



## FACTS ON CLIMATE IN NIGERIA #3 REPERCUSSIONS FOR ENERGY, INDUSTRY, COMMERCE, AND FINANCIAL SERVICES

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. Climate Change 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; #2, Water Resources, Wetlands, and Freshwater Ecology; #4, Agriculture, Food Security, Land Degradation, Forestry, and Bio-Diversity; and #5, Coastal and Marine Ecosystems.)

### What's the problem?

All aspects of life are increasingly affected by Climate Change. The effects of climate change have terrible repercussions for our water resources (see Fact Sheet #2). It can adversely affect agriculture and its yield (see Fact Sheet #4). In fact, it can affect all sectors of a country's economy, its dire effects no less evident in the energy, industry, commerce and financial services sectors.

How does climate change wield such power? When floods and storms increase (both symptoms of Climate Change), transportation is disrupted; trucks can't transport merchandise—whether it be agricultural produce or manufactured goods—from one part of the country to another. When weather patterns are unpredictable, industries dependent on climate-sensitive natural resources suffer (fishing and agriculture, for example), consumer behaviour becomes more erratic, financial resources are depleted in dealing with such obstacles. Getting their wares to market becomes problematic for industries, as do industry setbacks such as lack of yield translating into fewer products to sell, and, of course, reductions in consumer spending. Businesses near the coast relocate to avoid the risk of having to deal with floods (if the region becomes prone to them), commercial activities are greatly reduced (or stopped altogether), the insurance industry becomes overloaded with claims for damage. All of the energy, industry, commerce and financial services are severely disrupted for a protracted duration of time.

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

Nigerians rely on hydro-electric power generation which is the energy source most likely to be affected by climate

change. It is sensitive to change in rainfall and to temperature. Climate Change results in more intense rainfall events (requiring more conventional water storage strategies to prevent flood damage), more likelihood of drought (less hydro-electric production), and less precipitation (less water available during warm months); all of which point to a disruption to (or a reduction in) hydroelectricity for Nigeria. Higher temperatures also reduce transmission capabilities. Severe and lengthy dry spells are likely to affect Nigeria's forest cover, and so will pose problems for fuel wood supply. Excessive drought will also lead to reductions in water volume, which also reduces hydroelectric capacity.

Heavy winds and waves, heavy precipitation, and shoreline erosion—from fierce storms and storm surge—will make it more difficult for the fossil fuel extraction industry. Oil and gas extraction infrastructures will be lost. Extreme weather events such as windstorms, severe and excessive rainstorms, floods and tornadoes (which can topple transmission towers and hundreds of kilometres of power lines) will also increase the failure rate of electric utility transmission systems. The cost implications are mind-boggling. Yet demands for both space-cooling and space-heating can only increase, placing further dependence on the already burdened energy industry.

Many industries are vulnerable to climate change (construction, transportation operations and infrastructure, energy transportation and transmission, offshore oil and gas, thermal power generation, and tourism and recreation, to name a few. There are also industries in Nigeria dependent on climate-sensitive resources; industries tied to agriculture and renewable energies, for example. All are vulnerable.

Industries that aren't affected directly by climate change will be affected indirectly. Potential impacts will depend on a number of factors, including the geographic location of such industries. For example, industries located in the coastal zone will suffer from sea-level rise and flooding. Significant sea-level rise will virtually eradicate the beach-based tourism and recreation industries, and disrupt oil and gas exploration and extraction activities in the region. Industries located in the northern dry belt will be exposed to the effects of warmer climate on water supplies that make process cooling and environmental processes more difficult and unduly expensive. This belt is equally prone to occasional devastating thunderstorms, floods and windstorms that can destroy industrial infrastructure. When that happens, industry activity ceases altogether and costs are incurred for expensive repairs to damaged facilities.

