GLOBAL ENVIRONMENT FACILITY

MOHAMED T. EL-ASHRY
*CHIEF EXECUTIVE OFFICER
AND CHAIRMAN*

October 3, 1997

Dear Council Member:

The World Bank as the Implementing Agency for the project entitled: *Central Africa Region: Regional Environmental Information Management Project*, has submitted the attached proposed project document for CEO endorsement prior to final approval of the project document in accordance with World Bank procedures.

Over the next four weeks, the Secretariat will be reviewing the project document to ascertain that it is consistent with the proposal included in the work program approved by the Council in May 1997, and with GEF policies and procedures. The Secretariat will also ascertain whether the proposed level of GEF financing is appropriate in light of the project's objectives.

If by October 31, 1997, I have not received requests from at least four Council Members to have the proposed project reviewed at a Council meeting because in the Member's view the project is not consistent with the Instrument or GEF policies and procedures, I will complete the Secretariat's assessment with a view to endorsing the proposed project document.

Sincerely,
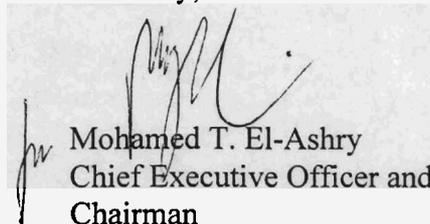
Mohamed T. El-Ashry
Chief Executive Officer and
Chairman

Attachments: *Central Africa Region: Regional Environmental Information Management Project*
cc: Alternates, Implementing Agencies, STAP

OFFICE MEMORANDUM

DATE: September 30, 1997

TO: Mr. Mohamed El-Ashry, CEO/Chairman, GEF Secretariat

FROM: Robin Broadfield, Acting Chief, ENVGC *RB —*

EXTENSION: 34355

SUBJECT: **Regional Environmental Information Management Project**
Final Council Review/CEO Endorsement

1. Please find attached 75 copies of the project document for the above-mentioned project for circulation to Council and your final endorsement.

2. Please send us a copy of your out-going letter to Council for our records. Many thanks.

Attachment

cc: Messrs./Mmes.   Al Duda, Walter Lusigi (GEFSEC); Francois Rantrua, Philippe Gerbe (Africa Region) Lars Vidaeus, Jamison Suter, Maria Nikolov (ENVGC).
ENVGC ISC

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The World Bank

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Report No. 17006

STAFF APPRAISAL REPORT

CENTRAL AFRICA REGION

REGIONAL ENVIRONMENTAL INFORMATION MANAGEMENT PROJECT

August 22, 1997

Africa Region

Environment

ABBREVIATIONS AND ACRONYMS

ADIE	Association pour le Développement de l'Information Environnementale dans la sous-région du Bassin du Congo
AWP	Annual Work Plan
CAR	Central African Republic
CARPE	Central Africa Region Program for the Environment (USAID)
CIDA/ACDI	Canadian International Development Agency
ECOFAC	Écosystèmes Forestiers d'Afrique Centrale (Forestry Ecosystems of Central Africa)
EIS	Environment Information System
EU	European Union
DRC	Democratic Republic of Congo
FAO	Food and Agriculture Organization of the United Nations
GEF	Global Environment Facility
GIS	Geographic Information System
GTZ	Gesellschaft für Technische Zusammenarbeit (German Technical Cooperation Agency)
ICCN	Institut Congolais pour la Conservation de la Nature
IDA	International Development Association
IFAD	International Fund for Agricultural Development of the United Nations
IGC	Institut Géographique Congolais
INC	Institut National de Cartographie (Cameroon, Gabon)
ITTO	International Tropical Timber Organization
IUCN	International Union for the Conservation of Nature
JRC	Joint Research Center
NASA	National Aeronautics & Space Administration
NASDA	Japanese Space Agency
NEAP	National Environmental Action Plan
NGO	Non Governmental Organization
NOAA	National Oceanic and Atmospheric Administration
NRM	Natural Resource Management
NWG	National Work Group
ODA	Overseas Development Agency
PARN	Projet d'Aménagement des Ressources Naturelles (CAR)
PFE	Projet Forêt Environnement (Gabon)
PMU	Project Management Unit
PSC	Project Steering Committee
REFLI	Regional Fund for Local Initiatives
TFAP	Tropical Forest Action Plan
TREES	Tropical Ecosystems Environment Observations by Satellites Projects
UNDP	United Nations Development Program
UNEP	United Nations Environment Progam
UNIDO	United Nations Industrial Development Organization
USAID	United States Agency for International Development
WCS	World Conservation Society
WCMC`	World Conservation Monitoring Center
WWF	World Wide Fund for Nature

Vice President		Callisto E. Madavo and Jean-Louis Sarbib
Country Directors		Serge Michailof / Nils Tcheyan
Sector Manager	:	Cynthia C. Cook
Task Officer	:	François Rantrua

CENTRAL AFRICA REGION

REGIONAL ENVIRONMENTAL INFORMATION MANAGEMENT PROJECT

STAFF APPRAISAL REPORT

Grant and Project Summary

Beneficiaries:	Association pour le Développement de l'Information Environnementale dans la sous-région du Bassin du Congo (ADIE) Congo Basin Countries (Cameroon, Central African Republic (CAR), Congo, Equatorial Guinea, Gabon, Democratic Republic of Congo (DRC)
Implementing Agencies:	Ministry of Environment and Forests in Cameroon Ministry of Territorial Administration in Cameroon Ministry of Research in Cameroon Ministry of Environment and Tourism in CAR Ministry of Agriculture, Waters and Forests, Fisheries and Livestock in Congo Ministry of Research in Congo Ministry of Fisheries and Forest in Equatorial Guinea Ministry of Agriculture and Livestock in Equatorial Guinea Ministry of Health and Environment in Equatorial Guinea Ministry of Finance in Gabon Ministry of Water and Forests, Post and Telecommunications, and Environment in Gabon Ministry of Civil Works and Urbanism in Gabon World Wildlife Fund in Gabon Ministry of Environment, Conservation of Nature and Tourism in DRC International Union for Conservation of Nature in DRC
Poverty:	Not Applicable
Grant Amount:	US$ 4.0 million equivalent
Terms:	Not Applicable
Commitment Fee:	Not Applicable

Financing plan:

(US$ '000 equivalent)	Government	Global Environmental Facility	Other donors	Self-financing	Total
Cameroon	447	235	1,763	148	2,592
Central Africa Republic	462	551	1,900	36	2,949
Congo	478	654	1,651	87	2,869
Democratic Republic of Congo	476	499	2,194	70	3,239
Equatorial Guinea	196	181	1,314	49	1,739
Gabon	333	399	1,342	157	2,230
Regional Coordination	151	1,491	2,598		4,240
Total	2,542	4,010	12,760	547	19,859

EXECUTIVE SUMMARY

The Congo Basin Rainforest is the second largest contiguous primary rainforest in the world and is one of the last three remaining major blocks of intact tropical rain forest, the others being the Amazonian and Melanesia rain forests. It covers 2.1 million km² representing 26 percent of the world's remaining rain forest and 70 percent of the remaining African rain forest. It is currently shrinking at about 0.6 percent per year and is under increasing human pressure. The Congo Basin Rainforest spreads over the territory of six countries --Cameroon, Central African Republic (CAR), Congo, Gabon, Equatorial Guinea and Democratic Republic of Congo (DRC)-- with a total population of 62.6 million people.

In the region, several donor agencies are involved in efforts to assist national authorities to develop strategies to put into action the Convention on Biological Diversity, which was signed and ratified by all of the Congo Basin countries. This convention explicitly recognizes the links between the conservation of biodiversity and sustainable development. National Environmental Action Plans (NEAPs) and the Tropical Forest Action Plans (TFAPs) are examples of donors financed activities in this area. Within these initiatives, as well as other local activities and projects, the lack of (or lack of access to) accurate and comprehensive environmental information for effective natural resources management has been identified as a critical problem.

With the support of several donors, national authorities of the six countries and major stakeholders have developed collaboratively the framework for a project to address the following four problems: (i) existing environmental information and knowledge are poorly shared, (ii) not enough well-informed decisions are made in the forestry and environmental sectors, (iii) major gaps exist in basic and thematic information on natural resources, and (iv) national capacity to generate and manage this information is limited. The Regional Environmental Information Project (REIMP) represents the implementation of such framework.

The main goal of the REIMP is to improve planning and management of natural resources in the Congo Basin by helping the various stakeholders address the four problems identified above. Accordingly, the project has four specific objectives: (i) ensuring information circulation and optimizing benefits from existing initiatives, (ii) fostering the involvement of decision-makers in environmental information use and facilitating sound land use planning, (iii) providing users with environmental information meeting their demand, and (iv) strengthening national capacity in the six project countries.

The five-year project budget is estimated at US $19.9 million, provisionally allocated as follows: 5 percent for the Network and Service Component, 8 percent for the Decision-Makers Component, 32 percent for the User-Oriented Production Component, 26 percent for the Capacity Building Component, and 5 percent for a Regional Fund for Local Initiatives (REFLI). The project will be financed by multiple sources including the six countries, the European Union, IFAD, the Global Environment Facility (GEF), multilateral and bilateral agencies (Belgium, France, Germany). Local and international non-government organizations (NGOs) and the private sector are expected to participate and to support the project. The sustainability of the project is addressed through the development of specially-designed self-financing mechanisms.

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3. Socioeconomic Dimension of the Project (V. Galastro, IFAD Consultant)
4. Technical Specifications (S. Lombardo, FAO)
5. Status of the Basic Information in the Congo Basin (M. Hassan Hassan, World Bank)

CHAPTER 1: The Congo Basin Rainforest

1.1 Introduction

1.   <u>Biodiversity Conservation and sustainable development</u>. The Convention on Biological Diversity, signed and ratified by all of the project countries, explicitly recognizes the links between the conservation of biodiversity and sustainable development. It acknowledges that biodiversity is more than just the sum of species and encompasses the variety, variability, and uniqueness of the genes, species, and the ecosystems in which they occur. It is not possible to realize sustainable development without an effective strategy for biodiversity conservation and management.

2.   <u>Role of biodiversity in national economies</u>. All of the project countries are heavily dependent on their natural resources, and none can afford the economic, ecological and social costs resulting from their destruction or serious impairment. The conservation of biodiversity is crucial to the sustainability of sectors as diverse as forestry, agriculture, fisheries, health care, industry and tourism. The irreversibility of species extinction and the loss of genetic strains and ecosystem types through habitat degradation and over-exploitation compromise options for present and future generations.

1.2 Biodiversity in the Congo Basin Rainforest

3.   <u>World importance of the Congo Basin Rainforest</u>. The region encompasses the second largest contiguous primary rainforest in the world and as such has a unique biodiversity capital of global significance and considerable carbon sequestration capacity. This region is one of the last three remaining major blocks of intact tropical rainforest of the world, the others being the Amazonia and Melanesia rainforests. The rainforest of the Congo Basin covers 2.1 million km² representing 26 percent of the world's remaining rainforest and 70 percent of the remaining African rainforest. Protected areas cover 111,000 km², equal to 5 percent of the Congo Basin forest.

4.   <u>Significance of biodiversity richness in the Congo Basin</u>. The tropical rainforest in the sub-region is regarded as a global biodiversity "hot spot" by the international community. DRC is considered a country of megadiversity significance, one of the twelve countries in the world which together account for 60 per cent of the world's species; the whole of Cameroon is listed as a Conservation Priority Area; Congo and Equatorial Guinea are considered to hold rich biodiversity, although knowledge about these areas is generally poor (the known biodiversity values and significance of each country are highlighted in a working paper available upon request). On the marine side, coastal wetlands, mangroves, turtle and bird nesting areas, sand dunes, and coral reefs have been identified as requiring enhanced protection. This is becoming of paramount importance in the face of industrial and commercial development, pollution, and the over-exploitation of marine resources. The Congo Basin has been identified as one of 20 Critical Ecosystems worldwide for the purpose of seeking partnerships between the World Bank and client countries for biodiversity conservation.

5.   <u>Threats to biodiversity</u>. The threats to biodiversity in this sub-region arise mainly from deforestation and poaching. Especially serious is the indiscriminate clearance of lowland and

mountain forest, which results in essential habitats for certain species being lost through partial degradation and fragmentation of ecosystems. The risk from overgrazing, deforestation, and other forms of land degradation is also high for the more arid savanna areas (largely in the north). The main human activities contributing to habitat loss are: unsustainable commercial logging, agricultural expansion and related practices, and new settlement into areas opened up by forestry operations and improved transport systems. The annual decline in total forest cover in the six countries is about 0.6 percent. Poaching is widespread and results from a combination of the nutritional value of bushmeat (the main source of proteins in rural areas) and economic interests (game hunting, the urban bushmeat market, international trade in trophies). Indeed, illegal hunting --be it subsistence, commercial, or sport--has become a serious threat to wildlife. Consequently, the challenge is how to maintain the forest and biodiversity capital while deriving benefits for the local people. Table 2 at the end of this Chapter indicates the seriousness of these threats at the species level, where many of the most threatened species are endemic.

6.   The protected area network. Protected areas are regarded as one of the most important mechanisms for in-situ conservation of biodiversity, but those in the region are beset with problems. Many of the systems of protected areas are not receiving priority attention from the governments, exist on paper more than in reality, and fail to achieve an ecologically representative system suitable for the long-term strategic maintenance of biodiversity. Table 3 at the end of this Chapter shows the distribution of protected area categories and sizes within the six countries. Of note is that two thirds of the countries lack the strictest category of protection (Category I) and Equatorial Guinea has no protected areas at all.

7.   Gaps in the current system of protected areas. Most of the funds spent on managing protected areas come from national government sources, increasingly assisted by international donors. However, a number of major problems still need to be urgently addressed. Most of the protected area systems do not include a representative sample of the range of species and ecosystems consistent with ensuring the long-term viability of species and natural processes. The viability of protected areas is seriously compromised by inadequate legislation and funding due to lack of political will, and/or lack of enforcement even if the regulatory framework is in fact in place. Furthermore, there are inherent conflicts with local hunters and farmers which are exacerbated by populations growth and the resulting pressure to poach and exploit the natural resources of the protected areas. In many areas, protected area legislation has been forced upon people without their participation, and has failed to consider their cultural values and survival strategies. Without local and national support, it is no wonder that such protected areas fail to be effective. In addition, there is a lack of awareness of the long-term benefits of protected areas from, for example, protected water-shed forests. Although certain isolated protected areas remain intact, habitat alteration in surrounding areas threatens their viability for protecting migrating species which require large ranges.

1.3 Socio-Economic Context of the Congo Basin Rainforest

8.   Socio-economic background. The Congo Basin Rainforest covers 4 million km² with a population of 62.6 million unevenly distributed among the six countries of the region: Cameroon, Central African Republic (CAR), Congo, Gabon, Equatorial Guinea and Democratic Republic of Congo (DRC). DRC accounts for 57 percent of the total area and 67 percent of the population. Population densities are generally low (less than 20 persons per km², except in Cameroon), and the average regional population growth is 3.2 percent per year. Annual income per capita ranged in 1995 from US $ 120 in DRC to US $ 3,800 in Gabon (see Table 1 at the end of this Chapter). On average, agriculture including forestry, accounts for 23 percent of the GNP and employs 58

percent of the working population. Mineral extraction is another significant source of national income (19 percent) although it accounts for only 4 percent of employment. Twenty-eight percent of the working population is employed in the service sector, which accounts for 45 percent of GNP.

1.4 Environmental Challenges within the Congo Basin Region

9.   Intensive and selective logging. Commercial logging poses a serious threat to the forest resource base. The thirty species of high value timber found in the Basin are being mined in some areas at clearly unsustainable rates, and there are few incentives to do otherwise given current policies. While logging companies generally harvest only the most valuable trees, the extraction and transportation of those trees causes significant collateral damage to the forests. Furthermore, the logging roads that are constructed open up formerly inaccessible areas to people who hunt wildlife and clear the land to establish farms.

10.   Deforestation as a result of shifting cultivation. Clearing for agriculture is the predominant cause of deforestation in Central Africa. Forest clearing rates in Central Africa are rising and, given the current demographic and economic dynamics of the region, are likely to continue to increase. The root causes of deforestation include high population growth rates (from 2.5 to 3.2 percent), insufficient financial, technical, and institutional capacity, inappropriate macroeconomic policies, economic stagnation and the need to earn foreign exchange. These result in increasing pressure on land and forest resources to meet food, energy, and building material needs. Increasing population pressure is undermining the sustainability of centuries-old systems of shifting cultivation. At the same time, migrants or settlers from outside the forest regions are introducing cultivation practices that are unsuited to local conditions. The result is an agricultural frontier that advances at the expense of the receding forest.

11.   Pressure of human activities on coastal zones. There is ample evidence that coastal zones within the Congo Basin Region are under heavy pressure and are deteriorating. Population growth is a major concern and will exacerbate already severe coastal-use conflicts in terms of land, water and resource utilization. The negative impacts of increased human settlement and industrial development are also more acutely felt in the coastal zone since it is at the receiving end of land- and water-based pollution, which exacerbates human health issues through direct contamination of drinking water. Associated with this increased population pressure is coastal erosion. Marine fisheries are particularly vulnerable and where water hyacinth has been introduced, local fisheries have been destroyed. Increased coastal resource use conflicts will inevitably intensify social and economic development problems. Overfishing is becoming a major issue within the Guinea Gulf, and there is concern that the fish catch is soon likely to exceed the natural capacity to replenish the population. Problems of multiple jurisdiction and competition between users of resources, inadequate regulations for the protection of natural resources, and the lack of nationally or locally adapted coastal policies for informed decision-making, will translate into a loss of capability for future sustainable development.

12.   Urban pressure. Next to demographic growth, urbanization is the most dramatic change that the Congo Basin Region has experienced over the past decades. In 30 years, while its total population has multiplied by 2.5, its urban population has multiplied by five. From an environmental point of view, this rapid urban development poses two related problems: on the one hand, the extension of cities undermines the pre-existing natural environment and increases the risk of natural disasters, on the other, the inability of urban infrastructure and services to keep up with demand results in deteriorating living conditions, especially for the poor. The most

evident environmental problems linked to urbanization are insufficient supplies of clean drinking water, untreated solid and liquid wastes which pollute ground water (and damage fragile ecosystems in the humid coastal zones), soil erosion, and deforestation linked to the consumption of charcoal. In the larger metropolitan areas, such as Kinshasa, Brazzaville and Yaoundé, this pressure has resulted in the creation of "urban halos" of deforested land stretching over 150 km from city centers.

13.   Pressure of the oil industry. The petroleum industry within the region (in Cameroon, Gabon, Congo, DRC and Equatorial Guinea) undertakes widespread exploration and production activities. Negative impacts of these activities include contamination of land, groundwater, surface water (lakes, rivers, sea) and air; destroying vegetation and disturbing animals; interference with other economic activities related to natural resources such as fisheries, hunting, forestry, tourism and agriculture.

14.   Pressure of the mining industry. The mining sector is an important source of tax revenues and foreign exchange which are essential to the country's economic recovery. In contrast with global and national environmental issues such as deforestation, and climate change, the effects of mining are generally localized, identifiable and specific. Most African mining operations lag behind those in industrialized and more advanced developing countries in environmental, health and safety standards. Environmental conditions are also poor in many small mining operations within the region.

15.   Significance of deforestation. Because the region's forest stock is vast, deforestation rates are relatively low in comparison with other areas of the tropics, on average 0.6 percent annually compared, for example, to 1 percent annually in coastal West Africa. However, in terms of actual area cleared annually, the forest loss in the Congo Basin is substantial. Based on the 1992 FAO report, the loss of tropical forest in Central Africa between 1980 and 1990 was of the order of 114,000 km². Landscape change of this magnitude represents a significant release of greenhouse gases.

Table 1: Socio-economic indicators 1994

Development Indicators	unit	Cameroon	CAR	Congo	Eq. Gu.	Gabon	DRC	Total	Average
Population	million	12.9	3.2	2.5	0.4	1.0	42.6	62.6	
Pop./Pop of the Region	%	21%	5%	4%	1%	2%	68%	100%	
Pop. Growth	% per year	2.8	2.5	3.0	2.5	1.9	3.3		3.11
Area	1000 Sq. km	465	623	342	28	258	2,267	3983	
Area/total area	% of CA Region	12%	16%	9%	1%	6%	57%	100%	
Pop. density	Pop per Sq. km	28	5	7	14	4	19		16
GNP per Capita	US$	680	370	640	430	3,550	130		334
GNP	US$ million	8,752	1,197	1,610	167	3,674	5,532	20,933	
Percent of working population per sector (ind. 1992)									
Agriculture		63	66	34	70	48	57		58
Mines		2	3	5	0	10	5		4
Industries		10	9	20	5	11	10		10
Services		25	22	41	25	31	28		28
Contribution of each sector to the GNP (ind. 1992)									
Agriculture		24	41	10	60	9	38		23
Mines		12	10	28	0	39	9		19
Industries		19	9	10	5	12	8		14
Services		45	40	52	35	43	45		45

* Average is weighted by the population.

Table 2 : Environmental Indicators 80-90: Forest and Biodiversity

Forest area	unit	Cameroon	CAR	Congo	Eq. G.	Gabon	DRC	Total	Average
Natural forest '90	1000 ha	21,569	31,850	20,188	1,896	19,398	120,597	215,498	
Nat. forest in % of the country	%	46%	51%	59%	68%	75%	53%		54%
% regional forest	%	10%	15%	9%	1%	9%	56%	100%	
Protected areas '90	1000 ha	1,127	436	1,215	315	1,790	6,313	11,196	
Deforestation 80-90	1000 ha	1,219	1,288	323	70	1,163	7,322	11,385	
% per year (average)	%	0.6%	0.4%	0.2%	0.4%	0.6%	0.6%		0.6%

Biodiversity species								
Mammals	All species	297	209	200	184	190	415	No information found
	Endemic	10	2	1	1	3	25	
	Threatened	27	12	12	15	17	31	
Birds	All species	848	668	500	392	617	1086	
	Endemic	11	0	0	3	0	23	
	Threatened	17	2	3	3	4	27	
Higher plants	All species	8260	3602	6000	3250	6651	11000	
	Endemic	156	100	?	66	?	3200	
	Threatened	76	1	3	8	78	7	

Table 3 : Protected Areas

Country	Area in Sq. km	Area in Cat. I	%	Area in Cat. II	%	Area in Cat. IV	%	Total Area designated	%
Cameroon	465,000	0	0.00%	10,318	2.22%	10,186	2.19%	20,504	4.41%
CAR	623,000	860	0.14%	31,020	4.98%	29,180	4.68%	61,060	9.80%
Congo	342,000	0	0.00%	1,266	0.37%	10,508	3.07%	11,774	3.44%
Eq. Guinea	28,050	0	0.00%	0	0.00%	0	0.00%	0	0.00%
Gabon	258,000	150	0.06%	0	0.00%	10,300	3.99%	10,450	4.05%
DRC	2,267,000	0	0.00%	99,166	4.37%	0	0.00%	99,166	4.37%

Source of Data: 1993 United Nations List of National Parks and Protected Areas by IUCN, UNEP, and WCMC, 1994.
Meaning of Categories: (Categories III, V and VI are not represented in those countries.)
Category I. Strict Natural Reserve/Wilderness Area: protected area managed mainly for science or wilderness protection.
Category II. National Park: protected area managed mainly for ecosystem protection and recreation
Category III. Natural Monument: protected area managed mainly for conservation of specific natural features
Category IV. Habitat/Species Management Area: protected area managed mainly for conservation through management Intervention
Category V. Protected Landscape/ Seascape: protected area managed mainly for landscape/seascape conservation and recreation.
Category VI Managed Resource Protected Area: protected area managed mainly for the sustainable use of natural ecosystems
This categorization is subject to change in the near future as both IUCN and WWF are working on new definitions.

CHAPTER 2: Project Background

2.1 Context

1. <u>World Bank involvement in the preparation of national strategies</u>. The World Bank has been assisting countries within the Congo Basin Region in their efforts to develop and implement strategies to improve governments' ability to manage natural resources. Such involvement has produced, among others, National Environmental Action Plans (NEAPs) and Tropical Forest Action Plans (TFAPs). The Natural Resource Management strategy of the Congo Basin countries is mainly focussing on forest management and biodiversity conservation.

- *Forest Management*. National strategies for forest management are described in the national TFAPs, which are underway or completed in all the Congo Basin countries. To help governments implement their TFAPs, several international organizations are contributing to the elaboration of a strategy for the forest sector in the Congo Basin, but this is not always being done in a coordinated way. The World Bank position calls for[1]: (i) establishing a policy, legal and regulatory framework which provides incentives for sustainable forestry management while increasing national revenues and community benefits from logging activity; (ii) introducing long-term logging concessions and eventually logging certification arrangements to encourage sustainable logging practices; (iii) strengthening forest management capacity through training and the introduction of more effective concession monitoring systems; and (iv) introducing environmentally and economically sound forest zoning practices to help maximize the returns to sustainable forest resource management.

- *Biodiversity Conservation*. Improved forest management strategies will contribute to reduce the rate of biodiversity loss, but they alone are not sufficient to achieve this objective. Biodiversity conservation requires that some areas of specific biodiversity importance be set aside and managed. The main elements of the current biodiversity conservation strategy are: (i) preparation, with GEF assistance, of national biodiversity strategies and action plans (already underway or completed in Cameroon, CAR, Gabon, DRC and Equatorial Guinea) to identify priority areas for enhanced protection; (ii) expansion and more effective management, in collaboration with local communities, of protected area systems; and (iii) strengthening of national capacities for biodiversity conservation through training, site-specific species monitoring and the development of national ecosystem and biodiversity data management facilities.

2.2 Links with Other Ongoing Initiatives

2. <u>Review</u>. The Congo Basin benefits from many projects involved in natural resources planning and monitoring at the local, national and regional level. Among them are: GEF Cameroon, GEF Congo and GEF Gabon; the World Bank's PARN in CAR and PFE in Gabon; the European Union's ECOFAC and TREES; USAID's CARPE; and NASA's Pathfinder (Figure

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[1] See: Sharman, N., S. Rietbergen, C. Heimo and J. Patel. *World Bank Strategy for the Forest Sector in Sub-Saharan Africa.* Washington, DC, 1994.

3at the end of the document provides a map of major existing projects within the Congo Basin and shows the range of donor and NGO involvement in Central Africa). Some of these projects have information components, but they could profit from better environmental information systems. In particular, all natural resource information initiatives taken to date lack a mechanism to produce comprehensive and regularly updated information on the condition and trends in the entire Congo Basin forest, and the means to put that information at the disposal of key land use decision-makers, commercial forestry interests, biodiversity management teams, local NGOs, and the population at large. The REIMP will maintain close collaboration with these projects to avoid duplication, ensure that products are compatible and complementary, and fulfill the demand for information within the region. Specific arrangements have already been made for collaboration with FAO's AFRICOVER team and NASA's Pathfinder team.

2.3 Importance of Environmental Information Management

3.   Key role of information in the decision-making process. The use of accurate and comprehensive information and knowledge leads to greater transparency and better governance, hence it plays a crucial role in environmental management. It is the foundation upon which the analytical and decision-making processes are based, which in turn are the precursors for effective action. Assessment of the results, in turn, represents the information base for the subsequent cycle of decision-making and action. The more widely shared the information, the more likely it is that individuals and institutions will agree on the definition of problems and strategies for their solutions. In addition, information may also force decisions through growing public awareness and lobbying. Developing and using information and knowledge are, therefore, an essential part of conservation management at all levels, from the local to the global community.

4.   Types of information required for natural resource management and biodiversity conservation. Planning of biological resources requires a general spatial information base on natural resources, including major vegetation areas, hydrology, topography, and human presence. To this base should be added, as needed, more detailed information on species and ecosystems, in particular for the ecosystems of forested areas. Indicators for monitoring and assessing habitat changes and natural resource degradation should also be developed, and be supplemented with information on socio-economic factors likely to interact with the environment (e.g., demographic indicators, cultural beliefs and practices, access to basic social services and infrastructure). Regular monitoring can identify areas of conflict between high value biodiversity and human activities. Such areas could then be the focus for decisions on land use and natural resource conservation and management. This information, therefore, constitutes an important planning tool for both the conservation of biodiversity (protection and sustainable use, identification of new sensitive areas) and the management of those economic sectors which exploit biological resources (forest logging, oil or mine extracting).

