

## CHAPTER FIVE

### THE ACTION PLAN

#### 5.1 Introduction

**G**oals, strategies and specific objectives have been identified and developed in Sections 4.4 to 4.6. This chapter is concerned with the actions to be undertaken to conserve biodiversity, to use its components sustainably and to share fairly and equitably benefits arising therefrom in these ecosystems. These actions do not have the weight and importance when examined in terms of available resources, urgency and time frame required for their implementation. This, therefore, calls for some prioritisation. For this first NBSAP, we used the relative importance of the objectives in the process of the conservation of biodiversity as the only criterion for prioritisation and a three level prioritisation ranking consisting of 'Very High Priority' (VHP), 'High Priority' (HP), and 'Priority' (P) with respect to their importance for the conservation of biodiversity. At this stage it has been judged reasonable and convenient to prioritise objectives (fusion of specific objectives in Boxes 4.3 to 4.8 results in the number of objectives per ecosystem as reflected in Tables 5.2.1 to 5.2.6) and leave the prioritisation of actions at the level of execution by implementers. The duration is indicated for the objective including related actions.

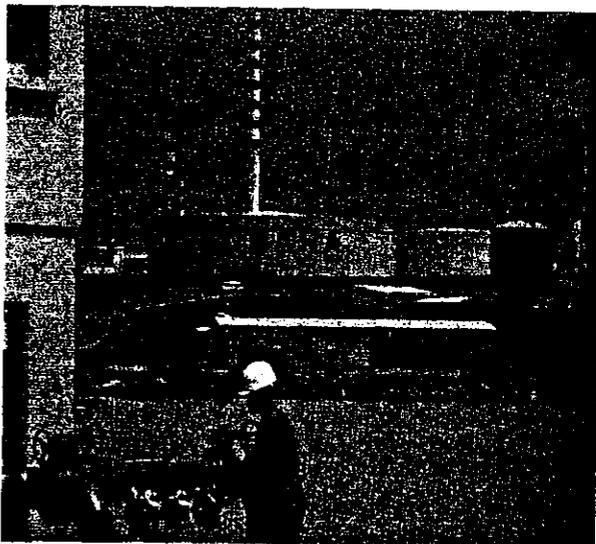
It is expected that the actions proposed here are meant to address the root causes and not just the symptoms of ecosystem degradation. That is why participatory management, legal and socio-economic considerations are included in the proposed actions. For each objective and its proposed actions, the "focal point" has been identified, including collaborating ministries for the implementation of the proposed action(s). Additional partners including organisations involved in on going projects (Boxes 2.1-2.6) and other governmental and non governmental organisations (both national and international) and the business sector will be identified when detailed activities/Tasks are described.

#### 5.2 Actions required in the respective ecosystems

In preparing the action plan, some of the specific objectives in the respective boxes have been fused.

### 5.2.1 Marine and Coastal Ecosystem

Human population and associated activities are concentrated within the marine and coastal ecosystem zones of Cameroon. This is a result of the shipping requirements (particularly in the Douala area), offshore oil exploitation (particularly in the Limbe area), plantation agriculture (particularly in the Limbe, Tiko and Douala areas). Such concentration of human activities is taking its toll on the environment and thus on biodiversity. Mangrove forests (along the marine coast from Limbe through Douala to Campo) are being cut down for local energy requirement. The petroleum industry is contributing to sea and air pollution. Much biodiversity has been lost as a result of clearing huge areas for plantation agriculture. Industrial and urban wastes are contributing to pollution (chemical wastes in Douala, waste from petroleum refinery in Limbe). These are among the main concerns for taking action to conserve and restore, where possible, the biodiversity of the marine and coastal ecosystem.



*Plate 3.1.1.1 SONARA Oil Refinery Complex*

If pollution is not properly controlled, the release of industrial waste in such Petroleum complexes could be disastrous to the marine biodiversity.



*Plate 3.1.1.2 Marine turtle*

The conservation of marine turtle in the Gulf of Guinea has become a major concern of the governments of the sub-region

Table 5.2.1. Objectives and Action for Marine and Coastal Biodiversity

OBJECTIVE	PRIORITY LEVEL	ACTION	FOCAL POINT	PARTNER	DURATION (YR)
1. To promote activities and policies that ensure the sustainable and cleaner exploitation of biodiversity and reduce the vulnerability of the ecosystem	VHP	1 Identify/survey components of biodiversity for conservation; identify processes that may have significant adverse impacts on marine and coastal ecosystem and organisms living in them (Art. 7), organise data/create a centralised data base including baseline data and trends in marine and coastal biodiversity.	MINEF	MINREST MINEPIA MINAGRI MINMEE MINUH MINTP NGOs LCs DONORS	5
		2 Establish protected areas (types to be specified out of the 6 IUCN categories) to specifically protect (species, habitats and target % of protected areas to be specified) and develop management plans where necessary and devise management systems for buffer zones (Art. 8a-e) in marine and coastal ecosystem.		MINEPIA MINREST NGOs LCs	
		3 Restore/rehabilitate degraded marine and coastal ecosystem (e. g. coastal vegetation including mangrove, and recover 35 threatened species of fish, (Table 2.2)).		MINEPIA MINREST NGOs LCs	
		4 Describe and monitor impact of exotic species (Art.8h) and genetically modified organisms (UNEP technical guidelines) Control exotic species/genetically modified organisms threatening marine and coastal species, habitats or ecosystem.		MINEPIA MINREST NGOs LCs	
		5 Determine acceptable harvesting levels for each resource (Art. 10)		MINEPIA MINREST MINCOF NGOs LCs	
		6 Integrating with UNCLOS, revise existing policies and legislation that affect marine and coastal ecosystem, ensure their implementation, and include, in particular, environmental impact assessment.		MINEPIA MINAGRI NGOs LCs	
		7 Promote relevant traditional know-how and practices in marine and coastal ecosystem management (Art. 8j).		MINEPIA MINREST NGOs LCs	
		8 Assess possible incentives for conservation and sustainable use (Art. 11) and identify disincentives and perverse incentives to be		MINEPIA MINEFI MINDIC NGOs	

		discouraged/prevented.		LCs	
		<p>9 Promote international co-operation on regional issues and benefit from other countries' experience and expertise (Art. 18) and exchange of information (Art. 17).</p> <p>10 Adopt ecosystem exploitation systems, including land use that prevent or control soil erosion.</p> <p>11 Undertake environmental impact assessment of projects and their activities within the marine and coastal ecosystem, including mining, agriculture, and forestry (SBTTA/CBD / COP/4/2/ Recommendation III/1, COP IV decision), concerning agenda item 3 in UNEP/CBD/COP/4/2 Report of the third meeting of the subsidiary body on scientific, technical and technological advice.</p> <p>12 Assess impacts of industrialisation and urbanisation and identify ways and means to control adverse impacts, if any (Art. 14).</p> <p>13 Monitor changes in marine and coastal ecosystem caused by such factors as climate change, industrial and agricultural wastes.</p>		<p>MINREST NGOs LCs</p> <p>MINAGRI MINEPIA MINREST CEPH- NGOs LCs</p> <p>MINMEE MINAGRI MINEPIA NGOs LCs</p> <p>MINDIC MINUH NGOs LCs</p> <p>MINEPIA MINREST MINT- RANS NGOs LCs</p>	
2. To build, develop and strengthen capacity at all levels for the management and protection of marine and coastal ecosystem	VHP	<p>1 In the area of human resources development and capacity building, establish and maintain programmes for scientific and technical education and training in sustainable use of marine and coastal biodiversity and its components (Art. 12), including the empowerment of local communities.</p> <p>2 Promote and encourage research which contributes to the conservation and sustainable/safe use of biodiversity and biotechnology (Art. 12/UNEP technical guidelines.</p>	MINREST	<p>MINEPIA MINAGRI INTER- ORGS NGOs Mining Companies AGRO-P MINMEE LCs MINCOF</p> <p>MINEF MINEPIA IRAD LANAVET NGOs LCs</p>	3
		3 Promote and co-operate in the use of scientific advances in biological diversity research in developing methods		MINEF MINESUP NGOs	

		<p>for conservation and sustainable use of biological resources</p> <p>4 Concerning industrial capacity building, establish/strengthen bodies/organisations responsible for research, technology acquisition, and monitoring of the status in forest and floral biodiversity, and to ensure co-ordination.</p> <p>5 Strengthen national taxonomy capacity.</p> <p>6 Strengthen the actions of NGOs</p> <p>7 Strengthen education awareness programmes.</p> <p>8 Promote effective collaboration among ecologists, planners and economists within the country and between them and their counterparts from other countries (SBSTTA) Recommendation III/1, concerning Agenda item 3, in UNEP/CBD/4/2. Report of the third meeting of the subsidiary body on scientific, technical and technological advice.</p> <p>9 Monitor changes in marine and coastal ecosystem caused by natural factors.</p> <p>10 develop biosafety regulations</p>		<p>LCs</p> <p>MINDUC MINREST MINESUP NGOs LCs</p> <p>MINESUP MINREST NGOs LCs</p> <p>MINEPIA NGOs LCs</p> <p>MINEPIA MINREST NGOs LCs MINIDUC MINESUP</p> <p>MINREX MINESUP NGOs LCs</p> <p>MINTRAN SMINEPIA MINAGRI MINREST NGOs LCs</p> <p>MINEF MINEPIA MINESUP</p>	
3. To check uncontrolled implantation of plantations, and construction of infrastructure.	VHP	<p>1 Ensure that environmental protection norms are respected during the implantation of urban centres, infrastructure and plantations and ensure that those already in place are managed in accordance with environmental norms</p> <p>2 Provide buffer zones between plantations/urban centres and coastal protected areas, and ensure that regulations protecting riparian areas are</p>	MINEF	<p>MINUH MINTP MINAGRI MINVILLE NGOs LCs DONORS</p> <p>MINEPIA MINAGRI MINAT NGOs</p>	CONTINUOUS

		respected  3 Revise and implement land management law/regulations in marine and coastal ecosystem		LCs  MINUH MINEPIA NGOs LCs	
4. To promote traditional knowledge of the use and value of marine and coastal biodiversity and its component parts.	HP	1 Document traditional uses of biodiversity and identify potential uses of its components. (Art. 8j & Art.10c) <i>inter alia</i> through ethnobiological and valuation studies.  2 Analyse the cultural, educational, recreational, spiritual and other uses including the socio-cultural dimensions and market values of biodiversity and its component parts (UNEP/CBD/COP/1/16 Annex X)  3 Promote participation of local communities in biodiversity related activities in the marine and interacting coastal ecosystem.	MINREST	MINEPIA MINESUP NRMP NGOs INTER-ORGS L-COM LCs MINCOF  MINEPIA MINEF MINCULT NGOs LCs  MINEPIA MINAGRI NGOs LCs	CONTINUOUS
5. To reduce man-made pollution of marine and coastal ecosystem	VHP	1 Identify, describe and monitor pollution (including household and municipal waste, harmful agricultural run-offs and industrial effluents) that may have or are having significant adverse impacts on the ecosystems (Art. 7) and organise data (Art.7d).  2 Determine impacts of pollution on important biodiversity and its components and describe indicators of impacts (Art. 10).  3 Determine minimum acceptable levels of pollutants (Art. 10).  4 Revision of existing policies/legislation as need arises.  5 Improve access to, and acquisition of, clean technology (Art. 16).	MINEF	MINMEE MINREST NGOs INTER-ORGS MINAGRI MINEPIA LCs  MINREST MINEPIA NGOs LCs  MINREST MINEPIA NGOs LCs  MINEPIA NGOs LCs  MINREST MINEPIA NGOs LCs	CONTINUOUS
6. Promote biodiversity prospecting	HP	1 Develop and/or strengthen biodiversity prospecting at the national and regional level by strengthening existing national institutions and local NGOs for, <i>inter alia</i> , taxonomic work.	MINEF	DONORS MINEPIA MINAGRI MINREST NGOs	

		<p>2 Revise policies/laws in particular with regard to access to genetic resources and assure the fair and equitable sharing of the results of research and development and the benefits from the commerce and utilisation of genetic materials (Art. 15)</p> <p>3 Promote regional and international co-operation;</p> <p>4 Establish and enhance incentives for biodiversity prospecting.</p>		<p>LCs</p> <p>MINEPIA MINAGRI MINREST NGOs LCs</p> <p>MINAGRI MINREST NGOs LCs</p> <p>MINEFI MINREST NGOs LCs</p>	
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### 5.2.2 Tropical Humid Dense Forest Ecosystem

The causes of biodiversity loss in the Tropical Humid Dense Forest. Ecosystem of Cameroon are many and complex. However, the main causes of this loss have been attributed to plantation agriculture, unsustainable marginal agriculture (including shifting cultivation), unsustainable logging, poaching/hunting and to some extent, clearing for urban and industrial development. As in other cases, these major causes are closely associated with policy, legal and socio-economic failures.

