

*Reversal of Land and Water Degradation Trends  
in the Lake Chad Basin Ecosystem*

**Strategic Action Programme  
for the Lake Chad Basin:  
Agreed by the LCBC Member States of  
Cameroon, Central African Republic, Chad,  
Niger, and Nigeria**

Final SAP: 11 June 2008





## EXECUTIVE SUMMARY

This Strategic Action Programme (SAP) for the Lake Chad Basin has been prepared as part of the UNDP-World Bank-GEF project entitled *Reversal of Land and Water Degradation Trends in the Lake Chad Basin Ecosystem*. The SAP is the final output of a regional consultation process, which has involved the Member States of the Lake Chad Basin Convention, the Lake Chad Basin Commission and International Partners, together with contributions from academics and members of various NGOs active in the region.

The SAP primarily addresses the seven priority regional environmental concerns that were identified in the Transboundary Diagnostic Analysis (TDA), namely the variability of the hydrological regime and fresh water availability, water pollution, decreased viability of biological resources, the loss of biodiversity, the loss and modification of ecosystems, sedimentation in rivers and water bodies, and invasive species.

The SAP lays down the principles of environmental management and cooperation; establishes a long-term vision for the sustainable development of the Lake Chad Basin; notes the challenges to the sustainable integrated management of the Lake Chad Basin; sets the regionally agreed Ecosystem Quality and Water Resource Objectives (EQWROs) and EQWRO indicators for the priority areas of environmental concern in a transboundary context; and defines a set of targets and interventions to meet these objectives.

The priority transboundary problems in the Lake Chad Basin can be most effectively and appropriately addressed through the aims of five Ecosystem Quality and Water Resource Objectives. These EQWROs are:

- Improved quantity and quality of water in the Lake Chad Basin
- Restoration, conservation and sustainable use of bioresources in the Lake Chad Basin
- Conservation of biodiversity in the Lake Chad Basin
- Restoration and preservation of ecosystems in the Lake Chad Basin
- Strengthened participation and capacity of stakeholders, and institutional and legal frameworks for environmental stewardship for the Lake Chad Basin

The SAP is a regional policy framework document. The Member States have identified a long-term over-arching vision for the Lake Chad Basin, which is a clear representation of the characteristics desired for the future environment. The long-term vision is a political objective to be achieved within a fifteen year time frame and is designed to inspire the peoples of the Lake Chad Basin and their leaders. Implementation of the SAP to achieve this vision will be the responsibility of the Member States independently as components of their National Action Plans (NAPs), and collectively as part of the mandate of the Lake Chad Basin Commission.

The SAP builds upon and complements the NAPs, and creates clear targets and interventions for priority investment action considerations for the international community. A detailed Investment Plan, identifying priority actions to be undertaken, needs to be developed for presentation to a Donor Conference in late 2008.

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## ACRONYMS

CCA	causal chain analysis
EIA	environmental impact assessment
EQWRO	ecosystem quality objective
ESRA	environmental and social risk assessment
GEF	Global Environment Facility
GIS	Geographic information system
GIWA	Global International Waters Assessment
IUCN	International Union for the Conservation of Nature and Natural Resources
IWRM	integrated water resources management
LCB	Lake Chad Basin
LCBC	Lake Chad Basin Commission
NAP	national action plan
NGO	non-governmental organisation
PNC	project national coordinator
PSC	project steering committee
SAP	strategic action programme
TDA	transboundary diagnostic analysis
UNDP	United Nations Development Programme
WB	World Bank

## 1 INTRODUCTION

### 1.1 Background

This Strategic Action Programme (SAP) for the Lake Chad Basin has been drawn up as part of the UNDP-World Bank GEF project entitled *Reversal of Land and Water Degradation Trends in the Lake Chad Basin Ecosystem*. The SAP is the final output of a regional consultation process, which has involved the Member States of the Lake Chad Basin Convention, the Lake Chad Basin Commission and International Partners, together with contributions from academics and members of various NGOs active in the region.

The provenance of this SAP is the work previously conducted by the Lake Chad Basin Commission, namely the *Master plan for the development and environmentally sound management of the natural resources of the Lake Chad conventional basin* produced in 1992 and the *Strategic action plan for sustainable development of the Lake Chad Basin* – a GEF Project output in 1998. Building on past efforts, this SAP incorporates the findings of key outputs of the current GEF Project, namely the environmental and social risk assessment (ESRA) and the transboundary diagnostic analysis (TDA), noting that the TDA process has included a causal chain analysis (CCA), stakeholder analysis and gap analysis. The SAP postulates and promotes a vision for the Lake Chad Basin, together with five Ecosystem Quality and Water Resource Objectives (EQWROs), together with the targets and interventions to achieve them, as well as appropriate EQWRO indicators to monitor progress and measure success.

The SAP identifies the regional interventions needed to address the following seven priority regional environmental concerns that were identified in the TDA:

- variability of the hydrological regime and fresh water availability
- water pollution
- decreased viability of biological resources
- loss of biodiversity
- loss and modification of ecosystems
- sedimentation in rivers and water bodies
- invasive species

The SAP lays down the principles of environmental management and cooperation; establishes a long-term vision for the sustainable development of the Lake Chad Basin; notes the challenges to the sustainable integrated management of the Lake Chad Basin; sets the regionally agreed EQWROs and EQWRO indicators for the areas of environmental concern in a transboundary context; and proceeds to define a set of targets and interventions to meet these objectives.

The SAP is a regional policy framework document. With appropriate support from International Partners, the programme is designed for voluntary adherence by the Member States and its contents are supported by and in accordance with the National Action Plans. Such voluntary adherence will promote and ensure the cooperative and coherent action for safeguarding the environment of the Lake Chad Basin and for advancing the sustainable and equitable use of its resources.

The Member States have identified a long-term over-arching vision for the Lake Chad Basin, which is a clear representation of the characteristics desired for the future environment. The

long-term vision is a political objective to be achieved within a fifteen year time frame and is designed to inspire the peoples of the Lake Chad Basin and their leaders. Implementation of the SAP will be the responsibility of the Member States independently as components of their NAP, and collectively as part of the mandate of the Lake Chad Basin Commission.

