

Research article

Mainstreaming Climate Change Adaptation and Mitigation Issues into Development Planning in Rivers State

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Abstract

Climate Change and its attendant adverse effects has become global phenomenon in time past and recent decades. The study considered Mean Annual Temperature Departures, moving averages for temperature data (1970 – 2010). 40 years inclusive. Also Climate Changed in urban development in a coastal area of Rivers State, Nigeria Evidence indicates continuous rise in temperature characteristic from 1987 to present years for a five year moving average and consequent flooding of the coastal communities of the state after heavy rainfall accompanied by thundering activities. The study recommends the urgent need for the creation or establishment of state commission on Climate Change.

Keywords: MAINSTREAMING, CLIMATE CHANGE, DEVELOPMENT, COASTAL, COMMUNITIES, COMMISSION.

Introduction

Climate, Weather and Climate Change

Climate is considered as the average weather condition of an atmosphere taken over a long period of time (Gobo and Akpan, 2009). While weather is the instantaneous state or condition of the atmosphere. Weather elements include temperature, rainfall, relative humidity, barometric pressure, wind speed, wind direction, cloud cover and sunshine hours. These weather elements are measured on hourly basis and averaged over twenty four hours of the day. This could be considered for the day, month and year. For climate change estimates, climatologists adopted a period of thirty to fifty years for climate change estimates (Gobo, 2000; Miller 1961).

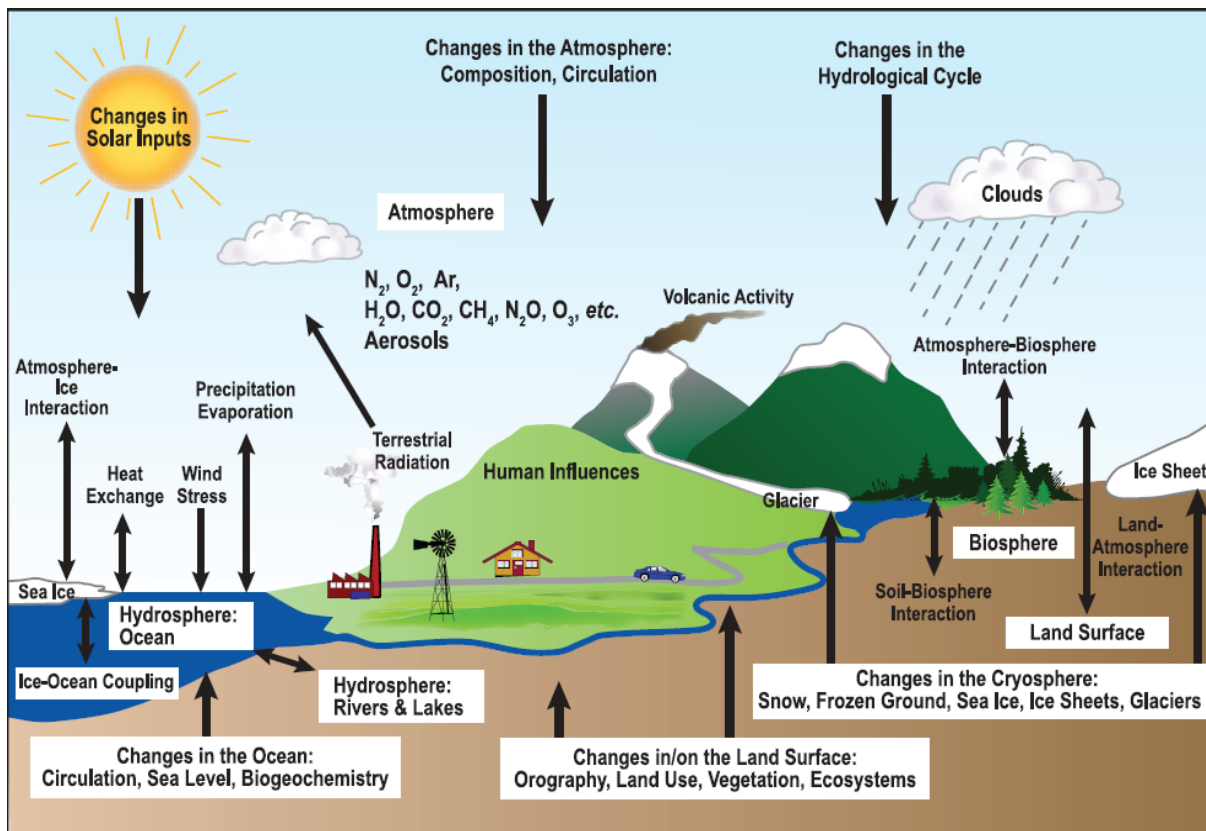


Figure 1: Relationship between Weather and Climate Change

Climate Change is considered as a situation where the weather elements especially air temperature is rising or falling. Recent world climate change estimates indicate that temperature has been rising (IPCC, 2007). Climate change is also defined as any change in climate over time, whether due to natural variability or as a result of human activity. According to the UN Framework Convention on Climate Change (UNFCCC), this refers to a change of climate that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that in addition to natural climate variability observed over comparable time periods.

