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Review

Climate change, global warming and threats to Nigerian Vision 20:2020: A sustainability framework

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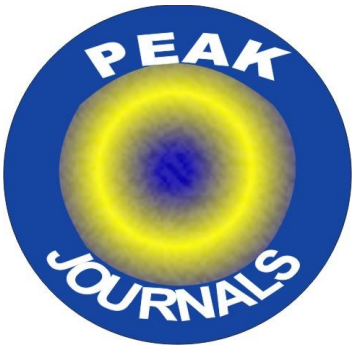
Given the country's considerable resource endowment and coastal location, there are potentials for strong growth and development. Yet, little of these potentials have only been realised; and the effects of global warming and climate change are ravaging. It is in the light of these that this work is looking into the challenges of global warming and climate change *vis a vis* sustainable development in Nigeria and put forward a framework for sustainability of social and economic sectors. The work is based on both primary and secondary sources of data and information. Nigeria is excellent in policy formulation and envisioning of lofty ideas towards sustainable growth and development. These have resulted into a number of organs, agencies, programmes and others of governments, government parastatals and agencies. But global warming, climate change, and lack of political wills, indiscipline and unpatriotic tendencies for implementation remains abacus and defy to sustainability. Long term priority towards mitigating the effects of climate change and global warming and the overall consequences on the environment of man may include but not necessarily limited to phasing out fossil fuel electricity, evolving and deploying low-carbon and zero-carbon technologies, improving energy efficiency, greening transportation, reviving up renewable, ensuring sustainable development, managing forests and agriculture, and exploring nuclear power. Agricultural sector must be encouraged and supported far more than the aspiration of vision 2020; and the sector may not have to diversify more than vision 20:2020 anticipated. Irrigation must be massive particularly in the dry north to counter the effects of rising temperature on rain-fed yields.

Key words: Nigeria potentials, vision 20:2020, climate change, threats, sustainability.



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INTRODUCTION

The economic potential of the country is well recognized and it has been publicly discussed (Okonjo-Iweala, 2013; Bell and Morse, 2008). It is the biggest economy in West African sub region; and the nation is often referred to as giant of Africa (Itua, 2011; Amayah, 2003). Given the considerable resource endowment and coastal location, there are potentials for strong growth and development (Bell and Morse, 2008; Itua, 2011; Onyekakeya, 2011). Yet very little of these potentials were realized (Okonjo-Iweala and Osafo-Kwako, 2007; Adams, 2006; Bell and Morse, 2008; Okonjo-Iweala, 2013). Previous efforts at planning and visioning were not sustained. The histories of economic stagnation, declining welfare and social instability, have undermined development for most of the past 30 years and over. But in recent years, the experienced growth turn around and conditions seem right for launching onto a path of sustained and rapid growth, justifying its ranking amongst the nations "seriously aspiring to develop" (Hasna, 2009). These are the countries identified by Goldman (2012) to have the potential for attaining global competitiveness based on their economic and demographic settings and the foundation for reforms already laid.

The immediate past administration declared the intention to pursue the vision of placing the nation among the 20 largest economies in the world by the year 2020

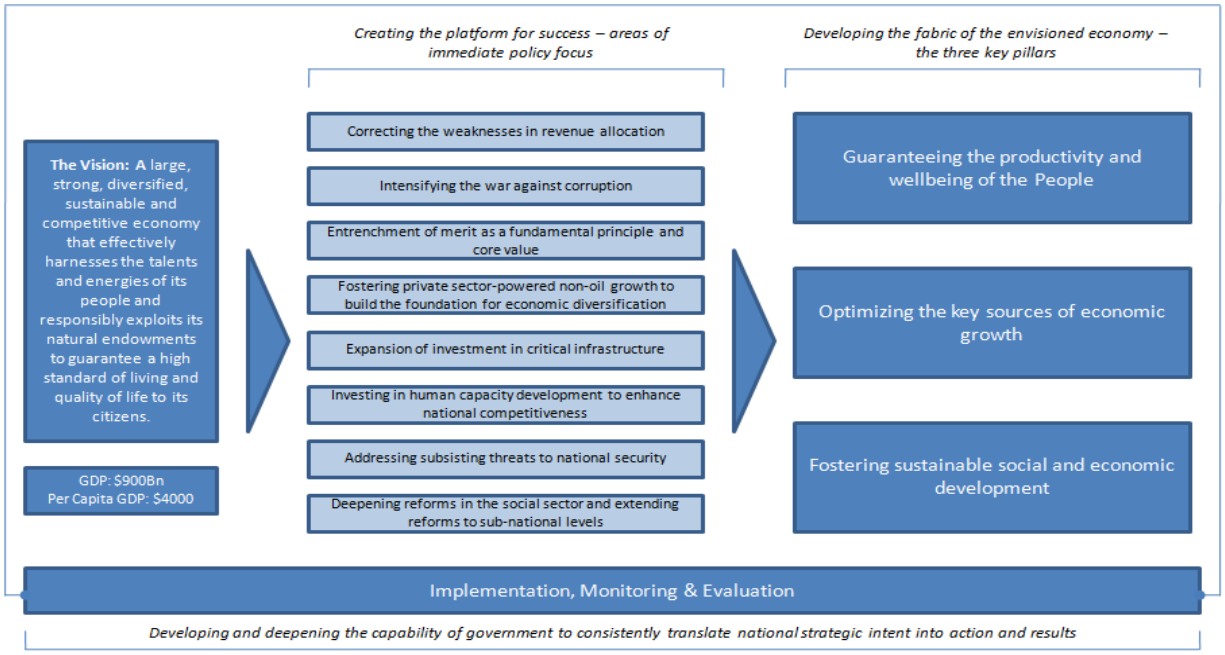

Figure 1. Fabric of the Envisioned Nigeria's Economy. Source: Nigeria's Vision 20:2020 (2009).

