
CLIMATE AND CLIMATE CHANGE: MEETING THE CHALLENGES FOR A CARBON FREE WORLD

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Abstract

Climate change has attracted considerable attention in recent years because of complex ecological impact in different parts of the world. The problem is clearly an international one and international and regional cooperation and collaboration is desirable. The policies and actions aimed at combating climate change has been confronted with a lot of challenges such as poverty, politics, limited technological know-how, problems of policy implementation, knowledge of the environment etc. These challenges have affected the ability to adopt and mitigate the harmful effect of climate change. This paper examined these challenges and suggested ways of meeting the challenges for a carbon free world.

Keywords: Climate Change, Carbon-Free World, Climate Action

INTRODUCTION

The world is worried about the climate. The worry has increased in recent years partly because of extreme events which have affected many countries as a result of extreme weather conditions. From Stockholm convention 1972 to date, many local, national and international convention to preserve the natural environment from the actions of man have been conducted. But many nations still holds the view that if pollution meant development, they accept it whole heartedly. It is not surprising that the rate of pollution in many of these countries should parallel the increased pressure for environmental management and protection.

The scientific recording of temperature actually started in 1860 and since then studies have shown that global climate has experienced noticeable variations (IPCC 1996, Hengevald et al 2002). Climate change is a change which is attributable directly or indirectly to human activities that alter the composition of the global atmosphere and which are in addition to natural climate variability observed over a considerable time periods (IPCC 2001). The Biogeographical (natural process) and anthropogenic (human activities) are the two basic factors that causes climate change.

The ability to adopt and mitigate the harmful effect of climate change is constrained mainly by human factors like politics, poverty, limited technological know how, policy implementation and knowledge of the environment. The earth is our house and its future must not be compromised. This demands positive and realistic actions that balances human needs against the potentials that the environment has for meeting them. The nature of these challenges and actions that might be necessary now, on the basis of present knowledge on climate change is the mission of this paper.

CARBON DIOXIDE (CO₂) AND OTHER GREEN HOUSE GASES IN THE ATMOSPHERE, IMPLICATIONS TO CLIMATE CHANGE

Most economic activities involves using up energy and raw materials: this in turn, creates waste that the planet has to absorb. The observed temperature increase of the atmosphere is attributed to CO₂ and other green house gases released through human activities.

- The concentrations of carbon dioxide and other greenhouse gases in the atmosphere is continuously on the increases. This causes climate variations and associated impacts. All the gases produced through human activities circle in the atmosphere and aid in the depletion of ozone layer with resultant increase in global warming that causes climate change.
- Carbon dioxide (CO₂) is emitted to the atmosphere through both human activities and natural process. The main anthropogenic source of CO₂ emissions is the combustion of carbon-based fuels. Other net CO₂ emissions from the terrestrial biota, including the clearing and burning of forests have contributed significantly to the present atmospheric CO₂ concentration.
- The energy sector is also responsible for producing carbon dioxide emission, methane emission and large quantities of nitrous oxide. Coal is the most 'CO₂-intensive' fossil fuel, followed by oil and gas. In the combustion of any fossil fuel, carbon is oxidized and CO₂ is released to the atmosphere. Since 1860, industrialization has progressed with an increase in the use of fuels especially fossil fuels and a corresponding increase in CO₂ emissions.
- Modern economic growth is generally attributed to the spread of industrialization. Economic growth has depended on the availability of energy and on the combustion of

fossil fuels. For numerous countries, energy and economic data for the years 1860 and 1973 suggest that economic and energy use increased together (Keeling 1973).

