bilateral programmes in Brazil, for example through the

Pilot Programme to Preserve the Brazilian Rainforest (PPG7), regional programmes such as those developed in partnership with the Amazon Cooperation Treaty Organization (OTCA) and the “Rioplus” sectoral programmes. This last project provides assistance in the implementation of national strategies for sustainability in follow-up to major international conferences such as the United Nations Conference on Environment and Development (Rio de Janeiro, 1992) and the World Summit on Sustainable Development (Johannesburg, 2002).

Ingrid-Gabriela Hoven

Director-General, Division for Cooperation with Countries and Regions,
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I. Conclusions and recommendations

The State of Amazonas boasts high levels of nature conservation and biodiversity. Environmental pressures exist, however, especially in the south with the advance of the agricultural frontier and in relation to a number of plant and animal species. Nonetheless, the state's industrial development model, focused on the Free Trade Zone of Manaus (the state capital) and basically sustained by the tax and non-tax incentives associated with its free-trade-zone status, has thus far helped to restrain the environmental degradation processes that other Amazon states have been suffering.

The state's environmental policy is set out in the Green Free Trade Zone Programme (Programa Zona Franca Verde), the strategy of which has several notable features. Firstly, it includes a long-term vision and development model for the scenario when tax incentives have ended —looking beyond circumstantial analyses and thinking long-term have merit in their own right. Secondly, it proposes a sustainable development model based on applying scientific and technological knowledge to the state's natural resources. Although most countries see investment in biotechnological development as strategic, only a few of them (e.g. Australia, New Zealand and South Africa) are clearly investing to link this with bio-prospecting and traditional knowledge. In this sense, it could be an almost unique experience in the world.

Other features of current environmental policy should also be mentioned, such as the strong encouragement it gives to the creation of conservation units (UCs), proactive policies to tackle deforestation in the southern part of the state, reduction of bureaucracy in licensing processes (in coordination with the federal authorities), and many successful examples of grass-roots and civil-society participation in the design and implementation of environmental programmes. The work done on the Coari-Manaus gas pipeline is an outstanding case.

There are some major challenges too. The development model needs to be consolidated, so the first challenge is to maintain current policy directions while strengthening human and financial resources available to environmental institutions to enable them to fulfil their ever-expanding commitments. It is also

important to persevere with vertical coordination (with the federal government and municipalities), and also horizontal coordination (with other secretariats) and the key development stakeholders — rural and indigenous communities, civil society, the private sector and so forth. A total of 35 recommendations are presented below with the aim of consolidating the state's progress on environmental issues, in a sustainable development setting.

Box 1.1

Note on the methodology used, scope and limitations

The methodology followed here is based on that used by the Organisation for Economic Co-operation and Development (OECD) to review the environmental performance of its members (the OECD consists of 30 countries, including the world's most developed economies). Application of this methodology has succeeded in improving environmental policies and enhancing their coordination and coherence with economic, sectoral and social policies affecting the environment. The countries evaluated have the chance to show, both internally and to other countries, their efforts, progress and results in environmental protection, in a setting of dialogue, participation and transparency.

These reviews analyse environmental conditions, environmental pressure and the responses made by the public and private sector to achieve national goals and fulfil international commitments on environmental protection and sustainable natural resource use. Integration of the environment with the economy, social issues and relevant sectors is one of the key characteristics of this methodology. Bearing in mind the importance given to the inter-relationships between the economic, social and environmental dimensions, it is possible to speak of development sustainability analysis.

One of the most important features of the methodology is the distinction it draws between intentions, actions and outcomes. The review stresses outcomes, i.e. the effectiveness of actions. It also analyses efficiency in achieving objectives, which means taking the attendant costs into consideration. Outcomes are analysed in the context of the environmental pressures exerted by economic activities within the pressure-state-response framework. The methodology is not intended to make comparisons between countries, but to exchange experiences based on mutual trust.