2.4 Environmental Information Management in the Congo Basin

5.   Identification of specific needs. The governments of the six project countries have identified a set of issues and needs which have inspired the REIMP specific objectives (see chapter 3). Among them, the following four have been identified as particularly important.

Issue no.1: Information on the environment is poorly collected, integrated, shared and disseminated.

6.   <u>Lack of dissemination</u>. Information often does not reach appropriate users or is unused as a result of an inadequate dissemination structure, restricted accessibility, or unsuitable presentation. In fact, dissemination mechanisms have generally been neglected during the design of existing projects, which makes it difficult now for them to promote their findings and inform stakeholders. For example, the PARN project has collected and analyzed a large amount of data on forests in CAR, but has failed to focus on information dissemination to the forest managers operating in the country.

7.   <u>Lack of standards</u>. The multiplicity of actors, the lack of standard methods for data collection, and the lack of a framework to integrate the results lead to the loss of much information and diminished confidence in the data produced. The definition and acceptance of standards for information gathering, processing, storage and dissemination, and the development of a coherent system, would increase confidence in the reliability of information, provide a technical framework for its circulation, facilitate dissemination, and improve the conservation of the results.

8.   <u>Inadequate communication systems</u>. Central Africa has one of the world's lowest levels of development for communication infrastructure, including basic telephone facilities and Internet connectivity. Central African countries are poorly connected to the rest of the world. Internet facilities are available in three countries only, the high cost of the service and the low transfer speed on telephone lines do not allow exchange of high amounts of data. Yet, computer applications to telecommunications offer high returns for regional information projects, for example by allowing new project design processes involving several stakeholders and facilitating regional approaches without the bureaucratic burdens of centralized agencies.

Issue no.2: Not enough well-informed decisions are made in the forest and environment sectors.

9.   <u>Most decisions in the forest and environment sectors are not based on reliable information</u>. The enforcement of logging concession agreements and management of protected areas have been seriously hampered by the lack of basic information. In addition, improving the information available on forest resource conditions would help deciding on the designation of conservation areas, areas for sustainable exploitation of forest resources, and areas for multiple use.

Issue no.3: Basic and thematic information on natural resources is lacking.

10.   <u>There is a real demand for basic and thematic information on natural resources</u>. REIMP planning meetings revealed that few ongoing projects and none of the governments can bear the costs of intensive information production activities. Data production activities--which are often supposed to be small components of natural resource management (NRM) projects-- turn out to be more time and money consuming than expected and divert these projects from their initial planning and development goals. Many projects, particularly those devoted to biodiversity conservation, would like to extend data collection activities to buffer zones for more effective biodiversity conservation and maintenance of protected areas. Moreover, such information is necessary to develop reliable management tools and is required by many governments within the

Congo Basin.

11.   Gaps in environmental information. The following major information gaps have been identified as hampering decision-making and compromising country capacity to manage the sustainability of natural resources in the region:
- topographic maps at scales 1:200,000 and 1:50,000 as well as land cover, vegetation, geological, hydrological and pedological maps, where they exist, were mainly produced during the 1960s or 1970s and are outdated;
- national and local planning tools like zoning plans and management plans have been developed for only a few years and are not available region-wide;
- there is currently no means of monitoring biodiversity at national and regional levels, as initiatives are site-specific;
- both data and data collection procedures for monitoring exploitation activities at the concession level are weak and make it impossible to make informed decisions.

Issue no.4: National capacity to generate and manage environmental information is limited.

12.   National capacity to generate and manage information is limited. In most projects, local technical staff are strongly dependent on technical assistance. As a result, local skills remain weak and their autonomy is not assured even after five years of project implementation. Moreover, national capacity to store and maintain information is inadequate and weakly supported. Unfortunately, most projects have no plans to help existing national institutions provide information services and ensure their linkage to ongoing initiatives.

2.5 Lessons Learned and Technical Review

13.   Relying on information technologies. Information technologies have been successfully used to improve natural resource planning and management in the multi-donor Tropical Forest Project in the Amazon. Remote sensing techniques enabled various organizations such as FAO, NASA, NASDA, and JRC to acquire regional satellite image coverage and devise cost-effective tools to map and monitor issues of global concern for the environment (deforestation, degradation of different types of habitat). Pilot initiatives have demonstrated that these images could also provide basic spatial data for biodiversity localization at a relatively low cost, since emerging competition and technical improvements have helped decrease their cost.[2] Moreover, Geographic Information Systems (GIS), which make it possible to integrate and correlate data from various sources, and Global Positioning Systems, that enable quick positioning of information surveyed in the field and easy updating of the database, are now mastered by a wide range of users. Where several users were involved, information technologies made economies of scale possible. Finally, such technologies can facilitate information exchange between partners, provided that a common base has been defined and agreed upon. These lessons have been incorporated into the design of the REIMP.

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[2]   The price of the unprocessed high resolution satellite image ranges from US$ 0.2 (radar) to US$ 1 (Spot) per km². for unprocessed satellite images. The price of the processing for making space-maps at scale 1:200.000 range from US$ 0.5 to 1 US$ per km² depending on the quality of geometric requirements. Thus, on a classical commercial basis (which must be lowered for a big area) the price for a space map at 1:200.000 scale range from US$ 0.7 to US$ 2 per km². The price of a classical topographic map at the same scale including aerial photographs and their restitution would be US$ 100 per km².

14.   NRM key decisions. Discussions with natural resource managers made it possible to determine four types of key decision areas for effective NRM:
- environment protection,
- natural resource planning,
- permit attribution, and
- exploitation monitoring.

Improving these four decision-making processes requires specific products and services, of course, but appropriate institutional mechanisms are also essential. These mechanisms will make the use of information more effective and thus will increase its impact.

15.   Linking public agencies, the private sector, and the NGO community through national information networks and a regional information network. Sustainable management of natural resources involves not only public agencies but also private companies and NGOs. So far, dialogue between these three categories of actors has been generally weak and has sometimes led to tense situations where distrust and misunderstanding prevailed. Linking these institutions through an information network will contribute to increase dialogue and understanding. At the national level, communication between public agencies, private companies and NGOs may lead to a better definition of products and services related to environmental information, as well as sharing of financial, human, and logistical resources to offer new products or services. At the regional level such a network will provide a discussion platform where private sector representatives and governments may agree on the NRM policies to be enforced.

16.   Building on existing institutions rather than creating new ones. There is no need for a regional production center which centralizes both expertise and equipment. Technical review clearly showed that existing national agencies need to be linked to one another within a network, while little would be gained from the creation of yet another agency. The creation of a small regional network management unit, however, is necessary to ensure coordination and to offer such specific regional services as: (i) promotion and dissemination of products and services, (ii) maintenance of various regional databases, (iii) elaboration of a regional report on the environment, and (iv) harmonization and promotion of standards for data collection and integration.

17.   Project concept. The REIMP belongs to a new generation of trans-border projects which are needed to address sub-regional ecosystem issues. The project, while targeting global environment management, will also have a broader development impact by providing a greatly improved, geo-referenced information base which facilitates the identification, design, and implementation of future economic activities at the national level. The project design is based on the following principles learned from the technical review:
- adopting a demand-driven and action-oriented approach;
- relying on information technologies;
  linking public agencies, the private sector, and the NGO community through national information networks and a regional information network;
  building on existing institutions rather than creating new ones;
- focusing on capacity building;
- generating benefits and building sustainability through the sale of products and services.

CHAPTER 3: Project Description

3.1 Objectives

1.   Project objectives. The main goal of the project is to improve planning and management of natural resources in the Congo Basin, with a specific focus on biodiversity conservation, by providing the various stakeholders with appropriate information on the environment in response to the needs they identify. In line with the major needs identified in chapter 2, the project has the following four specific objectives:
(1) ensuring the circulation of environmental information and optimizing benefits from existing initiatives;
(2) fostering involvement of decision-makers in environmental information use and facilitating sound land use planning in the Congo Basin;
(3) providing users with environmental information meeting their demand; and
(4) strengthening national capacities for environmental information management.

2.   Project objectives will be achieved through the implementation of four components. These components are the four building blocks to develop a regional network of environmental information users including public and private partners involved in natural resource management. The project will build capacity at local, national and regional levels for environmental monitoring, land use planning, priority setting and decision-making, particularly for forest management and biodiversity conservation. To manage and coordinate the four components, the project will rely on National Coordinators and a regional unit, to whom technical assistance will be made available as needed (see Chapter 4).

3.2 Component 1: Network Creation and Service
Objective: Ensuring information circulation and optimizing benefits from existing initiatives

3.   Overview. Actors involved in natural resource management in the Congo Basin agreed that better dissemination of information is the most important objective (see previous chapter). This component will enable users and decision-makers to take advantage of the large amount of environmental information already available.

4.   Setting up the primary network. During the preparation phase, several public, private and non-governmental agencies were selected by National Work Groups (NWG) to constitute an initial primary network. Selection criteria were: (i) having a national or regional mandate which makes them key actors in collecting, processing, storing and disseminating environmental information, (ii) having the technical and human capacity to participate effectively in the project, and (iii) being actively involved in the preparation phase. As members of the initial REIMP network, these agencies will have both rights and duties. (see Table 4)

5.   New agencies joining the network. During the course of the project, new agencies which are involved in environmental information management, biodiversity conservation and forestry could join the network. In addition, it is envisaged that agencies focusing on socio-economic issues particularly relevant to the project objectives will also join the network (e.g., refugee/migrant assistance agencies, NGOs focusing on land tenure and the rights of indigenous people, rural radio stations). By joining the network, each newcomer agrees to both the network rules and the terms of the data exchange policy regulating the circulation of REIMP information. Members who do not follow the rules could be dropped from the network.

Table 4 : Rights and Duties of the network agencies

Rights	Duties
• free equipment, training, technical assistance and access to Internet plus financial resources to carry out or sub- contract field surveys	• responsibility to carry out specific tasks within the project
• free access to other REIMP members' information	• provide other REIMP members with free access to its information.
• sell other REIMP members' information and reception of royalties whenever one of their products is sold by other REIMP members	• share the benefits of information sales with other REIMP members which contributed to the products sold
• improve other REIMP members' existing products and sell the enhanced product	• disseminate own knowledge within REIMP network
• market products and services realized within the frame of the project	• perform according to monitoring indicators target values.
• define and submit new products or services to be financed by the project	• promote the expertise of REIMP members

6.   Promoting and harmonizing standards for data collection and integration. Because of the involvement of a multiplicity of actors, it will be necessary to establish a set of standards for information gathering, processing, storage and dissemination. The project does not intend to create new standards to be added to existing ones, but to make the most useful standards more easily available to a wide range of users or newcomers in the region. Harmonization of these standards will be achieved through the information services described above and regional workshops.

7.   Implementing or improving telecommunication infrastructure including Internet facilities. Development of cost-effective computer-aided telecommunications is of high interest in a region where international calls may cost up to US$ 6 per minute. During the preparation phase, the REIMP helped improve electronic mail facilities within the Congo Basin by installing basic Internet servers in each country and providing the main REIMP agencies with electronic mail (both equipment and connection). The project will expand this telecommunication service by offering the same facilities to a wide range of users mainly operating in NRM. After a few months, the system should evolve to enable full Internet applications and transfer of large volumes of data using as much as possible already existing private Internet service providers.

9.   Developing information services. The REIMP intends to develop information services in the form of:
• An archive database, whose purpose is to collect existing maps and reports related to NRM. To enable quick and secure retrieval, valuable documents will be converted in a digital format through scanning or digitizing. This is especially important in view of the lack of climate-controlled document storage facilities in the region (vital documents often deteriorate beyond use or are available only outside the region).
• National and regional libraries on environment in order to satisfy external requests for information. Particular attention will be paid to dissemination mechanisms including research and referencing of new documents, reproduction or new edition of old documents, conversion to adequate exchange formats, and regular publication of a directory.
• National compilations of laws and rules related to NRM, especially within countries subject to new environmental regulations. Such compilations are considered a key product to: (i) disseminate new regulations nation-wide, (ii) identify areas where legal instruments need to be strengthened, (iii) assist administrations in charge of monitoring natural resource exploitation

in attributing concessions and controlling activities within authorized areas, and (iv) help private operators better prepare their management plans.

10.   Developing catalogues and rosters. This activity is essential for promoting data, services, and human skills in Central Africa. It includes:

- The development of a meta-database which references databases created by projects and international organizations, paper documents such as photos, reports or maps, as well as socio-economic data sources for users interested in taking into account interactions between environmental and socio-economic factors (e.g., urbanization rates, poverty levels and deforestation) into account. A first version has been prepared, together with a user-friendly tool to view the references. The meta-database will reflect the state of information on the Congo Basin and will be regularly updated and will be freely accessible by external clients.
- The elaboration of a REIMP expert roster to meet managers' demand for both recognized and high-level skills in basic and thematic mapping, database management, and biodiversity and forest resource management.
- A directory of products and services provided by the REIMP. Products include all the REIMP realizations as described in the user-oriented production component (see section 3.4). Services include training courses offered by any REIMP agency and specific works for which demand exists and for which a specialized REIMP agency could be contracted as a bidder. Examples of specific works are multi-resource inventories, mapping works, development of Web pages, etc.

3.3 Component 2: Decision-Making and Communication
Objective: Encouraging decision-makers to use environmental information and facilitating sound planning for land use in the Congo Basin.

11.   Overview. Involvement of decision-makers was identified by the major stakeholders in NRM as the second most important issue to be addressed by the REIMP. This component aims to help decision-makers, mainly at the national and regional level, use information on natural resources in planning and monitoring.

12.   Organizing sensitization and communication workshops for decision-makers. The REIMP network will provide a platform for raising the environmental awareness of decision-makers within the region. The success of the four REIMP workshops, which offered decision-makers opportunities to discuss together issues related to NRM and exchange experience on biodiversity conservation, demonstrated the benefits of this kind of activity. As a consequence, the project provides for two sets of workshops, one to focus on NRM and provide guidelines for sound planning and monitoring of land use, the other to increase the confidence of decision-makers in environmental information systems and encourage their active participation in product design and development.

13.   Developing user-friendly information tools and elaborating a regional report on the environment. Existing management tools are generally inadequate to enable national decision-makers to plan and monitor natural resource use with a medium-to-long term perspective. The REIMP aims to develop and disseminate user-friendly tools such as *Tableaux de Bord* (comprehensive summaries of information) for decision-makers. These *Tableaux de Bord* will include: (i) indicators on environmental issues such as deforestation, loss of biodiversity, watershed degradation, erosion, pressure on peri-urban environment; (ii) socio-economic indicators such as population growth trends, population movement trends, poverty levels, ethnic distribution and land tenure systems; (iii) synthetic mapping ("country at a glance"); (iv) maps

combining environmental and socio-economic data, such as maps of social risks and potential conflict; (v) catalogues of existing data; and (vi) access to analytical modeling facilities in order to visualize different socio-economic scenarios. This activity will be managed at the regional level by the PMU which will sub-contract work as needed. Such information will be compiled into a regional report on the environment that will be a valuable planning instrument for the donor community.

14.   Developing communication tools for rural populations. At the grassroot level, the REIMP plans to hold participative village-centered workshops to sensitize rural population against non-sustainable local practices (e.g., slash-and-burn, poaching), and to encourage meetings between national administrations and local communities. A number of pilot initiatives are also envisaged to develop information services accessible and useful to grassroot communities (posters, street theater, radio programs in local languages, etc.).

15.   Elaborating communication tools for the public. The REIMP will assist agencies to develop a set of tools specifically designed to increase public awareness of environmental issues. Such tools will include: (i) regular publications and newsletters (using also Web sites) that will keep the various stakeholders informed of findings and results of the REIMP and other projects, and (ii) elaboration of guides and dictionaries with a special focus on the various uses of non-timber forest products and the promotion of local traditional knowledge and practices.

3.4 Component 3: User-Oriented Production
Objective: Providing users with environmental information meeting their demand

16.   Overview. In spite of the huge amount of information on natural resources in reports, inventories, maps, aerial photographs, and satellite images already available, serious gaps remain and affect decision-making. This component aims at filling such gaps.

17.   Producing and updating basic environmental information. The REIMP will provide all the actors involved in NRM (conservation agencies, private companies, national administrations) with regularly updated basic landscape information, including topography and land cover. Technical requirements will follow FAO's recommendations (see Annex 2) which favor common specifications and methodology for the whole region. The result will be the following products:
- border-to-border radar coverage of the entire region (4 millions km²) to provide users with cost-effective background information necessary for cartographic and inventory applications;
- topographical and land cover databases and maps at a scale of 1:200,000 in the areas where basic landscape information is in high demand: intensive forest logging areas (500,000 km²), biologically sensitive areas (300,000 km²), urban and suburban areas (50,000 km²), and coastal zones (300,000 km²) --the realization of these space-maps could be reinforced with optical and radar satellite images (LANDSAT, SPOT, ERS, JERS etc.); and
- databases and geometrically corrected photos for the major urban centers at a scale of 1:50,000, using aerial photography or aerial videography.

18.   This information will be complemented by the collection/updating of data on socio-economic indicators which interact with environmental variables. They include: ethnic distribution and conflicts, land ownership and access, land tenure laws (modern and traditional, theoretical and applied), poverty levels and survival strategies, population movement trends (migration, urbanization, refugees), access to basic social services and infrastructure, agricultural techniques, etc.

19.   Producing and updating information on forestry and biodiversity. The project will assist governments in building capacity to assess the status, evolution and best use of their forest and biological resources. This capacity will include:

- elaboration of forest zoning plans, as recommended by most national forest strategies;
- development of local biodiversity conservation plans to orient and control future investments and conservation activities with the participation of local population in seven biologically sensitive areas in the Congo Basin.

20.   Producing and updating information on agriculture and rural development. Even though the REIMP major concerns are related with forest and biodiversity issues, implementation of activities affecting rural development and local population well-being is considered as a global objective to target as well.

21.   Producing information on geological resources and mining extraction. In spite of its minor importance in terms of damage to the Congo Basin rainforest, geological resource exploitation constitutes a significant part of GNP in Central Africa, and extraction is a major cause of pollution. Gabon proposed to elaborate a geological and hydro-geological information system so as to monitor resource depletion and regulate the mining sector.

3.5 Component 4: Capacity Building
Objective: Strengthening national capacities

22.   Overview. The three components above cannot be properly implemented without appropriate equipment, technical assistance and training of local staff. Capacity building will not only a support other project objectives, but also provide local expertise an opportunity to serve other projects and clients within the region.

23.   Equipment of local agencies. National agencies in charge of environmental information production will receive significant support for equipment purchase and installation. This support will enable agencies to take an active part in the production of REIMP databases by focusing on vector data, and fulfill the demand for specific mapping works at a competitive cost.

24.   Technical assistance and training. In the early stages, basic information such as space maps will be quickly produced with the help of outside specialized companies. Meanwhile, technical experts will train and supervise local teams selected by the partners of the primary network to work at the specific products of the information system. On-the-job training and collaboration between foreign and local technicians will ensure progressive technology transfer in favor of local agencies and companies. Technical assistance will be selected on the basis of established experience in the transfer of adapted technologies to developing countries, and its performance evaluated on the basis of successful transfer in this case.

25.   Marketing of the national agencies and experts. The project gives high priority to improve the technical reputation of national agencies, as thus far low skill levels and poor marketing have made potential clients prefer expensive survey agencies from developed countries. Participation into REIMP activities will progressively enable national agencies to provide high quality information services. To have a broader impact, appropriate marketing actions will be developed.

3.6 Activities Started during Project Preparation

26.   The preparation process. The project has adopted a flexible, participatory approach whereby activities to be financed are identified in broad terms but are not yet planned, making it possible to drop, suspend or redefine activities which may turn out to be inefficient or unnecessary. This flexibility enables the project to respond quickly to changes in users' needs and to maximize project impact in the field. The effort to actively involve all major stakeholders and to collaborate with different agencies and projects has avoided duplication and produced a synergetic effect. For example, table in annex 6 shows the large participation of donors and NGOs during appraisal mission in March 1997. Below is a summary of activities that have been carried out during the preparation phase. They represent an illustration of the participatory approach that characterizes the REIMP, as well as an indication of the commitment shown by all stakeholders.

For component 1 (promoting information circulation):
- created National Work Groups, who have assessed user needs for geo-referenced information and tools for natural resource management in each project country;
- set up, with the active involvement of all stakeholders, the institutional, technical and funding framework of the REIMP (see Chapter 4);
- secured collaboration of National Work Groups at the preparation of the national project documents;
- set up a telecommunication network;
- produced a meta-database; and an archive database.

For component 2 (involving decision makers):
- held four regional workshops during which decision-makers worked together with other stakeholders (Yaounde, February 1996; Libreville, October 1996; Brazzaville, March 1997; Bata, October 1997).

For component 3 (providing information):
- carried out preliminary surveys on biodiversity and forestry (forest inventories); and
- at the request of network members, produced a 1:1,000,000 database to provide REIMP partners with small scale data on topography, land cover, soils, biodiversity, social and economic pressure for quick action.

For component 4 (strengthening national capacities):
- supporting regional team work between the Gabonese and Central African Work Groups,
- participation of national technicians to a seminar on remote sensing at the University of Maryland in January 1997,
- improvement of technical knowledge and comprehension of information management issues through technical assistance during the preparation missions and the regional workshops.

Table 5 : Logical Framework of the Project

	Narrative summary (1)	Prep(2)
Objective 1	**Ensuring information circulation and optimizing benefits from existing initiatives. [Network Creation and Service Component]**	
Expected results	1. A national network on environmental information is created or strengthened 2. Mechanisms of dissemination within the network are established 3. Ongoing projects promote their results and products through the REIMP 4. Existing information on the Environment is gathered and easily accessible to private sector, NGOs and local population	
Activities	1. Setting up the primary network 2. Promoting and harmonizing standards for data collection and integration 3. Implementing or improving telecommunication infrastructure including Internet facilities 4. Developing information services (archive database, national and regional libraries, compilation of laws and rules) 5. Developing directories and rosters (meta-database, rosters of experts, training and products directories)	● ● ● ●
Objective 2	**Encouraging decision-makers to use environmental information and facilitating sound land use planning in the Congo Basin. [Decision-Making and Communication Component]**	
Expected results	1. Dialog between decision-makers and information producers is improved 2. Decision-makers are provided with both land use planning and monitoring tools 3. Capacity to monitor implementation of land use decisions is enhanced	
Activities	1. Organizing sensitization and communication workshops for decision-makers 2. Developing user-friendly information tools (*tableaux de bord*) and elaborating a regional report on the Environment 3. Developing communication tools for rural populations (village-centered workshops, posters, radio,...) 4. Developing communication tools for public (guides, dictionaries,...)	● ●
Objective 3	**Providing users with additional environmental information meeting their demand [User-Oriented Production Component]**	
Expected results	1. A basic information platform is established and meet the demand 2. Level of information on the biodiversity status, trends, and threats is increased and conservation priorities are set 3. Natural resource zoning is facilitated	
Activities	1. Producing and updating basic information (topographical and land cover maps) 2. Producing and updating information on forestry and biodiversity (national and subnational forest zoning plans, local conservation plans, forest and biodiversity monitoring system) 3. Producing and updating information on agriculture and rural development (market price observatories, land use zoning plans, peri-urban management plans, slash-and-burn monitoring system) 4. Producing and updating information on geological ressources and mine extraction	
Objective 4	**Strengthening national capacities. [Capacity-Building Component]**	
Expected results	1. National agencies are able to manage and use information technologies for information production and environmental monitoring 2. National agencies are renowned for their competencies 3. Local experts are involved in information component of ongoing and future projects	
Activities	1. Equipment of local agencies 2. Technical assistance and training of national staff 3. Marketing of the national agencies and experts	 ●

(1) indicative as per the 1997 annual work plan, may change during the project.
(2)● = Activities already initiated in preparation.

CHAPTER 4: Project Organization and Policies

4.1 Project Organization

1.   Memorandum of Understanding. In recognition of the importance of environmental information for NRM, and therefore for sustainable development, the six project countries have signed a Memorandum of Understanding on environmental data exchange within the Congo Basin region. This Memorandum of Understanding constitutes the foundations and the guiding principles for the project.

2.   Institutional design. The REIMP comprises a number of national sub-projects running in parallel and financed by different donors on a contractual basis. These sub-projects are entrusted to the national partners of the primary network, which will be responsible for REIMP database production and the update and dissemination of data. The primary network is constituted as an international association registered in Gabon. Its members include major governmental agencies, private sector firms and NGOs involved in environmental information management. They were identified during project preparation by National Work Groups. Membership mechanisms have been defined with the members themselves and are described in the Operating Manual which defines implementation procedures for the project; it is envisaged that new agencies will be able to join the network throughout the life of the project, while non-performing members may be asked to drop out of the network. Each member will sign a separate agreement detailing its rights, benefits and obligations within the network (see Chapter 3). Project partners have also expressed interest in the constitution of thematic families transcending national networks to allow for more specialized exchanges (e.g., forestry family, computer science family, mapping family and biodiversity family). Membership in the thematic families will be open to all members of the primary network; modalities still need to be worked out.
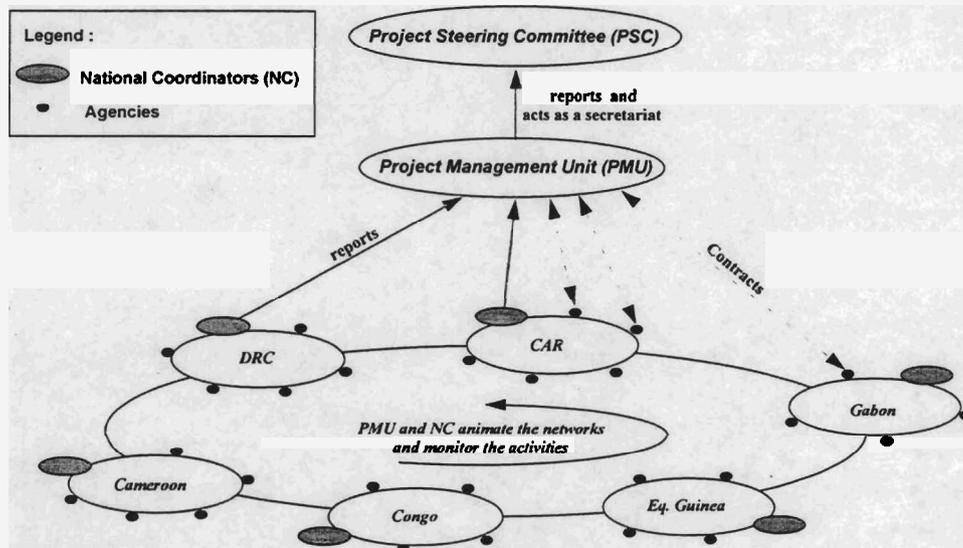

Figure 1 : Structure of the REIMP primary network

3.   Regional Project Coordination. A Project Steering Committee (PSC) will ensure global coordination, provide direction and policy for project execution, overview the project at the regional level, and decide on the composition of the primary network. It will comprise one representative of NGOs, two of the government and one of the private sector from each national network and will meet on a periodic basis (no permanent staff). A regional Project Management Unit (PMU) will supervise, monitor and evaluate the sub-projects, as well as provide regional services such as the loading of data for the regional database. The PMU will implement the recommendations of the PSC, to which it will report. REIMP partners decided that the PMU will temporarily be located in Libreville; in the long run, however, PMU activities could be transferred to an existing regional or national institution, including an NGO or a private company. A permanent Regional Coordinator will act as the representative of the PMU (terms of reference are in the Operating Manual).

4.   Counterpart Agencies. The REIMP counterpart in each country will be:
- Ministry of Environment and Forests in Cameroon;
- Ministry of Environment, Waters and Forests, Livestock and Fishery in CAR;
- Ministry of Education, Technology and Scientific Research in Congo;
- Ministry of Health and Environment in Equatorial Guinea;
- Ministry of Finance, Economy, Budget and Participation in Gabon; and
- Ministry of Environment, Conservation of Nature, and Tourism in DRC.

5.   Each counterpart agency has designated a National Coordinator, with limited support staff, to supervise sub-project contracts between national agencies and the PMU, and to promote network members (terms of reference are in the Operating Manual).

