

**PILOT PROGRAM TO CONSERVE THE
BRAZILIAN RAIN FOREST**

Mid-Term Review
Sector Mata Atlantica

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MID-TERM REVIEW OF PPG7, SECTOR MATA ATLANTICA

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FOREWORD

The following evaluation report on past and current PPG7 activities in the Mata Atlantica forms an integral part of the Mid-Term Evaluation of the PPG7 Program. The consultant was contracted by INDUFOR to contribute to the evaluation of PPG7 activities associated with the Mata Atlantic and to provide technical input into the proposed new PPG7 Sub-program for the protection of the Atlantic forests. The total time allotment for this task was 66 working days.

In accordance with the ToR as prepared by the World Bank (see Annex 1), the consultant visited Germany from March 27 to April 7 for discussions on the decentralized PPG7 associated projects that are financed by the German government. Interviews were scheduled with key persons affiliated with the PPG7 program from the BMZ, GTZ, and KfW, complemented through comprehensive archive studies on the projects within the three institutions. The results of the interviews are presented in Annex 2 of this report.

This was followed by a four-week visit to Brazil for the data-gathering phase of the assignment. The first week was spent in Brasilia on consultations with key government institutions, the World Bank, donors, and selected groups from civil society. This was followed by a 19-day field visit to selected PD/A and Bilateral Associated Projects in three different Atlantic States. The final week in Brazil was spent in Brasilia with the INDUFOR/STCP Mid-Term Evaluation Team for brainstorming the findings from the field and for final stakeholder consultations. The itinerary and a brief progress report on the data-gathering phase of the assignment are attached as Annex 3.

The consultant returned to his home base on May 12 to prepare the draft report on Mata Atlantica. A second 10-day visit to Brazil was scheduled for early July to discuss the draft report with donors and other stakeholders, to collect data still outstanding, and to finalize the overall report. A list of persons contacted for this assignment is attached as Annex 4.

ABBREVIATIONS

The following abbreviations are used in this report:

<u>Abbreviation</u>	<u>Definition</u>
AFBR	Atlantic Forest Biosphere Reserve
AMA	Assistance to Monitoring and Analysis
APAs	Environmental Protection Areas
ARPA	Amazon Expansion of Protected Area System
BAPs	Bilateral Associated Projects
BMZ	German Ministry for Economic Co-operation and Development
BR	Biosphere Reserve
CAMPFIRE	Communal Area Management Planning for Indigenous Reserves
CBD	Convention on Biological Diversity
CEPLAC	Executive Commission for Cacao Production Plan
CI	Conservation International
CNPA	National Council for the Protection of Fauna (of IBAMA)
CNUC	National Council for Protected Areas (of IBAMA)
CONAMA	National Committee for the Environment
CTC	Scientific and Technical Committee (of IBAMA)
DPRN-3	Divisão do Litoral e Vale do Ribeira do DEPRN (Departamento Estadual de Proteção de Recursos Naturais)
(FZ)	German Financial Aid
FUNATURA	Environmental NGO
GAMBA	Environmental NGO in Bahia State
GEF	Global Environmental Facility
GIS	Geographic Information System
GoB	Government of Brazil
GOPA	German Consulting Firm
GTZ	German Agency for Technical Aid
ha	hectare
IBAMA	Brazilian Institute for Environment and Renewable Resources
IBDF	Brazilian Institute for Forest Management
ICMS Verde	Environmental NGO
IEF	Environment and Forest Institute
IF	Forest Institute
INCRA	National Institute for Agrarian Reform
INDUFOR	Finnish Consulting Company
INPE	National Institute for Remote Sensing
ISA	Environmental NGO in São Paulo
ITR	Imposto Territorial Rural
KfW	Kreditanstalt fuer Wiederaufbau (German Bank)
MMA	Federal Ministry of Environment
NCC	National Coordination Committee
NGOs	Non-Government Organizations
PA	Protected Area

PAMTA	Action Plan for Mata Atlântica
PD/A	Demonstration Projects
PPG7	Pilot Project Group 7
PPTAL	Protection of Indigenous Reserves
PRODESQUE	Control of Deforestation and Fire
PROMANEJO	Assistance to Forest Management
RESEX	Extractive Reserves
RMA	Rede Mata Atlântica
RPPN	Private Reserves
SASOP	Serviço de Assessoria de Organizações Populares Rurais
SEMA	Special Secretariat for the Environment
SEMAD	State Secretariat for Environment and Sustainable Development
SICI	Proposed Monitoring System in São Paulo Mata Atlântica Project
SISNAMA	National System of the Environment
SMA	Secretaria de Estado do Meio Ambiente, São Paulo
SNUC	National Law for Conservation Areas
SOS MAt	Environmental NGO Mta Atlantica, São Paulo
SPRN	Natural Resources Policies
STCP	An Engineering Consulting Firm
SUDBEVEA	Agency for the Development of Rubber
SUDEPE	Agency for the Development of Fisheries
ToR	Terms of Reference
(TZ)	German Technical Aid
USAID	United States Aid Agency
WB	World Bank
WWF	World Wide Fund for Nature

EXECUTIVE SUMMARY

PART I. EVALUATION OF PPG7 PROGRAMS IN MATA ATLANTICA

The following evaluation report on past and current PPG7 activities in the Mata Atlantica forms an integral part of the Mid-Term Evaluation of the PPG7 Program. The report is based on interviews with key persons from KfW, BMZ, and GTZ in Germany; archive studies; discussions with representatives from Brazilian governments and civil society familiar with PPG7 projects and threats to the ecological integrity of the Atlantic forests; and a three-week field reconnaissance.

1.0 INTRODUCTION

The findings suggest that the ecological integrity of the Atlantic forests is compromised everywhere. The once-abundant contiguous forests of the Atlantic states have been reduced to insignificant fragments mostly composed of secondary succession forests. Practically all of the Mata Atlantica has been converted into managed landscapes comparable to central Europe and other heavily populated parts of the world. It appears that the opportunity to restore the diversity of the original climax forest of the Atlantic region is largely lost.

2.0 RELEVANCE OF MATA ATLANTICA INTEGRATION INTO PPG7

2.1 Background

"Mata Atlantica" refers to all forest ecosystems of Brazil's coastal states from Rio Grande do Sul to Rio Grande do Norte. The Mata Atlantica is dominated by dense ombrophilous forests. Originally, the Mata Atlantica covered more than 1.29 million km² and represented 15 percent of Brazil's entire land surface area spread over 17 states (ISA 1999, SOS 1998, MMA 1999). According to ISA (2000), the Mata Atlantica had been reduced to less than 7 percent of its original size by 1999. Predatory logging, burning, and forest alienation for agriculture, cattle-ranching, monocultural reforestation, and housing developments are cited as responsible for the large-scale forest destruction and degradation.

2.2 Justification for a Mata Atlantica Sub-Program

It is widely acknowledged that the Atlantic forest is the most threatened of the Brazilian forest biomes and one of the most threatened forest biomes worldwide. With less than 7 percent of its original forest area remaining, the ecological integrity of the Mata Atlantica is compromised even in officially designated conservation areas. Conservation units have turned into ecological islands surrounded by agriculture, cattle pasture, and human settlements and have little opportunity to expand or be rehabilitated into ecologically viable entities. The majority of the remaining Mata Atlantica is composed of secondary forest in different seral stages. It is assumed that this process has resulted in a significant loss of biodiversity and system stability and has caused local species extinction of unknown magnitude.

It is important to note that the Mata Atlantica supplies more than 100 million people with water. Considering that protected areas are the backbone of sustainable biodiversity

conservation worldwide, it is worth noting that protected areas in the Atlantic region account for less than 1 percent of the original forest biome (MMA 1999).

3.0 PROGRAM DESIGN AND IMPLEMENTATION

3.1 Program Design

i) Framework Conditions

The management of forests and protected areas in the coastal area includes key government agencies under the Ministry of Environment (MMA): the National Council for the Environment (CONAMA) and the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA). The state and municipal governments play a key role in the conservation of areas with designated protection needs and the creation and management of conservation units under state and municipal authority. It is evident, however, that the civil society, with more than 80 percent ownership in coastal forest land, is the single most important stakeholder with responsibility for sustainable forest conservation.

Principal problems encountered by IBAMA, state, and municipal environmental agencies are chronic shortage of funds and insufficient and poorly qualified personnel.

Civil society, under the leadership of the "Rede Mata Atlantica" (RMA), has taken a proactive role in the design and lobby of environmental policies and conceptualization of strategies.

Legislation applying to conservation areas and forest management are complex, confusing, and in urgent need of upgrading. In spite of innovative steps taken by the government to halt forest destruction ("Green Protocol," Imposto Territorial Rural-ITR, etc.), environmental degradation in the Mata Atlantica continues.

ii) Goals, Objectives, and Feasibility of PPG7 Program for Mata Atlantica

At present, none of the designated "core programs" of the PPG7 are applied to the Mata Atlantica. Current PPG7 activities are confined to PD/A projects and three decentralized projects (Bilateral Associated Projects [BAPs]). The latter are implemented with financial assistance of the German government under cooperative agreements with the three target states of Minas Gerais, Parana, and Sao Paulo. Both the PDA activities and BAPs focus on the narrow belt of highly fragmented ombrophilous forests along the Atlantic coast.

iii) Summary Assessment of Program Design and Planning for Mata Atlantica

It is apparent that past and ongoing PPG7 activities in the coastal states are insufficient to provide the much-needed sustainable protection of the highly fragmented Mata Atlantica. To date, no comprehensive program has been designed for the Mata Atlantica. The current BAPs and PD/As are not part of a synchronized strategy. Although current projects comply in principle with PPG7 objectives, better conceptual guidance is needed to establish coordinated synergies.

3.2 Program Implementation

i) Background

PD/A Projects: There is consensus that the PDA program has provided the civil society, and NGOs in particular, with an excellent opportunity to become involved in the PPG7 and efforts to protect Brazil's remaining tropical rain forests. The majority of PD/A projects approved for the Mata Atlantica have been awarded to members of the RMA, with generous funding for strengthening the administrative capacity of the proponent and project-related field expenses.

To date, 33 PD/A projects have been approved for Mata Atlantica, with a total of approximately US \$ 5 Million of sub-grants, reflecting the "20 percent clause" of the PPG7 (20 percent for Mata Atlantica and 80 percent for Amazonia). Practically all PD/A projects in Mata Atlantica are currently financed through the German Trust Fund. Sub-grants average approximately \$150,000 per project. The lack of comprehensive statistical data on the PD/A programs are a major obstacle to a meaningful overall program evaluation.

It appears that the majority of the PD/A projects in the Mata Atlantica are linked to agricultural production and primarily address socio-economic issues. Very few projects contribute directly to forest conservation. Most projects are implemented without any connection to protected areas.

It is recognized by the government of Brazil, the World Bank, and Donors that Bilateral Associated Projects need full integration into the PPG7. The current Germany-supported BAPs in Parana, Minas Gerais, and Sao Paulo fit the PPG7 criteria. The main focus of the German intervention in the three coastal states is on designated protected areas. The projects also support state and federal environmental law enforcement and monitoring agencies. Total project costs of KfW-sponsored interventions are: Sao Paulo DM 53.5 Million (Donor contribution DM 30 Million), Parana DM 30 Million (Donor contribution 18 Million) and the approved project for Minas Gerais DM 29.3 Million. The GTZ project is costed at DM 7.5 Million. A fifth BAP (KfW intervention) will become operational in the year 2000 in the State of Rio de Janeiro with a financial contribution of DM 15 Million (KfW, 2000).

ii) Case studies

Case Study 1: Bilateral Associated Project Doces Matas, Minas Gerais (Caparao).

This project supports the sustainable protection of three designated protected areas in the State of Minas Gerais through a cooperative agreement between IEF, IBAMA, and Biodiversitas under the leadership of the State Secretariat for Environment and Sustainable Development (SEMAD). The project receives technical assistance from the German GTZ, provided through one local forester and one long-term international professional forester. The project has a seven-year duration.

The project started with highly favorable framework conditions. There is consensus that the major achievement of this project is the well-functioning inter-institutional cooperation that now allows for coordinated planning and program implementation for the three target conservation units and their support zones.

It appears that the project pays insufficient attention to biodiversity conservation and sustainable forest protection inside and outside the PAs. Work inside the park concentrates on tourism-related infrastructure and capacity-building of park personnel. Work outside the park seems to focus mostly on socio-economic aspects of agricultural production, biological disease control, agro-forestry, and general environmental education instead of addressing urgent problems of ecological integrity and priority needs to establish ecological connectivity.

Case Study 2: Bilateral Associated Project Sao Paulo State (FZ).

The KfW-supported Sao Paulo project aims at the support of 20 protected areas within this state. The project is implemented by Sao Paulo's Ministry of Environment with assistance from an international consultant. According to a July 1999 agreement between KfW and Sao Paulo State, the project has been extended by two years (to a six-year total) with additional funding of DM 10 Million in support of an additional 11 PAs. Learning from the experience of phase I of the project, more emphasis in the second phase will be placed on environmental education, tourism, and cooperation with support zone communities.

Overall impacts of the project are positive. Financial support to the 3rd Battalion of the Forest Police has enhanced overall efficiency. The financial support given to DPRN-3 (which is in charge of licensing) is of equal importance. Both interventions have led to increased cooperation between the two agencies with direct benefits to PAs. Support aimed at the elaboration and updating of management plans has been less successful and needs improvement. State Park Serra do Mar, one of the project's focal areas, would greatly benefit from an amalgamation of its core areas. The project has given insufficient attention to support zones of PAs and the need for participatory PA planning and management. Designated support zones have to become an integral part of protected areas.

Case Study 3: Demonstration Project Itamaraju (Terra Viva).

The three-year US \$ 153,000 project terminated in 1999. A US \$208,000 follow-up phase has been approved. The project area includes 2,000 ha of INCRA land settled by a group of 50 families (sindicatos) in 1987. At the time of land transfer, all of the 2,000 ha were covered by secondary forest. Of the original forest cover (that is secondary forest as of 1987), an estimated 5 percent remains, with an additional 30 percent under regeneration.

Overall, the three-year project has been very successful. The project introduced target families to agro-forestry systems that are economically viable and environmentally friendly. The project shows that three-year project cycles are too short to produce and disseminate results. It appears that the project has focused too little on conservation and placed most of its emphasis on socio-economics.

Case Study 4: Demonstration Project Camamu (SASOP).

This project has been implemented by SASOP, a small NGO working in the general project area of Camamu. With an orientation similar to the Itamaraju project, the project aimed at poverty alleviation of a group of rural families through technology transfer in the area of agro-forestry on the basis of demonstration plots and capacity development. In contrast to Itamaraju, the families and demonstration plots selected by SASOP were

widely scattered, extremely isolated, and access was difficult. The project involved 28 families from four communities. All families are sindicatos with land provided by INCRA. Each family averages 10 ha of land, of which half is generally under production (mostly cacao); the other half is covered by secondary forest of low quality, mostly in early seral stages. The three-year project had a \$ 204,000 sub-grant; it was completed in 1999 with no follow-up.

The project was not very successful and did not meet its goals. The reasons include: poor choice of sample plots that are isolated, widely dispersed, and with problematic access. The only successful component is the establishment of a fruit-drying plant. The project failed to achieve its goals of capacity-building and environmental education. The project did not address biodiversity conservation concerns and only marginally seems to have qualified for a PD/A grant.

Case Study 5: Demonstration Project Elisio Medrado.

This project was implemented by the well-known NGO "GAMBA," which is currently responsible for the coordination of the Rede Mata Atlantica. The three-year project was completed in 1999 with a sub-grant of \$ 210,000. A follow-up phase has been considered.

The selected pilot area for this project comprises five municipalities with a total of 26 randomly distributed demonstration plots covering a total of 50 ha of degraded cattle pasture that was selected for reforestation with native tree species. The plots are located in degraded micro-watersheds selected for their potential to provide important "ecological stepping-stones." In general, the project fits well into the PPG7 objectives for Mata Atlantica. The project reached its goals, in principle. GAMBA has the proven ability and ecological qualifications to satisfactorily implement a project as well-designed and conceptualized as the Elisio Medrado project. Shortcomings are the wide dispersal of the plots, poor cooperation with state agencies, and the absence of systematic environmental monitoring of the demonstration plots.

iii) Summary Assessment of Program Implementation

One of the main hurdles for the KfW-sponsored Bilateral Associated Projects is the cumbersome state bureaucracy with respect to procurement procedures, financial management, timely release of counterpart funds, centralized decision-making processes, unwillingness to decentralize, and complicated accounting and bookkeeping procedures.

The implementation of the GTZ-sponsored BAP in Minas Gerais benefits greatly from the good working relationship between the three key stakeholders: IBAMA, IEF, and Biodiversitas.

Overall, the PD/A projects visited appeared to be reasonably well managed and implemented. The implementation of the GAMBA and SASOP projects would have benefited from a better selection of demonstration areas.

4.0 OVERALL ASSESSMENT OF PPG7 INPUT INTO MATA ATLANTICA

4.1 Cost -Efficiency of the Mata Atlantica Projects

Decentralized projects (Bilateral Associated Projects) appear more efficient because of reduced bureaucracy and number of players. Government ownership in decentralized projects is easier to achieve than in centralized projects. Efficiency of the KfW-sponsored projects may have benefited from a feasibility study. The use of an external consultant, as in the KfW-sponsored projects, has greatly enhanced project efficiency.

The cost-efficiency of the GTZ technical assistance project appears comparatively low. Overhead costs are high compared to outputs. Most of the GTZ budget is spent on financing the external advisor. Project efficiency could have benefited from conceptual planning and more target-oriented project strategies.

PD/A projects are highly cost-effective and may well be the most efficient component of the PPG7. Projects implemented by non-government grassroots organizations (NGOs) in particular excel through cost efficiency by (a) keeping overheads low, (b) providing technical services through in-house expertise free of charge or by using cost-effective local expertise, and (c) staying clear of government bureaucracies. Efficiency of the Camamu and Elisio Medrado projects could have been enhanced through a better selection of demonstration sites and better use of readily available technical know-how.

4.2 Effectiveness of the Mata Atlantica Projects

The conceptual approach for the BAPs supported by the German government with focus on designated protected areas and support to institutions associated with, and direct responsibility for, the protection of the PAs is well justified and fully meets overall priority needs. The overall effectiveness of the GTZ-sponsored project in Minas Gerais seems low compared to PD/A projects. Both the GTZ and PD/A projects provide technical support to identified target groups; translating the GTZ budget into PD/A projects indicates that 10 PD/A projects of six years duration each could have been financed through the GTZ budget. Overall efficiency of PD/A projects compared to other PPG7 programs appears high.

4.3 Sustainability

The sustainability of all projects scrutinized remains an unsolved problem, although overall, the prospects are promising. A major constraint to all projects in support of designated protected areas is the lack of cooperation by all levels of government agencies in providing PAs with the authority to do their own fundraising. This stifles any effort and promising initiatives.

Components of the KfW project that promise financial self-sufficiency, partly as a result of the intervention, include support to the Forest Police and support to the DPRM-3.

The financial sustainability of the GTZ-supported project is unsolved. NP Caparao has an excellent potential for revenue generation from gate fees as a prime tourist destination in the region. Sossego is self-sustaining, being the private property of the highly capable NGO Biodiversitas. The situation regarding the third state-operated park supported by the project is not known.

The sustainability of the PD/A project Itamaraju seems secure. Prospects for Elisio Medrado are less promising. The Camamu project is not sustainable, except for the fruit-drying plant.

4.4 Replicability

The Itamaraju project has the best potential of the three PD/A case studies in terms of replicability. The replicability of the BAPs is difficult to judge. Support to PAs is of critical importance, however, and the overall positive results may encourage other donors to continue with BAPS in other states.

5.0 INPUTS OF MATA ATLANTICA PROJECTS TO PPG7 OBJECTIVES

The focus of the KfW-sponsored projects is on direct support to the PA system of the Mata Atlantica and the institutional strengthening of environmental law enforcement agencies. This conforms with overall PPG7 objectives. The GTZ-supported project, Doces Matas, conforms to all objectives and strategies of the PPG7. It promotes sustainable land use and agriculture in support zones of the three PAs targeted for the project, involves the private sector, fosters cooperation with NGOs, and addresses the need for public awareness through the production and dissemination of educational materials.

The PD/A projects conform to overall PPG7 goals and objectives in principle and have adopted the stipulated strategies by involving diversified target groups in their various programs.

6.0 CONCLUSIONS AND RECOMMENDATIONS

It appears that the ecological integrity of the remaining Atlantic forest (Mata Atlantica) is compromised everywhere. Literally all of the original climax forest has been replaced by secondary forest in different successional stages that are highly fragmented and scattered throughout the coastal mountains. In this light, the focus of the Bilateral Associated Projects on the protection of designated protected areas fully addresses the priority needs for Mata Atlantica. The need to update PA management plans under the leadership of a professional PA planner and with proper stakeholder participation is recognized.

Inter-institutional cooperation should become a focal area of future PPG7 projects in Mata Atlantica.

The relevance and usefulness of the PD/A program for the Mata Atlantica is recognized and an expansion of the program with a defined thematic and regional focus is encouraged.

Monitoring and evaluation of PD/A projects as implemented by the MMA is costly and inefficient. Both activities should become the responsibility of the project executants. Evaluations and monitoring procedures should be standardized.