- Industrialized nations use energy primarily for industry, transportation, space heating and cooling in buildings. In developing countries, the use of fuel wood and farming accounted for carbon dioxide emission in the atmosphere.
- The green house gases reinforce and accelerate the impact due to CO_2 in changing the climate. The emitted greenhouse gases are carbon dioxide (CO_2) chlorofluorocarbons (CFCs), methane (CH_4), nitrous oxide (N_2O), perfluorocarbons (PFCs), hydrofluorocarbons (HFCs) and sulphuric hexafluoride (SF₆).
- The emitted green house gases upset the greenhouse gases concentration in the atmosphere. This create two atmospheric problems like the depletion of the atmospheric ozone layer and increase in atmospheric temperatures.
- The human activities that alter the composition of the atmosphere are the negative consequences of legitimate and intended human action. All life supporting activities degrades the environment. Industrialization, farming, development and extraction of mineral resources forms the life wire of economic survival to the nation and for these activities to continue degradation is inevitable and economic survival is certain. This survival should be in the shortest term beyond which catastrophe is imminent. All types of pollution which emanates from mans activities has its own positive outcome.
- Fossil fuel combustion, land use changes, deforestation, agriculture, population changes etc exert pressure on the environment with resultant emission of CO_2 into the atmosphere that causes climate change. The atmospheric CO_2 concentration would have profound effects on global ecosystems, agriculture, water resources and sea ice. Increasing eutrophication of lakes and marine coastal waters and some net withdrawal of carbon from the atmosphere and surface layers of the sea may occur because of increased sedimentation. Undoubtedly this process would represent a sink for excess atmospheric CO_2 . (Bolin 1986).

EFFECTS OF CHANGES IN CLIMATE

- Climate change, mostly due to the changes in the composition of the atmosphere by man's activities leads to extreme weather condition that is closely linked with other major environmental issues such as ozone depletion, global warming/temperature increase, acid deposition etc.
- The temperature increase and effects on ecosystems and humans could have for reaching consequences that can lead to poor agricultural system, poor economic system, poor health condition, increase in death rate, increase in environmental refugees, negative effects on water resources, sea level rise, increasing eutrophication of lakes, marine and coastal waters, drought, flooding etc.
- Some people advocate that plants can grow more rapidly as a result of enhanced photosynthesis in the atmosphere and there have also been some thought that Siberia will be transformed into the grain basket of the east and that forest will be produced where no trees grow now.
- Potential evapo-transpiration probably will increase throughout the tropics whereas in moist tropical regions convective rainfall could increase. Increasing temperature and decreasing precipitation in most parts of the world are the greatest impact.
- The global warming as a result of increasing temperature has resulted to melting of the ice berg and glaciers, and can lead to a significant melting of the west Antarctic ice sheet leading to much rise in sea level and ocean upsurge.

- The sea level rise will have major effects on small island states, coastal areas and estuaries which will lead to loss of land area – which is already in short supply due to sea encroachment and coastal erosion, leading to reduced shore length and changed shorelines.
- The rise in sea level will result to encroachment of the sea into the beaches and coastal areas on which recreation and tourism activities greatly depends resulting to low patronage and reduced income.
- The salt water intrusion from rising seas will increase exposure of freshwater and agriculture to salination which will reduce food production thus increasing dependence on food imports and aggravating food insecurity, exacerbated by population pressure. The salt water intrusion into the fresh water will also result to the destruction of coastal wetland, coastal reefs, beaches and mangrove ecosystem.
- The increasing temperature and decreasing rainfall have led to frequent drought and desertification thus reducing viable agricultural lands and crops production. This has led to massive emigration and resettlement of people to areas less threatened by desertification which give rise to social effects like loss of social values, dignity and the growth of ecological refugees.
- For some of these refugees, the cost of settling into an entirely new environment and a new culture could add dearly to the psychological and social strains expected of a displaced community. The host countries are likely to have insufficient support services to accommodate new arrivals. Competition for scarce resources and facilities will intensify.
- The problems must be addressed sooner rather than later if the ecological refugees created by climate change are to be assured of food and shelter from their future host country or community. The climate change convention now under negotiation offers an excellent opportunity to begin to put in place provision of humanitarian assistance to ecological refugees.

CHALLENGES TO POLICIES AND ACTIONS IN COMBATING CLIMATE CHANGE

Some of the challenges to the adoption and mitigation of harmful effect of climate change includes:

- Government Action
- The politics and logic of climate change
- Poverty
- Knowledge and understanding of the environment
- Social cultural and religious values.