6.   New countries joining the network. Sao Tome and Principe has already expressed its interest in joining the regional network, and other countries of Central Africa may become interested as well. To allow new countries to be part of the regional network, the following process has been designed in accordance with the first six countries:
- The requesting country must first create a national network and nominate a National Coordinator.
- The request has to be made to the PSC through the PMU with a letter to the PSC President detailing the above arrangements.
- The Regional Coordinator together with the PSC President and the donors organizes an appraisal mission. The PMU and the donors evaluate the technical, financial and institutional arrangements proposed by the requesting country.
- The PMU puts the membership of the requesting country agencies on the agenda of the following meeting of the PSC. The PSC votes (two thirds majority).

The membership of the new agencies becomes effective when the government signs the Memorandum of Understanding. Informal exchanges are encouraged before ratification (consistently with REIMP philosophy), even though the new agencies will not yet be eligible for financing.

4.2 Programming and Funding Mechanisms

7.   Funding basics. There will be potentially four types of funding:
- contributions from the Governments of the six member countries;
- external funds channeled at the regional level through the PMU;
- external funds channeled directly to a network member by a donor;

- contributions from the resources of a network member including revenues from products and services sales.

The allocation of the GEF funds will be managed centrally and used as the funding of last resort to finance incremental costs which could not be funded otherwise and are eligible under GEF criteria. GEF funding will be passed to network members in the form of "service contracts" specifying the activity to be financed and expected outputs.

8.   Funding mechanisms. There will be essentially two funding mechanisms. One will allow donors to issue contracts directly to members of the primary network for the execution of activities agreed upon at the yearly planning meetings of the PSC; the PMU will provide technical monitoring and supervision, acting as a *maître d'ouvrage délégué* for the donor. The other mechanism will see funding from donors and (potentially) governments channeled through the PMU, which will issue contracts to agencies and administer, supervise and monitor all aspects of contract implementation. Funding channeled through the PMU will have two purposes: (a) the execution by network members of activities agreed upon at the yearly planning meetings of the PSC, (b) the execution of activities financed by the Regional Fund for Local Initiatives (see below).

9.   Yearly work plans. Once a year, before November 15, the PSC will meet with donors to examine the various proposals put forth by the National Coordinators and consolidated by the PMU into a tentative work plan for the upcoming year. Proposals will be evaluated according to the criteria detailed in the Operating Manual; their acceptance and inclusion in the yearly work plan will be on the basis of such criteria as well as of donor funding priorities. Mid-year review sessions (in June) will assess progress and performance in carrying out contracts to implement the agreed work plan and, if needed, amend the plan for the remainder of the year. The PMU will be responsible for preparing appropriate documentation for the mid-year review and make it available to stakeholders on its Web site.

10.   The Regional Fund for Local Initiatives. To add flexibility to the planning process, the REIMP will establish a Regional Fund for Local Initiatives (REFLI). This fund is meant to allow for the implementation of activities that are not included in the yearly program agreed upon by the PSC, but that are pertinent to the objectives of the project. For example, it will make it possible to complement REIMP core activities by stressing the socio-economic dimension and the interaction between environmental and socio-economic variables. In addition, because it will be open to agencies which are not network members, it will give an opportunity for lesser known organizations to prove their competence and to nurse working relationships with well-established agencies. The REFLI will finance (or co-finance):
- the realization of new products and services; and
- the collaboration with ongoing projects, private companies, or NGOs on specific information activities.

11.   The PMU will be entitled to receive investment requests coming from REIMP network members, as well as from ongoing projects, private companies and NGOs outside the network as long requests fulfill the following criteria:
- the request fits in one or more REIMP objectives;
- activities to be financed target information management and involve a partnership between agencies;
- local expertise is promoted;
- information integration in the decision-making process is clearly defined;
- the technical proposal is cost-effective and avoids duplication with existing initiatives;

- the amount requested is not above US$ 30,000 equivalent;
- the activity is performed within less than 12 months.

4.3 Data Exchange Policy

12.   The data exchange policy. Project management and implementation will be facilitated by the adoption of a clear data exchange policy by the network institutions. This policy will provide network members with general principles and guidelines on formats, accessibility, archiving and distribution of data collected and produced under the REIMP. This will make it easier to assess project impact, identify information gaps, avoid duplication, facilitate information circulation and encourage cooperation between institutions. The data exchange policy will be based on the following principles:
- It should promote a decentralized archiving approach, whereby each institution in charge of producing information (the producer) will be responsible for the storage of its intermediate and final products (for security reason a copy of the final product will also be automatically archived in the regional PMU and in the national documentation center where existing).
- The dissemination of the products will be under the responsibility of the producer and the PMU, which will agree on the dissemination strategy and set the price together. Dissemination of intermediate products should be encouraged when projects take years to generate the final products. In case of sensitive information, different precision level for the data will be considered according to the potential uses and users of the information (for their private utilization, other network members could access the product at reproduction cost and upon request).
- Other network members will be authorized to disseminate copies of the product upon acceptance by the producer. An agreement between the producer and the disseminating network member will fix the respective level of compensation.
- Network members are encouraged to add value to existing products and disseminate the new, improved product. Once again, an agreement between contributors will set the level of remuneration according to the profits generated.
- The integration of various data type from disparate sources is facilitated by adherence to established map precision and accuracy standards.
- Documentation on data source, scale, collection and processing methodology and lineage will be collected and archived by the producing institutions. This information will be made available to other users with the dissemination of the data. For comparability, a common methodology for data collection and processing will be encouraged.

13.   The PMU will make full use of electronic facilities (Internet and meta-database development) to disseminate information on the data collected and produced by the network members. The project will also assist the six countries in developing the appropriate legal framework to regulate environmental information management, focusing primarily on the harmonization of copyright law and contract law.

4.4 Involvement of the Private Sector

14.   Rationale. The participation of the private sector in the project will make it possible to learn from companies' experience while increasing the network capacity to raise funds beyond the project period, hence ensuring its sustainability. Moreover, it will be the first opportunity for government, NGOs and the private sector in the Congo Basin to collaborate on environmental issues. Private companies who will participate into the REIMP process include: (i) companies

dealing with information data processing, mapping or communication, (ii) companies using environmental information, including oil, mining and logging companies, and, to a lesser extent, civil works contractors (ports and roads), ecotourism operators, pharmaceutical laboratories and agricultural industrialists. The first group is to be considered as the information providers' group and the second one as the users' group.

15.   Incentives for participation. From the point of view of the private sector, incentives to take part in the project include: (i) economic interests because of the low cost, reliability and ready availability of REIMP products; (ii) the opportunity to improve their own competence while working with high level technicians; (iii) the opportunity to secure their supply (loggers, miners) or to develop new business (roads, port builders); and (iv) a strong political motivation to establish better relations with the other actors involved by improving their own image (this applies mainly to the oil companies and loggers).

16.   Role of private sector within the REIMP. The relationship between private companies and the REIMP will be based on the following three different potential situations:
(1) a client/supplier relationship, whereby private companies are not part of the network but may sell or purchase goods (e.g., databases, maps, inventories), or services (e.g., digitizing works, field surveys, specific mapping activities);
(2) a technical partnership, whereby private companies will join the project as a network member, thus gaining access to all the network products, but also making available their own environmental information (e.g., forest inventories for loggers, geological maps from miners) or funding the creation of new information (e.g., maps, surveys) that will be specifically useful for their own activities (they could also make available facilities and services such as field camps, technical equipment for image processing, expert weeks and training centers);
(3) a political partnership, whereby some companies, especially international ones, may prefer to support the project through unallocated funds.

4.5 Involvement of NGOs and local communities

17.   Need for NGO involvement in the project. The complexities of natural resource management have become more apparent as experience is gained in this process, and the increased recognition of the limitations of the public sector has led to a greater awareness of what different actors in civil society can contribute. NGOs and community-based organizations often have very close contacts with the users of natural resources and have therefore a key role to play. Working with NGOs can increase project outreach and sustainability, facilitate consultation with local people and promote empowerment at the grassroot level. In Central Africa, the NGO community is not yet well established and faces significant institutional, legal, financial and political problems. Presently, the institutional capacity of local NGOs and local communities is inadequate to fully participate in environmental information management. Indeed, strengthening the capacity of NGOs within the Congo Basin to contribute to the natural resources management process is an important issue for many international NGOs (e.g., WWF, WCS, IUCN) and official agencies (e.g., USAID, the European Community, the World Bank, GTZ, French Cooperation, IFAD, CIDA, UNDP, UNIDO, FAO). The REIMP will contribute to this objective by encouraging the involvement of local NGOs and communities through the activities financed by the REFLI.

4.6 Project Monitoring, Accounting and Auditing Requirements

18.   Status and performance indicators. The REIMP can be viewed as a set of contracts between network members at the national level and the PMU at the regional level. Each contract represents a specific activity. Each activity will be monitored through status indicators (input, output) and performance indicators, which will be described in the contract, thus allowing contract parties and the National Coordinators to keep a close eye on the implementation of the contracted activities. Each indicator, its measurement and its annual target values are described in the project Operating Manual. The set of indicators will be included in the annual work plans and will be used in the project annual report to evaluate the progress of the activities.

19.   Impact indicators. Each activity will be entered into the logframe under one of the four objectives of the project. If the activity is contributing to more than one objective, the major objective of the activity will be selected. Indicators of performance and impact for each objective, as well as expected results, have been agreed upon at negotiations. The PMU will be responsible for reaching these objectives and results.

20.   Monitoring system. A specific project monitoring system has been designed to track the above mentioned indicators, and to measure them against financial and disbursement indicators. This monitoring system, which uses commercial software packages, has GIS and planning capabilities as well, and is fully compatible with the accounting system. Thus, it will be possible to reference each activity with the same code in the monitoring system, GIS and accounting system. The system will be set up in the PMU, but will also be available to the National Coordinators. Direct access to the system through Internet will be possible by the end of the fist project year to allow all stakeholders, including donor, to share up to date monitoring information.

21.   Reporting. On the basis of information gathered from the implementing agencies and the monitoring system, the PMU will prepare quarterly progress reports, covering every project component and aspect such as summary of sources and uses of funds, cost variance, project forecast for six months, special account statement, expenditures by disbursement category, contract expenditure and procurement management. The reports will be made available to the World Bank and other donors through Internet. They will also be used for change of disbursement process.

22.   Donor monitoring. The World Bank will carry out project supervision at least twice a year, in joint missions with other donors, to coincide with the project planning meetings of the PSC. A multidonor mid-term review will be conducted during the third year of the project. Assurances have been obtained during negotiations that: (a) Grantees and donors shall conduct, not later than three years after the effectiveness of the project, a mid-term Project Implementation Review; (b) no later than six weeks prior to this review, the Grantees shall furnish a report that includes an evaluation of implementation progress by the Grantees, an analysis of key problems that have emerged during implementation, and a draft action program to be carried out through the completion of the Project; (c) the Grantees shall carry out promptly the recommendations of the mid-term review. In addition, a beneficiary assessment will be carried out to obtain feed-back from, and measure impact on, decision-makers, network members and grassroot communities in areas touched by project activities.

23.   Accounting. Each participating agency will maintain an adequate accounting system, satisfactory to the World Bank, to allow for accurate and timely recording of its operations, and will prepare annual financial statements in accordance with generally accepted accounting

principles. These annual financial statements will be consolidated by the PMU. Annual financial statements prepared for audit will consist of the cumulative account since Grant effectiveness, a summary of the special account and a summary of reimbursements and replenishments claimed under the statement of expenditures (SOE) procedures. The implementing agencies will have to improve their accounting capacities with the support of experienced and competent accountants.

24.   Auditing. Annual financial statements of GEF-financed components will be prepared and audited in accordance with the International Standards on Auditing (ISA). In addition, the audits will be performed by or in association with a member of the International Federation of Accountants acceptable to the World Bank. By June 30 of each year, the PMU will submit to the World Bank audited financial statements for the preceding financial fiscal year. The auditor's report will include: (i) a statement of expenditure, (ii) a statement of special account, and (iii) a long-form report or management letter commenting on the adequacy of the accounting system and internal controls. Furthermore, the PMU and participating agencies, in association with all donors, will explore the possibility and implications of harmonizing auditing standards and procedures regardless of the origin of funds.

25.   Evaluation. In addition to these periodic reports and the mid-term review, the PMU will produce within six months after the end of the project a comprehensive report on the achievements of the REIMP, that is, its performance, impact and the main lessons learned.

CHAPTER 5: Benefits, Justification and Risks

5.1 Types of Economic Benefits

1.   Environmental information products and services. The REIMP will result in the provision of enhanced as well as entirely new information products and services, covering a wide range of outputs targeted at a wide range of users. The information products include dissemination of existing information, new or updated inventories of selected resources and environmentally-significant areas, maps of different types, and aggregated indicators of environmental status. Software products will focus on decision-support applications for specific decision-makers. Technical services will focus on communications and technical support for gathering and disseminating environmental information. Some benefits may also result from spin-off activities of the individuals and/or organizations who receive training as part of the project and apply the resulting skills in other sectors.

2.   Information users. The recipients of the expected benefits will comprise users from different organizations as well as individuals who benefit from capacity building activities. The organizations identified at this time include: national governments, public organizations, local and municipal authorities, oil companies, mining companies, logging companies, the ecotourism industry, pharmacology firms, private sector consultants, NGOs, international aid organizations, and bilateral aid agencies. A detailed table of potential users and the priority needs that they have identified is given in Annex 1, table 1.3.

3.   Categories of benefits. From an analytical perspective, the benefits that these individuals and organizations will receive can be grouped into three categories for the purpose of this project:

- First, there will be marketable products and services emanating from the project that will result in financial transactions. The project will enhance the present situation, in terms of product quality and production capacity, and new products and services will also appear.

- Second, there will be cost-savings in the delivery of outputs that would otherwise have been produced at a higher cost because of economies of scale and the introduction of more efficient technologies. This will not result in a market transaction, but will release resources to be utilized for other useful purposes. The value of such cost saving is the economic benefit of the marginal activity that is thereby allowed. Since this may not be possible to determine and measure, the direct cost reduction will be used as a proxy.

- Third, public information goods will be available as a result of the project but for which the willingness to pay cannot be assessed by registering a market transaction, as in the first case. Comparison can be made with the revealed willingness to pay within the international community to have access to environmental information and to support biodiversity protection. Contingent valuation method offers another opportunity to assess willingness to pay. While this type of assessment can never be very precise, it will underpin the ultimately political decision as to whether or not the benefits are of a sufficient magnitude.

4.   Although the third type of benefits is very important to the region and may be the most important type from the viewpoint of the GEF facility, it is also the hardest to quantify. Therefore, the economic analysis will try to quantify mainly the first two types of benefits. Given

the wide range of potential beneficiaries, the estimate of benefits will also focus on a selected subset of the potential data users who are the most likely to be the major and earliest users of the products and services.

5.   Benefits due to marketable products and services. The expected benefits due to marketable services and products were assessed for a set of organizations in the countries of the project. The assessment of improved existing products and services included topographical maps, thematic maps, biodiversity and forestry inventories and data reproduction services. The assessment of potential new services included Internet services, land use maps and quality control activities. These are summarized in Annex 1. It is expected that the data production organizations will capture the majority of the benefits for marketable products and services by pricing the services according to the market. There will be additional benefits in the form of consumer surplus for the data users which is not indicated here. This is therefore a conservative estimate of the economic benefits to be derived.

6.   Benefits due to cost savings. The second category of benefits quantified for this project consist of expected cost savings due to economies of scale (e.g., lower unit prices for products or services due to a greater volume) and to the use of new technology (e.g., satellite imagery) where it is not currently used. These benefits also accrue to a wide range of users.[3]   The amount of benefits that were estimated in this category are given in Annex 1.

7.   Benefits due to public information goods. There will be an important category of benefits in the form of public goods that are not marketable, but for which, through a contingent valuation method, a quantification is possible. The two main types of such benefits are improved biodiversity monitoring and conservation, and improved forestry management and mining operations. Information can also enhance the quality of public environmental policy.

8.   Financial cost recovery. As noted above under marketable products and services, the project is expected to generate revenues from the data produced and disseminated by members of the REIMP network. The total revenues are estimated to be equal to the benefits for the first category as described above. This is currently estimated to total US$ 0.45 million per year in the base year (year one after the project completion) and to increase by an average of 2 percent per year. The associated recurrent costs of the member organizations is estimated to be US$ 0.66 million for the first year and to decrease to US$ 0.35 million after ten years including depreciation of equipment).

9.   This will result in full recovery of recurrent costs by the year five. There are additional recurrent costs between year one and year four, for an amount of US$ 0.5 million over four years. The commitment of the governments and stakeholders to cover these costs is a condition of sustainability of the system. Revenues are expected to exceed recurrent costs in the following years and to constitute a source of additional financing for project-related activities (see Figure 2).

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[3] The benefits were based on a limited number of estimates from interviews of the potential users relying on a willingness to pay survey.
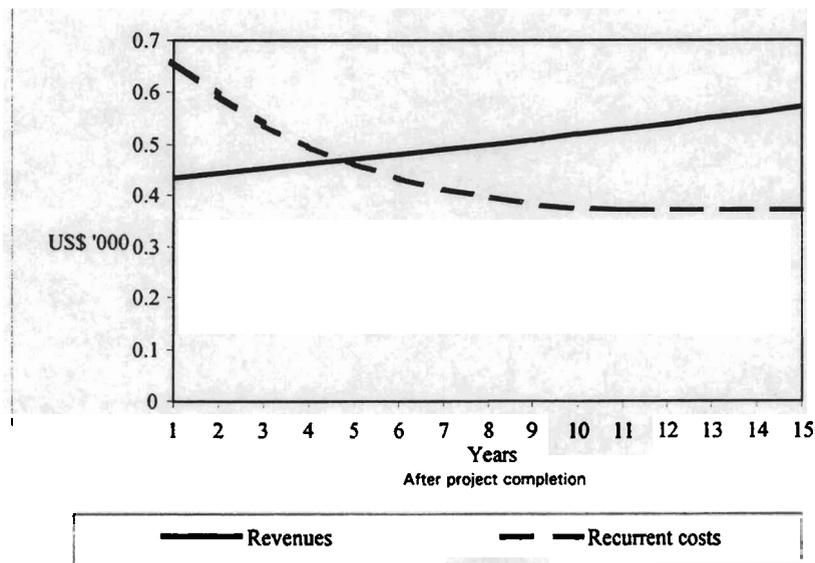
Figure 2 : Cost recovery after project completion

5.2 Justification for GEF Involvement

10.   Rationale for GEF financing. The project will promote basic environmental information and will develop expertise and scientific knowledge to assist policy makers in developing a knowledge-based information network that will facilitate sustainable management of natural resources and conservation of biodiversity in the Congo Basin. The project will provide the information needed to support the development of regional and national strategies for conservation of biodiversity and optimize biodiversity management and planning in the Congo Basin. Better monitoring and planning capacity will enhance forest habitat protection and biodiversity conservation, and help identify new areas to protect. In this way, the project contributes to the implementation of the Convention on Biological Diversity and Agenda 21, to which all Congo Basin countries are signatories. The global environmental benefits of the project come especially from the fact that environmental information is a public good. The GEF component of the project focuses on this global environmental aspect, which requires making a distinction between domestic and global costs and benefits. When global benefits exist, it is appropriate for GEF to fund the incremental costs required to generate the global environmental benefits.

11.   GEF program to conserve forest ecosystems. The project will be a component of the GEF Forest Ecosystem Operational Program. It will be the first ecosystem-wide component of an evolving GEF operational sub-program for the globally-significant tropical forest of the Congo Basin. The project will complement the largely site-specific biodiversity conservation projects that the GEF is supporting in several of the participating countries (Cameroon, CAR, Congo, Gabon) by establishing a comprehensive national and region-wide information system and the tools with which to apply that information to ecosystem planning and to the monitoring of both forestry and conservation initiatives. The project will also complement the biodiversity activities that are just getting underway in the region by improving the existing, inadequate environmental information on which their initial work will be based and updating that information over time to identify trends in the condition of the ecosystem.

5.3 Rationale for a Regional Project

12.   The Regional Approach. The regional approach of the project will make it possible to:
- address the Congo Basin biome conservation as a whole;
- ensure compatibility and integration of the various national outputs;
- address trans-border issues such as migration, transhumance, refugee movements and poaching;
- profit from economies of scale on investments, production costs and technical preparation expenses;
- facilitate relationships with other global networks;
- facilitate the development of common policies on forestry and natural resources within the region; and
- establish a technical and institutional framework to identify and implement projects and programs in biodiversity, forestry and environment as well as in other related sectors.

5.4 Risks

13.   Insufficient capacity of the governments to undertake the project. The six countries in the region are facing difficult economical and/or political situations. National capacity and political will are already under stress and may not be sufficiently strong to undertake such a project. To mitigate this weakness, the project will endeavor to create a synergetic effect with other initiatives within the donor community, NGOs and the private sector. The highly participatory approach adopted during preparation has already resulted in fruitful collaborations and will be pursued throughout implementation.

14.   Weak commitment of the decision-makers to use the information system. Project outputs will provide key data for managing national priorities and strengthening national capacities. From the donors' point of view, this project can also provide an opportunity to discuss global policy and project portfolios in a more transparent way with the governments of the region. The project cannot succeed, however, without the commitment of decision-makers to use the system and to allow the system to work as planned (free access to information, etc.). To mitigate this risk, decision-makers have been fully involved in the preparation process in order to give them a sense of ownership and ensure that project activities are useful to them. This, in turn, will give them a stake in the success of the project.

15.   Poor relationships with other regional and national projects. To be efficient, the REIMP must work in close collaboration with the other environmental projects within the region and make sure that outputs are useful to them. Different project management teams have been contacted, and collaboration arrangements have been proposed to them during the preparation stage. Specific arrangements have been made with the FAO's AFRICOVER team in order to share technical facilities and competencies. The continental AFRICOVER Program, which has been officially requested by most of the six governments, will be included in the REIMP activities to avoid duplication.

16.   Difficult project coordination. Given the network approach adopted, coordination plays an essential role -- among national network members, among National Work Groups and between National Work Groups and the regional PMU. Through regular workshops and well developed communication networks, it is expected that such multi-level coordination will be achieved. In addition, the existence of National Coordinators should facilitate smooth collaboration among national network members, while the Regional Coordinator will ensure coordination between

countries and on regional initiatives.

17.   <u>Excessive complexity</u>. The regional approach taken by this project, building on national networks in six different countries, is necessarily complex. However, this approach makes it possible to develop common approaches to similar problems, thus providing an element of simplification to counterbalance the complexity. The institutional set-up of the project has been simplified as much as possible, by establishing a very light PMU and avoiding the creation of new agencies. In addition, the project has been designed in a modular way, so that failure to make progress in any one country will not significantly affect the success of the project as a whole.

CHAPTER 6: Project Costs and Financing Plan

6.1 Project Costs

1.　　Total cost. The total cost of the project is estimated at US$ 19.9 million equivalent, including taxes, and physical and price contingencies, of which US$ 8.8 million equivalent in foreign currency and US$ 11.1 million equivalent in local currencies (Cameroon, CAR, Congo, Equatorial Guinea, Gabon and DRC). A summary of project costs is given below and detailed tables can be found in Annex 5.

Table 6 : Project Cost Summary

	(FCFA '000)			(US$ '000)		
	Local	Foreign	Total	Local	Foreign	Total
Cameroon	779,289	650,562	1,429,851	1,299	1,084	2,383
Central Africa Republic	986,798	639,481	1,626,279	1,645	1,066	2,710
Congo	927,270	638,730	1,566,000	1,545	1,065	2,610
Democratic Republic of Congo	789,436	990,329	1,779,765	1,316	1,651	2,966
Equatorial Guinea	577,832	379,180	957,012	963	632	1,595
Gabon	600,924	626,076	1,227,000	1,002	1,043	2,045
Regional Coordination*	1,470,076	946,934	2,407,010	2,433	1,578	4,012
Baseline Costs	6,121,626	4,871,291	10,992,917	10,203	8,119	18,322
Physical Contingencies	136,502	243,565	380,067	228	406	633
Price Contingencies	1,000,138	296,445	1,296,583	695	209	904
Total Project Costs	7,258,266	5,411,301	12,669,567	11,125	8,734	19,859

* Regional coordination covers support to the PMU, the PSC and the REFLI.

2.　　Base Cost. Base costs are estimated in July 1997 prices using the prevailing rates of exchange of FCFA 600 for US$ 1. The average physical contingency for all components is estimated 5 percent of base cost. Price contingencies were applied to base costs over the project implementation period of five years (1998 to 2002). Inflation on foreign exchange costs was calculated at an average rate of 3.5 percent from FY 1998 to FY 2002. The inflation rate on local costs was assumed to be 8 percent during the same period.

6.2 Incremental Costs and Global Environmental Benefits

3.　　Baseline Scenario. Within the baseline scenario, the major activities that have been designated by the six countries as national economic priorities concern the development and maintenance of comprehensive national environmental and geographical information systems and the effective and reliable internal dissemination of that information to key decision-makers. These components are identified in the Incremental Cost Annex. The improved national information systems will allow monitoring of activities such as logging or concessions, in order to better oversee these activities and collect appropriate fees from the timber companies. The participation of the governments will cover the local taxes and the salaries of the National Working Groups. Each of the six countries will provide all local funds needed to implement, operate and maintain the project. These amounts are as follows: (i) Cameroon: US$ 0.3 million equivalent; (ii) CAR: US$ 0.2 million equivalent; (iii) Congo: US$ 0.2 million equivalent; (iv)

Equatorial Guinea: US$ 0.1 million equivalent; (v) Gabon: US$ 0.2 million equivalent; and (vi) DRC: US$ 0.4 million equivalent. The governments will also finance local taxes and local salaries totaling about US$ 2.5 million. Derived products sales are assumed to cover US$ 0.5 million. Other donors will contribute US$ 12.8 million. European Commission, IFAD, Belgian Cooperation, French Cooperation, French GEF and German Cooperation (GTZ) are already involved in the financing of the project. Some other donors, including African Development Bank and CIDA expressed serious interest in co-financing. All financial commitment with the donors will be finalized before December 97.

4.   Global Environmental Benefits of the GEF Alternative. The GEF Alternative will achieve global environmental benefits to complement the national benefits realized under the baseline scenario. It will improve scientific and public knowledge on the Congo Basin ecosystem and assist national policy makers in developing a knowledge-based information network to facilitate the conservation of biodiversity. Global environmental benefits will be generated by the international sharing of information goods and development of improved conservation-oriented national information services. The project will help strengthen public environmental policy and help optimize biodiversity management and planning. For instance, the project will help to identify relevant new protected areas, monitor their status and management and enhance national capacities for biodiversity conservation planning and decision-making. More details are also provided in Chapter 5.

5.   Incremental Cost. The requested GEF contribution to cover the project's agreed incremental costs is US$ 4.010 million or 20% of total costs. This will finance the components that are outside the baseline and will produce additional global benefits. These components are: (i) regional harmonization of the primary network and the operation of the regional unit (US$ 1.720 million); (ii) regional workshops, the regional database, and regional environment reports of the decision-makers component (US$ 0.267 million); (iii) regional shared data [images, archives] and ecosystem wide information [biodiversity analysis, metadatabase] ($1.815 million), (iv) for the regional information unit (US$ 0.208 million). A GEF Grant Agreement will be signed between the World Bank and the regional PMU for US$ 4.0 million equivalent. A summary of project financing is given below and detailed tables are in Annex 5.

Table 7 : Project Budget by Source (US$ '000)

	Government	GEF	Other donors	Self-financing	Total
Cameroon	447	235	1,763	148	2,592
Central Africa Republic	462	551	1,900	36	2,949
Congo	478	654	1,651	87	2,869
Democratic Republic of Congo	476	499	2,194	70	3,239
Equatorial Guinea	196	181	1,314	49	1,739
Gabon	333	399	1,342	157	2,230
Regional Coordination*	151	1,491	2,598	0	4,240
Total Project Costs	2,542	4,010	12,760	547	19,859

* Regional coordination covers support to the PMU, the PSC and the REFLI.

6.   Government contribution. The participation of governments will cover local taxes and the salaries for the personnel of public agencies in the network. Two different rules may be applied by the countries to finance local taxes: (i) tax exemption for all goods, equipment or services purchased locally, or (ii) allocation of a local fund to reimburse the taxes. The procedure will be fixed for each country during negotiations.