Rivers State due to its coastal nature, has a high vulnerability risk of climate change and will need to evolve a more proactive mitigation and adaptability strategy towards its environmental management programmes and policies (Fig. 2).

Evidence of Climate Change

This could be considered in terms of the facts shown at a) Global level and; b) typical case of Rivers State (Figs. 3 and 4).

Climate Change and Sustainable Development

Human welfare is inextricably or seriously linked to the earth's climate. Similar to other life forms, the manner in which we respond to change is critical not only to our survival, but also to our well-being. The prospects of climate change offers an opportunity to re-evaluate our priorities and approaches to global problems.

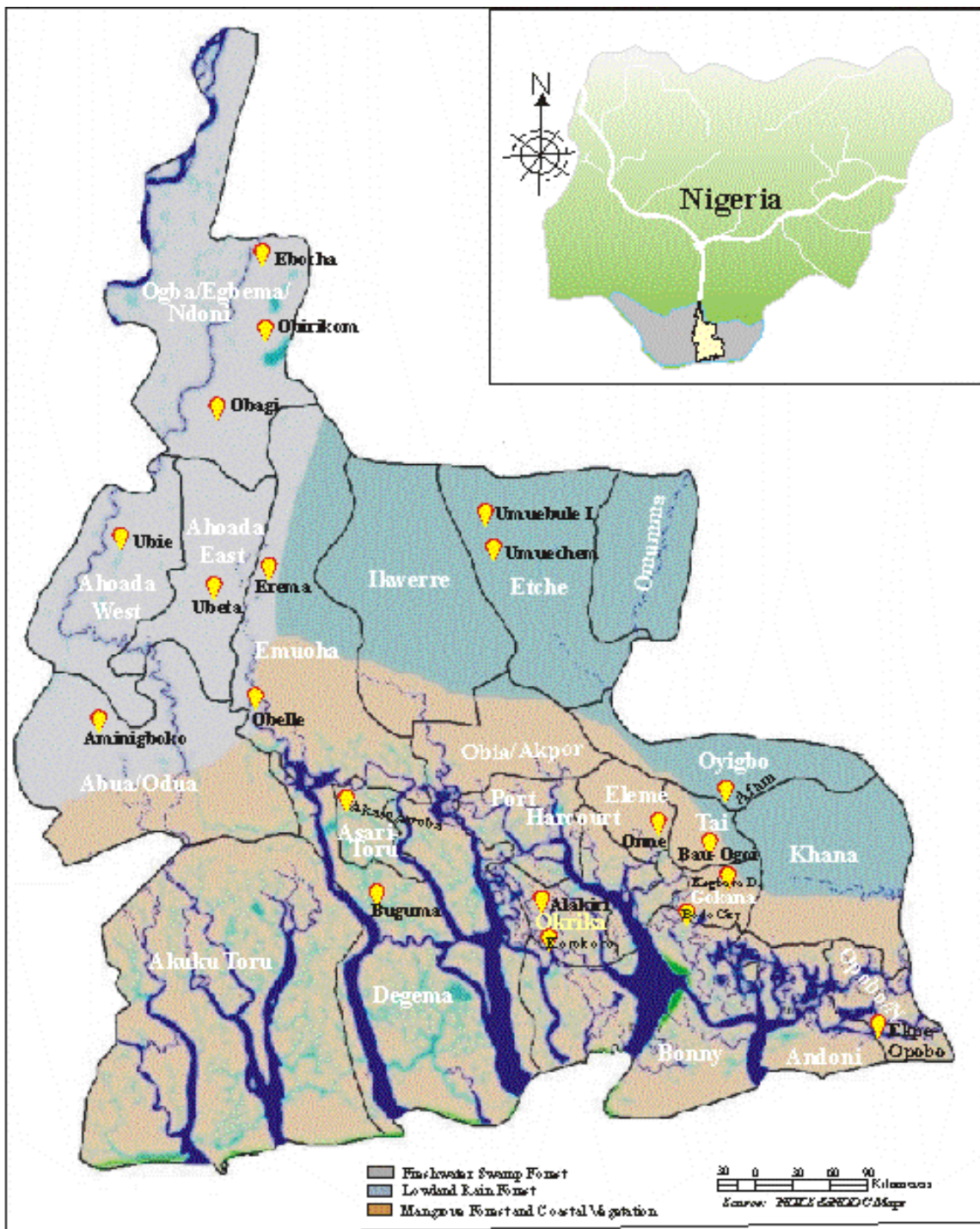


Figure 2: Map of Rivers State showing its Coastal Location

The International Community promotes ‘mitigation’ and adaptation as parallel strategies to cope with adverse impacts of climate change.