and the current administration is committed to the attainment of this vision saying:

> "By 2020 Nigeria will be one of the 20 largest economies in the world, able to consolidate its leadership role in Africa and establish itself as a significant player in the global economic and political arena".

This was recognized, buttressed, revised and enhanced to accentuate the commitment of the Nigeria Vision 2020 agencies when it reiterates that:

> "By 2020, Nigeria will have a large, strong, diversified, sustainable and competitive economy that will effectively harness the talents and energies of its people and responsibly exploits its natural endowments to guarantee a high standard of living and quality of life to its citizens". (Nigeria's Vision 20:2020, 2009).

The strategy is anchored upon three overarching thrusts as road map for economic transformation and towards realizing the vision 20:2020 (Figures 1 and 2; Nigeria Vision 20:2020, 2009a):

1. Creating the platform for success by urgently and immediately addressing the most debilitating constraints to Nigeria's growth and competitiveness.
2. Forging ahead with diligence and focus in developing the fabric of the envisioned economy by:

(a) Aggressively pursuing a structural transformation from a mono-product economy to a diversified, industrialized economy.
(b) Investing to transform the Nigerian people into catalysts for growth and national renewal, and a lasting source of comparative advantage.
(c) Investing to create an environment that enables the co-existence of growth and development on an enduring and sustainable basis.
(d) Developing and deepening the capability of government to consistently translate national strategic intent into action and results by instituting evidence-based decision making in public policy space.

The three pillars of Vision 20:2020 represent the building blocks of the future that Nigerians desire. The key strategic objectives of these pillars are explicit (Figure 2). The Vision 20:2020 is anchored on the recognition that the people are the most essential assets of any nation (World Bank, 2013a; United Nations Industrial Development Organisation, 2004). With a teeming and vibrant population of over 140 million people (National Population Commission, 2006), she represents one of the largest markets in the developing world. Transforming people into catalysts for growth and national renewal, and a lasting source of comparative advantage is the essence of the pillars of Vision 20:2020 (Federal Republic of Nigeria, 2004; Nigeria Vision 20:2020, 2009a). Given the history of wide income inequality, which is manifested in large-scale poverty, unemployment and poor access to healthcare, the disconnection between economic growth and human development has to be addressed to increase the well-being and ultimately labour productivity of people.