6.3 Project Preparation

7.   Project Preparation Advances. The World Bank, acting as Trustee of the GEF, provided Cameroon, CAR, Equatorial Guinea, Gabon (includes PMU set-up costs) and DRC with Project Preparation Advances (PPA) of US$ 120,000, US$ 94,000, US$ 55,000, US$ 104,700 and US$ 103,500 equivalent, respectively. A US$ 50,000 fund was also added by the GEF to the project budget to be used by Congo during the preparation phase. These advances are not included in the project costs as they are on a grant basis.

8.   Other donor contributions. Other donors have helped finance the REIMP preparation phase by supporting the starting network and the creation of some initial products for a total contribution of US$ 865,000. Donors include: Belgian Cooperation (US$ 600,000), French Cooperation (US$ 100,000), USAID (US$ 60,000), Canadian Trust Fund (US$ 90,000), and German Cooperation (US$ 15,000). Moreover, costs related to the implementation of a telecommunication network are shared with UNDP, which advanced US$ 150,000, and with the CARPE project ($30,000).

6.4 Procurement

9.   Procurement Guidelines. Goods, vehicles, and aerial photographs and mapping, wholly or partly financed by the GEF, will be procured in accordance with the World Bank's "Guidelines for Procurement under IBRD Loans and IDA Credits" published by the World Bank in January 1995 and revised in January and August 1996. Consultancy services wholly or partly financed by the GEF will be procured in accordance with the World Bank's Guidelines for Selection and Employment of Consultants by World Bank Borrowers published in January 1977. Donor financing of the REIMP will be on a parallel basis and procurement of items financed by other donors will follow the procurement procedures of the respective donors. The following table summarizes procurement arrangements for the GEF (amounts include taxes). Procurement plans will be based on agreed standard processing time.

Table 8 : Procurement arrangements (US$ '000)

	International Competitive Bidding	National Competitive Bidding	Other	N.B.F.	Total
A. Operating Costs			2,631	6,055	2,631
			(2,343)		(2,343)
B. Consultant Services,			235	6,306	235
Studies and Training			(235)		(235)
C. Goods and vehicles	411	102		2,053	513
	(261)	(65)			(326)
D. Aerial Photographs	1,106				1,106
and Satellite mapping	(1,106)				(1,106)
E. Funds mechanism				960	
Total	1,517	102	2,866	15,374	4,485
	(1,367)	(65)	(2,578)		(4,010)

Note 1: Figures in parentheses are the respective amounts financed by the GEF.

Note 2: "Goods" is the category for equipment except vehicles, and includes office, cartographic and field equipment.

10.   Common equipment. To enable joint operations and training, and ensure availability of spare parts, the same data and equipment suppliers will be contracted jointly by the six countries using the same technical specifications and implementation schedule, as often as possible. To simplify disbursement, however, separate contracts will be signed with each of the implementing agencies.

11.   Vehicles, Goods, aerial photographs and mapping. All vehicles as well as equipment and supplies contracts exceeding US$ 100,000 will be procured through International Competitive Bidding (ICB) and will be bulked to the extent possible. Under ICB procurement of goods, locally manufactured goods will be allowed a preference of 15 percent or the import duty, whichever is lower. For goods contracts amounting to less than US$ 100,000 per contract, up to an aggregate amount of US$ 0.10 million, national competitive procedures acceptable to the World Bank will be used. Goods purchased under "operating costs" for contracts amounting to less than US$ 30,000 per contract will be procured under shopping (International and National) up to an aggregate of US$ 1.0 million. All aerial photographs and satellite mapping services amounting to less than US$ 400,000 per contract will be procured through ICB, up to an aggregate amount of US$ 1.1 million. This equipment and data will belong to the implementing agencies after the completion of the project, including the regional PMU.

12.   Consultants, studies and training. Recruitment of consulting firms or individual consultants for the strengthening of implementing agencies and training of its personnel will be carried out under the Quality and Cost Based Selection method (QCBS) in accordance with the World Bank's Guidelines. Exceptions to using the QCBS method will apply to financial audits (Least Cost Selection). Individuals will be hired based on procedures described in section V of the Guidelines.

All technical assistance, studies and training contracts, and incremental staff funded under the GEF Grant will be procured in accordance with the World Bank's guidelines for the selection of consultants; technical assistance will be primarily in the form of individual short-term consultants, who will be selected on the basis of experience and qualification.

13.   World Bank review. Requirements for World Bank review of procurement operations will be as follows:

(i) Procurement of goods, vehicles, aerial photographs and satellite mapping: proposal for advertising, draft tender documents, bid evaluation, and award proposals for all contracts exceeding US$ 100,000 will be subject to review by the World Bank prior to their execution.

(ii) All consultant contracts expected to cost more than or the equivalent of US$ 50,000 per contract with firms and US$ 25,000 per contract with individuals will be subject to prior review by the World Bank. All other contracts under these thresholds will be subject to post review. For contracts expected to cost more than or the equivalent of US$ 100,000, the World Bank will also require the Technical Evaluation Report for its prior review for non objection before opening of the financial envelopes.

(iii) Contracts below the prior review thresholds under (i) and (ii) will be subject to an ex-post review by the World Bank on a selected basis (about one in five contracts).

6.5 Disbursement

14. <u>Categories</u>. The number of disbursement categories will be limited to the four categories of (i) goods and vehicles, (ii) consultants, training, aerial photographs and satellite mapping, (iii) operating costs, and (iv) unallocated. Costs exclude taxes which is part of the Government contribution. Staff salaries funded by the GEF will be disbursed under the consultants category. This precludes the need for the PMU to manage counterpart funds. Operating costs funded by the GEF cover only a part of the total incrementing costs, which are also supported by the Government and other donors. The following table shows the Grant allocation per disbursement category.

Table 9 : Disbursement of GEF Grant, by categories (US$ million)

	Amount	Share of financing
Goods and vehicles	0.30	100 % of foreign expenditure
		90 % of local expenditure
Consultants services, Studies, Training, Aerial photographs and satellite mapping	1.20	100 %
Operating costs	2.10	100 %
Unallocated	0.40	
Total	4.00	

15. <u>Special account</u>. Financing and disbursement arrangements will be determined each year in accordance with the annual work plan and funding requirements prepared by the Regional PMU and agreed on with all donors. To facilitate payment of project expenditures and avoid the need for the PMU to pre-finance the GEF's contribution, the PMU will open a special account in French Francs in a commercial bank acceptable to the World Bank under terms and conditions agreed by the World Bank. The authorized allocation will be an amount of French Francs 1,500,000 (US$ 240,000). Fifty percent will be deposit upon Grant effectiveness and the remaining fifty percent when justified by project activities. The special account will be replenished on a monthly basis, or sooner, as needed. Replenishment requests will be fully documented, including the contracts themselves and other supporting documents, except for contracts of less than (i) US$ 100,000 for consultant services (firms), (ii) US$ 50,000 for goods, vehicles and consultant services (individuals), (iii) all operating costs and training costs which may be claimed on the basis of SOEs. Documentation of SOEs will be made available for review by World Bank supervision missions, and the annual audit of the special account will include a separate opinion on claims made against SOEs. The PMU will then sign separate contracts with network members to carry out the project activities, in accordance with the work plan and funding requirements agreed on with all donors. A standard model of these contracts, satisfactory to the World Bank, will be describe in the Project Manual.

16. <u>Disbursement plan</u>. Estimated GEF disbursement is based on detailed COSTAB tables and will be as follow:

Table 10 : Estimated GEF disbursement (US$ '000)

	1998	1999	2000	2001	2002	2003
Annual	782	1,252	782	546	440	208
Cumulative	782	2,034	2,816	3,362	3,802	4,010
Share	19 %	26 %	70 %	84 %	95 %	100 %

17.   Completion. The project is expected to be completed by December 2002. The closing date will be December, 31 2003. About 53 percent of all disbursements will be made during the first two years (26 percent for the GEF disbursements), reflecting the large amount of capacity building activities and basic products required. Relatively small amounts will be disbursed for specific investment requirements during the final two years.

CHAPTER 7: Agreements

During the Libreville and Brazzaville workshops (October 1996 and March 1997), representatives of the six Congo Basin countries involved in the REIMP committed themselves to promote environmental information management in Central Africa region. This commitment included: (i) implementing national networks for environmental information, gathering public agencies, NGOs, and private companies involved in natural resources management, and (ii) linking these national networks within a regional network fostering exchange of data, skills and experience between the countries. This commitment has been formalized through a Memorandum of Understanding, which has been signed by the respective Governments.

Conditions for appraisal (for information)
- National Coordinators have been appointed by each government and their terms of reference agreed by all the parties.
- The list of agencies of the primary national networks for environmental information have been defined in each country.
- National Working Groups proposed project documents that reflected the national components of the REIMP. The project documents gave a detailed description of expected results in each country, and contained a provisional budget and timetable.

Conditions for negotiations:
- Legal and institutional documents creating the national networks for environmental information have been signed by the Government of each country.
- The Memorandum of Understanding on regional cooperation for environmental information management have been signed by all parties.
- A draft Operating Manual has been issued and proposed to the stakeholders.

Conditions for effectiveness:
- The PMU will be established, that is, staff will be recruited and premises will be in working order (a provisional PMU has already been set up in Libreville).
- A written financing agreement will have been signed between the World Bank and European Commission.
- The Project Operating Manual will be available.
- The Terms of Reference for the mid-term review will be drafted.

Annex 1: Economic and Incremental Cost Analysis

A. Economic Analysis

Much information has the typical characteristics of a *public good*, that is, non-rivalry and non-exclusivity. This creates certain difficulties that private markets are not well equipped to handle.

- *Non-rivalry*. It entails that consumption or use of a public good by a particular individual does not diminish the quantity or quality of the same public good available to another individual. For example, the addition of one more user of an existing database concerning the forest cover and species composition in the Congo Basin, will not "crowd out" other users and impose a cost on them. The cost of the data gathering is "sunk" and not affected by the degree of use. Hence, there is no significant marginal cost imposed on society for the marginal user, and it follows that the efficient price should be zero. Not charging any fee to the user, however, leaves the producer without compensation for the fixed cost of production for the public good.

- *Non-exclusivity*. This concerns the fact that it is sometimes difficult or costly to exclude users from benefiting from private goods. For example, recipients of information from radio or television are in some countries asked to pay a fee, but monitoring of compliance is notoriously difficult; similarly, maps or statistical tables can easily be reproduced at a low copying cost. Thus, consumers become *free riders* and often do not pay, or pay too little to cover the full production costs. To the extent that fees are actually enforced, another problem arises: the marginal cost for a user will exceed the marginal cost of production. This is inefficient, as some potential users will forego the benefit that could have been delivered to them at a lower cost than the benefit enjoyed.

In summary, private producers will either be unable to charge for the public good, and will therefore not produce it, or, if they are able to successfully charge for it, there will be too little consumption of the public good. The result is that production of basic information is often a public undertaking, with private markets adding value in terms of selective presentations or tailor-made analysis targeted to selected audiences that are willing to pay for the upgraded information service.

From a cost-benefit analytical perspective, the valuation of information presents particular difficulty because its value is not easily observed in market transactions. Some distinction can be made among different information-related goods and services. There are derived information products and services that take on more of the usual private good characteristic, making them more and more amenable to conventional market analysis.

The project will result in the provision of enhanced (but existing) data as well as entirely new information products and services, covering a wide range of outputs targeted at a wide range of users. In order to organize this array of outputs, and prioritize what can be usefully captured in the valuation process, table 1.4 shows an Assessment of User Needs. The simple, unweighted ranking across users and products allowed for some focus in the valuation survey undertaken

during appraisal.

For the purposes of this projects, we distinguish three different kinds of benefits. Examples of these benefits are given in tables below.

First there are **marketable products and services** emanating from the project. Should these exist already, the project will either upgrade the quality, which will result in a higher market value (e.g., an updated map), or increase the output, which will allow previously unsatisfied demand to be fulfilled. In both cases, the existing market price and level of activity can serve as a benchmark, on the basis of which users can be asked for their incremental willingness to pay.

The marketable products or services may also be entirely new, however, such as access to new Internet services. In such cases, the price and volume of trading in goods or services as similar as possible will be assessed. Succinct and informative descriptions of these new activities, will also be presented to respondents in order to elicit their willingness to pay[4]. Market data from all the countries may also be useful.

Table 1.1 Annual Benefit Estimates for Marketable Products and Services (US$)

Type of benefit	CAR	Cameroon	Congo	Eq. Guinea	Gabon	DRC	Total US$
Improved Products	27,600	60,600	41,200	17,300	49,200	64,500	260,400
New Products	9,000	20,000	13,600	5,800	16,300	21,300	86,000
Improved services	2,500	5,600	3,800	1,600	4,600	6,000	24,100
New Services	6,800	15,000	10,200	4,300	12,200	16,000	64,500
Total Benefits	45,900	101,200	68,800	29,000	82,300	107,800	435,000

From a GEF perspective, marketable information products and services will result in benefits that are essentially, but not entirely captured by the domestic suppliers, selling both to domestic and international users. The omission is a consumer surplus that to some extent will be captured by an international audience. As the magnitude of marketable items will be small in comparison to the total output of the project, and because of data limitations, no separate attempt will be made to assess this surplus. Existing market prices and volumes and respondents' stated WTP are used to assess the expected market clearing prices and volumes.

An additional aspect of marketable products and services is that they can help in assessing the level of future cost-recovery of the project, an important indicator of its financial viability. This is discussed in the main text (chapter 5).

A second benefit category concerns **cost-savings**. These may not result in any market transaction directly tied to the saving, but constitute a real benefit. Cost-savings may result from (i) economies of scale, such as the buying in bulk of satellite images which brings down unit cost substantially, or (ii) the adoption of new technology, such as using satellite data to produce a map previously based on air photos taken at a higher cost. Theoretically, the value of the cost-saving

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[4] The willingness-to-pay (WTP) methods are not completely accurate, but when combined with current product price information they are a good basis for estimates of costs and benefits. The benefits for Cameroon are based on existing prices for products and services and on estimates of willingness-to-pay from interviews of the potential users. Estimates for Equatorial Guinea, Congo, CAR, Gabon and DRC are the result of a projection from Cameroon (using the distribution by country in the revenue generating plan). A complementary survey is planned for the six countries and the regional unit in order to have more accurate data.

is the benefit of the marginal activity that the saving will allow. This will often not be possible to identify, so the cost-reduction for undertaking an essentially similar activity with/without the project is used as a proxy. From a GEF perspective, cost savings are captured both domestically and internationally.

Table 1.2 Annual Benefit Estimates for Cost Savings (US$)

Type of benefit	CAR	Cameroon	Congo	Eq. Guinea	Gabon	DRC	PMU	Total US$
Satellite imagery[5]	19,200	14,400	10,600	1,200	7,200	68,400		120,000
Aerial photos[6]	10,000	10,000	10,000	10,000	10,000	10,000		60,000
Inventories[7]	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
New Technology[8]	TBD	TBD	TBD	TBD	TBD	TBD		TBD
Total Benefits								180,000

The third benefit category, which will also be the most difficult to assess concerns **information of a public good character**. Examples include the creation of biodiversity inventories, assessment of forest cover, deforestation rates, species composition, the creation of metadata and archive systems. The catalogue system about existing environmental information products and services will be free of charge to the public.

When no behavioral trail is observable in terms of market transactions, and actual market creation would be inappropriate for efficiency reasons, one is left with the use of hypothetical markets; or Contingent Valuation Methods (CVM). This is a well-established field within environmental economics. In brief, CVM entails the "simulation" of a market by succinct description of options, and questions about willingness to pay for certain options versus others. There are a number of well-known biases that afflict this type of survey, the impacts of which can be mitigated though careful design. Precision will not be high, but it can serve as a useful tool in assessing the order of magnitude of various benefits.

From a GEF-perspective, information public goods have the character of global benefits, including the share of global benefits that accrue domestically. Hence, the full value for all users of these products and services should be counted as a benefit against legitimate incremental cost.

In summary, the figure below illustrates the benefits divided into three categories, and makes a nominal comparison with the costs. The latter are divided between various sources of funding.

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[5] Lower unit price. Estimates are done per countries. The assumption made is the following: 1,000,000 km². of satellite imagery will be purchased during the project. This will reduce the price of the images purchase. The cost savings assumption is US$ 0.6 /km² (see footnote 10, p. 20 for satellite imagery prices). The benefits are US$ 120,000 per year. The distribution of benefits by country depends on the country size.

[6] This cost saving is mainly provided by avoiding the deplication of transportation costs for this service (usually 30% of the total cost, i.e., for two consultancies of US$ 30,000, US$ 20,000 goes to transportation. By avoiding duplication, US$ 10,000 is saved).

[7] This is due to standardized methodology that will rationalize data collection, storage and circulation.

[8] New technologies are introduced in the countries. This will result in cost savings due to technology transfer.

Benefits and Costs

Benefits

Market products

Costs savings

Public goods

Costs (Source of Funds)

▢ Governments

▢ GEF

▉ Other donors

▢ Self-financing

Benefits   Costs
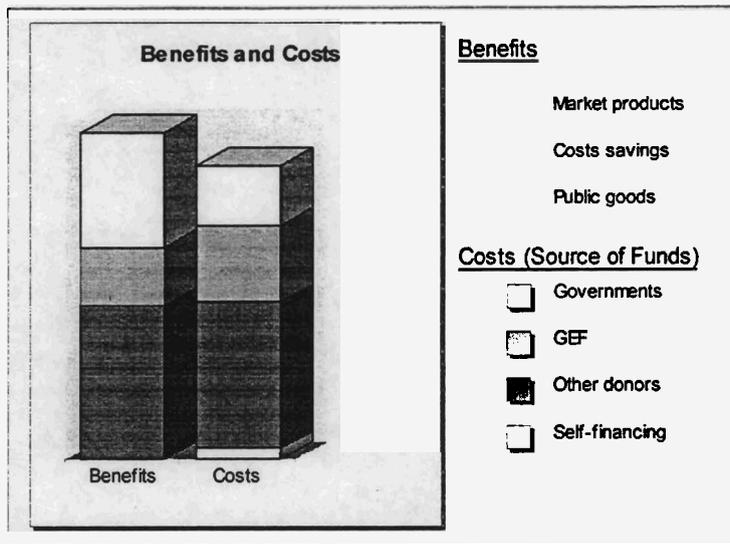
Table 1.3 - Assessment of the users need

		Intern. organis	Bilateral agencies	Em-bassies	National govts	Public organis	Oil comp.	Mining comp.	Logging comp.	Eco tourism industry	Pharma. Lab.	Local private sector	General Public	NGOs	Research centers	Local authorities, muni-cipalities	Total: Prioritization of the products
Topographical databas	A																
-R		●●●	●●●	●	●	●	●	●		●	□	□	●	●●	□	□	15
-N		●●●	●●●	●●	●●●	●●●	●●	●●	●●	●	□	●	●●●	●●	●	●	29
-L		●●●	●	●●	●●●	●●●	●●●	●●●	●●●	●●	□	●●	●●●	●●	●	●●●	34
Soil occupancy database	A																
-R		●●●	●●●	□	●	●	●	●	□		□	□	□	●●	?	□	13+?
-N		●●●	●●●	●	●●●	●●●	●●	●●	●●	●	□	●	□	●●	?	●	24+?
-L		●●●	●	□	●●●	●●●	●●●	●●●	●●●	●●	□	●●	□	●●	●	●●●	29
Environmental database	C																
-R		●●●	●●●	□	●	●	●●●	●●	●	●●	●●	□	□	●●●	●	●	23
Sub regional and national "Dashboard"	B																
-R		●●	●●●	□	●	●	●	●	□	●	□	□	□	●	?	□	11+?
-N		●	●●●	●	●●	●●	●●	●●	●	●●	□	□	▢	●	?	●●	19+?
Legal database	C																
-N		●	●●	●●	●●●	●	●	●	●	●	●	●	□	●	□	●	17
-L		●	●	●●	●●	●	●●	●●	●●	●●	●	●	□	●	□	●●	20
Socio-economical database	B																
-N		●●	●●	●	●●●	●●	●	●	●	●	□	●	□	●	●	●	18
-L		●	●	●	●●●	●●	●	●	●	●	□	●	□	●	●	●●●	18
Forest and biodiversit database	B																
-N		●●●	●●	●	●●	●	□	●	●●●	●●	●	□	□	●●●	●●	●	22
Pedology/Climate/Geology/Water database	D																
-N		●	●	□	●	●	□	□	●	●●	□	□	□	●●	●●	●	12
Land management database	B																
-N		●●●	●●●	□	●●●	●●	□	●	●●	●●	□	●	□	●●	?	●	20+?
Biodiversity Inventory	B																
-L		●●●	●●	□	●	●	□	●	●●	●●	●●	□	□	●●●	●●	●	20
Urban areas	C																
-L		●	●	●●	●●	●●	□	□	□	□	□	●	□	□	□	●●●	12
Rural areas	C																
-L		●	●	●●	●●	●●	●●	●●	●●●	●	□	●	□	□	□	●●●	20
Total: Prioritization of the users		41	39	18	40	33	25	27	28	27	7	13	7	31	12+?	28	

R: regional - N: National - L: Local

Order of availability of the products: A - D

Level of importance for the users: very high ●●● =3, high ●● =2, medium ● =1, low 0, unknown ?

Totals are nominal leverage.

B. Incremental Costs Analysis and Global Environmental Benefits

Context and Broad Development Goals

1.   The Congo Basin is covered by the second largest contiguous primary rain forest in the world. This forest is a region of rich biological diversity and has an enormous carbon storage capacity. It covers 2.1 million sq. km, representing 26% of the world's remaining rain forest and 70% of the remaining African rain forest. The current loss of forest cover is about 11,385,000 ha per year (0.5% per year).

2.   The project countries are highly dependent on their natural resources but biodiversity is poorly inventoried in the Congo Basin, and forest cover is not precisely known. Consequently, management planning is very difficult due to the lack of basic data regarding forest extent, composition and characteristics at local, national and regional level.

3.   The project will introduce new communication technologies and develop environmental information products and decision-making tools and standards to assist policy makers, the private sector, donors and NGOs in pursuing sustainable management of natural resources in the Congo Basin. Moreover, it will enhance national capacities to produce, manage and market environmental information.

Baseline Scenario

4.   The baseline scenario is six different environmental information projects, one for each country. In this scenario, the governments would improve existing rudimentary information systems to a level that would allow monitoring of natural resource management activities. The national institutes in charge of geographical and environmental information management would benefit from new equipment and be able to provide reliable and updated information on the countries' geographical features.

5.   The baseline scenario consists of the following specific components: (i) dissemination of national information by improving the internal telecommunications infrastructure. Basic internal communication facilities would also be available, such as email connectivity. (US$ 1.890 million) (ii) sound land use planning by organizing national workshops and developing land use planning and monitoring tools. National capacities to monitor implementation of land use decisions would be enhanced. (US$ 1.932 million) (iii) provision of basic environmental information products (topographical and land cover maps) and national and local resource zoning (US$ 6.082 million), (iv) strengthening national information capacities by providing equipment and technical assistance, and marketing the national agencies. (US$ 5.945 million). The total cost for the baseline scenario is of US$ 15.849 million.

6.   Development of the baseline scenario would allow the governments to develop a sustainable natural resource management framework in partnership with the local private sector and the local authorities, through regular dissemination of national environmental information. It would assist national policy makers to make better use of environmental information in monitoring activities, such as logging or concessions management, in order to collect taxes from the timber companies, and enforce compliance with environmental regulations. Marketable products and services, such as maps, atlases, etc. would increase revenues for the national institutes in charge of geographical and environmental information management. National agencies would be able to manage and use information technologies for information production and monitoring.

Global Environmental Objective

7.   The objective of the GEF alternative would be to add a regional dimension which would enable the governments and donors to address the environmental issues of the Congo Basin as a whole. It would

optimize biodiversity management and conservation, by providing the decision makers with appropriate information on biodiversity. The project would help to identify new high-priority national and transboundary protected areas, and enhance habitat protection in the Central Africa Region, thereby contributing to the implementation of the Convention on Biological Diversity and Agenda 21.

GEF Alternative

8.   GEF alternative would serve to convert the baseline scenario of six unconnected national projects into an integrated and consistent regional project and to strengthen the products and services focused on biodiversity. Under the GEF alternative, the following components would be added to the baseline scenario to realize the global environmental objectives: (i) dissemination of scientific information on biodiversity and harmonizing of the primary network and the regional unit. It will facilitate information comparison and exchange by promoting international standards for data collection and integration. Information on the condition of biodiversity and protected areas will be brought into the public domain. (ii) involvement of decision makers in biodiversity conservation by organizing regional workshops and elaborating regional reports. This will foster regional policies on biodiversity conservation by enlarging the scope of environmental concerns to the national officials. (iii) providing users with environmental information by developing regional databases (archive database and metadatabase) and ecosystem wide information (biodiversity information integration and analysis, species inventories). Reliable and timely information will reduce response time in crisis situation that could occur in the Central Africa Region, and affect the quality of public conservation policies. Specific studies would be done at a small scale, as for example a study on an threaten specie unique to the Central Africa Region, and (iv) strengthening the regional capacity to manage and use information on biodiversity by providing equipment to the regional unit dedicated to the previous components. Additional domestic benefits are not expected for the activities developed under GEF alternative.

9.   With the GEF alternative, global environmental benefits would be generated by collecting, inventorying and sharing information on biodiversity in a network with global access that would facilitate informed decision making and permit the development of conservation policies in the Congo Basin. Improved knowledge on complex biological mechanisms would help to set priorities in protection and conservation of biodiversity. It would also bring environmental information into the public domain and increase international public awareness on biodiversity, which is expected to urge decision makers to protect the biological resources of the region.

10.   Implementation of GEF alternative would develop activities of a regional scope that would not have been possible under the baseline scenario. The project countries would therefore be able to consider transboundary environmental issues and the development of a regional information network would help to monitor and protect biodiversity in the Central Africa Region.

Scope of the analysis

11.   The scope of the analysis encompasses the development of environmental information in the six countries, where the regional component in the GEF alternative represents an extension of the system boundary. This extension will significantly improve global dissemination of information on biodiversity and enhance external access to the entire network.

Incremental Costs

12.   The total costs of the project are of US$ 19.859 million. The incremental costs for which GEF financing is requested, are about US$ 4 million. Details on the incremental costs and global benefits per project component are presented below.

Incremental Costs Matrix

i. Network Creation and Service Component.

	Baseline	Alternative	Increment
Costs ('000 US$)	1,890	3,610	1,720
Domestic Benefits	• Better communication within the countries due to the introduction of new technologies and the improvement of the national telecommunications infrastructure • Improved natural resource management development for the local private sector and the local authorities by allowing them access to national environmental information (newsletters, documentation centers, information on national environmental legislation, etc.) • Collaboration between the various stakeholders involved in forestry management by sharing information in order to develop national strategies for forest sector management	• Same as in the baseline	
Global Environmental Benefits		• Enhanced conservation policies by using improved scientific knowledge on biodiversity through the development of information services in the regional unit. In the Congo Basin region, research on environment and health is important, and dissemination of such information will also serve a demand from the international community of scientists. • Better dissemination of information in the public domain will facilitate international consensus and action on biodiversity conservation priorities in the Central Africa Region. This is due to standardized methodology that will rationalize data collection, storage and dissemination	

ii. Decision-Makers Component

	Baseline	Alternative	Increment
Costs ('000 US$)	1932	2,199	267
Domestic Benefits	• Improved national natural resources management policies and compliance with environmental regulations by facilitating sound land use planning • Better monitoring of agricultural activities at the forest margin and enhanced identification of encroached areas by developing user-friendly information tools	• Same as in the baseline	
Global Environmental Benefits		• Increased global environmental awareness on biodiversity protection and conservation in the Congo Basin through a regional workshop on biodiversity and a regional report on the Environment. This will improve the ability of decision makers to control and prevent environmental impacts of natural resources degradation, and allow better conservation of biological resources	

iii. User Oriented Production Component

	Baseline	Alternative	Increment
Costs ('000 US$)	6,082	7,897	1,815
Domestic Benefits	• Increased revenues due to the sale of marketable products and services (maps, atlases, consultancies, national environmental guides, etc.) • Increased quality in geographical and environmental information products (topographical and land cover maps) that would allow improved resource exploitation monitoring	• Same as in the baseline	
Global Environmental Benefits		• Increased quality of information on biodiversity and forestry ecosystems, e.g. up-to-date inventories compiled in a guide on biodiversity by collecting, integrating and analyzing complementary information on biodiversity. The use of satellite imagery will benefit to forestry monitoring by allowing identification of damaging environmental impacts of logging activities. This is expected to reduce response time and speed up the decision making processes on conservation policies • Free access for the international community to products like a metadatabase and an archive database	

iv. Capacity Building Component

	Baseline	Alternative	Increment
Costs ('000 US$)	5,945	6,153	208
Domestic Benefits	• Improved local skills in data management through technical assistance and training of local staff on information technologies • Acquisition of basic equipment that will allow economies of scale in information processing for the national institutes in charge of geographical and environmental information	• Same as in the baseline	
Global Environmental Benefits		• Building regional capacities by providing equipment to the regional unit and enhanced national equipment for data processing. This component is crucial to ensure long term regional information development and strengthen the regional dimension	

Total

	Baseline	Alternative	Increment
Costs ('000 US$)	15,849	19,859	4,010

Annex 2: Technical content of the contracts

Cette annexe est composée de deux parties. La première partie (A) est une synthèse des propositions présentées par les pays au financement PRGIE. Elle a été établie par la FAO. Ces propositions nationales seront revues lors de l'atelier de Bata en octobre 1997. Les propositions RDC n'ont pu être insérées dans cette version (document arrivé trop tard). les événements de juin 97 ont empêché l'équipe congolaise de fournir la version finale de leur documents de projet. La deuxième partie (B) est un tableau qui recense les principales décisions qui peuvent être prises ou actions menées dans le domaine des ressources naturelles à partir des informations fournies par le projet.

