

# Lake Chad: A Study of a Drying Freshwater Body

Luke Onyekakeyah, PhD  
Editor, Editorial Board  
Guardian Newspapers, Rutam House  
PMB 1217, Oshodi Lagos, Nigeria  
*E-mail: lonyekakeyah@yahoo.com*

## **Abstract**

Concern that the capacity of the Lake Chad to provide adequate water supply has drastically reduced in the last three decades led us to investigate what management actions have been employed to ensure sustainable use of the shared water system. Lake Chad is Africa's fourth largest lake with a maximum length of 25, 000 km<sup>2</sup> from a previous 388, 500 km<sup>2</sup> some 600, 000 years ago. During the last four decades, the Lake has been susceptible to increasing variability and irregularity in rainfall. Dry spell, excessive evaporation and sandstorm have impacted negatively on the water body. Consequently, the Lake has shrunk appreciably by up to 80 per cent in 1985 but reaching 19, 000 km<sup>2</sup> in 2001. Given the critical importance of the Lake, its capacity to ameliorate extreme aridity in a desert ecosystem, the Lake as a source of livelihood support to more than 20 million people, the Lake as habitat to a wide range of biodiversity, we assessed relevant case studies and references from accessible documentation pertaining to the Lake. We found that the Lake is under severe stress arising from several factors, which include drought. To reverse the trend and ensure sustainability, a deliberate and coordinated international action is required.

## **1. Introduction**

The Lake Chad is an endorheic (closed) drainage basin that retains inflow of water but allows no outflow to other bodies such as rivers or oceans. The main river systems flowing into the Lake are those of Yedesram/Ngadda and Hadejia Jama'rare-Komadougou/Yobe from northeast Nigeria. Others are the Logone and Chari located in southwest Chad. The only outlet of water accruing into the Lake drainage basin is by evaporation or underground seepage. Its waters seep into the Soro and Bodele depressions.

Most endorheic basins are saline as a result of saltpan occupying their bottom. Examples include the Aral Sea and the Caspian Sea, the world's largest saline body of water. An extreme example is the Dead Sea, which is more saline than the oceans. Australia being very dry with exceedingly low runoff ratios due to ancient soils has significant variable endorheic drainages. These include Lake George originally joined to the Murray-Darling Basin, Lake Corangamite, and

Lake Eyre Basin. But the Lake Chad is a freshwater body suggesting a different geological substrate.

Located in North Central Africa, Lake Chad covers almost 8 per cent of the continent and spreads over seven countries. It was once Africa's fourth largest lake and the sixth largest in the world, with a maximum length of 25, 000 km<sup>2</sup> from a previous 388, 500 km<sup>2</sup> some 600, 000 years ago. The Lake is generally shallow with only 10.5 metres (34 feet) at its deepest point.

Historically, the formation of Lake Chad took place during the Neolithic Sub pluvial period from the 7<sup>th</sup> millennium BCE when wet and rainy conditions prevailed in the climate of North Africa [1]. The Lake is believed to be a remnant of the ancient sea, Mega-Chad that grew and shrunk in size with changes in climate over a long period of 13, 000 years. The depth of the sea was over 180 meters (600ft) in most regions and covered over 441, 584 km<sup>2</sup> (154, 400 square miles) of Central African land before draining into the Atlantic Ocean through the Benue River in present day Nigeria.

During this period, which lasted for about 2000 years, large areas of North and Central Africa had hydrographic profiles that were significantly different from what obtained later. The existing lake surfaces were several meters higher than what they are today. Lake Chad reached a maximum areal extent of 400, 000 km<sup>2</sup>, which was larger than the modern Caspian Sea. The surface level was about 30 meters (100 feet) higher than its average in the 20<sup>th</sup> century. Many of the shallow lakes and river systems that existed during the Sub pluvial era later disappeared and could only be detected today by radar and satellite imagery.