It is recommended to extend the PD/A project cycles to a total of six years of all projects related to reforestation and agro-forestry.

A well-designed and standardized environmental monitoring program is needed to be supported by standardized, fully socialized databanks.

In summary, there is legitimate concern that the PPG7 places too much emphasis on economics and too little emphasis on biodiversity conservation.

7.0 LESSONS LEARNED AND OPPORTUNITIES

- Programs and projects should be based on well-designed concepts rather than follow an adaptive management approach.
- Verifiable indicators should be developed to allow for quality assessment of project activities and project evaluations in general.
- All conservation units should have demarcated boundaries and designated support zones in order to facilitate protection, support zone planning, and elaboration of action programs.
- Updating and elaboration of management plans for conservation units should be spearheaded by a professional protected area planner and involve key stakeholders from the support zones.
- An ecological gap analysis in support zones of conservation areas would be helpful in order to identify priority needs for biodiversity conservation.
- Conservation units should not become isolated tourist destinations but rather be integrated into regional tourism development plans.
- Appropriate methods should be developed for all of the PPG7 programs, to be spearheaded by AMA and the Research/Monitoring Unit. All PPG7-related projects should be obliged to adhere to the proposed methodology.
- Urgent training needs for PA staff are recognized. A centralized capacity-building program under PPG7 auspices, to be based on a comprehensive needs assessment, would benefit several PPG7 program components.
- PD/A project proposals related to the protection of the Mata Atlantica should have proven relevance to biodiversity conservation and forest protection. Preference should be given to projects that provide quantifiable and qualifiable contributions to forest protection, expansion of forest land, and ecological connectivity.

PART II: FORWARD-LOOKING PHASE

1.0 INTRODUCTION

The proposed sub-program of the PPG7 for Mata Atlantica provides a unique opportunity to apply the lessons learned from the Amazonian component of the PPG7. This applies particularly to overall strategy planning and establishment of synergies.

A sub-program for Mata Atlantica would benefit from PPG7 components beyond the current PD/As and BAPs, in particular the: (a) Private Sector Involvement, (b) Monitoring and Analysis, to include standardized and mandatory environmental monitoring, (c) Fire Prevention, Mobilization and Training Project and, most important, (d) Rain Forest Corridors.

2.0 CONSERVATION CONCEPTS AND STRATEGIES FOR MATA ATLANTICA

2.1 Strategies

In spite of numerous attempts to design a comprehensive strategy for the conservation of the Mata Atlantica, no consensus solution on the "best" approach or thematic and regional focal areas has been achieved to date.

2.2 Priority Designations

i) Role of Conservation Areas for the Sub-Program Mata Atlantica

The critical role of Brazil's Protected Area System, with respect to the sustainable protection of biodiversity and ecosystem conservation in general, is widely recognized. The existing PAs in the Mata Atlantica currently protect the majority of what is left of the highly fragmented ombrophilous forest ecosystems of the Atlantic region.

The protection of designated conservation units of any given category and under any jurisdiction in the Atlantic region has to receive first priority in the proposed PPG7 sub-program for Mata Atlantica. This has to go hand-in-hand with efforts to expand the current PA system with emphasis on RPPNs. Of equal priority should be the need to strengthen environmental law enforcement agencies and promote inter-institutional cooperation (focal areas of current KfW-supported interventions in several Atlantic states).

ii) Maintenance of Ecological Integrity and Environmental Monitoring.

Another priority for the proposed PPG7 sub-program Mata Atlantica should be (a) the overall assessment of the ecological integrity of the existing PA system, and (b) the development and implementation of a suitable monitoring system that would include the PA system and other currently unprotected fragments of the Atlantic forests. The design and implementation of comprehensive monitoring programs have not been priorities anywhere within PPG7. Environmental monitoring of all PPG7-related projects will improve the decision-making process, as well as planning and programming in general.

iii) Support Zone Designation and Management.

Sustainable, conservation-oriented support zone development in recognition of support provided to communities neighboring PAs in return for communities willing to support conservation efforts is critical for long-term conservation goals. This may only be achieved through profit-sharing and tourism development with a focus on benefits to support zone communities. In return, support zone communities have to adopt conservation-oriented land use techniques and have to respect PA boundaries.

iv) Atlantic Forest Biosphere Reserve (AFBR)

The Atlantic Forest Biosphere Reserve (AFBR) was created in 1991. It encompasses an area of 29 million ha in 14 coastal states of Brazil. It is the largest BR worldwide and covers practically all that is left of the Mata Atlantica. The AFBR has a National Coordination Council and State Committees, both composed in equal proportion by representatives from the federal, state, and municipal governments and society. The National Council is supported by thematic groups that assist in the identification of

priority regions and thematic areas. The AFBR priorities and approach to sustainable ecosystem management fully comply with overall PPG7 goals and priorities.

Overall, inter-institutional cooperation involving the NCC needs improvement. The NCC has a functioning working relationship with IBAMA and several member states. Cooperation with the RMA, in particular with SOS and Conservation International, is excellent. The NCC has taken a pro-active role in advising the PPG7 on the PD/A program for Mata Atlantica and by identifying thematic and regional focal areas for PD/A projects.

v) Biological Corridors

In most of the Mata Atlantica, protected areas have become ecological islands disconnected from other areas of remaining natural habitat. Increasingly, urban development, agriculture, ranching, industrial forestry, or other land uses surround conservation areas, threatening the viability of the area's ecosystems. It has been realized that without active intervention the already largely disturbed ecological integrity of the conservation units will continue to deteriorate. Recognizing the need to interlink designated conservation areas in order to provide a broader spectrum of habitats and create larger contiguous conservation units, the PPG7 and Brazil government have adopted the "ecological corridor" concept.

It has been explained why the corridor concept is not suitable for the majority of the Atlantic region having lands beyond recovery. Only candidate areas that offer optimum framework conditions should qualify to become designated corridors.

2.3 Thematic and Regional Focal Areas

It is apparent why designated protected areas and their respective support zones should be the focus of the proposed PPG7 sub-program for the Mata Atlantica. To make proper use of synergies, the PD/A program and all newly adopted programs for Mata Atlantica should favor work that confers direct benefits to designated PAs and support zones. Of equal importance is the expansion of the PA system. Here, emphasis should be placed on ecosystems currently under-represented or not found at all in the existing PA system.

Watershed management and rehabilitation of micro-watersheds should receive priority attention inside the proposed ecological corridors.

Reforestation of degraded lands should not become a PPG7 priority. Only reforestation projects aimed at (a) the rehabilitation of degraded micro-watersheds with proven value in context with ecological connectivity and sustainable high quality water production, and (b) the rehabilitation of degraded forests in connection with designated protected areas, should be supported through the PPG7.

Other priorities are: (a) Fire suppression when there is a threat to PAs and forests; (b) standardized environmental monitoring having a focus on designated conservation areas; (c) identified ecological hotspots and proposed ecological corridors; (d) standardized databanks; and (e) environmental education and public awareness as integral components of PPG7 programs.

2.4 Institutional Aspects of a Mata Atlantica Sub-program

It seems sensible to decentralize the administration of the proposed sub-program. State-level environmental secretariats and ministries in the Atlantic region seem quite capable of providing the administrative support needed for projects under the new sub-program. Projects could use existing structures, such as are currently being used by the Bilateral Associated Projects. Another suitable option would be to use the existing administrative structure of the Atlantic Forest Biosphere Reserve.

Ecological corridor programs should be coordinated by technical committees under the auspices of environmental state agencies.

2.5 Financial Sustainability of the Protected Area System

It is unlikely to expect sufficient funding for the sustainable conservation of protected areas from any level government in the near future. Therefore, it is a matter of urgency to develop financial mechanisms that safeguard proper stewardship of national, regional, municipal, and private areas with a designated protection status that includes all categories of PAs. Currently, there is no single solution to solve sustainable financing for protected areas, except for centralized endowment funds, which are not very popular with the donor community or governments. In this context, the PPG7 provides a unique opportunity to pilot promising options and assist in the development and establishment of revenue generation and financial arrangements as important prerequisites for the sustainable protection of the ecological integrity of conservation areas.

3.0 CONCLUSIONS AND RECOMMENDATIONS

In conclusion, there is consensus on the importance of a PPG7 sub-program for Mata Atlantica. There is no consensus, however, on thematic and regional priorities or on defined goals, strategies, and time frames. The lead role taken by the MMA in developing a comprehensive strategic concept for the protection of the Mata Atlantica is acceptable, assuming that use is made of cooperative synergies.

The MMA, in collaboration with the donor community and the World Bank as program coordinator, has recently agreed on adopting two ecological corridors as focal areas for the proposed sub-program, as an integral part of the Atlantic Forest Biosphere Reserve. This decision should be endorsed. It fits overall priorities for the Mata Atlantica.

In the action program for Mata Atlantica, emphasis should be placed on (a) the sustainable protection of designated conservation units and their support zones, (b) expansion of the PA system through adding RPPNs and other areas, (c) law enforcement for better protection of existing APAs and remaining forest fragments on private lands, and (d) promoting pilot projects that address forest rehabilitation and multiple land use compatible with the overall conservation goals for the Atlantic forest biome.

It further is recommended that:

- An ecological sensitivity map be established for the proposed biological corridors as a basis for wise integrated land use planning.
- The sub-program be expanded to include the PPG components: (a) Private Sector Involvement, (b) Monitoring and Analysis, stipulating standardized and mandatory

environmental monitoring, and (c) Fire Prevention, Mobilization and Training Project.

- The existing administrative and technical infrastructure of the Atlantic Forest Biosphere Reserve is strengthened.
- The National Coordination Council (NCC) and State Committees (SC) are given leadership role in the Mata Atlantica PPG7 sub-program; to assume liaison functions regarding all PPG7 matters in the Mata Atlantica between the MMA, donor community, and the World Bank as program coordinator; to maintain a centralized, fully socialized databank for the Atlantic region; and to provide leadership and technical guidelines for environmental monitoring.
- The corridor activities and programs are coordinated by the SCs, supported by local committees instead of IBAMA.
- A landscape approach is adopted for ecosystem planning and management (this is of critical importance to the connectivity issue).
- The Biosphere Reserve to become the ultimate reference regarding biodiversity conservation in the Mata Atlantica.
- The sub-program Mata Atlantica be fully decentralized and implemented by state agencies, instead of creating one more technical secretariat under the MMA.
- The protection and rehabilitation of micro-watersheds and fire control should become thematic focal areas.
- Policies and guidelines for standardized databanks and monitoring should be prepared.
- The PPG7, in collaboration with IBAMA and Atlantic state agencies, should agree on a *modus operandi* that allows designated PAs to implement fundraising programs in an effort to become self-financing operations.

PART I: EVALUATION OF PPG7 INPUT IN MATA ATLANTICA

1.0 INTRODUCTION

Based on the field visits and numerous discussions with key individuals familiar with problems facing the Mata Atlantica, it is cautiously suggested that the ecological condition of what currently is left of Brazil's coastal forest ecosystems is much more critical than commonly believed. The ecological integrity of the Atlantic forests seems compromised everywhere. The once-abundant contiguous forests of the Atlantic states have been reduced to insignificant fragments. The systematic and rapid forest destruction caused by predatory logging, hand in hand with forest alienation for agriculture and cattle pasture, may be recognized as one of the world's greatest ecological disasters of the last century.

The much-discussed biological and species diversity of Brazil's Atlantic forests may be considered a thing of the past. Such diversity may at one time have been found in the original coastal forest biome, which was characterized by enormous expanses of broadleaf tropical rainforest equaling the Amazon forests, but what remains today can only be considered relict forests. These systems were known as some of the richest in the world in terms of species diversity and level of endemism. It is doubtful, however, that this diversity still exists in the highly fragmented secondary forests of various seral stages that by now have replaced the ancient coastal climax forests.

Practically all of the Mata Atlantica has been converted into managed landscapes comparable to central Europe and other heavily populated parts of the world. The only difference is that the cultured landscapes of Europe have suffered proportionately less loss in biodiversity simply because there was less diversity to start with (the boreal and mixed deciduous forests of northern and central Europe contained forests with 5 to 10 tree species/ha, respectively, compared to the Mata Atlantica, which may contain up to 350 tree species/ha). Furthermore, boreal and temperate deciduous forest ecosystems seem to display a higher resilience to disturbances than do complex tropical rainforests.

Less than 7 percent of the original Mata Atlantica remains; what is left occurs in the form of numerous small fragments (mostly less than 10 ha and widely dispersed) that are too small to sustain viable populations of flora and fauna. Original climax forest in the Atlantic region outside and inside of protected areas has been reduced to insignificant fragments concentrated on the most inaccessible sites of the coastal mountains, which have provided some degree of natural protection. The extinction rate for local species, and species loss in general, in what is left of the Mata Atlantica may therefore be much higher and proceed at a much faster rate than suspected.

It is suggested that the opportunity to restore the diversity of the original climax forest of the Atlantic region is largely lost. It seems unlikely, even under the most favorable conditions, to fully rehabilitate degraded secondary forests into ecosystems that resemble original climax conditions. This is of special significance considering the fact that today possibly more than 95 percent of the remaining Mata Atlantica is secondary forest.

It is suggested that available taxonomic inventory data from the Mata Atlantica on which current statements regarding species richness and endemism are based may be outdated and mostly apply to original climax systems. Previously published statements may not

truly reflect the presumably drastically reduced species diversity and relative species abundance of the existing fragmented secondary forests. Compounding the problem is the absence of systematic monitoring of the forest recuperation process in the Mata Atlantica, which could supply much-needed information on the development of different forest successions and changes in species composition associated with seral development (of both natural and assisted forest regeneration).

The current evaluation of past and proposed PPG7 involvement in the rehabilitation and conservation process of the Mata Atlantica has to be seen against this background. For a better understanding of the complexity of the problems related to Mata Atlantica, the appreciation of ongoing PPG7 activities, and in order to provide meaningful recommendations for a future sub-program under PPG7, it seems prudent to provide some background on the Atlantic region and to highlight current framework conditions.

2.0 RELEVANCE OF MATA ATLANTICA INTEGRATION INTO PPG7

2.1 Background

By definition (MMA, 1999; Federal decree 750/93), "Mata Atlantica" refers to all forest ecosystems of Brazil's coastal states from Rio Grande do Sul to Rio Grande do Norte. The Mata Atlantica is dominated by dense ombrophilous forests. The definition also includes the mixed ombrophilous forests characterizing the southern coastal states, as well as the deciduous and semi-deciduous forests typifying the hinterlands of several coastal states and the coastal mangrove ecosystems.

Originally, the Mata Atlantica covered more than 1.29 million km² and represented 15 percent of Brazil's entire land surface area spread over 17 states (ISA 1999, SOS 1998, MMA 1999). According to ISA (2000), by 1999 the Mata Atlantica had been reduced to less than 7 percent of its original size. Data used for the production of the Atlas for the Mata Atlantica (SOS, INPE and ISA, 1998) indicate that 500 million ha of forests were destroyed between 1990 and 1995 alone. More recent satellite data prove (ISA 1999) that the destruction of forests continues in all of the Atlantic region.

Predatory logging, burning, and forest alienation for agriculture, cattle-ranching, monocultural reforestation, and housing developments are cited as responsible for the large-scale forest destruction and degradation. The problems are currently compounded by subsistence and commercial extraction in the south of Bahia and the southern states, as well as by real estate speculation and uncontrolled tourism in the coastal zone. The process of systematic forest destruction and alienation that took place during the last century has been well documented (MMA, 1999 b; ISA 1999).

A comprehensive historic overview of the coastal colonization process associated with the systematic destruction of the Mata Atlantica has been provided by Viana et al (1998). The same source aptly describes the current framework conditions for environmental protection in the Mata Atlantica and outlines an action program to deal with the problems.

2.2 Justification for a Mata Atlantica Sub-program

It is widely acknowledged that the Atlantic forest is the most threatened of the Brazilian forest biomes and one of the most threatened forest biomes worldwide. With less than 7 percent of its original forest area remaining in highly fragmented bits and pieces, it is safe to assume that the ecological integrity of the Mata Atlantica is currently compromised everywhere, including in its officially designated conservation areas. Conservation units have turned into ecological islands surrounded by agriculture, cattle pasture, and human settlements and have little opportunity to expand or be rehabilitated into ecologically viable entities. The majority of the remaining Mata Atlantica is composed of secondary forest in different seral stages. As indicated earlier, it is safe to assume that this process has resulted in a significant loss of biodiversity and system stability, and has experienced local species extinction of unknown magnitude.

It has been the extent of species diversity and endemism that has placed Brazil in the first place worldwide in terms of megadiversity. It is still widely believed that the Mata Atlantica is one of the most important global biodiversity hotspots (Conservation International 1999), although supporting evidence is largely missing.

It is important to note that the Mata Atlantica supplies more than 100 million people—nearly half of Brazil's population—with water. There are indicators, however, that water will become a scarce commodity in many coastal areas if the destruction of forest and vegetation cover cannot be controlled.

Considering that protected areas are the backbone of sustainable biodiversity conservation worldwide, it is also worth noting that protected areas in the Atlantic region account for less than 1 percent of the original forest biome (MMA 1999). The number of forest ecosystems that are missing or under-represented in the Atlantic system of designated conservation units is unknown. At present, 80 percent of the Atlantic Forest is in private hands, which makes expansion of the existing PA system very difficult.

In the absence of adequate law enforcement, designated conservation units and other protected areas (e.g., watersheds, riparian vegetation, steep slopes) continue to be decimated and degraded as a result of unwise land use practices, fire, and conversion for agriculture and housing developments.

It will be a formidable challenge to the Brazilian society, with assistance of the PPG7, to develop meaningful strategies to (a) effectively stop further forest destruction, (b) convert the highly fragmented conservation units into ecologically viable entities, (c) expand the system of protected areas, (d) effectively halt the alarming rate of soil degradation and erosion, (e) rehabilitate the vast expanse of degraded lands without further compromising the ecological integrity of the already highly disturbed original ecosystems of the Mata Atlantica, and (f) assign meaningful priorities within the action program.

3.0 PROGRAM DESIGN AND IMPLEMENTATION

3.1 Program Design

i) Framework Conditions

Institutional Framework: The management of forests and protected areas in the coastal area includes key government agencies under the Ministry of Environment (MMA): the National Council for the Environment (CONAMA) and the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA). The state and municipal governments play a key role in the conservation of areas with designated protection needs and the creation and management of conservation units under state and municipal authority. It is evident, however, that the civil society, with more than 80 percent ownership in coastal forest land, is the single most important stakeholder with responsibility for sustainable forest conservation. In recent years, the GoB has promoted the general involvement of Brazilian society in conservation issues. Through meetings and workshops, local communities and their representatives are now taking a more active part in land use planning and conservation issues, which are frequently carried out through partnerships between government agencies, NGOs, and other institutions and organizations of the private sector.

The MMA is the central body within the Brazilian National Environmental System (SISNAMA). The MMA's responsibilities include the planning, coordinating, supervising, and controlling of activities related to the National Environment Policy; as well as the preservation, conservation, and rational use of renewable natural resources. The MMA is also responsible for articulating and coordinating the actions of the integrated policy for the Atlantic and Amazon regions. The MMA hosts the National Council for the Environment (CONAMA). CONAMA was established by Law No. 6.938 in 1981, and plays a key role in the control of environmental impact. CONAMA oversees and coordinates the establishment of norms, criteria, and standards related to the control and maintenance of the quality of the environment, with a view to the rational use of natural resources (GEF, 2000).

IBAMA was created by Law No. 7.735 on February 22, 1989. It is the central executive agency for Brazilian environmental policy. IBAMA took over the functions of a number of institutions, such as the Brazilian Institute for Forest Development (IBDF), the Agency for the Development of Fisheries (SUDEPE), the Agency for the Development of Rubber (SUDBEVEA), and the Special Secretariat for the Environment (SEMA).

IBAMA has financial and administrative autonomy. Its mission is to carry out national environmental policies aiming to conserve and restore environmental quality for present and future generations. Key mandates related to PA management include: (a) maintenance of the integrity of Areas of Permanent Preservation (APAs) and legal reserves; (b) control and management of fisheries in Brazilian waters under state jurisdiction; (c) control and management of the use of forest resources; (d) monitoring of the conservation status of Brazilian ecosystems, species, and the genetic heritage of the country; (e) promotion measures for the protection and management of Brazilian fauna and flora; (f) promotion of research, information, and scientific and technical development in environmental administration and management; (g) facilitation and promotion of access

to, and the sustainable use of, natural resources; (h) analyzing the status of and prospects for the improvement of environmental planning.

The basic structure of IBAMA is complex; it comprises different advisory directorates and several advisory councils. This includes the National Council for Protected Areas (CNUC), which is in charge of establishing the policies and guidelines for the creation, establishment, and use of PAs. Other key advisory councils include the National Council for the Protection of Fauna (CNPA), which is in charge of wildlife protection and management, and the Scientific and Technical Committee (CTC), which is responsible for the promotion of research and technology development, and the evaluation of the research and the technical outputs of IBAMA (GEF, 2000).