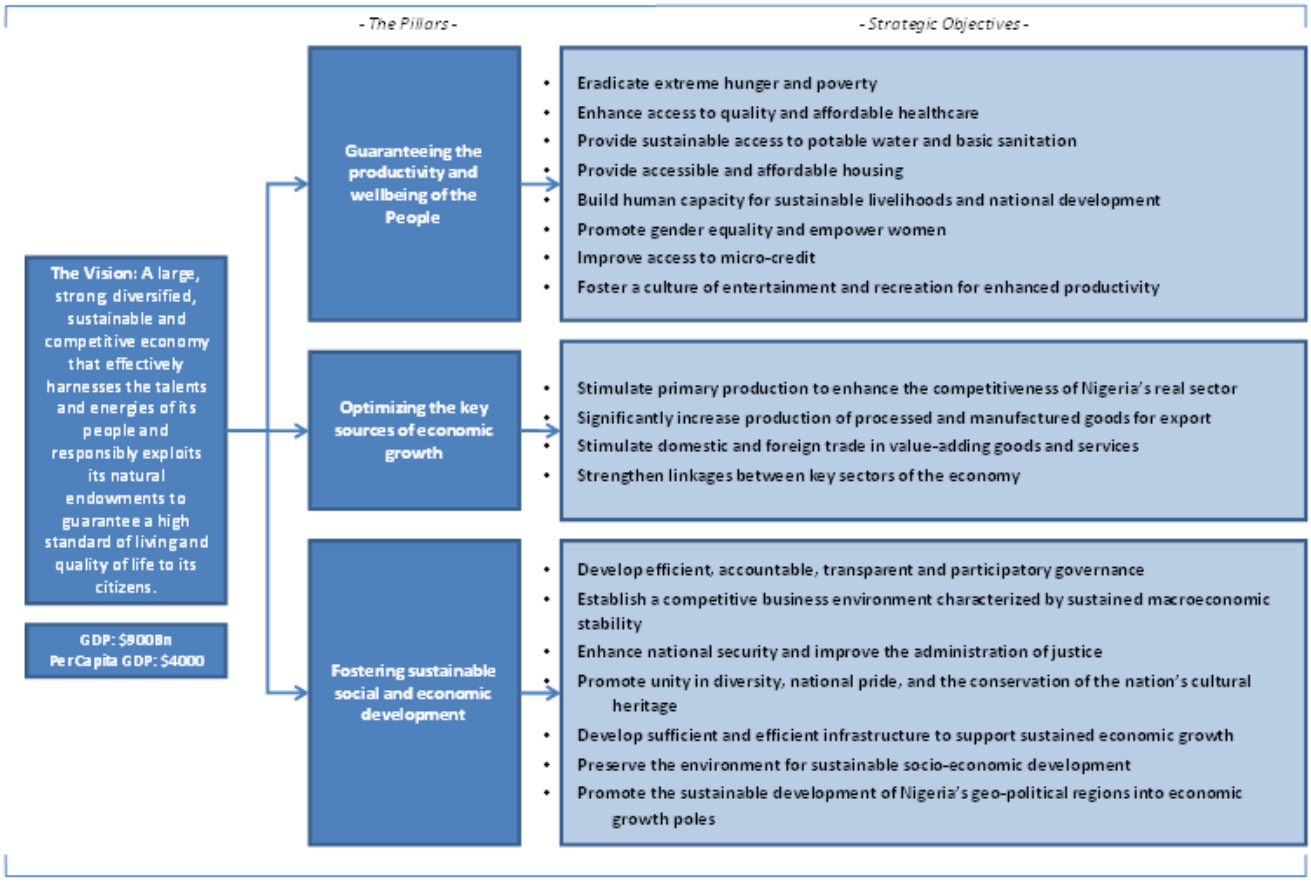

Figure 2. The Three Pillars of Nigeria's Vision 20:2020. Source: Nigeria's Vision 20:2020 (2009).

Currently, the country ranks 158 out of 177 economies on the Human Development Index (Human Development Report, 2008), despite her rich cultural endowment and abundant human and natural resources; Vision 20:2020 recognises the criticality of attaining the 2015 Millennium Development Goals and improving the wellbeing of the populace, especially the under-privileged, including women and children. To attain people-oriented goals, the Vision 20:2020 and its organs seek amongst others to:

(a) Adopt a decentralized approach to the development and implementation of pro-poor programmes.
(b) Reform the educational system in conjunction with states and local governments to enforce completion of the mandatory nine-year Universal Basic Education programme, while building new capacity in technical and vocational education.
(c) Support small scale and rural farmers while sustaining the renewed national focus on commercial agriculture.
(d) Encourage population control measures to reduce the massive demand-pull on existing resources.
(e) Expand and enhance the primary health care system to improve access to health for all citizens while improving the national health database as a tool for proactive health delivery planning.
(f) Improve the availability, affordability, and transferability of housing units by developing a new land administration and land title transfer system.
(g) Develop an effective primary housing finance system, and facilitate linkage of that market to the capital market to provide long-term mortgage finance.

Towards realisation of these, a Business Support Group was initiated by the Secretariat of the National Steering Committee of Vision 2020, to engender Private Sector support to:

(1) Generate publicity, public opinion and national buy-in.
(2) Mobilize resources from the private sector.
(3) Organize fund raising activities to support NV2020.
(4) Provide technical and financial support (Mutallab, 2011).

The Vision20:2020 and its various organs and agencies have been at work to achieve and actualise its erstwhile and potential imminent objectives and goals in recognition of the Millennium Development Goals and the wellbeing of the populace (Appendices 1 and 2 (A and B).

But, there seem to be unusual defies on the path of growth and development in every ramification.

In a public outing, a Minister of the Federal Republic of Nigeria avers that Nigerian economy has experienced high growth rate of between 5 and 8% in the past five years; and that there are also hope for growth and development in all sectors of the economy (Okonjo-Iweala, 2013). But, Nwachukwu (2013) quoting the World Bank (2013b) remarked that development aspirations of joining the leagues of twenty largest global economies by year 2020 could fail if government and the citizenry "fail to take concise actions to combat the impact of imminent global warming and climate change related issues". The World Bank (2013a), like (Scott-Cato, 2009; Ogunnowo and Aderogba, 2008; Ayoade, 2003; Hegerl et al., 2007; Environmental Protection Agency, 2010; Aderogba, 2011; Aderogba and Afelumo, 2008) list some of these challenges posed by the climate variability and global warming to include:

1. Long term reduction in crop yields of 20-30%.
2. Declining productivity of livestock and increasing attention to poultry and birds.
3. Increase in food importation of which rice alone is about 40% in the developing nations including Nigeria.
4. Worsening prospect for food security as it is particularly in the drier north and south west Nigeria where population is soaring.
5. Persistent and preponderance floods at every raining season across nations.
6. Long term decline in Gross Domestic Product (GDP) of up to 4.5% for nations and regions.

It is in the light of these that the work is looking into the challenges of global warming and climate change on Nigeria and Nigerians; and put forward a framework for sustainability of social and economic sectors. The work is based on both primary and secondary sources of data and information. Emphasis is on climate elements and physical environment of man.