Throughout the era, fertile climatic conditions prevailed in North Africa. What is today known as the Sahara desert supported luxuriant savanna type of ecosystem that was habitat to elephants, giraffe and other grassland and wood animals that are found in the Sahel region. The clement fertile conditions supported human settlements in the Nile Valley in Egypt and other Neolithic societies in Sudan. By the end of the sub pluvial era around the 4<sup>th</sup> millennium, drier conditions set in and prevailed. Desertification advanced and the Sahara desert emerged. Since then, arid condition has continued till today, thereby adversely affecting the Lake.

The objective of this paper is to investigate the management actions that have been employed to ensure sustainable use of the fragile water body. In doing this, we reviewed empirical information and assed relevant case studies pertinent to the Lake Chad.

This study is warranted considering the fact that the Lake has over the decades diminished in size while at the same time the demand for its water by the riparian populations has increased dramatically.

Experience shows that these shared resources, while serving the needs of the populations across national boundaries often constitute a major source of conflict among the users, as it is the case in the Nile Basin and the Bakassi Peninsular between Nigeria and Cameroon. This underscores the need to study international waters by assessing their uses, abuses, conflicts and to what extent international cooperation have been applied for their sustainable management.



Fig.1: Location of Lake Chad

## 2. Factors Affecting Lake Chad

There are natural and anthropogenic factors affecting Lake Chad, which account for its predicament. The Lake has been particularly susceptible to increasing variability and irregularity of rainfall during the last four decades. The mean annual rainfall in the basin area is 415-mm. Dry spell, excessive evaporation and sandstorm have impacted adversely on the water body.

Thus, the Lake has fluctuated greatly over the decades, centuries and millennia to changes in global temperatures and regional rainfall. The water body has shrunk appreciably by up to 80 per cent in 1985. Today, in absolute terms, the surface area barely reaches 1350 km<sup>2</sup> [2]. The Lake has almost disappeared and is on the verge of extinction.

The geographical location of Lake Chad in the arid southern fringes of the Sahara desert is the underlying factor affecting its fragile ecosystem and

utilization. All over the Lake basin area, the environmental characteristics are harsh.

Extreme high temperatures characterize the Sahara. This is a common phenomenon that induces high evaporation rates of the Lake. The evaporation rate is estimated to be 2000 mm/year. Low rainfall of about 1500 mm/year in the south and 100 mm in the north of the basin is another factor.

Thus, from a historic ancient sea referred to as Mega-Chad to the present low ebb almost close to a pond, the Lake Chad has witnessed tremendous changes over time. The changes have however occurred over large time scales caused mainly by fluctuations in climate.

Apart from climatic factors, in modern times, human activities have aggravated the disappearance of the Lake. The basin of the Lake extends to over 967, 000km<sup>2</sup> covering five countries that make up the Lake Chad Basin Commission (LCBC). These are Cameroon, Chad, Nigeria and Niger, together with Central African Republic (CAR). About 20 million people, according to the LCBC, populate this area.

In the attempt to maximize water resource utilization in an arid environment, the riparian communities in the respective countries harness large amounts of water for irrigation, dam construction, livestock production and other purposes. Fishing is intensively carried out in Lake Chad. Tons of the popular *mangana* fish consumed throughout West Africa is obtained from the Lake. The excessive use of the Lake water resources by competing demands has put further stress on the strained water body.

Thus, as the population demand for water rises, the Lake continues to shrink in size. The Lake's retreat has also been blamed on overgrazing in the area surrounding it, causing desertification and decline of vegetation [3]. Increasing aridity that gave rise to the great Sahelian drought over the past three decades has exacerbated the drying out of the Lake. The surface area of the Lake declined by more than 20 per cent during the West African disastrous Sahelian drought from 1968 – 73 [2]. As a result, large quantities of water from the inflowing rivers are being diverted for irrigation purposes before getting into the Lake. It is estimated that over one-third of the waters from River Chari are diverted before reaching Lake Chad.