## **1.2 Basin Vision**

The SAP evolves from the kinds of goals and objectives that are articulated in The Africa Water Vision for 2025: Equitable and Sustainable Use of Water for Socioeconomic Development (Africa Water Vision) and Lake Chad Vision 2025 (Vision 2025) consequently developed by the LCBC.

### **1.2.1 The Africa Water Vision**

The shared vision articulated in the Africa Water Vision, which was endorsed at an Extra-Ordinary Summit of the African Union, calls for:

*An Africa where there is an equitable and sustainable use and management of water resources for poverty alleviation, socio-economic development, regional cooperation, and the environment.*

As can be seen, the scope of this statement significantly expands upon the narrower parameters of the Convention, and recognizes, albeit implicitly, the need to view economic growth in tandem with other considerations as social well-being, the principle of sustainable use, and environmental context.

The Africa Water Vision then embraces ten goals which, if achieved, the African Union believes would result in an Africa where:

- 1. There is sustainable access to safe and adequate water supply and sanitation to meet the basic needs of all;*
- 2. There is sufficient water for food and energy security;*
- 3. Water for sustaining ecosystems and biodiversity is adequate in quantity and quality;*
- 4. Institutions that deal with water resources have been reformed to create an enabling environment for effective and integrated management of water in national and transboundary water basins, including management at the lowest appropriate level;*
- 5. Water basins serve as a basis for regional cooperation and development, and are treated as natural assets for all within such basins;*
- 6. There is an adequate number of motivated and highly skilled water professionals;*
- 7. There is an effective and financially sustainable system for data collection, assessment and dissemination for national and trans-boundary water basins;*

8. *There are effective and sustainable strategies for addressing natural and man-made water-resources problems, including climate variability and change;*
9. *Water is financed and priced to promote equity, efficiency, and sustainability; and*
10. *There is political will, public awareness and commitment among all for sustainable water-resources management, including the mainstreaming of gender issues and youth concerns and the use of participatory approaches.*

These ten goals explicitly expand upon the old paradigm of looking at resources in isolated economic and environmental terms. By recognizing the importance of understanding the consequences of man-made water-resource problems, such as climate variability and change, these goals were formulated consistent with the recognition of a need to incorporate an anticipatory approach in the management of international water basins.

### **1.2.2 Lake Chad Vision 2025**

The Lake Chad Basin vision, as stated in the Vision Document 2025 is:

*The Lake Chad Region would like to see by the year 2025 the Lake Chad - common heritage - and other wetlands maintained at sustainable levels to ensure the economic security of the freshwater ecosystem resources, sustained biodiversity and aquatic resources of the basin, the use of which should be equitable to serve the needs of the population of the basin thereby reducing the poverty level.*

The two principal objectives of the Lake Chad Vision, also consistent with the Africa Vision, are:

- *A Lake Chad Region where the regional and national authorities accept responsibilities for freshwater, ecosystem and biodiversity conservation and judicious integrated river basin management to achieve sustainable development.*
- *A Lake Chad Region where every Member State has equitable access to safe and adequate water resources to meet its needs and rights and maintain its freshwater, ecosystem and biodiversity resources.*

### **1.3 The Need for and Purpose of the SAP**

The SAP sets the agenda for enhanced regional environmental cooperation among the Member States over the next fifteen years. To improve environmental stewardship and protect the ecosystems of the Lake Chad Basin, the SAP outlines five regional EQWROs to be addressed, and identifies environmental interventions to be taken in order to meet those EQWROs at the national and regional level. The SAP builds upon and complements the NAPs, and creates clear targets and interventions for priority investment action considerations for the international community.

## 1.4 The Geographic Scope of the SAP

The geographic scope of the SAP is the Lake Chad Conventional Basin.

## 1.5 Physical and Socio-economic Context

The Lake Chad Basin serves as a source of fresh water, fisheries, and pastoral and agricultural lands for a population of approximately 22 million people living in Cameroon, the CAR, Chad, Niger, and Nigeria. It is comprised of the following diagnostic basins:

*Lake Chad:* The lake itself has a maximum surface area of approximately 25,000km<sup>2</sup>, and has distinct morphological pools that become fully visible at a water surface elevation of about 279 meters. Although it is a closed basin within an arid zone, it has relatively low salinity. A major water resources concern of the lake is shrinkage, with the present expanse being less than 3,000 km<sup>2</sup>. The shrinkage has a negative impact on, among other things, large scale irrigation schemes in Nigeria. The lake serves as a critical, strategic area for global biodiversity, being home to 120 species of fish as well supporting 372 bird species. The land area immediately around the lake serves as an important grazing area for livestock. The current status of the Sitatunga, a swamp adopted antelope, is of conservation concern. The lake fishery, an important source of protein for local populations, is under threat.

*Lower Chari:* The lower Chari is the most important collecting area for waters that feed the lake, having the largest permanent river. This basin spans the Sahelo-Sudanian zone and the Sudano-Sahelian zone. There is a national park (Dougia) and one Faunal Reserve (Mandelia) within this sub basin, both of which have questionable protection status. The population currently faces resources constraints related mainly to water scarcity. Economic diversification (cultivation of hydrophilic sorghums and millet, seasonal hunting and fishing, intensive livestock rearing) has been the traditional response to this constraint.

*The Flood plains of the Logone:* The flood plains occupy about 25,000 km<sup>2</sup>, with the most significant plain being the Grand Yaeres, a 5,000Km<sup>2</sup> area. The major water resource concern in this plain is the Maga Dam. The dam, originally constructed to support large scale rice production, is now moribund but has had a very disruptive effect on the ecology and economy of the Grand Yaeres and the Waza National Park. In addition to supporting large numbers of seasonally grazed livestock, the flood plains support major fisheries and fish spawning habitat.

*The Komadugu Yobe:* The Komadugu Yobe river system drains 148,00Km<sup>2</sup> and is a classical example of a tapering stream, losing a large part of its total annual flow by infiltration and evapo-transpiration. With the largest number of dams and population of any other of the sub-basins, poor management of the river system and dam operations have altered its overall water regime. The international strategic Hadejia Nguru Wetlands, home to Nigeria's premier Ramsar site, is in this sub basin. The Kouri breed of cattle, which is unique to the LCB, is also found here.