THE WORLD GLOBAL WARMING AND CLIMATE CHANGE

Dow and Dowing (2007) aver that the world is experiencing increasingly uncommon weather, and the implications for day-to-day life are becoming more apparent. They also went further to say that naturalists' observations of animal and plant behaviours suggest that ecosystems are already being forced to adjust. The Inter-governmental Panel on Climate Change (IPCC) (2007) started with "high confidence" that recent warming has affected terrestrial, marine and fresh water biological systems, glaciers and rivers. Based on an analysis of over 29,000 data sets, contained in 75 studies from around the world, it concludes that over 90% of the observed changes were consistent with climate change (IPCC, 2007). In their summary of "sign of change" of trends and events that are consistent with theories of climate change (1990s-April 2007), they assert that:

> "A single extreme weather event or change in the natural environment does not prove that humans are changing the climate …. the proven physical science, the history of recent observations, and the consistency in model assessments all support only one explanation: the emission of greenhouse gases by human activity is causing profound changes to the climate system and to the world we live in" (Dow and Dowing, 2007).

Cox et al. (2000), IPCC (2007), Millennium Ecosystem Assessment (2005), Dow and Dowing (2007), Aderogba and Afelumo (2008), Hasna (2009), National Research Council (2010) and World Bank (2013a) identified what is across the globe, changing animal and plant behaviour; extreme heat and or drought; precipitation and wind; and local temperature rise as follows:

1. Arctic sea ice is declining by around 8% each decade, reducing polar bears' hunting season and resulting in poorer health and reproductive success.
2. Scientists have detected a genetic adaptation to warmer temperature in a type of North American mosquito. It is entering its winter dormancy 9 days later than it did 30 years ago; that is, prolonging the period during which it can spread disease.
3. Trees have been noticed to be flowering at an average of 4.5 days earlier in the temperate regions like in Washington DC.
4. About 35 European non-migratory butterfly species were studied, 22 shifted their ranges northward by 35-240 km during the 20th century, and only one shifted southward.
5. Drought conditions in southern Brazil in 2006 led to a 10% decrease in soya bean yield - Brazilian drought.
6. About 35,000 deaths were related to heat in France, Italy, Netherlands, Portugal, Spain and United Kingdom in 2003 alone; the European heatwave.
7. In 2005, Spain experienced the driest winter and early spring since records began in 1947; the Spanish drought.
8. More than 1,500 fatalities in India and Pakistan in 2003 were caused by temperatures over 50°C; the India heat wave.
9. In 2006, at least 11 million people were affected by food shortages caused by drought in Burundi, Djibouti, Eritrea, Ethiopia, Kenya, Somalia and Tanzania, Horn of Africa.
10. In Australia, abnormal low or absent rainfall in the decade up to 2007 severely affected cattle farmers and led to cities imposing water restrictions. Arable farmers were warned, in April, of the possibility of restrictions on

Table 1. Major sources of pollutants (Unclassified).

Gasoline/ diesel generators	Excavations and quarrying
Bio waste	Construction
Cooking activities (kitchen; commercial and domestic)	Reconstruction
Incineration	Renovation
Cleaning activities	Animal routes (animal rearing)
Combustion activities	Bush burning
Vehicular emission	Forest fire
Aviation	Thunder
Daily activities	Playing/sport fields
Automobile repair works	Industrial ethanol
Hospital ethanol	Hotel /restaurant/bar/brothel
Process plant discharge	Local crafts
Demolition	Others (specified)

water for irrigation.
11. The Great Barrier Reef and coral reefs elsewhere experienced the most severe bleaching ever recorded in 1998.
12. Heavy rains in Nigeria in 1980, 2010, 2011 and 2012 severally led to great floods that claimed hundreds of lives, rendered thousands of people homeless, washed away hectares of agricultural land and crops and properties worth millions of Naira as similar heavy rain led to severe flooding and landslide in June 2006, affecting 17 million people in southern China.
13. Heavy rain and flooding in parts of northern India, Nepal and Bangladesh in 2004 left 1,800 dead and millions stranded; Asian Summer monsoon.
14. In February 2004, New Zealand experienced severe floods, caused loss of life and property and agricultural land.
15. In 2006, the Horn of Africa experienced the worst floods in 50 years and they claimed about 600 lives in Ethiopia and affected hundreds of thousands of people in Somalia.
16. Tens of thousands of people were left homeless and over 160 killed in 2004 by mud slides and floods in Brazil.
17. The first hurricane ever observed in the South Atlantic hit Brazil in 2004; the South Atlantic hurricane.
18. Heavy rain and flooding in early 2006 affected around 17,500 people in Bolivia.
19. The 2005 Atlantic hurricane season, broke records for the frequency of storms, and for the number of category 5 hurricane, though this remains points of debate whether they are signs of climate change.
20. In Tropical Andes, there has been a widespread retreat of mountain glaciers during the 20th century.
21. In 2002, 3,250km^2 of ice shelf broke away from the Atlantic peninsula. This was followed by an unexpected rapid increase in the rate of glacier flow and ice sheet retreat; Larsen B ice.
22. European autumn – in many countries North of Alps, autumn 2006 was the warmest since official measurement began. Records for Central England dates back to 1659.
23. Siberian melt - Average temperatures in the West have risen by 3°C since the 1960's leading to melting of the permafrost.
24. Increasing temperature, rainfall, and glacier melt rates are consistent with expectations of climate change in North-West China.