Thus, increased irrigation activity under the cash crop production programme of the various basin countries has impacted adversely on the Lake, especially since the 1980s. The general belief is that about 50 per cent of the decline in the Lake size is attributed to human water use, the remainder is attributed to shifting climate patterns.



Source: UNEP

Fig. 2: Lake Chad changes in 1963, 1973, 1987, 1997, 2001.

### 3. Importance of Lake Chad

The location of Lake Chad on the edge of the Sahara Desert makes it an oasis providing a vital source of water for humans, livestock and wildlife. Domestic water supply and other water-based activities and needs depend heavily on it. The Lake's resources benefit an estimated 20 million people living around its shores in the seven basin countries. These include Nigeria, Niger, Algeria, Sudan, Central African Republic (CAR), Chad and Cameroon. As mentioned earlier, four of these countries, namely Nigeria, Chad, Niger and Cameroon have direct contact with the Lake. These countries share about 20 per cent of the Lake Chad Basin called the Conventional Basin, which is under the mandate of the Lake Chad Basin Commission (LCBC).

The Lake supports the peasant economy of the local people whose main occupations are fishing, agriculture and pastoralism. A host of fishermen and their families live on the Lake's shores and its islands. Some of the islands include Kalom, Kindjera, Kofia, Kika, Dabouroun, Tebour and Ngelea. Both the annual fish catch from the Lake, fish size and varieties have diminished over time in relation to the dying Lake.

In 1972, for example, the annual fish catch was more than 130, 000 – 141, 000 metric tons. This has reduced drastically to a current estimated 50, 000 – 70, 000 tons. Local fishermen report that some 27 years ago, they caught fish as large as man! But this has all changed. Today, the fishermen are grappling with tiny catfish, which is what is available. The average family income has also reduced from about \$100 a day to a mere \$6 according to the locals.

The common fish species caught in the Lake are *Tilapia spp.*, *Schilbe spp.*, *Citharinus citharus*, *C. distichodoides*, *alestes spp.*, *Labeo coubie.*, *Synodontis spp.*, and *Heterotis niloticus*. The resultant environmental changes since the 1970s, including fluctuations in the Lake level have introduced considerable changes in the fish fauna. These include high mortality rate, disappearance of some open-water species and appearance of species adapted to swamp conditions in previously unknown areas.

The raising of cattle, sheep and camels by the locals and nomadic herders is an important economic activity. The traditional cultivation of crops has been changing in response to the contraction of the Lake. The villagers have shifted from relying entirely on fishing to farming emergent Lake floor as water recedes. A few large-scale irrigation schemes (polders) developed by the farmers have proven totally unsuited to the hydrological, climatic and cultural conditions in the area. Different crops mainly grains and vegetables are cultivated. These include rice, wheat, barley, guinea corn, onions, lettuce, cucumber and carrots.

The devastating droughts that occurred in the 1970s and 80s have had adverse effects on the farming communities and their livelihood system. Droughts have reduced groundwater recharge and have forced farmers to construct poorly designed dams and unsustainable reservoirs leading to inefficient use of water. The worsening dry condition due to lack of rainfall has forced some farmers to abandon farming for other means of livelihood in the nearby cities.

Furthermore, the Lake Chad is on a migratory route for birds moving between Africa, Europe and Asia. At least 70 species of birds are known to make stopovers each year. Albeit, the numbers are lower than what was reported in the 1960s, they are still significant and qualify the Lake for inclusion in the Ramsar List of Wetlands of International Importance. Over 120 species of fish have been recorded in the Lake while the flood plains support rich terrestrial and aquatic fauna. The Lake plays important role in regulating annual water supply, recharging groundwater and flood control. Thus, its vast wetland is home to wide varieties of biodiversity.

#### **4. Management Actions**

A number of actions have been initiated at local, national and international levels to manage the diminishing water resources of Lake Chad. This demonstrates the level of concern by the people, governments of the riparian states and the international community towards the Lake. Most of these actions are on going and are generally aimed at reversing the trend towards extinction. In what follows, we shall review some of the key management actions that are being undertaken and their impacts on the Lake.