The review process using the OECD methodology can be divided into different stages.

1. Preparation: Stage in which the scope of the review is defined, including the environmental aspects (water, air, soil) and sectors (energy, industry, agriculture, etc.) to be considered. The execution timetable and team of experts that will visit the country in question are also established in this phase.
2. The host country prepares the documentation, data and schedule of meetings between the review team and government representatives (both the environmental institution and ministries or institutions related to the agriculture, water, industry areas, etc.), private sector, civil society, academic sector, labour unions, legislative and judicial branch and local authorities.

Box I.1 (concluded)

3. The mission lasts roughly 10 days, which are mostly spent in meetings with stakeholders and on-site visits. The information gathered, together with data from the meetings, are used to prepare a report containing a set of recommendations, which is sent to the country being reviewed and also to others.
4. Peer review consists of an open dialogue between the countries, which peer countries review the environmental outcomes of the country being evaluated, based on the report submitted. Lastly, the conclusions and recommendations of the report are discussed and approved among peer countries.
5. The next stage is publication of the report.
6. The final stage consists of following-up and monitoring the recommendations received. Many countries prepare a report based on actions undertaken in the two years following the review. The cycle is completed five years later.

For the State of Amazonas, ECLAC adapted the OECD methodology for use in a subnational territory. Thus the review performed there, entitled Environmental and Sustainability Analysis (ESA), was a pioneering activity. Its subnational nature and the fact that it is the first experience of its type affect the review process in a number of ways:

- The key role of the federal government in the state's environmental performance. For this reason, considerable attention is given to vertical coordination (between the state and central governments).
- The report was prepared with information provided by the state and completed during the mission with additional data. The quality of the data and the period covered by them are uneven, which makes the review period somewhat vague. The advantage is that ESA can be used as a baseline for future reviews. Some of the recommendations in the report aim to improve information availability.
- One recommendation is to set specific targets to be achieved by environmental policies, together with indicator systems that make it possible to measure progress, since in many cases it is impossible to compare outcomes with a previously proposed target. To overcome this problem, the review has focused on the changes made and the trends in available indicators, although analyses of effectiveness and efficiency are problematic.
- Where possible, data from other states are presented. It is important to note that the purpose of this analysis is not to compare the policies of the states involved, but to show different realities. It is therefore impossible to draw conclusions as to the relevance of the policies implemented in the State of Amazonas by comparing them with data on the reality of other states and the country at large.

In preparing the ESA, the areas and sectors to be reviewed were defined as follows: biodiversity; the agriculture, forestry and fishing sectors; and integration of the environment in the economy and social area. Thematic areas that do not directly form part of this report are: water and sanitation, air quality (including energy and transport) and waste management. The evaluation concluded in November 2006.

1. Conservation of nature and biodiversity

The State of Amazonas has made major efforts to combat deforestation and preserve biodiversity. Between 2003 and 2006, the area covered by state conservation units (UCs) grew by nearly 128%, from 7.4 million ha in 2002 to 16.9 million in 2006. Those efforts are being undertaken in a setting in which roughly 98% of the forest is still conserved, and deforestation rates have been declining, from 12.1% in 2003 and 8.2% in 2004, to 4.7% in 2005. Currently, state and federal UCs jointly account for around 22% of the total state land area. In addition, there are 45.7 million ha of indigenous lands, of which over 85% have already been marked out.

The state has used the creation of new UCs as a proactive strategy to restrain the advance of the agricultural frontier from neighbouring states further to the south; and 44% of the state UCs created between 2003 and 2006 are located in the area with the highest indices of deforestation. Along with the creation of new UCs the state government has increased its presence through environmental inspections (as many as 30 in the first half of 2006).

A highly positive feature of the conservation strategy implemented by the state is that 80% of the UCs created by 2005 are sustainable-use reserves. This category of conservation helps to make the UCs more popular among the rural population and encourages local stakeholders to protect natural resources. It also helps to integrate policies on production, sustainable development and the conservation of biodiversity.