**Table 5.2.2. Objectives and Actions for Tropical Dense Forest Ecosystem**

OBJECTIVE	PRIORITY LEVEL	ACTION	FOCAL POINT	PARTNER	DURATION
1. To promote sustainable management and exploitation of tropical dense forests and resources	VHP	1 Identify/survey components of forest biodiversity for conservation, in particular, those that are at risk or have great value: identify processes that may have significant adverse impacts on forest ecosystem including organisms living in them (Art. 7), organise data/create a centralised data base including baseline data and trends in forest biodiversity.	MINEF	DONORS MINREST MINESUP MINAGRI MINEPIA NGOs LCs	CONTINUOUS
		2 Establish well defined boundaries for protected areas according to types specified in the 6 IUCN categories, to specifically protect species, habitats and specify the target % of protected areas; develop management plans, where necessary, and devise management systems for buffer zones (Art. 8a-e) (in particular between plantations, towns,		MINEPIA MINAGRI MINUH NGOs LCs	

		<p>villages and protected areas) in forest ecosystem, find alternative options to current use of forest by dwellers and devise community based management.</p> <p><b>3</b> Restore/rehabilitate degraded flora and fauna ecosystems (habitats/communities to be specified) and recover threatened/lost species (<i>Prunus sp.</i>, <i>Gnetum sp.</i>, <i>Rattan</i>, Tables 2.5 and 2.8 including the Drill, African forest elephant, <i>Guerrilla</i>, <i>Galago</i> and <i>Beecroft flying squirrel</i>; <i>Muturu cattle</i>, <i>Black Belly sheep</i>) and improve forest regeneration activities.</p> <p><b>4</b> Describe and control exotic species including genetically modified organisms threatening forest species, habitats or ecosystems as well as monitor their impact (Art. 8h).</p> <p><b>5</b> Determine sustainable harvesting level for each forest resource (Art. 10) and assure special planning of exploitation and prevent/control soil erosion.</p> <p><b>6</b> Revise/adapt policies and legislation/regulation (NFAP and Land Laws) that affect forest ecosystem, and include in particular, environmental impact assessment including mining, agriculture and forestry (SBSTTA Recommendation III/1, concerning agenda item 3 in UNEP/CBD/COP/4/2 Report of the third meeting of SBSTTA) and indicators.</p> <p><b>7</b> Compile and promote relevant traditional knowledge, know-how and practices in forest and ecosystem management (Art. 8j) through a participatory approach involving forest dwellers.</p> <p><b>8</b> Encourage measures of <i>in situ and ex situ</i> conservation through, in particular, rehabilitation of existing facilities (gene banks, botanical and zoological gardens, arboretums, game reserves and parks) and establish new ones for threatened species (Art. 9).</p> <p><b>9</b> Assess possible incentives for conservation and sustainable use of forest and resources (Art. 11) and identify disincentives and perverse incentives to be discouraged/ prevented.</p>		<p>MINAGRI MINEPIA MINREST ONADEF NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINCOF MINAGRI MINEPIA MINREST NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs MINDIC MINUH</p> <p>MINREST NGOs LCs</p> <p>MINAGRI MINREST NGOs LCs</p> <p>MINEFI MINREST NGOs LCs</p>	
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		<p><b>10</b> Promote international co-operation on transboundary and regional issues and benefits from other countries' experience and expertise (Art. 18) and exchange of information (Art. 17) and technology transfer (Art. 16).</p> <p><b>11</b> Attract and mobilise adequate financial (particularly from the private sector), material and human resources for sustainable biodiversity management in forest and ecosystems.</p> <p><b>12</b> Promote sustainable agro/sylvo/pastoral activities in forest ecosystems especially in the regulation of shifting cultivation, controlled utilisation of bush fires and domestication of interesting species including <i>inter alia</i>, <i>Gnetum sp</i>, <i>Irvingia sp</i>, Rattan and "cutting grass".</p> <p><b>13</b> Assess impacts of industrialisation and urbanisation, slash and burn and subsistence agriculture and identify ways and means of controlling adverse impacts, (Art. 14)</p> <p><b>14</b> Monitor changes (in particular carbon sequestration) in tropical forest ecosystems caused by natural factors, including Climate Change, on environment.</p>		<p>MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINREST MINEPIA NGOs LCs</p> <p>MINEPIA MINAGRI NGOs LCs MINREST</p> <p>MINTRANS MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p>	
2.To build, develop and strengthen capacity at all levels of the sustainable management and the protection of forest ecosystem	VHP	<p><b>1</b> In the area of human resources development and capacity building establish and maintain programmes for scientific and technical education and training in methods for the identification, conservation and sustainable use of forest biodiversity and its components (Art. 12) including empowerment of local communities.</p> <p><b>2</b> Promote and encourage research, which contributes to the conservation and sustainable/safe use of biodiversity and biotechnology (Art. 12/UNEP technical guidelines) and create a data bank on forest biodiversity.</p> <p><b>3</b> Promote and co-operate in the use of scientific advances in biological diversity resources (Art. 12)</p> <p><b>4</b> Concerning Institutional Capacity Building establish/strengthen</p>	MINREST	<p>MINEF INTER-ORGS MINESUP MINUH NGOs LCs DONORS MINCOF</p> <p>MINREST MINEF MINEPIA IRAD LANAVET NGOs LCs</p> <p>MINESUP MINEF MINEPIA NGOs LCs</p> <p>MINESUP MINEF</p>	

		<p>bodies/organisations responsible for research technology acquisition, and monitoring of the status and changes in forest and flora biodiversity, and to ensure co-ordination.</p> <p>5 Strengthen the national taxonomic capacity.</p> <p>6 Strengthen the actions of NGOs in the area of forest biodiversity.</p> <p>7 Strengthen education and awareness programmes.</p> <p>8 Promote effective collaboration among ecologists, planners, engineers and economists within the country and between them and their counterparts from other countries (SBTTA ) Recommendation III/1, concerning agenda item 3, on scientific, technical and technological advice.</p> <p>9 Monitor changes in flora and fauna caused by natural factors.</p> <p>10 Develop biosafety regulations</p>		<p>MINEPIA NGOs LCs</p> <p>MINESUP NGOs LCs</p> <p>MINEF NGOs LCs</p> <p>MINEF MINESUP NGOs LCs MINIDUC</p> <p>MINEF NGOs LCs</p> <p>MINTRANS MINAGRI MINEPIA NGOs LCs</p> <p>MINEF MINEPIA MINESUP</p>	
3. To promote traditional knowledge of forest biodiversity and its socio-economic importance.	HP	<p>1 Identify and document potential and traditional uses of biodiversity and its components of forest ecosystem and promote their wider uses (Art. 8j &amp; Art. 10c) through ethnobiological studies.</p> <p>2 Analyse the cultural, educational, recreational, spiritual and other uses including the socio-cultural dimensions and market values of biodiversity and its component parts (UNEP/CBD/COP/1/6 Annex X)</p> <p>3 Promote stakeholder participation in biodiversity related activities</p> <p>4 Carry out information, sensitisation and</p>	MINEF	<p>MINREST MINAGRI MINEPIA MINCOF NGOs LCs INTER-ORGS</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINEPIA MINAGRI NGOs LCs</p> <p>MINAGRI</p>	CONTINUOUS

		<p>awareness creation activities</p> <p>5 Develop alternative income sources and encourage private initiative</p> <p>6 Improve the mechanism for the redistribution of revenue from biological resources among stakeholders</p> <p>7 Sensitise the local communities on the sustainable utilisation of forest and flora/fauna resources</p> <p>8 Promote the valorisation of fauna and flora resources</p>		<p>MINEPIA NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI NGOs LCs</p> <p>MINEPIA MINAGRI NGOs LCs</p>	
4. To promote biodiversity prospecting.	VHP	<p>1 Carry out economic valuation of forest biodiversity starting with taxonomic work.</p> <p>2 Develop and/or strengthen biodiversity prospecting at the national and regional levels by strengthening existing national institutions and local NGOs;</p> <p>3 Revise policies/laws in particular with regard to access to genetic resources and assure the fair and equitable sharing of the result of research and development and the benefits from commercial and other utilisation of genetic materials (Art. 15)</p> <p>4 Promote regional and international co-operation</p> <p>5 Establish and enhance incentives for biodiversity prospecting</p>	MINEF	<p>DONORS MINREST MINEFI NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINREST MINAGRI NGOs LCs</p> <p>MINEFI NGOs LCs</p>	CONTINUOUS

### 5.2.3 Tropical Wooded Savannah Ecosystem

The tropical wooded savannah ecosystem in Cameroon is located between the tropical humid dense forest and the semi-arid ecosystems. This location is of specific significance in that unsustainable activities in that zone can have unfavourable effects in two directions. One is that the semi-arid region may start to eat-up into the savannah and the other that the wooded savannah may start to eat-up into the tropical humid dense forests. In fact, there is evidence that this is already the case in some areas of the country. The main biodiversity loss issues to be addressed in this zone centre around unsustainable agriculture and livestock activities, unsustainable harvesting of wood and other resources, fires, introduction of poorly adapted exotic breeds.

**Table 5.2.3. Objectives and Actions for Tropical Wooded Savannah Ecosystem**

OBJECTIVE	PRIORITY LEVEL	ACTION	FOCAL POINT	PARTNER	DURATION
1. To promote sustainable management and exploitation of tropical wooded savannah ecosystem resources	VHP	1 Identify/survey component of tropical wooded savannah biodiversity for conservation; identify processes that may have significant adverse impacts on tropical wooded savannah ecosystem including organisms living in them ( Art. 7), organise/create a centralised data base including baseline data and trends in savannah biodiversity.	MINEF	DONORS MINEPIA MINAGRI MINREST NGOs LCs	5
		2 Establish well defined boundaries for protected areas in savannah ecosystem according to type specified in the 6 IUCN categories, to specifically protect species and habitats, specify the targeted % of protected areas and develop management plans, where necessary, and devise management systems for buffer zones (Art. 8a-e) (in particular between plantations, towns, villages and protected areas) in savannah ecosystem.		MINEPIA MINAGRI MINREST NGOs LCs	
		3 Restore/rehabilitate degraded savannah ecosystem (particularly degraded pastureland : invasive plants including <i>Pteridium sp.</i> , <i>Mimosa sp.</i> , <i>Chromolaena sp.</i> ) and recover threatened/lost species (many forage species), and reinforce		MINAGRI MINREST MINEPIA NGOs LCs	