#### 4.1 *Fadama* Farming

The local populations living around Lake Chad are the principal victims of the worsening circumstances of the water body. Their source of livelihood is in peril as they are pushed to the brink of ecological disaster. As a result, they have devised strategies to adapt to the emerging realities on the Lake. Part of the strategies the farmers have adopted is *fadama* (lakebed) cultivation. This is a local level stakeholder management strategy involving the farming of the exposed lake floor as floodwater recedes. The farmers, particularly, those living in the northern shores of the basin are forced to take advantage of the new opportunities offered by the exposed fertile *fadamas (lake floor)* to cultivate their crops. They employ both traditional and improved technologies to adapt to the reduced availability of water.

The receding waters have exposed hundreds of thousand hectares of cultivable land, which has opened new opportunities for intensive farming. A few large-scale irrigation schemes (polders) have been developed but these have been found to be unsuited to the hydrological and cultural conditions in the region. Not all the polders are in use. The farmers grow one crop annually in a traditional polder. But where earth dams and water pumps are used, they grow up to three crops as the water recedes. The principal crops cultivated include rice, wheat, maize and different kinds of vegetables. Profitable farming in the region is unsustainable without the annual flooding of the Lake.

#### 4.2 Lake Chad Basin Development Authority (LCBDA)

The Lake Chad Basin Development Authority (LCBDA) is a national initiative of the Federal Republic of Nigeria. It was created to deal with the development and management of water resources of the part of Lake Chad that falls within the territorial boundary of Nigeria. Established under the river basin development programme of the country, the LCBDA was created in 1976 by Decree No. 25 by the then military government together with ten other river basin authorities throughout the country.

Following mounting political pressure, Decree No. 87 of 28<sup>th</sup> September, 1979 was promulgated, which repealed and consolidated Decree 25 and provided for the continuing existence of the eleven basin authorities as statutory corporations. Consequently, the boundaries of the river basin authorities were redefined mostly in terms of the existing political units in the country.

The powers, which the decrees mentioned above gave the river basin authorities, were meant to gear them towards accomplishing certain objectives. The principal policy objective of the LCBDA was the economic exploitation and management of the land and water resources of the Lake Chad. The following are the functions

of the river basin as contained in Decree No. 87. These functions formed the operational guidelines for the LCBDA and include:

- a) To undertake comprehensive development of both surface and underground water resources for multipurpose use;
- b) To undertake schemes for the control of floods and erosion, and for watershed management including forestation;
- c) To construct and maintain dams, dykes, polders, wells, bore holes, irrigation and drainage systems and other works necessary for the achievement of the authorities functions under this section;
- d) To provide water from reservoirs and lakes under the control of the authority for irrigation purposes to farmers and recognized associations as well as for urban water supply schemes for a fee to be determined by the authority concerned;
- e) To control pollution in rivers, lakes, lagoons and creeks in the authority's area in accordance with the nationally laid down standards;
- f) To resettle persons affected by the works and schemes specified in this section or under special resettlement schemes;
- g) To develop fisheries and improve navigation on rivers, lakes, reservoirs, lagoons and creeks in the authority's area;
- h) To undertake mechanized clearing and cultivation of land for the production of crops and livestock and for forestry in areas both inside and outside irrigation projects for a fee to be determined by the authority concerned;
- i) To undertake large-scale multiplication of improved seeds, livestock and tree seedlings for distribution and for forestation schemes;
- j) To process crops, livestock products and fish produced by farmers in the authority's area in partnership with state agencies and any other person;
- k) To assist the state and local government councils in implementing the following rural development work in the authority's area: -
  - the construction of small dams, wells and bore holes for rural water supply schemes and of feeder roads for the evacuation of farm produce;
  - the provision of power for rural electrification schemes from suitable irrigation dams and other types of power stations under the control of the authority concerned;
  - the establishment of agro-service centres;
  - the establishment of grazing reserves, and
  - the training of staff for the running and maintenance of rural development schemes and for rural extension work at village level.