*The Borno Drainages:* This is a featureless plain drained by three rivers (Yedseram, Ngadda, Gobio) that make a very negligible contribution to the lake's inflow. The Sambisa Game Reserve (important for elephant conservation), the Chingurimi Duguma and the Lake Chad Game Sanctuary Sectors of the Chad Basin National Park are situated in this sub basin. It is also home to the largest, failed irrigation scheme that has become moribund as lake levels have dropped.

*Northern Diagnostic Basin:* Noted for its Oasis, this is the largest diagnostic basin (807,360 Km<sup>2</sup>). It supplies no inflow for the lake, as it is also the most arid sub basin. Major resources use concerns here include the mobilisation of dunes by trampling livestock and the over harvesting of increasingly scarce trees.

*Lake Fitri:* This is a miniature version of Lake Chad. It is a rich source of pasture in a zone of scarcity. There is an intensified competition for the resources of this sub-basin amongst the indigenous populations, resulting in increased risk of conflict over resource use.

## **1.6 Principles of Environmental Management and Cooperation**

The Member States share a common desire for the sustainable management of the natural resources and biodiversity of the Lake Chad Basin for the benefit of present and future generations, and recognize their role and responsibility in conserving the global value of the biodiversity resources. The Member States have considered and taken into account, where appropriate, the following principles and values when developing this document.

- i) The **principle of sustainable development** shall be applied such that there is a prudent and rational utilization of living resources and the preservation of the rights of future generations to a viable environment.
- ii) The **precautionary principle** shall be applied, such that measures shall be taken when there are reasonable grounds for concern that any activity may increase the potential hazards to human health, harm living resources or ecosystems, damage amenities, or interfere with other legitimate uses of the Lake Chad Basin, even when there is no conclusive evidence of a causal relationship between the activity and the effects; and by virtue of which, greater caution is required when information, including scientific information, is uncertain, unreliable or inadequate.
- iii) The **polluter pays principle** shall be applied, such that the cost of preventing and eliminating pollution, including clean-up costs, shall be paid by the polluter.
- iv) The **principle of anticipatory action** shall be applied, such that contingency planning, environmental impact assessment (EIA) and strategic impact assessment (involving the assessment of the environmental and social consequences of governmental policies, programs and plans) shall be undertaken in the future development in the region.
- v) The **principle of preventative action** shall be applied, such that timely action shall be taken to alert the responsible and relevant authorities of likely impacts and to address the actual or potential causes of adverse impacts on the environment, before

they occur. Many adverse impacts are irreversible or, if they can be reversed, the cost of remedial action is higher than the costs associated with prevention.

- vi) **Environmental and health considerations** shall be included into all relevant policies and sectoral plans and programs, including, *inter alia*, urban planning, industrial development, fisheries and aquaculture, and tourism.
- vii) Use of **clean technology** shall be promoted when replacing or phasing-out high waste and waste-generating technologies.
- viii) Development planning and environmental planning processes should be integrated to the maximum extent. The use of **economic instruments** that foster sustainable development shall be promoted through, *inter alia*, the implementation of economic incentives for introducing environmentally friendly technologies, activities and practices; the phasing-out of subsidies which encourage the continuation of non-environmentally friendly technologies, activities and practices; and the introduction of user fees.
- ix) The **principle of accessibility of information** shall be applied, such that information on the pollution of the environment of the Lake Chad Basin held by one Member State shall be provided by that state to all Member States, where relevant and in the maximum possible amount.
- x) The **principle of public participation and transparency** shall be applied, such that all stakeholders, including communities, individuals and concerned organizations shall be given the opportunity to participate, at the appropriate level, in decision-making and management processes that affect the Lake Chad Basin. This includes providing access to information concerning the environment that is held by public authorities and effective access to judicial and administrative proceedings to enable all stakeholders to exercise their rights effectively. Public authorities shall widely disseminate information on the work proposed and undertaken to protect and improve the state of the Lake Chad Basin.

## **2 THE CHALLENGE: SUSTAINABLE INTEGRATED MANAGEMENT OF THE LAKE CHAD BASIN**

The work conducted under the TDA led to the identification of seven environmental problems of regional concern, which are listed here in order of priority: variability of the hydrological regime and fresh water availability; water pollution; decreased viability of biological resources; loss of biodiversity; loss and modification of ecosystems; sedimentation in rivers and water bodies; and invasive species. Common regional root causes of these transboundary issues comprise the absence of sustainable development on the political agenda of the Member States; a low standard of environmental education and awareness; and population pressure.

### **2.1 Priority Transboundary Problems**

The transboundary problems, which constitute the past, present and future social risks to populations of the Lake Chad conventional basin are the products of the combined impacts of accelerating global climate change and unsustainable resource-use practices by a growing population, driven by institutional failures. The net effect of the transboundary problems is deepening poverty in the sub region. The following sections provide a brief description of each issue.

#### ***2.1.1 Variability of Hydrological Regime and Fresh Water Availability***

This pertains to the dramatic decrease in fresh water availability in the LCB, the best illustration of which is the decrease in the lake's volume by 95% from 1963 to date. It also pertains to a marked variability in the hydrological regimes of the rivers that feed it, as well as rainfall regimes in the region, at the root of which is population pressure, low environmental awareness levels and the absence of sustainable development in the political programs of the Member States. This has led to continuing decline in local access to water, crop failures, livestock deaths, collapsed fisheries and wetlands services, etc. The socio-economic consequences of the impacts include food insecurity and declining health status of the populace. It is rated as the most significant problem not only due to the above impacts and consequences, but also because it drives or contributes towards all the other six problems.

#### ***2.1.2 Water Pollution***

The relatively high rating of this problem is based on foreseeable trends, rooted mainly in the absence of working regulations and standards for environmental protection. Commercial cotton and rice production, known to use large quantities of agro chemicals are on the increase, and will lead to inorganic chemical pollution and eutrophication in the future. There is also the issue of increasing oil exploitation in Chad, which will give rise to increased urbanization, and the pollution of water bodies from oil spills. When water pollution becomes prevalent it will contribute to fisheries depletion and a possible increase in invasive species.