Some of the major problems encountered by IBAMA and by state and municipal environmental agencies that relate to forest conservation and PA management in Mata Atlantica include the following: (a) PAs are operated under different jurisdictions and agencies with little inter-institutional cooperation; (b) PAs are mostly too small for the maintenance of genetically viable populations of many species of flora and fauna; (c) the institutional resources of IBAMA, state agencies, and municipalities are insufficient to control and effectively manage a large number of small conservation areas. In general, strictly protected areas lack personnel in terms of numbers and skills. Other special areas protected by law (APAs, riparian vegetation, steep slopes, 20 percent of privately owned lands to be maintained as "pristine" forest, etc.) also suffer from a lack of available enforcement. On average, there is one IBAMA employee for every 27,560 ha of protected areas. IBAMA has 575 employees for the administration of strictly protected areas, of which only 20 percent have a higher education. For the National Forests (direct use), there are 195 employees, of which only 15 percent have a higher education. Together, these employees represent about 13 percent of the IBAMA staff; (d) PAs lack infrastructure and equipment, and have undefined boundaries that are generally not demarcated. Compounding the problem of conservation is overlapping and confusing legislation applying to forest conservation and management and the wide range of PA categories. Thus, the approval of Draft Law No. 2.892/92 for the definition and regulation of a National System of Protected Areas (SNUC) is vital.

Under the ongoing decentralization of the GoB, the state and municipal governments are becoming active partners in the management of natural resources and PAs. However, they still have limited capacity and require significant inputs for institutional strengthening. These include decentralized activities, such as: (a) participation in the consultations and technical processes for the selection and establishment of new PAs; (b) participation in the different activities included in the process of obtaining the legal decrees that create the new PAs; (c) direct execution of the activities involved in the consolidation and expansion of existing PAs; (d) development and establishment of financial mechanisms to compensate private owners for areas to be added to existing PAs; (e) participation in the design, development, and co-financing of community development plans and projects based on sustainable management of natural resources at state and municipal levels to benefit communities in and around PAs (GEF, 2000).

Role of the Civil Society: Alerted by the massive destruction of the Atlantic forests and the inability of the government to adequately deal with the problem, the civil society of the Mata Atlantica launched its first efforts to slow down the alarming forest destruction

process in the mid-1980s. Following the Rio conference in 1992, more than 150 environmentally oriented NGOs formed an alliance, known as "Rede Mata Atlantica" (RMA), mostly to battle forest destruction and related environmental problems in the Atlantic region. Meanwhile, numerous NGOs have become actively involved in the implementation of forest protection and rehabilitation oriented field projects. Others are very successful in environmental education and public awareness campaigns in the area of political lobbying. A number of initiatives have become landmarks in changing the concepts and conventional approaches of government agencies. The Rede Mata Atlantica has been pivotal in the debate over legislation for the Atlantic Forest (Lele et al., 2000). The RMA is currently engaged in the design of a PPG7 sub-program and an action plan for the recovery and conservation of the coastal forest biome.

Legal Framework: Combatting deforestation and forest degradation in a country the size of Brazil requires complex infrastructure systems for planning, implementing and monitoring environmental policies, laws, and law enforcement. Deforestation and other environmental problems in Brazil have received growing government attention mainly as a result of increased public awareness and pressure by civil society. This has forced the GoB and state agencies to move towards environmentally compatible policies for sustainable development and to step up existing enforcement in an effort to slow down the process of environmental degradation.

Steps taken by the government include the introduction of the so-called "Green Protocol" (Protocolo Verde). This program benefits public or private financing agencies that make resources available only to the agricultural, cattle-ranching, and forestry businesses that follow the legal requirements to maintain the Legal Forest Reserve. Another measure promotes biodiversity conservation through a change in the rural land tax law (Imposto Territorial Rural-ITR). This implies tax exemption for Legal Forest Reserves and Areas of Permanent Preservation (steep slopes, riparian forest, springs, etc.), as well as other areas that a state may declare of interest for conservation. In several states, the government has obliged landowners to officially register their Areas of Permanent Protection in order to secure their special status with changing ownership.

Measures *inter alia* also include (a) the ratification of the Convention on Biodiversity; (b) the devolution of environmental management to states and municipalities; (c) the introduction of a "green sales tax" (ICMs verde) for biodiversity conservation in some states; (d) the approval of a national water resources law (1997), which establishes a legal framework for integrated watershed management; and (e) the approval of the Environmental Crimes Law (February 1998), which allows for the prosecution of environmental violators. Although each of these policies constitutes an important reform, a concerted effort by all stakeholders is needed to coordinate and implement the policies.

Currently, federal and state environmental laws applied to sustainable land and resource use, including the establishment and management of protected areas under different ownership and stewardship regimens, are numerous, overlapping, and are very confusing, in general. This places an additional burden on already under-staffed and under-budgeted federal and state environmental law enforcement agencies. It is common knowledge that the GoB, state, and municipal capacities for effective enforcement of environmental laws is far from adequate on all levels and in all respects (MMA, 1999). The complex and

sometimes contradictory language of the legal framework applying to PAs may serve as an example (see Annex 5).

Recognizing the need for a comprehensive legal framework for protected areas, the GoB has submitted a National Protected Areas System Law (SNUC) to Congress. Following a lengthy process of public consultations and consideration in thematic commissions, the proposed Law (No. 2892/99) was approved by the House of Representatives on June 10, 1999, and is now in the Senate for final approval. The overall objective of the SNUC Law is to contribute to the sustainable conservation of biodiversity and genetic resources in the national territory. This will be achieved by providing a uniform legal basis, concepts, and methodologies for the numerous governmental agencies responsible for the consolidation of conservation areas at the federal, state, and municipal levels. This new law will eliminate the contradictions and overlap characterizing the current legislation applied to Brazil's PA system.

ii) Goals/Objectives and Feasibility of PPG7 Program for Mata Atlantica

The Pilot Program for the Protection of Tropical Rainforest (PPG7) adopted the following sub-programs and associated strategies to achieve its overall goal (see Table 1):

Table 1. Objectives, Strategies, and Activities of the PPG7

Experimentation, Demonstration	Conservation	Institutional Strengthening	Research	Lessons learned, Dissemination
Demonstration Projects (PD/A)	Extractive Reserves (RESEX)	Natural Resources Policies (SPRN)	Research Centers	Assistance to Monitoring and Analysis (AMA)
Assistance to Forest management (PROMANEJO)	Protection of Indigenous Reserves (PPTAL)	Control of Deforestation and Fire (PRODESQUE)	Applied Research Projects	
Floodland management (Varzeas)	Ecological Corridors			
	Decentralized Bilateral Projects			

*Lightly shaded cells indicate current PPG7 strategies applied to the Mata Atlantica.

Although the PPG7 has clearly defined overall objectives, it is perceived to be a "pilot program" with the intention of experimenting and learning about new methods of sustainable conservation and development of highly threatened tropical rainforests for the benefit of mankind. The PPG7 does not intend to ultimately solve Brazil's problems with respect to sustainably conserve and manage its forests in Amazonia and the Atlantic region. It is hoped that lessons learned from the PPG7 in Brazil can ultimately be of global benefit.

At present, none of the designated "core programs" of the PPG7 are applied to the Mata Atlantica. Current PPG7 activities are confined to PD/A projects and three decentralized projects (Bilateral Associated Projects [BAPs]). The latter are implemented with financial assistance of the German government under cooperative agreements with the three target

states of Minas Gerais, Parana, and Sao Paulo. Current PPG7 strategies applied to the Mata Atlantica are highlighted in Table 1 (see shaded cells).

Both the PD/A activities and BAPs focus on the narrow belt of highly fragmented ombrophilous forests along the Atlantic coast. The PPG7 program has not yet addressed the even more threatened forest fragments scattered throughout the hinterland of the coastal states.

To date, Amazon forests has been the focus of the PPG7 pilot program for obvious reasons. Through its vast expanses of contiguous virgin forests, the Amazon still offers opportunities that have been lost in the Atlantic states. Efforts of the PPG7 program for Amazonia therefore rightly concentrate on solutions to the same problems that have led to the large-scale deforestation and environmental degradation of the Mata Atlantica, and at the same time capitalizing on existing opportunities to expand the network of Protected Areas. The latter involves substantial expansion of the PA network (10 percent has been pledged by the government of Brazil) and the sustainable development of the support zones of PAs. This is complemented through general land and resource use development activities compatible with the overall forest conservation objectives for the Amazonian forest biome.

Although the special focus on Amazonia at this point seems fully justified, the need to protect what is left of the Mata Atlantica may be of equal importance in terms of global biodiversity conservation. Here the focus should be on strategies and activities that will effectively help to protect whatever is left of the original forest ecosystems and assist in the rehabilitation of degraded forests that have a high recovery potential. In this light, the design of a comprehensive sub-program for the conservation management of the Mata Atlantica under the PPG7 umbrella would be timely and well justified. Such a sub-program as an integral part of the PPG7 has to take the special framework conditions of the coastal states into account and should be based on a proper needs assessment and program-specific feasibility assessments.

iii) Summary Assessment of Program Design and Planning for Mata Atlantica

It is apparent that past and ongoing PPG7 activities in the coastal states are insufficient to provide the much-needed sustainable protection of the highly fragmented Mata Atlantica. A concerted effort is needed to save whatever can be saved and salvaged in a predominantly cultured landscape that is populated by nearly 70 percent of Brazil's population. The proposed sub-program under the PPG7 for the Mata Atlantica could become a very important milestone in reaching this goal.

The design of the sub-program for Mata Atlantica should take advantage of the lessons learned from ongoing projects in both the Mata Atlantica and Amazonia. As will be shown in the second part of this report, a sub-program for Mata Atlantica would benefit from the integration of other core programs currently applied to Amazonia (e.g., private sector involvement, fire prevention and, most importantly, environmental monitoring). It will also be more critical for the Mata Atlantica than for Amazonia to involve the private sector in conservation efforts, especially in the context of the much-needed expansion of the regional PA system (70 percent of forest land is privately owned). Furthermore, the sub-program for the coastal region should make full use of the capabilities of the well-organized Rede Mata Atlantica.

3.2 Program Implementation

i) Background

PD/A Projects. The Demonstration Projects (PD/A) aim to promote, test, and disseminate community-based conservation and development initiatives in the Amazon and Atlantic rain forest regions that are environmentally, economically, and socially sound and can be replicated elsewhere¹.

The manual² prepared by the MMA for PD/A project proponents lists the following thematic priority areas:

- Ecosystem conservation
- Sustainable forest management
- Sustainable water and aquatic system management
- Agroforestry related to recuperation of degraded sites

The manual stipulates that PD/A proposals (a) must show an excellent demonstration potential with a convincing multiplier effect, (b) should be innovative, and (c) should address gender equity by involving women in proposed activities.

There seems to be consensus that the PD/A program has provided the civil society, and NGOs in particular, with an excellent opportunity to become involved in the PPG7 and efforts to protect Brazil's remaining tropical rainforests. The majority of PD/A projects approved for the Mata Atlantica have been awarded to members of the RMA, with generous funding for strengthening the administrative capacity of the proponent and project-related field expenses.

To date, 158 PD/A projects have been approved since the initiation of this program in 1996, and more than 500 proposals have been received and screened. According to original arrangements, 20 percent³ of available funding was earmarked for Mata Atlantica, the rest for Amazonia. Meanwhile, 33 projects have been approved for Mata Atlantica, with a total of approximately US \$ 5 Million of sub-grants. Although the 20 percent clause does not seem to apply any longer⁴, this is not yet reflected in the number of projects approved for Mata Atlantica. The same source quotes that the quality of project proposals originating from the Mata Atlantica is by far superior to the average proposal from Amazonia. Practically all PD/A projects in Mata Atlantica are currently financed through the German Trust Fund. Sub-grants average approximately \$150,000 per project.

¹ Secretaria Executiva do PPG; general brochure on the PPG7.

² MMA and Banco do Brasil; Manual de Operacoes, instrucoes gerais, Subprograma Projetos Demonstrativos PD/A.

³ The reason for the 20 percent clause was that the wealthy Atlantic States were expected to provide a larger counterpart contribution to the PDA program than the Amazonian States. C. Diewald, World Bank, pers. comm., 12.4.2000.

⁴ N. Soares, World Bank, pers. comm., 10.4.2000.

The lack of comprehensive statistical data on the PD/A program is a major obstacle to a meaningful evaluation of the overall program. In spite of numerous written materials produced on the PD/A program (e.g., general information, evaluation reports, progress reports, newsletters, news releases, project-specific fact sheets, summary tables), the available information is widely scattered and difficult to obtain. Databanks on PD/A projects in the Mata Atlantica are maintained at the Technical Secretariat of the MMA in charge of the PD/A and the RMA. However, from the information provided by the two agencies it is not possible, for example, to identify the number of projects that (a) are completed, (b) have an approved follow-up phase, (c) have applied for an extension, or (d) have received a formal evaluation. Very little qualitative information is available on the relevance of the projects to the PPG7's overall goal: the sustainable conservation of the Mata Atlantica, the multiplier effect of the projects, and whether lessons were learned and how lessons learned are being disseminated.

The summary sheets produced by the Secretariat do not indicate time frames or calendar dates for project implementation. Although this information may be found on the RMA's project data sheets, the data sheets are neither complete nor consistent in their format. For the 33 PD/A Mata Atlantica projects approved, only 20 individual data sheets were provided. Data sheets were not available for the remaining 13 projects. The data sheets also show that 13 of the projects were completed in 1999, or will be completed in 2000.

From available information on PD/A projects in the Mata Atlantica, it appears that the majority of the projects are directly linked to agricultural production or agro-forestry (addressing mostly socio-economic issues). Very few projects seem to contribute directly to forest conservation. Most projects are implemented without any connection to protected areas or the sustainable conservation of the last fragments of primary forests found in the coastal region.

Although conservation priority needs by region and issue are well documented for the Mata Atlantica (MMA, 1999, Nature Conservancy, 1999; SOS, 1999; ISA 1999), priority needs are not truly reflected by the approved PD/A projects. It is unknown, however, whether this is the result of a lopsided selection process in favor of agro-socio-economic projects, or the result of a lack of NGO or other project proponents with vested interests and technical expertise in biodiversity and ecosystem conservation, or a combination of both. It appears, however, that many of the approved PD/A projects only marginally fulfill the requirements for a conceptual fit of the program.

Bilateral Associated Projects: Bilateral Associated Projects (BAP) should help to achieve the overall goals of the Pilot Program and be consistent with core project objectives and activities. In addition, these projects should contribute to generating strategic lessons about issues of current potential relevance to the Pilot Program. Such lessons should lead to improved effectiveness of the Pilot Program and should also be relevant to other conservation and development initiatives in rainforest regions in Brazil and other tropical countries⁵.

It is recognized by the government of Brazil, the World Bank, and donors that Bilateral Associated Projects need full integration into the PPG7. Criteria used to determine the

⁵ Proposed Guidelines for Bilateral Associated Projects (Participants' Meeting Manaus 1997).

relevance of candidate projects to the PPG7 are (a) thematic fit, and (b) grant support by the respective donor as applied to core Pilot Program projects.

The current Germany-supported BAPs in Parana, Minas Gerais, and Sao Paulo have been approved in principle by the Pilot Program's Coordinating Commission as associated projects to the PPG7. This implies that the donor agency (the German government) has to fully cooperate with the Pilot Program's Monitoring and Analysis Unit (UMA) by furnishing project reports and data in a timely fashion. To assure proper information exchange, the UMA, in return, is requested to prepare a database on Bilateral Associated Projects that will be available to all participating donor agencies.

The three German-sponsored BAPs contribute to the sustainable protection of the remaining highly fragmented Mata Atlantica. Although the main focus of the German intervention in the three coastal states is on designated protected areas of the threatened ombrophilous forest ecosystems (a total of 24 protected areas of different categories and under different management authorities), the projects also provide support to state and federal agencies in charge of environmental control and monitoring (e.g., Forest Police, forest institutes, and environmental ministries).

The KfW-sponsored projects in Sao Paulo and Parana provide financial assistance for infrastructure development and enhancement of PA management, improvement of PA protection efforts, and institutional strengthening of counterpart institutions and environmental law enforcement agencies. The current project in Minas Gerais delivers technical assistance through the German GTZ to the State Forest Institute of the Environmental Secretariat and assists in the enhancement of management and protection efforts of three designated PAs under different ownership and management authorities. This project will be supported through financial contributions from KfW of DM15 Million in support of designated protected areas as of the year 2000. Total project costs of KfW-sponsored interventions are: for Sao Paulo DM53.5 Million (donor contribution DM30 Million), Parana DM30 Million (donor contribution DM18 Million) and the approved project for Minas Gerais DM29.3 Million. The GTZ project is costed at DM7.5 Million. A fifth BAP (KfW intervention) will become operational in the year 2000 in the State of Rio de Janeiro with a financial contribution of DM15 Million (KfW, 2000).

A summary description of the three bilateral associated projects financed by the German Bank Kreditanstalt fuer Wiederaufbau (KfW) is provided by Wenz (1999).

Comprehensive background information on the projects can be found in KfW's project justification reports (1990 Sao Paulo, 1996 Parana, 1999 Minas Gerais) and the numerous project progress reports, trip reports, and documentation materials produced by the projects that are available at the KfW archives in Brazil and the archives of the BMZ and KfW in Germany.

There is legitimate concern that Bilateral Associated Projects are donor driven and may not address the priority needs of the PPG7 program. However, this can easily be prevented through the proposed screening of bilateral projects by the PPG7 Executive Committee. The current BAPs in the Mata Atlantica comply with the GoB's initiative for decentralization and are fully supported by the economically and politically powerful recipient target states. As will be shown later, BAPs currently play a pivotal role in the protection efforts of the Mata Atlantica. BAPs should be considered the nucleus of the

proposed PPG7 sub-program for the coastal region, of which they undoubtedly will become the most significant synergetic element.

ii) Case studies

Time constraints did not permit an in-depth evaluation of all PPG7-related PD/A and Bilateral Associated Projects in the Mata Atlantica. The consultant therefore randomly selected two decentralized associated and three PD/A projects in the states of Minas Gerais, Sao Paulo, and Bahia as representative samples of PPG7 activities in the coastal region. Each of the selected projects was visited in the field and discussed in detail with the project executants, stakeholders, beneficiaries, and target groups. The field visits were complemented by discussions with key representatives from participating state government institutions, municipalities, and associated NGOs. The results are presented as "case studies," which are also used for the elaboration of recommendations regarding the proposed PPG7 Sub-program Mata Atlantica, presented in Part II of this report.

Case Study 1: Bilateral Associated Project Doces Matas, Minas Gerais (Caparao).

This project supports the sustainable protection of three designated protected areas in the State of Minas Gerais through a cooperative agreement between IEF, IBAMA, and Biodiversitas under the leadership of the State Secretariat for Environment and Sustainable Development (SEMAD). The project receives technical assistance from the German GTZ, provided through one local forester and one long-term international professional forester. Pertinent project data are highlighted in Table 2. The following assessment of the Doces Matas project is based on consultations with Biodiversitas, IEF, IBAMA, and GTZ in Belo Horizonte and on a field visit to National Park Caparao supported through consultations with NP personnel, representatives of municipalities from Caparao's support zone, the local NGO "Ecofeliz," and the local detachment of the Policia Florestal.

Table 2. The GTZ-sponsored project "Doces Matas" in the State of Minas Gerais

Duration: 1.11.1995 - 2.01.2002
Budget: DM7.5 Million
Executant: GTZ in cooperation with IEF, IBAMA, Biodiversitas, and SEMAD
<p>Overall Goal: Sustainable protection of three designated Protected Areas:</p> <ul style="list-style-type: none"> • State Park Rio Doce: 36 000 ha (IEF) • National Park Caparaó: 26 000 ha (IBAMA) • Biological Station Sossego: 180 ha (Owned and operated by Biodiversitas)
<p>Key Objectives of GTZ Technical Assistance:</p> <ul style="list-style-type: none"> • Promote stakeholder participation in PA management • Prepare diagnostic evaluations of the three PAs and their support zones • Field test concepts for sustainable protection and use of PAs • Disseminate lessons learned • Identify and implement sustainable land use in support zones of PAs • Enhance inter-agency cooperation between the three key participating stakeholders and promote activities that involve the three project executants • Elaborate and/or update existing management plans for the three PAs • Elaborate ongoing capacity-building program

The project formed a Technical Coordination Committee composed of one representative of each of the three participating institutions and the GTZ to decide on common concepts, strategies, and activities. Additionally, technical "thematic" groups have been established to elaborate the conceptual framework and action plans for the areas of (a) ecotourism development related to PAs, (b) environmental education, (c) participatory diagnostic rural assessments, and (d) sustainable agriculture. The Coordination Committee provides technical support to the management personnel of the three PAs in an effort to integrate support zone communities into overall land use planning that is compatible with biodiversity conservation objectives.

The project started with highly favorable framework conditions:

- The Biological Station Mata do Sossego is owned and operated by Biodiversitas, a locally very active and highly competent environmental NGO that is well respected in Minas Gerais by the government and the civil society alike. This NGO actively and successfully promotes inter-institutional cooperation on the state level in Minas Gerais. Biodiversitas has been instrumental in the design and successful promotion of state level conservation policy and concepts, mostly associated with biodiversity conservation (Biodiversitas produced the Atlas on Biodiversity of Minas Gerais, and the red data book on endangered and threatened species in this state). The Biological Station Mata do Sossego serves Biodiversitas as an open laboratory where research and environmental monitoring in cooperation with state universities provide a sound database for sustainable forest management. The NGO has also been involved in environmental education and public awareness programs. Its strength rests with the conceptualization of environmental conservation strategies and inter-agency

cooperation. The NGO is also actively involved in the two other target PAs of the project: NP Caparaó and State Park Rio Doce. Biodiversitas has been a partner of the GTZ-state government alliance since inception of the project in 1995. The project concept and the inter-institutional alliance was developed by Biodiversitas with financial assistance of the McArthur Foundation⁶. Biodiversitas has successfully applied for a PD/A sub-grant for the implementation of a forest conservation project associated with the Sossego Station. The PD/A project intends to expand the PA Sossego through promoting sustainable forest management in close cooperation with support zone communities. As equal partner in the GTZ-supported BAP, Biodiversitas provides a valuable link between government, academia, and civil society.