1. Government Action

Environmental policies is inevitably interventionist without government intervention, the environment cannot be fully protected. Environmental issues may raise awkward questions of justice and rights which only government can protect. For it is only government that can decide how much society should value the environment, and how that value should be inserted into economic transactions. Nicholas Ridley (1989) noted that: pollution, like fraud, is something you impose on others against their will so that you can perhaps gain financial advantage. It is an ill for which the operation of the free market provides no automatic care. Like the prevention of violence and fraud, pollution control is essentially an activity which the state, as protector of the public interest against particular interest, has to regulate and police (Coirncross, 1992).

To demand that this generation should undertake repairs means making people pay for something that they have previously regarded as free yet only government can ultimately set the terms of that repair. For it is only government that can decide how much society should value the environment, and how that value should be inserted into economic transactions. But in most cases, it is sad to note that governments and companies may become more concerned with environmental issues if they see them as benefiting their economic interest. If polluters are to pay, government will need to measure pollution. Government will need to punish polluters who cheat. Monitoring, measurement, and enforcement are, all jobs that cannot be done voluntarily. They require a legal framework and the sanction of the state, sound economics and sound environmental policies go hand in hand.

Government has a stewardship role which extends to the environment: just as government has a duty to ensure the stability of the value of the currency, so it has an ethical responsibility to look after our planet and to hand it on in good order to future generations.

In a developing country such as Nigeria, where a significant proportion of the rural dwellers are illiterates, it is the duty of the government and its agencies to guide the people so that they can play positive roles in the environmental improvement efforts. Local communities are likely to wisely use and protect natural resources if the link between conservation of the resources and their livelihood is clear (Ezeaku, 2009).

Intervention activities such as the use of Geographic Information System (G.I.S) to better understanding and pinpoint risk, land use planning, flood control programs, mitigation along coastlines, cloud seeding to divert hail storms and heightened zoning. Improved weather forecasting, storm warning system, public spending on disaster preparedness and recovery are all the responsibility of the government. The genuine commitment and involvement on the part of the government is lacking. Government should be clearer with their intentions.

2. The Logic of Climate Change

Reactions to the issue of climate change both at national and international level has been mixed. The developing nations saw it as a ploy by the rich nations to prevent the co-nations from industrializing and to keep them as sources of vital supplies for sustaining development and prosperity for industrial and post industrial nation. They argued further that if pollution meant industrialization that they will welcome pollution wholeheartedly. They also feared that climate concern will impose extra burden on them, eg. by paying more on imported materials and machinery which will need stringent environmental standard that the importing nations will adopt, they also suspected that their export trade with the industrialized society will be hard because of the environmental measure and standard that the importing nations will adopt. Hence development and environment were seen to be in conflict. It was feared that the commitment to the environment is likely to be trapped with commitment to development.

According to O’Riordon (1995) the United Nation Conference on Environment and Development (UNCED) was noted for the suspicion, held by many third world countries, of the motives of the developed world. The view was that somehow the rich nations wanted to limit development for the sake of the earth (or their aesthetic sensibilities), or at least to control future aid and trade on environmentally conditional terms. This led to charges of environmental colonialism and subjugation of the poor to the whim of the wealthy, much of whose riches were earned on the backs of the impoverished.

Andrew Lees, Campaigns Director, FOE, Independent , 15 June 1992 also noted that the earth summit has exposed the enormous gulf that lies between what the public want and what their leaders are willing to do. The North has done little to signal let alone address, the issue of its over-consumption. Much of the burden of the environment and development crisis has been left on the shoulders of ten of the world's poorest countries in the South.

POVERTY

It is very clear to us that poverty is the worst pollutant. This calls for integrating the issue of poverty alleviation with the environmental objectives. Actions aimed at combating poverty should be vigorously pursued than any other agenda in the struggle for sustainable development (Ezeaku, 2004).

Hughes and Flinton 2001 noted that “unless the needs of the local communities living in and around biodiversity-rich area are met they will not support or will be hostile to conservation efforts”. Where there are a large number of actors, who will often have to be persuaded to change habits of working or living. Occupation/economic variables/factors constitute strong variables to be considered in the policy issues.

