Climate change adaptation is increasingly becoming an area of growing interest and engagement for many developing countries that unfortunately bear the brunt of an overheating planet caused by developed countries. The uncertain effects of a changing climate on Nigeria’s economy pose significant setbacks for meeting development targets like Nigeria’s aspiration to be among the twenty best performing economies of the world by the year 2020 [Vision 20:20:20] and achievement of the Millennium Development Goals.

Typical of most developing countries, Nigeria’s 167 million people rely heavily on their environment as well as the natural resource base for their livelihood. The fact that Africa’s most populous country runs dangerously on a mono-product economy oiled by cheap hydrocarbon deposits, underscores this heavy dependence on natural resources. Climate change-induced losses and the unsustainable use of these invaluable resources appear to be a malignant problem that has elevated itself to a real development challenge in Nigeria. It is not difficult to see that Nigeria’s climate security vulnerability lies predominantly along the coastal, littoral states of the south and the northern frontline states as a result of a combination of high physical exposure as well as low household and community resilience. Poor adaptive responses to growing shifts in temperature, rainfall, storms, and sea levels could help fuel violent conflict in some areas of the country due to shortages of resources.

Climate Adaption Strategies for Nigeria

- Marshall the health care system
- Adopt appropriate water management strategies
- Phase in weather adapted agriculture
- Develop climate ready housing stock
- Encourage insurance programs to help share and mitigate the risks
- Invest weather prediction and response technology
- Develop a more resilient, local economy
- Rally and coordinate government ministries
such as land and water which breeds negative secondary impacts such as more sickness, hunger, and joblessness, which in turn flings the doors to conflict and social chaos wide open. These problems are further compounded by a lack of institutional, legislative and fiscal capacity for effective management of natural resources and stability of the ecosystem; leading to reduced farm productivity, increased work load particularly on women, and a dislocated rural economy. Mitigation and adaptation are both necessary to alleviate the impacts of a changing global climate on our local communities and national economy. This article describes a set of adaptive actions that would give Nigeria an edge in the fight for survival in an overheating planet.

**Marshall The Health Care System**

Hotter global temperatures will lead to the spread of more infectious diseases such as malaria and an increase in food-borne diseases. Quality information and robust enlightenment campaigns will help people adapt before any disaster, and after it, by aiding recovery from harm. This will require stakeholders in Nigeria’s public health to be empowered to come up with creative and innovative ways to deliver drugs to the most remote of places in the country as well as deliver preventative and precautionary information. These enlightenment campaigns on preventive and defensive medical practices should be taken to the grass roots in local dialects using community radio and General System for Mobile communication [GSM] platforms. The Nigerian Medical Association and the ministry of health at the federal, state and local government should be empowered both technically and financially to take up emerging climate change induced health challenges.

**Adopt Appropriate Water Management Strategies**

Water resources will likely come under intense pressure in a warming climate. Harsher and more wide-spread droughts coupled with the rising concentration of salt in ground water sources from rising sea levels will lead to stress on already fragile farming communities. Changing weather patterns will also increase flood risk along waterways. Adaptation along this path will require huge investments in desalination technology, increased gray water use and rainwater harvesting for crops and everyday human uses other than drinking, and flood control mechanisms to protect communities and crops from overflowing rivers. Adaptation efforts should also focus on how the infrastructure can be designed to simultaneously manage water for hydropower, agriculture and human consumption to further scale up the environmental and economic development of communities. The challenge remains how these strategies can be affordable made available in a struggling economy.
Phase in Weather Indexed Agriculture
The agricultural sector is perhaps where sustained attention should be concentrated for obvious reasons of maintaining food security. High temperatures usually lead to droughts or more rainfall as well as cut annual crop productivity due to longer or shorter crop seasons. Farmers will need to be taught how to adapt their crops to a climate rife with both drought and flooding. Farmers that grow crops on risk-prone lands will need seeds that can withstand higher temperatures, more or less water, and fluctuating crop seasons. Efficient irrigation systems can help farmers in affected regions cope with the uncertainty that comes with climate change.

Develop Climate Resilient Housing Projects
The housing and construction industry must recognize its dual role of helping people cope with climate change as well as developing sustainable and efficient building practices in order to prevent environmental degradation. There is need to build the capacity of the construction industry to be able to step up to these critical challenges. The ministry of housing and urban development should take the lead in mobilizing the stakeholder groups to come out with innovative design models that city development control authorities could rely on to encourage, model and monitor new housing projects. Climate adaptation suggests building homes on stilts, constructing barriers around natural and artificial water bodies in populated regions and providing local or on-site energy generation technologies.

Encourage Insurance Programs To Mitigate Risk
The insurance industry is already saddled with the biggest responsibility as the costs of climate change often accrue directly to them. There is an opportunity for them to leverage their position to help spread the risk of extreme weather events by encouraging adaptation behaviors through the construction of new policy clauses. These measures would come at a cost to insurance buyers, but taking action today could stave off greater losses that owners would otherwise incur from infrastructure and asset damage in the future. For instance, insurance companies covering property development in coastal areas could assess the potential for sea-level rise, increased storm severity, flooding, and other climate change impacts on their clients and incorporate appropriate measures in their policy document. The National Insurance commission [NAICOM] will need to understand these issues before they can reach out to other stakeholders in the industry. NAICOM and other stakeholders in the insurance industry must be made to understand that it is in their best interest to be more proactive and see how they can protect the entire insurance industry from the envisaged shocks of the impacts of climate change.
Improve Weather Prediction Technology
We cannot run away from extreme weather conditions occasioned by climate change. Massive floods and hurricanes will become more common because of the warming of the earth. Government institutions like the Nigerian Meteorological Agency that have hitherto limited their operational jurisdiction to mere weather forecasting, should invest in technologies to enable more accurate predictions and warning systems. There is also need for accurate environmental data, particularly from sensors located in the soil, ocean, atmosphere, flood zones and arid, drought-stricken lands. It will be important to track the changes in order to have timely and quality information that will assist disaster aversion and emergency management strategies to minimize losses. Financial resources from the Ecological Funds Office, domiciled in the ministry of environment, would need to be deployed towards acquiring these innovative weather monitoring technologies.