	<p>afforestation activities including "sacred forests".</p>	
	<p>4 Control exotic species and genetically modified organisms threatening savannah species (cattle breed such as <i>Bos taurus</i> and <i>Bos indicus</i>, Grassland Dwarf goat and grassland dwarf sheep), habitats or ecosystem.</p>	<p>MINEPIA MINAGRI NGOs LCs</p>
	<p>5 Promote activities that ensure the sustainable exploitation of savannah resources, including wild and domestic fauna, assure spatial planning of exploitation and determine acceptable harvesting levels for each savannah resource measure should be taken to facilitate in situ and ex situ conservation of threaten wooded savannah species (Art. 8,9 and 10) and control and prevent soil erosion.</p>	<p>MINEPIA MINAGRI MINREST</p>
	<p>6 Revise/adapt policies and legislation/regulation (NFAP and land laws) that affect savannah ecosystem, and especially those that eliminate/minimise farmer-grazier problems, and include in particular, environmental impact assessment including mining, agriculture and forestry (SBSTTA recommendation III/1, concerning agenda item 3 in UNEP/CBD/COP/4/2 report of the third meeting of SBSTTA).</p>	<p>MINEPIA MINREST MINAGRI NGOs LCs</p>
	<p>7 Compile and promote relevant traditional knowledge, know-how and practices in savannah ecosystem management and participatory approach involving savannah dwellers (Art. 8j).</p>	<p>MINEPIA MINREST MINAGRI MINCOF NGOs LCs</p>
	<p>8 Encourage measures of <i>in situ</i> and <i>ex situ</i> conservation through, in particular, rehabilitation of existing facilities (gene banks, game reserves and parks) and establish new ones for threatened species (Art. 9).</p>	<p>MINAGRI MINREST NGOs LCs</p>
	<p>9 Assess possible incentives for conservation and sustainable use of savannah resources (Art. 11) and identify disincentives and perverse incentives to be discouraged/prevented.</p>	<p>MINREST MINEPIA MINAGRI NGOs LCs</p>
	<p>10 Promote international co-operation on transboundary and</p>	<p>MINREST NGOs</p>

		<p>regional issues and benefits from other countries' experience and expertise (Art. 18) and exchange of information (Art. 17)</p> <p>11 To attract and mobilise adequate financial (particularly in the private sector), material, and human resources for sustainable biodiversity management in savannah ecosystem.</p> <p>12 Promote sustainable agro/sylvo/pastoral activities in savannah ecosystem especially the regulation of shifting cultivation, control the utilisation of bush fires and domestication of interesting species including <i>inter alia</i>, <i>Gnetum sp</i>, <i>Irvingia sp</i>, Rattan and "cutting grass".</p> <p>13 Promote and enhance programme/activities for sustainable water resources management.</p> <p>14 Assess impacts on industrialisation, urbanisation, slash and burn agriculture and identify ways and means to control adverse impacts, if any (Art. 14).</p> <p>15 Monitor changes in savannah ecosystem caused by natural factors, including draught Climate Change.</p>	<p>LCs</p> <p>MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA ONADEF NGOs LCs MINREST</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINUH MINAGRI MINREST MINEPIA NGOs LCs</p> <p>MINDIC MINUH NGOs LCs</p>	
<p>2. To build, develop and strengthen capacity at all levels to manage and protect tropical wooded savannah ecosystem biodiversity and its component parts.</p>	HP	<p>1 In the area of human resources development and capacity building, establish and maintain programmes for scientific and technical education and training methods for the identification, conservation and sustainable use of savannah flora/fauna biodiversity and its components (Art. 12) including the empowerment of local communities.</p> <p>2 Promote and encourage research which contributes to the conservation and sustainable/safe use of biodiversity and biotechnology (Art. 12/UNEP technical guidelines) and create a data bank on savannah biodiversity.</p> <p>3 Promote and co-operate in the use of scientific advances in biological</p>	<p>MINREST</p> <p>DONORS MINEF MINAGRI MINCOF NGOs LCs</p> <p>MINAGRI MINESUP MINREST NGOs LCs IRAD LANAVET MINSANTE</p> <p>MINEPIA MINAGRI</p>	

		<p>diversity and in developing methods for conservation and sustainable use of biological resource (Art. 12).</p> <p>4 Concerning institutional capacity building, establish/ strengthen bodies/organisations, including NGOs responsible for research, technological acquisition, and monitoring of the status and changes in savannah biodiversity, and to ensure co-ordination</p> <p>5 Strengthen national taxonomic capacity.</p> <p>6 Strengthen education and awareness programmes.</p> <p>7 Promote effective collaboration among ecologists, planners and economists within the countries and between them and their counterparts from other countries ( SBSTTA Recommendation III/1, concerning agenda item 3, in UNEP/CBD/COP/4/2 Report of the third meeting of the subsidiary body on scientific, technical and technological advice.</p> <p>8 Improve on criteria for selection of exotic breeds/varieties to be introduced locally and improve local breeds/varieties through adapted biotechnology techniques</p> <p>9 Improve infrastructure/ equipment/finances/manpower for manipulation of genetic material and enforcement of biosafety regulations.</p> <p>10 Develop biosafety regulations.</p>		<p>MINESUP</p> <p>MINEF MINEPIA MINAGRI MINESUP NGOs LCs</p> <p>MINESUP NGOs LCs</p> <p>MINESUP MINAGRI MINIDUC MINEPIA NGOs LCs</p> <p>MINEF NGOs LCs</p> <p>MINAGRI NGOs LCs MINEF</p> <p>MINESUP MINEF NGOs LCs</p> <p>MINEF MINEPIA MINESUP</p>	
3. To promote traditional knowledge of savannah biodiversity and its socio-economic importance.	HP	<p>1 Identify and document potential traditional uses of savannah ecosystem biodiversity and its components and promote wider uses (Art.8j &amp; Art. 10c) through ethnobiological studies.</p> <p>2 Analyse the cultural, educational,</p>	MINEF	<p>MINEPIA MINAGRI MINREST MINCOF NGOs LCs</p> <p>MINREST</p>	3

		<p>recreational, spiritual, and other uses including the socio-cultural dimension and market values of savannah biodiversity and its component parts (UNEP/CBD/COP/1/16 Annex X)</p> <p>3 Promote Stakeholder participation in biodiversity related activities, including information dissemination, sensitisation and awareness creation.</p> <p>4 Develop alternative income sources (particular agro-forestry and domestication of wild plants and animals) encourage private initiative* including <i>inter alia</i>, <i>Gnetum sp.</i>, <i>Irvingia sp.</i>, Rattan and "cutting grass".</p> <p>5 Improve the mechanisms for the redistribution of revenue from biological resources among stakeholders.</p> <p>6 Sensitise the local communities on the sustainable utilisation of savannah resources.</p>		<p>MINCULT NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINEPIA MINAGRI NGOs LCs</p> <p>MINAGRI NGOs LCs</p> <p>MINAGRI NGOs LCs</p>	
4. Promote biodiversity prospecting.	HP	<p>1 Promote valorisation of faunal and floral resources by developing and/or strengthening biodiversity prospecting at the national and regional levels by strengthening existing national institutions and local NGOs.</p> <p>2 Revise policies/laws in particular with regard to access to genetic resources in the savannah ecosystem and ensure the fair and equitable sharing of the results of R &amp; D and the benefits from commercial and other utilisation of genetic resources (Art. 15).</p> <p>3 Promote regional and international co-operation concerning biodiversity issues in the savannah ecosystem.</p> <p>4 Establish and enhance incentives for biodiversity prospecting in the savannah ecosystem</p>	MINREST	<p>DONORS MINEF MINAGRI MINEPIA MINSANTE NGOs LCs</p> <p>MINEPIA MINAGRI MINEF NGOs LCs</p> <p>MINEF MINEPIA NGOs LCs</p> <p>MINEF MINEFI NGOs LCs</p>	CONTINUOUS

### 5.2.4 Semi-arid Ecosystem

The semi-arid ecosystem has the highest population density in the country. Consequently, the pressure on biological resources is varied from especially for fuel wood needs, agriculture and livestock activities, and building construction. The problem of desertification and drought, poor water management and fires increases the vulnerability of biological resources in this ecosystem. The zone is very abundant in wildlife and most of the wildlife hunting reserves are located in this zone.

**Table 5.2.4. Objectives and Actions for Semi-arid Ecosystem**

OBJECTIVES	PRIORITY LEVEL	ACTION	FOCAL POINT	PARTNERS	DURATION (YR)
1. To promote sustainable management and exploitation of semi-arid ecosystem resources	VHP	1 Identify/survey components of biodiversity for conservation, identify processes that may have significant adverse impact on semi-arid ecosystem and organisms living in them (Art. 7), organise data/create a centralised data base including baseline data and trends in semi-arid biodiversity.	MINEF	DONORS MINREST MINESUP MINEPIA NGOs LCs	5
		2 Establish well defined boundaries for protected areas in semi-arid ecosystem according to types specified in the 6 IUCN categories, to specifically protect species and habitats, specify the targeted % of protected areas, and develop management plans, where necessary and devise management systems for buffer zones (Art. 8a-e) in semi-arid ecosystem.		MINAGRI MINEPIA MINUH NGOs LCs	
		3 Restore/rehabilitate degraded semi-arid ecosystem (particularly degraded pastureland) and recover threaten/lost domestic species (Namchi, Kapsiki and Kuri) cattle and wildlife species (Table 2.14).		NGOs LCs MINREST MINEPIA MINAGRI	
		4 Describe, monitor and control exotic species, including genetically threatened semi-arid species, habitats or ecosystem		MINREST MINAGRI MINEPIA NGOs LCs	
		5 Revise/adapt policies and legislation/regulation that affect semi-arid ecosystem, and include, in particular, environmental impact assessment and indicators		MINAGRI MINEPIA NGOs LCs	
		6 Compile and promote relevant traditional		MINREST	

	<p>knowledge, know-how and practices in semi-arid ecosystem management (Art. 8j) and participatory approach.</p>	<p>MINAGRI MINCOF NGOs LCs</p>	
	<p>7 Assess possible incentives for conservation and sustainable use of semi-arid resources (Art. 11) by both the private and the public sectors and identify disincentives and perverse incentives to be discouraged/prevented.</p>	<p>MINAGRI MINEPIA MINREST NGOs LCs</p>	
	<p>8 Promote international co-operation on regional issues and benefits from other countries' experience and expertise (Art. 18) and exchange of information (Art. 17).</p>	<p>MINREST MINESUP</p>	
	<p>9 Revise/adapt policies and legislation/regulation (NFAP and land laws) that affect semi-arid ecosystem, especially those that eliminate/minimise farmer-grazier problems, and include particular, environmental impact assessment including mining, agriculture and forestry (SBSTTA recommendation III/1, concerning agenda item 3 in UNEP/CBD/COP/4/2 report of the third meeting of SBSTTA) and indicators.</p>	<p>MINEPIA MINUH MINAGRI NGOs LCs</p>	
	<p>10 Attract and mobilise adequate financial, material, and human resources for sustainable biodiversity management in semi-arid ecosystem.</p>	<p>MINREST MINEPIA NGOs LCs</p>	
	<p>11 Promote activities that ensure the sustainable exploitation of semi-arid resources and ensure spatial planning of exploitation and determine acceptable harvesting levels for each semi-arid resource (Art. 10)</p>	<p>MINAGRI MINEPIA MINREST NGOs LCs</p>	
	<p>12 Promote and enhance sustainable agro/sylvo/pastoral activities in semi-arid ecosystem programmes and projects especially the regulation of shifting cultivation, control the utilisation of bush fires domestication of interesting species including <i>inter alia</i>, <i>Gnetum sp.</i>, <i>Irvingia sp.</i>, Rattan and "cutting grass".</p>	<p>MINAGRI ONADEF NGOs LCs</p>	
	<p>13 Improve actions on forest regeneration in the semi-arid ecosystem through reinforcement and/or establishment of tree planting projects.</p>	<p>ONADEF MINAGRI NGOs LCs</p>	
	<p>14 Carry out inventory and elaborate management plans for semi-arid ecosystem resources exploitation,</p>	<p>MINAGRI MINMEE MINREST</p>	

