



MITIGATION OF DISASTERS DUE TO SEVERE CLIMATE EVENTS : A CASE STUDY OF THE SHRINKING OF LAKE CHAD IN NORTH EAST NIGERIA.

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OUTLINE OF PRESENTATION

- ✓ Introduction
- ✓ Objectives
- ✓ Definition of Basic concepts
- ✓ Features of Lake Chad Basin
- ✓ The shrinking of Lake Chad
- ✓ Lake Chad Basins Commission
- ✓ Achievements of LCBC
- ✓ Challenges.



OUTLINE...

- ✓ Factors Responsible for the shrinking of Lake Chad.
- ✓ Problems arising from the shrinking of Lake Chad
- ✓ Implications for North East Nigeria
- ✓ Recommendations
- ✓ conclusion



INTRODUCTION

- Disaster mitigation measures, especially warning and preparedness systems for drought, floods and storms, and safer building design for earthquakes and high winds, particularly in economically developed countries, have limited the increase in numbers of deaths, but appear not to have had a major impact on economic losses or numbers of affected people as compared to developing countries.
- Climate change can be argued to be the most pervasive and far-reaching environmental issue.
- Climatic events have also been responsible for the progressive shrinking of Lake Chad with its attendant effects on North Eastern Nigeria.
- The Lake Chad is a Common on Pool Resource (CPR) for diverse livelihood. The livelihood include diverse forms of farming, herding, fishing and harvesting of wild resources livelihood and game. A very diverse range of people numbering over thirty (30) million from several diverse riparian countries are involved. Right of access to CPRs without proactive and strategic management, always generates conflicts.



OBJECTIVES

- To define the concept of disaster and mitigation.
- To understand the features, achievements and challenges of Lake Chad Basin Commission.
- To assess the factors responsible for the shrinking of Lake Chad.
- To identify the implications of Lake Chad on North East Nigeria.



DISASTER AND MITIGATION

Disaster may be sudden onset or “creeping”. Sudden onset disaster often happen with little or no warning and most of their damaging effects are sustained within hours or days e.g. earthquakes, tsunamis, volcanoes, landslides, tornadoes and floods. Creeping disasters occurs when the ability of the response Agencies to support people’s needs degrade over weeks or months and they are persists for months or years once discovered. Examples are drought, famine, soil salination the AIDS epidemic and erosion.

In the language of the emergency preparedness community, **Mitigation** means to cause to become less harsh, hostile; severe or painful; to moderate or secondarily, to carry out sustained action to reduce the risk to life, property and the environment from disasters of all types.



FEATURES OF LAKE CHAD

- The Lake Chad Basin is the largest inland drainage basin in Africa. It is situated in West/Central Africa between 6° to 24° N and 6° to 24° E (UNEP 2006). It comprises of a vast expanse of land made up of several catchments that feed Lake Chad
- Lake Chad is located in the far west of Chad and the northeast of Nigeria. Parts of the lake also extend to Niger , Cameroon and Central Africa Republic (CAR).
- It was once Africa's largest water reservoir in the Sahel region, covering an area of about 26,000 square kilometres. The Lake is generally shallow with only 10.5 metres (34 feet) at its deepest point.



FEATURES OF LAKE CHAD...

- 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.
- Of Lake Chad's tributaries, the Chari/Logone System supplies 90% of the lake's water input while the remaining comes from the Komadugu-Yobe river system. The lake is subject to substantial evaporation, yet it is not saline.

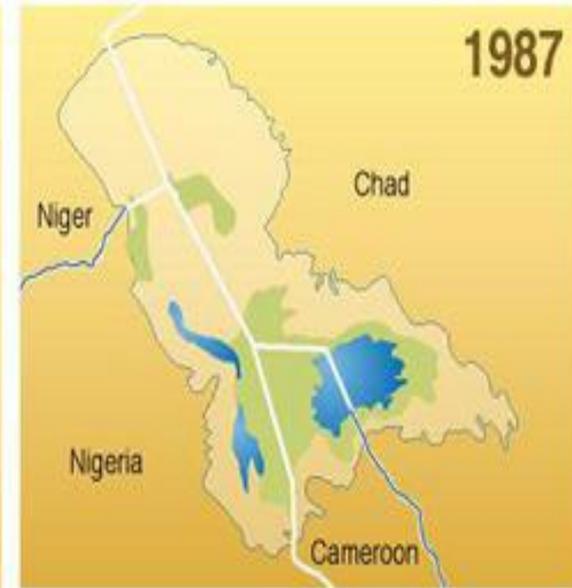


THE SHRINKING OF LAKE CHAD

- In the 1960s it had an area of more than 26,000km². Between June 1966 and January 1973, the surface area of Lake Chad shrunk from 22,772 km² to 15,400 km².
- In 1982, the lake's surface area was estimated to be about 2,276 km². In February 1994, Meteosat images measured it at just 1,756 km².
- And between 1994 and 2004, it receded further dramatically, covering just an area of some 532 km²
- Between 1953 and 1979, irrigation had only a modest impact on the Lake Chad ecosystem. But between 1983 and 1994 irrigation had increased four-fold.
- About 50% of the decrease in the lake's size since the 1960s is attributed to human water use, with the remainder attributed to shifting climate patterns and environmental degradation.