- National Park Caparaó offers excellent framework conditions for the GTZ-supported project through highly motivated municipalities located in its support zone that have vested interests in nature-based tourism and sustainable land use management. The support zone municipalities have been very active in the environmental arena under the leadership of the Secretary for Education and Culture from Dores do Rio Preto (Estado Espírito Santo). Formal and informal environmental education programs have been introduced in the region under cooperative agreements between the municipalities in the support zone. Public awareness events have been organized and a regional committee has been formed to promote ecotourism related to NP Caparaó.⁷ Caparaó has become a popular tourist destination with a good potential for self-financing through gate fees. Ecofeliz, the local NGO, also located in the support zone of the NP, has successfully formed a voluntary fire-fighting brigade involved in fire prevention campaigns, early response to fire, and the combat of fires in cooperation with official fire brigades. The focal area of Ecofeliz activities is fire prevention and boundary defense of the NP Caparaó, which is threatened by neighboring coffee growers.

There is consensus that the major achievement of this project is the well-functioning inter-institutional cooperation that now allows for coordinated planning and program implementation for the three target conservation units and their support zones. It may be rightly assumed that the current inter-institutional cooperation spirit may well have a snowball effect with benefits to other sectors and activities involving state and municipal governments and the civil society. Biodiversitas and GTZ both see their role as facilitating this process.

Achievements of this Bilateral Associated Project also include the positive impacts of educational and informational materials produced with the financial assistance of GTZ, the continuing support to local NGOs, cooperation of PA personnel with support zone communities and, most importantly, the capacity-building efforts of the project. Target groups for capacity development in the area of biodiversity conservation, sustainable agriculture, agro-forestry, and general environmental protection range from PA management personnel to teachers, community leaders, farmers, and other groups.

⁶ Herrmann Gisela, Biodiversitas, pers. comm., 17.4.2000.

⁷ Maxwell do Carmo, Secretary for education and culture, Dores do Rio Preto, pers. comm., 19.4.2000.

Another achievement is that the Caparaó park personnel fully embrace the new concept of support zone community involvement and the need for environmental education after a 20-year focus on law enforcement and boundary protection against fires. The strict protection strategy of the NP for the past 20 years, however, should not be substituted by another extreme having its emphasis on socio-economic problem solving, as currently supported by the project.

The specific achievements of this project are very difficult to qualify. Quantitative data on training (e.g., number of persons and target groups trained, number of training days provided, number and volume of training materials produced), the number of management plans produced, or the number of brochures and other information materials elaborated do not necessarily reflect the quality of the materials and services provided. Neither can such data be used as indicators to gauge the effectiveness of project components. This is a concern shared by many project participants.

This concern also applies to the work of the "thematic groups." The establishment *per se* of such groups may rightly be considered an achievement. They bring people together, enhance communication, provide a platform to brainstorm topics of common interest, and facilitate inter-disciplinary and inter-institutional cooperation. Without competent guidance and sound technical expertise, however, outputs from the groups are of questionable value. Concern was expressed by several people consulted for this evaluation that key stakeholders and resource persons were missing from the thematic groups, especially stakeholders from the private sector.

The paper on the potential of ecotourism in the protected areas of Minas Gerais (Project Doces Matas, 2000) produced by the thematic group on ecotourism provides excellent baseline data on the tourism potential inside the PAs considered by the paper, which focuses on PAs only. Similar information would be needed for tourist attractions and destinations outside the PA system and on existing and required infrastructure to accommodate identified tourism potential. This has to be supported through a market analysis to be followed by a practical marketing plan. It is apparent that this can only be done in cooperation with stakeholders, such as tourist associations, tour operators, and hotel associations. The principal task of the thematic group on ecotourism should be the development of a comprehensive regional tourism development plan with focus on the three target PAs. This requires the professional input of a very diversified group of stakeholders, which currently seems to be missing in this thematic group. Local consultations revealed that the same concern applies to the other three thematic groups under this project.

The following comments are offered with respect to National Park Caparaó:

- **Management Plan for Caparaó:** The existing management plan (produced in 1981) for the NP Caparaó needs updating. It is structurally and thematically sound. It needs updating with respect to: (a) the participatory elaboration of a clear vision statement that provides the long-term development goal for the NP (a critical requisite for the planning of potential ecosystem rehabilitation needs, visitor capacity and visitor programs, and for cooperation with support zone communities); (b) the designation of a support zone and the development of a sound and practical support zone program; (c) the need for streamlining and updating the research and monitoring programs.

Clearly defined priorities are needed for applied research and environmental monitoring with emphasis on the recuperation process of disturbed sites and secondary forests; (d) the need to re-design the visitor program in view of the already compromised ecological integrity of the park. Updating the management plan should be facilitated by a professional park planner with participatory input from the support zone communities and other stakeholders.

- It appears that the project pays insufficient attention to biodiversity conservation and sustainable forest protection inside and outside the park. Work inside the park concentrates on tourism-related infrastructure and capacity-building of park personnel, whereas work outside the park seems to focus mostly on socio-economic aspects of agricultural production, biological disease control, agro-forestry, and general environmental education. Meanwhile, the park becomes increasingly more isolated and threatened by the ever-encroaching coffee plantations. To date, the project has failed to sufficiently address the protection needs of remaining forest fragments found in the more inaccessible micro-watersheds originating from the park. It appears that little attention has been paid to the fact that the park only protects the ecosystems located above 800m. The very important transitional ecosystems below this elevation have survived only in the form of the aforementioned fragments in the micro-watersheds. The critical role of these fragments as ecological stepping-stones for the much-discussed ecological connectivity needs to be addressed by the project. It is suggested that the project, in close collaboration with IBAMA, aggressively pursue the opportunity to establish Private Reserves (RPPN) under the forestry legislation # 4.772 from 1965 and Law # 8.171 from 1991. It is further suggested that strong support be provided to the Forest Police in an effort to enforce the mandatory protection of the 20 percent forest of lands in private hands.
- There is an urgent need for conceptual planning and a comprehensive action plan for Caparaó and its support zone with a clear orientation towards sustainable forest conservation and ecological integrity of the NP as principal long-term goals. In absence of such plan the overall success of the project is in jeopardy.
- It appears that the project makes insufficient use of mass media in order to disseminate information related to project activities and to keep the general public informed of the progress and nature of the project.
- The project does not seem to have a conceptual plan in place on how to disseminate project results (multiplier effect).
- Although Caparaó has an excellent potential for self-financing through revenues generated from gate fees, this should not be achieved by compromising the already threatened ecological integrity of the park.

Lessons learned from the Doces Matas (Caparaó) Project

- Thematic planning groups should involve key stakeholders and competent resource persons. Focus should be on conceptual planning and program design.
- Inter-disciplinary and inter-institutional thematic planning groups should be inter-linked with each other and be an integral part of an overall well conceptualized program.
- Programs and projects should be based on well designed concepts rather than follow an adaptive management approach. Adaptive management tends to fight brush-fires rather than provide long-term solutions.
- There should be better support to promising initiatives from the private sector (i.e., fire brigades as established by the local NGO "Ecofeliz" have a good potential for a multiplier effect).
- Verifiable indicators should be developed to allow for quality assessment of project activities and project evaluation in general.
- Updating and elaboration of management plans for conservation units should be spearheaded by a professional protected area planner and involve key stakeholders from the support zones.
- Management plans should be developed and updated in a truly participatory manner in order to develop stakeholder ownership. The planning should involve PA personnel and stakeholders from the support zone.
- Management plans should include only such norms that are area-specific. Generic norms should be developed by IBAMA and state agencies for PAs under different jurisdictions.
- Conservation units should have designated support zones in order to facilitate support zone planning and action programs.
- An ecological gap analysis in support zones of conservation areas would be helpful in identifying priority needs for biodiversity conservation (i.e., ecological stepping-stones needed to ensure ecological connectivity). The gap analysis would also identify areas of special protection needs (steep slopes, riparian vegetation, springs etc.) and remaining fragments of threatened forests.
- Better use should be made of the opportunity to create RPPNs as critical ecological stepping-stones for the network of protected areas.
- The overriding objective for activities associated with conservation units should be safeguarding the ecological integrity of the conservation unit in order to prevent loss in biodiversity and system stability.
- Environmental monitoring should be an integral part of all PPG7 programs and projects. Well designed environmental monitoring can provide the much needed indicators for assessment of the effectiveness of interventions.
- Although the importance of conservation areas for nature-based tourism is recognized, conservation units should not become isolated tourist destinations but rather be integrated into regional tourism development plans.
- In order to create a meaningful and homogenous database, appropriate methods should be developed for all of the PPG7 programs, to be spearheaded by AMA and the Research/Monitoring Unit. All PPG7-related projects should be obliged to adhere to the proposed methodology.

Case Study 2: Bilateral Associated Project Sao Paulo State (FZ).

Like the other bilateral associated projects financed by the German bank KfW, the Sao Paulo intervention was fielded in support of protected areas within this state. The project is implemented by Sao Paulo's Ministry of Environment with assistance from GOPA consultants. The counterpart contribution for this project by the State of Sao Paulo (30 percent) is considerably higher than for any similar project in Amazonia. This may be an indication of the state's concern for the sustainable protection of its remaining forest, which has been reduced to mostly secondary forest and a fraction of its original size. It is also indicative of the state's population size and favorable economic status in comparison to Amazonian states. KfW's conditions for grants and loan agreements can therefore be more stringent than in Amazonia.

According to a July 1999 agreement between KfW and Sao Paulo State, the project has been extended by two years (originally 4 to now 6 years duration) with additional funding of DM10 Million in support of an additional eleven PAs. Learning from the experience of phase I of the project, more emphasis in the second phase, which includes the additional ten PAs, will be placed on environmental education, development of tourism, and cooperation with support zone communities.

Pertinent project data are highlighted in Table 3. The following assessment of the Sao Paulo project is based on consultations with key representatives from state agencies in Sao Paulo and other institutions supported by the project, local NGOs, and GOPA consultants. The Sao Paulo consultations were complemented through field visits to several PAs currently covered by the assistance package.

In general, there is consensus on the overall positive impacts of the project. This is mainly due to the wise decision to focus financial support on protected areas and agencies responsible for environmental law enforcement, but also due to a well-planned and conceptualized strategy prior to project inception. This greatly facilitates the development and implementation of action plans according to priorities assigned in the design stage of the project without compromising the flexibility needed to respond to emergency situations. The project proves that a well-conceptualized and target-oriented program may provide a better working platform than "dynamic planning," typical of a more "adaptive management" approach.

Table 3. The KfW-sponsored project in the State of Sao Paulo

Duration: 1995 - 1999 with an extension until 2002
Budget Total: DM53.939.000 Sao Paulo State: DM23.939.000 Germany (KfW): DM30.000.000 (DM15 Million FZ loan and DM15 Million grant)
Executant: Secretaria do Meio Ambiente (SMA), founded in 1986
Overall Goal: Conservation and sustainable management of the biodiversity of the Mata Atlantica in the State of Sao Paulo.
Key Objectives: <ul style="list-style-type: none"> • Enhancement of the protection of the coastal forests with a total area of 2.2 Million ha • Sustainable conservation and development of nine conservation units (State Parks and designated protection units) with a total of 300,000 ha
Target Groups and Beneficiaries: <ul style="list-style-type: none"> • People living inside the targeted PAs and their support zones • Population of Sao Paulo State at large • Participating Government agencies and institutions
Principal Project Intervention: <ul style="list-style-type: none"> • Support for the protection of 2.2 Million ha Mata Atlantica through strengthening (a) the Departamento Estadual de Protecao dos Recursos Naturais (DPRN-3) with responsibility for licensing and (b) the 3rd Batalhao da Policia Florestal e de Mananciais with responsibility for environmental law enforcement • Support to Sao Paulo's Instituto Florestal (IF) for the enhancement of 10 PAs with support to planning, equipment purchase, infrastructure development, and enhancement of sustainable use (total of 300,000 ha) • Support to the IF for the elaboration of management plans and training of PA personnel from the target PAs • Support to the Project Coordination Group established by the SMA, which is supported by GOPA Consultants

A comprehensive summary on project achievements, obstacles, and shortcomings has been provided by the GOPA consultant⁸ of the Sao Paulo project, prepared for this evaluation. Major achievements may be highlighted as follows.

Financial support to the 3rd Battalion of the Forest Police ranges from the purchase of vehicles to communication equipment, uniforms, and computers. Funding is also used for staff training and capacity development for electronic data processing and data storage. This has enhanced overall efficiency, but also provided the much needed moral boost to the agency's personnel.⁹ The Forest Police are responsible for all aspects of environmental law enforcement inside and outside protected areas. Prior to the KfW-sponsored support, the Forest Police only rarely entered PAs for enforcement purposes. This has changed dramatically, thanks to the project intervention. Apart from enforcing violations, the Forest Police make good use of environmental education opportunities in an attempt to prevent rather than combat environmental violations. The Force is also fully aware of the opportunities offered through good public relations and the use of mass media for building awareness and forging alliances with the public.

⁸ Scheele, 2000. A Project Summary paper prepared for this evaluation in the German language.

⁹ Captain PM Prazeres, Policia Florestal Guaruja, pers. comm., 25.04.2000.

The responsibilities of the Forest Police also include enforcement of the licensing system related to the DPRN-3. The financial support given to this agency by the project is of equal importance. The project has financed vehicles, the establishment of office space, the purchase of office equipment, and data processing systems, which are much needed for more efficient and transparent processing of licenses. This has led to increased co-operation between the two agencies and the PAs currently supported by the project.

To further improve the licensing system, law enforcement, and inter-institutional co-operation, the project supports the establishment of an integrated information and communication system (SICI). This system will produce digitized thematic maps at the 1:30 000 scale based on the data provided by the three institutions. The corresponding topographic base map will be elaborated using aerial photography and is currently being produced. SICI will also be used to monitor vegetation cover changes in the Mata Atlantica and the State of Sao Paulo at large. By providing free access to the SICI database to all interested parties, it is hoped that this will enhance inter-institutional relationships and interactions with the private sector. The SICI will be hosted at Sao Paulo's SMA.

The need for and the usefulness of the planned SICI is apparent. However, the system should be complemented by data from systematic environmental monitoring, as discussed in the context of the BAP for Minas Gerais. To date, the project has not addressed the need for systematic environmental monitoring that could produce the data by which to judge the effectiveness of the measures taken in this project.

It is generally recognized that the current inter-institutional cooperation between the Forest Police, the State Forest Institute (responsible for the management of state-owned PAs), and the DPRN-3 is one of the major achievements of the project. It enables conceptual program planning and the design and implementation of mutually binding and beneficial operational plans and controls.

Another major achievement of the project is the financial support to ten PAs. This has facilitated infrastructure development and equipment purchase needed for more efficient PA management within all management programs. The support also includes the elaboration and updating of management plans for the ten PAs. The project promotes the establishment of Management Committees with representation from support zone communities for the participatory management of PAs and their support zones. The project also finances the survey, re-adjustment, and demarcation of PA boundaries and promotes the conceptual development of self-financing of PAs. Major project components are supported through environmental education and public awareness programs. All project activities are implemented in agreement with and the cooperation of 36 municipalities in the State of Sao Paulo. This may be seen as another major achievement of the project.

Major constraints negatively affecting the progress of the project are the state's cumbersome bureaucracy, problems regarding timely fund disbursement, and fund restrictions due to government austerity measures and the complicated accounting and bookkeeping procedures of the state (the Governor has to personally approve the purchase of any vehicle for the project). This has been a common complaint by most people consulted on the project.

As mentioned in context with the BAP in Minas Gerais, it is very difficult to qualify the impacts of the different intervention components. Statistics provided by the Forest Police, for example, on the increased number of patrols and apprehension of violators are interpreted as a direct result of better mobility, improved communication, and enhanced inter-institutional cooperation. Such statistics, however, are relative; the increase in numbers of field patrols may be indicative of more vehicles being available and more funding for fuels but are no quality indicator for improved controls and enforcement efficiency. Associated environmental education efforts, public relation activities, and improved inter-institutional relationships are other examples of project-supported efforts that are extremely difficult to qualify.

Overall project achievements are related to institutional strengthening but mostly to the support given to the ten targeted PAs. The credit given to the project for financial assistance in support of infrastructure development and equipment purchase for the targeted conservation units is easy to understand. Infrastructure and equipment are basic requirements for proper PA management. A legitimate question is whether all the equipment purchased is really necessary and of first priority in terms of financial support. The best infrastructure and most modern equipment will be of little use to under-staffed PAs with poorly qualified personnel (this applies to all of the PAs selected for this project).

It has rightly been criticized¹⁰ that the equipment list and infrastructure needs supported by this project (including the selected PAs) were specified by the SMA instead of through a proper feasibility study. As a result, the project had to buy into a "wish list" rather than support realistic priority needs. Although the project was able to downsize and streamline this list during the course of action, it is suggested that the project would have been better served by a full scale feasibility assessment.

Little progress has been made to date regarding the elaboration and/or upgrading of management plans. Meanwhile, two management plans have been produced in-house by the SMA to serve as a model for other areas. One of the plans (Nucleo Santa Virginia) was reviewed for this evaluation.

While this plan was produced in a participatory manner that involved the primary stakeholders and uses the principal elements of the commonly used management plan format (biophysical description, zoning, management programs etc.), it fails to provide a long-term view and applies to a two-year timeframe only, which is much too short a period to meet the suggested targets. Activities specified in the program don't seem to reflect realistic priorities. The plan fails to provide budget information on current operational costs, on investment costs for the development phase, and on expected recurrent costs on completion of the development phase. The plan is difficult to read and understand. It needs streamlining and a better structure. A detailed budget for proposed activities to be organized by programs and priorities with realistic timeframes would also be helpful.

The amendment to this plan (SMA, 1998) highlights the threats to the park. This is followed by a quantitative and qualitative description of proposed activities, current

¹⁰ BMZ, KfW, pers. comm., April 2000 and see Annex 2.

personnel, and outlines additional infrastructure and personnel requirements. Included are summary tables describing priority actions by management programs. However, the amendment does not provide plausible justification for the proposed actions and fails to provide details on current budgets and recurrent costs to be expected on completion of the proposed program. This addendum needs consolidation with the management plan. Again, it is difficult to read and to relate to real needs. In summary, the produced plan leaves much to be desired and is not suitable to be a model for other plans. A well-qualified professional PA planner with sound experience is needed to spearhead the production of management plans.

The focal area of KfW support in this project is the State Park Serra do Mar. The Park protects approximately 300 000 ha of forest land that covers the narrow belt adjacent to the approximately 200 km long coastal mountain range. This is the largest contiguous forest area left in the State of Sao Paulo, and Serra do Mar may be considered the most important park for forest conservation in the coastal region. The park is boxed in by the city of Sao Paulo to the north and the heavily populated coastal plain to the south, and exhibits all the inherent problems of this adjacency. Serra do Mar is dissected by numerous highways and roads connecting Sao Paulo with the coast. The ecological integrity of the park's ecosystems are severely threatened by land encroachment and the poaching of forest products along most of its undemarcated boundaries. At the same time, the park offers unique opportunities for nature-based tourism and environmental education.

Serra do Mar is sub-divided into eight administratively independent core areas (nuclei). The project has supported several of these core areas, each of which has been treated as a "stand-alone" conservation unit rather than an integral part of the park as one single ecological and administrative entity. It is planned that each of the eight core areas will have its own management plan, its own development and activity programs, and its own administration, and that each area will have its own direct reporting line to the headquarters in Sao Paulo.

In this context it is strongly suggested that the park would greatly benefit from an amalgamation of the individual units into one administrative entity. This would greatly facilitate planning processes for all management programs, capacity building and training, simplify overall administration, budgeting and accounting, strengthen the park's overall political standing and, most importantly, would make proper use of synergies. Therefore, it is strongly recommended to elaborate one single management plan for this park to be implemented by one single administrative organizational structure, and headed by one park director who would have overall responsibility. The director should be supported by two assistant directors, one being located in the eastern, the other in the western section of the park in due consideration of the geographical extension of the park.

Insufficient attention has been given in this project to the importance of support zones of PAs and to the need for incorporation of support zone communities into the planning and management process. Designated support zones have to become an integral part of protected areas.

Lessons Learned from the Bilateral Associated Project Sao Paulo State

- The project would have benefited from a feasibility study by an impartial external consultant.
- Consolidation of the different core areas of the State Park Serra do Mar would have significant synergy effects and would enhance conservation efforts.
- It is apparent that the elaboration of meaningful management and operational plans require the leadership of a qualified and experienced PA planner. Lessons learned in the Minas Gerais ABP with respect to management plans and support zones also apply to this project.
- Physical demarcation of PA boundaries is a critical prerequisite for law enforcement and discourages encroachment.
- It is apparent that the cost efficiency of the interventions are difficult to judge without verifiable indicators (systematic environmental monitoring to assess changes in the conservation status of PA ecosystems).
- Training needs for PA staff are obvious. A centralized capacity-building program under PPG7 auspices to be based on a comprehensive needs assessment would be beneficial to many PPG7 program components.