There are some sophistic who persist in the view that man can indeed must alter not only tides but also the weather.

Sustainable Development is about promoting progress by eliminating poverty by empowering people through decentralized ownership and property rights, the Rule of Law, and free trade. These policies empower people and communities to take charge of their own lives. **To achieve Development planning, choosing the right policies to address climate change must not be compromised.**

Policy responses must be continuously evaluated. Erase from our thoughts that the only solution to continuous warming of the earth's surface is limiting emissions of greenhouse gases (IPN, 2004).

The truth is that energy is an essential factor of production that is an important ingredient in all economic activity.

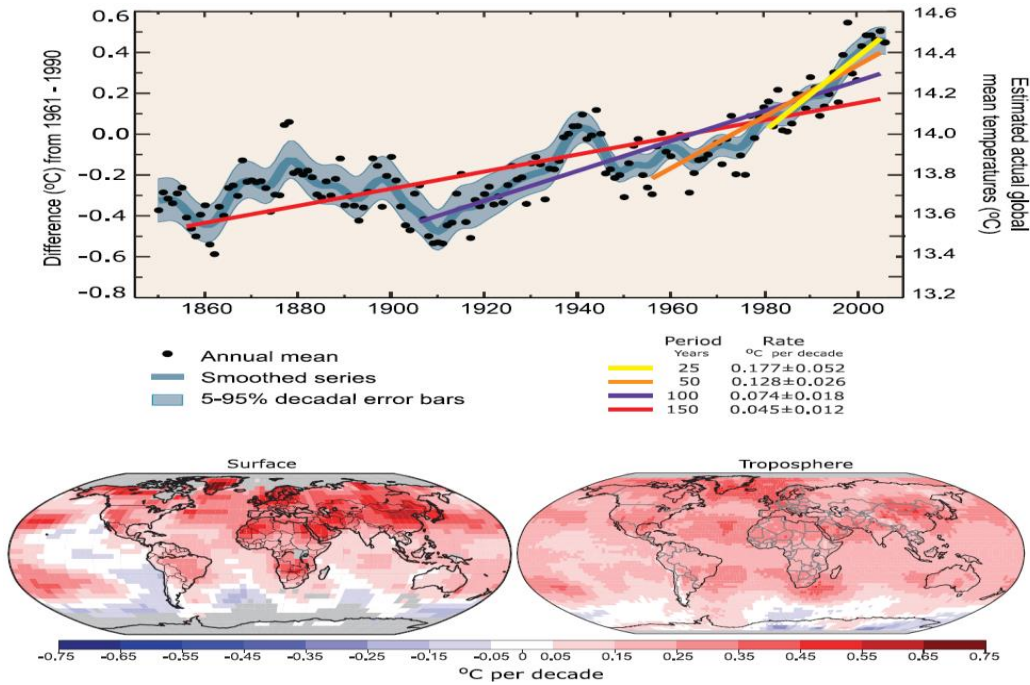


Figure 3: Global Mean Temperature

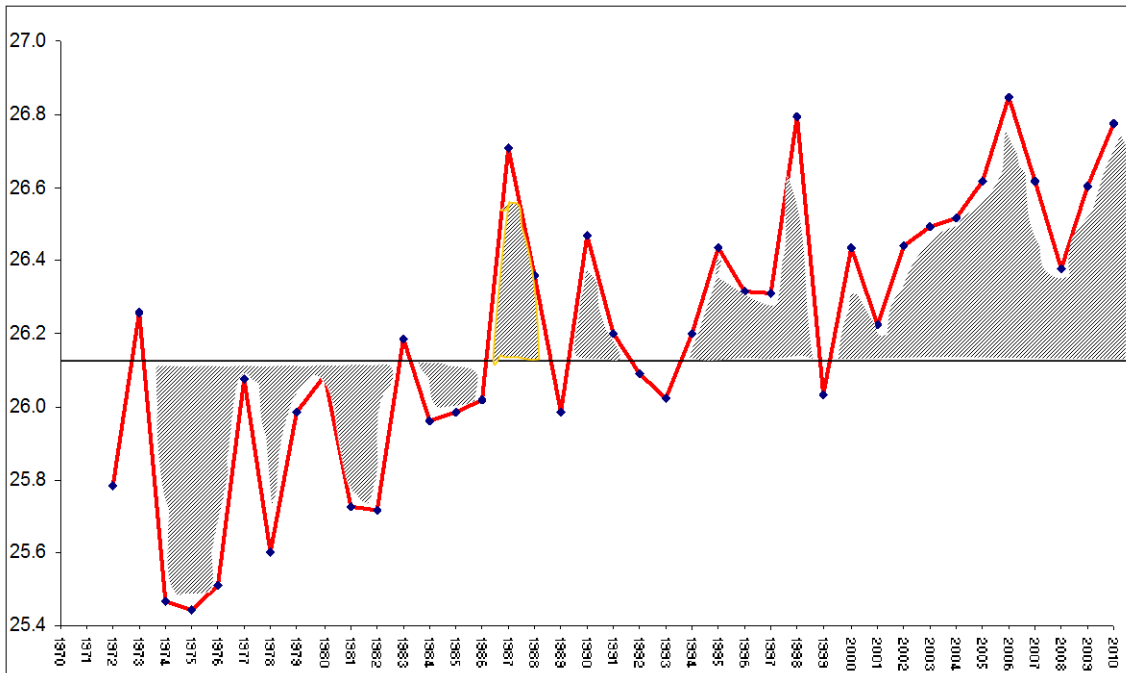


Figure 4: Mean Annual Temperature Departure (1970 – 2010) for Port Harcourt

Weather, Health and a Clean Carbon Environment

Empirical Evidence abounds to show that economic growth, human well being and a clean environment go together. Increased wealth is associated with improvements in nearly all aspect of human well-being and environmental quality (Goklany, 1999). Wealthier people live longer, are better nourished, have lower mortality rates, have better access to clean water, education sanitation and cleaner carbon free environment, reduce use of firewood and stoves.

Countries with significant declines in air and water pollution have significant improvement in environmental quality. Existing and new technologies allow people to use their resources more efficiently, to be healthier and to live more benign existence. Such technologies allow people to earn a living, to control their environment, invest in the future of their children, their community, their states and their country as well as their environment.

Increased wealth, children can attend good schools, improved technology, eradication of water borne diseases, improved infrastructures, children can eat good food, good health that will enable them to grow up and live healthy, happier and longer lives. Accepting this three in one relationship between prosperity (wealth), health and clean environment will be the best policy for reducing the vulnerability of people. Potentially, a negative aspect of climate change is one that enables people to become rich and thereby avail themselves of all the adaptive measures wealthy people can afford.