The Disappearance of Lake Chad in Africa



-  Water
-  Former outline of the lake
-  Vegetation

Source: This collection of maps has been drawn after a series of satellite images provided by NASA Goddard Space Flight Center, available at:

<http://www.gsfc.nasa.gov/gsc/earth/envir/lakechad/chad.htm>

PHILIPPE REHACEWICZ
MAY 2002



LAKE CHAD BASIN COMMISSION

- In 1964, the Lake Chad Basin Commission (LCBC) was established by the Fort Lamy (now N’jamena) Convention by the 4 riparian countries (Cameroon, Niger, Nigeria and Chad). The Central African Republic became the member in 1994 and the Great Libyan Arab Jamahiriya joined the LCBC in 2008. Sudan and Republic of Congo are observer countries.
- The primary responsibility of the Commission is to regulate and control the utilization of water and other natural resources in the basin, to initiate, promote and coordinate natural resources development projects, to examine complaints and to promote the settlement of disputes.



ACHIEVEMENTS OF LCBC

- The successful demarcation exercise of international boundaries between Chad, Niger, Nigeria and Cameroon between 1988-1992 which now formed the basis of the dispute settlement between Cameroun and Nigeria by International Court of Justice.
- The successful preparation of a Master Basin Plan in collaboration with experts from member states and supported by FAO, UNDP, and UNSO.
- The Strategic Action Plan was prepared with identification of 36 priority projects. The project for water transfer from Oubangui to Lake Chad was second in the list of the project contained in the SAP.



ACHIEVEMENTS OF LCBC...

- The preparation of LCBC Vision 2025 based on an analysis of the current situation and challenges to IWRM. It defines the means to get to the envisaged situation in 2025 vis-à-vis as the short- and middle and long term action necessary to be implemented for the reversal of degradation trends, restoration and conservation of the ecosystem for environmentally sound and sustainable development of the sub region.



CHALLENGES

- Although there are basic documents adopted by key stakeholders in Lake Chad, there are still not significant improvements in river basin management.
- The main factors of unfavorable conditions is a combination of effects of climate fluctuations and unsustainable water projects that led to significant reductions in the flows of the rivers that drain into Lake Chad. In turn, this situation has resulted in the shrinkage of the lake.
- The intensity of competition between different land and water users has been exacerbated by the failure of traditional rules governing peaceful relationships. In the absence of new guiding rules and regulations that are equitable and properly enforced, the breakdown of law and order is inevitable.



FACTORS RESPONSIBLE FOR THE SHRINKING OF LAKE CHAD

- It is a common knowledge that Lake Chad and the rivers that feed it, and other associated wetlands have been traditional source of freshwater for domestic consumption, fisheries, agricultural production and pastoralism through the countries.
- Because of the way it has shrunk dramatically in recent decades the lake has been labelled an ecological catastrophe by the UN Food and Agriculture Organization.
- Some consider it likely that the lake will shrink further and perhaps even disappear in the course of the 21st century.



FACTORS RESPONSIBLE FOR THE SHRINKING OF LAKE CHAD...

- A 2001 study published in the *Journal of Geophysical Research* blamed the lake's retreat largely on overgrazing in the area surrounding the lake, causing desertification and a decline in vegetation.
- The United Nations Environment Programme (UNEP) says that about half of the lake's decrease is attributable to human water use such as inefficient damming and irrigation methods.
- The rivers that feed the Lake have experienced desiccations over a long period of about forty years.
- The diminution of Lake Chad and its wetlands and the resultant impoverishment of the inhabitants.



FACTORS RESPONSIBLE FOR THE SHRINKING OF LAKE CHAD...

- Large and unsustainable irrigation projects built by Niger, Nigeria, Cameroon and Chad, which have diverted water from both the lake and the Chari and Logone rivers.
- Lake Chad is shrinking due to reduced rainfall, persistent droughts and increased pressure for irrigation water, resulting in both environmental degradation and social unrest
- The general belief is that about 50 per cent of the decline in the Lake size is attributed to human water use due to population growth, the remainder is attributed to shifting climate patterns



PROBLEMS ARISING FROM THE SHRINKING OF LAKE CHAD

1. **Water Pollution:** 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. 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.
2. **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. There is also the disappearance of tree seedlings, collapsing of fisheries and sterilization of soils, at the root of which is population pressure, low level of environmental awareness and the absence of sustainable development in the political programs of the riparian countries.



PROBLEMS ARISING FROM THE SHRINKING OF LAKE CHAD...