A. Synthèse des documents de projet nationaux

GABON

1. Carte topographique de base sur la zone côtière
Sous-objectif: Production d'Information de Base (C1)
M. d'oeuvre: Institut National de Cartographie (INC)
Durée: 16 mois à partir de 1998

La nécessité de disposer d'une base cartographique de référence établie selon une norme standardisée homogène sur l'ensemble du territoire gabonais est reconnue par tous les utilisateurs et producteurs d'information géographique, qu'ils soient du domaine urbain, minier, forestier, agricole et environnemental. Or, quelle que soit l'échelle considérée, cette couverture n'est ni complète ni homogène et surtout, sa précision n'est en moyenne plus compatible avec les contraintes modernes d'aménagement et de gestion du territoire et de ses ressources. Si un tiers des feuillets au 1:200,000, considérée comme l'échelle de base, a subie une mise à jour depuis 1980, il n'en demeure pas moins que 20% du territoire environ est toujours couvert par des esquisses cartographiques parfois vieilles de 50 ans en zone de forêts denses. L'INC inscrit donc dans ses priorités la confection d'une base de données cartographique au 1:200,000 fiable et homogène sur l'ensemble du territoire. Ce produit renseignera sur le relief, l'état des infrastructures, le réseau hydrographique, la localisation des villes et villages, et la toponymie. Dans le cadre du premier Plan de Travail Annuel (PTA) du PRGIE, la région côtière identifiée au bassin sédimentaire gabonais constituera la première zone d'intervention de l'INC La production de la base de données donnera lieu à la publication de spatiocartes sur cette même zone afin de la populariser. Il est à noter que l'INC possède d'ores et déjà une expérience significative dans l'interprétation d'images satellite, en particulier radar, qui permettent de s'affranchir du couvert nuageux particulièrement pénalisant pour les réalisations cartographiques. L' INC est également à l'étude de l'intégration des normes AFRICOVER préparé par la FAO dans le processus de réalisation de la base de données.

Méthodologie:
1. Acquisition et installation du matériel
2. Assistance technique
3. Formation
4. Définition de la structure de la base de données
5. Recherche et analyse documentaire
6. Définition des spécifications et de la méthodologie finale
7. Elaboration du plan de travail
8. Préparation de la base de données
9. Acquisition des données satellitaires
10. Travaux d'amélioration géodésique et stéréopréparation
11. Pré-traitement des images (corrections géométriques et radiométriques)
12. Numérisation des courbes de niveau (automatique/manuelle)
13. Numérisation des infrastructures (cartes anciennes et images récentes)
14. Numérisation de l'hydrographie (cartes anciennes et images récentes)
15. Saisie des toponymes
16. Complètement et vérité terrain
17. Intégration des données de terrain et finalisation
18. Contrôle qualité
19. Edition cartographique et impression
20. Gravure de CDROM

2. Stratification forestière de la zone côtière
Sous-objectif: Production d'Information dans le thème Forêts/Biodiversité (C2)
M. d'oeuvre: Direction des Inventaires, Aménagement, et Régénération Forestières (DIARF)
Durée: 12 mois à partir de 1998

La Direction Générale des Eaux et Forêts s'est donnée pour mission depuis quelques années de mieux connaître l'occupation actuelle et le potentiel des terres en vue de circonscrire avec précision les massifs forestiers qui devraient effectivement être classées comme aires protégées et forêts de production. Cet engagement a donné lieu avec l'appui de l'Organisation Internationale des Bois Tropicaux (OIBT) à un projet de stratification de la première zone forestière, actuellement en cours de réalisation au sein de la DIARF. Conçu comme un outil de planification des inventaires forestiers nationaux, mais également d'attribution de permis temporaires d'exploitation et de permis industriels dans une logique d'intervention à long terme, les cartes qui en découlent sont également des instruments de grande valeur pour les spécialistes des autres domaines environnementaux, en particulier les mines et la conservation.

C'est dans cette logique que s'inscrit cette proposition de la DIARF dans le cadre du PRGIE, qui vise la première année à étendre sur le reste de la zone côtière les travaux de stratification forestière. En particulier, la DIARF et l'INC travailleront en bonne intelligence afin d'éviter les duplications, et ainsi maximiser l'impact du PRGIE auprès des utilisateurs. La DIARF est également à l'étude de l'intégration des recommandations AFRICOVER dans le processus de production des plans.

Méthodologie:

1. Acquisition et installation du matériel
2. Assistance technique
3. Formation
4. Normalisation des données à intégrer
5. Intégration de la carte de base
6. Caractérisation et numérisation des régions climatiques
7. Caractérisation et numérisation des grandes unités de paysage
8. Caractérisation et numérisation des unités géologiques et géomorphologiques
9. Caractérisation et numérisation des unités pédologiques
10. Intégration de la couverture végétale ancienne, lorsqu'elle existe
11. Photo-interprétation de la couverture végétale et occupation des sols actuelles
12. Collecte et intégration des données de faune et de flore
13. Numérisation des tenures forestières
14. Numérisation des infrastructures forestières
15. Numérisation des infrastructures sociales
16. Evaluation des potentiels et contraintes (accessibilité, risques d'érosion, potentiel de production forestière, potentiel de production agricole)
17. Production du plan d'affectation des terres forestières
18. Edition et diffusion des plans
19. Gravure et diffusion des CD-ROM
20. Elaboration du rapport de synthèse

3. Appui à l'établissement du plan d'aménagement du Complexe de Gamba et massif du Chaillu
Sous-objectif: Production d'Information dans le thème Forêts/Biodiversité (C2)
M. d'oeuvre: Direction de la Faune et de la Chasse (DFC)
Durée: 21 mois à partir de 1998

Le complexe des aires protégées de Gamba est constitué d'un ensemble de 8 aires protégées qui s'étendent sur 1,000,000 ha et qui abritent de nombreux types d'habitats naturels représentatifs de la diversité biologique du bassin du Congo: écosystèmes côtiers, aquatiques, savanicoles et forestiers. L'élaboration d'un plan d'aménagement de la zone selon les lignes de conduites du Plan Directeur établi conjointement par la Direction de la Faune et de la Chasse (DFC) et le WWF, est considéré comme une priorité pour la conservation de cet ensemble exceptionnellement riche. Un soutien actif des bailleurs de fonds, notamment la coopération néerlandaise (DGIS) et américaine (programme CARPE), a permis de financer la réalisation d'inventaires faunistiques afin d'établir les densités relatives d'éspèces-clés dans différents secteur du complexe, la formation de personnel national pour les inventaires et le suivi des populations animales, et la réalisation d'enquêtes socio-économiques sur l'utilisation des ressources naturelles par les populations riveraines. Au

delà de ces activités, la connaissance du complexe nécessite la réalisation d'inventaires botaniques, la confection d'une carte de végétation au 1:100,000, et l'organisation des données collectées par les différentes initiatives en cours au sein d'un système d'information pour en faciliter la comparaison, l'analyse et la diffusion. Ces trois initiatives font l'objet de cette activité dont la coordination sera assurée par la DFC. Le WWF activement impliqué dans la zone sera un partenaire important, qui pourra assurer un appui à la fois technique et logistique au projet. Le recours à des agences spécialisées du réseau, telle que l'INC, se fera également pour les tâches de nature cartographique.

L'activité prévoit par la suite d'étendre ces opérations dans les Monts de Chaillu, refuge forestier du Pléistocène très peu connu à l'est du complexe de Gamba. Tout comme celui-ci, ce refuge aurait joué un rôle important dans la régénération de la forêt tropicale à l'époque où les conditions climatiques moins humides en Afrique Equatoriale favorisèrent le recul de la forêt au profit de la savane. Par là même, le massif, dont la connaissance n'est qu'anecdotique, devrait être un site d'intérêt unique par sa richesse et son endémisme.

Méthodologie:

1. Acquisition et installation des équipements
2. Formation de deux biologistes
3. Assistance technique
4. Appui à la collecte des données locales sur la pression anthropique
5. Elaboration de la carte de végétation au 1:100,000
6. Identification des différents types de milieux par stratification de la carte de végétation
7. Détermination des bio-indicateurs pour les différents type de milieux
8. Inventaire botanique
9. Création de la base données sur les inventaires faunistique, botanique, et anthropique
10. Synthèse et diffusion des informations

4. Création et diffusion de plans d'information géologiques et hydro-géologiques
Sous-objectif: Production d'Information dans le thème Energie (C6)
M. d'oeuvre: Direction Gle des Mines et de la Géologie (D.G.M.G.)
Durée: 5 ans à partir de 1998

Outre ses ressources forestières, le Gabon tire également profit des ressources de son sous-sol, essentiellement le pétrole, le manganèse, et l'uranium. La connaissance du secteur est certes déjà très avancée mais reste souvent difficile d'accès étant donné le morcellement de l'information dû à la multiplicité des opérateurs dans le domaine, la sensibilité de certaines données confidentielles, et des faibles structures de documentation et de reproduction. Aussi, la mise au point d'un outil permettant de rendre compte des données existantes en les organisant sous un format facilitant son exportation vers les clients extérieurs est-elle envisagée afin de supporter les processus de décisions liées à la recherche et prospection géologique, l'attribution de permis de recherche et permis d'exploitation, le suivi des activités et la réglementation du secteur. La Direction Générale des Mines et de la Géologie (DGMG) par le biais de sa Direction de la Géologie et de la Recherche Minière (DGRM) aura la tutelle de cette activité qu'elle réalisera avec l'appui de l'INC qui fournira le cadre topographique de référence et la formation nécessaire aux techniques de numérisation et positionnement par GPS. La

première année, l'activité se concentrera sur la zone côtière, soit une couverture des l0 feuillets au 1:200,000 situé à l'ouest du onzième méridien.

Méthodologie:

1. Acquisition et installation des équipements
2. Assistance technique
3. Formation
4. Importation des fonds topographiques numériques de l'INC
5. Recherche documentaire et organisation des données
6. Conception de la base de données et élaboration du modèle cartographique
7. Numérisation des documents collectés
8. Rédaction de la notice provisoire et synthèse
9. Reconnaissance sur le terrain - intervention de spécialistes
10. Correction, finalisation de la base et rédaction de la notice finale
11. Maintenance du matériel
12. Renouvellement des consommables
13. Mise à jour de la documentation et veille technologique

5. Promotion des services télématiques de diffusion
Sous-objectif: Mise en oeuvre de catalogues et métabases (A3)
M. d'oeuvre: Direction Gle de l'Informatique (D.G.I.)
Durée: 15 mois à partir de 1998

Conçu initialement comme une activité "support" à la mise en oeuvre du PRGIE, la promotion des produits, services et compétences des agences du réseau via des médias informatisés a fait l'objet de nombreuses requêtes de la part d'institutions a priori extérieures au projet. La réflexion menée depuis a ainsi permis d'élargir les interventions en la matière de manière à répondre aux requêtes externes et accroître l'impact du projet auprès des utilisateurs. Ces interventions couvrent: (i) le développement et la mise à jour d'un serveur Web destiné à promouvoir les produits et services offerts par les agences du réseau mais également par toute agence qui en exprimerait le souhait, (ii) la finalisation et mise à jour nationales de la métaphase de données (prototype développé par l'Université belge de Gand), qui se veut un répertoire des ensembles de données environnementales de nature cartographique, photographique, satellitaire, ou statistiques existant sur l'Afrique Centrale, (iii) l'installation d'un kiosque télématique à l'usage des particuliers - notamment étudiants - désireux de s'éprouver aux techniques télématiques, (iv) l'organisation de séminaires de sensibilisation sur les produits du PRGIE, et (v) la veille technologique en matière de technologies de l'information via par exemple une lecture assidue des revues spécialisées. Si la DGI assure la coordination de l'activité, sa réalisation fera néanmoins intervenir activement l'IAI pour la gestion de la métabase de données, et l'ONG Association Club UNESCO (ACU) pour l'animation du kiosque télématique.

Méthodologie:

1. Acquisition et installation des équipements
2. Etudes préalables à la conception de pages Web
3. Collecte auprès des agences de l'information à promouvoir
4. Développement du serveur Web
5. Maintenance et mise à jour du serveur
6. Définition d'un cahier des charges utilisateur pour la métabase de données

7. Evaluation du produit de l'Université de Gand
8. Développement des procédures de consultation
9. Mise en place et formation des équipes de saisie
10. Recherche documentaire et saisie des données
11. Mise en forme et valorisation des données pour diffusion auprès des utilisateurs
12. Aménagement du kiosque télématique
13. Animation du kiosque télématique
14. Organisation d'ateliers nationaux de sensibilisation sur les produits de PRGIE
15. Veille technologique

6. Formation des cadres nationaux et régionaux à la production, gestion et diffusion de données environnementales
Sous-objectif: Formation des cadres nationaux (Dl)
M. d'oeuvre: Direction Gle de l'Informatique (D.G.I.)
Durée: 14 mois à partir de 1998

Le Gabon possède incontestablement des atouts majeurs pour jouer au sein du PRGIE le rôle de pôle sous-régional de formation en matière de gestion de l'information à caractère environnemental. Cette formation est rendue nécessaire par, d'une part, les exigences nouvelles en matière de programmation durable des ressources naturelles ainsi que de suivi des activités d'exploitation et des dommages sur l'environnement qui en résultent, et d'autre part, par la faiblesse des compétences sous-régionales dans ces domaines. La présence à Libreville d'établissements à dimension régionale tels que l'Ecole Nationale des Eaux et Forêts (ENEF) et l'IAI, l'émergence de bureaux d'études locaux ou internationaux spécialisés de type Metrika ou Geoscan, et le haut degré d'implication des institutions nationales dans les composantes "information" de nombreux projets de développement (ex: les rôles de la DGI au sein du projet RDD, de la DIARF au sein des projets OIBT et PFE, et celui de l'INC dans les projets PFE et FAC) sont autant d'atouts susceptibles d'attirer au Gabon les cadres sous-régionaux pour des cycles de formation, stage de recyclage, ou séminaires de perfectionnement. L'activité proposée est élaborée dans cette perspective et son suivi sera assuré par la DGI. La première année, elle visera principalement à la formation des cadres nationaux pour les besoins du PRGIE mais se dotera de procédures lui permettant d'étendre son intervention à d'autres clients et à des requêtes extérieurs. La DGI aura également en charge la publication d'un catalogue des formations proposées par les agences du réseau.

7. Coordination
Sous-objectif: suivi des activités nationales (El)
M. d'oeuvre: UNGC.
Durée: 5 ans à partir de 1998

La dimension régionale du PRGIE ainsi que la grande variété des partenaires membres du RNIE constituent deux facteurs importants favorables au développement des synergies entre les agences. Toutefois, cette richesse pourrait aussi entraîner une dispersion des activités en oubliant les objectifs initiaux du projet. D'où la nécessité de mettre en place une structure de coordination souple et évolutive à l'écoute des besoins et respectueuses des engagements. A cet effet et sur le plan national, l'UNGC aura la charge de la gestion quotidienne des rapports entre les agences dans le but de stimuler la production,

la valorisation et l'échange des données, informations, produits et services. Dans cette optique, les principales fonctions de l'UNGC seront les suivantes :

(i) Assurer le secrétariat du RNIE, appliquer les décisions du CRIE et la gestion des contrats.
(ii) Gérer les accès à Internet et autres réseaux.
(iii) Assurer la programmation et le suivi des activités du PRGIE.
(iv) Faire circuler l'information et développer la crédibilité entre les membres.
(v) Identifier les offres et les besoins en formation interne et externe et faire développer les nouveaux produits.
(vi) Gérer les catalogues de données et services et la certification nationale des bases de données.
(vii) Faire appliquer les standards pour garantir le label PRGIE
(viii) Concevoir et mettre en œuvre un Tableau de Bord de l'Environnement

Méthodologie:

1. Coordination
2. Rédaction des documents et lancement d'appel d'offres
3. Suivi des indicateurs
4. Préparation du Plan de Travail Annuel (PTA)
5. Conception du Tableau de Bord national sur l'Environnement

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CAMEROUN

1. Produits topographiques de base
Sous-objectif: *Production d'Information de Base (Cl)*
M. d'oeuvre: Institut National de Cartographie (INC)
Durée: 4 ans à partir de 1998

L'existence d'une cartographie de base de qualité comme outil préalable aux travaux d'inventaires, d'exploration ou d'aménagement a été jugé essentielle par l'ensemble des partenaires consultés, qu'ils soient du secteur public[9], du secteur privé[10], ou du secteur non-gouvernemental[11]. Or la base cartographique actuelle à l'échelle du 1:200,000 souffre de graves lacunes parmi lesquelles son obsolescence - certains feuillets n'ont pas fait l'objet de mise à jour depuis bientôt quarante ans -, sa faible précision géométrique sur certaines zones de forêts denses, et la faiblesse des structures d'archivage et de reproduction. La couverture topographique au 1:50,000 ne couvre quant à elle que 30% du territoire et souffre des mêmes lacunes. L'Institut National de Cartographie (INC), en charge de l'entretien de cette base cartographique, travaille avec des moyens limités, et n'intervient que très partiellement dans les projets à forte composante cartographique bien qu'investi de cette mission.

La présente proposition s'inscrit dans un programme beaucoup plus vaste de l'INC pour remettre à jour l'outil cartographique au 1:200,000 aux normes élaborées par la FAO (normes AFRICOVER) sur l'ensemble du territoire camerounais et d'apporter son expertise pour la confection de cartes topographiques au 1:50,000 sur les zones faisant l'objet d'une requête spécifique. 150,000 km^2 seront concernés par la mise à jour des feuillets au 1:200,000 dans le cadre du PRGIE dont 50,000 seront réalisés conjointement avec le CETELCAF dans la région Ouest, qui est l'une des zones d'intervention prioritaires de l'Office National du Développement des Forêts (ONADEF).

2. Cartes d'occupation du sol et d'influence humaine
Sous-objectif: *Production d'Info. de Base (Cl)*
M. d'oeuvre: Centre de Télédétection et Cartographie Forestière (CETELCAF)
Durée: 4 ans

Le gouvernement camerounais s'est engagé depuis plus de cinq ans dans la réforme de sa législation forestière. Les travaux récemment réalisés par l'ONADEF avec l'appui de la coopération canadienne ont notamment permis l'élaboration d'un plan d'affectation du territoire au 1:200,000 visant à délimiter les zones destinées à la production des matières ligneuses et les zones à vocation multiple sur l'ensemble des terres situées au sud du 4 ème parallèle. Conçu comme un instrument d'attribution des concessions, l'extension de cet outil au reste des terres forestières camerounaises qui s'étendent jusqu'au 6 ème parallèle, est désormais une priorité du gouvernement. C'est dans ce cadre que s'inscrit la confection des cartes d'occupation des sols et d'influence humaine au 1:200,000 proposé au financement du PRGIE pour la zone s'étendant du 4 ème au 6ème parallèle, comme préalable à l'extension du plan d'affectation des terres. La méthodologie que suivra le CETELCAF, maître d'oeuvre de cette activité, sera très largement inspiré des et compatibles avec les recommandations AFRICOVER.

3. Inventaires multi-ressources de la région Ouest
Sous-objectif: *Production d'Information sur le thème Forêts/Biodiversité (C2)*
M. d'oeuvre: Office National pour le Développement des Forêts (ONADEF)
Durée: 2 ans à partir de 2000

Etape suivante dans la chaîne de production de plans d'affectation des sols pour la région Ouest, cette activité ne démarrera pas avant la troisième année et fera entre-temps l'objet d'une recherche active de cofinancements. Ces inventaires ont pour but non seulement d'évaluer la présence, la localisation et la quantité de ressources ligneuses commercialisables, mais également d'aider à mettre en évidence le rôle des ressources forestières végétales ou animales dans l'économie locale et leur interaction avec les populations.

4. Tableau de bord environnementale (SIECAM)
Sous-objectif: *Communication et sensibilisation auprès des décideurs (Bl)*
M. d'oeuvre: CETELCAF
Durée: 5 ans à partir de 1998

Réplique miniature du tableau de bord sous-régional PRGIE en cours de réalisation, ce tableau de bord viendra compléter le système de suivi de la comptabilité forestière mise à oeuvre par

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[9] MINEF, MINAT, MINMEE, ONADEF, MINREST
[10] CORON, SFID, CAFOREX
[11] UICN

la Direction des Forêts (DF) avec l'appui canadien, sur une province du Cameroun (il est proposé la province d'Ebolowa, zone d'intervention expérimentale du projet canadien). Outre les éléments de suivi financiers, fiscaux et économiques, d'ores et déjà développés par la DF, le PRGIE cherchera à rendre opérationnel un système de suivi local de paramètres environnementaux dans cette région. Sous la supervision du CETELCAF, les activités de la première année consisteront essentiellement à définir les indicateurs locaux, les outils et les procédures de suivi qui seront compatibles avec le système en cours d'installation à la DF.

5. Dictionnaire d'utilisation des produits forestiers non-ligneux

Sous-objectif: Communication et sensibilisation du grand public (B3)
M. d'oeuvre: Direction de la Faune et des Aires Protégées (DFAP) - MINEF
Durée: 3 ans à partir de 1998

Outil pédagogique destiné au grand public, cette réalisation poursuit le triple objectif de: (i) synthétiser les connaissances actuelles sur les différents modes d'utilisation des produits de la forêt par les populations locales, que ce soit à des fins cosmétiques, alimentaires, médicinales, ou mystiques, (ii) promouvoir le savoir-faire local, et (iii) en informer le grand public. Les opérations seront entreprises sous la tutelle de la Direction de la Faune et des Aires Protégées (DFAP) qui en sera le principal exécutant.

6. Guide National de la Biodiversité animale au Cameroun

Sous-objectif: Mise en place de service de documentation (A2)
M. d'oeuvre:
Durée:

Ce thème assez vaste donnera lieu à une succession d'activité qui s'échelonneront sur trois ans avec pour ambition ultime de fournir un document synthétique sur la répartition des principales espèces menacées des écosystèmes camerounais. Ce document dont la réalisation se justifie par la multiplicité des renseignements collectés quotidiennement au niveau de chaque délégation provinciale - voire de chaque poste forestier - et qui restent inexploités, se veut un point des connaissances en matière de distribution des espèces animales (oiseaux, mammifères, reptiles, batraciens, poissons) représentatives du Cameroun et menacés par la pression des activités humaines. L'objectif fixé pour la première année est la collecte et l'organisation des données et rapports existants au sein du centre de documentation environnementale du MINEF et la publication d'un catalogue documentaire. La maîtrise d'ouvrage sera comme précédemment confiée à la DFAP qui s'est engagé à fournir l'expertise requise.

7. Service télématique entre les agences du réseau

Sous-objectif: Télématique (A1)
M. d'oeuvre: Ecole Polytechnique de Yaoundé

Durée: 5 ans

Rendus populaires par les avantages comparatifs qu'ils offrent relativement aux technologies traditionnelles de télécommunication (téléphonie, télécopie), les services de messagerie assistée par ordinateur (E-mail) sont d'ores et déjà en cours d'expérimentation par quelques agences du PRGIE et facilitent considérablement la coordination des activités de préparation. Etendue à l'ensemble des agences du PRGIE Cameroun et aux autres facilités offertes par les connexions télématiques (transferts de fichiers FTP, World Wide Web,...), la présente activité confiée dans un premier temps à l'Ecole Polytechnique de Yaoundé aura pour objectif: (i) l'administration et la maintenance des connexions télématiques, (ii) la promotion des compétences des agences PRGIE à travers l'animation d'un forum électronique, et (iii) la mise à jour et la diffusion de la métabase de données. Par la suite, et si le besoin s'en fait sentir, la réalisation de ces tâches sera transférée à UNGC (cf. point 10) qui aura préalablement été renforcée en conséquence.

8. Observatoire des prix du marché

Sous-objectif: Production d'information agricole (C3)
M. d'oeuvre:
Durée:

La publication périodique de mercuriales de prix portant sur les principaux produits agricoles et forestiers a été identifié comme un besoin à la fois pour les clients et pour les fournisseurs de ce type de produits afin d'anticiper les évolutions et d'évaluer les potentialités de certains marchés. Des institutions à vocation sous-régionale ou internationale sont d'ores et déjà spécialisées dans la production et la publication de telles statistiques (ex: OIBT, OAB) et quelques initiatives locales font leur apparition en éditant depuis plusieurs mois les prix comparées des principales denrées consommées dans plusieurs agglomérations (ex: La voix du paysan, ONG SAILD). Toutefois l'audience reste dans le premier cas limitée à un public d'initiés, et dans le second cas restreinte par la sous-diffusion des bulletins locaux d'information compte tenu des faibles moyens mis en oeuvre. L'initiative proposée dans le cadre du PRGIE se veut une passerelle entre ces deux niveaux en popularisant les données disponibles auprès des agences spécialisées et en apportant un soutien significatif aux initiatives locales. A cet effet, différents média de l'information, allant du bulletin papier aux bulletin électronique seront testés afin d'en augmenter l'impact sur les utilisateurs.

9. Recueil des lois et règlements

Sous-objectif: Communication et sensibilisation auprès des décideurs (B1)
M. d'oeuvre:
Durée:

A l'heure de l'application du nouveau code portant sur le régime des forêts, de la faune et de la pêche, le gouvernement a affiché son intention de sensibiliser l'ensemble des opérateurs impliqués dans la gestion de ces ressources aux nouvelles procédures d'attribution et de régulation y affairant. Une version bilingue de la nouvelle loi, document en partie subventionnée par des groupes forestiers privés opérant au Cameroun, a notamment vu le jour. Le gouvernement camerounais souhaite à présent

poursuivre son effort en direction des secteurs environnementaux non forestiers tels que la prospection minière et l'exploitation des carrières, ainsi qu'en direction du secteur de la propriété intellectuelle supposé régir l'ensemble des informations à caractère environnementale produites dans le pays ou sur le pays. La présente activité consiste donc à fournir une première compilation de ces textes sous forme analogique (document papier) et numérique (pages Web) et mettre en place une cellule de mise à jour au fait des derniers arrêtés, décrets, et autres textes parus. La mise en oeuvre de ce recueil débutera dès la première année sous la maîtrise d'oeuvre du Conseil National pour l'Environnement et la Développement (CNED), ONG de Douala, et membre du réseau PRGIE.