- a) The Natural Process (N) which include:
Rainstorm
Extreme / Excessive Rainfall / Flood

Causes of Climate Change

These are considered in terms of climate model. The inputs involve:

- Cyclonic Activities
Sudden Natural Disasters
Earth Quakes
Tsunami
- b) Anthropogenic Activities (A)
Also considered as man made and human induced activities which include:
Industrial Activities (such as gas flaring)
Forest fires
Increasing amounts of invisible greenhouse gases which include methane, carbon dioxide, nitrous oxide and chlorofluoro carbons are slowly raising the temperatures of the atmosphere.

As the earth warms, sea levels rise, Arctic Sea-Ice retreats, rainfall increases and droughts are more sever. Communities everywhere will be affected. Some changes will be positive but many others will have a negative impact.

Our attitude towards the environment such as poor waste disposal practices; dumping of waste in drainages, poorly designed, and uncoordinated drainage designs that are not channeled into natural waterways. Designs that do not take into considerations inputs such as runoff, return periods and extreme value analysis, slope analysis, soils and topography.

When the Natural (N) and Anthropogenic (A) factors combined, then the effect becomes unbearable. Aftermaths of such disasters, as a result of climate change are Tsunami, flooding, houses are destroyed, fallen trees, broken down vehicles, overflow of debris which is indicated in the climate model (Fig. 5).

MAINSTREAMING CLIMATE CHANGE INTO DEVELOPMENT PLANNING

Mainstreaming simply imply, bringing into focus. In terms of development planning, this indicates the extent to which climate change mitigation (reduction of unpleasant situations) opportunities are integrated into development projects or programmes.

In Nigeria, development programmes are made on annual basis. Our national development plans are now Millennium Development Goals each year with the ritual of annual budgets. The developed countries e.g. Holland operate development plans that span thirty years. Therefore a minister or commissioner coming in only continues where his predecessor stopped. Here in Nigeria and Rivers State each government or any administration that comes in introduces his programmes according to his dictates.

There is urgent need to integrate climate change phenomenon into development projects such as:

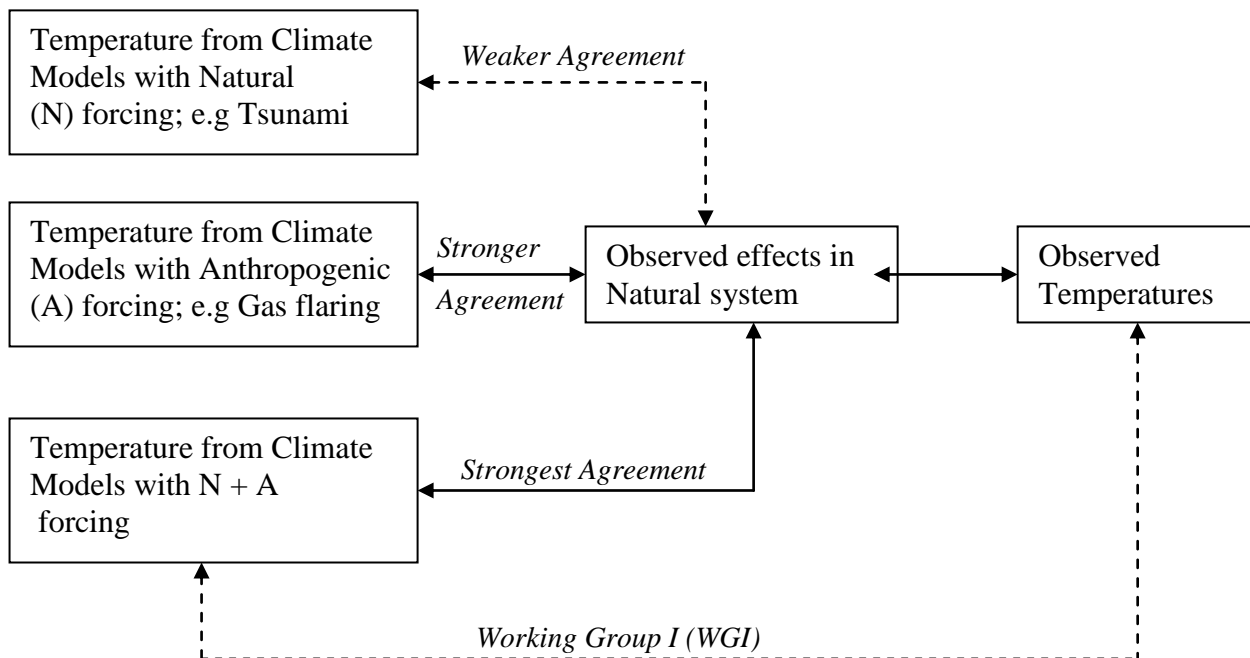


Figure 5: Climate Model (Source: Parry et al., 2007 in Gobo 2012)

Infrastructural projects e.g., in schools, providing lawns, green environment; in solid waste management programmes (safe waste disposal practices); water supply project – portable drinking water; energy, forestation programme (avoiding the use of firewood – biomass) or power supply. Coordinated network of drainages designs; housing projects, that take into consideration wind pattern, materials that are prone to our weather conditions, transport sector projects and urban renewal projects

Integration of planning programmes in project preparation processes to identify climate change mitigation measures. Identifying specific entry points project development objectives, sector / microeconomic objectives and macroeconomic linkages for mainstreaming climate change processes with development plans e.g. in Rivers State, waste to wealth projects).

Undertake analytical work to create climate change related performance indicator for monitoring of climate change measures over time e.g. risk reduction strategies, reducing vulnerability, improving livelihood, in case of quality of life (QOL), industrial safety and security.

Develop a benefits frame work that links climate change phenomenon / interventions to local benefits and priorities e.g. projects that reduce vulnerability.

Climate Change Impacts are considered in terms of

- Physical Impacts – dislocation due to flooding, epidemic diseases
- Economic Impacts – Loss of livelihood, loss of production, loss of income
- Social Impacts – Increased risk of isolation due to vulnerability, hunger, social maladjustments

The task of the climate change adaptation (mitigation into development goal is to see how this could be integrated with the ultimate aim to contribute to the reduction of poverty, reduction of vulnerability (adjustment patterns), increase in people ownership of the development control process, increase in peoples say in their own development or progress.

The Problem

The commonly known August break in Rivers of Nigeria is no longer predictable. Farmers are not able to determine periods of onset and cessation of the rainy and dry season. Also the five (5) year moving average temperature (°C) shows consistence and continuous rise from 1987 to date (Figs. 6 and 7).