		<p>especially timber, fuelwood and wildlife resources, including genetic material and promote sustainable exploitation of wild and domestic fauna/flora including fuel wood</p> <p>15 Promote and enhance programmes/activities for sustainable water resources management and utilisation through participatory process in the semi-arid ecosystem</p> <p>16 Promote sustainable management and conservation of biodiversity resources – <i>Ex-situ</i> and <i>In-situ</i> including genetic resources in the public and private sectors.</p> <p>17 Promote and monitor measures for early warning, prevention and adaptation ( to natural disasters, drought, locust, floods, climate change).</p> <p>18 Adopt ecosystem exploitation systems, including land use that prevents or controls soil erosion.</p> <p>19 Undertake environmental impact assessment of projects and the activities within semi-arid ecosystem, including, agriculture, and forestry (SBSTTA Recommendation III/1, concerning agenda item 3, in UNEP/CBD/COP/4/2 report of the third meeting of the subsidiary body on scientific, technical and technological advice.</p> <p>20 Reinforce and/or establish tree planting projects</p> <p>21 Sensitise local communities on the proper utilisation of water resources; Promote and enhance programmes/activities for sustainable water resources management</p>		<p>NGOs LCs</p> <p>MINAGRI MINEPIA MINMEE NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINAT MINAGRI MINMEE NGOs LCs</p> <p>MINUH MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINMEE MINAGRI MINEPIA NGOs LCs</p>	
2. To build, develop and strengthen capacity at all levels to manage and protect semi-arid ecosystem biodiversity and	HP	1 In the area of human resources development and capacity building establish and maintain programmes for scientific and technical education and training in measures for the identification, conservation and sustainable use of semi-arid biodiversity and its components (Art. 12), including the empowerment of local communities.	MIN-REST	DONORS MINESUP MINCOF NGOs LCs	

its components.		<p>2 Promote and encourage research which contributes to the conservation and sustainable/safe use of biodiversity and biotechnology (Art. 12/UNEP technical guidelines) and create a data bank on semi-arid biodiversity.</p> <p>3 Promote and co-operate in the use of scientific advances in biological diversity and in developing methods for conservation and sustainable use of biological resources (Art. 12).</p> <p>4 Concerning institutional capacity building, establish/strengthen bodies/organisations, including NGOs responsible for research technology acquisition, and monitoring of the status and changes in semi-arid biodiversity, and to ensure co-ordination.</p> <p>5 Strengthen national taxonomic capacity in the semi-arid ecosystem.</p> <p>6 Strengthen education and awareness programmes among stakeholders in the semi-arid ecosystem.</p> <p>7 Promote effective collaboration among ecologists, planners, and economists within the country who are working on biodiversity issues in the semi-arid ecosystem, and with their counterparts from other countries (SBSTTA) recommendation III/1, concerning agenda item 3, in UNEP/CBD/COP/4/2 report of the third meeting of the subsidiary body on scientific, technical and technological advice.</p> <p>8 Develop early warning systems for adverse natural factors, especially climate change, desertification, drought and other catastrophic incidences.</p> <p>9 Develop biosafety regulations</p>		<p>MINESUP NGOs IRAD LANAVET LCs MINSANTE</p> <p>MINESUP NGOs LCs</p> <p>MINEF NGOs LCs</p> <p>MINESUP NGOs LCs</p> <p>MINAGRI MINEPIA MINEDUC MINESUP NGOs LCs</p> <p>MINEF NGOs LCs</p> <p>MIN-TRANS MINREST MINAGRI MINEPIA MINAT NGOs LCs</p> <p>MINEF MINEPIA MINESUP</p>	
3. To promote traditional knowledge of biodiversity,	HP	1 Identify potential and traditional uses of biodiversity components in semi-arid ecosystem and promote wider uses (Art. 8j & Art. 10c) through ethnobiological	MINEF	MINREST MINAGRI MINEPIA DONORS	

and its socio-economic importance in the semi-arid ecosystem.		<p>studies.</p> <p>2 Analyse the cultural, educational, recreational, spiritual and other uses including the socio-cultural dimensions and market values of biodiversity and its component parts (UNEP/CBD/COP/1/16 Annex X)</p> <p>3 Promote stakeholder participation in biodiversity related activities; including information dissemination, sensitisation and awareness creation activities.</p> <p>4 Develop alternative income sources and encourage private initiative, and improve the mechanisms for the redistribution of revenue from biological resources among stakeholders.</p> <p>5 Sensitise the local communities on the sustainable utilisation of semi-arid resources.</p> <p>6 Promote the participation of local communities in decision-making and respect of the cultural values they attach to biodiversity.</p>		<p>MINCOF NGOs LCs</p> <p>MINCULT MINREST MINESUP NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA MINEFI NGOs LCs</p> <p>MINAGRI MINMEE NGOs LCs</p> <p>MINCULT NGOs LCs</p>	
4. To promote biodiversity prospecting.	HP	<p>1 Develop and/or strengthen biodiversity prospecting at the national and regional levels by strengthening existing national institutions and local NGOs.</p> <p>2 Revise policies/laws in the semi-arid ecosystem, and ensure fair and equitable sharing of the results of research and development and the benefits from the commercial and other utilisation of genetic materials (Art. 15).</p> <p>3 Promote regional and international co-operation concerning biodiversity issues in the semi-arid ecosystem.</p> <p>4 Establish and enhance incentives for biodiversity prospecting in the semi-arid ecosystem.</p> <p>5 Valorise semi-arid ecosystem resources.</p>	MIN-REST	<p>DONORS MINEF MINAGRI MINEPIA MINSANTE NGOs LCs</p> <p>MINEPIA MINAGRI MINEF NGOs LCs</p> <p>MINEF MINREX NGOs LCs</p> <p>MINEF MINEFI NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p>	

### 5.2.5 Montane ecosystem

The biodiversity of the Cameroon montane ecosystems has very important economic assets for the population and the economic interest groups (such as farmers, hunters, graziers, traditional medicine practitioners, natural product scientists and tourists). Exploitation pressure on biodiversity has been great, particularly on some species such as *Prunus africana* and other medicinal plant products from Mount Cameroon (South West Province) and Kilum (North West Province) leading to the threat of extinction of such species. Exploitation of elephants on Mount Cameroon is also such that the species is threatened with extinction. It is therefore necessary to develop sustainable management and utilisation of the biological resources of these very important ecosystems, which contain endemic (Tables 2.16 and 2.17), threatened (Table 2.19) and rare species.

**Table 5.2.5. Objectives and Actions for Montane Ecosystem**

OBJECTIVE	PRIORITY LEVEL	ACTION	FOCAL POINT	PARTNER	DURATION (YR)
1. To promote sustainable management and exploitation of montane flora and fauna resources.	VHP	1 Identify and survey components of biodiversity for conservation and utilisation (in particular timber, fuel wood and wild life resources) ; identify processes that may have significant adverse impact on montane forest ecosystem and organisms living in them (Art. 7), organise data/create a centralised data base including baseline data and trends in montane forest biodiversity.	MINEF	MINEPIA MINUH INTER-ORGS NGOs LCs MINREST ONADEF	5
		2 Establish well-defined boundaries for protected areas /reserves in montane forest ecosystem according to types specified in the 6 IUCN categories to specifically protect species and habitats, specify the targeted % of protected areas, and develop management plans where necessary and devise management systems for buffer zones (Art. 8a-e) in montane forest ecosystem.		MINAGRI MINEPIA MINUH NGOs LCs	
		3 Restore/rehabilitate degraded montane forest ecosystem (habitats/communities to be specified) and recover threatened/lost species (Table 2.20 for mammals) and seven endangered birds (see 2.6.1.2 (b)) and improve regeneration activities		MINAGRI MINEPIA ONADEF NGOs LCs	

including medicinal plants (e.g. <i>Prunus</i> ).	
4 Describe, control and monitor exotic species including genetically modified organisms threatening montane forest species, habitats or ecosystem.	MINREST MINEPIA MINAGRI IRAD LANAVET NGOs LCs
5 Determine acceptable harvesting levels for each montane forest resource (Art. 10) and assure spatial planning of exploitation.	MINREST MINESUP NGOs LCs MINCOF
6 Revise/adapt policies/legislation that affect montane forest ecosystem, and include in particular, environmental impact assessment, eliminate/minimise farmer-grazier problems, regulate farming activities and encourage agro/sylvo/pastoral projects.	MINAGRI MINEPIA NGOs LCs
7 Promote relevant traditional knowledge, know-how and practices in montane forest ecosystem management (Art. 8j).	MINEPIA MINAGRI MINREST NGOs LCs
8 Assess possible incentives for conservation and sustainable use of montane forest resources (Art. 11) by the public and private sectors and identify disincentives and perverse incentives to be discouraged/prevented	MINAGRI MINEPIA MINEFI NGOs LCs
9 Encourage measures of <i>in situ</i> and <i>ex situ</i> conservation through, in particular, rehabilitation of existing facilities (gene banks, botanical and zoological gardens, arboretums, game reserves and parks) and establish new ones for threatened species (Art. 9).	MINET MINREST MINAGRI NGOs LCs
10 Promote international co-operation on regional issues and benefits from other countries' experience and expertise (Art. 18) and exchange of information (Art. 17)	MINREST MINREX NGOs LCs
11 Attract and mobilise adequate financial, material, and human resources for sustainable biodiversity management in montane ecosystem.	MINEFI NGOs LCs
12 Promote activities that ensure the	MINAGRI

		<p>sustainable exploitation of montane forest resources and ensure spatial planning of exploitation, especially domestication of interesting species including <i>inter alia</i>, <i>Gnetum sp.</i>, <i>Irvingia sp.</i>, Rattan and "cutting grass" and the regulation of shifting cultivation.</p> <p>13 Undertake environmental impact assessment of projects and their activities within montane forest ecosystem, including agriculture, and forestry (SBTTA recommendation III/1, concerning agenda item 3, in UNEP/CBD/COP/4/2 report of the third meeting of the subsidiary body on scientific, technical and technological advice.</p> <p>14 Monitor changes in montane forest ecosystem caused by natural factors, including climate change and volcanic eruptions/lava flow (e.g. Mount Cameroon).</p>		<p>MINEPIA NGOs LCs</p> <p>MINREST MINEPIA MINAGRI NGOs LCs</p> <p>MIN- TRANS MINAGRI MINREST NGOs LCs</p>
<p>2. To build, develop and strengthen capacity at all levels to manage and protect montane forest ecosystem biodiversity and its components.</p>	HP	<p>1 In the area of human resources development and capacity building, establish and maintain programmes for scientific and technical education and training in measures for identification, conservation and sustainable use of montane forest biodiversity and its components (Art. 12), including the empowerment of local communities.</p> <p>2 Promote and encourage research which contributes to the conservation and sustainable/safe use of biodiversity and biotechnology (Art. 12/UNEP technical guidelines) and creates a data bank on montane forest biodiversity.</p> <p>3 Promote and co-operate in the use of scientific advances in biological diversity research in developing methods for conservation and sustainable use of biological resources (Art. 12).</p> <p>4 Promote participatory management of montane ecosystem resources.</p> <p>5 Concerning Institutional Capacity</p>	MINREST	<p>DONORS MINESUP MINEPIA MINAGRI MINCOF NGOs LCs</p> <p>MINESUP IRAD LANAVET MINSANTE NGOs LCs</p> <p>MINESUP NGOs LCs</p> <p>MINEF NGOs LCs MINAGRI MINEPIA</p> <p>MINEF</p>

		<p>Building, establish/strengthen bodies/organisations, including NGOs, responsible for research, technology acquisition, and monitoring of status and changes in montane biodiversity, and ensure co-ordination.</p> <p>6 Strengthen education and awareness programmes among stakeholders in the montane forest ecosystem.</p> <p>7 Promote effective collaboration among ecologists, planners, and economists within the country who are working on biodiversity issues in the montane forest ecosystem, and between them and their counterparts from other countries (SBSTTA Recommendation III/1, concerning agenda item 3, in UNEP/CBD/COP/4/2 Report of the third meeting of the subsidiary body on scientific, technical and technological advice</p>		<p>NGOs LCs</p> <p>MINESUP MINEDUC MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA MINMEE NGOs LCs</p>	
<p>3. To promote traditional knowledge of montane biodiversity, and its component parts and their socio-economic importance and values.</p>	HP	<p>1 Identify and characterise potential and traditional uses of biodiversity and its components in montane ecosystem and promote wider uses (Art 8j &amp; Art. 10c) through ethnobiological studies.</p> <p>2 Analyse the cultural, educational, recreational, spiritual and other uses including the socio-cultural dimensions and market values of biodiversity and its component parts (UNEP/CBD/COP/1/16 Annexe X).</p> <p>3 Promote stakeholder participation in biodiversity related activities, including information dissemination, sensitisation and awareness creation activities.</p> <p>4 Develop alternative income sources, encourage private initiative and improve the mechanisms for the redistribution of revenue from biological resources among stakeholders.</p> <p>5 Promote the valorisation of montane forest ecosystem resources.</p>	MINEF	<p>MINREST MINCOF DONORS NGOs INTER-ORGS LCs</p> <p>MINCULT MINREST MINTOUR NGOs LCs</p> <p>MINCULT MINCOM MINREST MINAGRI NGOs LCs</p> <p>MINAGRI MINEPIA MINEFI NGOs LCs</p> <p>MINAGRI MINEPIA NGOs</p>	