Industries that rely on climate-dependent material (such as agriculture) become vulnerable when that material is moderately or severely damaged due to climate change. Harvest failure, for example, would directly affect the fruit juice manufacturing and food-processing industries. Other industries affected by climate change will have to adapt or fold. The telecommunications industry, for example, is affected by heavy storms that fell cables. Sales slump under such circumstances and can seriously affect the industry as a result.

Industries such as construction, housing, transportation, energy generation and distribution, are all affected by extreme weather conditions. Increased and higher rainfall days will damage roads and increase road maintenance costs. Traffic accidents nationwide will also be expected to rise as this impact increases. On the other hand, excessive heat will cause serious problems to the nation's roads infrastructure from softening asphalt and exploding or buckling concrete roads, warped railroad rails, airport closures due to lack of "lift" in extremely hot air conditions, and increased mechanical failures in automobiles and trucks. Adverse weather conditions have equally been known to cause flight delays, flight cancellations, and flight re-routing, with attendant heavy financial losses to the airline industry.

Financial services—which comprise private and public institutions that offer insurance, banking and asset management services—will be affected, especially the property insurance industry which would be the most vulnerable to the effects of climate change since it is already vulnerable to extreme weather events. Climate-induced events are likely to place undue stress on insurance markets. As it is, weather-related losses stress insurance companies to the point of bankruptcy by raising consumer prices, causing insurance coverage withdrawals for settlement claims, and increasing the demand for publicly-funded compensation and relief. More uncertainty in the frequency, intensity and regional distribution of weather-related losses will merely increase the

vulnerability of the insurance sector. Tourism and leisure industries and associated businesses will also be adversely affected by climate change, as will the banking industry.

## How do humans add to the problem?

Human activity contributes to increasing Climate Change. Either through lack of care for the environment (see Fact Sheet #1, human settlements; Fact Sheet #2 on water resources; and Fact Sheet #5 on marine and coastal ecosystems), the use of water-based industries and reliance on firewood (see Fact Sheet #1 on human settlements), the widespread use of gas-flaring practices, and forestry and agricultural practices (see Fact Sheet #4), both urban and rural populations contribute to environmental instability, loss of bio-diversity, environmental decay, and water/air/environmental pollution.

## What can we do about it?

There are various strategies that can be adopted if not to prevent, then at least to reduce the ill effects of Climate Change. Buildings can be designed for increased resilience and flexibility to climate change (with provision made for reduced cooling and lighting demand elements) if clients and contractors in various areas of engineering works incorporate these two elements into their prescription and design concepts. It will ultimately be less costly, for example, to design and build oversized flood control elements in the beginning, than to rebuild and expand their capacity at a later period. More energy-efficient consumer goods (such as motor vehicles, space heating/cooling gadgets) can be introduced. Property development in high-risk areas, such as flood plains, hillsides and shore lines, could be restricted under effective zoning and property development control laws. Economic activity, especially in Nigeria's oil and gas-dependent economy, could be diversified in light of the possible decline of the oil market and an international shift to greener energy sources occurs.

Timely engineering works that protect shorelines, roads, coastal infrastructure, could be undertaken. An Instituting strict compliance to environmental management laws at all levels of society could be put into place. But probably most important is to educate the Nigerian public on climate change and how it will affect all of human activity.

## 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.

But there are other obstacles, too. Many industries just don't want to be bothered with the costly adaptation strategies that being environmentally-friendly brings. This is short term thinking. And the fact that government does

not set an example and often shows an insensitivity to climate change is no encouragement for industries to adopt their own climate change strategies. There is a dearth of public policies that target adaptation, and those that do exist are inadequate.

### Why should we concern ourselves?

All economic activity is affected by climate change, as is our quality of life. It is obvious that unless we concern ourselves now, it will be too late to help Nigerian society to

take preventative measures and we will end up being ill-equipped to deal with our new reality. The scientific community must get involved in studying climate change and forecasting weather, and then transmitting this information to all sectors of Nigerian society and economy so that these sectors can adapt and be ready to meet a very different future than the present. And the Nigerian government must adopt strategies and policies now that will encourage industries to adapt to Climate Change to everyone's benefit.