Although only one management plan had been completed by 2002, the effective implementation of existing UCs is now progressing steadily. Between 2003 and 2006, two new management plans were concluded, having been prepared on a participatory basis, and four management boards were set up. In addition, the preparation of 18 plans is currently being coordinated, and four boards are being created. Nonetheless, full implementation of the 34 state UCs already created represents a challenge.

Apart from the UCs, there are various initiatives for developing a framework for land management, with civil society participation. These include the proposal for ecological-economic zoning for the state; the biological corridor project that accounts for 34% of the state's land area; and the Sustainable Development Plan for the South of the State of Amazonas, covering 25% of its territory. In addition to this, a strategic plan is being developed to promote sustainable development and to combat deforestation and the falsification of property titles (*grilagem*) in

the hinterland of the BR-319 highway. These organizational proposals aim to strengthen the presence of public authorities in the promotion of sustainable development in areas far from the capital. Another aim is to encourage civil society participation in the sustainable use of natural resources. To accomplish these objectives, consolidation between the State Environmental Council and the Municipal Environmental Secretariats created in numerous prefectures will be fundamental.

Despite the progress achieved, major challenges remain, particularly in relation to preparing specific targets to guide the state's conservation strategy and policy. With regard to the preservation of biodiversity, explicit policies are needed on the conservation of endangered species and especially vulnerable ecosystems, such as riverside zones and flood-prone areas. The challenge of increasing the scale of the economic exploitation of biodiversity and environmental services also remains. Integral-protection UCs also need to be linked to a policy of enhancing society's appreciation of those areas and showing their importance and value for the population's quality of life.

One of the major challenges is to effectively implement the group of UCs that have already been created or are in the process of creation. This requires additional financial resources and personnel trained in sustainable natural resource management. It will also be necessary to improve land ownership regularization both within and outside the UCs, effectively implement the land management policy as designed, and expand municipal and civil society participation. Lastly, it should be noted that the significant progress made over the last few years, together with the management of the UCs and land administration, require greater coordination and cooperation with all federal government mechanisms involved.

Recommendations

1. Establish specific conservation targets with firm deadlines, backed by systems for monitoring and evaluating progress, ensuring that endangered species and especially vulnerable ecosystems are considered.
2. Continuously improve collaboration and inter-agency relationships with the federal and municipal authorities, extending the positive experience of programmes such as ARPA, through: (1) joint efforts in conservation programmes; (2) biodiversity research in cooperation with the National Institute for Amazon Research (INPA), the Federal University of Amazonas (UFAM), the State

University of Amazonas (UEA) and other teaching and research institutions; and (3) inspection campaigns (following the example of the Uiraçu operation), in conjunction with the Brazilian Institute of the Environment and Renewable Natural Resources (IBAMA), the Federal Police (PF), the Military Police (PM) of Amazonas, the Environmental Unit (Batalhão Ambiental) and the municipalities involved.

3. Maintain and strengthen policy to encourage civil society participation in processes for biodiversity conservation and sustainable natural resource management, extending participatory experiences to ecological-economic zoning, and the construction of conservation unit maps.
4. Continue to encourage collaboration with municipalities and participation by private owners in managing municipal, state and private conservation units.
5. Strengthen the state system of conservation units, completing the preparation and implementation of management plans, creation of management councils, and the development of human capital and infrastructure to support the management of biodiversity conservation.
6. Further strengthen the proactive strategy to curb the advance of the deforestation frontier in the southern part of the state.
7. Follow up the linkage between inter-sectoral programmes such as the Green Free Trade Zone, biological corridors, and the Comprehensive Environmental Management Project of Amazonas (PGAI-SPRN/PPG7), by consolidating sustainable use conservation units.
8. Explore possibilities for implementing instruments that generate resources for conservation (taxes, concessions, royalties, compensation mechanisms and voluntary contribution schemes).