Notwithstanding the preponderance floods that killed thousands of people, rendered millions homeless and washed away thousands of hectares of agricultural land and consequently result in lack of food in the last two decades, there have been extreme heat, inclement warmth, acid rain, excessive dust in the air, resulting in changes in planting seasons and shortage of food in Nigeria (Ayoade, 2003; Ojudgo, 2009; Aderogba and Afelumo, 2008; Aderogba, 2011). These are further highlighted in the next section.

GLOBAL WARNING AND CLIMATE THREATS IN NIGERIA

In Nigeria, developments and growth of cities and towns and related activities such as industrialization, transportation and automobiles, natural phenomena, agricultural practices, construction and reconstructions; and others have resulted in pollution of the air, water and land in both rural and urban settings (Tables 1 and 2). Emission of air pollutants (gasses and particulates) by weight have been increasing over the years.

Averagely, total estimated combustion in stationery sources, in ug/m^3 is 49.80; transportation and automobiles is 101.70; agriculture and industrial processes is 58.60; and miscellaneous is 48.50 (Table 2). Concentrations of particulates and SO_2 (ug/m^3) in a typical

Table 2. Estimated emission of air pollutants by weight per annum.

Components	Gases and particulates					
	Total	**SO_x**	**HC**	**NO_x**	**CO**	**Particulates**
Fuel combustion in stationary sources	49.80	25.50	0.8	11.10	2.80	9.60
Transportation and automobiles	101.70	0.90	18.7	10.40	68.80	2.90
Agriculture and industrial processes	58.60	12.40	6.8	5.60	15.80	18.00
Solid waste disposal	22.80	1.40	3.9	2.60	11.80	3.10
Miscellaneous	48.50	1.60	10.8	3.50	18.80	13.80
Total	**281.40**	**41.80**	**41.0**	**33.20**	**118.00**	**47.40**

Source: Federal Environmental Protection Agency; and Field Survey.

Table 3. Typical concentrations of particulates and SO_2 in Metropolitan Lagos.

Community	Particle concentration ug/m^3	SO_2 concentration ug/m^3
Amukoko	148	166
Ajegunle	144	201
Itire	127	158
Agege	138	148
Surelere	140	204
Ebute meta	132	142
Oshodi	151	310
Ikoyi	94	119
Yaba	139	211
Ikeja	154	281
Ketu	138	188
Maryland	126	169
Mushin	131	158
Egbeda	128	181
Isolo	129	171
Alapere	131	188
Lagos Island	108	129
Ajah	91	131
Shomolu	134	182
Victoria Island	98	128
Bariga	131	161
Average	**129.14**	**177.43**

Source: Field Survey/ Lagos State Environmental Protective Agency.

industrialized, commercialized and urbanized metropolis (Lagos) are considerably high (World Health Organization, 2005; Table 3). It is 129.14 and 177.43ug/m^3 respectively on the average.

The poor air qualities result in a number of ailments the symptoms of which are: sore throats, cough and constriction of the chest, headaches, eye irritation, nasal discharge, and others. The cases have been on the increase over the years. At the geographical center of the country, at the Federal Capital Territory, Abuja, hospital records of illness caused by poor air quality (2002-2009) is as shown in Figure 3. It is alarming and on the increase over the years: cases of cough increased from 501 in 2002 to 801 in 2009; and so also the other ailments.

SOURCE: Federal Medical Center, Abuja

However, the foregoing are results of drastic departure from the known environmental and weather elements and characteristic components of normal air at normal temperature and pressure: inclement warmth and acid rain are becoming obvious and frequent. Specifically, there are various symptoms and behaviours of man and

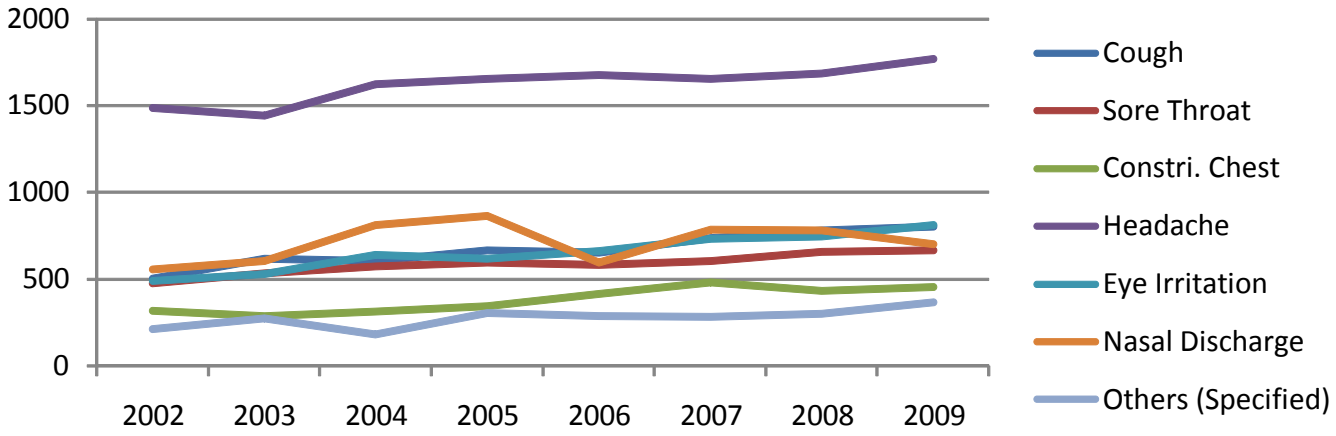

Figure 3. Hospital records of illness caused by poor air quality at Abuja (2002 – 2009).