10. Coordination.
Sous-objectif: Suivi des activités nationales (E1)
M. d'oeuvre: UNGC
Durée: 5 ans

Etant donné l'importance de la composante camerounaise du PRGIE, il est proposé de mettre en place l' UNGC bien que de structure plus légère que l'URGC, afin d'assister cette dernière dans les tâches de coordination et suivi des indicateurs. Le fonctionnement de l'UNGC est précisé dans l'article 14 de l'arrêté ministériel 97/515 du 24 juillet 1997 institutionnalisant le RNIE. En particulier, un coordonnateur national et un coordonnateur national adjoint assureront la représentation des agences camerounaises du PRGIE auprès des représentations politiques et diplomatiques présentes dans la sous-région ainsi que dans les réunions sous-régionales du PRGIE. S'ils ne sont pas affectés à temps plein sur le PRGIE, le secrétariat de l'UNGC sera quant à lui une structure permanente constituée d'un conseiller technique chargé du suivi-évaluation, un responsable administratif et financier, l'administrateur système, un(e) secrétaire. L'UNGC aura en particulier pour mission d'élaborer les PTA et leur budget avec les agences du réseau, l'ordonnancement des dépenses qui seront gérés localement, le suivi des activités et des indicateurs de suivi-évaluation pour le compte de l'URGC, la gestion de la métabase de données, et l'administration du système, ces deux dernières tâches étant par ailleurs sous-traitées dans un premier temps par l'Ecole Polytechnique.

GUINÉE ÉQUATORIALE

1. Inventaire et organisation de l'information existante sur l'environnement
Sous-objectif: Mise en place de service de documentation (A2)
M. d'oeuvre: Direccion Gal del Medio Ambiente (DGMA)
Durée: 5 ans à partir de 1998

L'une des difficultés majeures à laquelle se heurtent la plupart des opérateurs impliqués dans la gestion des ressources naturelles est la trop forte dispersion des informations existantes sur les ressources naturelles en Guinée Equatoriale. Outre les données difficilement accessibles parce que détenues par des organismes étrangers (principalement espagnols), la gestion de ces connaissances souffre également de la pluralité des projets et travaux développés indépendamment les uns des autres et sans beaucoup d'interaction étant donné les problèmes de communication. Beaucoup de ces travaux sont également restés à l'état d'ébauche, ou pis encore inexploités, notamment à cause de la faiblesse des structures de promotion et dissémination de l'information. La présente activité consistera donc à faire le point des connaissances existant à l'intérieur et à l'extérieur du pays, de les organiser, et de les rendre disponibles aux opérateurs intéressés. Elle pourra profiter avantageusement des travaux de l'Université de Gent qui a d'ores et déjà accumuler des données intéressantes dans ce domaine.

Méthodologie:
1. Acquisition et installation du matériel bureautique
2. Installation de la base de données documentaire (métabase de données) préparée par l'Université de Gent
3. Elaboration des formulaires d'enquêtes et du plan de travail
4. Enquêtes auprès des organismes nationaux (ministères)
5. Enquêtes auprès des organismes internationaux (coopérations internationales, universités et ONG espagnoles, entreprises privées)
6. Sélection des données les plus pertinentes
7. Numérisation des données les plus pertinentes
8. Réédition des documents de base épuisés
9. Finalisation des documents à l'état d'ébauche
10. Mise à jour de la base de données documentaire
11. Promotion de la base de données documentaire
12. Formation spécifique à la gestion de la base de données documentaire
13. Assistance technique

2. Connexion des agences PRIGMA au réseau télématique
Sous-objectif: Télématique (A1)
M. d'oeuvre: Guinea Equatorial Telecom S.A. (GETESA)
Durée: 5 ans à partir de 1998

Corollaire du diagnostic précédent, la connexion physique des principales agences impliquées dans la gestion des ressources naturelles devrait intervenir comme un support aux échanges de données, d'expérience, à la concertation et à la coordination. Compte tenu des facilités offertes actuellement par les services de communication assistée par ordinateur mais également par les dernières innovation de l'agence de télécommunication GETESA, la mise en oeuvre d'un tel réseau physique pourra se faire de manière rapide et fiable.

Méthodologie:
1. Identification des premières agences à connecter
2. Acquisition des équipements
3. Configuration, installation et test
4. Formation aux logiciels de communication
5. Abonnements et maintenance

3. Formation
Sous-objectif: Formation des cadres nationaux (D1)
M. d'oeuvre: Gabinete de Planificacion Forestal (GPF)
Durée: 5 ans à partir de 1998

Par delà les formations spécifiques aux activités décrites précédemment, une formation plus générale aux outils de gestion

de l'information et gestion de l'environnement sous forme de cours ou séminaires est proposée afin de combler les lacunes d'ores et déjà mentionnées par les projets en cours (FAO, CUREF, ECOFAC). Les bénéficiaires seront quant à eux l'ensemble des cadres travaillant dans les ministères ou encore les projets en cours sur leur requête.

Méthodologie:

1. Sélection des thèmes prioritaires de formation spécifiques aux projets en cours
2. Elaboration du plan de formation - recrutement des formateurs
3. Formation aux langues (anglais et français)
4. Formation de base bureautique
5. Formation spécifiques aux outils de gestion de base de données
6. Formation spécifiques aux besoins des autres projets (botanique, taxonomie, cartographie ...)
7. Atelier de sensibilisation aux outils de planification.

4. Gestion du projet
Sous-objectif: Suivi des activités nationales (El)
M. d'oeuvre: Direccion Gal del Medio Ambiente (DGMA)
Durée: 5 ans à partir de 1998

L'architecture régionale du projet donne un rôle prépondérant à l'URGC, sise à Libreville, pour les activités de suivi du projet. La cellule nationale de coordination ne doit pas venir se substituer à cette entité, mais en constituer un relais efficace afin de dynamiser la production au niveau national et faire remonter les informations au niveau régional. Il devrait donc consister en une structure légère de 3 ou 4 membres au maximum: le coordonnateur national qui siège au conseil exécutif du projet, le comptable national qui agit avant tout comme l'adjoint de l'administrateur comptable régional, le technicien chargé du suivi des indicateurs, une secrétaire administrative et un chauffeur. Il est à noter que le caractère permanent ou partiel de la fonction de coordonnateur national est à l'étude et devra se négocier pays par pays.

Méthodologie

1. Coordination
2. Acquisition des véhicules
3. Acquisition et installation du matériel d'appui au secrétariat
4. Suivi des indicateurs
5. Formation au système de suivi et évaluation
6. audit des comptes
7. maintenance des véhicules
8. Imprévus

RCA

1. Gestion, Coordination, et Appui Institutionnel
Sous-objectif principal: Suivi des activités nationales (El)
M. d'oeuvre: UNGC
Durée: 5 ans à partir de 1998

La mise en oeuvre du PRGIE sera animée par une UNGC composée d'un coordonnateur national, d'un conseiller technique, d'un gestionnaire comptable, d'une secrétaire, d'un logisticien, d'un planton, et de trois chauffeurs. Sous

tutelle du Ministre en charge de l'Environnement, le coordonnateur national sera nommé par celui-ci en accord avec les membres du réseau centrafricain. L'UNGC aura en charge:

(i) les activités de gestion et coordination du projet qui incluent l'animation du réseau, la coordination des activités, la rédaction et lancement des documents d'appel d'offres, la supervision des aspects contractuels. le suivi des indicateurs de réalisations, de performance et d'impact auprès des utilisateurs, la préparation des PTA.

(ii) Les activités d'appui institutionnel aux agences du réseau qui englobent la supervision de l'assistance technique, la programmation des formations, l'achat et l'entretien des véhicules.

(iii) Les activités de diffusion et communication qui incluent la maintenance de la métabase de données nationale, la promotion des produits et compétences des agences du réseau via des publications, le réseau télématique assuré par l'agence SOCATEL, ou l'organisation de séminaires de sensibilisation, et l'appui à l'installation de kiosques télématiques. Ces activités feront l'objet de cotisations ou de droit d'accès et contribueront à l'autofinancement de l'UNGC.

Méthodologie

1. Recrutement du personnel de l'UNGC
2. Rédaction et lancement des documents d'appel d'offres
3. Acquisition des équipements d'appui au secrétariat
4. Achat et entretien des véhicules
5. Connexions et abonnements Internet et installation de kiosques
6. Formation initiale du personnel de l'UNGC aux procédures PRGIE
7. Coordination
8. Programmation des activités de formation
9. Supervision de l'assistance technique
10. Réunions nationales et régionales PRGIE
11. organisation de séminaires nationaux
12. Installation de la métabase de données sur le serveur SOCATEL
13. Maintenance et diffusion de la métabase de données
14. Suivi des indicateurs
15. Préparation des PTA

2. Aménagement du territoire national
Sous-objectif principal: Production d'information de base (Cl)
M. d'oeuvre: Pôle Géomatique
Durée: 3 ans à partir de 1998

L'aménagement rationnel du territoire centrafricain est inscrit dans les priorités du gouvernement telles que formulées dans le Plan National d'Action pour l'Environnement (PNAE). Prémisses de ces résolutions, le Projet d'Aménagement des Ressources Naturelles (PARN) a déjà concentré ses efforts sur les étendues forestières du Sud-Ouest centrafricain, avec pour objectif une analyse des potentialités et contraintes inhérentes à l'exploitation forestière dans la région ainsi qu'une planification de l'utilisation des ressources à long terme. L'activité proposée s'inscrit dans la continuation de cette initiative en étendant l'analyse des potentialités et contraintes des terres et l'élaboration de leur plan d'affectation au 1:200,000 à l'ensemble du territoire, et à l'ensemble des ressources naturelles (ressources forestières, ressources biologiques, ressources agro-sylvo-pastorales, ressources géologiques). Elle vise à appuyer la réalisation d'un schéma directeur de l'aménagement du territoire et de documenter l'élaboration de plans directeurs sectoriels inscrits dans l'agenda du gouvernement. Le projet, qui s'étend sur 5 ans,

envisage à ce titre l'intégration de travaux et d'éléments de nature différente (équipement géodésique national, information topographique de base, occupation du sol, recherche et saisie de données géologiques et pédologiques) avant d'en analyser les effets combinés sur les ressources et d'en déduire une utilisation optimale des terres. Le pôle géomatique bâti autour du noyau PARN en aura la charge et travaillera de concert avec les institutions nationales compétences (Service National de la Cartographie, Direction des Mines,...). Pour la première année, la zone d'intervention se limitera à la province de Berbérati-Carnot couvrant 50,000 Km^2. L'accent sera également mis sur la définition d'une norme acceptée par tous les protagonistes comme préalable à la réalisations des travaux. En particulier, l'adaptation des normes AFRICOVER au contexte centrafricain est à l'étude.

Méthodologie:

1. Acquisition et installation des équipements
2. Assistance technique
3. Formation
4. Recherche et collecte documentaire
5. Acquisition des images satellites
6. Mise à jour du réseau géodésique
7. Pré-traitement des images satellites
8. Numérisation des cartes topographiques
9. Numérisation des cartes géologiques
10. Numérisation des cartes pédologiques
11. Numérisation des courbes de niveau
12. Photo-interprétation de l'occupation du sol
13. Complètement et vérité terrain
14. Analyse des potentialités et des contraintes des terres
15. Réalisation du plan d'affectation
16. Contrôle qualité
17. Edition cartographique et impression

3. Aménagement en zones péri-urbaines
Sous-objectif principal: Production d'information dans le thème Urbain/Péri-urbain (C5)
M. d'oeuvre: Direction Gle de l'Environnement (DGE)
Durée: 5 ans à partir de 1998

L'exode rurale qui amène de plus en plus de paysans en quête de d'activités rémunératrices autour des grands noyaux urbains a accentué ces dernières années le besoin d'orienter les investissements en matière de gestion des ressources périurbaines. Dans le cadre du PRGIE, 7 centres urbains ont été identifiés comme particulièrement affectés par ces pressions démographiques, à savoir: Bangui, Berbérati, Carnot, M'Baiki, Bambari, Bossangoa, et Papoua. L'objectif de ce volet est de mettre en oeuvre, pour chacun de ces centres, un système d'information destiné à: (i) documenter l'aménagement des ressources naturelles périurbaines au travers la mise au point d'une base de données géoréférencées à moyenne échelle (1:100,000 pour Bangui, 1:50,000 pour les autres villes) intégrant l'occupation du sols, les potentialités et contraintes physiques et socio-économiques ainsi que le zonage foncier, (ii) suivre la dynamique entre la croissance urbain et déplétion périurbaine via des indicateurs relatifs à la consommation de produits vivriers, l'approvisionnement en bois de chauffe et de service, la gestion des ressources forestières et des sols essentiellement, et aux infrastructures

sanitaires (alimentation en eau potable), et (iii) à satisfaire les requêtes spécifiques entre autres dans les domaines de la cartographie ou de l'appui à la sensibilisation des populations à la gestion des ressources naturelles. La maîtrise d'oeuvre sera confiée à la Direction Générale de l'Environnement (DGE) qui précisera les deux ou trois premières pôles urbains qui feront l'objet d'une intervention la première année, en plus de Bangui. En outre, l'activité sera également réalisée en partenariat avec le pôle géomatique, l'Université de Bangui, la Division des Statistiques du Ministère du Plan, et le Département de l'Aménagement du Territoire et du Logement.

Méthodologie (pour 1998 et 1999):

1. Acquisition et installation des équipements
2. Recherche documentaire
3. Acquisition des données satellitales en complément des images déjà acquises
4. Pré-traitement des données
5. Prise des vues aériennes complémentaires éventuelles
6. Mise à la norme AFRICOVER et élaboration des formulaires d'enquêtes
7. Séminaire national de définition des indicateurs de la dynamique périurbaine
8. Formation
9. Assistance technique
10. Photo-interprétation et cartographie thématique
11. Réalisation des enquêtes et dépouillements
12. Intégration et finalisation
13. Modélisation de la dynamique périurbaine sur la région de Bangui
14. Diffusion des produits et sensibilisation

4. Suivi écologique
Sous-objectif principal: Production d'information dans le thème Développement Rural (C3)
M. d'oeuvre: Comité de Lutte contre les Feux de Brousse et Autres Calamités (CLCFBAC)
Durée: 5 ans à partir de 1998

L'utilisation des feux de brousse comme pratique agricole est l'objet chaque année de la dégradation de quelques dizaines de milliers d'hectares de forêts claires et savanes arborées en RCA, et serait la cause d'effets indirects non estimables (érosion des sols, augmentation de l'effet de serre, pluies acides dans les régions intertropicales). Depuis sa création, le Comité de Lutte contre les Feux de Brousse et les Autres Calamités (CLCFBAC) est chargé de dresser des calendriers de feux en vue du déclenchement de feux précoces, de sensibiliser les populations locales aux effets à long terme de la culture sur brûlis et le braconnage, et d'entamer des actions dissuasives à l'encontre des contrevenants. La présente activité est conçue principalement comme un support aux missions du CLCFBAC et s'inscrit dans la continuité du programme FIRE du Centre Commun de Recherche Européen d'Ispra (JRC) qui sera à même de fournir une assistance technique adéquate. Au delà du projet FIRE, le rapprochement de ce volet à d'autres projets (TREES, DANIDA) est envisagé afin de maximiser l'impact du projet sur la recherche en ce domaine. Le CLCFBAC qui assurera la coordination de cette activité apportera son expertise en matière de sociologie des feux de brousses (pratique, utilisation des feux) et mènera les actions de sensibilisation. Le CLCFBAC sera également assisté du pôle géomatique qui entreprendra la confection de la cartographie des feux de brousse au 1:2,500,000 à base d'images NOAA qui pourront être acquises localement. Les deux

premières années consisteront à mettre en place le système, à produire les premières cartes, et à mener les premières actions de sensibilisation. Par la suite, une régionalisation de ce service pourrait être envisagée pour le compte des autres pays.

Méthodologie:

1. Acquisition et installation des équipements
2. Adaptation des logiciels SUN en logiciels PC de traitement d'images NOAA
3. Test et validation des logiciels PC
4. Formation
5. Assistance technique
6. Acquisition des données
7. Traitement des données et production des cartes de feux
8. Diffusion et sensibilisation des populations
9. Suivi et établissement d'un calendrier des feux
10. Organisation et promotion de la banque de données NOAA

5. Appui à la préservation de la biodiversité
Sous-objectif principal: Production d'information dans le thème Forêt/Biodiversité (C2)
M. d'oeuvre: Direction Gle de l'Environnement (DGE)
Durée: 5 ans à partir de 1998

De par leur position géographique entre les steppes subsahéliennes au Nord et la forêt dense au Sud, les écosystèmes centrafricains jouissent d'une étonnante diversité et abritent une faune et une flore à la fois riches et variées qui entrent dans une part non négligeable des revenus locaux. La politique nationale de conservation de la biodiversité est caractérisée par une double attention portée à la fois au niveau local sur le réseau des 17 aires (10,4% du territoire) qui bénéficient d'une protection particulière - tout du moins en théorie -, et sur le territoire centrafricain dans son ensemble qui fait l'objet d'une partition en deux zones d'intérêt distinctes: une zone d'intérêt cynégétique au Nord (40% du territoire) et une zone banale au Sud (60% du territoire). C'est donc à ces deux niveaux que la proposition centrafricaine en matière de biodiversité prévoit d'intervenir. Au niveau national, elle envisage d'inventorier, d'organiser sous forme d'une base de données documentaire nationale, d'analyser, et de promouvoir l'ensemble des enquêtes, cartes, inventaires, statistiques, études existant sur l'ensemble du pays et relatifs à la biodiversité animale et végétale. Cette base documentaire se transformera progressivement en tableau de bord environnemental par l'introduction d'indicateurs et de collecte périodique de données à caractère national. Au niveau local, elle vise à approfondir la connaissance de la biodiversité et de ces interactions avec les populations sur un ensemble de sept sites identifiés par l'UICN comme des sites menacés et ce par le biais de travaux de cartographie topographique et de végétation (aux normes AFRICOVER) au 1:200,000, de travaux d'inventaires multi-ressources sur des zones définies par une méthode aréolaire, et à proposer un schéma d'aménagement pour chacun de ces sites. La Direction Générale de l'Environnement en sera le maître d'oeuvre principal mais sera seconder activement des structures et projets spécialisés parmi lesquels le WWF, ECOFAC, l'Université de Bangui, et le pôle géomatique. Le plan de travail pour la première année permettra d'identifier les sites qui retiendront initialement l'attention.

Méthodologie

1. Acquisition et Installation des équipements
2. Formation
3. Assistance technique
4. Recherche documentaire sur l'existant
5. Inventaires des besoins et produits prioritaires
6. Définition des indicateurs, des méthodes de collecte et d'analyse
7. Enquêtes sur le terrain
8. Modélisation selon les problématiques prioritaires
9. Production, mise à jour, et diffusion des produits nationaux
10. Complément de collecte sur les sites prioritaires
11. Acquisition de données de télédétection sur les sites prioritaires
12. Création de la base données topographique grande échelle sur sites prioritaires
13. Création de la base de données occupation du sol grande échelle sur sites prioritaires
14. Plan d'échantillonnage
15. Enquêtes socio-économiques
16. Relevé de terrain - complètement
17. Intégration des données du terrain
18. Modélisation des options d'aménagement selon les problématiques prioritaires
19. Production et diffusion des produits locaux

B. Utilisateurs et décisions ciblés par le projet

Principaux clients ciblés par le projet	Types de décision/action ciblés par le projet	Connaissance pré-requise pour la prise de décision	produits et/ou services proposés
Administrations en charge du contrôle des exploitations forestières	Attribution transparente des concessions et des permis d'exploitation	•Statut règlementaire des zones soumises à des requêtes •Raison social et fiabilité des entreprises demandeurs •Conformité du plan d'aménagement aux dispositions règlementaires	•Recueil des textes règlementaires et juridiques - Cameroun •ateliers de sensibilisations - Gabon, Guinée Equatoriale
Direction des Forêts et/ou des Exploitations - tous pays	Recette des taxes et comptabilité nationale	•Fiscalité affectant les zones d'exploitation •Statut fiscal des concessions et permis d'exploitation	•Recueil des textes règlementaires et juridiques - Cameroun •Système de suivi des exploitations forestières - Cameroun (Ebolowa)
	Suivi de la réalisation du plan d'aménagement	•Indicateurs de suivi environnemental	•Système de suivi des exploitations forestières - Cameroun (Ebolowa)
Bureaux d'inventaires et d'aménagemet forestiers	Réalisation des travaux d'inventaires	•Accessibilité et viabilité des zones à inventorier •Stratification du couvert végétal dans la zone à inventorier (base de sondage aréolaire)	•Produits topographiques de base - Cameroun, Gabon, Congo Kinshasa, RCA •Produits d'occupation du sol - Cameroun, Gabon, RCA
Cabinet de Planification Forestière (Guiné Eq.) DIARF (Gabon) ONADEF (Cameroun) PARN (RCA) SIA (Congo) SPIAF (Congo Kinshasa)	Planification de l'utilisation des terres forestières	•Accidents topographiques •Accessibilité et viabilité des zones à planifier •Prédispositions climatiques •Stratification du couvert végétal •Nature des sols •Stratification des formations forestières •Potentiel en essences commercialisables •Vitesse de régénération •Richesse des ressources biologiques (faune et flore) •Localisation des groupements humains •Utilisation actuelle des ressources par les différents groupes d'opérateurs (populations, exploitants forestiers,...)	•Inventaires mulit-ressources - Cameroun (région Ouest) •Schéma national d'aménagement du territoire - RCA •Plan de zonage forestier - Gabon (zone côtière) •ateliers de sensibilisations - Gabon, Guinée Equatoriale
Bureau de Conservation de la Nature	Réalisation de travaux d'inventaires dans les aires protégées	•Accessibilité et viabilité des zones à inventorier •Stratification du couvert végétal dans la zone à inventorier (base de sondage aréolaire)	•Produits topographiques de base - Cameroun, Gabon, Congo Kinshasa, RCA •Cartes d'occupation du sol - Cameroun, Gabon, RCA
UICN Direction de la Faune et des Aires Protégées - DFAP (Cameroun)Direction de la Faune et de la Chasse - DFC (Gabon)	Elaboration de plans de conservation durables	•Accidents topographiques •Densité du réseau hydrologique •Accessibilité et viabilité dans la zone à conserver •Localisation des villages •Revendications des populations riveraines de la zone de conservation •Richesse biologique dans la zone de conservation (cf. travaux d'inventaires)	•Inventaires multiressources - Cameroun (région Ouest) •Plans de conservation de sites protégés ou à protéger - Gabon, Congo Kinshasa, RCA
WWF (Gabon, RCA) Institut Congolais pour la Conservation de la Nature - ICCN (Congo Kinshasa) Direction Gle de l'Environnement - DGE (RCA) CERVE (Congo Brazzaville)	Sensibilisation des opérateurs économiques	•Distribution des espèces-clés à l'intérieur des aires protégées •Nature et gravité des menaces exercées sur ces espèces •Localisation et conditions d'accès à la documentation	•Banque de données nationale dur la biodiversité - Cameroun, RCA •Dictionnaire des utilisations des produits forestiers non-ligneux - Cameroun
Entreprises d'exploitation forestière: CIB LEROY - GABON RC CORON R.O.G. SFID	Requête de concessions ou de permis d'exploitation	•Statut règlementaire de la zone convoitée •Fiscalité affectant la zone convoitée •Potentiel commercial de la zone convoitée	•Recueil des textes règlementaires et juridiques - Cameroun
	Planification rationnelle des investissements en matière d'infrastructure d'exploitation	•Accidents topographiques •Densité du réseau hydrologique •Accessibilité et viabilité dans la zone exploitée	•Produits topographiques de base - Cameroun, Gabon, Congo Kinshasa, RCA
	Elaboration de plans d'aménagement durables	•Localisation des villages •Revendications des populations riveraines de la zone d'exploitation •Richesse biologique dans la zone d'exploitation •Densité des essences ligneuses commercialisables dans la zone d'exploitation	•Formation à la production et gestion de l'information environnementale - Gabon, Guinée Equatoriale •Inventaires mulit-ressources - Cameroun (région Ouest)
	Prévisions des bénéfices	•Tendance du marché des bois tropicaux	•Observatoire des prix du marché des produits agro-forestiers - Cameroun

Administration en charge du développement rural	Elaboration de plan d'aménagement de zones péri-urbaines	• Etat des infrastructures routières et sanitaires • Filière d'approvisionnement de la ville en bois de chauffe et de construction • Filière d'approvisionnement de la ville en produits agricoles et produits d'élevage • Filière d'approvisionnement de la ville en gibier • Caractéristiques du régime foncier	• Plans d'aménagement des zones agricoles péri-urbaines - Congo kinshasa, RCA • ateliers de sensibilisations - Gabon, Guinée Equatoriale
	Préventions contre les pratiques agricoles non durables et sensibilisation des populations	• Localisation des groupements humains • Pratiques agricoles en vigueur • Localisation et gravité de leurs conséquences sur l'environnement • Revendications des populations	• Système de suivi des feux de brousse - RCA
Populations rurales	Pratiques agricoles durables	• Pratiques agricoles en vigueur • Conséquences de ces pratiques sur l'environnement • Revendications des populations • Caractéristiques du régime foncier	• Sensibilisation des populations contre la pratique non-durable des feux de brousse - RCA
	Prévisions des bénéfices et choix des prochaines cultures	• Tendance du marché des produits agricoles • Coût des intrants agricoles	• Observatoire des prix du marché des produits agro-forestiers - Cameroun
Administrations en charge de l'aménagement du territoire CGAT (Gabon) MINAT (Cameroun)	Elaboration du schéma directeur de l'aménagement du territoire	• Démographie • Etat des infrastructures routières, ferroviaires, industrielles, et sanitaires • Nature, localisation, et abondance des ressources naturelles • Localisation et objectifs des projets d'investissement en cours	• Schéma national d'aménagement du terriotire - RCA
	Protection civile	• Démographie • Localisation et nature des risques	• Produits topographiques de base - Cameroun, Gabon, Congo Kinshasa, RCA • Cartes d'occupation du sol - Cameroun, Gabon, RCA • Schéma national d'aménagement du terriotire - RCA
Bailleurs de fonds	Orientations des investissements	• localisation et montant des budgets investis • Impact environnemental des projets en cours	• Tableau de bord environnemental - URGC
	Suivi des projets en cours	• Localisation et objectifs des projets en cours • Indicateurs de suivi-évaluation	• Tableau de bord environnemental - URGC • Système de Suivi-Evaluation - URGC
Tous publics	Acquisition d'informations existantes	• Localisation des et conditions d'accès aux données existantes	• Messagerie electronique (Email) - Tous pays • "World Wide Web" (WWW) - Tous pays • Transfertde fichiers (FTP) - Tous pays • Base de données Archives - URGC • Centre de documentation environnementale - Guinée Equatoriale • Banque de données nationale sur la biodiversité - Cameroun, RCA • Métabase de données - Tous pays • Catalogues des produits du PRGIE - URGC
	Réalisation ou sous-traitance de travaux de production, gestion ou diffusion de l'information à caractère environnemental	• Maîtrise des outils de production, gestion et diffusion de l'information • Localisation et conditions d'accès à l'expertise existante • Localisation et conditions d'accès aux cycles de formation appropriés	• Répertoire des experts PRGIE - URGC • Catalogue des formations - Gabon • Formation théorique et pratique à l'étranger - Tous pays • Assistance technique régionale - URGC • Assistance technique nationale - Tous pays
	Echange de données ou d'expérience	• Maîtrise des outils de communication	• Messagerie electronique (Email) - Tous pays • "World Wide Web" (WWW) - Tous pays • Transfertde fichiers (FTP) - Tous pays • Formation des cadres nationaux et régionaux à la production, gestion et diffusion de données environnementales - Gabon, Guinée Equatoriale

Annex 3: Project Monitoring

Cette annexe présente d'une part (A) le système de Planification, Suivi et Evaluation qui a ete dessiné et developpé pour le projet sur la base d'outils du marché et, d'autre part (B et C) deux listes d'indicateurs globaux et specifiques du projet. Ces listes ont été élaborées avec les bénéficiaires et les spécialistes des différents secteurs et seront finalisées durant les négociations

A. System for Planning, Monitoring and Evaluation

1 - PRESENTATION GENERALE

Le principal objectif du système informatisé de gestion de projet est d'une part, de fournir aux différents responsables du Projet de Gestion de l'Information Environnementale de la Région Afrique Centrale un véritable outil d'aide à la décision, de permettre le suivi des activités, résultats et impacts de chaque composante, et d'autre part, de planifier les activités du projet dans le temps et permettre l'analyse des écarts significatifs entre objectifs et résultats. Le système développé tiendra compte du caractère régional du projet et de son implantation dans plusieurs pays. Le sytème doit permettre de cordonner un grand nombre d' activités et de partager l'information entre différents acteurs dans différents pays.