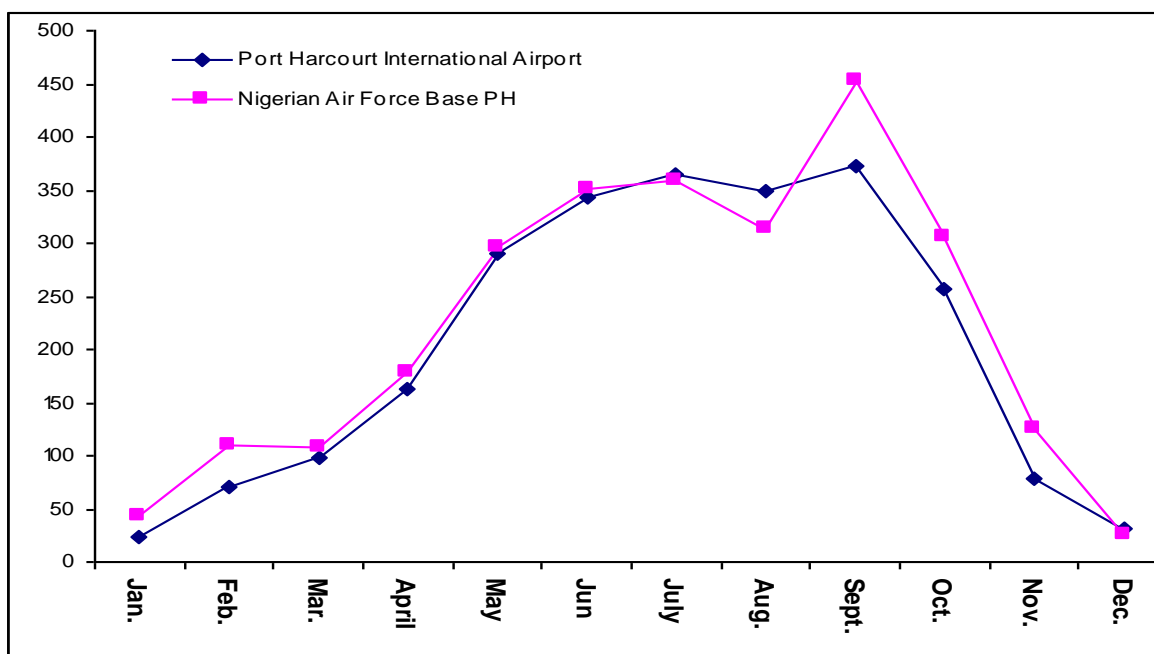


Figure 6: Comparative Analysis of Mean Monthly/Annual Rainfall for Port Harcourt International Airport and Nigerian Airforce Base Port Harcourt (2006 – 2010 [5 year inclusive])

Explaining the concept on the issues of vulnerability, mitigation, adaptation and sustainability as applicable, the first perspective characterizes vulnerability in terms of exposure to hazardous events and how this affects people and structures. The second perspective views vulnerability as basically a human relationship and not a physical one, i.e. social vulnerability, while the third integrates both the physical event and the underlying causal characteristics of populations that lead to risk exposure and limited capacity of communities to respond.

In line with this and other obvious reasons, developments in our city and urban centres are occurring in unsustainable forms and patterns. Much of the growth in the city suburbs is unplanned, unregulated and unsustainable. Right now the pattern of physical growth makes it increasingly difficult to provide services in any meaningful way (Owei and Ikpoki, 2006).

The Climate Change Challenges for Urban Development

In case of Rivers state

McCarney (2009) noted that the vulnerability of cities to climate is largely underestimated. It was observed that the critical factor is global warming with the attendant rise in temperature. This has been attributed to carbon emissions from greenhouse gases derived from human consumption of hydrocarbon-based energy, deforestation

and industrial processes. These are some of the peculiar situations in Rivers state. It was further predicted that increase in the world's average temperature will lead to drastic change in rainfall patterns with significant increases and more frequent flooding in some areas. The UNPF (2007) estimates that low elevation coastal zones (LE CZs) i.e. areas less than 10 metres above sea level currently account for only 2% of the world land area but 13% of its urban population. These low level land areas are prone to flood as a result of sea rise and Rivers state is one of such areas.

In Rivers state, Port Harcourt the capital of Rivers State has been under threat by flood due to storm water after heavy rainfall. Few of the trouble spots are low land areas in GRA phase 3, D-line, Andoni street water front settlement and the numerous of such settlement round the city. Parts of the urban periphery suffer perennial flooding during the rainy season. Although, this may be attributed to many factors but of importance are human activities such as building on flood plains, fencing off of properties that block the natural flow of run off; paving surfaces thereby reducing natural runoff, dumping of refuse into river channels. This year, the National Meteorological Service reported that there will be more than 200 days of rainfall out of 365 day and going by this, flooding in Rivers state will be accentuated. However, the coastal towns and villages are likely to be more affected. In parts of Rivers State, it is almost impossible to find sufficiently dry land on which to bury the dead at some times of the year.