### ***2.1.3 Decreased Viability of Biological Resources***

This pertains to the inability of the regenerative rates of the plant and animal resources to keep pace with exploitation and disturbances (disappearance of tree seedlings, collapsing of fisheries, sterilization of soils, etc), at the root of which is population pressure, low environmental awareness levels and the absence of sustainable development in the political programs of the Member States. This phenomenon has a spiralling effect, as the shortages cause more unsustainable resources harvesting and thus more degradation. The net socio-economic consequence is deepening poverty due to resources shortages. It also contributes to biodiversity loss and increasing variability of hydrological regime and fresh water availability.

### ***2.1.4 Loss of Biodiversity***

This concerns the loss of plant and animal species, as well as damages to ecosystem health. It is rooted in population growth, absence of sustainable development in political programs, and low environmental awareness. This reduces ecosystem productivity and thus resources availability, resulting in deepening poverty. It also contributes to the decreasing viability of biological resources.

### ***2.1.5 Loss and Modification of Ecosystems***

Extensive habitat and community modification has been experienced in the lake and the river environment. The lake, for example, has changed from an open water to a marshy environment, and about 50% of wetlands have been destroyed. This has been due predominantly to reduced flows rooted mainly in the lack of sustainable development in the political agenda of the Member States, as well as a low level of environmental awareness. The impact of this phenomenon is most felt in the collapse of some fisheries and recessional rice cultivation, as well as biodiversity loss and the decreased viability of biological resources.

### ***2.1.6 Sedimentation in Rivers and Water Bodies***

This has led to changes in channel flow patterns as well as a reduction in the inflows to the lake through channel diversion, as well as the colonisation of the silted sites by invasive species. It is driven mainly by unsustainable farming practices on marginal lands and is rooted in low environmental awareness, population pressure, and absence of sustainable development on the political agenda of the Member States.

### ***2.1.7 Invasive Species***

The Lake itself is being invaded by typha grass and water hyacinth. Typha is also a major problem in the Komadugu Yobe Basin, and quelea birds are a major plant pest prevalent all over the basin. Invasive species, to a large extent, are a function of poor water resources management, poor enforcement of environmental regulations and standards, and the absence

of resource-use planning. The typha grass blocks river channels and diverts flows, while the quelea destroys crops, both contributing to poverty through the loss of livelihoods.

## **2.2 Over-arching Root Causes**

Three of the root causes of the degradation trends require special attention, as they appear to be over-arching. They are briefly discussed in a descending order in terms of their perceptible regional coverage and magnitude as driving forces behind the degradation trends.

### ***2.2.1 Absence of Sustainable Development and Wise Use of Natural Resources on Political Agenda***

In all the Member States, there is clear evidence that the governments of the day make very minimal investments in the biological resources management and environmental protection sector. This is hard to explain, as the regions economy is dependant on the exploitation of natural resources, whether through agricultural production or direct harvesting of resources. The most probable reason is the preoccupation of the governments with short-term concerns, which is driven mainly by a low level of environmental awareness and education, as well as survival instincts in an unstable economy and political setting. There is no pressure on the governments of the day for investments and services that can underpin sustainable development.

### ***2.2.2 Low Standard of Environmental Education and Awareness***

The leadership and populace in the region have minimal appreciation of the linkages between environmental stability and economic well-being. For example, each Member State provides more budgetary outlay for tackling the impacts of environmental disasters than they provide for proactively checking environmental degradation. On the part of the populace, especially as articulated through their elected representatives, there appears to be little desire for change, again an indication of a lack of environmental awareness. At the level of individual resource users, there has, and continues to be, an irresponsible exploitation of natural resources.

### ***2.2.3 Population Pressure***

This phenomenon would likely not have been a serious problem in isolation. However, given the generally low levels of technical knowledge for sustainable natural resources exploitation that characterizes the region, coupled with the pressures of short term survival concerns (low standards of living), as well as the laissez-faire attitudes of governments towards natural resources exploitation, there is a correlation between growing populations and more reckless natural resources exploitation.

## **2.3 Environmental Management Challenges**

### **2.3.1 Legal and Regulatory**

The signing of the Lake Chad Basin Convention in 1964 was a clear indication of the willingness of countries in the region to address issues related to the sustainable management of the lake and its catchment area. Individually the Member States have also acceded to many other international agreements and conventions that pertain to joint international action for addressing resource-use issues. However, the LCBC Convention has not been sufficiently backed by the relevant national legislations required for effective implementation. Moreover, many of the Member States have been tardy or are in default of paying their agreed financial dues required for running the LCBC.

In the individual Member States, there is no shortage of sectoral laws related to water resources management in each country. However, the laws are not harmonized, may in some cases be outdated, and overall need to be streamlined with regional perspectives. The regulations are very complicated and haphazardly enforced, with confusion among different administrative agencies. There is a multiplicity of agencies at all tiers of government pursuing different uncoordinated water agendas. For example, river basin development authorities can have conflicting responsibilities for regulating the use of water at the same time as managing development in the catchment area. The boundaries of operational areas are usually based on political borders instead of natural divides, making monitoring and maintenance of river systems difficult.

### **2.3.2 Institutional**

The LCBC as a regional institution is not presently in the position to tackle the regional problems. It lacks the power to arbitrate water conflicts in the LCB and cannot sanction Member States. The LCBC has no mechanism for fostering basin level integrated water resources management by way of getting the administrative agencies of the Member States to harmonize their water resources development programmes. The LCBC lacks the necessary funds for routine technical activities, such as hydrological, livestock and resource monitoring.

### **2.3.3 Economic and Financial**

The Lake Chad Basin has a young and rapidly growing population that is predominantly rural in character. The people are, for the most part, financially dependent on primary industries, with fishing, agriculture and livestock rearing being of chief importance. Other key economic activities comprise mining, oil exploitation and some manufacturing.