Le système informatisé devra fonctionner sur micro-ordinateur en environnement Windows en monoposte ou en réseau, sera organisé autour d'une base de données relationnelle (type Access), offrira des possibilités de connection avec un outil de planification de projet (type Microsoft Project) et sera interfacé avec un système d'information géographique (SIG type ArcView ou Map Object).

2 - OBJECTIFS DU SYSTEME

Conformément aux termes de référence d'avril 1997, le système assurera les fonctions suivantes :
* permettre la programmation et le suivi des activités
* définir et mettre en place un système d'indicateurs pour évaluer l'impact et la performance du projet
* mesurer les écarts entre les objectifs initiaux et les réalisations
* détecter rapidement les retards d'exécution et les dépassements de coûts
* permettre une lecture rapide et facile des informations (tableaux de bord)
* améliorer la coordination des activités entre les différents pays grâce à la circulation des informations à travers le réseau des agences
* constituer un outil de contrôle et d'aide à la décision fiable et efficace.

3 - COMPOSANTES DU SYSTEME INFORMATIQUE

Le système proposé sera décomposé en trois modules étroitement liés et communiquant entre eux :
* suivi financier et comptable
* programmation et suivi des activités
* système d'information géographique

3.1 - Suivi Financier et Comptable: FINPRO

Le suivi financier et comptable sera organisé autour du logiciel FINPRO. FINPRO est l'évolution naturelle de TOMPRO et fonctionne sur micro-ordinateur dans un environnement SQL Windows.

FINPRO comporte les modules suivants :
* paramétrage du système et utilitaires

- comptabilité générale et auxiliaire
- suivi budgétaire
- comptabilité analytique
- suivi des conventions de financement
- gestion des contrats et des marchés

FINPRO est structuré autour d'un système de codifications extrèmement souple et complet qui lui permet d'être totalement compatible avec les besoins exprimés lors de la préparation du PRGIE

Chaque dépense effectuée par le Projet sera codifiée comme suit :
- code comptable paramétrable pour être compatible avec les plans comptables nationaux et/ou sectoriels
- code budgétaire totalement paramétrable (maximum de 10 caractères et 10 niveaux),permettant notamment de respecter la structure budgétaire qui a été utilisée pour l'ébauche des budgets du premier exercice
- code analytique totalement paramétrable (maximum de 10 caractères et 10 niveaux), permettant notamment d'être parfaitement compatible avec les propositions de codage qui ont permis l'élaboration des PTA du premier exercice (objectifs - sous-objectifs - activités - tâches - ...)
- code géographique totalement paramétrable (maximum de 10 caractères et 10 niveaux), permettant notamment de suivre l'exécution financière des activités du Projet par Pays (et éventuellement par zone d'intervention ou agence d'exécution selon les besoins)
- code financier (bailleur + financement + catégorie de décaissement) permettant de suivre l'exécution financière du Projet par bailleur

Les budgets annuels d'investissement et de fonctionnement préparés à partir des Programmes de Travail Annuel seront saisis dans Finpro. De la même manière, les plannings prévisionnels de décaissements pourront être saisis et révisés pour chaque année.

Les budgets seront saisis avec un niveau de détail maximum (de préférence identique à celui des pièces comptables). Ainsi, les prévisions budgétaires ainsi que les prévisions de décaissement pourront ainsi être comparées en temps réel aux réalisations extraites des saisies comptables.

Une procédure périodique d'extraction des données du système Finpro (gérées sous SQL Windows) sera développée spécifiquement pour les besoins du PRGIE, afin d'alimenter le système de suivi-évaluation (géré sous Access) et calculer les indicateurs de réalisation (budgétaire et décaissement) qui alimenteront les tableaux de bord périodiques (trimestriels, semestriels, annuels, ...).

FINPRO est un système de gestion financière et comptable multisites qui permet d'envisager de mettre en place une version décentralisée dans chaque U.N.G.C. et de consolider les informations auprès de l'U.R.G.C. à partir d'un transfert périodique des données, selon diverses modalités qui devront être finalisées sur place (par disquette, modem, Internet, ...). Cette approche multisites est d'ores et déjà intégrée à la présente offre financière.

FINPRO sera installé, dans un premier temps, uniquement au niveau de l'Unité Régionale de Coordination (URGC). Toutes les saisies comptables et les exploitations se feront à l'URGC, à partir des pièces transmises par les UNGC respectives et les agences d'exécution. Il sera toutefois possible de connaître la situation comptable, budgétaire et financière détaillée d'une agence d'exécution bien précise, et bien sûr d'avoir la situation consolidée de tout le Projet.

Financièrement, la mise en place de Finpro dans chaque pays ne nécessitera le moment venu que l'acquisition d'une clé de protection système (dongle) par poste, ainsi que les frais d'installation et de

formation du personnel utilisateur. Le coût de cette prestation par pays (dongle + installation + formation) n'est pas compris dans la présente proposition.

3.2 - Programmation et suivi des activités

Ce sous-module permettra d'une part de suivre la programmation et l'exécution des activités du PRGIE dans le temps et, d'autre part, de suivre et mesurer la performance des activités du Projet à travers des indicateurs de réalisation et de performance. Le système permettra aussi de mesurer l'impact du Projet (en terme d'utilisation des produits réalisés ou de services offerts).

Le système sera basé sur le mécanisme de programmation annuelle que représente le Programme de Travail Annuel (PTA). Les PTA devront, dans la mesure du possible, être normalisés avant le développement de l'application, afin qu'un cadre homogène de saisie et d'exploitation puisse être proposé pour être définitivement adopté à l'atelier de Bata

Les Programmes de Travail Annuel, établis par chaque pays, seront saisis dans le système et stockés en format Access. La représentation chronologique de ces PTA sera faite par l'intermédiaire de Microsoft Project, afin de visualiser directement la répartition prévisionnelle des activités dans le temps.

Pour chaque activité définie dans le PTA, il sera possible de définir un ou plusieurs indicateurs de performance. Chaque indicateur saisi pourra être de type binaire, échelle ou valeur numérique. Il sera également possible de définir des indicateurs de performance, non pas saisis par l'utilisateur, mais calculés automatiquement à partir des indicateurs de base (somme, moyenne, ...). L'utilisateur définira la valeur cible de chaque indicateur (à atteindre en fin de période d'exécution du PTA) et pourra définir des valeurs intermédiaires (par exemple à la fin de chaque trimestre ou semestre).

Les activités réalisées seront ensuite saisies dans le système, à périodicité fixe (mensuelle ou trimestrielle ?), aussi bien pour suivre les chronogrammes d'activités que pour suivre les résultats obtenus en terme de performance par rapport aux objectifs définis à travers les indicateurs.

Le système fera alors la synthèse entre les prévisions initiales et les réalisations effectives enregistrées, afin de :
- suivre l'état d'avancement des activités dans le temps (via Microsoft Project)
- détecter rapidement les retards d'exécution
- détecter rapidement les écarts entre les objectifs et les résultats via les indicateurs de performance
- suivre l'exécution du Projet à travers des indicateurs de réalisation calculés (taux d'exécution dans le temps, taux d'exécution budgétaire, taux de décaissement), afin de permettre de détecter rapidement les dépassements de coûts et a   insi prendre les mesures appropriées.

Les indicateurs d'exécution budgétaire et de décaissement seront directement extraits de la base financière Finpro pour figurer sur les tableaux de bord périodiques et compléter l'information fournie par les indicateurs de performance au niveau de chaque activité.

La forme des rapports de synthèse mis à la disposition du Projet devra être finalisée lors de l'atelier de Bata. Une matrice sera présentée pour discussion aux différents intervenants du PRGIE à l'occasion de cette manifestation.

Le système permettra aussi la définition et le suivi d'indicateurs d'impact (ou d'utilisation) au niveau des grands objectifs définis lors de la préparation du Projet. Ces indicateurs seront entièrement paramétrables, auront une valeur cible à atteindre en fin de projet et une valeur initiale en début de projet. Il sera possible de définir des valeurs intermédiaires (annuelles ou à mi-parcours par exemple).

Le suivi de ces indicateurs d'impact complétera les tableaux de synthèse qui permettront de visualiser périodiquement les produits ou services réalisés par objectif, à travers les trois grandes familles d'indicateurs : réalisation, performance et impact (utilisation).

Même s'il est prévu de ne l'installer initialement qu'au niveau de l'U.R.G.C., le système proposé pourra ensuite être décentralisé dans les U.N.G.C. nationales. La circulation des informations entre les différents niveaux, et notamment les indicateurs de performance et d'impact du projet, se fera sous forme de rapports ou d'échanges de données informatisés, selon des modalités et une périodicité qui restent à définir. Ces éléments devront également être affinés lors du séminaire atelier de Bata prévu en octobre prochain.

En ce qui concerne les flux d'information, ce module communiquera avec le module de suivi financier et comptable (par import des données budgétaires et financières) et avec le module de système d'information géographique (en import et en export). Plusieurs tables (cf prototype de la base ci-joint) seront partagées entre les deux modules selon des modalités définies dans le paragraphe ci-dessous.

3.3- Interface et fonctionnalités SIG

Le rôle de cette interface S.I.G est de permettre la quantification, la représentation et le sélection des différents indicateurs de réalisation/performance à partir de la base de données spatiale SIG

La conception de l'interface SIG se veut modulaire et évolutive. Comme illustré, les fonctionnalités s'appliquent à plusieurs niveaux:
- définition en termes et concepts SIG des activités/tâches et des indicateurs,
- saisie et mise à jours des indicateurs à partir de la base de données SIG,
- visualisation et représentation spatiale des indicateurs,
- représentation spatiale des autres éléments des rapports lorsqu'applicable.
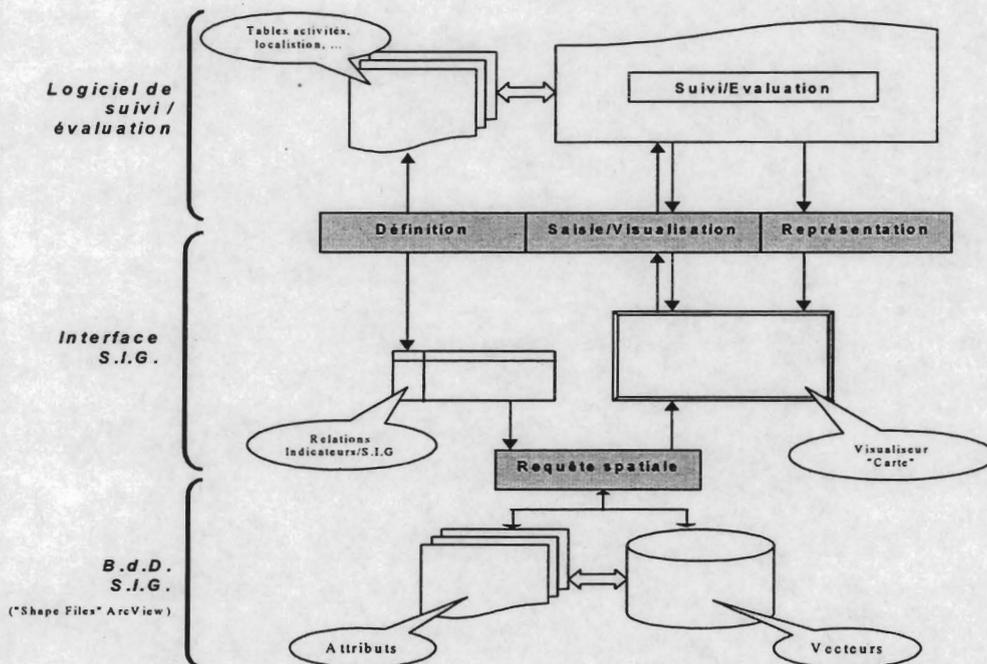
3.3.1 Définition spatiale

Les fonctionnalités de définition consistent à établir les relations entre les activités/tâches (et leurs indicateurs) et les objets du SIG auxquels ils s'appliquent ou qui les représentent.

3.3.l.l. Définition spatiale des activités/tâches.

Le lien activités/tâches-SIG s'effectue au moyen d'une table de relation. Elle permet d'affecter à chaque activité ou tâche, un objet spatial (ou une collection d'objets) la représentant. Cette table est gérée par l'interface SIG et contient la définition (nom de couverture, critères de sélection, symbologie ...) des objets SIG associés aux activités/tâches. L'accès à cette table s'effectue par le code localisation.

L'interface offre les fonctionnalités de manipulation et de gestion de cette table et permet d'établir les relations suivantes :
- sélection d'une couverture entière (dans ce cas, la couverture ne doit contenir que les objets représentant l'activité ou la tâche, par exemple couverture des régions administratives du Congo + villes importantes pour une activité portant sur l'ensemble du territoire et se déroulant dans ces villes.)
- sélection d'un sous-ensemble d'une couverture sur base des attributs directement associés: par exemple le(s) polygone(s) de la couverture administrative "Congo Kinshasa" dont l'attribut "Région"="Shaba" pour une activité portant sur le Shaba.
- La structure de cette table et des outils de gestion associés sera ouverte de manière à faciliter les évolutions ultérieures, par exemple :
- sélection sur base d'attributs impliquant des tables externes,
- sélection impliquant des calculs de géométrie/topologie (fusion/intersection de polygones, opérateurs de proximité "buffer", ...)
- gestion avancée de la symbologie,
- ...

Au sens strict, le code de localisation peut être arbitraire, sous contrainte qu'il constitue une clé identifiante dans la table de relation spatiale. La nature exacte de ce code n'est pas définitivement établie. Pour des activités simples, ce code peut être structuré comme suit :

PPNNNN ou PPXXXXYYYY, avec   PP = code pays, NNNN = code administratif, XXXX et YYYY = code géographique.

Pour des activités dont la définition est plus complexe, cette structure peut perdre son sens.

3.3.1.2. Définition spatiale des indicateurs (de réalisation)

Le lien indicateurs-SIG s'effectue au moyen d'une table de relation similaire à la table de relation spatiale des activités/tâches. Elle permettant d'affecter à chaque indicateur, une collection d'objets permettant de les quantifier (et non de les représenter), ainsi qu'une méthode d'évaluation. Cette table est également gérée par l'interface SIG

Les objets SIG associés à l'indicateur d'une tâche et à la tache elle-même sont différents.

Par exemple, pour une activité cartographique portant sur l'entièreté d'un pays et dont l'indicateur est constitué par les cartes réalisées, on a :

- représentation de l'activité = limites administratives du pays + affectation du sol par exemple,

- quantification de l'indicateur = limites UTM des cartes à réaliser avec attributs "réalisé/non réalisé"

ou "réalisé à xx %" pour chaque carte.

L'interface offre les fonctionnalités de manipulation et de gestion permettant d'établir les relations suivantes :
- sélection des objets S.I.G, idem qu'au point 3.l.l Définition spatiale des activités/tâches.
- définition générique de la méthode d'évaluation à partir des attributs des objets sélectionnés.

Par définition "générique", il faut comprendre une formule du type moyenne normalisée et pondérée des attributs des objets associés.

Par exemple, pour une tâche consistant à réaliser 20 cartes dont certaines sont plus difficiles à réaliser, chaque pavé UTM a un attribut binaire "Réalisé/Non Réalisé" (l/0) (variant au cours du projet) et un attribut de poids représentant la difficulté (défini au début pu projet).Ou encore, pour une activité portant sur plusieurs parcs nationaux, chaque parc a un attribut de réalisation exprimé par la superficie traitée, sans attribut de poids (si chaque parc intervient au prorata de sa superficie totale).

Les mêmes remarques qu'au point 3.3.l.l concernant les possibilités d'évolution peuvent être émises, par exemple calcul de l'indicateur de réalisation d'une activité par agrégation des indicateurs de réalisation des tâches qui constituent cette activité ou encore prise en compte d'attribut "catégorie" plutôt qu'attribut ordonné (exemple les étapes à réaliser pour effectuer une tâche)

3.3.2 Saisie/Visualisation des indicateurs

Ce module permet d'effectuer la mise à jours et le calcul proprement dit des indicateurs de réalisation. Les fonctions de ce module permettent de :
- visualiser l'état actuel de l'indicateur par les objets SIG, avec la symbologie définie; par exemple, les pavés UTM apparaissent rouge ou bleu selon qu'il sont terminé ou pas, les parcs apparaissent rempli par un densité de couleur en fonction de la surface traitée, ...
- modifier les attributs de réalisation de ces objets; un pavé UTM rouge devient bleu, ...
- calculer et sauvegarder la nouvelle valeur de l'indicateur.

Ces opérations s'effectuent normalement lors de la remise à jours des PTA

3.3.3 Représentation des indicateurs

Ce module permet essentiellement de représenter la valeur de variables sur fond de carte.

Par variables, on entend non seulement les indicateurs de réalisation mais également les indicateurs de performances, d'impact ou d'autres variables des rapports. Le fond de carte peut être constitué par les objets définis plus haut (définition d'activités et d'indicateurs) ou d'autres couvertures SIG (ou images "raster") définies de manière similaire. La représentation elle-même, outre les fonctions de visualisation du point 3.2, reprend les types "bar graph", histogrammes, courbes et "pie chart" du genre "Excel".

Par exemple, représentation sur fond de limites administratives d'un pays (=activité) du niveau de dépense (=rapport) par des "pie chart" centrés sur chaque région, ou encore évolution d'un indicateur de réalisation cartographique par un "bar graph" sur fond de quadrillage UTM.

La visualisation s'effectue interactivement à l'écran. En outre, ce module contient des fonctions d'habillage (titre, légende, ...) et d'impression.

En termes d'évolution potentielle, on peut citer la sauvegarde des vues en format GIF ou JPEG pour

utilisation dans des pages HTML ou passerelle HTTP/CGI vers un serveur Web pour la génération ou la mise à jours dynamique des pages.

3.3.4 Requête spatiale et SIG

Le module "Requête spatiale" effectue les accès SIG proprement dit. Tous les aspects spécifiques du SIG sous-jacent sont concentrés dans ce module. Dans un premier temps, il s'appuie sur les outils de "MapObjects" (interface SIG ArcView) et permet d'utiliser des couvertures ArcView ("Shape Files") et ArcInfo natives.

Dans une phase d'évolution, seul ce module doit être modifié pour permettre l'utilisation d'autres SIG tels que MapInfo, Geomedia,... ou CAD tels que MicroStation, AutoCad, ...

Le mise en place d'une base de données SIG spécifique pour le suivi/évaluation n'est pas retenue afin de permettre une intégration plus aisée avec le SIG central du projet PRGIE à établir ultérieurement. Les données SIG utilisées par le système de suivi/évaluation sont parties intégrantes de ce SIG central et en constitueront pour l'instant l'embryon.

Le logiciel de suivi/évaluation sera fourni avec les couvertures suivantes:
* limites administratives des pays concernés (extrait de DCW 1:1.000.000)
* réseau hydrographique (idem)
* réseau routier (idem)
* villes principales (idem)
* découpage Système International UTM sur les différents méridiens centraux de la région Afrique centrale (I-Mage)
* limite des zones d'activités (I-Mage, qualité informative, sur base de documents à fournir par le PRGIE)

Ces couvertures seront fournies en format ArcView.

4 - CALENDRIER PREVISIONNEL D'INTERVENTION
(1) Août 1997   : Finalisation de l'analyse fonctionnelle
(2) Septembre - Octobre 1997   : Développement du prototype de l'application
(3) 21-22 Octobre 1997   : Fourniture et Installation du Prototype à l'U.R.G.C. et à la B.M.
(4) Novembre - Décembre 1997   : Finalisation du développement de l'application
(5) 19 Janvier 1998   : Mise en place de l'application à l'U.R.G.C. GABON

B. Global Indicators

	Narrative summary	Indicators	type	Unit	Target pY5
Objective 1	Ensuring information circulation and optimizing benefits from existing initiatives.	• New requests to join the institutional (primary) network	I	per annum	5
		• New requests to join the physical (secondary) network	I	per annum	30
		• Information requests addressed to REIMP information services	I	per month	200
		• Annual income generated from the sale of REIMP promotion and dissemination services to data providers and users	I	equ. US$	50,000
Expected results	1. National networks on environmental information are created or strengthened and and network rules established	• Agencies connected to the network	I	unit	200
		• Offences to the Data Exchange Policy (DEP) reported	P	per annum	0
	2. Existing information on the environment is made easily accessible to private sector, NGOs and local population	• Average delay before an information request is satisfied.	P	days	< 7
		• Satisfaction rate	I	% requests	80
	3. Ongoing projects and data providers promote their results and products through the REIMP	• Data providers using REIMP facilities for promotion only	I	unit	120
		• Data providers using REIMP facilities for both promotion and dissemination	I	unit	100
Objective 2	Encouraging decision-makers to use environmental information and facilitating sound land use planning in the Congo Basin.	• Decision-makers provided with REIMP licences	I	unit	30
		• Specific requests from decision-makers to develop new planning and monitoring tools	I	per annum	10
		• Area subject to land management policies based on REIMP land use zoning information and management plans	I	% area to be mapped by the REIMP	100
Expected results	1. Dialog between decision-makers and information producers is improved	• Partnerships or contracts initiated with REIMP agencies	I	unit	100
	2. Decision-makers are knowledgeable of existing land use planning tools and their capacity to monitor implementation of land use decisions is enhanced	• Audience regularity to workshops	I	% participants	80
		• Analysis requests addressed by decision-makers to the REIMP for planning and monitoring	I	per month	10
		• Regional reports on the environment disseminated	P	unit	1,000
	3. Grassroot communities are knowledgeable of land use policies and their claims are reported	• Audience regularity to workshops	I	% participants	80
		• Proceedings disseminated	P	per workshop	500
	4. Public and international community are sensitized to sound land use planning requirements and sustainable development concept	• Annual income generated from the sale of REIMP products meant for the public	I	equ. US$	50,000
Objective 3	Providing users with additional environmental information meeting their demand	• Annual income generated from the sale of REIMP products or subscriptions to REIMP services	I	eq. US$	200,000
Expected results	1. A high-quality basic information platform is established and meets the demand	• Area covered with updated topographical and land cover information	I	% total area of the Congo basin	20
		• REIMP labels delivered	P	% products issued	80
	2. Level of information on the biodiversity status, trends, and threats is increased and conservation priorities are set	• Protected area covered with faunistic and floristic inventories	P	% protected area of the Congo basin	20
		• Protected area covered with local biodiversity conservation plans	P	% protected area of the Congo basin	10
	3. Natural resource zoning and monitoring is facilitated	• Area covered with pre-zoning information (inventories and surveys)	P	% total area of the Congo basin	40
		• Area covered with medium-scale zoning plans	P	% total area of the Congo basin	10
		• Area covered with local management plan (including biodiversity conservation plans)	P	% total area of the Congo basin	3
Objective 4	Strengthening national capacities.	• Autonomy of local staff	I	quality ratio*	1
Expected results	1. National agencies are able to manage and use information technologies	• Staff trained	P	unit	60
	2. National agencies are renowned for their competencies	• External requests for special services	I	per annum	10
		• Annual income generated by private contracts with REIMP agencies	I	eq. US$	200,000
	3. Local experts are involved in information component of ongoing and future projects	• REIMP agents involved in other projects	I	unit	40

C. Models of monitoring indicators for the different types of contracts

	Narrative summary	Indicators	type	Unit	Target pY5
Objective 1	Ensuring information circulation and optimizing benefits from existing initiatives.				
Activities	1. Setting up the primary network	• Coordination efficiency	P	quality ratio*	1
		• Conflicts between REIMP members solved	P	% conflicts	95
		• Agreements between network members compatible with DEP	P	unit	50
		• External requests to join the network	I	per annum	30
	2. Promoting and harmonizing standards for data collection and integration	• Official adoptions of standards	I	unit	50
		• Labels delivered	P	unit	100
	3. Implementing or improving telecommunication infrastructure including Internet facilities	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocated budget	100
		• Emails sent within the region	P	per month	300
		• Emails sent outside the region	P	per month	100
	4. Developing information services (archive database, national and regional libraries, compilation of laws and rules)	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocated budget	100
		• New proposals for information services	P	unit	30
		• Consultations	I	per month	100
		• Internal requests for information	I	per month	100
		• External requests for information	I	per month	100
	5. developing directories and rosters (meta-database, rosters of experts, training and products directories)	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocated budget	100
		• Database actuality	P	quality ratio	1
		• Access to the directories and rosters	I	per month	100

Objective 2	**Encouraging decision-makers to use environmental information and facilitating sound land use planning in the Congo Basin.**	•			
Activities	1. Organizing sensitization and communication workshops for decision-makers	• National workshops held	R	% total of workshops planned	100
		• Regional workshops held	R	% total of workshops planned	100
		• Disbursment rate	R	% allocated budget	100
		• Participants	P	unit	300
		• Satisfaction rate among participants	I	quality ratio	1
		• Follow-ups and requests for more information	I	% participants	50
	2. Developing user-friendly information tools (*tableaux de bord*) and elaborating a regional report on the Environment	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocated budget	100
		• Relevance of indicators as assessed by a panel of scientists	P	quality ratio	1
		• Demonstrations to decision-makers at their request	I	unit	150
		• Requests for REIMP reports on the Environment	I	unit	150
	3. Developing communication tools for rural populations (village-centered workshops, posters, radio,...)	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocate budget	100
		• Population tageted	R	thousands of people	400
		• Attendance regularity	I	quality ratio	1
		• Changes observed in behaviours	I	quality ratio	1
	4. Developing communication tools for public (guides, dictionaries,...)	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocated budget	100
		• Documents sold	I	unit	500
		• REIMP notoriety	I	quality ratio	1
Objective 3	**Providing users with additional environmental information meeting their demand**				
Activities	1. Producing and updating basic information (topographical and land cover maps)	• Completion rate	R	% area to be covered	100
		• Disbursment rate	R	% allocated budget	100
		• Geometrical accuracy	P	meter	< 30
		• Confusion rate between the map and the fields as regards land cover	P	% area to be covered	< 5
		• Maps sold	I	unit	10,000
		• Database licences provided	I	unit	40
	2. Producing and updating information on forestry and biodiversity (national and subnational forest zoning plans, local conservation plans, forest and biodiversity monitoring system)	• Completion rate	R	% area to be covered	100
		• Disbursment rate	R	% allocated budget	100
		• Confusion rate between the plan and the fields as regards inventories and surveys	P	% area to be covered	< 10 / 1
		• Relevance of the methodology as assessed by a panel a scientists	P	quality ratio	1
		• Respect of the methodology validated by the panel of scientists	P	quality ratio	1
		• Agreement between the various economical stakeholders	I	quality ratio	20
		• Database licences provided	I	unit	2,000
		• Plans sold	I	unit	50
		• External requests sent to the monitoring system	I	per month	100
		• Enforcement of forest zoning or conservation plan recommandations	I	% total area zoned	
	3. Producing and updating information on agriculture and rural development (market price observatoire, land use zoning plans, peri-urban management plans, slash-and-burn monitoring system)	• Completion rate	R	% area to be covered	100
		• Disbursment rate	R	% allocated budget	100
		• Confusion rate between the plan and the fields as regards inventories and surveys	P	% area to be covered	< 10
		• Relevance of the methodology as assessed by a panel of scientists	P	quality ratio	1
		• Respect of the methodology agreed by the panel of scientists	P	quality ratio	1
		• Agreements between the various economical stakeholders	I	unit	20
		• Database licences provided	I	unit	2,000
		• Plans sold	I	per month	50
		• External requests sent to the monitoring system	I	% area to be covered	100
		• Enforcement of land use zoning or peri-urban management plan recommandations			
	4. Producing and updating information on geological ressources and mine extraction (geological and hydrogeological databases)	• Completion rate	R	% area to be covered	100
		• Disbursment rate	R	% allocated budget	100
		• Confusion rate between the database and the fields as regards geological features	P	% area to be covered	< 10
		• Database licences provided	I	unit	10
Objective 4	**Strengthening national capacities.**				
Activities	1. Equipment of local agencies	• Completion rate	R	% equipment to be installed	100
		• Disbursment rate	R	% allocated budget	100
		• Equipment suitability to fulfill REIMP needs	P	quality ratio	1
	2. Technical assistance and training of national staff	• Completion rate	R	% scheduled work	100
		• Disbursment rate	R	% allocated budget	100
		• Staff successfully trained	P	% staff to be trained	100
		• Technical assistants' abilities	P	quality ratio	1
	3. Marketing of the national agencies and experts	• Brochures sent and bulletins broadcast	P	unit	5,000
		• External requests for special services	I	eq. US$	200,000

Type of indicator: R=Realisation, I=Impact, P= Performance
Quality ratio: 1=excellent; 2=good; 3=fair; 4=poor

Annex 4: Link With Other Projects

A. National Projects

Central African Republic

1.　　WB / Projet d'Amenagement des Ressources Naturelles (PARN). The objective of the project is to provide a better knowledge of the dense humid forest of CAR. The development of a GIS and the production of cartographic information on woody resources has been, so far, the main component. The project need a wider structure of information dissemination in order to meet user's request for information. The extension of the PARN area to the entire CAR forest zone is relevant, particularly to the dense dry forest of the East. The project is, due to its technical development and to the accuracy of its products, an essential project for the REIMP. Its second phase is already well integrated in the framework of the REIMP.