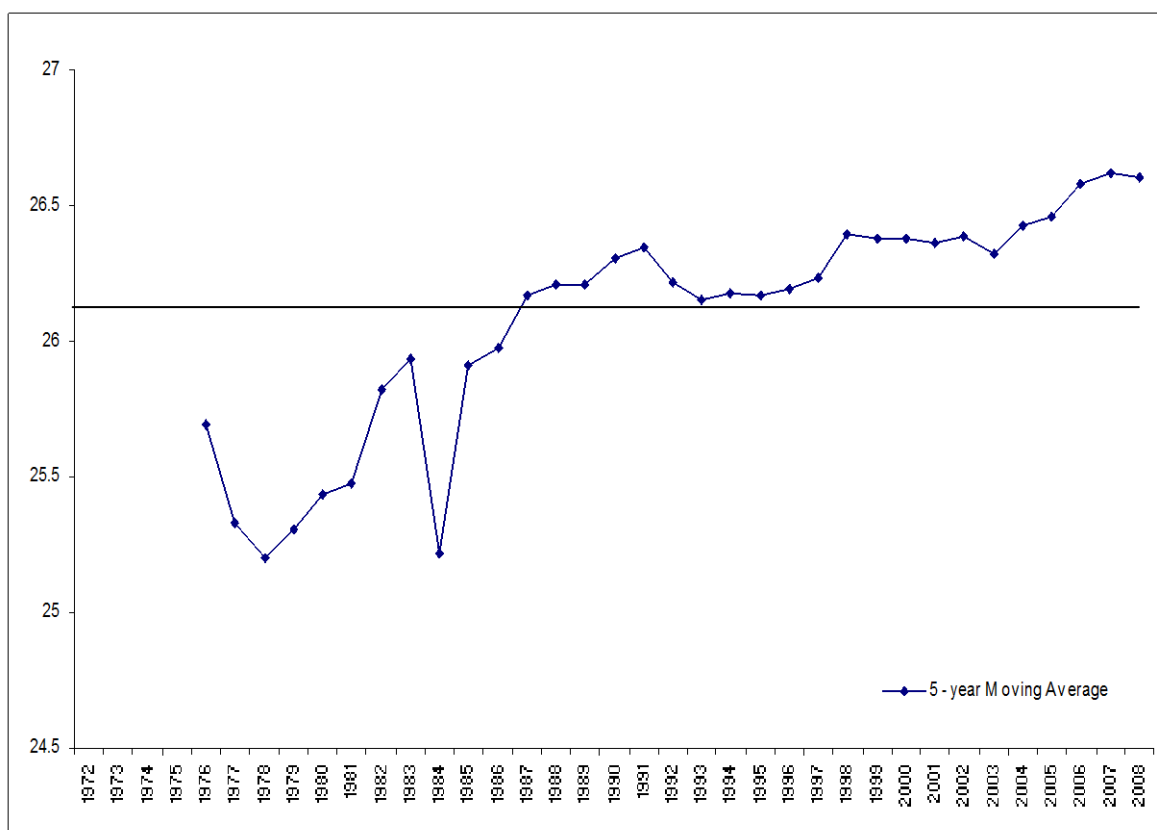


Figure 7: Five year moving Average for Temperature Distribution (1972 – 2010)

RECOMENDATION/ MITIGATION

Clearly impacts associated with climate change are unpredictable and without boundary. In a time like this, a state like ours can stand tall if our present urban planning principles and policies are tailored to cope with any future occurrence. One of such measures is the development of sustainable city design/model for instance the 'Ecocity Design.' This was developed by Richard Register in 1987. It was conceptualised on the theory of Ecology. Ecocity is a city designed with consideration of environmental impact, inhabited by people dedicated to minimization of required inputs of energy water and food, and waste output of heat, air pollution, methane and water pollution (Wikipedia, the free Encyclopedia, 2009). However, Register defines ecocity as simply an ecologically healthy city. The design and functioning principle are assiduous recycling of waste; maintain

maximum biodiversity, being very efficient in energy and materials, having a compact generally three dimensional form like complex natural living organisms.

There is need for environmentally sound and ecologically sensitive physical planning and urban development in River state. According to Register, ecocity have a long history, citing Venice, in Italy; Arcosanti, USA and Curitiba, in Brazil. Wenjie (2008) suggests the suitability of the theory of ecocity to city planning; adding that attempts to establish an ecocity planning system should integrate the ecological theories with the present city planning system. The key characteristics of a perfect ecocity are abilities of self adjustment; self restrain and self organization. While this state of advancement may not be fully achieved, cities and urban centres can have it as a long term goal. The planning system that facilitates the city achieving the above goal is regarded as the ecocity planning system.

The critical question for Town planners is how to make existing cities and new urban development more functional, ecologically based and viable. This is a great challenge and there is a way out. This takes us to the next point of recommendation.