		<p>6 Provide incentives for stakeholders and involve the private sector in biodiversity conservation and sustainable utilisation.</p> <p>7 Promote the participation of local communities in decision-making and respect of cultural values they attach to biodiversity and its components.</p> <p>8 Promote ecotourism.</p>		<p>LCs</p> <p>MINDIC MINREST MINESUP NGOs LCs</p> <p>MINCULT MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINTOUR NGOs LCs MINREST</p>	
4. To promote biodiversity prospecting	HP	<p>1 Develop and /or strengthen biodiversity prospecting at the national and regional levels by strengthening existing national institutions and local NGOs.</p> <p>2 Revise policies/laws in particular with regard to access to genetic resources in the montane forest ecosystem, and assure the fair and equitable sharing of the results of research and development and the benefits from commercial and other utilisation of genetic materials (Art. 15)</p>	MINEF	<p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA MINREST NGOs LCs</p>	
		<p>3 Promote regional and international co-operation concerning biodiversity issues in the montane forest ecosystem.</p> <p>4 Establish and enhance incentives for biodiversity prospecting in the montane forest ecosystem.</p> <p>5 Carry out economic value assessment of biodiversity.</p>		<p>MINREST MINAGRI MINEPIA MINREX NGOs LCs</p> <p>MINREST MINEFI NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p>	

### 5.2.6 Freshwater ecosystem

In Cameroon, human activities have been intimately linked with freshwater ecosystems. For instance, village communities and some farms are usually built near the shores of rivers and lakes. Thus, these activities, which are becoming more complex, have continued to put pressure on freshwater ecosystems. In almost all cases the related distance requirements for location activities around riparian areas (near rivers, lakes, marshes, etc.) are not respected, not even by the agro-industrial plantations. On the other hand, no assessments have been made of the impacts of these activities on the freshwater ecosystems, especially as it may be expected that much biodiversity is being lost. However, the creation of artificial lakes (dams) leads to new fresh water habitats and biodiversity formations, water pollution, and unsustainable exploitation.

**Table 5.2.6. Objectives and Actions on the Freshwater Ecosystem**

OBJECTIVE	PRIORITY LEVEL	ACTION	FOCAL POINT	PARTNER	DURATION
1. To promote sustainable exploitation of freshwater resources.	HP	1 Identify and survey components of biodiversity which are important for conservation; identify processes that may have or are having significant adverse impact on freshwater ecosystem and organisms living in them (Art.7) and organise data/create a (centralised) data base including baseline data and trends in freshwater biodiversity.	MINEF	MINEPIA MINREST MINAGRI NGOs LCs DONORS	CONTINUOUS
		2 Establish protected areas (to be specified based on 6 IUCN categories) to specifically protect (species and habitats, including targeted % of protected areas ( to be specified) and develop management plans where necessary and devise management systems for buffer zones (Art.8a-e).		MINUH MINEPIA MINAGRI NGOs LCs	
		3 Restore/rehabilitate (mining and agroindustrial and agrochemical areas) and recover (threatened fish species: Table 2.2) (Art.8a-e) also using <i>ex-situ</i> and <i>in-situ</i> facilities (Art.9) and promote aquaculture.		MINEPIA MINAGRI MINREST NGOs LCs	
		4 Identify, control and monitor exotic species including genetically modified organisms threatening freshwater species or ecosystem (Art. 8).		MINEPIA MINREST IRAD LANAVET MINSANTE	

		<p>5 Attract funding from the private sector and from bilateral/multilateral agencies for these activities;</p> <p>6 Determine acceptable harvesting levels for each freshwater resource (Art. 10).</p> <p>7 Revise/adapt policies and legislation (considering RAMSAR Convention, Art.2 ) that affect the freshwater ecosystem, and include, in particular, environmental impact assessment.</p> <p>8 Promote relevant traditional knowledge and know-how and practices (Art.8j).</p> <p>9 Promote international co-operation for regional issues and to benefit from other countries' experience and expertise (Art. 18) and exchange of information (Art. 17).</p> <p>10 Improve access to , and acquisition of, clean and appropriate technologies (Art. 16) including diseases of fresh water fishes (e.g. fish in lakes such as Bamenjing).</p> <p>11 Assess possible incentives, subsidies, regulations and other relevant mechanisms for conservation and sustainable use (Art. 11) and identify disincentives and perverse incentives to be discouraged/prevented (SBSTTA Recommendation III/1)</p>		<p>MINEFI NGOs LCs</p> <p>MINEPIA MINREST NGOs MINCOF LCs</p> <p>MINEPIA MINREST NGOs LCs</p> <p>MINREST MINEPIA NGOs LCs</p> <p>MINREST NGOs LCs</p> <p>MINREST MINEPIA MINAGRI NGOs LCs</p> <p>MINREST MINAGRI MINEPIA NGOs LCs</p>	
2. To reduce man-made pollution of freshwater ecosystem	VHP	<p>1 Identify and describe pollution (including household and municipal waste, harmful agricultural run-offs and industrial effluents) that may have or are having significant adverse impacts on the ecosystem (Art. 7) and organise data (Art.7d).</p> <p>2 Determine impacts of pollution on important biodiversity and its components and describe indicators of impacts (Art. 10).</p> <p>3 Determine minimum acceptable levels of pollutants (Art. 10).</p>	MINEF	<p>MINMEE MINREST NGOs LCs INTER-ORGS MINCOF MINAGRI MNEPIA</p> <p>MINREST MINEPIA NGOs LCs</p> <p>MINREST MINEPIA NGOs LCs</p>	CONTINUOUS.

		<p>4 Revision of existing policies/legislation as need arises.</p> <p>5 Develop biosafety regulations.</p>		<p>MINEPIA NGOs LCs</p> <p>MINEF MINEPIA MINESUP</p>	
3. Stop to degradation of fresh water ecosystem.	HP	<p>1 Adopt ecosystem resource exploitation systems (including land use) that prevent or control soil erosion.</p> <p>2 Describe and monitor impact of exotic species (Art. 8h) including genetically modified organisms (UNEP technical guidelines).</p> <p>3 Revise/adapt /enforce existing policies/legislation.</p> <p>4 Undertake environmental impact assessment of water development projects, aquaculture, and watershed management activities including agriculture, forestry and mining (SBSTTA recommendation III/1, concerning agenda item 3, of the UNEP/CBD/COP/4/2 report of the third meeting of subsidiary body on scientific, technical and technological advice.).</p> <p>5 Assess impact of dams and urbanisation and identify ways and means to control adverse impacts, if any (Art. 14).</p> <p>6 Monitor changes in freshwater ecosystem caused by natural factors (e.g. gas accumulations in crater lakes).</p>	MINEF	<p>MINREST NGOs LCs INTER-ORGS MINEPIA</p> <p>MINREST MINEPIA NGOs LCs</p> <p>MINEPIA IRAD MINSANTEL ANAVET NGOs LCs</p> <p>MINAGRI MINEPIA MINMEE NGOs LCs</p> <p>MINREST MINEPIA NGOs LCs</p> <p>MINTRANS MINREST MINEPIA NGOs LCs</p>	CONTINUOUS
4. To build, develop and strengthen capacity at all levels of the sustainable management and the protection of fresh water ecosystem.	VHP	<p>1 In the area of human resources development and capacity building establish and maintain programmes for scientific and technical education and training in methods for the identification, conservation and sustainable use of fresh water biodiversity and its components (Art. 12) including empowerment of local communities.</p>	MINREST	<p>ONADEF MINESUP INTER-ORGS MINUH NGOs LCs</p>	

		<p>2 Promote and encourage research which contributes to the conservation and sustainable/safe use of biodiversity and biotechnology (Art. 12/UNEP technical guidelines) and create a data bank on fresh water biodiversity.</p> <p>3 Promote and co-operate in the use of scientific advances in biological diversity resources (Art. 12)</p> <p>4 Concerning institutional capacity building establish/strengthen bodies/organisations responsible for research technology acquisition, and monitoring of the status and changes in fresh water fauna and flora biodiversity, and to ensure co-ordination.</p> <p>5 Strengthen the national taxonomic capacity.</p> <p>6 Strengthen the actions of NGOs in the area of fresh water biodiversity.</p> <p>7 Strengthen education and awareness programmes.</p>	<p>MINESUP MINEF MINEPIA IRAD LANAVET MINSANTE NGOs LCs</p> <p>MINESUP MINEF MINEPIA NGOs LCs</p> <p>MINESUP MINEF MINEPIA NGOs LCs</p> <p>MINESUP NGOs LCs</p> <p>MINEF MINCOF NGOs LCs</p> <p>MINEDUC MINEF MINESUP NGOs LCs</p>	
5. To promote traditional knowledge of freshwater resources and their values	<p>HP</p> <p>HP</p>	<p>1 Identify and document potential uses and traditional uses of components of the freshwater ecosystem; promote wider uses (Art.8j and 10c) through ethnobiological studies;</p> <p>2 Analyse the cultural, educational, recreational, spiritual and other uses, including the socio-cultural dimensions and market values of the components of biodiversity (UNEP/CBD/COP/1/16/Annex X)</p> <p>3 Promote stakeholder participation in biodiversity related activities</p> <p>4 Carry out information, sensitisation and awareness creation activities</p>	<p>MINREST</p> <p>MINEF</p>	<p>3</p> <p>CONTINUOUS</p>

		<p>5 Develop alternative income sources and encourage private initiative.</p> <p>6 Improve the mechanism for the redistribution of revenue from biological resources among stakeholders.</p> <p>7 Sensitise the local communities on the sustainable utilisation of forest and freshwater flora/fauna resources.</p> <p>8 Promote the valorisation of fauna and flora resources.</p>	<p>MINREST MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI MINEPIA NGOs LCs</p> <p>MINAGRI NGOs LCs</p> <p>MINEPIA MINAGRI NGOs LCs</p>	
<p>6. To promote biodiversity prospecting</p>	<p>HP</p>	<p>1 Develop and/or strengthen biodiversity prospecting at the national and regional levels by strengthening existing national institutions and local NGOs.</p> <p>2 Revise policies/laws in particular with regard to access to genetic resources (Art. 15) and assure fair and equitable sharing of the results of research and development, and benefits from commercial and other utilisation of genetic materials.</p> <p>3 Promote regional and international co-operation.</p> <p>4 Establish and enhance international biodiversity prospecting.</p>	<p>MINREST</p> <p>MINEF MINEPIA NGOs LCs INTER-ORGS</p> <p>MINEF MINEPIA MINAGRI NGOs LCs</p> <p>MINEF MINAGRI NGOs LCs</p> <p>MINEF MINESUP MINEPIA NGOs LCs</p>	<p>3</p>

### 5.3 Monitoring, evaluation and reporting

Monitoring and Evaluation (M&E) are required activities for every project to ensure follow-up and appraisal of the implementation. M&E examine all aspects of the project design, performance of different inputs and implementation agents, measures of progress towards targets, and may well indicate a necessity to redesign and revise the strategies and actions. Problems encountered, their solutions and lessons learnt within the period of implementation of the action plan are indicated by the M&E exercise. Monitoring shall be regular and periodic so as to ensure effectiveness of inputs and programme implementation according to established plan of work to guarantee achievement of expected results. The purpose of monitoring and evaluation is to provide decision-making with a technical support utility for the impact assessment of the activity. Monitoring and evaluation (Box 3.1) will indicate the level of effectiveness and efficiency of activities, measures and changes resulting from implementation or non-implementation of the NBSAP in order to predict their consequences and impacts. Monitoring and evaluation shall also allow for corrective measures to be taken to render the project sustainable.

In order to attain the goals and objectives of the NBSAP, baseline data shall be obtained on all the factors relevant to the status and trend of biodiversity. These factors are species distribution, boundaries of habitat types, population densities of different species, socio-economic conditions and trends, demography of the human population and existing policies that influence biodiversity. They have an impact on the action plan and shall ensure the full implementation and effectiveness of the mitigation measures. Various methods for monitoring and evaluation shall be used as appropriate for the achievement of the exercise.