2. Integration of the economy and the environment

The economic performance of the State of Amazonas is based on strong tax and location incentives provided by its status as a free trade zone. The lifetime of the Manaus Free Trade Zone was recently extended for 10 years until 2023. Incentives were also upgraded to further promote the productive chain model, by making the most of the state's natural

resources, with a view to creating a sustainable model. The strategy of harnessing natural wealth supported by increasing investments in science, technology and innovation is different from that followed in other forest-rich tropical regions.

Under the current model, the environmental performance of firms in the Manaus industrial hub is outstanding. This situation is justified by exemption from state-level ICMS, which is subject to compliance with environmental legislation and performance commitments by the firms. In relation to that sector, the current situation needs continued promotion.

In contrast, the situation in the interior of the state is very different. Low-density land occupation, compounded by access difficulties, has given rise to low-productivity agriculture and poverty conditions for the people living there. There are environmental problems associated with sanitation, potable water, sewerage and waste management. In relation to deforestation, the policy implemented by the state government, which is consistent with federal policy, has aimed mainly to protect resources through sustainable use of natural resources and the creation of conservation units, as a mechanism to prevent not only the advance of the agricultural frontier from states further to the south, but also the deforestation that follows the construction of new highways. The aim is to channel sustainable development policy into promoting rational exploitation of forestry resources, and improve incomes among populations living in the interior of the state. Currently, about 50% of state territory is under some form of protection, either as indigenous land or as a protected area.

The glaring inequality between the growth of the city of Manaus and the situation in the interior has fuelled a migratory process that has caused problems of irregular land occupation, giving rise to consequent demands on the authorities to provide housing solutions. The associated environmental problems relate mainly to basic sanitation and refuse. Nonetheless, sanitation operations are being undertaken in specific locations, such as igarapés (creeks). The investment shortfall in the aforementioned sectors augurs a potential problem in the future.

In terms of economic instruments, making tax incentives conditional on adequate environmental performance is the most widely used instrument related to free-trade-zone status. Other instruments that respond to an economic rationale include the recently created exemptions from the Sales Tax on Goods and Services (ICMS) for extractive activities producing non-wood forest products; subsidies on the price of rubber which can be seen as a payment for environmental services; certain government procurements (e.g., the purchase of school furniture from forestry

producers and small scale furniture makers that exploit forestry resources under authorized management plans); or exemption from the payment of ICMS on diesel used by Manaus public transport and by fishermen. There are also interesting possibilities such as charging for environmental services in the framework of the Kyoto Protocol, tourism, and payment for conservation.

The state's environmental policy is based on current state laws that define the scope of the proposed objectives and the strategic tools that can be used. The Green Free Trade Zone Programme, whose mission is to change the socioenvironmental framework and promote sustainable development in the State of Amazonas, is the instrument through which the environmental policy of the current administration is channelled. Although it is mainly production oriented, it clearly mentions sustainable use. Given the situation of the population in the interior of the state, it represents a more suitable approach in the current context. Nonetheless, the budget of the state public institutions most directly linked to environmental protection amounts to about 0.6% of the public state budget, which is clearly insufficient.

In relation to the current institutional framework, environmental legislation which mainly comes from the federal level, affects the productive sector through the environmental licensing requirement. This procedure has to be fulfilled by all new projects and amendments, for which purpose they have to be classified by their potential environmental impacts. The licensing system aims to mitigate project impacts, while also providing for the possibility of compensation for damage. This is based on a minimum defined in relation to the project investment, rather than its impact, which is often counterproductive, since the minimum tends to predominate as the actual compensation amount. With regard to the model, the procedure entails authorization of three licences (prior, installation, and operating). The latter, which has to be renewed periodically, serves as an important inspection instrument. The capacity of the Amazonas Environmental Protection Institute (IPAAM), mainly in terms of the workload of its personnel, is the main constraint on adequate performance of tasks in that area. Geoprocessing tools could also be used more systematically in the licensing process.