The Lake Chad region is trying to cope with mass poverty. The countries within the region are among the poorest countries in the world. Based on the 2007/2008 UNDP Human Development Index (HDI) for 177 countries (<http://hdr.undp.org/en/statistics/>), the LCBC countries ranked fairly low globally: Cameroon 144; Central African Republic 171; Chad 170; Niger 174 and Nigeria 158.

Economic growth is very slow and variable in the region. The economies of the countries generally suffer from very low productivity, insufficient infrastructure, poor governance, the lack of a dynamic private sector, an oversized informal sector, and a vulnerability to domestic and external shocks. In several countries, economic progress has also been inhibited by the series of civil war and consequent military expenditures, infrastructure deterioration and discouragement of foreign aid and investment. The HIV AIDS pandemic has directly impaired economic growth because it mainly affects the economically active population.

#### ***2.3.4 Information***

The region suffers from severe limitations in available regional data and information, both to decision makers and to informed members of the society. Some research and monitoring has been carried out in the past, but the data are generally not comparable across the region. Data are often insufficient, inaccurate or non-harmonized and not freely exchanged and shared amongst the responsible institutions.

The research and pilot studies conducted in the region under umbrella of LCBC and the GEF Projects have contributed to the overall knowledge of the Lake Chad Basin environment and demonstrated an ability of the countries to cooperate in data and information exchange. However, the lack of strong country commitment has not allowed sustainability to be reached in this issue. The lack of data often promotes regulatory capture and self-interest. Furthermore, if and when national legislation requires open access to information, it is often constrained by poor dissemination, non-user friendly formats and insufficient media attention to the environmental issues. The lack of information technology also hampers information exchange. This sub-optimal accessibility of data and information can result in uncoordinated and unsubstantiated policies and measures at regional level.

### 3 SAP DEVELOPMENT AND PRIORITISATION

#### 3.1 SAP Overview

The TDA identified and prioritized seven transboundary problems in the Lake Chad Basin. These areas of concern, and their root causes, could be most effectively and appropriately addressed through the aims of five Ecosystem Quality and Water Resource Objectives.

The Ecosystem Quality and Water Resource Objectives are:

- Improved quantity and quality of water in the Lake Chad Basin
- Restoration, conservation and sustainable use of bioresources in the Lake Chad Basin
- Conservation of biodiversity in the Lake Chad Basin
- Restoration and preservation of ecosystems in the Lake Chad Basin
- Strengthened participation and capacity of stakeholders, and institutional and legal frameworks for environmental stewardship for the Lake Chad Basin

Each EQWRO consists of a number of targets that are comprised of inter-related interventions that address the root causes of the concern areas. For the regional level interventions, the Member States and the international partners shall work collectively to take the required steps to fulfil the intervention. The national level supporting interventions will be the responsibility of the Member States. The EQWROs, their targets and interventions are listed here.

#### 3.2 EQWRO I: **Improved quantity and quality of water in the Lake Chad Basin**

**EQWRO Indicator 1:** The quantity and quality of the Lake Chad is maintained at a sustainable level with reference to the average during the 1960s

**EQWRO Indicator 2:** A measurable decline in levels of the main contaminant groups in the water, sediment and biota

##### 3.2.1 *Target 1: Develop and initiate implementation of strategies for managing surface waters*

- 1.1 Assess the current knowledge about the occurrence, flow and quality of surface water, including its interaction with Lake Chad.
- 1.2 Carry out a review of legal and institutional framework for managing surface water and make adjustments to reflect current needs, as necessary.
- 1.3 Design a regional programme of surface water management measures.
- 1.4 Implement demonstration of sound surface water management.
- 1.5 Strengthen national network monitoring of surface water and rainwater

**3.2.2 Target 2: *Develop and initiate implementation of strategies for managing groundwater***

- 2.1 Assess the current knowledge about the occurrence, flow and quality of groundwater, including its interaction with Lake Chad.
- 2.2 Carry out a review of legal and institutional framework for managing groundwater and make adjustments to reflect current needs, as necessary.
- 2.3 Design a regional programme of groundwater management measures.
- 2.4 Implement demonstration of sound groundwater management.
- 2.5 Strengthen national network monitoring of ground water

**3.2.3 Target 3: *Develop regional strategies to reduce water pollution***

- 3.1 Undertake a comprehensive assessment of sources of pollution to surface and groundwater in the Lake Chad Basin.
- 3.2 Undertake a comprehensive review and harmonization of existing laws and regulations relating to pollution management
- 3.3 Develop recommendations for harmonization of pollution discharge and emission, and water quality standards.
- 3.4 Develop and introduce economic instruments to encourage reduced pollution loads.
- 3.5 Reduce untreated discharges from municipal sources.
- 3.6 Develop a Regional Persistent Organic Pollutants and Persistent Toxic Substances (POPs/PTS) Programme to be coordinated with POPs enabling activities in Stockholm Convention signatory states.
- 3.7 Undertake a comprehensive assessment of contaminated aquatic and terrestrial environments and develop a regional action plan to remediate areas of pollution concern identified.

**3.2.4 Target 4: *Implement a regionally coordinated water quality monitoring programme***

- 4.1 Develop and implement a regional surface water quality monitoring programme focused on critical contaminants and hotspots.
- 4.2 Develop and implement a regional ground water quality monitoring programme focused on critical contaminants and hotspots.

- 4.3 Provide report on contaminant levels the in Lake Chad Basin every three years, and make proposals for remedial actions.
- 4.4 Strengthen the water quality monitoring network (e.g. through establishing an Earth Observation System)

**3.2.5 Target 5: *Foster regional and international research and cooperation between water scientists***

- 5.1 Develop a regional network for water scientists, encompassing researchers in academia, government agencies and NGOs.
- 5.2 Foster the development of research collaboration between regional centres of expertise and international organizations and institutes.