Case Study 3: Demonstration Project Itamaraju (Terra Viva).

The originator and executant of this PD/A project is a small NGO (15 members) located in the southern part of Bahia State. The NGO was founded in 1993 by a group of agronomists with interest in agro-ecology and sustainable land use directed at rural families living at the subsistence level. The mission statement of the NGO is to provide support to subsistence farmers of three major target groups: (a) indigenous people, (b) families practicing traditional subsistence agriculture, and (c) families occupying land provided by INCRA.¹¹ All three target groups live at or below subsistence level.

Influencing the application for a PD/A grant was the outcome of a rapid rural assessment by the NGO that covered the southern part of Bahia State and included more than 12 000 families. This area, known as one of the poorest in all of Brazil, has suffered rapid deforestation since 1940. Results from aerial photo interpretation and satellite imagery show that of more than 2 million ha of forest in 1940, only 4 percent, remained in 1990. With deforestation continuing during the last decade, it is unknown how much forest is left today. In 1940, only a few settlements were found in this part of the state. This changed dramatically with access development related to timber exploitation and establishment of sugar cane plantations in the early '70s. Today, the remaining forest is highly fragmented, composed almost entirely of secondary forest in different seral stages, and is scattered throughout a landscape dominated by up to 70 percent mostly low quality cattle pasture.

Based on the diagnostic report from the rapid rural assessment, the NGO identified priority areas on which to concentrate activities. One of the target areas involves land distributed by INCRA to poor families that do not have the technical know-how to diversify production or make the best use of the land without destroying its productivity. Most of the land subdivided by INCRA is covered by secondary forest that is destroyed

¹¹ Terra Viva, pers. comm., 2.05.2000.

in the process of settlement by subsistence farmers. In other words, INCRA is partly responsible for the continuing deforestation.

Pertinent project data are summarized in table 4. The following assessment of the PD/A project is based on discussions with key persons of Terra Viva, the results of a stakeholder meeting with more than 30 participants in the field, and a visit to the project site at Piacho das Ostras.

Table 4. Data for PD/A Project Itamaraju

Duration: 1996-1999 (3-year duration); a 3-year follow-up project has been approved
Budget: US\$153,000 (\$208, 000 for the follow-up phase has been approved)
Executant: Terra Viva
Overall Goal: Development of sustainable agriculture in an area supported by the land reform
<p>Key Objectives:</p> <ul style="list-style-type: none"> • Demonstrate economic feasibility of sustainable agro-forestry compatible with forest conservation in a 2000 ha area occupied by 50 families under an agrarian reform project • Establish experimental plots and nurseries for production of crop and native tree species • Provide farming families with nursery stock and teach them basic principles of agro-forestry • Introduce methods of biological disease control, mulching instead of slash burning, and how to protect remaining forest in the project area • Demarcate forest areas designated for permanent protection • Implement environmental education program targeted at the selected families • Produce information materials from lessons learned and disseminate
Target Groups and Beneficiaries: 50 families (sindicatos)

The project area includes 2,000 ha of land given to a group of 50 families (sindicatos) by INCRA in 1987. At the time of land transfer, all of the 2,000 ha were covered by secondary forest. Of the original forest cover (that is secondary forest as of 1987), an estimated 5 percent is left, with an additional 30 percent under regeneration.

In the overall, the three-year project has been very successful. As was learned from the stakeholder meeting, there is consensus among the participants that the following achievements will contribute to the protection of the remaining forest on the communal lands and the rehabilitation of forests in micro-watersheds of the 2,000 ha project area:

- At the onset of the project, a rapid land use capability assessment (Diagnostico Participativo de Agroecosistemas), including the land occupied by the 50 families, was carried out.

- Subsequently, six nurseries were established in cooperation with selected families to produce 100,000 seedlings of 60 species of fruit trees and important endemic tree species for free distribution to the participating families.
- A total of 150 ha sample plots were planted as pilot areas for the fruit tree species grown in the project nurseries. Seedlings of endemic tree species were distributed to rehabilitate degraded watersheds.
- Terra Viva provided technical support and training throughout the project to all families involved. This included transfer of technical know-how on economically attractive agro-forestry, biological disease control, green mulching, fire prevention, and watershed management. This was complemented with formal and informal environmental education.
- The project has successfully promoted the demarcation and protection of forest lands on family plots.
- The project demonstrates that well-practiced agro-forestry can be economically viable and enhance soil conservation and biodiversity.

The development of a community spirit, dedication to the new land use practices, and the relatively high level of environmental awareness within the target community are some of the more important achievements of the project.

The evaluation of this project by the MMA-PD/A group has criticized the lack of a strategy by the NGO to replicate the results (snowball effect). It is pointed out, however, that a three-year duration of an agro-forestry demonstration project is much too short to produce meaningful results and have a strategy in place for replication. It is suggested that it takes at least three years to demonstrate the feasibility of methods and strategies adopted for a demonstration project.

This project clearly demonstrates that the standard duration of PD/A projects directed towards forest rehabilitation, watershed management, agro-forestry, etc. should have a minimum life span of five years or should be divided into two phases: (a) the demonstration phase, which proves whether the project is feasible, and (b) the second phase to replicate the findings elsewhere, in case the project showed positive results.

There is major concern regarding the relevance of the project to the PPG7 overall goal, which is sustainable protection of the Mata Atlantica. While it may be argued that this project promotes forest conservation (enforcement of the 20 percent forest cover rule on private land), the focus of this project has been on promoting sustainable agriculture and social assistance to the poor and too little focus on biodiversity conservation and the need for a systems approach to sustainable forest conservation.

This concern has been addressed by Terra Viva in the second phase of the project. The target areas for the follow-up project are located in the support zones of two national parks under the jurisdiction of IBAMA. The two NPs are some of the most important PAs in southern Bahia, protecting the largest contiguous forest areas left in the entire State (NP Descobrimento with 22,000 ha and NP Monte Pascual with 14,000 ha and the attached indigenous reserve with 8,000 ha). The project aims to provide the ecological bridge between the parks by promoting the positive results of the Itamaraju project and by establishing the "ecological stepping-stones" critical to safeguarding ecological

connectivity in close co-operation with the target communities (indigenous community and sindicatos). The two targeted areas are 8,000 ha of INCRA land and 4,000 ha owned by indigenous communities. Both share boundaries with the national parks.

Concern has been expressed by the NGO about the lack of IBAMA's interest in communicating with support zone communities and the lack of inter-institutional cooperation between IBAMA and INCRA. The follow-up project hopes to facilitate cooperation between all stakeholders for the benefit of sustainable forest protection.

It has been recognized by Terra Viva that insufficient attention has been given to the dissemination of project results within the first phase of the project. In the proposed follow-up phase, 31 percent of the budget is dedicated to environmental education and awareness-building, including the production of educational and information materials.

Lessons Learned from the PD/A Project Itamaraju (Terra Viva)

- It is suggested that a three-year time allotment for projects related to agro-forestry, reforestation, watershed rehabilitation, and forest rehabilitation in general, is too short a time-span to provide meaningful results for replication elsewhere.
- PD/A project proposals related to the protection of the Mata Atlantica should have proven relevance to biodiversity conservation and forest protection. Preference should be given to projects that provide quantifiable and qualifiable contributions to forest protection, expansion of forest land, and ecological connectivity.
- PD/A projects provide a unique opportunity to facilitate cooperation between government institutions and the private sector for the benefit of sustainable forest protection.
- PD/A projects should develop strategies to replicate positive project results elsewhere (multiplier effect).

Case Study 4: Demonstration Project Camamu (SASOP).

This project has been developed and proposed by SASOP, a small NGO with four professional agronomists working in the general project area of Camamu. The project was implemented by SASOP in close cooperation with CEPLAC. SASOP's overall mission is to (a) enhance the life of the poorest people living in rural areas, (b) provide training to rural families in the area of agro-forestry, (c) assist in the commercialization of agricultural crops and products, and (d) strengthen agricultural organizations.

Pertinent project data are highlighted in Table 5. The following project assessment is based on discussions with the persons from SASOP and CEPLAC responsible for the implementation of the project, discussions with project beneficiaries, and a brief field reconnaissance.

This project has basically the same orientation as the Itamaraju project; it aims at poverty alleviation of a group of rural families through technology transfer in the area of agro-forestry on the basis of demonstration plots and capacity development.

The framework conditions and the approach by SASOP, however, differ significantly from the Terra Viva project. In contrast to Itamaraju, the families and demonstration plots selected by SASOP are widely scattered, extremely isolated and have difficult access, and are generally not part of a well-organized community. The project involved 28 families from four communities. All families are sindicatos with land provided by INCRA. Each family averages ten ha of land, of which half is generally under production (mostly cacao), the other half covered by secondary forest of low quality, mostly in early seral stages.

Table 5. Data for PD/A Project Camamu

Duration: 1996-1999 (3 year duration)
Budget: US\$204,000
Executant: SASOP (Servicio de Assessoria Organizacoes Populares Rurais)
Overall Goal: Sustainable management of agro-forestry and biodiversity in ecosystems of the Mata Atlantica
Key Objectives: <ul style="list-style-type: none"> • 50 ha of demonstration plots under agroforestry production • Provide 200 rural families with training in agro-forestry • Disseminate experience from the demonstration project • Provide training to agricultural associations and leaders of rural communities • Establish processing facilities for agricultural products and assist in marketing efforts • Produce and distribute information materials on the project results
Target Groups and Beneficiaries: poor rural families living at or below subsistence level, community leaders, and rural associations

Before the international collapse of the cacao market, the Camamu area had been known for cacao production (that explains the strong presence of CEPLAC until recently). As a result of the cacao market collapse, cacao producers were forced to search for alternatives. Focus was then shifted to cattle-ranching and forest exploitation. Both activities resulted in adverse environmental impacts of great magnitude, causing erosion, destruction of major watersheds, and large-scale deforestation in a very precipitous and inhospitable terrain. In this light, the SASOP project, looking for environmentally friendly alternatives for a very poor rural population, made sense. The results of the project, however, are less satisfying.

The evaluation report by Alves (2000) aptly describes the shortfalls and the reasons for the shortcomings of the project. The evaluator states that it is too early to judge to which extent the overall objective has been reached. The evaluation report compares targets with achievements as follows:

- 50 ha targeted as demonstration areas, of which only 10 ha have been planted, with 34 widely scattered sample plots (20 percent of the goal). Many sample plots are less than 1,000 m² in size, which is too small to be of any great value.
- The establishment of five nurseries was planned, of which only one has been completed but is not operational.
- Training of 200 producers of the Camamu municipality; goal has only partly been reached and cannot be quantified.

- Construction of a fruit processing plant to benefit one community. This plant, a solar powered fruit drier operated by three people, is operational and may serve as a model for other communities.
- Produce information material on the project and disseminate results; neither of these goals have been achieved.
- Training of community leaders and leaders of rural associations; partly achieved.

The evaluation report credits the project for the overall reduction of fires commonly used for land clearing and debris removal after harvest. This has a positive effect on forests neighbouring the agricultural plots, where no more fires are being used.

It is worth noting that the evaluation report provides no comments on the overall relevance of the project to PPG7 or its potential contribution to the sustainable protection of the Mata Atlantica. It also seems symptomatic that the report's conclusions and recommendations only address agricultural production-related and economic aspects rather than the need for biodiversity conservation through forest protection and sustainable forest management.

In summary, in spite of its title, the Camamu project is a strictly agricultural project with little affinity to the overall goal of the PPG7 for Mata Atlantica. The widely dispersed demonstration areas do not relate to any designated PAs, neither is there any attempt in the project to address biodiversity conservation concerns. It is suggested that the Camamu project is another typical example of projects that only marginally qualify for PD/A support.

There is no cooperation between the project executants (SASOP/ CEPLAC) and environmental law enforcement agencies, or any other environmental government agency or institution.

Lessons Learned from the PD/A Project Camamu (SASOP)

- It is of critical importance to establish close working relationships with community leaders and local governments.
- A concerted effort should be made by all PD/A projects to cooperate with environmental law enforcement agencies.
- PD/A projects should make better use of mass media in an effort to gain public support and establish alliances.
- This PD/A project is another example that three years is too short a time span to get the results needed for demonstration purposes.

Case Study 5: Demonstration Project Elisio Medrado.

This project was developed and implemented by the well known NGO Grupo Ambientalista da Bahia (GAMBA), which is currently responsible for the coordination of the Rede Mata Atlantica. Created in 1982, GAMBA has over 300 active members with a

common interest in nature conservation, and recuperation and enhancement of the environment. Its mission statement is: "to promote ecologically sustainable land use, environmental protection, and biodiversity conservation and to enhance man's relationship with nature." This NGO has adopted several strategies to pursue its goals: (a) development of environmental policies and legislation on all government levels, (b) political lobbying, (c) promotion of public participation in land and resource use development compatible with conservation objectives, (d) close cooperation and alliance with environmental NGOs, and (e) promotion and implementation of demonstration projects.

Pertinent data on this PD/A project are summarized in Table 6. The following assessment is the result of a brief field reconnaissance under guidance of the project implementation team and on-site discussions with target land-owners.

Table 6. Data for PD/A Project Elisio Medadro

Duration: 1996-1999 (3-year duration); a second phase is being proposed
Budget: US \$210,000
Executant: Grupo Ambientalista da Bahia (GAMBA)
Overall Goal: Rehabilitate degraded areas of the Mata Atlantica through reforestation using key native tree and shrub species and promote sustainable land use in close cooperation with rural communities.
Key Objectives: <ul style="list-style-type: none"> • Produce key shrub and tree species native to the region for reforestation of degraded areas. • Rehabilitate degraded areas through project "Reflorar." • Promote watershed and soil conservation. • Preserve flora and fauna. • Develop and implement environmental education program.
Target Groups and Beneficiaries: Landowners with interest in rehabilitation of degraded areas within their ownership
Principal Project interventions: <ul style="list-style-type: none"> • Establish a nursery for production of 25,000 seedlings of 100 native species/month. • Reforest selected micro-watersheds, riparian zones, and protected areas. • Convince and stimulate private and public landowners to reforest degraded areas. • Provide technical know-how to interested landowners in the establishment of nurseries for native species production. • Provide technical assistance and professional advice on reforestation efforts of degraded land. • Disseminate information on conservation needs of natural resources of the Mata Atlantica. • Combat deforestation, fire, and poaching of wildlife.

The selected pilot area comprises five municipalities with a total of 26 randomly distributed demonstration plots covering a total of 50 ha of degraded cattle pasture. According to Paschoal,¹² 40 landowners were involved in the project. Reforestation priority focused on deforested micro-watersheds, degraded riparian areas, and legally protected sites (steep slopes, springs, etc.). Participating landowners were given plant material free of charge. Selection of suitable native tree and plant species grown in the project nursery (approximately 100 different species to choose from) was done by two project agro-technicians, who also selected the sites and supervised the planting process. Landowners were obliged to fence the reforested areas against livestock intrusions.

In general, the project fits well into the PPG7 objectives for Mata Atlantica. The sites chosen for reforestation were rightly classified as priority areas and the species diversity of nursery stock available is unmatched in the coastal states. The project reached its goals in principle. The nursery was established according to planned specifications with a capacity to produce the projected number of seedlings. A second nursery, with corresponding infrastructure partly funded by the project, was established on a forest reserve owned and operated by GAMBA. The forest reserve is used by the NGO to carry out research on the ecology of plant species used in the trials, but also research on systems ecology and soils in close collaboration with the University of Salvador.

The nursery established by the project is a low-cost operation with total construction costs of approximately US \$1,000 and a very low overhead compared to its capacity to produce 25,000 seedlings per month on 0.5 ha. This makes such a small-scale nursery economically attractive to a landowner who can produce seedlings for personal demand and as "cash crop." The project nursery therefore has true model character and is suitable for replication elsewhere.

There is little doubt that GAMBA has the proven ability and ecological qualifications to satisfactorily implement a project as well-designed and conceptualized as the Elisio Medrado project. However, there is reason for concern:

- The project depends completely on landowners who volunteer their land for the project demonstration sites. This is considered a distinct disadvantage because it forces the project to accept "second best sites" instead of allowing the selection of sites according to ecological and logistic priorities. As a result, the project sites are widely scattered, partly isolated, and difficult to reach. This is a distinct disadvantage for "demonstration plots," which for all purposes should be readily accessible to fulfill their model function.
- The capacity-building component of the project is relatively low, being mostly confined to the participating landowners.
- The project duration of three years is much too short to prove the validity of the project's major premise: trial plots stocked with a diversity of native plant species will exponentially expand into a biodiversity-enriched system.
- It appears that the project made insufficient use of mass media in order to attract the interest of more landowners.

¹² Elbano Paschoal, GAMBA, project coordinator, pers. comm., 5.05.2000.

- It appears that the project was unsuccessful in involving community leaders and municipal governments in a project area that is dominated by degraded cattle pasture and where the forest has been reduced to very small and widely scattered fragments. This seems partly due to the lack of presence by GAMBA in the project area (GAMBA's headquarters is located more than 200 km away in Salvador); there is no local permanent representation of GAMBA.
- It is suggested that because of the highly fragmented and scattered remaining forest patches that are mostly composed of secondary successional species, the project's ambitious objective to create vital ecological corridors is very difficult to attain.
- It appears that GAMBA made insufficient effort to cooperate with law enforcement authorities in an effort to protect the remaining forest fragments, which are found mostly on designated protected sites.
- GAMBA has failed to recognize the need for systematic environmental monitoring. This should be a critical component of the project and follow-up work. The demonstration plots offer a unique opportunity to study the re-colonization process of flora and fauna in areas where forests were completely destroyed and converted into cattle pasture.

GAMBA has applied for a three-year extension of the project. The request is justified because GAMBA can now apply the lessons learned in phase 1 more efficiently and cost effectively. The second phase will focus on:

- Identification of new degraded areas;
- Addition of more demonstration sites;
- A full-fledged environmental education campaign with proper use made of mass media and material produced in-house;
- A concerted effort to train producers and landowners on reforestation techniques and the establishment of low-cost nurseries;
- A concerted effort to establish a close working relationship with IBAMA for law enforcement purposes;
- Spending 40 percent of the budget on the dissemination of the results from the first phase.

Lessons Learned from the PD/A Project Elisio Medrado

- It is of critical importance to establish close working relationships with community leaders and local governments.
- A concerted effort should be made by all PD/A projects to cooperate with environmental law enforcement agencies.
- PD/A projects should make better use of mass media in an effort to gain public support and establish alliances.
- This PD/A project is another example that three years is too short a time span to get the results needed for demonstration purposes. Funding for a second phase as requested by GAMBA seems justified.

iii) Summary Assessment of Program Implementation

One of the main hurdles for the KfW-sponsored Bilateral Associated Projects is the cumbersome state bureaucracy with respect to procurement procedures, financial management, timely release of counterpart funds, centralized decision-making processes, unwillingness to decentralize, and complicated accounting and bookkeeping procedures. These have slowed down the project progress and have resulted in adverse impacts on project implementation.

Another drawback with adverse impacts on project implementation has been the state government's continuing austerity measures. The role of the international consultant (assistance to the project coordination committee in project implementation and liaison between the different stakeholders of the project) with respect to project operations is critical. The effectiveness of the consultant, however, depends on the willingness of the state institutions to delegate and accept the consultant's advice. The project has achieved good cooperation between law enforcement agencies, park staff, and government institutions with direct benefits to the PA protection and the conservation of the Mata Atlantica at large.

The implementation of the GTZ-sponsored BAP in Minas Gerais benefits greatly from the good working relationship between the three key stakeholders: IBAMA, IEF, and Biodiversitas. The role of GTZ in the implementation process of the project is difficult to qualify. Its principal tasks are to provide technical services to the project, guide the process, and help identify activity programs of key importance. GTZ's true contributions to the project implementation cannot be judged based on a brief reconnaissance.

Project management and implementation related to the PD/A projects depends to a large extent on the management ability of the project executants, but also on the willingness of participating groups to cooperate and contribute. In general, the PD/A projects visited appeared to be reasonably well managed and implemented.

Undoubtedly, the implementation of the GAMBA and SASOP projects would have benefited from a better selection of demonstration areas. Long distance to sample plots that can only be reached via 4-wheel-drive vehicle and good-weather roads is a major handicap to all aspects of project implementation. On the other hand, project implementation is greatly facilitated by demonstration sites that are clustered and easy to reach (e.g., Itamaraju project implemented by Terra Viva).

4.0 OVERALL ASSESSMENT OF PPG7 INPUT INTO MATA ATLANTICA

4.1 Cost Efficiency of the Mata Atlantica Projects

It is suggested that decentralized projects (Bilateral Associated Projects) in general may be more efficient than centralized projects by reducing one layer of bureaucracy and by reducing the number of players. It appears that ownership in decentralized projects is easier to achieve than in centralized projects. It is also suggested that stakeholders and

beneficiaries demonstrate better support to decentralized projects than to something "forced on them" from the outside.