- 3. Loss of biodiversity:** there is also the loss of plant and animal species, as well as damages to ecosystem, rooted in population growth, absence of sustainable development in the political programs and low environmental awareness of the riparian countries. This reduces ecosystem productivity and thus, resources availability, resulting in deepening poverty.
- 4. Loss and modification of the Ecosystem:** the Lake has changed from open water to a marshy environment and about 50% of wetlands have been destroyed. This has been due mainly to reduced flows rooted mainly in the lack of sustainable in the political agenda of the member countries, as well as low level of environmental awareness.



PROBLEMS ARISING FROM THE SHRINKING OF LAKE CHAD...

- 4. Sedimentation in rivers and water bodies:** which has led to changes flow patterns as well as reduction in the inflows to the lake through the channel diversion as well as the colonization of the listed sites by invasive species.
- 5. Invasive Species:** the lake itself is been invaded by Typha grass and water hyacinth. Typha is also a major problem in the Komadugu Yobe Basin and, Quelea birds are a major pest prevalent all over the basin. The invasive to a large extent, are the functions of poor water resources management, poor enforcement of environmental regulations and standards, and the absence of resources use planning.



IMPLICATIONS FOR NORTH EAST NIGERIA

- The portion of Lake Chad that is situated in the Nigerian territory borders on the North-Eastern region which consists of the current six states of Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe.
- Of the estimated 20 million people that lived on the Lake Chad basin in 2003, about 11.7 million live in the North-Eastern region of Nigeria.
- The diminishing water resources of the lake will compound the problem of water security/scarcity in the region.
- The diminution of the Lake has contributed to conflicts through intensification of frequency of contacts between and among major livelihood system e.g. between migrating Nigerian fishermen toward the lake South east wards, conflicts between udawa nomads from Niger and Chad and Nigeria farmers in recent years.



IMPLICATIONS FOR NORTH EAST NIGERIA...

- The International IDEA (2000:268) has argued that access to safe drinking water, essential to human and animal survival, is very limited in the North-Eastern region. This lack of access to safe drinking water is responsible for the poor quality of life in the region because it affects people's health and productivity.
- The shrinking of the lake's water will pose the biggest single threat to food security, leading to the exacerbation of poverty in the region resulting from loss of production opportunities..
- Shrinkage of the lake poses serious security implications for the North-Eastern region of Nigeria in particular, and the country in general. Rise of insurgency (Boko Haram), theft, robberies, abductions, terror etc.



IMPLICATIONS FOR NORTH EAST NIGERIA...

- Relationship between countries (e.g. Nigeria and Cameroon) authorities domiciled in the basin have always been frosty, mainly because authorities take sides with their citizens who are into unhealthy competition over common pool of resources.



CONCLUSION:

The fact that the CPR and the Lake Chad Basin is essential for the livelihoods of over 30 million people is not a doubt. the fact that the diminution of the resources has engendered unhealthy competition and resultant conflicts as users asserts their access rights is also common knowledge. Even the opportunity cost pf the conflicts and the resultant impoverishment of resources users is not in dispute. The measures that can be taken to resolve the situation are now well known. Those who have the responsibility to impress it upon our govern.



CONCLUSION...

- The shrinking of Lake Chad poses serious security implications for Nigeria and the North-Eastern region will be the hardest hit To mitigate the impact, it advocates for greater political cooperation to save the drying lake, the strengthening of the supranational organisation to ensure sustainable regulation and exploitation of the resources of the lake, and the integration of the local communities in the management of the resources of the lake.
- Even with the LCBC, there is still no significant improvement in management. Consequently, the lesson can be learnt that the mere existence of agreements and institutions is not sufficient for securing success, but there also needs to be a strong political will for implementation.



RECOMMENDATIONS

- For the management of resources use conflicts, there is a need for each member country to tease the relevant activities from their NAPS and prioritize them for implementation. This would basically be about the resources use planning in the context of implementing the Integrated Water Resources Management (IVRM) practices in the basin.
- For the local level conflicts, resources use planning will entail a process of data collection followed by an inclusive series of participatory exercises that will redefine equitable access right to CPRs. Outcomes of the process will include redefinition of the physical structures for effecting allocations and mechanisms for enforcing fishing guidelines.



RECOMMENDATIONS...

- For the conflict between upstream and downstream communities, the process will again be about collecting all needed information and usage in broad-based consultations to agree on access rights. The outcomes will also include water sharing agreements and the definition of the mechanisms for implementation.
- For the conflicts between countries, there is need for LBBC to be more powerful than it is now, along the lines of Tennessee Valley Authority (TVA), to have power to execute and sanction, with accompanying needed resources.
- There is also the need to fast track the implementation of the inter basin transfer for recharging the lake. This will boost the resource base and reduce the frequency and intensity of competition, which is the foundation of resources use conflicts.



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THANK YOU FOR LISTENING

AND GOD BLESS