other life forms exhibiting significant changes (Ojudgo, 2009; Hassan, 2010; Aderogba, 2011):

1. Animals and birds prefer to stay more under shades, look for and drink more water.
2. Human beings complain more about heat, drink more, and preferably cool drinks.
3. Umbrella and sunshades are becoming more popular and useful.
4. Residents request for more ventilations in their new buildings, and offices while old structures are being renovated to provide for better ventilations.
5. Though no electricity from national grids to effect cooling of houses and offices, residents were forced by circumstances to buy electricity generating plants and facilities to fan/cool their offices, houses and drinks.
6. There have been unbearable stifling humidity that often pervade the atmosphere for over a decade and the dense haze has been producing uncomfortable heat and dust in the months of dry seasons.
7. Both days and nights are extremely very hot and the temperature become inclement; this is particularly unbearable during hot seasons - December to April. The extreme inclement warmth in March/April of 2010 is what Lagos residents are yet to come to terms with.
8. Early rains are more acidic and turbid; wearing dull appearances.
9. Sachet water (*pure water*) is now very common and it is taken sporadically and frequently by travellers and traders at the parks, markets and business centres.
10. Children now play more with water than they do with sand.
11. Relatively, residents of urbanized centres now patronise beaches, (where there are any) restaurants and bars more often to cool off from the hot days and inclement warms of offices and homes.
12. More drinks, beer, stout, beverages, soft drinks, chocolates drinks and others are sold and consumed more than ever before.
13. Heat related ailments/diseases are reported more often in hospitals for children, adults and aged.
14. Some plant species are going into extinction and others are now emerging and aquatic ecosystems are assuming terrestrial attributes.

Adeyemo (2010) writes on Nigerian reservation/conservations; and in particular, that historians tell about a government reservation in Ibadan that was maintained actively in the colonial era"

> It was the original idea of the colonialists in the 1940s. It stretched from Queen Elizabeth Road to Adeoyo Agbadagbudu area. This area was designed to prevent desert encroachment and for the economic use of the wood, for example, as electric poles. The successive governments even encouraged the "plant a tree" campaign as a means to keep many areas green and to fight desert encroachment.... Igbo Agala has an exclusive attachment call Bower Tower from where one views the entire city. .... Bower Tower was named after the colonial administrator. It is estimated over. .... 80 years away. It was illegal to collect firewood from there as it was a reserved area. There were wardens, *asogba*, at the time whose jobs were to keep the forest free from wood poachers. .... Unfortunately, the forest has since lost its environmental appeals. Successive governments have downplayed the importance of conservation and neglected to look after one of Ibadan's antique treasures. .... is a far cry from what it was designed to be. It has been desecrated. .... There is a new policy whereby the land has been allocated for building of residential areas, social/club house and the new Olubadan of Ibadan's palace is being built in the green belt zone.

The Igbo Agala, as conceived, was to prevent flooding and erosion, and by extension, to conserve the trees, preserve the animals and serve as massive green area for the ancient city. With this, like most other reservation/conservation areas it is not only Ibadan, but the entire nation (and of course Africa) that has lost one of the environmental appeals and antique treasures. The environmental consequences are far more damaging, grievous and devastating.

Often, elevated levels of hydrogen ions (pH) caused by the emission of compounds of ammonia, carbon, nitrogen, and sulphur react with water molecules in the atmosphere to produce acid and acid rain. The most urbanised, industrialised and commercialised human settlement in Nigeria, Lagos experienced these for once as far as history can track of the metropolis. Though unconscious of the magnitude (World Bank, 2013b; Dow and Dowing, 2007), it is already a threat to lives and property. In the weeks of 28th March, 2010, there were threats of rain and there were frenzied outburst made by residents of Lagos Metropolis as they dash in different directions following the shower that fell in various parts of the metropolis - Ogba, Agege, Mafolukun, Oshodi, Ijesha, Mushin and a few other suburbs of the Metropolis in south western Nigeria. Within the few minutes of the light shower, all hell broke loose as people scampered from what they feared and earlier been announced as acid rain.

TOWARDS UTOPIAN VISION 20:2020

The three tiers of government could consider short term priority responses to build resilience to elements of both climate variability and future changes through actions to improve climate governance across sectors, research and extension in agriculture and hydro-meteorological systems; integration of climate factors into the design of irrigation and hydropower projects; and mainstreaming climate concerns into priority programmes an example of which is agricultural transformation agenda. As noted by the World Bank (2013b):

> "sustaining high pace of growth over a longer term implies that by 2035 Nigeria would increase electricity generation by a factor of 9, road freight transportation by a factor of 18, and private car ownership by a factor of 3.5 ….. domestic agricultural production would need to increase six fold to meet the food requirements of the growing population while decreasing dependency on food importations …. Federal Government priority …. There are many ways that Nigeria can achieve the Vision 20:2020 development objectives for 2020 and beyond, but with up to 32% lower carbon emissions."