**3.3 EQWRO II: Restoration, conservation and sustainable use of bioresources in the Lake Chad Basin**

**EQWRO Indicator 1:** Measurable and sustainable increase of the qualitative production of bioresources in the countries of the Lake Chad Convention Basin with reference to the average of the 1960s

**EQWRO Indicator 2:** Measurable and sustainable increase in livelihood of the populations of the countries in the Lake Chad Convention Basin are restored

**3.3.1 Target 1: *Establish the sustainable use and management of riparian and lacustrine zones***

- 1.1 Strengthen national regulation on planning and management of lacustrine and riparian zones.
- 1.2 Strengthen technical capacity at local and municipal government level for planning and introduce economic instruments to promote rational use of natural resources.
- 1.3 Develop regional databases including GIS for environmental planning and management.
- 1.4 Develop regional guidelines for environmental planning and management, and undertake a pilot project in each LCBC Member State.
- 1.5 Development of ecotourism pilot projects based on existing and successful models from other regions.

**3.3.2 Target 2: *Promote environmentally sound agro-pastoral practices in the Lake Chad Basin***

- 3.1 Promote the best environmentally sound traditional agricultural practices based on soil fertility management and the use of biopesticides.
- 3.2 Establish and promote best practice recommendations for the use of agrochemicals based on agro-ecological zones.
- 3.3 Demonstrate through pilot projects environmentally sound agro-pastoral practices such as soil conservation, creation of surface and groundwater protection zones, use of natural fertilizers, use of resistant crop strains and intensive livestock breeding.
- 3.4 Promote the best environmentally sound traditional pastoral practices
- 3.5 Combat eutrophication in sensitive zones by controlling soil and water contamination from agriculture and other nutrient sources.
- 2.6 Establish and apply soil information system for planning sustainable agriculture

**3.3.3 Target 3: *Promote the management of fisheries resources***

- 4.1 Formulate and implement a regional Fisheries Protocol within the framework of the Lake Chad Basin Convention.
- 4.2 Strengthen the regional cooperation for fisheries management, by formulating a regional strategy for integrated management
- 4.3 Improve the productivity of the fisheries

**3.3.4 Target 4: *Improve livelihoods in lacustrine and riparian communities to reduce dependency on unsustainable fishing practices***

- 5.1 Promote more selective fishing methods and aquaculture.
- 5.2 Promote alternative income sources and the adoption sustainable livelihoods in fishing communities.

**3.3.5 Target 5: *Promote the sustainable management of timber and non-timber forest products (NTFP) and pastoral production***

- 5.1 Promote a strategy for the supply of fuel wood.
- 5.2 Maximizing the value of NTFP (e.g. Gum Arabic, medicinal plants, aromatics, pesticides etc).
- 5.3 Promote reforestation with *Jatropha* and the study of its potential as a biofuel.

- 5.4 Support the creation of community forests and their management.
- 5.5 Promote and maximize the value of precious species and varieties (e.g. Kouri, blue algae).
- 5.6 Develop eco-tourism.
- 5.7 Develop fodder production.

**3.3.6 Target 6: *Manage transhumance areas***

- 6.1 Identify new transhumance areas.
- 6.2 Develop and manage transhumance corridors and grazing areas.
- 6.3 Adapt and harmonize regulations concerning transhumance.

**3.4 EQWRO III: Conservation of biodiversity in the Lake Chad Basin**

**EQWRO Indicator:** Reverse the trend of biodiversity degradation

**3.4.1 Target 1: *Increase regional collaboration to achieve strengthened protection for biodiversity***

- 1.1 Draft and adopt a Biodiversity Protocol to the Lake Chad Basin Convention.
- 1.2 Establish a regional biodiversity monitoring system.
- 1.3 Develop an international research programme on Lake Chad Basin biodiversity related issues.
- 1.4 Harmonize the legal and regulatory instruments on biodiversity conservation and establish a permanent transboundary consultation framework.
- 1.5 Develop a common methodology to conduct EIAs in all the countries of the Lake Chad Basin.
- 1.6 Establish a sub-regional network for the exchange of experiences based on ecological monitoring observatory of biodiversity in the Lake Chad Basin.
- 1.7 Promote the creation of and support the sustainable management of transboundary protected areas and undertake their mapping.
- 1.8 Encourage the creation of biological corridors.

**3.4.2 Target 2: *Ensure key threatened and/or extinct species are maintained or restored to viable levels***

- 2.1 Make an inventory of key threatened/endangered species.
- 2.2 Ensure adequate legal protection for key threatened species.
- 2.3 Provide improved in-situ and ex-situ conservation for key threatened species.
- 2.4 Create a gene bank of key threatened species.
- 2.5 Encourage the re-introduction of certain species that are extinct

**3.4.3 Target 3: *Control invasive species and their harmful effects***

- 3.1 Make an inventory of invasive species
- 3.2 Foster regional commitment to the control of invasive species in a Biodiversity Protocol and other appropriate regional agreements.
- 3.3 Develop regional procedures for the study and management of invasive species
- 3.4 Undertake pilot demonstration of strategies/approaches for controlling invasive species

**3.5 EQWRO IV: Restoration and preservation of ecosystems in the Lake Chad Basin**

**EQWRO Indicator 1:** Restored and preserved aquatic and terrestrial ecosystems  
**EQWRO Indicator 2:** Increased productivity of the ecosystems

**3.5.1 Target 1: *Combat desertification***

- 1.1 Encourage implementation of National Action Plans to Combat Desertification.
- 1.2 Apply remote sensing and GIS techniques to monitor trends in desertification
- 1.3 Develop and implement projects and programmes to restore degraded ecosystems in critical desertification areas.
- 1.4 Develop remedial techniques for the management and preservation of pastoral ecosystems in desert areas

**3.5.2 Target 2: *Combat deforestation***

- 2.1 Encourage domestic energy strategies based on participatory forestry management to ensure sustainable supply of fuel wood and other alternative sources of energy.

- 2.2 Apply remote sensing and GIS techniques to monitor trends in deforestation.
- 2.3 Develop and implement reforestation projects and programmes.
- 2.4 Develop remedial techniques for the preservation and management of existing forests.

**3.5.3 Target 3: *Identify and restore riparian and lacustrine habitats***

- 3.1 Develop and apply a standardized methodology for the assessment of the ecological quality of riparian and lacustrine habitats.
- 3.2 Design and implement projects and programmes for the restoration of riparian and lacustrine habitats.