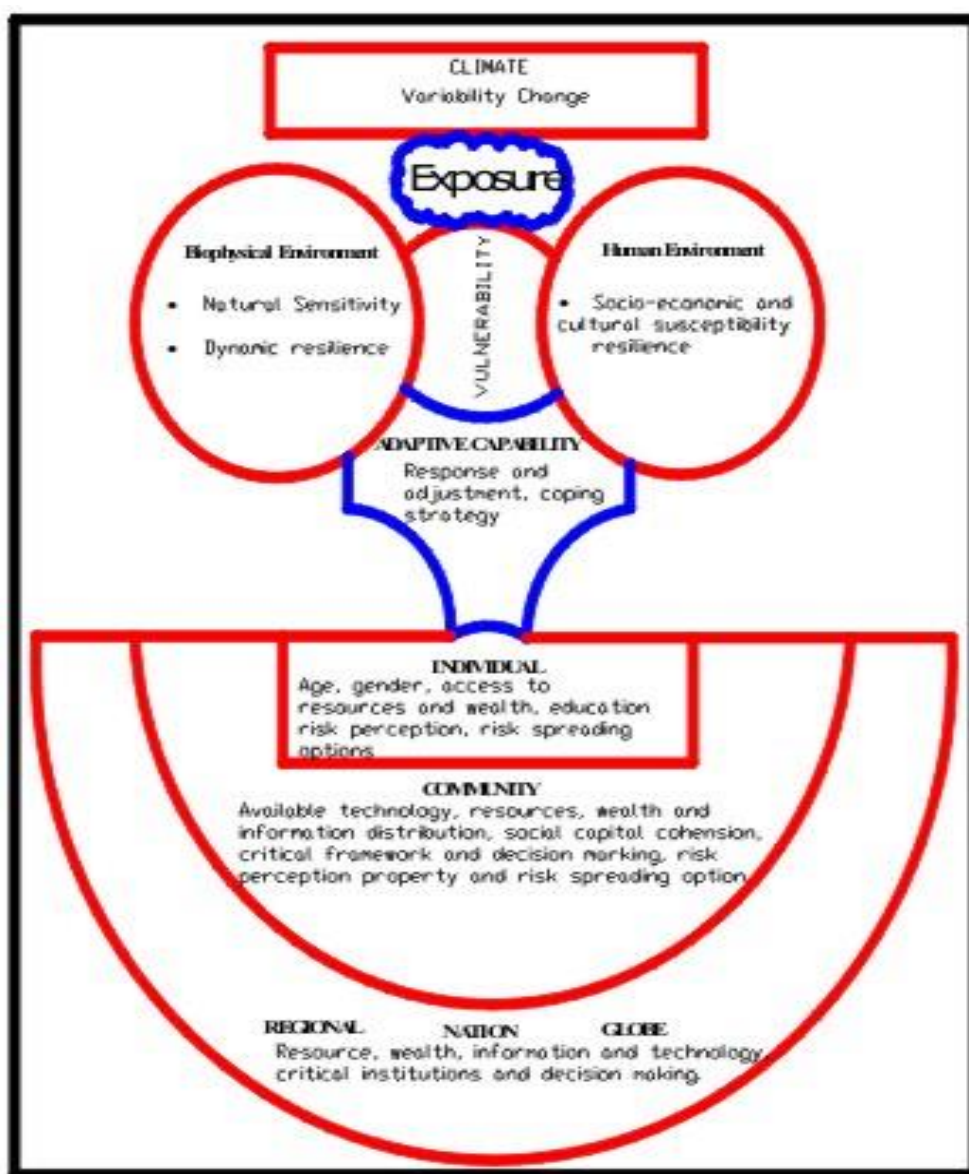


Figure 8: Integrated Vulnerability Framework
 Source: (Dolan and Walker 2004 in Owei and Ikpaki, 2006)

The Creation of the State Commission on Climate Change

Urgently there is the need to set up a commission on climate change in Rivers state. The body should be charged with the responsibilities of providing the strategies for handling the impact. The level of preparedness of the society is what determines the response. Even in the most advanced countries like USA and others people are still vulnerable. This was seen clearly with the Katrina disaster in New Orleans, USA.

The commission when created must work together with the state ministries of Environment and Urban Development. This is because if the commission is domiciled in a particular ministry, networking will be difficult. However, there are funds and expertise made from the United Nations and World Bank for climate change related. Climate change adaptation strategies are not always capital intensive and expensive or technologically advanced.

Some of the things required to check the impact on climate change are simple and cheap e.g. maintaining open spaces, setbacks and natural landscaping of our environment. In this direction, we appreciate the present government of the state for the green schools.

In another vein, we must be prepared to teach aspect of climate change in the primary and post primary schools. This is necessary because this segment of the society is even more vulnerable especially health related. Waste sorting for instance is best handled in a household when children are involved. Ultimately, neighbourhoods and communities must be active participants in any strategy to minimize climate change impacts.

Physical Planning and Development Control

Port Harcourt as a fast growing city has no development plan. The city is allowed to develop eating up all available open spaces within and at the periphery. Thus the need for development control activities in addition to comprehensive physical planning base is here by emphasised. This is necessary because the city Port Harcourt has lost its form and grown beyond the capacity of town planner to manage and provide services.

CONCLUSION

The strength to sustainably secure our urban and rural areas in the state from the impacts of climate change depends on political will. Countries in the world at one time or the other that have experienced bitter taste of the impact of climate change have resolved to channel their policies and resources to prevent further occurrences. As it stands, the signals of climate change are obviously around our cities and villages and the resources to deal with them are available but the political will to consistently pursue the required strategies are crucial.

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