Notwithstanding the federal government's considerable interest in resource development particularly in agriculture, which formed the basis for creating the river basin development authorities, not much has been achieved through this framework. The LCBDA has not done much to realize the lofty objectives for which it was established. The Authority has been faced with numerous constraints, which include political realignment of state boundaries following the

creation of new states. This made the river basin authorities not to conform to their natural hydrological boundary unit.

Furthermore, there is too much politicization of river basin development programmes, agitation for even development within the political units and asset sharing. As a result most of the programmes commissioned for implementation were stalled thereby making the authority to be ineffective. The abandonment of agriculture by government in pursuit of oil revenue frustrated the efforts to achieve sustainable development through the river basin framework. To date, the LCBDA like its counterparts across the federation is comatose without much to reckon with. At present, there is no political will and commitment to make the authority efficient. In practical terms, the authority is as good as nonexistent.

#### 4.2 Lake Chad Basin Commission (LCBC)

The Lake Chad Basin Commission (LCBC) is the oldest and most visible institution widely recognized as being responsible for the management of the water body. This is an intergovernmental agency established under the Fort Lamy (now N'djamena) Convention and Statutes on 22 May, 1964 by the heads of state of Chad, Niger, Nigeria and Cameroon - the four principal riparian states. The original Conventional Basin covered 427,300 km<sup>2</sup> with Chad having 42 %, Niger 28%, Nigeria 21% and Cameroon 9%. This is approximately 18% of the total drainage basin area of 2,434,000 km<sup>2</sup>. Later on, Central African Republic (CAR) and Sudan were admitted as fifth and sixth Member States in 1994 and 2000 respectively. The admission of these two countries increased the Conventional Basin area to 1,035,000 km<sup>2</sup>, which now covers the entire hydrological active drainage basin of the Lake.

The objectives of setting up the LCBC are spelt out in its primary responsibilities and include:

- i) To regulate and control the utilization of water and other natural resources in the basin;
- ii) To initiate, promote and coordinate natural resources development projects and research within the basin area;
- iii) To examine complaints and to promote the settlement of disputes, thereby promoting regional cooperation.

The LCBC has been relatively active in many respects although its activities have not resulted in any visible improvement in the overall lake water replenishment. Poor funding has been a major constraint. This notwithstanding, the Commission has made some remarkable achievements that border mainly in setting operational guidelines to regulate action by the Member States.

In 1977, the LCBC signed a protocol to harmonize the regulations governing the exploitation of flora and fauna by the Member States. It also adopted a plan for a

multi-donor approach for implementing major integrated projects within the Conventional Basin. The Member States have also approved a blueprint for the development and environmental sound management of the Lake.

During the 1980s, the LCBC carried out in-depth studies to identify critical factors affecting the Lake and ways of addressing them. These studies yielded useful information that was used to prepare the Lake blueprint, which was finalized and adopted in 1994. There is also a strategic plan to address water degradation in the Lake.

The Strategic Action Plan spanning 20 years period was prepared in 1994 with funds from the Global Environment Facility (GEF) and adopted by the Member States in 1998. Furthermore, in 1999, the LCBC started a three-year in-land fisheries project. The project was funded by the European Union under its GIWA programme.

Over and above all this, the Member States of the Commission are forbidden to embark on any unilateral action that would impact negatively on the Lake. The Fort Lamy Convention, however, recognizes their sovereign rights over the water resources of the basin. The Member States are to refrain from acts that are likely to alter the Lake water balance, water quality, the composition of the flora and fauna and its exploitation by other riparian states. While each Member State has the right to plan projects, it is required to consult with the Commission and obtain necessary clearance before embarking on the project.