There are many other factors that also influence project efficiency. The efficiency of the two bilateral associated projects visited for this evaluation suffer greatly from a cumbersome and inefficient state level bureaucracy, in spite of vested interest in the projects and demonstrated ownership. It has been suggested that the efficiency of the KfW-sponsored projects could have been enhanced if feasibility studies had been carried out that clearly identified priority needs, rather than financing a government-produced shopping list at the outset of the projects. On the other hand, it is apparent that the use of an external consultant has greatly enhanced project efficiency of the KfW-sponsored project in all respects, including streamlining the conceptual approach, identifying and financing priority needs, and enhancing inter-institutional cooperation on all levels.

The GTZ-supported project in Minas Gerais is a different matter. The nature of this GTZ project is technical support to state government institutions by one expatriate and one local professional. It is argued that the cost-efficiency of this project is rather low. Overheads are very high compared to the output. Most of the GTZ budget is used for financing the expatriate expert. Project efficiency could have benefited from better comprehensive conceptual planning and more target-oriented project strategies.

It is generally recognized that PD/A projects are highly cost-effective and may well be the most efficient component of the PPG/7. Projects implemented by non-government grassroots organizations (NGOs) in particular excel through cost efficiency by (a) keeping overheads low, (b) providing technical services through in-house expertise free of charge or by using cost-effective local expertise, and (c) staying clear of government bureaucracies. The three PD/A projects used as case studies are no exception. However, as indicated already in context with the Camamu and Elisio Medrado projects, efficiency could have been enhanced through a better selection of the trial areas prior to project inception. The efficiency of all three projects may have benefited from consultation of available literature regarding lessons learned from similar projects elsewhere.

4.2 Effectiveness of the Mata Atlantica Projects

It is suggested that the most important premise for the effectiveness of any project is the design of a clear project concept and of strategies that are target oriented, practical, and feasible (this usually requires a sound feasibility study). The conceptual approach of the BAPs supported by the German government with focus on designated protected areas and support to institutions associated with and direct responsibility for the protection of the PAs is therefore well justified and fully meets overall priority needs. The decentralized projects clearly recognize the critical role of PAs for the protection of important samples of the fragmented Mata Atlantica.

The financial support by KfW to designated PAs principally aims at the priority requirements of PAs, which are to provide basic equipment and infrastructure. Secondary priorities are strengthening the institutions in charge of PAs and those responsible for law enforcement. The KfW projects recognize that management and protection efforts are seriously hampered without the proper tools. The KfW projects also finance PA boundary demarcation and updating PA management plans as essential prerequisites for long-term operational planning. Furthermore, the project supports cooperation with support zone

communities and the development of mechanisms for revenue generation that safeguard the sustainability of the investment. In summary, the KfW-sponsored projects seem to be comparatively effective.

The overall effectiveness of the GTZ-sponsored project in Minas Gerais seems rather low. A simple cost-benefit analysis shows that the GTZ project compares unfavorably to the three PD/A projects used as case studies for this assessment. Both the GTZ and PD/A projects provide technical support to identified target groups in an effort to conserve the Mata Atlantica. The GTZ project has a duration of six years and a total budget of approximately US \$4 Million, mostly used to cover overhead costs and finance the two in-house experts. The average cost of a PD/A project is US \$200,000 with three years duration. PD/A budgets cover all project-related investments (e.g., office equipment of NGO, vehicles, nurseries, environmental education campaigns, and wages for technical personnel involved in a project). Furthermore, important fringe benefits of PD/A projects are the strengthening of local grassroots initiatives with an excellent potential to achieve a "snowball" effect lasting well beyond the life of a three-year project.

Translating the GTZ budget into the typical PD/A project means that 20 PD/A projects of three years duration each, or 10 PD/A projects of six years duration each, could have been financed through the GTZ budget. There is little doubt that 10 PD/A projects of six years duration each would have a much higher effectiveness (cost-benefit analysis) than a single GTZ project of the same duration implemented by two in-house experts.

In summary, the overall efficiency of PD/A projects compared to other PPG7 efforts is very high for the following reasons, *inter alia*:

- Projects implemented by Not-For-Profit and Non-Government Organizations have vested social interests in the topic, the target groups, and the project success.
- Projects originate from and are implemented at a grassroots level.
- Projects are cost-efficient due to generally large counterpart contributions.
- Projects have relatively high spin-off effects.
- These projects generally have an insider advantage and increased ability to lobby on a political level, in contrast to bilateral projects.

In spite of the generally favourable assessment of PD/A projects, however, the overall effectiveness of the 32 PD/A projects implemented or approved for Mata Atlantica are insignificant in the light of the mammoth task to conserve what is left of the Mata Atlantica. In this respect, the PD/A projects are but a drop into the ocean.

4.3 Sustainability

The sustainability of all projects scrutinized remains an unsolved problem, although overall, the prospects are promising. A major constraint to all projects in support of designated protected areas is the lack of cooperation by all levels of government agencies in providing PAs with the authority to do their own fundraising. This stifles any effort and promising initiatives. Current revenues for PAs result mostly from gate fees and different leaseholds ranging from concessions to land leases for receiver/transmitter stations. At present, no standards for gate fees, concessions, or leases have been developed. All locally generated revenues have to be returned to central government

coffers. It is left to the discretion of the government how much funding is provided to the designated PAs, which usually is not even enough to cover the most basic operational costs. Most national and state parks are under-staffed and under-budgeted. With respect to designated PAs, there are ample opportunities for sustainable financing if only state agencies would cooperate.

With respect to the KfW-supported Sao Paulo project, all operational costs are currently covered through counterpart contribution. There still is no formalized structure in place to provide sustainable financing on termination of the project. The project has proposed many feasible ideas, ranging from a water surcharge (PAs provide most of the potable water for the city of Sao Paulo and the densely populated coastal regions) to well-structured and standardized gate fees. However, no final solution to the problem has been found.

Sustainable financing of the Forest Police, currently supported by KfW, will be provided by the government¹³ and through revenues generated through fines. Sustainable financing of the KfW-sponsored DPRM-3 seems secured, once the system of standardized service charges for the administration of licensing is in place. It is believed that the DPRM-3 will become totally self-sufficient.

The financial sustainability of the GTZ-supported project is unsolved. NP Caparao has an excellent potential for revenue generation from gate fees as a prime tourist destination in the region. Sossego is self-sustaining, being the private property of the highly capable NGO Biodiversitas. The situation regarding the third state-operated park supported by the project is not known.

The sustainability of the PD/A project Itamaraju seems to be secured. It is expected that with the help of the follow-up phase of the project and through the proven results of the economic and ecological viability of the project, the momentum can be perpetuated.

The sustainability prospects for the Elisio Medrado project are much less promising. It is hoped that the proposed second phase with concentration on awareness-building and environmental education will achieve what the first phase was unable to achieve. The project concept is excellent in principle and needs continuing support.

The only element of the PD/A Camamu project that promises financial sustainability may be the fruit-drying plant, which has generated interest in producer associations. The other project components show poor prospects for sustainability. The demonstration plots are too small and too isolated to generate widespread interest.

Complex background information on current international support to Brazil's PA system and on innovative opportunities to generate revenue and funding for sustainable financing of protected areas has been provided in the proposal for a GEF grant in support of meeting Brazil's 10 percent PA pledge for Amazonia (MMA, ARPA 2000).

¹³ Captain PM Prazeres, pers. comm., 25.04.2000.

4.4 Replicability

The RMA recently received a grant under the PD/A (US\$90,000) to assist in the dissemination of lessons learned in the PD/A projects. Concern has been expressed¹⁴ that too many PD/A projects are implemented with too little effort spent on the dissemination of results. The same source suggests to stop approval of new projects and rather concentrate on the dissemination of the lessons. This concern is not shared by the evaluator regarding Mata Atlantica PD/A projects. Here the findings suggest the need for an expansion of the PD/A program and the need to finance a second phase of projects with positive results. It is reiterated that the current three-year project cycle is much too short to provide the results needed for demonstration purposes.

The Itamaraju project is the most promising of the three PD/A case studies in terms of replicability. It is safe to assume that its success in terms of economics and community support will have the expected ripple effect. It is very much hoped that the chances for the results of the Elisio Medrado project to be replicated elsewhere will improve through financing a follow-up phase. The project concept is excellent in principle and deserves to be replicated elsewhere. However, more emphasis has to be placed on awareness-building and media use for the project results to become widely known. Prospects for the replicability of the main components of the Camamu project seem to be very bleak, except for the fruit-drying plant.

Lessons learned from the GTZ-sponsored project with potential to be replicated elsewhere are:

- Positive effects of inter-institutional cooperation;
- Usefulness of fire brigades and cooperation with the private sector;
- The need for NGO and private sector support for PPG7 programs and projects;
- Need for sound management plans that address support zone development needs and participatory management opportunities.

Regarding the replicability of KfW-sponsored projects, the results show that financial support to designated protected areas and strengthening environmental law enforcement agencies is a critical prerequisite for sustainable protection of the last fragments of the Mata Atlantica. It is strongly recommended that this program be expanded and that it be used to stimulate the interest of other donors to participate in this effort.

5.0 INPUTS OF MATA ATLANTICA PROJECTS TO PPG7 OBJECTIVES

The overall objectives for the PPG7 inputs into Mata Atlantica are the sustainable protection of the Atlantic Forests and the conservation of biodiversity in general. It is hoped that this can be achieved through (a) sustainable development and land use, (b) an informed and supportive public, and (c) private sector involvement.

¹⁴ Neila Soares, PD/A World Bank, pers. comm., 10.04.2000.

The focus of the KfW-sponsored projects is the direct support to the PA system of the Mata Atlantica and the institutional strengthening of environmental law enforcement agencies. This is in conformance with the PPG7 overall objectives. KfW has not provided direct support to strategies (a) and (b), which will be addressed in the proposed program expansion.

The GTZ-supported project, Doces Matas, conforms to all objectives and strategies of the PPG7. It promotes sustainable land use and agriculture in support zones of the three PAs targeted for the project, involves the private sector, fosters cooperation with NGOs, and addresses the need for public awareness through the production and dissemination of educational materials.

The PD/A projects conform to overall PPG7 goals and objectives in principle and have adopted the stipulated strategies by involving diversified target groups in their various programs.

6.0 CONCLUSIONS AND RECOMMENDATIONS

It appears that the ecological integrity of the remaining Atlantic forest (Mata Atlantica) is compromised everywhere. Practically all of the original climax forest has been replaced by secondary forest in different successional stages, and is highly fragmented and scattered throughout the coastal mountains. It is suggested that the much-cited species diversity of the original primary forests has been reduced dramatically through the massive deforestation in the Atlantic region and through large-scale land conversion for agricultural monocultures and low quality cattle pasture. Degraded lands dominate in the area once covered by ombrophilous forests.

In this light, the focus of the Bilateral Associated Projects on the protection of designated protected areas fully addresses the priority needs for Mata Atlantica. Designated conservation units, including APAs and RPPNs, cover some of the most important areas of what is left of the original Mata Atlantica. It is widely recognized that the current PA system in the Atlantic region is in urgent need of expansion. A concerted effort is needed to set aside representative samples of the region's ecosystems that are currently not included in the PA system or that are under-represented. One of the few remaining opportunities for PA expansion may be offered through close cooperation with private landowners for the establishment of RPPNs, and with landowners neighboring protected areas who are willing to contribute to the expansion of designated PAs.

It also is recognized that the already widely compromised ecological integrity of protected areas will continue to deteriorate without the assistance of PA neighbours living in the support zones of designated protected areas. This requires stakeholder cooperation and a good working relationship between PA personnel and PA neighbours. The latter has to be based on participatory planning and management of the PA and its support zone. It also requires integrated land use planning and optimum resource allocation compatible with overall conservation objectives.

Currently, PPG7-related projects in Mata Atlantica have given insufficient attention to the importance of sustainable support zone development. Some of the few projects with emphasis on this issue are the GTZ-sponsored intervention in Minas Gerais and two of the PD/A projects used as case studies (GAMBA and Terra Viva).

It has been suggested that integrated land use development of PA support zones, as well as sustainable land use planning in general, should remain the responsibility of the Brazilian government¹⁵ and should not be subject to bilateral assistance. This issue is addressed by the biological corridor concept and by the biosphere concept. Both will be discussed in detail in Part II of this report.

Recommendation

The assessment of the decentralized projects in Minas Gerais and Sao Paulo show the need for:

- Upgrading of PA management plans and elaboration of practical operational plans with clearly identified priorities set into proper time frames;
- PA boundary re-adjustment and proper demarcation in support of protection efforts by PA personnel and enforcement agencies (the KfW-sponsored projects have partly addressed this problem);
- The need for expansion of PA staff and capacity building of PA personnel.

Efficiency and effectiveness of environmental law enforcement and inter-institutional cooperation leaves much to be desired in the three states visited, although progress in this respect has been made in the ongoing bilateral projects.

Recommendation

Inter-institutional cooperation should become a focal area of future PPG7 projects in Mata Atlantica. This also applies to future assistance needed for streamlining the currently rather confusing legal framework applied to PAs and forest management.

Experience with PD/A projects in the Mata Atlantica is very limited. The relevance and usefulness of this program for the Mata Atlantica is recognized, however, and suggests an expansion of the program. A concerted effort should be made to concentrate on a more thematic and regional focus of PD/A projects in the Atlantic region. Projects should be favoured that aim at making good use of synergy effects. The current tendency of PD/A projects in the Atlantic region to focus on socio-economic issues is too narrow.

Recommendation

¹⁵ Dr. Aepli, KfW, pers. comm., 5.05.2000.

Preference should be given to PD/A projects in support of (a) support zone development of PAs, (b) identified ecological "hot spots," (c) establishment of ecological corridors, (d) biodiversity conservation, and (e) other PPG7 initiatives.

The assessment shows that current monitoring and evaluation of PD/A projects as implemented by the MMA is very costly and inefficient. To date, evaluation and monitoring have not been standardized. There also seems legitimate concern regarding the selection process and technical competence of the evaluators. Evaluators should have at least a basic understanding of ecology and an appreciation of the complexity of biodiversity related to forest protection in order to gauge a project's relevance to the overall PPG7 goal for the Mata Atlantica. It appears that the current selection of evaluators favors people with a background in economics and agriculture, rather than in biology or ecology. This applies in particular to PD/A projects associated with agro-forestry and assistance to subsistence farmers (the majority of projects in the Mata Atlantica).

Recommendation

It is recommended that the MMA Technical Secretariat responsible for the PD/A program facilitate training for all successful project proponents in self-evaluation and self-monitoring of PD/A projects. Both ultimately should become the responsibility of project executants. Furthermore, evaluations and monitoring procedures should be standardized.

There is legitimate concern that many opportunities for promising PD/A projects are lost simply because potential candidate proponents are not aware of the opportunity for PD/A sub-grants and also because of the rather complex project preparation process. The latter requires literary skills, familiarity with budgeting and bookkeeping procedures, and computer/word processing skills that are not necessarily available within small interest groups.

Recommendation

It is recommended to simplify the application process for PD/A project and step-up efforts in making civil society aware of this opportunity.

A major criticism is that insufficient effort is spent on the dissemination of results and lessons learned from PD/A projects. It has to be pointed out, however, that only a very few projects have been completed to date and that the project duration of three years is much too short a period to yield meaningful results, especially in the area of agro-forestry.

Recommendation

- It is recommended to extend the duration of PD/A projects accordingly and to provide follow-up funding to all projects with a positive outcome and results that could be replicated elsewhere.
- It is recommended that the Technical Secretariat (TS) should be responsible for the dissemination of the results supported by the RMA under separate contract. The TS has the funding available for the production and dissemination of suitable materials and the TA has ready access to public media.

There is a lack of systematic environmental monitoring that should be an integral part of any PPG7-related project in the Mata Atlantica.

Recommendation

A well-designed environmental monitoring program would be useful in gauging the effectiveness of projects and project components with regard to conservation efforts. It is recommended that a suitable monitoring package with standardized methodology be designed for use with all projects.

In this context, the importance of standardized databanks is mentioned. All data collected by projects associated with the PPG7 should be properly stored, processed, and made available. It may not be feasible nor desirable to establish one single databank.

Recommendation

The PPG7 should make every effort that data collection, storage and processing is standardized and socialized.

In summary, there seems legitimate concern that the PPG7 places too much emphasis on economics and too little emphasis on biodiversity conservation, which should be based on a systems approach¹⁶. This concern is shared by the author of this report.

¹⁶ ISA, Biodiversitas, SOS, GAMBA, Conservation International, WWF, pers. comm., April 2000.

7.0 LESSONS LEARNED AND OPPORTUNITIES

- Programs and projects should be based on well-designed concepts rather than follow an adaptive management approach. Adaptive management tends to fight brush-fires rather than provide long-term solutions.
- Verifiable indicators should be developed to allow for quality assessment of project activities and project evaluations in general.
- All Conservation Units should have designated support zones in order to facilitate support zone planning and timely action programs.
- Updating and elaboration of management plans for conservation units should be spearheaded by a professional protected area planner and involve key stakeholders from the support zones.
- An ecological gap analysis in support zones of conservation areas would be helpful in order to identify priority needs for biodiversity conservation (i.e., ecological stepping-stones needed to ensure ecological connectivity). The gap analysis would also identify areas of special protection needs (steep slopes, riparian vegetation, springs, etc.) and remaining fragments of threatened forests.
- Better use should be made of the opportunity to create RPPNs as critical ecological stepping-stones for the network of protected areas.
- The overriding objective for projects and activities associated with conservation units should be to safeguard the ecological integrity of the conservation unit in order to prevent further losses in biodiversity and system stability.
- Environmental monitoring should become an integral part of all PPG7 programs and projects. Well-designed environmental monitoring can provide the much-needed data for assessment of the effectiveness of interventions.
- Although the importance of conservation areas for nature-based tourism is recognized, conservation units should not become isolated tourist destinations but rather be integrated into regional tourism development plans.
- In order to create a meaningful and homogenous database, appropriate methods should be developed for all of the PPG7 programs, to be spearheaded by AMA and the Research/Monitoring Unit. All PPG7-related projects should be obliged to adhere to the proposed methodology.
- Consolidation of the different core areas of the State Park Serra do Mar would have significant synergy effects and would enhance conservation efforts.
- Demarcation of PA boundaries is a critical prerequisite for law enforcement and discourages encroachment.
- Urgent training needs for PA staff are recognized. A centralized capacity-building program under PPG7 auspices, to be based on a comprehensive needs assessment, would be beneficial to many PPG7 program components.
- A three-year time allotment for PD/A projects related to agro-forestry, reforestation, watershed rehabilitation, and forest rehabilitation is, in general, too short a time frame for projects to provide meaningful results for replication elsewhere.

- PD/A project proposals related to the protection of the Mata Atlantica should have proven relevance to biodiversity conservation and forest protection. Preference should be given to projects that provide quantifiable and qualifiable contributions to forest protection, expansion of forest land, and ecological connectivity.
- PD/A projects provide a unique opportunity to facilitate cooperation between government institutions, agencies, NGOs, and the private sector for the benefit of sustainable forest protection.
- It is of critical importance for PPG7-related projects to establish close working relationships with community leaders and local governments.
- A concerted effort should be made by all PD/A projects to cooperate with environmental law enforcement agencies.
- PD/A projects should make better use of mass media in an effort to gain public support and establish alliances.

PART II: FORWARD-LOOKING PHASE

1.0 INTRODUCTION

As aptly described by Ainscow et al. (1999) "...seven years into the program (PPG7) there still is no operationally usable statement of program strategy that integrates and enhances the various project strategies that have been adopted seriatim. This means that project selection and formulation lacked guidance as to functional and geographic priorities and emphases, and there are no agreed-upon criteria by which to judge program balance and cohesiveness. Without program strategy there has been no guidance for interfacing of projects, leaving each project to strive for "self sufficiency" instead of guiding it to establish well-coordinated synergies. Specifically for those participants and stakeholders who regard PPG7 as a true pilot program, it is of concern that there is still no clear answer to the question: What exactly is piloted?...There has been no learning strategy to guide pilot project selection, design implementation, and evaluation."

The proposed Sub-Program of the PPG7 for Mata Atlantica provides a unique opportunity to apply the lessons learned from the Amazonian component of the PPG7 as described by the Ainscow Review Team.

The results of the mid-term review of past and present PPG7 projects in Mata Atlantica substantiate Ainscow's findings. From the review, it became apparent that although the current PPG7-related projects in Mata Atlantica directly or indirectly contribute to the conservation of the Atlantic forests, they are neither inter-linked with each other, part of an overall conservation strategy for this region, nor of true "pilot character." In the absence of a coordinated program, valuable synergy will continue to be lost. The evaluation shows the need for a well-conceptualized overall conservation action plan for this highly threatened biome. It also shows that a new sub-program for Mata Atlantica would benefit from PPG7 components beyond the current PD/As and BAPs, in particular the: (a) Private Sector Involvement, (b) Monitoring and Analysis, to include standardized and mandatory environmental monitoring, (c) Fire Prevention, Mobilization, and Training Project and, most importantly, (d) Rainforest Corridors.

2.0 CONSERVATION CONCEPTS AND STRATEGIES FOR MATA ATLANTICA

2.1 Strategies

Several attempts have been made in the past by federal and state governments, as well as by NGOs, to design a comprehensive strategy for the conservation of the Mata Atlantica. Within this process many useful ideas, concepts, and strategies have been developed and much valuable baseline data collected. A concerted effort is now needed to synchronize these efforts in order to establish the required coordinated synergies and produce one single homogenous strategy that will be binding to all stakeholders and participants of the PPG7 having common interest in the sustainable conservation of the Atlantic Forest. In order to develop the required ownership, therefore, such an overall strategy has to be (a) practical and feasible, and (b) appealing and acceptable to all stakeholders.