For each objective, appropriate criteria and indicators shall be established for the M&E exercise. In the present document, guidelines and/or tentative criteria and indicators and, to some extent, verifiers have been established for each ecosystem. It is expected that these focuses will be refined as the NBSAP process progresses at the execution level.

### **Box 5.1**

#### ***Components of Biodiversity Participatory Monitoring and Evaluation System***

The degree to which the NBSAP is able to enhance Cameroon's capacity to conserve biodiversity and attain sustainable development will be a measure of its success in attaining the strategic goals developed in this document. An effective participatory monitoring and evaluation system shall provide baseline data that will have the following features:

*Component 1. Provide baseline data on changes occurring in the ecosystems.*

- Establish continuous observation and monitoring changes occurring in the ecosystems;
- Prepare and maintain an ecosystem database;
- Monitor pollution levels on a regular basis;
- Monitor stations for water flows and quality at critical points.

*Component 2. Present results of monitoring in a form readily available and understandable to decision-makers, economic interest groups, all including in particular and scientific communities.*

- Publish results of monitoring activities on a regular basis, through meetings and reports to stakeholders;
- Involve stakeholders in monitoring and evaluation activities.

*Component 3. Provide as accurate as possible timely information on population size and trends, especially of threatened species.*

- Periodic survey of threatened animal and plant species;
- Determine indicator species that can be used to monitor ecosystem changes.

*Component 4. Monitor implementation of policies, laws and projects.*

- Establish regular foot patrols in protected area reserves;
- Determine if biological resources are being properly allocated, so as to implement the NBSAP;
- Train forest game guards to monitor conditions in and outside reserves and protected areas.

The Cameroon NBSAP participatory Monitoring and Evaluation activities are programmed for as long as NBSAP project is on at which the various stakeholders, the Focal Point, MINEF, and Funding Agencies will participate. The M&E process will utilise a co-ordinated approach in its activities and as much as possible standard methods based on active co-operation and partnership among ministries, universities, research institutes, NGOs, local and international scientific communities, economic interest groups, and all other stakeholders, in order to produce a realistic and mutually acceptable and successful implementation of the action plan.

### 5.3.1 Benchmark/Performance Criteria

- The effectiveness of co-ordination between the Focal Point Ministry (MINEF) and the rest of the Institutions/Organisations carrying out biodiversity conservation and management.
- The effectiveness of the various Institutions and Organisations in carrying out their responsibilities.
- The level of responses and participation of the various stakeholders.
- The effectiveness of training programmes, sensitisation and awareness creation on biodiversity conservation and management of the various stakeholders.
- Timeliness of operations, the quality of output and report production during implementation period.

### 5.3.2 Monitoring

In the course of programme implementation, technical verification, follow-up and control will be assured through monitoring activities as follows:

- Preparation of broad yearly work-plans by the Institutions/Organisations charged with biodiversity conservation and management. These work-plans will be made more specific on annual basis.
- Periodic supervisory visits by competent officials from the focal point to monitor progress.
- Quarterly reviews to assess progress in funding and implementation.

*To oversee the implementation of this strategy and action plan, the main Ministry in charge of natural resources shall be the overall overseer. Consequently, together with key stake-holders, it shall determine the mechanism for the approval of broad work plans prepared and submitted by various institutions/organisations working on various objectives of the NBSAP. The mechanism agreed upon as above shall also determine the institution in charge of reviews.*

### 5.3.3 Evaluation

Programme evaluation will take place at three levels:

#### 5.3.3.1 Annual review

An annual review will take place starting the end of Year 1, to continue every year thereafter, towards mid-term and end of project review.

### 5.3.3.2 Mid-term review

The Focal Point/Funding Agencies/Donors will carry out the mid-term review. Each implementing Institution/Organisation will produce an internal evaluation report that will be used as the working document for the mid-term review.

### 5.3.3.3 Terminal review

Terminal review will be carried out at the end of the project as agreed by the GoC (Focal Point), partners and the funding agency.

### 5.3.4 Reporting

Periodic reports (technical and financial) on the implementation of the NBSAP will be produced quarterly, half-yearly, annually and at the end of any negotiated financing period. The formulation of indicators will be more meaningful at the project level and shall require more detailed baseline data to be generated. On the basis of the goals and objectives established for each ecosystem, the following global priority criteria and indicators for measuring success have been developed as indicated in the sections (5.4).

## 5.4 Criteria and indicators for monitoring and evaluation of the actions proposed for each ecosystem

### 5.4.5.2.1 Criteria and indicators for monitoring and evaluation of actions proposed for the Marine and Coastal Ecosystem

OBJECTIVE	CRITERION	INDICATORS	MOV (Reports, Minutes, etc, on)
5.4.5.2.1.1 To put in place measures that restrain petroleum mining companies and agro-industrial complexes against pollution	5.4.5.2.1.1 Pollution from petroleum and mining companies and agricultural chemicals	<ol style="list-style-type: none"> <li>1. Number of emergency waste disposal facilities</li> <li>2. Efficiency and capacity of existing waste management facilities on-/off-site waste management potential (amount of waste treated per unit of time).</li> <li>3. Rate of utilisation of treated waste water and recycled materials.</li> <li>4. Visual and smell effects of waste sites and treatment works.</li> </ol>	<ul style="list-style-type: none"> <li>• Functioning of estuary systems.</li> <li>• Waste site/treatment works</li> <li>• Level of pollution.</li> <li>• Heavy metal and pesticide residue assays.</li> <li>• Death or disappearance of fishes.</li> <li>• Availability of policies and texts of application or laws regulations on pollution</li> </ul>

		5. Relative growth of indicator flora and fauna. 6. Policies/laws/regulations on pollution.	
5.4.5.2.1.2 To promote activities that ensure the sustainable exploitation of biodiversity and reduce the vulnerability of the ecosystem.	5.4.5.2.1.2 Activities that ensure the sustainable exploitation of biodiversity and reduce the vulnerability of the ecosystem (s) are promoted.	1. Local community participation. 2. Warning system for assessing the effects of unsustainable exploitation of biodiversity resources. 3. Rate of survival of rare or endangered species. 4. Rehabilitation of disturbed habitats. 5. Creation of buffer zones. 6. improvement of land tenure system. 7. Adoption of ecosystems exploitation strategies, including land use that prevents and controls erosion. 8. Policies/laws/regulations on management and exploitation.	<ul style="list-style-type: none"> <li>• Relative number/indicator species.</li> <li>• Number of commercial trawlers.</li> <li>• Management of fishing activities.</li> <li>• Workshops for biologists and fishermen to discuss traditional and modern fishing methods.</li> </ul>
5.4.5.2.1.3 To build, develop and strengthen capacity at all levels for the management and protection of marine and coastal ecosystem	5.4.5.2.1.3 Capacity is built, developed and strengthened at all levels to protect and manage marine and coastal ecosystem	1. Scientific and technical education training programmes 2. Organisation of training seminars and workshops for stakeholders on the exploitation and management of marine/coastal resources. 3. Sensitisation, awareness creation, organisation and empowerment of local community/based groups. 4. Establishment and strengthening of organisations/bodies/NGOs responsible for research, technology appreciation and monitoring of changes in marine/coastal ecosystem.	<ul style="list-style-type: none"> <li>• Attendance at marine and coastal ecosystem seminars.</li> <li>• Introduction of marine coastal ecosystem courses in schools.</li> <li>• Sensitisation talks in social groups or NGO's.</li> <li>• Abundance of relevant publication.</li> </ul>
5.4.5.2.1.4 To check uncontrolled implantations of plantations, construction and infrastructure.	5.4.5.2.1.4 The uncontrolled implantation of plantations and construction of infrastructure is checked.	1. Environmental impact assessment. 2. Environmental protection norms for implantation of plantations and construction of infrastructure. 3. Promotion of activities that ensure sustainable exploitation and management of marine/coastal biodiversity, especially of aquatic resources and mangroves	<ul style="list-style-type: none"> <li>• Emergence of texts regulating installations in marine and coastal ecosystem</li> <li>• Restriction of structures not respecting regulation</li> <li>• Strictness in limiting approval of new installations</li> <li>• Participation in seminar/workshops on orderly implantation</li> </ul>
5.4.5.2.1.5 To promote	5.4.5.2.1.5 Traditional	1. Participation of	<ul style="list-style-type: none"> <li>• Research activities to identify</li> </ul>

traditional knowledge of the use and value of marine and coastal biodiversity and its components.	knowledge of the use and value of marine and coastal biodiversity and its components is enhanced.	<p>traditional societies and indigenous people in contributing traditional ecological knowledge as sustainable alternatives to ecosystem protection.</p> <p>2. Number of documents describing traditional uses of biodiversity and its components and the promotion of wider use through ethnobiological studies.</p> <p>3. Analysis of the cultural, educational, recreational, and socio-cultural, dimensions including the market evaluation of marine/coastal biodiversity.</p> <p>4. Valorisation of forest biodiversity resources and creation on alternative income sources.</p> <p>5. Mechanisms and amounts (percentages) of the redistribution of the revenue from marine/coastal resources among stakeholders.</p>	<p>pertinent traditional knowledge</p> <ul style="list-style-type: none"> <li>• Seminar/workshop to valorise traditional knowledge</li> <li>• Document production on content and value of traditional knowledge</li> <li>• Mass media publicity of traditional knowledge</li> </ul>
5.4.5.2.1.6 To promote biodiversity prospecting	5.4.5.2.1.6 Biodiversity prospecting in the marine and coastal ecosystem is promoted.	<p>1. Policies/laws/regulations on access to genetic materials</p> <p>2. Development / strengthening of capacity for biodiversity prospecting</p> <p>3. Fair/equitable sharing of the benefits of R&amp;D and from the commercial utilisation of genetic material.</p>	<ul style="list-style-type: none"> <li>• Seminar/workshop on sustainable harvesting of bioresources</li> <li>• Sensitisation of population on commercial value of biodiversity</li> <li>• Training on bioresource transfer contracts</li> <li>• Production of guides for equitable sharing of bioprospecting benefits.</li> </ul>

#### 5.4.5.2.2 Criteria and indicators for monitoring and evaluation of actions proposed for the Tropical Humid Dense Forest Ecosystem.