**3.5.4 Target 4: *Develop and implement land conservation and restoration strategies***

- 4.1 Assess current knowledge on types and levels of soil degradation, management, use and constraints.
- 4.2 Promote and maximize better soil and water conservation techniques (anti-erosion banks, other soil protection and restoration techniques, *etc.*).
- 4.3 Promote research and applications of modern technologies through the creation of an agro-ecological databank.
- 4.4 Revise the legal and institutional framework to ensuring sound management and use of soils.

**3.5.5 Target 5: *Restore and maintain wetland ecosystems***

- 5.1 Make an inventory of wetlands and assess the current environmental and economic status of the wetlands.
- 5.2 Develop and implement strategies for the restoration and maintenance of key wetlands.
- 5.3 Implement pilots or demonstration projects for the restoration and maintenance of the wetlands.
- 5.4 Support the designation of wetlands as Ramsar sites.
- 5.5 Develop and implement National Wetlands Management Plans and in particular those classified as Ramsar sites.

**3.6 EQWRO V: Strengthened participation and capacity of stakeholders, and institutional and legal frameworks for environmental stewardship of the Lake Chad Basin**

**EQWRO Indicator:** Enhanced participation of stakeholders in the NAPs and SAP implementation

**3.6.1 Target 1: *Increase participation of public and stakeholders of Lake Chad Basin countries in management of the environment***

- 1.1 Establish a Lake Chad Basin NGO Forum in order to provide support and advice.
- 1.2 Implement a Lake Chad Basin Public Participation Strategy through its incorporation in the National Action Programmes (NAPs).
- 1.3 Set up a fund for micro-grants addressing riparian and lacustrine community development schemes and local environmental issues, in partnership with the private sector and international donor community.
- 1.4 Set up “Friends of Lake Chad” programme with annual competition sponsored by local, national and international companies.

**3.6.2 Target 2: *Improve communication and information sharing among the stakeholders***

- 2.1 Create a press bureau to improve country, regional and international awareness of the Lake Chad Basin environmental issues and encourage the media to participate in the dissemination of information.
- 2.2 Provide regular training to journalists in order to strengthen environmental journalism and improve media coverage of environmental issues.
- 2.3 Establish media and film festivals, in conjunction with NGO Forum, on ecology to focus on the links between human behaviour and natural ecosystem functions.
- 2.4 Establish “Lake Chad Day” and develop specific awareness raising for specific target groups.
- 2.5 Strengthen awareness of environmental issues on Lake Chad Basin through partnership with the national and international media.

**3.6.3 Target 3: *Promote environmental education in the Lake Chad Basin***

- 3.1 Encourage the development of academic curricula and materials focusing on Lake Chad Basin environmental issues.
- 3.2 Encourage academic partnerships at school and university levels.

- 3.3 Assist universities to develop programmes featuring Lake Chad Basin issues in ecology and environmental science in partnership with international institutions.
  - 3.4 Strengthen the Ngala School in order to develop and implement Information/Education/Communication programme addressed to the public on the Lake Chad Basin environment.
  - 3.5 Provide a basic ecology training course for local riparian and lacustrine enterprises, and targeted populations emphasizing win-win scenarios and sound environmental stewardship.
- 3.6.4 Target 4: *Increase the understanding on the part of traditional, elected and administrative officials at all levels on the importance of environmental issues***
- 4.1 Develop environmental awareness training programmes.
  - 4.2 Establish a network of local councils to enhance the participation of local elected officials in implementing Lake Chad Basin environmental policies.
  - 4.3 Develop training programmes for regional and municipal authorities on modern techniques for the management of resources and wastes.
- 3.6.5 Target 5: *Develop active partnerships between lake Chad Basin NGO Forum, local and multinational enterprises and other stakeholders in the region and other Basin authorities***
- 5.1 Promote environmental partnerships between NGO, government and private sector to address specific Lake Chad Basin issues by implementation of Lake Chad Basin Public Participation Strategy.
  - 5.2 Develop Stakeholder Dialogue Groups at national level and exchange experience at regional level to improve dialogue opportunities for stakeholder groups who may be in conflict with natural resource management.
  - 5.3 Create linkages with other Basin's organizations to provide opportunities for sharing experiences.
  - 5.4 Revive the network of Lake Chad Basin Parliamentarians in order to undertake continuous advocacy actions targeting decision-makers in order to mainstream environmental concerns in budgetary resources allocations at the national level.

## **4 SAP IMPLEMENTATION**

### **4.1 Overview**

The SAP is a policy framework document that is meant to provide a strategic approach to resource management and environmental remediation in the Lake Chad Basin. Several EQWROs, targets and interventions have been regionally agreed. For each intervention, a number of activities must yet be further specified. Such actions will be conducted at national and local levels as part of the NAP. Implementation will occur in a stepwise series of work plans, under the supervision of appropriate national bodies. Given the wide-ranging nature of the activities, the involvement of an Inter-ministerial Committee should be considered essential. Regional coordination of the SAP will be part of the mandate of the Lake Chad Basin Commission. Thus, communications and coordination between Member States and the LCBC is through existing mechanisms involving technical expert groups and the national Commissioners.

Regarding timing, the SAP foresees a 15-year time frame, with implementation conducted as three 5-year work plans. Priority actions and funding have yet to be resolved. An Investment Plan will form the basis of the first 5-year work plan and budget. This exercise, to be completed prior to a donor conference to be held in late 2008, will provide an opportunity to integrate lessons learned from other GEF project outputs, notably the Pilot Studies and the Integrated Water Resource Management Plan, and to prioritise actions to be taken. The detailed budget will be formulated as a set of five work packages, each aimed at a specific EQWRO.

SAP implementation and future considerations are considered in more detail in the following sections.