After 28 years of its existence, the LCBC was reformed in 1990. This resulted in the reduction of its size. Consequently, the budget was reduced accordingly to \$1,000,000. Out of this, 50% is used for operational activities while the other half is used for development activities. The budget is contributed from five member States in the following proportions: Cameroon 20%, Chad 11%, Niger 7%, Nigeria 52%, and Central African Republic 4%. The diminishing economic fortune of the Member States is putting constraint on their ability to contribute their financial quota to the Commission. Besides, war and cross border conflicts among States over access to rapidly depleting resources is hampering the activities of the Commission. The LCBC should be assisted by donors to enable it execute on going and proposed projects in the Lake basin.

#### 4.3 Lake Chad Replenishment Project

The Lake Chad Replenishment Project (LCRP) is an inter-basin water transfer initiative by members of the Lake Chad Basin Commission (LCBC), conceived at the 49<sup>th</sup> Session of the LCBC held in Yaounde, Cameroon in 2002. Its goal is to rejuvenate the Lake, which is now a fraction of its former size. According to the executive secretary of the LCBC, Muhammad Sani Adamu, “the important thing

is to bring in more water because there is not going to be water in Lake Chad in the next thirty to forty years” [4].

Among other things, the project aims at reversing land and water degradation trends, regenerating the Lake’s ecosystem and integrating on-going projects in the Lake to avoid duplication. It would involve damming the Oubangui River (a tributary of the Congo River) at Palambo in Central African Republic (CAR) and subsequently channeling some 900 m<sup>3</sup>/s of water annually from the Congo-Oubangui-Sangha Basin, through a navigable canal of about 100-150 km to Lake Chad. The two countries sharing the Congo River, namely, Democratic Republic of Congo (DR Congo) and the Republic of Congo are reported to have already approved the project.

Implementation of the project would require major funding support from international donor countries and multilateral aid agencies. The sum of US \$10.6 was sought as start-off funds from the World Bank (WB) through the Global Environment Facility (GEF) under the LCBC/GEF Project on the Integrated Management of Lake Chad. According to the World Bank, this is one of the three GEF projects under development in the sub-region. The others are the Niger Basin Authority and the Senegal River Basin projects. The LCBC has also submitted requests for funding to donor countries through the New Partnership for African Development (NEPAD).

The LCRP is expected to transform the basin tremendously. On completion, the project is expected to restore the ecosystem, rehabilitate the Lake and reconstitute its biodiversity because people will no longer see the need to cut wood for energy [4]. The canal would facilitate the transport of goods and services in the region. When there is enough water, irrigation will boost agricultural production, fishing as well as reforestation [5]. It is estimated that between 50,000 – 70,000 km<sup>2</sup> of the drainage basin would be put into extensive irrigation. Furthermore, there will be a boost in the region’s energy supply from the 702 megawatts of electricity that would be generated from the proposed Oubangui dam.

Certainly, the LCRP is the most ambitious project intervention so far proposed for the Lake Chad. But its implementation is being hampered by lack of funding. The member states of the Lake Chad Basin Commission have not been able to muster enough political will and resources to see to the implementation of this project. With an average gross national income per capita of US\$ 322, the countries lack the capacity and could hardly handle the problem alone. It is regrettable that more than five years after the idea was conceived not much has been done. The sum of US\$ 6 million needed for feasibility studies has not been made available. The member countries of the LCBC have reportedly acquired US\$1 million from the counterpart funds remaining the balance of US\$5 million to be contributed by the donors.

There is an urgent need to rally funds in support of this project to forestall the impending human catastrophe that would result if the Lake were allowed to vanish. The World Bank and other international donor agencies are implored to save the Lake Chad and save millions of ecological populations living on the brink of unsustainable livelihood system around the Lake.

#### 4.4 A Ramsar Wetland Management Site

Efforts to save the Lake Chad have gone beyond the ambit of the framework of the activities of the LCBC and its Member States. The international community is also involved and has shown interest in some respects. One of such actions is the designation of the Lake Chad as a Ramsar Site by the Bureau of the Convention on Wetlands (Ramsar, 1971) based in Gland, Switzerland. The decision to recognize the Lake as a Wetland of International Importance dates back to July 2000 at the 10<sup>th</sup> Summit of the Heads of State and Government held in N'Djamena, Chad. At that meeting, Decision Nr. 3 was taken to designate the entire Lake Chad as a transboundary wetland of international importance under the Ramsar Convention.