2.　　EU / Projet de Developpement de la Region Nord (PDRN). The improvement of the management of environmental resources bt local population of the CAR Northern region is the general objective of the project. To achieve this goal, a large amount of information has been collected: aerial surveys, remote sensing mapping, biodiversity field surveys. The various information should be integrated in a structured system in order to be preserved. The participatory approach with local population is an interesting experience in the context of the dissemination of the information.

3.　　GEF / Bangassou. The GEF project on the dense forest of Bangassou is in its implementation phase. The objective is to develop and to test decentralized approaches to protect biodiversity in this unique forest area of Eastern CAR. The needs for basic information are clearly defined in order to be able to develop consistent biodiversity surveys. These surveys must follow and be integrated in a standardized structure. As for the PDRN, the approach represents an opportunity for a dialogue with local population. The development of specific population oriented environmental products is a necessity. The REIMP could develop the base of information for the project and work closely with Bangassou staff for specific products.

Cameroon

4.　　GEF / Cameroon. The project will enhance biodiversity conservation and management in six priority sites of Cameroon. It will also strengthen local biodiversity institutions. The project involves a lot of organisations (NGO and local institutions). Considerations undertaken during the project on the standardization of the biodiversity field surveys and on the information integration in a national system present a great interest for the REIMP. A support for the application of these considerations can be offered by the REIMP, beside the production of basic cartographic information. The support to the project can also be the extrapolation of the biodiversity surveys to other sites and the development of a dissemination structure for the products.

Congo

5.　　GEF Congo. The building of a framework for effective biodiversity conservation in Congo is a necessity. The management of selected reserves is entrusted to NGO (WCS, IUCN) and local institutions. Numerous data have been collected. A centralized unit (CERGEC) is in charge of providing the basic information. The strengthening of this unit in the context of the REIMP seems useful in order to develop a reliable structure for biodiversity information conservation. The strengthening will ensure a better coordination of the site activities at national scale by providing

common standards and common basic products.

6.   GTZ Congo. In the North of Congo, GTZ, funded by German Cooperation, is developping a buffer zone management system near the Ndoki reserve. The system requires the development and use of GIS technology to manage and monitor buffer zones and logging concessions. The application of GIS to logging concessions is quite new and is certainly a key application for REIMP products. A close link has already been established between GTZ and the REIMP.

Gabon

7.   WB / Projet Forêt Environnement (PFE). The objective of the PFE is to strengthen national capacity for management of the valorisation of the forest resources of Gabon. Activities include: strenghening the local intervention capacity, follow up of research activities in forestry, support to the creation of natural reserves.   The information component in this project is surprisingly relatively weak. The REIMP will therefore be a very complementary project to the PFE. The PFE will be a privileged user of the REIMP products and could be a perfect dissemination and valorisation unit for the REIMP products. The synergy between the two projects is strong.

8.   ITTO / Gabon. As for the PARN in CAR, the ITTO project objective in Gabon is the preparation of an accurate information base for a better management of the coastal forest area of Gabon (Zone l). The approach is technology-driven with the use of aerial remote sensing and GIS. A dialogue between the REIMP and the ITTO project is necessary to select a common standard for the products developed in the coastal area. The REIMP has been contacted to complement the ITTO project by the development of the same approach for Gabon's zone 2. This will allow a national and integrated management of the Gabonese forests.

DRC

9.   EU and UNHCR / Virunga. The European Union and UNHCR activities in the context of the management of Rwandese refugees near the high biodiversity areas of the Virunga National Park are very significant. Mapping of the areas affected by population migration have been realized on an emergency basis, using satellite and aerial remote sensing, unfortunately sometimes too late to allow conservation or effective management of the biodiversity resources. A dialogue has begun between the REIMP and the UNHCR in order to provide basic information in sensitive areas.

l0.   WCS / WWF. International NGO (WCS, WWF) activities in DRC are currently carried on outside of any internationally funded programs. Local scale projects (Okapi Reserve of Epulu, National Park of Garamba, Kahuzi-Biega, ...) whose objectives are mainly the management of protected areas and the training of local personnel, are nevertheless developing an essential information base. Remote Sensing and GIS techniques are used. REIMP can strengthen these initiatives by providing a cartographic base to support biodiversity surveys. REIMP can also ensure the dissemination of the information collected. These data are often poorly utilized partly because of their production outside of international programs.

B. Regional Projects

ll.   EU / ECOFAC and APFT Projects. The program of conservation and sustainable use of the forest ecosystems (ECOFAC) is an unique regional experience in Central Africa. The program implies the development of a specific activity in a selected study site of each country. Various topics are handled : Valorization of forest products, Eco-Tourism, Agro-Forestry. Due to the initial lack of an integration structure for the information collected, the project is facing difficulties

to synthesize its results at regional level. ECOFAC has produced airborne RADAR imagery and a vegetation map of each of its sites. Nevertheless, the development of common products between the sites seems an exception. The second phase of the project should improve the situation by the developement of a regional GIS and a common metadatabase. Collaboration with the REIMP can be considered at that level. The support of the REIMP has been requested for the development of common basic information products. The program "Avenir des Peuples de Forets Tropicales" is a socio-demographic component to ECOFAC. The objectives are to put the ECOFAC activities in a sociological context. The integration of both programs and their information is still a challenge to which the REIMP can bring its support.

12.   USAID / Central Africa Regional Program for Environment (CARPE). The general objective of CARPE is to reduce the rate of forest degradation in the Congo Basin, to promote biodiversity conservation and to minimize the negative impacts linked to global climate change. CARPE is a project of ten American partners: WCS, WWF, NASA, WRI, ...Field activities and information surveys are carried out by WCS and WWF in high biodiversity value sites : Lope, Gamba and Minkebe in Gabon, Ndoki in Congo, Sangha and Bangassou in RCA. Between the partners, a data policy has been prepared in order to standardize the field surveys and facilitate the dissemination of the project information. Collaboration between the REIMP and CARPE is effective through a constant dialogue and exchange of information. The REIMP with the development of basic cartographic products should improve the NGO work and should also contribute to foster the relation between CARPE and local institutions.

13.   Universities.University research activities (US, Japanese, European) are numerous in Central Africa but the results of their works are often poorly known, poorly disseminated or unavailable. Several universities are working in collaboration with existing programs (ex. Vegetation mapping by the University of Edinburgh - University of Gent for ECOFAC), in the context of individual PHd research (ex. Study and mapping of Bonobo habitat in south-east DRC - University of Oxford) or under well-structured research programs (ex. Global Change Program TIGER - UK). Due to the weakness of local institutions, the dialogue between the universities and the local institutions is nearly non existent. Information is going back to universities where no system is available to conserve them for the long term. The REIMP should reinforce local institutions in order for them to be able to handle and to preserve the information collected. This should also allow a better dissemination of the research results.

Annex 5: Detailed Project Costs

The next pages describe the following tables :

Financiers :

Tables A and B give the distribution of expenditure accounts and activities by financiers. The Self-financing category covers the estimated benefits from derived products sales.

Activities :

Table C gives the distribution of the budget for each activity over the five years of the project.

Detailed costs by countries :

Tables D to J respectively give the expenditure accounts for each activity of Cameroon, CAR, Congo, DRC, Equatorial Guinea and Gabon.

A. Financiers: Expenditure Accounts

Expenditure Accounts by Financiers
(US$ '000)

	Government	Global Environmental Facility	Other donors	Self-financing	Total
I. Investment Costs					
B. Goods	535	246	866	93	1,740
C. Data		1,106	36	15	1,157
D. Vehicles	413	80	330	3	826
E. Consultant Services					
Short Term Consultants		109	579	7	695
Long-Term Technical Assistance		21	4,354		4,375
Services	97	41	475	36	649
Subtotal Consultant Services	97	171	5,408	43	5,720
F. Training and Fellowships		64	656	49	769
G. Regional Fund for Local Initiatives			960		960
Total Investment Costs	1,045	1,667	8,257	202	11,172
II. Recurrent Costs					
A. Staff	754	1,754	2,404	177	5,089
B. Operation and maintenance of Vehicles	114	82	256	5	458
C. Other Operating Costs	628	507	1,842	162	3,139
Total Recurrent Costs	1,497	2,343	4,503	344	8,687
Total Project Costs	2,542	4,010	12,760	547	19,859

B. Activities by Financiers

Activities by Financiers

(US$ '000)

	Government	Global Environmental Facility	Other donors	Self-financing	Total
A. Cameroon					
Topographic products	105	128	265		498
Land use	47		175		222
Biodiversity national guide	16	96			113
Non ligneous products	10	1	73		84
Market prices	51	5	165		222
Legal database	26	1	91		119
Telecom. and dissemination	20			148	168
EIS	62	3	258		324
Coordination	109		735		843
Subtotal Cameroon	447	235	1,763	148	2,592
B. Central Africa Republic					
Rural Planning	86	69	433		588
Ecology Monitoring	48		186		234
Forestry	83	4	254		341
Biodiversity	19	407			425
Periurban Planning	19	71	82		172
Coordination	208		944	36	1,188
Subtotal Central Africa Republic	462	551	1,900	36	2,949
C. Congo					
Communication Tools	9			87	96
Core Environmental Info.	143	55	477		676
Forestry	111	32	331		475
Rural Development	74	59	180		313
Biodiversity	70	507			576
Coordination	71		662		733
Subtotal Congo	478	654	1,651	87	2,869
D. Democratic Republic of Congo					
Forestry	226	163	812		1,201
Biodiversity	67	337			403
Urban Development	86		266	70	422
Coordination	97		1,116		1,213
Subtotal Democratic Republic of Con	476	499	2,194	70	3,239
E. Equatorial Guinea					
Documentation and communication	15		194	49	258
Biodiversity	6	173			178
Forestry	96	8	272		376
Training	26		282		308
Coordination	52		565		618
Subtotal Equatorial Guinea	196	181	1,314	49	1,739
F. Gabon					
Core Environmental Info.	53	171	255		478
Coastal Zone Mngt	56		310		366
Biodiversity	27	228			255
Forestry	19		219		238
Training	19		171		190
Telecom. and Dissemination	31			157	187
Coordination	129		387		516
Subtotal Gabon	333	399	1,342	157	2,230
G. Regional Coordination					
Regional Project Mgnt Unit	151	1,491	2,598		4,240
Subtotal Regional Coordination	151	1,491	2,598		4,240
Total Disbursement	2,542	4,010	12,760	547	19,859

C. Activities by Year

Project Activities by Year
(US$ '000)

	Totals Including Contingencies					
	1998	1999	2000	2001	2002	Total
A. Cameroon						
Topographic products	330	79	27	47	15	498
Land use	98	57	23	21	23	222
Biodiversity national guide	47	33	21	6	6	113
Non ligneous products	38	27	14	3	3	84
Market prices	106	28	29	30	30	222
Legal database	42	18	19	20	20	119
Telecom. and dissemination	88	19	20	20	21	168
EIS	177	44	42	29	30	324
Coordination	272	140	142	144	146	843
Subtotal Cameroon	1,197	446	336	319	295	2,592
B. Central Africa Republic						
Rural Planning	129	249	92	101	16	588
Ecology Monitoring	39	98	28	34	35	234
Forestry	125	109	35	36	37	341
Biodiversity	180	135	101	5	5	425
Periurban Planning	56	62	39	9	6	172
Coordination	303	259	224	199	204	1,188
Subtotal Central Africa Republic	832	912	518	384	303	2,949
C. Congo						
Communication Tools	39	16	14	14	13	96
Core Environmental Info.	197	123	133	138	85	676
Forestry	120	88	100	103	64	475
Rural Development	124	55	50	52	32	313
Biodiversity	132	168	103	107	66	576
Coordination	160	137	153	155	128	733
Subtotal Congo	773	587	553	568	388	2,869
D. Democratic Republic of Congo						
Forestry	403	301	263	148	86	1,201
Biodiversity	280	23	71	19	9	403
Urban Development	297	47	36	21	21	422
Coordination	288	228	230	233	234	1,213
Subtotal Democratic Republic of Con	1,267	599	601	421	351	3,239
E. Equatorial Guinea						
Documentation and communication	65	46	47	49	51	258
Biodiversity	13	42	43	39	41	178
Forestry	118	81	68	54	56	376
Training	118	89	51	27	23	308
Coordination	138	118	119	121	122	618
Subtotal Equatorial Guinea	451	376	329	290	293	1,739
F. Gabon						
Core Environmental Info.	333	125	21			478
Coastal Zone Mngt	98	124	63	64	17	366
Biodiversity	130	73	34	16	2	255
Forestry	170	69				238
Training	93	53	14	18	12	190
Telecom. and Dissemination	100	30	19	19	19	187
Coordination	167	83	86	89	92	516
Subtotal Gabon	1,091	555	236	206	142	2,230
G. Regional Coordination						
Regional Project Mgnt Unit	837	804	856	866	877	4,240
Subtotal Regional Coordination	837	804	856	866	877	4,240
Total PROJECT COSTS	6,449	4,278	3,429	3,055	2,648	19,859

D. Detailed Project Costs : Cameroon

Expenditure Accounts by Activities - Totals Including Contingenci
(US$ '000)
Cameroon

	Topographic products	Land use	Biodiv. national guide	Non ligneous products	Market prices	Legal database	Telecom. & dissemination	EIS	Coordination
I. Investment Costs									
B. Goods	85	48	10	1	12	7	16	53	75
C. Data	128		1	1	5	1		3	
D. Vehicles	76				37			37	37
E. Consultant Services									
Short Term Consultants	17	17		36	34		3	49	
Long-Term Technical Assistance									410
Services	17	20	9	10	22	11	2	29	57
Subtotal Consultant Services	34	37	9	45	56	11	5	78	467
F. Training and Fellowships	5						10	43	10
Total Investment Costs	329	85	19	48	111	20	31	215	589
II. Recurrent Costs									
A. Staff	93	35	33	22	69	53	61	34	158
B. Operation and maintenance of Vehicles									
C. Other Operating Costs	76	102	60	15	42	45	76	75	97
Total Recurrent Costs	169	137	93	37	111	99	137	109	255
Total PROJECT COSTS	498	222	113	84	222	119	168	324	843

E. Detailed Project Costs : CAR

Expenditure Accounts by Activities - Totals Including Contingencies
(US$ '000)
CAR

	Rural Planning	Ecology Monitoring	Forestry	Biodiversity	Periurban Planning	Coordination
I. Investment Costs						
B. Goods	50	66				84
C. Data	69		4	118	71	
D. Vehicles			37			76
E. Consultant Services						
Short Term Consultants	80	32	33		17	
Long-Term Technical Assistance						410
Services	22	3		31	10	11
Subtotal Consultant Services	101	35	33	31	27	421
F. Training and Fellowships	88	9				4
Total Investment Costs	309	110	75	148	98	585
II. Recurrent Costs						
A. Staff	234	62	196	206	46	415
B. Operation and maintenance of Vehicles			31			29
C. Other Operating Costs	45	62	40	71	28	160
Total Recurrent Costs	279	124	267	277	74	603
Total PROJECT COSTS	588	234	341	425	172	1,188

F. Detailed Project Costs : Congo

Expenditure Accounts by Activities - Totals Including Contingencies

(US$ '000)

Congo

	Topographic products	Communication Tools	Env. Core Info.	Forestry	Rural Development	Biodiversity	Coordination
I. Investment Costs							
B. Goods	85	22	73	43	53	98	19
C. Data	128	6	55	32	59	66	
D. Vehicles	76		37	40	40	40	19
E. Consultant Services							
Short Term Consultants	17		77	21		46	21
Long-Term Technical Assistance							410
Services	17		5				57
Subtotal Consultant Services	34		81	21		46	488
F. Training and Fellowships	5	6	9	17	5	6	6
Total Investment Costs	329	35	256	153	157	255	532
II. Recurrent Costs							
A. Staff	93	50	306	230	98	230	109
B. Operation and maintenance of Vehicles			57	40	29	40	29
C. Other Operating Costs	76	11	56	52	29	52	63
Total Recurrent Costs	169	62	420	321	156	321	201
Total PROJECT COSTS	498	96	676	475	313	576	733

G. Detailed Project Costs : Democratic Republic of Congo

Expenditure Accounts by Activities - Totals Including Contingencies

(US$ '000)

Democratic Republic of Congo

	Forestry	Biodiversity	Urban Development	Coord.
I. Investment Costs				
B. Goods	117	96	122	41
C. Data	163	142	37	
D. Vehicles	75	37	19	20
E. Consultant Services				
Short Term Consultants	68			
Long-Term Technical Assistance				819
Services	57		7	11
Subtotal Consultant Services	126		7	830
F. Training and Fellowships	12	37	50	8
Total Investment Costs	492	313	235	900
II. Recurrent Costs				
A. Staff				188
B. Operation and maintenance of Vehicles	63	20	33	17
C. Other Operating Costs	646	70	154	108
Total Recurrent Costs	708	91	187	313
Total PROJECT COSTS	1,201	403	422	1,213

H. Detailed Project Costs : Equatorial Guinea

Expenditure Accounts by Activities - Totals Including Contingencies

(US$ '000)

Equatorial Guinea

	Documt. and comm.	Biodiv.	Forestry	Training	Coord.
I. Investment Costs					
B. Goods	13		24	16	2
C. Data	8	8	8		
D. Vehicles			37		19
E. Consultant Services					
Short Term Consultants					
Long-Term Technical Assistance					410
Services	11	9	23	29	11
Subtotal Consultant Services	11	9	23	29	421
F. Training and Fellowships				193	
Total Investment Costs	32	17	92	238	442
II. Recurrent Costs					
A. Staff	177	140	201	59	108
B. Operation and maintenance of Vehicles					
C. Other Operating Costs	49	21	84	11	68
Total Recurrent Costs	226	161	285	70	176
Total PROJECT COSTS	258	178	376	308	618

I. Detailed Project Costs : Gabon

Expenditure Accounts by Activities - Totals Including Contingencies

(US$ '000)

Gabon

	Env. Core Info.	Coastal Zone Mngt	Biodiversity	Forestry	Training	Telecom. and Dissemination	Coordination
I. Investment Costs							
B. Goods	64	101	38	31	28	64	48
C. Data	171						
D. Vehicles	19						37
E. Consultant Services							
Short Term Consultants	4	59	63		14	4	
Long-Term Technical Assistance	96		21	164			
Services	46	57			2	36	34
Subtotal Consultant Services	146	116	84	164	16	41	34
F. Training and Fellowships	11	74	2		99	23	23
Total Investment Costs	411	291	124	195	143	128	143
II. Recurrent Costs							
A. Staff	64	47	54	22	12	30	157
B. Operation and maintenance of Vehicles	3				13		6
C. Other Operating Costs		29	77	22	23	29	210
Total Recurrent Costs	67	75	131	44	47	60	373
Total PROJECT COSTS	478	366	255	238	190	187	516

J. Detailed Project Costs : Regional units

Expenditure Accounts - Totals Including Contingencies
(US$ '000)
Regional units

	Regional PMU
I. Investment Costs	
B. Goods	118
C. Data	
D. Vehicles	83
E. Consultant Services	
Short Term Consultants	
Long-Term Technical Assistance Services	1,638
Subtotal Consultant Services	1,638
F. Training and Fellowships	19
G. Regional Fund for Local Initiatives	960
Total Investment Costs	2,818
II. Recurrent Costs	
A. Staff	1,091
B. Operation and maintenance of Vehicles	49
C. Other Operating Costs	283
Total Recurrent Costs	1,422
Total PROJECT COSTS	4,240

Annex 6: Appraisal mission matrix

Cette annexe illustre la large participation des bailleurs et ONGs durant la préparation du PRGIE et recense les membres de l'équipe de préparation du coté bailleur.

Les deux semaines d'évaluation en groupe ont été suivies par l'atelier de Brazzaville du 24 au 26 Mars 97 qui a réuni l'ensemble des partenaires pour une synthèse des travaux.

Groupes	Groupe 1: RCA (au Gabon): du 9 au 14 Mars 1997 / Congo: du 16 au 21 Mars 1997			Groupe 2: Guinée Équatoriale: du 9 au 14 Mars 1997 / Cameroun: du 16 au 21 Mars 1997			Groupe 3: Gabon: du 9 au 14 Mars 1997 / Zaire: du 16 au 21 Mars 1997			Intégration Régionale 24 au 26 mars 1997 note (1)	Nombre d'experts
Chefs de groupe	M. Fernandez (UE)			J.M. Bouvard (FAC)			M. Simeon (BM)			F. Rantrua (BM)	1
Spécialités X Partenaires	1. Thématiques: 1.1. Biodiversité 1.2. Foresterie 1.3. Agriculture 1.4 Aspects socio-économiques	2. Techniques: 2.1. Systeme Info 2.2. Telecom	3. Autres: 3.1. Gestion/organ. 3.2. Juridique	1. Thématiques: 1.1. Biodiversité 1.2. Foresterie 1.3. Agriculture 1.4 Aspects socio-économiques	2. Techniques: 2.1. Systeme Info 2.2. Telecom	3. Autres: 3.1. Gestion/organ. 3.2. Juridique	1. Thématiques: 1.1. Biodiversité 1.2. Foresterie 1.3. Agriculture 1.4 Aspects socio-économiques	2. Techniques: 2.1. Systeme Info 2.2. Telecom	3. Autres: 3.1. Gestion/organ. 3.2. Juridique	Chef de mission a fait l'évaluation de la proposition régionale et participé aux travaux des groupes 1 et 3	
Allemagne	H.Hoffman (1.2.+ 3.1.) -R- Congo			M. Henze (1.1 + 1.2 + 1.3) -R- Cameroun			A. Lema (1.4)				2 -R-
Banque mondiale	C. Taupiac (1.2. et 3.1.)			P. Gerbe (2.2. et 3.2.)		M. Bekhechi (3.2.)	M. Siméon (3.1., 1.2. et 1.3.)			1.2. C. Taupiac 3.1.M. Simeon 3.2. M. Bekhechi	5
FAO		D. Lantieri (1.3. et 2.1.)			S. Lombardo (2.1.)					1.3. D. Lantieri 2.1. S. Lombardo	2
FIDA				V. Galastro (1.4) Gabon, Cameroun		T. Rico-Mora (3.1) Guinée Éq.				1.4. V. Galastro *	2
France	M. Langui (1.1.) -R-			J.M. Bouvard (3.1. et 1.2.) -R-			R. Nasi (1.2) -R- Gabon C.Tutin (1.1.) -R- Congo, Zaire				2 -R-
ONGs										1.1. C. Tutin *	2 -R-
ECOFAC (Union Européenne)	C. Aveling (1.1.) -R- Zaire										2 -R-
Autres partenaires (USA, Belgique)			M. Fernandez (3.1. et 1.1.) -R-				M. Massart (2.1.)		G. Schorochoff (3.1.)	2.1. M. Massart * (avec DL et SL)	2
Total par thème	3	1	2	3	2	2	3	1	2		19+1 (FR) dont 8 -R-
Total par groupe	6			7			6			6	

-R-: personne présente dans la région, lorsqu' un pays est précisé, la personne n'a participé à l'évaluation que dans ce pays

(1): certains experts ont parfois eu des responsabilités spécifiques qui ne sont pas précisées dans ce tableau de synthèse en particulier pour niveau régional.

* Rapports spécifiques séparés

Se sont joints à la mission lors de la conférence de Brazzaville: Cynthia Cook, Albert Grève (BM), David Kingsbury (FIDA), Filippo Saraco et Bas Huijbrejts (Union Européenne),

Bertrand Galtier, Alain Chaudron (France), James Graham (USAid), et F.Z. Bennani-Baii (ONUDI)
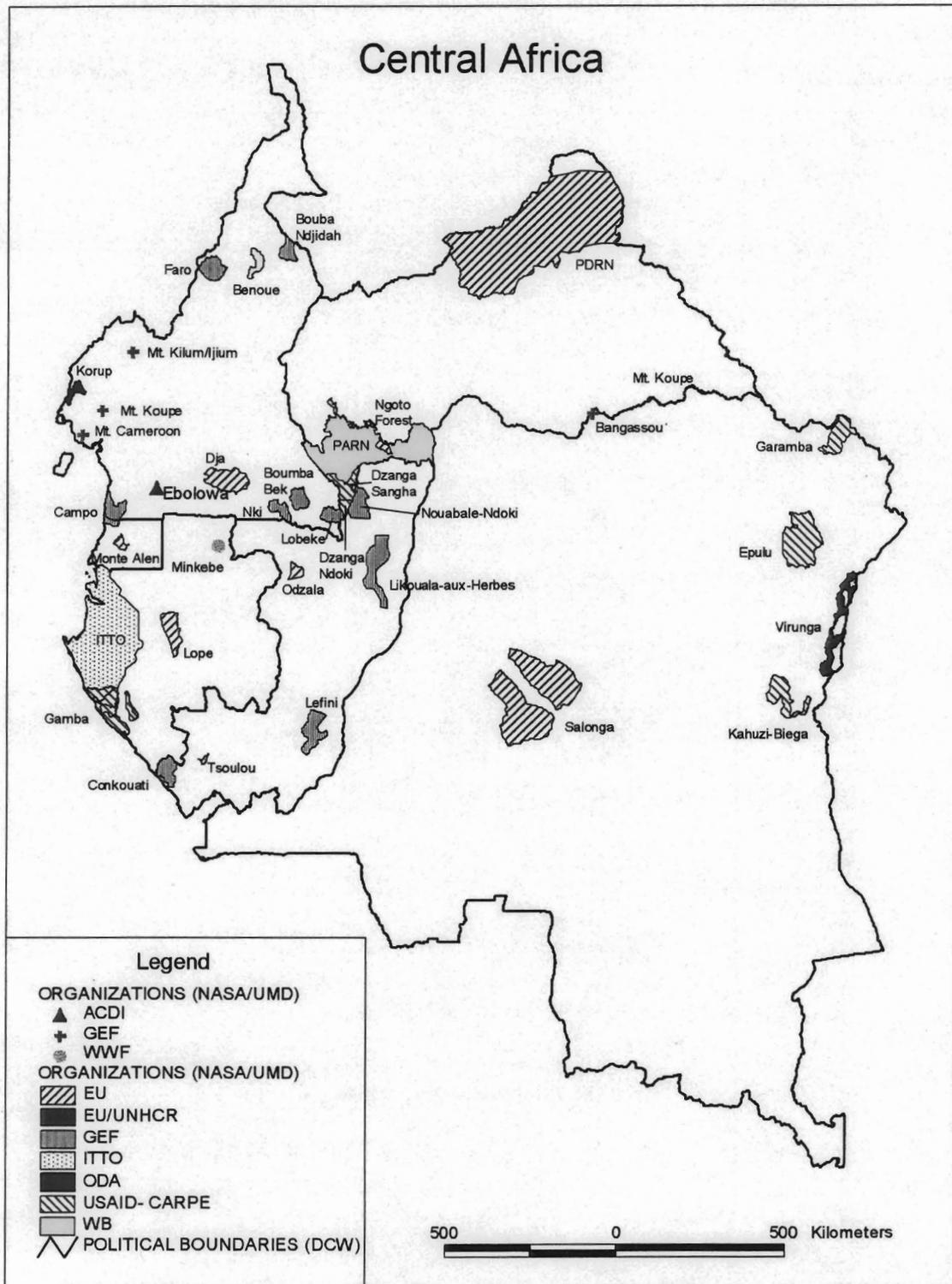
Figure 3 : Map of existing projects