For the construction of the Coari-Manaus gas pipeline by the State-owned Petrobrás, an unprecedented licensing process was implemented, in which the affected communities had wide-ranging participation resulting in a change to the original course of the pipeline. In addition, over R\$43 million was obtained for the compensation programme, among

other benefits. The destination of the funds was also decided upon on a participatory basis and resulted in a set of actions targeting sanitation and productive development issues.

Recommendations

1. Set specific targets to be attained as policy outcomes, with firmly established deadlines and indicator systems that make it possible to measure progress.
2. Strengthen policy articulation, integration and coordination for sustainable development through more intensive planning.
3. Strengthen preventive environmental inspection actions with personnel, material resources, training and coordination among those responsible for inspection, both within the state and at the federal and municipal levels.
4. Strengthen the capacity of environmental institutions in the public sector by upgrading budgets and human resources to make them stable and effective in meeting the needs of planning, implementation and monitoring of plans, programmes and projects.
5. Consolidate the Green Free Trade Zone Programme strategy to generate employment and income, particularly in the interior of the state; evaluate the possibility of supporting it through government procurement.
6. Take advantage of conditions for biotechnological development associated with biodiversity—the existence of mega-biodiversity, traditional knowledge, and research institutions such as the National Amazon Research Institute (INPA) and the Amazon Biotechnology Centre (CBA)—improving articulation between the stakeholders involved, including civil society, and ensuring a fair distribution of the related benefits.
7. Push ahead with cost-effectiveness and cost-benefit analyses of policies, plans and projects; evaluate possibilities for increasing the use of economic instruments for environmental management.
8. Improve the coverage of services provided in terms of environmental sanitation, drinking water, sewerage and refuse, with costs paid by users (including special treatment for the poorest sectors, taking due account of equity aspects), and encourage greater private-sector participation in service provision.

9. Consolidate ecological-economic zoning (ZEE) as a tool for guiding the development of economic activities in the state.
10. Evaluate the possibility of redirecting resources transferred to the municipalities on the basis of their environmental performance in keeping with the ecological ICMS concept.
11. Improve intra-regional connectivity by exploiting the state's large river-basin network and investments in river transport infrastructure, bearing in mind their environmental impacts.

3. Sectoral integration: agriculture, forestry and fishing

Agriculture and forestry sectors

The state has been making major efforts to prevent illegal land occupancy and to promote forest management and legal wood extraction. The agreement between SDS and IBAMA on licensing for forestry management has reduced bureaucracy and made it easier for producers to comply with the law. State support for the preparation of forestry management plans and the strengthening of productive chains based on plant extraction activities have yielded good results in terms of generating income and employment in the interior of the state, without undermining the aim of forestry conservation. In the agriculture sector, state support has also helped to improve the quality of life in the interior of the state. The new institutional framework of the agriculture and forestry sectors, together with the policy instruments applied, have generally been appropriate for achieving the objectives proposed in the economic, social and environmental context of the state.

Despite the progress made, however, significant challenges remain, particularly in relation to regularization of land ownership —a problem associated with uncontrolled expansion of the agriculture frontier on the one hand, and difficulties in legally exploiting the forest of the other. A high percentage of wood extraction is still illegal. Although the number of management plans has grown significantly, their quality seems to have diminished. Moreover, transaction costs arising from bureaucratic licensing procedures could be further reduced. Continuing to improve coordination between the various levels of government (federal, state and municipal) is an essential requirement for overcoming the challenges that exist. In terms of opportunities, the state recently launched a major initiative for access to international financing through a contribution for global environmental services; but thus far it has hardly been used.