Therefore, long term priority towards mitigating the effects of global warming and climate change and the overall consequences on the environment of man may include but not necessarily limited to some or all of the followings if properly articulated and applied by:

1. Phasing out fossil fuel electricity: Drastic reduction in the use of fossil fuels, especially carbon-intensive coal. There are many ways to start; by phasing out coal-burning power plants, initiating a phased shutdown of existing coal plants starting with the oldest and dirtiest, and capturing and storing carbon emissions from power plants.
2. Evolving and deploying low-carbon and zero-carbon technologies: Research on battery technology, new materials for solar cells, harnessing energy from novel sources like bacteria and algae, and other innovative areas will provide significant breakthroughs.
3. Improving energy efficiency: The energy used to power, heat, and cool homes, businesses, and industries is the largest source contributor to global warming. Energy efficiency technologies will allow less energy use to get the same or higher level of production, service, and comfort.
4. Greening transportation: There must be improvement in the efficiency (kilometre per litre) in all modes of transport, switching to low-carbon fuels, and reducing vehicle kilometres travelled through smart growth and more efficient mass transportation systems.
5. Reviving up renewables: Renewable energy sources such as solar, wind, geothermal and bioenergy are available around the globe. Renewable technologies can be embraced and deployed quickly; it will be cost-effective, and create jobs while reducing pollution.
6. Ensuring sustainable development: Different nations vary in their contributions to the problem of climate change and in their responsibilities and capacities to confront it. Any successful global compact on climate change in the third worlds like Nigeria must include financial assistance from developed countries to help make the transition to low-carbon development pathways and to help adapt to the impacts of climate change.
7. Managing forests and agriculture: Efforts should be made to fight global warming by reducing emissions from deforestation and forest degradation and by making production practices (for example, food) more sustainable.
8. Exploring nuclear power: An increased share of nuclear power in the energy mix will help reduce drastically global warming though the nation may have to special prepare for safety, health and environmental issues usually associated with it.

Nigeria is part of the world that is progressively gradually plagued by the global warming and climate change. There is gradual adaptability to the changes; but there may probably come the time when the changes may become unbearable and attainment of vision 2020 and MDGs may be hampered. Sustainability of the physical environment must be ensured, therefore:

1. Drastic and cogent measures must be taken to ensure electricity is readily available and cheaper for urban dwellers to enable them cool their houses, offices, indoor recreation centres and to prevent heat related diseases (such as stroke and measles) and for other uses, and above all processes and productions.
2. The design and construction of buildings for both commercial and residential purposes must take cognisance of inclement warmth.
3. Though the government have embarked on tree planting, this should be intensified, encouraged and supported by all tiers of governments, individuals, corporate bodies and philanthropies. The government could institute a programme to be titled “A family, a tree Project”, and in the same spirit, old abandoned forests must be resuscitated by replanting and replication.
4. Water is life, sanitation is dignity; there must be concerted efforts to make potable water readily available for cooking, bathing, washing, drinking, recreation and production processes; and for sanitation so as not to compound the inclement warmth.
5. Industrial, vehicular and domestic activities leading to air pollutants and pollutions, depleting ozone layer and also resulting in acid rain must be further comprehensively studied towards reduction from sources. The developed world is targeting zero emission; Nigeria should join the raise.
6. Following from above, Nigeria should pass a bill that will be very decisive on emission, and target zero emission by 2015.
7. The resources for environmental sustainability should be given very serious priority and in turn.
8. Environmental education should be given high priority in schools’ curricular and at the adult and non-formal levels of education.
9. Environmental Impact Assessment and certification of every project, be it government or non-governmental, must be carried out without prejudice.

There was an agreement that was reached between nine European nations and Canada during a meeting held in Ottawa in 1984 calling for reduction of Sulphur oxides by at least 30% within ten years. Similar agreement should be reached between the governments of Nigeria and those of other West African countries particularly the neighboring countries to adopt similar measures. Also, and with the immediate effect:
(a) There must be Environmental Impact Assessment of every human activity carried out, and certified by the appropriate government agencies, and Federal Government Environmental Protection Agency has a great role to play.
(b) Concerned city development authorities and estate developers in particular should not allow cropping, burning and grazing in the adjacent and nearby vacant lands around cities and towns.
(c) Campaign and incentives for shifting to efficient and high-energy laden fuels by government and government agencies is imperative.
(d) There must be Clean Air Act that must be passed into law. It will have far reaching effects on control of ozone depletion. Emission for automobiles will be drastically reduced. The real culprit in smog formation will also be substantially reduced.
(e) Behavioural changes in residents should be encouraged to reduce if not completely give-up burning of bush, grasses and incense during prayers, mosquito coils and others.
(f) Environmental education should become parts of syllabuses at every level of education in schools and colleges.

Certainly, adaptation is imperative. Every factor leading to adaptation will go beyond technical, political or economic to the socio-cultural and perpetual.

Therefore, there must be sufficient awareness through community heads, school programmes, environmental education in adult and non-formal education, and advertisements, campaigns, jingles on radio and television; newspaper and magazine publications and others should be used - all to be directed at influencing the behaviour of the citizens and others towards zero emission.