One of the most strategic background documents produced in this process is the Ecological Atlas for Mata Atlantica, prepared in a cooperative effort by ISA, SOS, and INPE (1998). The Atlas demonstrates the progressive deforestation that took place in the Atlantic region and it shows what remains of the once-abundant forest ecosystems and where the fragments are located. The Atlas proves in shocking clarity what is at stake in the Atlantic region.

Preceding the Ecological Atlas was a map prepared by Conservation International (CI) on "ecological hotspots" in the Atlantic region. The map is based on the results of a five-day international brainstorming and fact-finding workshop on the biological importance of the Atlantic region. The workshop was organized under the auspices of Conservation International, Biodiversitas, and the Northeastern Ecological Society in collaboration with key government institutions and coastal universities. Workshop participants included biologists as well as social scientists and economists of world standing, who were invited to provide a science-based assessment of regional conservation priorities. In the absence of complete biological information for some of the world's most important ecosystems, CI developed this priority-setting workshop approach to address the challenge of setting priorities for the use of limited conservation funding through expert analysis and consensus-building (Conservation International, 1997).

CI's map and supporting information on identified "biological hotspots" in the Atlantic region undoubtedly provided a major input to subsequent efforts to design and define conservation strategies for the Mata Atlantica. This includes *inter alia* the currently much-discussed biological corridor concept and the conceptual work related to the Mata Atlantica Biosphere Reserve. Because of their importance to the proposed PPG7 sub-program, these two topics will be discussed separately in one of the following sections.

One of the more comprehensive conceptual strategic documents for the Mata Atlantica to date appears to be the "Action Plan for the Mata Atlantica" (MMA, 1998), produced under the leadership of the MMA in close collaboration with a wide spectrum of key stakeholders from government, the private sector (ranging from environmental and social activists to business representatives), and academia. The action plan (PAMTA) was prepared in support of the proposed development of a PPG7 sub-program for the conservation of the Mata Atlantica.

The PAMTA addresses two problems: (a) the continuing process of ecological and cultural degradation and (b) the need to promote rehabilitation and management of degraded ecosystems. To achieve these goals, the Action Plan proposes two sub-programs: (a) the "structural" sub-program that addresses institutional limitations, ecological data gaps, and sustainable land and resource use; and (b) the "demonstration" sub-program that promotes testing and dissemination of sustainable use models and practices with a high potential for replicability and environmental education. It is proposed that the latter sub-program focus on designated protected areas, degraded lands, traditional populations, and lands subject to agrarian reform. The "structural" sub-program covers components of control and monitoring, public policies, education, science and technology, institutional development, and information management. To advance this Action Plan the MMA proposed a competitive bidding system that was open to governments, NGOs, the private sector, universities, and any other group proposing an innovative approach to problem solution.

The MMA's Action Plan for Mata Atlantica leaves much to be desired. Although it addresses the wide spectrum of ecological problems, it is much too general and ambitious (in its attempt to tackle all problems at the same time) to be practical or feasible. First of all, any Action Plan for Mata Atlantica should build on the PPG7 experience from the Amazon region. One of the major lessons learned from that program was the need to establish coordinated synergies in projects of "pilot" project nature and such others that fill identified gaps of conservation needs. Hence, it is self-evident that any action plan should result from a well-designed and conceptualized strategic plan.

Acknowledging the need for a conceptualized strategic plan for Mata Atlantica (e.g., development of a PPG7 sub-program for Mata Atlantica) that would optimize the coordination of projected activities in the Atlantic region, the MMA recently commissioned a six-month contract under a UNDP grant to accomplish this challenging task (MMA, 2000). The contract work will be implemented under the auspices of the MMA and in close cooperation with IBAMA, RMA, and the coastal Biosphere Reserve Coordination Group. The ToR for this task stipulate a participatory approach involving consultations and seminars with all major stakeholders. The expected result is a proposal for a sub-program for Mata Atlantica that structurally and conceptually complies with the format of the pilot program and its overall goals and objectives. Furthermore, it has to adhere to the environmental policies of different government levels.

Parallel with the MMA contract, the RMA is currently developing its own concept for a prioritized action plan for the Mata Atlantica. To add to the confusion, Atlantic states have their own agendas, action plans, and priorities. It is hoped that all these efforts will be synchronized in order to establish synergies and avoid overlapping and conflicting policies, concepts, action plans, and priorities.

2.2 Priority Designations

At the present time there is no consensus on priority strategies for Mata Atlantica, although the need for the preservation of what is left of the Atlantic forests is widely recognized as a common denominator. Opinions and suggestions on thematic and regional priorities differ widely between the diverse stakeholder groups and there seems to be no end to new ideas and recommendations. A lot of brainstorming and energy have been invested in defining solutions to the problems that could be acceptable to everyone.

Given all this, it seems rather arrogant to expect the findings from the Mid-Term Review to become the *Deus ex machina* for the proposed sub-program Mata Atlantica. It is highly unlikely that the brief assessment of the Mata Atlantica, as implemented for this Mid-Term Review, can add anything new. It therefore is understood that the recommendations for the forward-looking phase of the PPG7 and the proposed sub-program as provided in the following sections are based mostly on logical deductions and personal judgments.

i) Role of Conservation Areas for the Sub-Program Mata Atlantica

The critical role of Brazil's Protected Area System with respect to the sustainable protection of biodiversity and ecosystem conservation in general is widely recognized. The role of designated conservation units for the protection of the remainder of the Mata Atlantica is even more critical for the following reasons: (a) the existing PAs in the Atlantic region currently protect the majority of what is left of the highly fragmented

ombrophilous forest ecosystems of the Atlantic region, (b) the opportunities to expand the current PA system is limited, and (c) the ecological integrity of the coastal forests has been compromised with few exceptions. Compounding these problems is that literally all of the Atlantic forest has been converted into secondary successions with unknown impacts on species loss and ecosystem stability.

Against this background, it is suggested that the sustainable protection of designated conservation units of any given category and under any jurisdiction in the Atlantic region has to receive first priority in the proposed PPG7 sub-program for Mata Atlantica. This has to go hand in hand with efforts to expand the current PA system, with emphasis on RPPNs. Of equal priority should be the need to strengthen environmental law enforcement agencies and promote inter-institutional cooperation (focal areas of current KfW-supported interventions in several Atlantic states).

At present, Brazil does not have a comprehensive national protected area strategy that spans the myriad layers of conservation goals. Brazil has a very complex network of federal, state, municipal, private, and aboriginal protected areas. Private land conservation agreements play an increasing role in the Atlantic region and voluntary stewardship is now an important part of the protected area system.

Most jurisdictions in Brazil, including IBAMA, use a variety of methods to identify gaps in the system, but none provides a comprehensive approach. It is the private sector, with NGOs such as Conservation International, WWF, SOS, and ISA, that does most of the groundwork in this respect.

In most cases in Mata Atlantica, IBAMA's or the state's ability to maintain ecological integrity of existing, new, and proposed protected areas is uncertain due to compromises in PA size, boundary, configuration, adjacent land uses, and other adverse impacts

In spite of the shortcomings, there have been significant efforts in Brazil to expand the protected areas system, even though strictly protected areas cover only 2.6 percent and protected areas for direct use cover only 5.5 percent, for a total of 8.1 percent under some sort of protected area designation for the entire country. It is suggested that the official statistics are an over-estimate because many Environmental Protection Areas (APAs) overlap with other categories. Efforts by IBAMA regarding expansion of the national PA system are mostly directed to Amazonia, which still offers unique opportunities to place large contiguous areas of virgin tropical rainforest under protection. Such opportunities, however, are lost in the Atlantic region. Here, IBAMA has rightly concentrated its relatively successful efforts on the creation of RPPNs. It is worth noting that between 1990 and 2000 a total of 102 RPPNs ranging in size from 1 ha to 6000 ha have been created in the Mata Atlantica Biome, for a total of approximately 26,000 ha. IBAMA's statistics show a steady increase in numbers since 1996 (1996: 5 new areas, 1997: 10 new areas, 1998: 18 new areas, and 1999: 35 new RPPNs), reflecting the overall success of the program. There are many new candidate areas currently being registered.¹⁷

Conservation Units under federal jurisdiction are grouped into: (a) categories of strict conservation (Areas de Uso Indireto), including National Parks, Biological Reserves, Ecological Reserves, Ecological Stations, and Areas of Relevant Ecological Interest; and

¹⁷ Dra. Sonja Wiedmann, IBAMA, pers. comm., 7.05.2000.

(b) categories of direct use (Areas de Uso Direto), including Environmental Protection Areas (APAs), National Forests, and Extractive Reserves. Of equal importance are protected areas under state jurisdiction and, increasingly more, the generally small-sized areas administered by municipalities and the RPPN program.

Universities and research institutes also maintain areas reserved mostly for scientific and experimental purposes, as well as for conservation. Some areas have been acquired by non-governmental organizations for conservation purposes. The Biological Station of Caratinga (880 ha) in the east of the state of Minas Gerais, and the Station Sossego are administered by the Biodiversitas Foundation. Likewise, the Salto Morato Natural Reserve, of 1,716 ha in the east of the state of Parana, is administered by the Boticifio Foundation. In addition, FUNATURA maintains a chain of wildlife sanctuaries throughout the country.

The state of Sao Paulo may serve as a typical example for the importance of protected areas in the coastal region: 18 percent of the remaining Mata Atlantica is located in Sao Paulo state. This constitutes approximately 8.3 percent of the total state surface area and 83 percent of all the forests left in this state (SMA, 1999). Conservation units under state jurisdiction protect approximately 900 000 ha of mostly forest ecosystems, constituting approximately 3 percent of Sao Paulo State (see Table 7). Currently, nine category designations for protected areas are in use in the State of Sao Paulo, of which State Parks and Ecological Stations are the most important by size, legal protection status, and management capacity. With close to 2 million ha coverage, APAs are size-wise the most important protection units of the state (see table 7), although their conservation status is generally very low due to the absence of law enforcement. APAs and state-managed PAs combined have a total of just over 2 million ha, which equals almost 90 percent of the Mata Atlantica that remains in this state alone. This is a clear indication of how important protected areas are for the sustainable conservation of the Atlantic forests.

Table 7. Conservation Areas Managed by the State Secretariat of Environment Sao Paulo.

UCS-SMA	Number	Size in ha	Agency
State Parks	24	731.050	IF, FF, IBT, IG
Ecological Stations	22	103.529	IF
Biological Reserves	2	806	IBt
State Reserves	3	23.701	IF
Experimental Stations	22	35.011	IF
State Forests	10	13.026	IF
Forest Nurseries	2	19.72	IF
Ecological Parks	1	285	SMA/PMC/FF
Areas of Environmental Protection (APA)	18	1.908.907	CPLA
Total	104	2.019.852	

ii) Maintenance of Ecological Integrity and Environmental Monitoring

Two other priorities for the proposed PPG7 sub-program Mata Atlantica should be (a) the overall assessment of the ecological integrity of the existing PA system, and (b) the development and implementation of a suitable monitoring system that includes the PA system and other currently unprotected fragments of the Atlantic forests. Assessing and understanding ecological integrity requires three interrelated tools: inventory, research, and monitoring. Ecological inventories are baselines for understanding the state of ecological integrity within protected areas. Ecosystem-based inventories in the Mata Atlantica have been carried out for the past 50 years. Much of the assembled information, however, is now outdated and increasingly inaccessible.

IBAMA and most state organizations lack the capacity and flexibility to attract external research and to research key questions as they arise. This deficiency prevents PA agencies from responding to emerging issues in a timely and flexible fashion.

IBAMA and state agencies having mandates for protected areas should have the legal obligation to monitor and assess the conservation status of PA ecosystems to ensure they are maintained unimpaired. They also have a broader responsibility to evaluate the effectiveness of management actions and policies designed to conserve or restore ecological integrity. The role of monitoring and its utility to management decision-making is not well understood within the respective organizations, nor is monitoring linked to accountability measures. Consequently, the design and implementation of comprehensive monitoring programs have not been priorities anywhere within PPG7.

Recommended environmental monitoring of all PPG7-related projects will improve the decision-making process, and planning and programming in general, by making more accurate and reliable information available. PPG7 should support the establishment of a standardized environmental monitoring system for all projects related to PAs, support zones, and biodiversity conservation. Monitoring should include core biological variables (to identify conservation status of a given area or ecosystem) and selected variables, such as siltation and soil erosion from deforestation, urban expansion and settlements, land degradation through overgrazing, and other activities that have adverse impacts on biodiversity conservation.

Indicators for environmental monitoring should be selected in accordance with IBAMA's Biodiversity Monitoring System, which is currently being finalized. The data should either be fed into IBAMA's system or the databank currently supported by the PPG7 AMA program. IBAMA's system uses five principal indicators that show the actual situation, pressures, and responses by monitoring the state of biodiversity, pressures on ecosystems, water resources and weather, linkages, and coordination and management effectiveness. The indicators can be adjusted to local socio-economic and cultural conditions.

It is suggested that monitoring cover all designated protected areas and that a risk analysis¹⁸ be applied to predict potential degree of loss of biodiversity. All projects related to PAs in the Mata Atlantica should collaborate with IBAMA's GIS monitoring system. The availability of the IBAMA method provides a good opportunity to strengthen

¹⁸ Methodology developed by WWF and IUCN's Commission for Protected Areas.

collaboration and synergies and minimize duplication of activities. It is suggested that all planned environmental monitoring systems (e.g., Biosphere Reserve, Bilateral Associated Projects) be standardized according to guidelines developed by IBAMA in cooperation with GTZ.

iii) Support Zone Designation and Management

In the last four decades, increasing recognition has been given to the importance of land adjacent to protected areas. Traditionally, these areas were called “buffer zones,” a term first developed for African National Parks and subsequently adopted worldwide in connection with protected areas. The term “buffer” is a reflection of the original philosophical approach to PA management, which has changed dramatically within the past 30 years (Schuerholz, 1998). The term “buffer” indicates the need to protect something against outside influences, e.g., the protected area against adverse impacts from people living in adjacent areas.

In recognition of the importance of gaining the support of park neighbors for the sustainable protection of a PA, participatory planning and management has been adopted as the new and more appropriate approach to achieve the overall goal. Reflecting this new philosophy, the term “support zone” is now increasingly being used instead of the rather outdated “buffer zone” terminology (Schuerholz, 1998). The term “support zone” implies active community involvement rather than “buffering” the PA against such communities. Protected area planning nowadays recognizes that the support zone is an integral part of a conservation area. “Support zone” also implies that communities that have to make sacrifices and suffer user rights through the protection of the PA resources need to be economically supported, especially those communities that are economically deprived by being isolated without access to common amenities of life.

Sustainable conservation-oriented support zone management, in recognition of the support provided to communities neighboring PAs in return for these communities being willing to support conservation efforts, was first developed in the early seventies in Zimbabwe, Africa. The approach taken by the Parks Service in Zimbabwe (CAMPFIRE) has become well known worldwide and has served many other countries as a model. This approach promotes profit-sharing with park neighbors through revenues generated through gate fees and tourism development that has a focus on benefits for the support zone communities. In return, the support zone communities adopt conservation-oriented activities and land use techniques, as well as assist in stopping poaching inside PAs. The World Bank (WB) has adopted this approach in many of its projects. The current WB project in India in support of seven national parks refers to support zones as “eco-development areas.” In another WB and donor-supported project in Kenya, support zone management in cooperation with support zone communities has become well known as the “COBRA” project, financed and implemented by USAID.

It is suggested that the PPG7, under the leadership of the WB, capitalize on the worldwide experience in community involvement for sustainable support zone development. Full use should be made of existing documentation, particularly of the WB's corporate memory, for the benefit of ongoing projects and projects in preparation. The WB has produced numerous publications on this issue and has many more “lessons learned” on file.

iv) Atlantic Forest Biosphere Reserve (AFBR)

The concept of UNESCO's biosphere reserves (BR) needs little introduction. In principle, it is identical to the integrated management approach applied to PAs, with their respective support zones, as described in the previous section. The BR concept promotes support zones as an integral part of a designated conservation unit. Designated conservation units located inside a BR are named "core zones" (nucleus) and the surrounding areas are termed "transition zones." The latter term has been changed to "support zone"¹⁹ and is the term now more commonly used in context with conservation areas, as already described. The BR concept promotes sustainable integrated development in support zones in full recognition of the need to involve support zone communities and stakeholders in land use planning and sustainable development. The BR concept was developed at the same time as the CAMPFIRE concept became known. Although both approaches are interchangeable in principle, the BR concept has a somewhat broader approach than CAMPFIRE because it addresses the overall need for integrated land use planning directed at conservation goals.

UNESCO declared the Atlantic Forest Biosphere Reserve in 1991. It encompasses an area of 29 million ha in 14 coastal states of Brazil. It is the largest BP worldwide and covers practically all that is left of the Mata Atlantica. The AFBR has a National Coordination Council with headquarters in Sao Paulo, and State Committees, both of which are composed in equal proportion by representatives from the federal, state, and municipal governments and civil society (NGOs, scientific community, business community, and local stakeholders). The National Council is supported by thematic groups, which assist in the identification of priority regions and thematic areas.

The overall priorities of the AFBR are highlighted as follows²⁰:

- dissemination and promotion of biodiversity conservation and sustainable development principles;
- setting pilot areas as experimental and demonstrative models;
- promoting participation and partnership in the reserve management;
- setting up permanent networks for interchange and communication;
- integrating with national programs through financial and technical assistance;
- contributing to the improvement of legislation and public policies for the Atlantic forest.

As may be learned from the above-described priorities, the AFBR priorities and approach to sustainable ecosystem management differs little from overall PPG7 priorities. Less emphasis, however, seems to be placed by the AFBR's National Coordination Council (NCC) on economic aspects.

Since its early establishment, the thematic groups in support of the NCC of the AFBR have been actively producing guidelines and information materials. Noteworthy are the publications on: (a) Recuperation of degraded areas (AFBR, Caderno 3, 1996), (b) Action

¹⁹ Dr. Adrian Phillipps, Chair of IUCN's chapter on CPA; pers. comm.

²⁰ Taken from an official brochure produced under the auspices of the National Council of the AFBR.

Plan for the Mata Atlantica (AFBR, Caderno 4), (c) Guidelines for conservation policies and sustainable development of the Mata Atlantica (AFBR, Caderno 13, 1999), (d) and the proceedings from a workshop on science, conservation, and policies regarding the Mata Atlantica (AFBR, Caderno 15). These and other materials produced under the auspices of the National Coordination Council provide valuable background materials for the proposed elaboration of the PPG7 sub-program Mata Atlantica.

An attempt is made to establish a Technical Steering Committee in support of the Reserve within each state. The state committees are composed of equal numbers of representatives from government, the private sector, academia, and other segments of society. Their principal functions are to provide guidance on: (a) sustainable land use development, (b) existing conservation units and expansion of PA system, and (c) state policies and legal framework influencing the well-being of the biosphere reserve.

Several committees have been successfully established with varying degrees of influence on state government policies. The state committees work on a strictly voluntary basis and without any financial support. Currently, the secretariat (headquarters) of the NCC is financed by the Environmental Secretariat of Sao Paulo state. The NCC has initiated several projects in the biosphere reserve, mostly related to water and forest conservation, having financing from different sources. The NCC has to find its own financial support.

Overall inter-institutional cooperation involving the NCC needs improvement. The NCC has a functioning working relationship with IBAMA and several member states. Cooperation with the RMA, in particular with SOS and Conservation International, is excellent. The NCC has taken a pro-active role in advising the PPG7 on the PD/A program for Mata Atlantica and by identifying thematic and regional focal areas for PD/A projects. The current PD/A program for Mata Atlantica has been criticized for being too oriented to socio-economic development²¹ rather than to conservation as the principal focus of the PPG7 program.

The NCC sees its future role in the framework of the PD/A program by taking a stronger stand on defining priority areas in the Mata Atlantica, providing assistance to project proponents in the design and implementation of projects, and assisting in the monitoring and evaluation of PD/A projects. Currently, the biosphere reserve is not represented in any of the PD/A committees. The NCC's top priority is to consolidate state committees to secure their independence from political structures, and to strengthen the committees through proper financial backing.

Overall advantages of the biosphere reserve are: (a) it has created a functioning National Coordination Committee, several functioning thematic Technical Committees, and several more or less well-functioning state level planning boards; (b) the NCC, through its network, takes an active part in state and regional level integrated land use planning activities; (c) facilitates conflict resolutions; and (d) provides facilities for the establishment of a digitized regional databank with free access. The NCC actively pursues the expansion of its network in the Mata Atlantica member states for the benefit of biodiversity conservation and integrated land use development.

²¹ Clayton Lino, President AFBR, pers. comm., 24.04.2000.