Fishing and aquaculture sector

Fishing is one of the main ways of making economic use of rivers, and it guarantees the survival of a large section of the riverine population in the interior of the state. Over the last five years, fishery production has increased by 9%, while fish farming output has doubled; in 2006, this represented 10% of the sector's production.

Within the Green Free Trade Zone Programme, the State of Amazonas has been providing support mechanisms and incentives throughout the productive chain in the fishery sector (particularly aquaculture). This makes it possible to promote conservation through a social policy that seeks to create economically viable activities. Management of the pirarucu species —overfished in several parts of the state— in the Mamirauá e Fonte Boa Sustainable Development Reserve is a good example of this commercial fishing alternative to maintain stocks, stabilize prices and meet the economic needs of broad sectors of the population.

Despite the progress of aquaculture, the challenges in the sector are mostly concentrated in commercial and small-scale fishing. Some species, particularly those of highest economic value, are overfished. In addition, the limited capacity for enforcing the relevant laws and fishing restrictions, compounded by a lack of fishery zoning, has caused productivity to drop and triggered numerous disputes between the different sector stakeholders. Fishing agreements and voluntary inspection have been very useful in resolving some of those disputes on a participatory basis. Nonetheless, turning aquaculture and small-scale fishing into a modern competitive industry is a process that will require both time and resources. The solution to problems such as fleet quality, port infrastructure, transport and marketing, and the implementation and/or enforcement of fishing regulations and environmental, health and quality laws pose a major challenge to this sector.

Recommendations

General

1. Persevere with efforts to reduce the bureaucracy that restricts the expansion of sustainable models for exploiting agriculture, forestry, fishing and aquaculture resources, following the examples of the IBAMA-SDS agreements in the environmental licensing area, and the INCRA-SDS and ITEAM agreements on land ownership regularization.

2. Maintain the productive-chain approach and extend it to other sectors and products (tourism and sport fishing, ornamental fish, phyto-pharmaceuticals, fruit growing and so forth), overcoming the numerous bottlenecks that have been identified and maintaining the general aim of protection and sustainable use of nature.
3. Speed up the establishment of health and environmental quality frameworks, and the promotion of certification systems, to enhance quality in the production of environmental goods and services (tourism, fishing and aquaculture, wood and non-wood forestry products, among others), following the example of the Forest Stewardship Council (FSC) in terms of certification for wood and non-wood forestry products.
4. Further exploit the incentives system of the Manaus Industrial Hub and Free Trade Zone to increase on-site value added in products from productive chains in the agriculture, forestry, fishing and aquaculture sectors (furniture, pharmaceutical, cosmetics industries, etc).

Agriculture and forestry sectors

1. Intensify the process of land ownership regularization, by strengthening coordination between the federal, state and municipal institutions responsible for this.
2. Exploit possibilities for linking the provision of global environmental services to the financing of initiatives for sustainable forestry management and conservation (carbon markets).
3. Use ecological-economic zoning (ZEE) and environmental impact assessment when preparing settlement and agricultural-use projects.
4. Increase technical-scientific knowledge on forestry and agro-forestry species and production systems, and improve and expand the policy for disseminating such systems.

Fishing and aquaculture sector

1. Continue to improve the effectiveness of mechanisms for the planning and sustainable management of fishery resources, including comprehensive regulation of fishing in the state (zoning,

monitoring of stocks, inspection, participation, etc.), drawing on lessons learned from the Várzea Natural Resource Management Project (PROVARZEA).

2. Give special attention to monitoring and inspection activities in the fishery sector, strengthening capacity to enforce environmental and health laws and regulations, and stock management. Promote the production of permanent fishery statistics and information systems (e.g., an annual report on the situation of the sector and its environmental impacts).
3. Consolidate participation processes involving the different sector stakeholders to avert disputes and promote environmental conservation (following the example of fishing agreements), making active use of the State Fishery and Aquaculture Board.