OBJECTIVE	CRITERION	INDICATORS	MOV (Reports, Minutes, etc, on)
5.4.5.2.2.1 To promote sustainable management and exploitation of tropical humid dense forest flora and fauna.	5.4.5.2.2.1 Activities that ensure the sustainable management and exploitation of biodiversity of the tropical humid dense forest ecosystem are promoted.	<p>1. Identification/survey of biodiversity components through inventory.</p> <p>2. Establishment of well-defined boundaries for protected areas.</p> <p>3. Restoration/rehabilitation of degraded forest communities, habitats, and ecosystems.</p> <p>4. Elaboration of</p>	<ul style="list-style-type: none"> <li>• Seminar/workshop on sustainable harvesting of bioresources.</li> <li>• Sensitisation of population on commercial value of biodiversity.</li> <li>• Training on bioresource transfer contracts.</li> <li>• Production of guides for equitable sharing of bioprospecting benefits.</li> </ul>

		<p>management plans and determination of harvesting levels for each forest resource.</p> <p>5. Promotion of sustainable agro-sylvo-pastoral activities.</p> <p>6. Actions on forest regeneration.</p> <p>7. Incentives for sustainable utilisation of forest resources and disincentives for unsustainable utilisation.</p> <p>8. Policies/laws/regulations on management and exploitation.</p>	<ul style="list-style-type: none"> <li>• Inventories.</li> <li>• Migration reports of species.</li> <li>• Participatory management plans for reserves and state forest.</li> <li>• Availability of government texts on CITES and on village/inter village management committee.</li> </ul>
<p>5.4.5.2.2.2 To build, develop and strengthen capacity at all levels of the sustainable management and the protection of flora and fauna.</p>	<p>5.4.5.2.2.2 Capacity is built, developed and strengthened at all levels to Protect and manage tropical humid dense forest ecosystem</p>	<ol style="list-style-type: none"> <li>1. Scientific and technical training programmes.</li> <li>2. Organisation of training seminars and workshops for stakeholders on the exploitation and management of forest resources.</li> <li>3. Sensitisation, awareness creation and empowerment of local community -based groups.</li> <li>4. Establishment and strengthening of organisations/ bodies/ NGOs responsible for research, technology acquisition and monitoring of changes in forest ecosystem</li> <li>5. Research that contributes to the conservation and sustainable utilisation of forest biodiversity and data bank on forest biodiversity.</li> </ol>	<ul style="list-style-type: none"> <li>• Training seminars for forest technology transfer and development</li> <li>• Refresher courses in forest management for forestry professionals and others</li> <li>• Instruction of forest management into school and university curricula</li> <li>• Mass media programmes for forest management.</li> </ul>
<p>5.4.5.2.2.3 To promote traditional knowledge of forest and flora/fauna biodiversity and their socio-economic importance.</p>	<p>5.4.5.2.2.3 Traditional knowledge of the use and values of tropical humid dense forest biodiversity and its components is enhanced.</p>	<ol style="list-style-type: none"> <li>1. Participation of traditional society and indigenous people in contributing traditional ecological knowledge as sustainable alternative to ecosystem protection</li> <li>2. Identification and documentation of traditional uses of biodiversity and its components and the promotion of wider use of ethnobiological studies</li> <li>3. Analysis of the cultural, educational, recreational and socio-cultural</li> </ol>	<ul style="list-style-type: none"> <li>• Research activities to identify pertinent traditional knowledge</li> <li>• Seminar/workshop to valorise traditional knowledge</li> <li>• Document production on content and value of traditional knowledge</li> <li>• Mass media publicity of traditional knowledge</li> </ul>

		<p>dimensions including the market evaluation of tropical humid forest biodiversity</p> <p>4. Evaluation of tropical humid forest biodiversity resources and creation of alternative income sources.</p> <p>5. Mechanism for the redistribution of forest resources revenue among stakeholders.</p>	
5.4.5.2.2.4 To promote biodiversity prospecting	5.4.5.2.2.4 Biodiversity prospecting is promoted.	<p>1. Policies/laws/regulations on access to genetic materials from humid forest ecosystem.</p> <p>2. Development/strengthening of capacity for biodiversity prospecting.</p> <p>3. Fair/equitable sharing of the benefits of R&amp;D and the commercial utilisation of genetic materials.</p>	<ul style="list-style-type: none"> <li>• Seminar/workshop on sustainable harvesting of bioresources.</li> <li>• Sensitisation of population on commercial value of biodiversity.</li> <li>• Training on bioresource transfer contracts.</li> <li>• Production of guides for equitable sharing of bioprospecting benefits.</li> <li>• New texts on regulation and access to genetic resources.</li> </ul>

#### 5.4.5.2.3 Criteria and indicators for monitoring and evaluation of actions proposed for the Tropical Wooded Savannah Ecosystem

OBJECTIVE	CRITERION	INDICATORS	MOV (Reports, Minutes, etc, on)
5.4.5.2.3.1 To promote sustainable management and exploitation of the resources.	5.4.5.2.3.1 Activities that ensure the sustainable management and exploitation of the biodiversity of the tropical wooded savannah ecosystem are promoted.	<p>1. Identification/survey of biodiversity components through inventory.</p> <p>2. Establishment of well-defined boundaries for protected areas.</p> <p>3. Restoration/rehabilitation of degraded tropical wooded savannah communities and habitats.</p> <p>4. Elaboration of management plans and determination of harvesting levels for each tropical wooded savannah resource.</p> <p>5. Promotion of sustainable agro/sylvo/pastoral activities.</p> <p>6. Actions on forest regeneration/reforestation/a fforestation in tropical wooded savannah ecosystem</p> <p>7. Incentives for sustainable utilisation of tropical wooded savannah resources</p>	<ul style="list-style-type: none"> <li>• New and improved texts on protection of savannah woodlands.</li> <li>• Increase of agro/sylvo/pastoral activities.</li> <li>• Seminar/workshops on improved methods of the ecosystem management.</li> <li>• More effective mass media on wooded savannah management.</li> <li>• Inventories.</li> <li>• Migration reports of species.</li> <li>• Participatory management plans for reserves and state forest.</li> <li>• Availability of government texts on CITES and others.</li> </ul>

		and disincentives for unsustainable utilisation. 8. Policies/laws/regulations on management and exploitation.	
5.4.5.2.3.2 To build, develop and strengthen capacity at all levels to manage and protect the ecosystem and its components.	5.4.5.2.3.2 Capacity is built, developed and strengthened at all levels to protect and manage tropical wooded savannah ecosystem	<ol style="list-style-type: none"> <li>1. Scientific and technical training programmes.</li> <li>2. Organisation of training seminars and workshops for stakeholders on the exploitation and management of tropical wooded savannah resources.</li> <li>3. Sensitisation, awareness creation, organisation and empowerment of local community-based groups.</li> <li>4. Establishment and strengthening of Organisations/bodies/NGOs responsible for research, technology acquisition and monitoring of changes in tropical wooded savannah ecosystem.</li> <li>5. Research that contributes to the conservation and sustainable utilisation of tropical wooded savannah biodiversity and data bank on its biodiversity.</li> </ol>	<ul style="list-style-type: none"> <li>• Training seminars for forest/range technology transfer and development.</li> <li>• Refresher courses in forest and range management for forestry professionals and others.</li> <li>• Instruction of forest and range management courses into school and university curricula.</li> <li>• Mass media programmes for forest management.</li> <li>• New government texts on CITES, etc.</li> <li>• Communication facilities.</li> </ul>
5.4.5.2.3.3 To promote traditional knowledge of savannah biodiversity and its socio-economic importance.	5.4.5.2.3.3 Traditional knowledge of the use and value of tropical wooded savannah biodiversity and its component parts is enhanced.	<ol style="list-style-type: none"> <li>1. Participation of traditional societies and indigenous people in contributing traditional ecological knowledge as a sustainable alternative to ecosystem protection.</li> <li>2. Identification and documentation of traditional uses of biodiversity and its component parts and the promotion of wider use through ethnobiological studies.</li> <li>3. Analysis of the cultural, educational, recreational and socio-cultural dimensions including the market evaluation of tropical savannah biodiversity.</li> <li>4. Evaluation of tropical wooded savannah biodiversity resources and creation of alternative income sources.</li> </ol>	<ul style="list-style-type: none"> <li>• Research activities to identify pertinent traditional knowledge.</li> <li>• Seminar/workshop to valorise traditional knowledge.</li> <li>• Document production on content and value of traditional knowledge Mass media publicity of traditional knowledge.</li> <li>• Composition (inclusion of local communities) ecotourism/forest guardians corps.</li> </ul>

		5. Mechanisms and amounts percent for the redistribution of the revenue from tropical wooded savannah resources among stakeholders.	
5.4.5.2.3.4 To promote biodiversity prospecting.	5.4.5.2.3.4 Biodiversity prospecting in the tropical wooded savannah ecosystem is promoted	<ol style="list-style-type: none"> <li>1. Policies/laws/regulations on access to genetic materials from tropical wooded savannah ecosystem.</li> <li>2. Development/strengthening of capacity for biodiversity prospecting in tropical wooded savannah ecosystem.</li> <li>3. Fair/equitable sharing of the benefits of R&amp;D and commercial utilisation of genetic materials.</li> </ol>	<ul style="list-style-type: none"> <li>• Seminar/workshop on sustainable harvesting of bioresources.</li> <li>• Sensitisation of population on commercial value of biodiversity.</li> <li>• Training on bioresource transfer contracts.</li> <li>• Production of guides for equitable sharing of bioprospecting benefits.</li> <li>• New/improved texts regulating access to genetic resources.</li> </ul>

#### 5.4.5.2.4 Criteria and indicators for monitoring and evaluation of actions proposed for the Semi-Arid Ecosystem

OBJECTIVE	CRITERION	INDICATORS	MOV (Reports, Minutes, etc., etc)
5.4.5.2.4.1 To promote sustainable management and exploitation of semi-arid ecosystem resources.	5.4.5.2.4.1 Activities that ensure the sustainable management and exploitation of semi-arid biodiversity are promoted.	<ol style="list-style-type: none"> <li>1. Identification/survey of biodiversity components through inventory</li> <li>2. Establishment of well-defined boundaries for protected areas.</li> <li>3. Restoration/rehabilitation of degraded semi-arid communities and habitats</li> <li>4. Elaboration of management plans and determination of harvesting levels for each semi-arid ecosystem resource.</li> <li>5. Promotion of sustainable agro/sylvo/pastoral activities.</li> <li>6. Action on forest regeneration/reforestation/afforestation in semi-arid ecosystem.</li> <li>7. Incentives for sustainable utilisation of forest resources and disincentives for unsustainable utilisation.</li> <li>8. Policies/laws/regulations on management and exploitation.</li> </ol>	<ul style="list-style-type: none"> <li>• New and improved texts on protection of savannah woodlands</li> <li>• Increase of agro/sylvo/pastoral activities</li> <li>• Seminar/workshops on improved methods of the ecosystem management.</li> <li>• More effective mass media on wooded savannah management</li> <li>• Inventories.</li> <li>• Management plans.</li> <li>• New/improved texts.</li> </ul>

<p>5.4.5.2.4.2 To build, develop and strengthen capacity at all levels to manage and protect semi-arid ecosystem biodiversity and its components.</p>	<p>5.4.5.2.4.2 Capacity is built, developed and strengthened at all levels to protect and sustainably manage the semi-arid ecosystem.</p>	<ol style="list-style-type: none"> <li>1. Scientific and technical education training programmes</li> <li>2. Organisation of training seminars and workshops for stakeholders on the exploitation and management of semi-arid ecosystem resources.</li> <li>3. Sensitisation, awareness creation, organisation and empowerment of local community-based groups.</li> <li>4. Establishment and strengthening of Organisations/bodies/NGOs responsible for research, technology acquisition and monitoring of changes in semi-arid ecosystems.</li> <li>5. Research that contributes to the conservation and sustainable utilisation of semi-arid ecosystem biodiversity and data bank on its biodiversity.</li> </ol>	<ul style="list-style-type: none"> <li>• Training seminars for semi-arid technology transfer and development</li> <li>• Refresher courses in forest and range management for forestry and range professionals and others.</li> <li>• Inclusion of forest/range management courses in school and university curricula.</li> <li>• Mass media programmes for forest management.</li> <li>• Number of NGOs working on biodiversity.</li> </ul>
<p>5.4.5.2.4.3 To promote traditional knowledge of biodiversity, its components and their socio-economic importance in the semi-arid ecosystem.</p>	<p>5.4.5.2.4.3 Traditional knowledge of the use and value of the semi-arid biodiversity and its components enhanced.</p>	<ol style="list-style-type: none"> <li>1. Participation of traditional societies and indigenous people in contributing traditional ecological knowledge as a sustainable alternative to ecosystem protection.</li> <li>2. Identification and documentation of traditional uses of biodiversity and its component parts and the promotion of wider use through ethnobiological studies.</li> <li>3. Analysis of the market evaluation of semi-arid ecosystem biodiversity.</li> <li>4. Valorisation of semi-arid ecosystem biodiversity resources and creation of alternative income sources.</li> <li>5. Mechanisms and amount (percentages) for the redistribution of revenue from semi-arid ecosystem biodiversity resources among stakeholders.</li> </ol>	<ul style="list-style-type: none"> <li>• Research activities to identify pertinent traditional knowledge</li> <li>• Seminar/workshop to valorise traditional knowledge.</li> <li>• Document production on content and value of traditional knowledge.</li> <li>• Mass media publicity of traditional knowledge.</li> <li>• Revenue distribution.</li> <li>• New/improve texts on access</li> </ul>
<p>5.4.5.2.4.4 To promote biodiversity prospecting</p>	<p>5.4.5.2.4.4 Biodiversity prospecting in the semi-arid ecosystem is promoted.</p>	<ol style="list-style-type: none"> <li>1. Policies/law/Regulations on access to genetic materials from semi-arid ecosystem.</li> <li>2. Development/</li> </ol>	<ul style="list-style-type: none"> <li>• Seminar/workshop on sustainable harvesting of bioresources</li> <li>• Sensitisation of population on commercial value of</li> </ul>

		strengthening of capacity for biodiversity prospecting in semi-arid ecosystem. 3. Fair/equitable sharing of the benefits of R&D and from the commercial utilisation of genetic materials.	biodiversity <ul style="list-style-type: none"> <li>• Training on bioresource transfer contracts</li> <li>• Production of guides for equitable sharing of bioprospecting benefits</li> </ul>
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#### 5.4.5.2.5 Criteria and indicators for monitoring and evaluation of actions proposed for the Montane Ecosystem