As a result, Chad, Niger and Nigeria have already designated their portions of the Lake as Ramsar Sites remaining the part of the Lake in Cameroon. But a project supported by WWF is currently underway to actualize this goal. The designation is seen as a major contribution to the ChadWet regional initiative under the Ramsar Convention framework.

The Memorandum of Cooperation between Ramsar and the LCBC was signed at Valencia, Spain on 23<sup>rd</sup> November, 2002. The Memorandum identified a number of objectives, which include among others:

- Reinforcing the role of wetland ecosystem for sustainable development through the provision of water and a variety of wetland products;
- Collaborating and working to ensure that projects for wetland conservation and wise use appropriately focus on the key role of wetlands for biodiversity conservation and poverty alleviation;
- Reinforcing the establishment of a coherent national and regional network of Ramsar sites at the basin level as the basis for their sustainable management;
- Promoting transboundary wetland management initiatives all levels, particularly with assistance of potential international donors; and
- Taking into account innovative approaches to transboundary wetland management in the Lake Chad basin subregion, by promoting partnerships between Partners, Conventions (such as CBD, UNCCD, UNFCCC, etc), regional and subregional organizations, Governments, IGOs, NGOs, etc., as models for global replicability

The LCBC has urged its Member States that had not yet ratified the Ramsar Convention to take steps to ratify it to enable them pursue its stated objectives. The addition of Lake Chad to the Ramsar List of Wetlands is a positive development that has the capacity to attract more international attention to the Lake by way of project funding. Already, a GEF project has been approved, including a management plan for the Lake being undertaken by the WWF. The sum of US\$9.6 million has been approved for the project that commenced in 2003. These are positive developments that have the capacity to restore the environment and improve livelihood systems if properly implemented.

## **5. Conclusion**

We have attempted in this paper to highlight some of the main issues at stake pertaining to the Lake Chad. The factors affecting the Lake are mentioned. The importance of the Lake in sustaining livelihood systems in a harsh arid ecosystem is stated. The predicament of the Lake and the uncertainty of its future existence are expressed.

There is growing consciousness and concern at local, national and international levels over the fate of the Lake and the dependent population. It is on this basis that efforts are being made to apply different management strategies to recover the Lake. The locals are devising various farming and fishing methods to adapt to the changing situation. At the national level, some actions have been initiated to manage the diminishing Lake resources. The international community has also come up with a number of programmes to complement regional efforts. All the actions are geared towards restoring the Lake for sustainable use. Unfortunately, these efforts have not yet yielded any appreciable result as the Lake keeps decreasing rapidly at alarming rate. Inadequate funding has largely hampered the efforts. The other is lack of political will and commitment by the riparian states.

The future of the Lake depends on how much the proposed recovery projects and programmes are implemented. This again will depend on funding, which the Member States of the Lake Chad Basin Commission could hardly afford. The Lake Chad Replenishment Project is certainly the most ambitious and vibrant intervention that has the potential to bring life back to the Lake. Consequently, a deliberate and concerted international action is required to give financial impetus to the proposed action plan. There is need to coordinate all the efforts to save the Lake and save the millions of peasant population depending on it for livelihood.

The Lake Chad Vision for 2025 identified three major objectives, namely: (i) maintenance of Lake Chad and other wetlands of the region at sustainable levels for the economic security of the freshwater ecosystem resources, sustained biodiversity and aquatic resources of the basin and their equitable use and the alleviation of poverty; (ii) acceptance of responsibilities for freshwater, ecosystem and biodiversity conservation and judicious integrated river basin management

by regional and national authorities; and (iii) equitable access by Member States to safe and adequate water resources to meet their needs and rights [6]. All the stakeholders at all levels should join hands and work together to realize these objectives for the restoration of the Lake and preservation the ecosystem.

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