4. Integration of social and environmental aspects

With regard to progress made on several aspects of the social and environmental integration for sustainable development of the State of Amazonas, the wide-ranging mechanisms and participatory processes created have resulted in a growing number of public hearings, better articulation with NGOs, and valuation of indigenous and traditional population groups, by creating specific bodies within the State Environment and Sustainable Development Secretariat.

Progress has been made in improving people's access to environmental justice, through the State and Federal Public Prosecution Department, and the Specialist Environment and Agrarian Issues Branch (VEMAQA) for environmental matters; while the use of instruments such as Alteration of Conduct Bonds (termos de ajustamento de conducta) provide important mechanisms for solving environmental disputes. These form part of broader progress in the continuing development of citizenship which has been strengthened thanks to a number of measures taken by the state government, resulting in greater environmental awareness and increased charging of environmental duties.

That process would clearly not have been initiated without the presence of two converging trends: firstly, a structural change in the distribution and vertical integration of competencies in the environmental area, mainly between the federal government and the states (and on a smaller scale between the states and municipalities); and, secondly, a circumstantial policy stance, in the form of a firm commitment towards

sustainable development by the state government. This change is reflected in the creation of various new bodies and institutions within the SDS, and application of the concept of transparency in policy decisions, the Green Free Trade Zone policy itself, and the structuring of several programmes and projects for international cooperation within the general guidelines of the sustainable development in the state.

The change in policy orientation can also be seen in traditional social policies, such as housing and sanitation, and in complementary policies on sanitation, sewerage, and environmental recovery, mainly in the *igarapés* (creeks) in the city of Manaus, after the population living there moved to low-income housing units. The use of instruments for offsetting environmental damage represents a gain for traditional social policies. Other progress made by state policy can be seen in the education sector, including environmental education. Apart from representing a crosscutting element of school and university curricula, there is a wide-ranging training programme for volunteers in the municipalities. The foregoing analysis shows that the policy of the government of the State of Amazonas has made significant headway in promoting and implementing the concept of sustainable development in the state, and that public administration is on the correct path to tackle the major task awaiting it in the future.

To make its actions effective, the state, in conjunction with society at large, will have to face a number of challenges that continue to restrain sustainable development. These are of an institutional and inter-agency nature and involve the integration of sectoral actions, but they are also present in budgetary questions and resource-allocation priorities. The state's geographic location poses a number of problems for any government action, mainly in isolated areas, given the relatively weak infrastructure of the communication and transport sectors. In the environmental area, information exchange and dissemination is becoming more difficult, as even in urban areas there is a need for a mechanism that systemizes and disseminates information on the environment and sustainable development in a simple form, and also includes very important generators of data such as research agencies and civil society.

In terms of traditional social policies, investments in the health, housing, sanitation and education sectors, despite being a priority in the allocation of the state budget, are still a long way from finding solutions to improve the quality of life of the state's population, especially away from the capital. Outside of the city of Manaus, people still face major supply problems in relation to drinking water, basic sanitation, and the collection, treatment and adequate disposal of waste. Such problems have

a direct impact not only on the housing situation, but also on the health status and sanitary conditions of the affected population.

Recommendations

1. Intensify efforts to generate and systemize environmental information and indicators, and environmental status reports, to strengthen planning and decision-making and facilitate greater access to environmental information as a basis for responsible participation.
2. Continue to promote citizen participation in mechanisms for planning and implementation of environmental policies, programmes and plans (including environmental review processes), paying special attention to local processes and their articulation with state and federal government mechanisms.
3. Continue to strengthen access to environmental justice, increasing the presence of the Public Prosecutor's Office and creating additional specialist environmental units to address needs in the interior of the state.
4. Increase investments to improve environmental health, by expanding access to drinking water (mainly in the interior of the state) and sanitation services, while reducing haphazard land occupancy, especially in at-risk zones.
5. Strengthen and expand environmental education and awareness-raising processes, specially targeting the social groups that make use of or benefit from natural resources.