OBJECTIVE	CRITERION	INDICATORS	MOV (Reports, Minutes, etc, on)
5.4.5.2.5.1 To promote sustainable management and exploitation of montane flora and fauna resources.	5.4.5.2.5.1 Activities that ensure the sustainable management and exploitation of the biodiversity and reduce the fragility of the montane ecosystem.	<ol style="list-style-type: none"> <li>1. Identification/survey of biodiversity components through inventory.</li> <li>2. Creation of protected areas and reserves with well-defined boundaries in the montane ecosystem.</li> <li>3. Restoration/rehabilitation of degraded montane communities and habitats</li> <li>4. Elaboration of management plans and determination of harvesting levels with incentives/disincentives for sustainable utilisation for each montane ecosystem resource.</li> <li>5. Promotion of sustainable agro/sylvo/pastoral activities to check/stop erosion and bush fires.</li> <li>6. Actions on montane ecosystem regeneration/rehabilitation.</li> <li>7. Policies/law/regulations on management and exploitation.</li> <li>8. Natural disasters.</li> </ol>	<ul style="list-style-type: none"> <li>• Physical changes occurring in the ecosystem.</li> <li>• Field surveys.</li> <li>• Inventory of biological resources (NTFP, wildlife).</li> <li>• Government text, <i>inter alia</i> on CITES.</li> <li>• Management plans (structures, associations, etc.).</li> <li>• Availability/state of monitoring facilities for earthquakes and volcanic eruptions.</li> </ul>
5.4.5.2.5.2 To build, develop and strengthen capacity at all levels to manage and protect montane ecosystem	5.4.5.2.5.2 Capacity is built, developed and strengthened at all levels to protect and sustainably manage the montane ecosystem.	<ol style="list-style-type: none"> <li>1. Scientific and technical education training programmes</li> <li>2. Organisation of training seminars and workshops for stakeholders on the exploitation and management of montane ecosystem resources.</li> <li>3. Sensitisation, awareness creation, organisation and empowerment of local community-based groups.</li> <li>4. Establishment and</li> </ol>	<ul style="list-style-type: none"> <li>• Level of intensive farming and hunting.</li> <li>• Changes in farming practices.</li> <li>• Improved exploitation techniques.</li> <li>• Village/inter village management committees.</li> </ul>

		strengthening of organisations/bodies/ NGOs responsible for research, technical acquisition and monitoring of changes in montane ecosystems. 5 Research that contributes to the conservation and sustainable utilisation of montane ecosystem resources and data bank on its biodiversity.	
5.4.5.2.5.3 To promote traditional knowledge of montane biodiversity, its components and their socio-economic importance and values.	5.4.5.2.5.3 Traditional knowledge of the use and value of the montane biodiversity and its components is enhanced.	<ol style="list-style-type: none"> <li>1. Participation of traditional societies and indigenous people in contributing traditional knowledge as sustainable alternative to montane ecosystem protection.</li> <li>2. Identification and documentation of traditional uses of biodiversity and its component parts and the promotion of wider use through ethnobiological studies.</li> <li>3. Analysis of the cultural, educational, recreational, and socio-cultural, dimensions including the market evaluation of semi-arid ecosystem biodiversity.</li> <li>4. Valorisation of montane ecosystem biodiversity resources and creation of alternative income sources.</li> <li>5. Mechanisms for the redistribution of revenue from montane ecosystem biodiversity resources among stakeholders, especially local communities.</li> </ol>	<ul style="list-style-type: none"> <li>• Research activities to identify pertinent traditional knowledge.</li> <li>• Seminar/workshop to valorise traditional knowledge.</li> <li>• Document production on content and value of traditional knowledge.</li> <li>• Mass media publicity of traditional knowledge.</li> <li>• Composition (inclusion of hunters in corps of ecotourism guards.</li> <li>• Data bank on traditional knowledge.</li> </ul>
5.4.5.2.5.4 To promote biodiversity prospecting.	5.4.5.2.5.4 Biodiversity prospecting in the montane ecosystem.	<ol style="list-style-type: none"> <li>1. Policies/laws/ regulations on access to genetic materials from montane ecosystem.</li> <li>2. Development/ strengthening of capacity for biodiversity prospecting in montane ecosystem.</li> <li>3. Fair/equitable sharing of the benefits of R&amp;D and commercial utilisation of genetic materials.</li> </ol>	

### 5.4.5.2.6 Criteria and indicators for monitoring and evaluation of actions proposed for the Freshwater Ecosystem

CODE/OBJECTIVE	CRITERION	INDICATORS	MOV (Reports, Minutes, etc, on)
5.4.5.2.6.1 To promote sustainable exploitation of freshwater resources.	5.4.5.2.6.1 Activities that ensure the sustainable management and exploitation of freshwater resources and reduce the vulnerability of the ecosystems.	<ol style="list-style-type: none"> <li>1. Physicochemical quality of water in freshwater ecosystems.</li> <li>2. Establishment of protected freshwater ecosystem.</li> <li>3. Local community participation.</li> <li>4. Rate of survival of indicator species and rare or endangered species.</li> <li>5. Restoration/ rehabilitation of disturbed habitats, especially within wetlands.</li> <li>6. Exploitation strategies, including land use that prevent or control erosion.</li> <li>7. Policies/law/ regulations on management and exploitation.</li> <li>8. Natural disasters.</li> </ol>	<ul style="list-style-type: none"> <li>• Seasonal rhythms of rivers, lakes and wetlands.</li> <li>• Level of water pollution.</li> <li>• Changes in salinity gradient.</li> <li>• Effects of treated and untreated effluent on flora and fauna of rivers, streams, lakes, dams, canals, islands and estuaries.</li> <li>• Warning system involving indicator species (percentages).</li> <li>• Improve strategies/management plans including land use.</li> <li>• Monitoring of crater lakes.</li> <li>• New/improved texts.</li> </ul>
5.4.5.2.6.2 To reduce man- made pollution of fresh water ecosystem.	5.4.5.2.6.2 Man-made pollution of freshwater ecosystem is reduced.	<ol style="list-style-type: none"> <li>1. Environmental impact assessment.</li> <li>2. Waste management facilities and potential in the freshwater ecosystem.</li> <li>3. Effects of treated and untreated effluent on the flora and fauna of freshwater ecosystem and surroundings.</li> <li>4. Policies/regulations on pollution of freshwater</li> </ol>	<ul style="list-style-type: none"> <li>• Inventory of fish stocks</li> <li>• Field surveys and reports</li> </ul>
5.4.5.2.6.3 To decrease the vulnerability of freshwater ecosystem.	5.4.5.2.6.3 Capacity is built, developed and strengthened at all levels to protect and sustainably manage the freshwater ecosystem.	<ol style="list-style-type: none"> <li>1. Scientific and technical education training programmes</li> <li>2. Organisation of training seminars and workshops for stakeholders on the exploitation and management of freshwater ecosystem resources.</li> <li>3. Sensitisation, awareness creation, organisation and empowerment of local community-based groups</li> <li>4. Establishment and strengthening of organisations/bodies/ NGOs responsible for research, technology acquisition and monitoring of changes in freshwater</li> </ol>	<ul style="list-style-type: none"> <li>• Training seminars for fresh water ecosystem technology transfer and development.</li> <li>• Refresher courses in fresh water management for forestry and hydrology professionals and others.</li> <li>• Inclusion of hydrology management in school and university curricula.</li> <li>• Mass media programmes for fresh water management.</li> </ul>

		ecosystems. 5. Research that contributes to the conservation and sustainable utilisation of freshwater ecosystems resources and data bank on its biodiversity.	
5.4.5.2.6.4 To promote traditional knowledge of freshwater resources and their values.	5.4.5.2.6.4 Traditional knowledge of the use and value of the freshwater biodiversity and its components is enhanced.	<ol style="list-style-type: none"> <li>1. Conservation of recreational values of rivers, streams, lakes, wetlands, dams, and islands.</li> <li>2. Participation of traditional societies and indigenous people in contributing traditional knowledge as a sustainable alternative to freshwater ecosystems protection.</li> <li>3. Identification and documentation of traditional uses of biodiversity and its component parts and the promotion of wider use through ethnobiological studies.</li> <li>4. Analysis of the cultural, educational, recreational, and socio-cultural, dimensions including the market evaluation of freshwater ecosystems biodiversity.</li> <li>5. Valorisation of freshwater biodiversity resources and creation of alternative income sources.</li> <li>6. Mechanisms and amounts (percentages) for the redistribution of revenue from freshwater ecosystem biodiversity resources among stakeholders especially local communities.</li> </ol>	<ul style="list-style-type: none"> <li>• Research activities to identify pertinent traditional knowledge</li> <li>• Seminar/workshop to valorise traditional knowledge</li> <li>• Document production on content and value of traditional knowledge</li> <li>• Mass media publicity of traditional knowledge.</li> <li>• Availability of data bank or traditional knowledge.</li> </ul>
5.4.5.2.6.5 To promote biodiversity prospecting	5.4.5.2.6.5 Biodiversity prospecting in the freshwater ecosystem.	<ol style="list-style-type: none"> <li>1. Policies/law/regulations on access to genetic materials from freshwater ecosystems.</li> <li>2. Development/strengthening of capacity for biodiversity prospecting in freshwater ecosystems.</li> <li>3. Fair/equitable sharing of the benefits of R&amp;D and commercial utilisation of genetic materials.</li> </ol>	<ul style="list-style-type: none"> <li>• Seminar/workshop on sustainable harvesting of bioresources</li> <li>• Sensitisation of population on commercial value of biodiversity</li> <li>• Training on bioresource transfer contracts</li> <li>• Production of guides for equitable sharing of bioprospecting benefits.</li> <li>• New/improved texts regulated access to genetic resources.</li> </ul>

## CONCLUTIONS AND RECOMMENDATIONS

**T**his study has shown that Cameroon's biodiversity is one of the richest in Africa, ranking fourth in species richness after the Democratic Republic of Congo, South Africa and Tanzania. The richness is highly varied in terms of species and ecosystems as a result of the high variation in relief climate and other geographic features that have made Cameroon "Africa in miniature".

The biodiversity of the country has been presented under six ecological zones identified for the purpose of this study, namely, the Marine and Coastal, the Tropical Humid Dense Forest, the Wooded Savannah, the Semi-Arid, the Montane and the Freshwater ecosystems. Each of these ecosystems is in itself rich in biodiversity, with the degree of richness decreasing from the Marine and Coastal ecosystem in the south towards the Semi-Arid ecosystem in the north.

During the last 50 years, Cameroon has witnessed serious ecosystem degradation as a result of unsustainable exploitation of the biological resources despite laudable efforts made by government and her partners UNEP, UNDP, World bank, WWF, WCS, Birdlife International, etc. for better management and exploitation. While the causes of unsustainable exploitation are many, the most significant are attributed to poverty especially among the rural population: destructive agro-sylvo-pastoral practices, demographic pressure, as well as over harvesting of forest / wildlife / fisheries and other biological resources. These problems have been organised into "problem trees" (a problem tree for each ecosystem). They provide the basis for determining the goals, objectives, strategies and actions of NBSAP. The Action Plan includes monitoring and evaluation.

Every effort should be made to ensure that the actions contained in the Plan are executed timely and properly according to priorities. It is also necessary that the various sectors and institutions managing the country's biological resources are involved in the Plan. Equally, sufficient provision for funding be made to avoid delays or problems in implementing the actions contained in this Plan.

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