With respect to the proposed sub-program Mata Atlantica, the NCC recommends²²:

- incorporating all forest ecosystems of the Atlantic region in the proposed sub-program Mata Atlantica;
- brokering conflict resolution on land issues with indigenous communities;
- supporting fire monitoring and suppression programs;
- coordinating a network of ecological databanks in the coastal region;
- coordinating activities related to ecotourism (regional tourism development plans);
- supporting regional “thematic” development plans, which require interstate cooperation.

v) Biological Corridors

In most of the Mata Atlantica, protected areas have become ecological islands and are disconnected from other areas of remaining natural habitat. Increasingly, urban development, agriculture, ranching, industrial forestry, or other land uses surround conservation areas, threatening the viability of the area's ecosystems. It has been realized that without active intervention, the already largely disturbed ecological integrity of the conservation units will continue to deteriorate. In addition, many designated conservation areas in the Atlantic region, in particular RPPNs, are assumed to be too small to maintain a spectrum of viable populations of flora and fauna as wide as could be found in a typical original climax ecosystem. Compounding the problem is that primary forests have now been mostly replaced by secondary successions, which are much poorer in diversity than climax formations.

Brazilian authorities, in cooperation with the PPG7, have adopted the “ecological corridor” concept in recognition of the need to interlink designated conservation areas. This concept provides a broader spectrum of habitats and creates larger contiguous conservation units in an attempt to increase diversity and system stability.

For a better understanding of the issues at stake, it seems prudent to provide some background on the evolution of the “corridor” approach. This concept originated in Europe, where it was developed to provide an intricate network of conservation units of different size and with different designations within a managed landscape. Research in Europe found that numerous conservation units are too small to provide all the habitat requirements of certain species. Research also showed that requisites may be provided by a group of loosely interlinked conservation units as long as the units were not too widely interspersed and as long as land use practices on lands between these conservation units favored biodiversity conservation (i.e., “corridors”).

Germany has successfully applied the corridor concept to its managed landscapes since the 1960s. Natural habitat has been enhanced greatly through re-naturalization of watershed systems and strict protection of rehabilitated wetlands and riparian vegetation (i.e., excellent corridors).

With the fall of the Iron Curtain, the concept of biological corridors was promoted by non-government organizations, such as WWF, and has been very successfully applied to

²² Clayton Lino, Ibid.

the demilitarized border areas reaching from the North Sea to the Black Sea. In this process, numerous new designated conservation areas were created along the former international boundaries, many of them now being converted into “International Peace Parks.” These parks are interlinked by areas (corridors) where land uses that are compatible with overall biodiversity conservation objectives are practiced. Newly created conservation units that are individually too small to maintain viable populations of flora and fauna have become critical “ecological stepping-stones” and provide the much-discussed ecological connectivity. There is proof that a corridor will enable the continuity of functional ecological links between existing PAs. This, however, can only be achieved by determining what new areas must be conserved to ensure a continuum.

There is a great difference, however, between a comparatively simple European forest ecosystem and the Brazilian Atlantic forest biome. The latter is much more complex and excels through a species diversity that is unique on a global scale. In trees alone, up to 350 tree species/ha are known to have occurred in the primary forest of the Atlantic region (ombrophilous forest), whereas a comparable European deciduous mixed forest ecosystem averages less than 10 tree species/ha. This suggests that species diversity can be maintained much easier in a fragmented deciduous mixed forest ecosystem of a managed landscape (as in Europe) than in a complex and fragmented ombrophilous forest ecosystem (Brazil). It may be safely assumed that an Atlantic forest climax habitat, typified by a multitude of very specialized living organisms and complex inter-dependencies between flora and fauna, requires larger contiguous areas to maintain species diversity and system stability than does a European forest ecosystem. It is therefore suggested that the “ecological corridor” concept will be more successful in Europe—where it was developed—than in a managed landscape in Brazilian's coastal area. To be successfully applied to the coastal region or any other area in the tropics, it requires much larger contiguous protected forest complexes and a much more intricate ecological network than it would need in boreal or mixed deciduous forest ecosystems. In other words, fragmentation and island biogeography may be of lesser concern in relatively homogenous (deciduous and coniferous) forests than in the ecologically highly complex Mata Atlantica.

This has to be kept in mind when applying the corridor concept to Mata Atlantica. It is understood that the concept is not suitable for the majority of the Atlantic region that has undergone changes beyond recovery. Candidate areas therefore need to be carefully selected. They have to have the right framework conditions in order for the concept to be applied successfully.

It is self-evident that ecological corridors should be treated as part of a matrix of land uses, rather than as a rigid and discrete piece of land. The concept should accommodate the coordinated establishment of many human productive activities that can occur in harmony with the preservation of habitat as an alternative to the threats posed by unsustainable cattle farming, timber extraction, monocultures, and mining, which are resulting in severe habitat fragmentation.

If wisely managed, a corridor will enable the continuity of functional ecological links between existing conservation units. In order to be successful, it is suggested that a regional landscape management strategy be designed and established that integrates conservation, democratization of information, and sustainable production.

The following issues, summarized for an ecological corridor project in Ecuador (Fundacion Maquipucunu, 2000), are fully applicable to the proposed corridor approach in the Mata Atlantica and need special attention:

- Given that the primary goal of biological corridors is to conserve biodiversity and ecological processes, and to ensure connectivity among habitats over large areas, a well-designed monitoring system should be in place to obtain accurate information at the local and regional levels.
- Land use pressures will continue and new clearings of forests will occur, mostly of unfavorable land tenure (over 70 percent of the land in the Atlantic region is privately owned). Therefore, the participatory consultation process with representatives of indigenous people, landowners, conservation organizations, government agencies, and commercial sectors will have to be the initial priority step to motivate interest and awareness around proposed activities.
- The success of a corridor initiative relies strongly on the commitment of stakeholders to support project activities on a long-term basis. The potential lack of effective participation could hinder the coordination and exchange of information necessary for the design of a comprehensive strategic framework. Stakeholders at the pilot and macro levels need to implement a very careful and permanent communication strategy to reduce risks of poor participation and acceptance.
- The long-term sustainability of corridors is believed to be linked to the provision of economic opportunities to local communities, which goes beyond biodiversity conservation. Potential social impacts of the corridor approach must be carefully considered. A social assessment should be conducted at the initial stage of implementation, coupled with a social monitoring and evaluation mechanism through the project implementation.
- The corridor concept will only succeed with excellent cooperation between law enforcement agencies and with successful creation of new RPPNs having recognized importance as critical ecological stepping-stones.

Most of the above concerns and suggestions have been addressed by IBAMA's (1998) comprehensive project document in support of ecological corridors within the PPG7 program: "Parks and Reserves: Ecological Corridors." This document was prepared primarily for work in the Amazon region, but also covers the two corridors proposed for the Mata Atlantica. The areas selected by IBAMA in the Atlantic region appear to be too large for the successful application of the corridor concept. The evaluator concurs with ISA's suggestion²³ that efforts should concentrate on several relatively small corridors of great ecological importance ("ecological hotspots" as identified by ISA in cooperation with the Nature Conservancy) and having favorable framework conditions in order to be successful.

As highlighted in the summary report of the PPG7 Technical Secretariat of the MMA (1999), the Atlantic Forest to date has received only a minor portion of the financial resources of the PPG7 Program for the Ecological Corridors: Parks and Reserves Project.

²³ Dr. Copobianco, ISA; pers. comm., 26.04.2000.

These funds were spent by IBAMA for planning the two corridors described by the referenced IBAMA report.

2.3 Thematic and Regional Focal Areas

As described in the previous section, designated protected areas and their respective support zones should be the focus of the proposed PPG7 sub-program for the Mata Atlantica. To make proper use of synergies, the PD/A program should favor work that has direct benefits to designated PAs and their support zones.

Of equal importance is the expansion of the PA system. Here emphasis should be placed on ecosystems currently under-represented or not found at all in the existing PA system, as well as on designated conservation units, which offer opportunities for expansion. Proper use should be made of the opportunities offered through APAs and the potential for the creation of RPPNs. The establishment of small-sized ecological corridors should be seen in this context. Such corridors should become an integral part of the overall sub-program for the Atlantic region.

Watershed management and rehabilitation of micro-watersheds are of special concern. Both should receive priority attention within the discussion of ecological connectivity, island fragmentation, and the proposed ecological corridors.

Numerous people interviewed for this evaluation mentioned the reforestation of degraded lands as a key priority for the PPG7 sub-program. Although there is an excellent potential for reforestation, it would require enormous investments that at this stage may be spent more cost-effectively on other programs in the Mata Atlantica. Reforestation with native species, however, for (a) the rehabilitation of degraded micro-watersheds with proven value in context with ecological connectivity and sustainable high quality water production, and (b) reforestation of degraded forests in connection with designated protected areas, should be supported through the PPG7. This requires proper needs and feasibility assessments.

Special consideration should be given to transitional ecosystems. In this context it is referred to a decision reached by the World Bank, IBAMA, and the MMA in 1996, that suggests focusing on halting the processes that cause degradation instead of focusing on recuperation of degraded areas (World Bank, 1996). This wise decision should also be applied to the sub-program Mata Atlantica.

Proper fire management and suppression should become another thematic focus. Foremost should be fire control and prevention in the support zones of designated conservation areas and specially protected areas that still support forest cover. Fire management is a regional concern and more critical in some states than in others. An overall feasibility assessment would provide the information needed to assess the magnitude of the problem by state.

Standardized environmental monitoring having a focus on designated conservation areas, identified ecological hotspots, and proposed ecological corridors should be given priority status in the proposed sub-program. This should go hand in hand with the maintenance of standardized databanks.

Environmental education and public awareness should be integrated into all components of the sub-program. The purpose of nature interpretation is not just to provide factual

information about ecological integrity and protected areas, interpretation makes people aware of the values and purposes of protected areas, and of the uses that are allowable and appropriate, so that ecological integrity in protected areas remains unimpaired. Public support for protecting ecological integrity will come from strong messages that emphasize the positive aspects of ecological integrity. The strongest advocates for protected areas and their purposes could be the immediate neighbors and adjoining communities in support zones. Most state agencies in the Mata Atlantica are not well positioned to serve target groups in this vital education role. Well-trained education staff and well-prepared interpretation information is needed. This has to be supported through a complex outreach program to concentrate on regional and thematic focal areas.

It is self-evident that activities resulting from the proposed sub-program for Mata Atlantica should concentrate on identified ecological "hotspot" areas, proposed ecological corridors, and geographic regions that offer favorable framework conditions.

2.4 Institutional Aspects of a Mata Atlantica Sub-program

The current institutional framework of the PPG7 was subject to a critical external review (Ainscow et al., 1999). The review team recommended *inter alia* that the government of Brazil create a separate administrative structure as part of the MMA to implement the projects aimed at conservation of the Mata Atlantica under the PPG7 Program. This recommendation has been fully embraced by the MMA in its summary report on the PPG7 Mata Atlantica: "...the Coordination Commission, the highest body of the PPG7, constituted by all Brazilian government institutions and ministries involved in environmental and other issues of the pilot program, has already approved the creation of a technical secretariat specifically for the Atlantic Forest." The same document implies that resource allocations will be made available through the PPG7 for project proposals drafted by the MMA (1999). The statement in the MMA report regarding establishment of a new technical secretariat is *verbatim* what has been decided by the International Advisory Group of the PPG7 in one of its latest meetings (1999).

To create a separate technical secretariat for the new PPG7 sub-program Mata Atlantica under the MMA seems to contradict government policy to decentralize. In this light, it is not understood why the government would endorse such proposal. Furthermore, an additional technical secretariat would dramatically increase PPG7 bureaucracy and the already very high overheads.

It seems more sensible, therefore, to comply with government rules and decentralize the sub-program. State-level environmental secretariats and ministries in the Atlantic region seem quite capable of providing the administrative support needed for projects under the new sub-program. Projects could use existing structures, such as those currently being used by the Bilateral Associated Projects. Liaison work between states and the central MMA could be handled by one or two persons attached to the Ministry's existing technical secretariat for the Amazon region.

Another feasible option would be to use the existing administrative structure responsible for the coordination of the Atlantic Forest Biosphere Reserve. The reserve's National Coordination Council (NCC) and State Committees are recognized by government and the private sector alike and offer a readily established administrative and technical network that covers all of the Mata Atlantica. To strengthen the NCC and its network in

the Atlantic region would be in the best interest of conservation efforts of the Mata Atlantica. Another point in favor of the NCC would be that the biosphere reserve could provide the much-needed centralized services for a databank having socialized access.

With respect to the administration of the proposed ecological corridors, the following comments are offered. The government of Brazil prefers IBAMA to assume overall responsibility for the management of the proposed corridors. This, however, does not appear a practical or desirable solution for the following reasons:

- IBAMA has little jurisdiction over private lands dominating land tenures in the Mata Atlantica.
- IBAMA has a proven track record of poor communication with support zone communities.
- IBAMA has very little experience with land use planning and sustainable development in areas outside PAs under their jurisdiction.
- IBAMA has no jurisdiction over state-owned PAs, which are much more numerous than federally owned and operated conservation areas in the Mata Atlantica.
- It may be safely assumed that Atlantic states find it easier to develop ownership in corridor concepts if managed under state jurisdiction.
- State-managed corridors are more likely to find state financial support than corridors under IBAMA's jurisdiction.
- Civil society and government in Atlantic states are expected to have a vested interest in corridors if they are coordinated by local committees instead of being “managed” by IBAMA.²⁴

For these reasons, it is suggested that state agencies are better suited to coordinate ecological corridors. Management committees should be formalized with equal representation from state agencies, municipalities, private sector, civil society (NGOs), and the business community from the corresponding corridor. The planning/coordination group should be spearheaded by professional planning agencies from state- and municipal-level governments to guide the process of integrated land use planning and oversee projects implemented under the auspices of the PPG7. IBAMA's role should be restricted to membership on the corridor committees and to act as liaison between the regions, PPG7, and the MMA in Brasilia. This solution complies with the government's move towards decentralization.

It also has been suggested²⁵ that activities related to ecological corridors could best be coordinated by a group spearheaded by an impartial environmental NGO in cooperation with municipalities from the corridor and key stakeholders from the private sector. This solution has some merits and may warrant further scrutiny.

2.5 Financial Sustainability of the Protected Area System

It is unrealistic to expect sufficient funding for the sustainable conservation of protected areas from any government level in the near future. Therefore, it is of some urgency to

²⁴ ISA, Dr. Copobianco, pers. comm., 26.04.2000.

²⁵ ISA, Ibid.

develop mechanisms that safeguard proper stewardship of national, regional, municipal, and private areas with a designated protection status, all categories included. This will be one of the biggest immediate and future challenges facing agencies, institutions, and people entrusted with the management of PAs in Brazil. Currently, there is no single solution for achieving sustainable financing for protected areas, except for centralized endowment funds, which are not very popular with the donor community or with governments. It can rightly be assumed that the struggle for funding will continue, unless conservation areas are given the legal right to do their own customized fundraising, which currently is not legally possible for government-managed areas.

In this context, the PPG7 provides a unique opportunity to pilot promising options and assist in the development and establishment of revenue generation and financial arrangements as important prerequisites for the sustainable protection of the ecological integrity of conservation areas.

The GEF grant (MMA: ARPA, 2000) applied to fulfill Brazil's "10 percent pledge" for protected areas in the Amazon Region will finance *inter alia* ten pilot projects aimed at raising income for PAs and supporting biodiversity conservation. The proposed pilot projects will pursue the following revenue-generating instruments:

- Ecotourism
- Services
- Royalties
- Fiscal incentives

On inception of the GEF financed program, the MMA intends to prepare an overall action plan to define and include:

- the modus operandi for each of the instruments;
- an analysis of previous experience implemented in Brazil or in other countries;
- identification of bottlenecks for successfully implementing these instruments;
- development of strategies to overcome bottlenecks;
- identification of potential PAs where these instruments would best apply;
- detailed assistance plans on operational and legal aspects for the pilot projects; and
- the definition of potential implementers, selection criteria, and contracting mechanisms.

The GEF proposal describes the approach and the process of how to develop the action plan in detail. It defines the stakeholders to involve and the cooperative agreements needed to pursue the different avenues. The work would also include baseline inventories to explore revenue-generating opportunities. On identification of a suitable mechanism, a feasibility assessment would be implemented based on the following criteria: technical and financial soundness, due consideration given to local issues, environmental friendliness and compatibility, cost effectiveness, and replicability. This project component will also pioneer the design and consummation of partnerships and concession agreements.

It is noteworthy that within the framework of this proposal an international workshop will be implemented on the topic of sustainable financing of protected areas in Ecuador, to take place in June 2000. It is suggested that the workshop results be scrutinized for the benefit of pertinent PPG7 projects. It is recommended to include sustainable financing of protected areas as a key priority of the PPG7 agenda for Mata Atlantica.

3.0 CONCLUSIONS AND RECOMMENDATIONS

In conclusion, there seems consensus on the importance of a PPG7 sub-program for Mata Atlantica. There is no consensus, however, on thematic and regional priorities; neither is there consensus on defined goals, strategies, and time frames. There is little doubt that it will not be easy to reach consensus on all these issues, considering the number and importance of the players and stakeholders involved.

The lead role taken by the MMA in developing a comprehensive strategic concept for the protection of the Mata Atlantica is a step in the right direction. This process involves extensive stakeholder consultations and inter-disciplinary brainstorming seminars. It is suggested, however, that proper use be made of cooperative synergies, absorbing concepts and strategies developed in parallel by the RMA and International NGOs. The MMA²⁶ has expressed the need for well-defined landscape-based vision statements as a framework for a meaningful conceptual approach to the Mata Atlantica. WWF and Conservation International are currently developing biological vision statements addressing the long-, medium-, and short-term views on a landscape level for each ecosystem in the Mata Atlantica.²⁷ The scope of this exercise is too narrow. Vision statements have to take ecosystem-specific and regional socio-economic, cultural, and political conditions into consideration. Vision statements in general are worth supporting since they can assist in the clarification of where and when to do what. Only if this is defined can appropriate strategies be identified (how to do it).

The PPG7 is rightly being criticized for not having articulated strategic objectives of the program for the Amazon Region. It also is criticized that the program, and the World Bank as its coordinator, have failed to develop an agreed-upon pilot program strategy; that the program management is weak, unable to address fundamental complex issues, complex project design and financing plans, and that it is slow in coalition-building with Brazilian civil society and the private sector (Lele, 2000).

The proposed sub-program for the Mata Atlantica offers a unique opportunity for the PPG7 to learn from mistakes made in the Amazon program. Topmost, therefore, should be the development of a practical well-conceptualized strategy that addresses the priority needs spelled out in this review. The MMA, in collaboration with the donor community and the World Bank as program coordinator, have recently agreed on adopting two ecological corridors as focal areas for the proposed sub-program to be an integral part of the Atlantic Forest Biosphere Reserve. This decision is fully endorsed by the evaluator and, in principle, fits the overall priorities in the Mata Atlantica.

²⁶ Braulio Ferreira, Director DPCNP, pers. comm., 10.05.2000.

²⁷ Luis Ferraz, WWF; pers. comm., 13.04.2000.

It is recommended that a priority action plan be developed for the corridors with emphasis on: (a) the sustainable protection of the designated conservation units and their support zones, (b) expansion of the PA system through adding RPPNs and other areas, (c) law enforcement for better protection of existing APAs and remaining forest fragments on private lands, and (d) promoting pilot projects that address forest rehabilitation and multiple land uses compatible with the overall conservation goals for the Atlantic forest biome. Only projects and activities that are expected to provide a significant contribution to the overall ecological connectivity concept of the corridors and the conservation of the Atlantic forests should be supported.

It further is recommended that:

- Proper use is made of synergies, especially for activities taking place in the corridors, and that future programs are synchronized with the current and proposed bilateral associated projects in the Mata Atlantica and PD/A projects.
- An ecological sensitivity map be established for the proposed biological corridors as a basis for wise integrated land use planning.
- The PD/A program be expanded with an orientation towards biodiversity conservation and forest protection instead of socio economics and general land use development. PD/A projects with proven use of synergies within the PPG7 should be given priority.
- The sub-program be expanded to include the PPG components: (a) Private Sector Involvement, (b) Monitoring and Analysis, stipulating standardized and mandatory environmental monitoring, and (c) Fire Prevention, Mobilization and Training Project.
- The existing administrative and technical infrastructure of the Atlantic Forest Biosphere Reserve be strengthened.
- The National Coordination Council (NCC) and State Committees (SC) are given leadership roles in the Mata Atlantica PPG7 sub-program; to assume liaison function regarding all PPG7 matters in the Mata Atlantica between the MMA, the donor community, and the World Bank as program coordinator; to maintain a centralized, fully socialized databank for the Atlantic region; to provide leadership and technical guidelines for environmental monitoring.
- The corridor activities and programs are coordinated by the SCs, supported by local committees instead of IBAMA.
- A landscape approach is adopted for ecosystem planning and management (of critical importance with regards to the connectivity issue).
- The Biosphere Reserve is the ultimate reference regarding biodiversity conservation in the Mata Atlantica.
- The sub-program Mata Atlantica be fully decentralized and implemented by state agencies instead of creating one more technical secretariat under the MMA.
- The protection and rehabilitation of micro-watersheds and fire control become thematic focal areas.
- That policies and guidelines be prepared for standardized databanks and monitoring.

- That the PPG7, in collaboration with IBAMA and Atlantic state agencies, agree on a *modus operandi* that allows designated PAs to implement fundraising programs in an effort to become self-financing operations.

It is of urgency that the first priority in the Atlantic region be given to the sustainable protection of designated conservation areas in full recognition of the critical importance of conservation areas within managed landscapes that characterize the Atlantic region.

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