### **4.2 National Action Plans**

In preparing and updating the SAP, the NAP teams of experts in each of the five states were assembled with the purpose of describing the SAP process and outlining expectations for national input. The Lake Chad Basin Commission and International Partners, together with academics and members of various NGOs active in the region, also contributed to the consultative process to formulate the SAP through participation in two regional SAP meetings. A first regional SAP meeting overviewed the vision for the Lake Chad Basin and the priority regional environmental concern areas to be addressed before agreeing on the corresponding Environmental Quality and Water Resource Objectives. A second regional meeting refined the EQWRO indicators, and formulated the targets and interventions needed to achieve these EQWROs. This intense national involvement has resulted in a SAP containing regional interventions that are supported to a great extent by national interventions to be contained in the NAPs. Without this commitment to implement the national actions, the regional interventions of the SAP would have no foundation and their implementation would be undermined.

The NAPs are the main foundation of the SAP. The preparation of the NAPs by the Member States is based on an assessment of the priority national concern areas, which include, where they are in concordance, regional concerns identified in the TDA. Each country has developed objectives, targets, proposed interventions, and drawn up a resource mobilization strategy to address their objectives. They entered into a thorough inter-sectoral dialogue as an integral part of a national endorsement process. The NAPs represent an awareness of and commitment to enhanced environmental stewardship by the Member States. Whilst the NAPs feed into the SAP, they are also cohesive, independent documents detailing the national objectives, targets and interventions to be achieved. They have been prepared along common guidelines while taking note of the planning and implementations specificities of each Member State. Once full government endorsement has been granted, the NAP will move forward independently of the SAP process.

It is critical that all Member States continue to make further steps towards improved environmental stewardship at the national level, with the confidence that even the smallest action can lead to large improvements when taken collectively.

### **4.3 Policy Coordination**

The Member States have ensured and will continue to ensure that the NAP and SAP content, policy and measures, are coordinated and consistent with those developed across the sectoral ministries. The NAP consultation process leading to endorsement was designed to ensure all key government stakeholders were consulted as early as possible to ensure integration. In preparing the NAPs, the Member States were and are required to refer to existing development and environment plans, and it has been stressed that each Member State should ensure that its body of laws and regulations is fully coordinated and supportive of environmental policies developed through the SAP.

### **4.4 Resource Mobilization**

Several avenues for mobilizing resources, notably funding, can be explored collectively and independently by the Member States, the LCBC and International Partners. Firstly, a follow-up GEF project could be formulated that would aim to implement some aspects of the SAP under the direct management of a restructured LCBC. This approach depends upon the success of revitalising the LCBC and ensuring that it has the capacity to manage a GEF Project. Secondly, a Donor Conference can be held in late 2008. As a prelude to such an event, a detailed Investment Plan will need to be developed, thereby providing specific activities and costs to achieve the EQWROs identified in the SAP. Thirdly, Member States will need to fill funding gaps, either through national contributions or via bilateral donor mechanisms.

An Investment Forum / Donor Conference will be held in late 2008 to mobilize resources for a number of well-defined investment ideas and proposals. In preparation for such a donor conference, it will be necessary to formulate an Investment Plan. The Investment Plan will be a detailed work plan, listing the specific activities and budget needed to undertake various interventions. The Investment Plan should concentrate on the first 5-years of the SAP

implementation. This means that priorities will have to be set within the EQWROs and targets identified in the SAP. Moreover, the Investment Plan can benefit from lessons learned in the GEF Pilot Studies and the Integrated Resource Water Management Plan, and will ensure harmonisation between the NAPS and the SAP. International financial institutions should be approached for loans with the full involvement of both technical environmental institutions and financial, economic and planning authorities to ensure that the requests meet the strict financial criteria and are nationally guaranteed. Further initiatives to mobilize international and regional resources could be explored including development of Strategic Partnership(s).

Even given the above initiatives, a significant funding gap will likely remain that will principally need to be filled by the Member States. This may be done through further integration of development and environment planning processes; assigning higher value to environmental consideration in the region and allocation of substantially enhanced national financial resources to environmental issues in general and to the Lake Chad Basin in particular. The most doable, cost effective and upstream measures dealing with integrated water resource management, biodiversity protection, pollution monitoring and control, and sustainable development should be given higher implementation priority. Regional and supporting national policy measures and initiatives, including regional agreements and Memoranda of Understanding that would contribute to the creation of an environment conducive to implementation of other measures, such as investment activities and environmental sensitization initiatives, should be assigned highest priority. Environmentally oriented economic measures, environmentally oriented budgets, and private sector partnership for environmental protection should be promoted throughout the region.

#### **4.5 Institutional Arrangements**

In order to implement the actions and policies agreed upon, it is imperative that existing regional mechanisms for co-operation among the member states be strengthened to ensure the necessary capacity building to promote sustainable integrated management of the LCBC. The member states will actively pursue a policy of co-financing with industry and donor agencies.

Once agreed at Ministerial level, implementation of the SAP is the responsibility of the governments of the Member States. Regional coordination will be part of the mandate of the Lake Chad Basin Commission. Communications and coordination between Member States and the LCBC is through existing mechanisms involving technical expert groups and the national Commissioners.

#### **4.6 The Future of the Strategic Action Programme**

The SAP will be officially launched with its adoption by the LCBC Council of Ministers. Active promotion of the SAP by the Member States and the LCBC at national, regional and international fora is critical in gaining the broad support it needs for successful implementation. Key stakeholders must be targeted through public meetings, media campaigns and briefings and consultations. Ultimately, the Member States' responsibility is to create and maintain the necessary momentum for SAP implementation. The Member

States' and the LCBC International Partners will maintain their close dialogue on how best to support implementation of the SAP and strenuous efforts will be made to attract new international donors to LCBC. The private sector will be approached with the aim of obtaining coincidental, parallel funding.

The sustainability of SAP implementation depends upon a number of factors, including political will in Member States, the security situation throughout the region, sufficient financial resources, and a restructured LCBC. Progress to accomplishing the EQWROs of the SAP can be monitored using the EQWRO Indicators. Although this should be an ongoing process, periodic assessments of SAP implementation are worthwhile. In anticipation of a 5-year cycle for work plans, the SAP should be revisited during year 5. Procedures may vary, but this process should include an evaluation of the EQWRO Indicators and updating of the TDA. Such information will dictate whether or not the SAP itself needs to be revised, and will facilitate developing a subsequent Investment Plan for the next 5-year work plan.