Develop A Resilient, Localized Economy
Perhaps the most powerful response to climate change would be the development of a resilient, local economy. This is particularly true because most of the projected future global economic growth is set to take place in developing countries. Africa is well positioned to participate in that growth if we do not allow climate change impacts to wash away our potential gains. Being part of the “Business As Usual”, currently distressed, global economy that divorces the environment from the economy poses a risk of devolving into a social and economic crisis such as the one currently ravaging Somalia!

Nigeria seriously needs to look inwards and apply some out-of-the-box adaptation initiatives that have multi-dimensional positive implications for her economy as well as the health of her citizens and global environment. For example, Africans especially Nigerians, have adopted many western conventions that are not only out of alignment with our culture and climate, but that divest our country of local economic opportunities. Suits and coats make sense in colder climates but not in Nigeria where temperatures average 40 degrees Celsius! This vestige of colonial days not only makes us uncomfortable, but requires importing products that we could easily produce in country with local employment, using local resources while at the same time maintaining our national identity. Think of the local and global environmental benefits if the Nigerian government encourages massive switch to our locally made apparels as an adaptation measure to promote public health of her citizens in a changing climate! It appears to me that much of the adaptation work that needs to be done would concentrate on “reforming” the psyche of our people to be able to accept and embrace new ways of life in tune with the emerging realities of our changing climate! Nigeria, as the undisputed giant of Africa, needs to set shining examples for other developing countries in the tropics to emulate.

Rally and Coordinate Government Ministries
Ultimately the government will need to play a pivotal role in adaptation by articulating a national framework driven by the climate change commission. This framework will require
leveraging the critical ministries, agencies and parastatals of government like the National Emergency Management Authority [NEMA], Ministry of Health, Nigerian Metrological Agency, Ministry of Agriculture, Ministry of Water Resources, Ministry of Housing & Urban Development, National Insurance Commission, Institute for Peace & Conflict Resolution and the Ministry of Niger Delta Affairs to build capacity in conflict management, work through coordinated, robust national mechanisms to address climate induced security challenges as well as ensure transparent management and allocation of interventionist resources. Climate change adaptation in Nigeria must be approached from the standpoint of necessity in the context of sustainable development with greater emphasis on the generally accepted principle that economic empowerment, social development and poverty eradication constitute the first and overriding priorities of a developing country like Nigeria.

**Current Governmental Position**

The Nigerian government, just like governments of other developing countries, continues to struggle to maintain social services to meet the needs of an increasingly diverse and growing population amidst an anti-tax culture. Pursuing sustainable development, just like implementing climate change adaptation, requires political will at the highest level. Thus far, official responses have been weak and not much progress has been made on the part of the Nigerian federal government. The way out is a central oversight body that will coordinate research and policy response, harmonize roles for sister agencies, and aggressively pursue implementation master plans in a seamless collaborative partnership with the Annex 1 countries and the UN climate change response organizations. The good news is that the out gone sixth national assembly of the country’s parliament courageously passed the Nigerian Climate Change Commission Bill which currently awaits President Jonathan’s ink to transform it from a mere paper to a “toothful bulldog” in the fight against our greatest impediment to development-climate change. Nigeria’s Climate Change Commission, when fully operational, would be the very first in Africa and the country must be commended for this bold stride.

**Conclusion**

Mainstreaming Climate change adaptation into Nigeria’s economic blueprints and development master plans is an important strategic action at this stage of our development because emergency preparedness guarantees effective contingency plans to protect citizens, property and the environment. Resources should be invested and concentrated on developing specific adaptation measures that are peculiar to Nigeria as a country, with a focus on the ones that correspond to our most urgent and immediate needs while aligning and leveraging numerous international initiatives and financing mechanisms aimed at assisting countries with climate change adaptation.

As the next United Nations Conference on Sustainable Development aptly dubbed “Rio+20” opens up this June in Rio de Janeiro, it is apparent that the fight to limit climate change and global warming to easily tolerated levels is over. Nigeria and the rest of the
developing countries should focus on the reality of adapting to climate change by finding ways to live with overflowing sea levels, scarcer drinking water, higher peak temperatures, depleting species and agriculture altering weather patterns. Proactive governments are beginning to realize that, in the long term, climate change adaptation needs to be supported by an integrated, cross cutting policy approach. In view of the prevailing attention and priority given to climate change mitigation over adaptation in the last two decades, the battle cry of Nigeria and the rest of Africa in the next few years should be ADAPTATION, ADAPTATION, and ADAPTATION!!!

About Author: Stanley Ijeoma is Africa’s foremost Enviropreneur and one of only two Africans on the Board of World Council for Renewable Energy [WCRE]. He was one of the pioneers of the Lighting Africa Initiative of the World Bank/IFC. In 2010, Stanley was invited by the Welsh Assembly Government to lead an elite group of 15 budding African Enviropreneurs from 6 African countries on a month long field trip to Wales for the UNIDO sponsored “African Environmental Responsibility & Renewable Energy for Sustainable Development Initiative”- a capacity building and knowledge exchange platform supervised by Bangor University, UK. He is currently CEO, Schrodinger Limited; a climate change business & economic impact consultancy firm based in Abuja.