Global warming and climate change are not localized to Nigeria. There is no other nation or territory or region that Nigeria and Nigerians will migrate to and inhabit. The seriousness of global warming and climate change could be disturbing and drastically lead to unsustainable development. The situations must be nipped in the bud; and the governments and people of Nigeria must wake up to the responsibilities of challenging global warming and climate change.

Above all, governments must make effort to reduce the production of oxides and particulate into the atmosphere. Whatever could lead to acid rain must be prevented as the effects of acid rain can last for generations: the effects of pH level change can stimulate the continued leaching of undesirable chemicals into otherwise pristine water sources; killing of vulnerable insects and fishes; and blocking efforts to restore native life.

A number of international treaties, on the long range transport of atmospheric pollutants, have emerged and agreed, for example, in Sulphur Emission Reduction Protocol under the Convention on Long-Range Trans boundary Air Pollution. Government of Nigeria can be part of such bodies and their policies and programmes.

There are now emission trading. In the regulatory scheme, every current polluting facility is given, or may be purchased in an open market, an emission allowance for each unit of designated pollutant it emits. Operators can then install pollution control equipment, and sell portions of the emission allowance they no longer need for their own operations, thereby recovering some of the capital cost of their investment in such equipment. The intention will be to give operators economic incentives to install pollution controls.

DISCUSSION AND CONCLUSION

The paper has established that Nigeria is not an island. Environmental quality is getting deteriorated, exacerbated and excoriated. The impacts are gradually being experienced. The nation is fast growing and it will likely experience more industrial and other urban activities that will result in additional air pollution, poor air quality and thus facilitate warming that will be unsustainable. The challenges of depleting ozone layer, global warming and climate change for sustainable development will indirectly or directly aggravate the endemic problems of unemployment, kidnapping, AID, power failure, corruption, poor road network, religious and political violence, child labour, killings and rituals, pipeline vandalism, dilapidating economic system, unsecured educational system and others plaguing the nation if not quickly nip at the board and/or enthrone modality for adaptation by man, animals and plant species. Above all, Nigeria Vision 2020 will become a ruse.

Independent of the challenges of global warming and climate change, Nigeria is excellent at policy formulation and envisioning of lofty ideas towards sustainable growth and development. These have resulted into a number of organs, agencies, programmes and others of governments and government parastatals. But lack of political wills, indiscipline and un-patriotism for implementation remains an abacus and defy to sustainability. Though with some cautions, meticulous implementation/execution of the measures will drastically mitigate the effects of global warming and climate change for sustainability.

In conclusion, Vision 20:2020 should primarily focus on the platform of global sustainability practices and promote research and innovations aimed at creating sustainable environment that will reduce resource consumptions, combats environmental degradation and creates better environment for human living in human settlements through the reconciliation of the sustainability pillars.

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APPENDIX 1. Millennium development goals.

Goal 1. Eradicate extreme poverty and hunger.

Target 1. Halve, between 1990 and 2015, the proportion of people whose income is less than one dollar a day.
Target 2. Halve, between 1990 and 2015, the proportion of people who suffer from hunger.

Goal 2. Achieve universal primary education.

- Target 3. Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling
- Goal 3. Promote gender equality and empower women.

Target 4. Eliminate gender disparity in primary and secondary education, preferably by 2005, and to all levels of education not later than 2015.

- Goal 4. Reduce child mortality

Target 5. Reduce by two thirds, between 1990 and 2015, the under-five mortality rate

- Goal 5. Improve maternal health

Target 6. Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio

- Goal 6. Combat HIV/AIDS, malaria and other diseases

Target 7. Have halted by 2015 and begun to reverse the spread of HIV/AIDS
Target 8. Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases.

- Goal 7. Ensure environmental sustainability

Target 9. Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
Target 10. Halve by 2015 the proportion of people without sustainable access to safe drinking water
Target 11. By 2020 to have achieved a significant improvement in the lives of at least 100 million slum dwellers

- Goal 8. Develop a global partnership for development

Target 15. Deal comprehensively with the debt problems of developing countries through national and international measures in order to make debt sustainable in the long term
Target 18. In cooperation with the private sector, make available the benefits of new technologies, especially information and communications

Source: (United Nations, 2007).

Appendix 2A. List of the National Technical Working Groups (NTWGs).

1	Ageiculture and food security	16	Judiciary and the rule of Law
2	Business environment and competitiveness	17	Manufacturing
3	Corporate governance	18	Media and communications
4	Culture tourism and national re-orientation	19	Minerals and metals
5	Education	20	Niger Delta and regional development
6	Employment	21	Political system
7	Energy	22	Science, technology and innovation
8	Environment and sustainable development	23	Security
9	Finance	24	SME
10	Fpreign policy	25	Sports development
11	Governance	26	Trade and commerce
12	Health	27	Transport
13	Housing	28	Urban and rural development
14	Human development	29	Water and sanitation
15	ICT		

Appendix 2B. Abridged List of Special Interest Groups in Nigeria.

1	Civil service
2	Security
3	Traditional rulers
4	Media
5	Religious organizations
6	Judiciary
7	Legislature
8	Nigerians in Diaspora
9	Labour
10	Women
11	Nigerians with disability
12	Youths

Source: Nigeria Vision 20:2020. Abuja: The Presidency.