



## FACTS ON CLIMATE IN NIGERIA #2 REPERCUSSIONS FOR WATER RESOURCES, WETLANDS, AND FRESHWATER ECOLOGY

Climate Change has become our new reality. It brings with it changes in weather patterns that can have serious repercussions for all of us, upsetting seasonal cycles, harming ecosystems and water supply, affecting agriculture and food production, causing sea-levels to rise. Warming causes floods, landslides, drought and famine. As weather becomes fiercer and storms increase in frequency and intensity, serious socio-economic consequences result. Malnutrition and disease become common occurrences. Climate Change has a cumulative effect on natural resources and the balance of nature.

Its effects are already visible in Nigeria. This series of Fact Sheets identifies present and future challenges and suggests ways of managing and adapting to the Climate Change process. (For a full picture of climate change in Nigeria, refer to the other four Fact Sheets: #1, Health and Human Settlements; #3, Energy, Industry, Commerce, and Financial Services; #4, Agriculture, Food Security, Land Degradation, Forestry, and Bio-Diversity; and #5, Coastal and Marine Ecosystems.)

### What's the problem?

Changes in weather and climate have been known to profoundly affect water resources, and thus increase human vulnerability to infection. Climate Change will bring overall less rainfall and also heavier individual rainfall events in a single day. We depend on water for drinking, washing and cleaning, for agricultural needs (such as irrigation), for industrial needs (such as food processing) and for transportation, fishing, and recreation. Pre-existing problems will only get worse with climate change.

Nigeria's low-lying coastline makes the country prone to sea-level water intrusion into coastal fresh water resources as Climate Change brings with it a rise in sea-level that will seriously affect our coastline. Coastal erosion and flooding is not uncommon, and contributes to the "polluting" of fresh-water systems.

Nigerians do not enjoy adequate water supply. This problem is more prominent and devastating in the northern areas of the country with its limited sources of water and harsh weather conditions.

Drought—the total absence of rain—for a very long time to the detriment of agricultural and other water-related activities is of concern in our country. It drastically affects agricultural yield and it kills livestock (two drought incidences in Nigeria in the 1970's and 1980's led to the death of millions of cows, goats and sheep, while food production was adversely affected). Drought also contributes to increased desert encroachment and excessive heat, both of which have an inescapable impact on humankind and the use of water in the ecosystem. Increased rainfall events will bring floods and increased erosion such as more 'gullies' and more silting in rivers.

Increased floods and gullies and the silting of rivers will affect people living near or along side water ways such as rivers and streams.

### What will happen here if Climate Change is not addressed?

The impact of changes in water resources will be overwhelming. Climate change has brought about changes in rainfall patterns and variability, changes in water level and water volume in ponds, lakes, rivers and streams, and in the frequency of storms and drought. With increasing Climate Change and higher temperatures, the water volume in streams and rivers will change for the worse, drying up (like Lake Chad in north-east Nigeria) and contributing to poor sanitary and health conditions.

Wetlands comprise a wide range of coastal and marine habitats such as estuaries, flood plains, freshwater marsh, peat lands, swamp forests, open coasts and lakes. They are rife with life and serve as important spawning grounds for fish, attracting migratory seabirds. The freshwater ecosystems are also home to diverse species of plants and fish-life. These fragile areas will be devastated by climate change.

### How do humans add to the problem?

Human activity contributes to sullyng fresh-water resources in a variety of ways. Industries and their unrestrictive disposal of wastewater and use of water for cooling machines and equipment, agriculture and its consumptive use of water, hydroelectric power use, recreational use (whether it be boat or beach activity), and human waste disposal all induce deterioration of water quality. Not only that; such practices lead to high organic levels in surface and ground water which, in turn,

increases epidemics of water-borne diseases including outbreaks of cholera, hepatitis, typhoid and malaria.

## What can we do about it?

Much can be done. At the community level, the use of better water storage systems such as underground tanks and improved water treatment plants can help. Improved rainwater harvesting strategies and creating community water resources to meet human or livestock needs can also be effective. The clean-up and protection of natural streams, rivers and lakes is an activity that could (and should) be undertaken immediately.

Getting the government involved and “on side” is imperative. Its will is needed to make improvements to municipal water sources, to commission rural water schemes, to enact and enforce laws to protect streams, rivers and lakes from pollution, to improve medical facilities to treat those with water-based and waterborne diseases, and to institute better water resources management. Public/regional initiatives could create more water resources and regulate the use of rivers, streams and lakes, as well as ensure good water management. New water sources can be found and habits developed: gathering/harvesting water from rain, looking for underground water or bore-holes. And adaptable measures can be introduced, such as building covered barriers around houses prone to flooding, constructing drainage channels, planting trees to combat erosion, and irrigating agricultural lands. The government could better prepare itself to organize relief packages for flood victims, set up an emergency response team to face the problems, and research activities in different institutions to study, monitor and control the impact of climate change on water resources.

But there's only a way if there's a will to act. Every Nigerian has to be involved, from individuals, to communities, local governments, and the federal government. Most important is to educate Nigerians on the ill effects of climate change to Nigerian society, and the importance of adapting to it.

## What's preventing us from doing all this?

Perhaps the biggest obstacle is lack of awareness and knowledge. Nigerians need to be educated and informed about Climate Change and how it can change our lives

drastically. It's difficult to change the way we've been doing things. Some traditional Nigerians cannot accept that the river/stream water they have been using over the years is polluted. Humans can be very cavalier about their water use and so a lack of personal “ownership” in the upkeep of communal streams and lakes prevent them from taking more care of the ecology they have come to take for granted. Yet pollution of these water sources results in a loss of bio-diversity and reductions in biological productivity.

There is a dearth of public policies that target adaptation, and those that do exist are inadequate.

## Why should we concern ourselves?

The worst impact of climate change can be said to be on water resources because water and its availability affects all facets of life. Human health is vulnerable when the output in food production, livestock, and agriculture is implicated. As water-based farming activities are presently practiced by members of the society who are poor, older and less educated, products such as freshwater fish, sea foods, and some agricultural products that rely heavily on water irrigation will be depleted over time. And population growth may worsen the already fragile stability of water resources in Nigeria.

Drought and water shortages can affect energy supplies from hydropower stations. Hydropower reservoirs become depleted, threatening the country's electrical supply.

We really need to study, extensively, the impact of climate change on the biology and physicochemical quality of water and determine future scenarios based on the critically deepening water crisis in this country. Obviously, the cumulative impact of climate change is bound to affect water quality. This will have inestimable consequences on Nigerians, their occupation, on property, on all aspects of their lives.

The Nigerian government must adopt strategies and policies now that will encourage industries to adapt to Climate Change to everyone's benefit.