A case in point is the Nigerian Conservation Foundation (NCF) – STUBB CREEKS CONSERVATION initiatives in Akwa-Ibom State, Nigeria funded by the Mobil Producing Nigeria Unlimited (MPNU) in 1992. The policy was beautifully drawn up on paper and the funds were readily available from the funding agencies. The initiative was, unfortunately unsuccessful and soon collapsed and with it the funding. Despite operating for two years, the initiative provided virtually no increased protection to the area, and exploitation continued unabated, coupled with widespread distrust, wrangling, conflicts and unnecessary suspicion from the communities, individuals etc resulting in yawning gaps within the project/sectorial fabric.

This non acceptability and indeed lack of satisfaction with the policy issues will be attributed to the erosion of the communities, territorial control and their sources of income. The public were bitter about the fact that the policy imposed restrictions on their sources of income and livelihood. For instance, the expression of ill-will about the utility value of the project by the stakeholders appears more apparent from some of their utterances like demanding explanation as to whether the conservation of trees and wild life is more important than the people (themselves). If we must keep off from the SCFC area, the government must be prepared to show us what to do so as to sustain our livelihood and provide us with alternative sources of energy”. The public reacted negatively and opposed it. Consequently, community leaders, who used to be the link between the community, the government and its agencies were totally kept in the dark. No doubt, good as the initiatives was it collapsed.

Government should intensify actions aimed at combating poverty and alternative sources of income in biodiversity conservation. Efforts through awareness programme should also be intensify to help social group and individuals acquire a set of value and feeling of concern for the environment and motivation to actively participate in the struggle to save the climate. This will induce fundamental shifts in habits and attitudes, values and life style (Ezeaku, 2015).

The local communities are likely to wisely use and protect natural resources if the link between conservation of the resources and their livelihood is clear. Often, grassroots groups are community based, and can take on the character of the locality as custodians of resources

they see their proper role as working together with human and non-human forces to sustain life. For instance in a landmark 1968 court case, the Sierra club (a Non-Governmental Organization, NGO) sued the Disney corporation on behalf of the trees, rocks and wildlife of mineral king valley in the Sierra Nevada mountain where Disney wanted to build a ski resort. The sierra club argued that it represented the interests of beings that could not speak for themselves in the court. A legal brief entitled “should trees have standing”? Written for this case by Christopher D. Stone proposed that organisms as well as ecological systems and processes should have standing or rights in court after all, ... and the ski resort was never build.

Government should be clearer with their intensions on environmental issues. Actions in combating climate change should be coordinated with social and economic development in an integrated manner with a view to avoiding advance impacts on the later, taking into full account the legitimate priority needs of developing countries for the eradication of poverty.

KNOWLEDGE AND UNDERSTANDING OF THE ENVIRONMENT

Human beings are at the centre of environmental problems. Finding solutions requires an understanding of how people think, what they care about, what motivates them, how they communicate and the conditions under which they behave most reasonably and creatively (Ezeaku 2009).

Society and culture influence individual behaviour almost, but not quite to the point of determining it, by the way it structures the way people are able to think and act. In this sense, the individual is dependent upon the group for his perception of what constitutes reality. Social, cultural religious values affect the pricing of environmental goods. For instance, in Muslim countries many of which are dangerously short of water, people have strong religious objections to paying for a gift from God. More often, the reason is that the resources is owned by everybody and therefore by nobody. People take less care of what is theirs than of what is owned collectively; and the ozone layer, the oceans and the atmosphere are all common property. It is easy to put a price on a tree as timber. But the price will take no account of its value as a mechanism for preventing soil erosion, or as a home for rare birds or insects, or as a store of carbon dioxide that might otherwise add to the greenhouse gases in the atmosphere.

The difference between what people feel they want or deserve to what they actual get – “the want-get-ratio” and difference between “expected need satisfaction” and “actual need satisfaction determines people perception about the environment. Muoghalu (2007) noted that in situations where feelings of frustration become widespread among the population and the feeling of frustration is that people are getting less than they deserve, the most advisable thing for political leaders is to find out what the expectations of such individuals and groups are and seek ways of negotiating with them. But most of the time political leaders see this as a sign of weakness.

But further advances in pollution control may involve changing not only what companies do but also how individuals behave. People especially protest about what they can see in their own backyards and what effects their own lives. They have also become more eager to find links between changes in nature and human activities. Caircross (1992) noted that the drought of summer 1988 made Americans believe in the green house effect; dying seals in 1988 made the British worry about the muck they were dumping in the North Sea: wilting forest persuaded the West Germans to reverse their opposition to curbing acid rain. Public

enlightenment and awareness on issue of climate change, green house gases should be intensified to ensure understanding and attitudinal adjustment and changes.

MEETING THE CHALLENGES: THE WAY OUT

While some warming of climate now appears inevitable due to past actions, the rate and degree of future warming could be affected by governmental policies on energy conservation, reduction in the use of fossil fuels (coal and oil) and the emission of some greenhouse gases. Energy conservation, reduction of coal and oil use will reduce acid deposition, reduce emissions of greenhouse gases and a reduction in the release of chlorofluorocarbons (CFCs) will help protect the ozone layer and will also slow the rate of climate change.

- Energy usage could be reduced by using more energy efficient technologies such as wind power and solar energy in order to avoid putting into the atmosphere the carbon dioxide that may well cause global warming.
- Government and funding agencies should increase research support and focus efforts in areas of greenhouse gases and climate change. Policy makers should intensify an active collaboration with scientists to explore the effectiveness of alternative policies and adjustments, encourage afforestation project, conservation, green consumers and making polluters pay.
- Government must establish environmental priorities and determine what information needs to be put before the public and encourage research in developing countries to improve energy efficiency and conservation.
- Technologies for environmental monitoring and protection should be provided by developed to developing nations necessary for effective monitoring.
- Improved weather and meteorological stations should be provided in developing countries for accurate weather predictions and forecasting, early warning and effective response to prevent weather related disaster.
- Encouraging and promoting the use of clean and environmental friendly technologies in production process will ultimately reduce the pressure of CO₂ emission and other greenhouse gases in the atmosphere.
- The use of renewable energy should be intensified and alternative form of energy and livelihood should be introduced in developing countries so as to reduce pressure on forest and forest resources.
- The politics of who foots the bill of the climate change should not come in since Global, environmental threats occasioned by climate change knows no boundaries.
- Government and funding agencies should enhance the protection, sustainable management and conservation of all forests, and the greening of degraded areas through forest rehabilitation, afforestation, reforestation and other rehabilitative means.
- Popularizing the use of non-wood forest products which do not pose any threat to the forest and enhancing sustainable management and harvesting of renewable resources in a manner that is compatible with environmental conservation should be encouraged.
- High yielding crops that are drought resistant should be developed and given to farmers. Irrigation for agricultural purposes should be embraced and popularized in the sahelian region against drought and desertification.
- Improved method of food storage are necessary against food security. This will help to store excess agricultural produce for future use.
- Protection, sustainable management and enhancement of terrestrial and marine ecosystems, which act as carbon sinks and reservoirs to greenhouse gases are also very important.

- Government should increase funding for climate change programmes in developing countries.

CONCLUSION

The climate is actually wounded and the remedies lie on cooperation and collaborative efforts of everybody. The stewardship and ethical responsibilities of the government to the environment should be intensified with genuine commitment. Poverty is the worst pollutant. Actions aimed at combating poverty should be vigorously pursued and integrated in all the climate change programmes. Human beings are at the centre of environmental problems, finding solutions requires their understanding and knowledge of the environment. Efforts through awareness programme and environmental education should be intensified to help social groups and individuals acquire a set of value and feeling of concern for the environment. This will induce fundamental shifts in habits, attitudes, values and life style. Government must establish environmental priorities and determine what information needs to be put before the public and encourage research in developing countries to improve energy efficiency, conservation and alternative sources of livelihood.

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