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Environmental Dimensions of Global Warming: Ways of Mitigating the Impact

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Abstract:

Global warming is so severe in its impact to the physical environment now than it used to be about a century ago. This paper has examined the causative factors, trends, consequences and efforts made so far to mitigate the menace. The paper discovered that though, global warming is a natural phenomenon caused by the emission of heat-trapping gases from vulcanicity, solar variation and El_Nino events but anthropogenic processes like deforestation, industrialization, population pressure on the environment and communication have helped to load into the atmosphere huge amounts of greenhouse gases like carbon dioxide, chlorofluoro carbons, methane and nitrous oxides which exacerbate global warming. The potential hazards discovered include, increase in sea level, melting of ice, inundation of low-lying areas, increased spread of tropical diseases, low crop yield and other climate-related problems. The paper concluded by recommending that leaders of countries take proactive measures to contain the hazard by developing environment friendly forms of energy, avoiding further destruction of forest through improved forestry management, use of catalytic converters on all motor vehicles and reduction of public transport means and in its place the use of bicycles in urban areas has been advocated.

1. The Concept of Global Warming

Global warming is no longer a new concept to the inhabitants of planet earth that is gradually boiling and burning off. The phrase is a combination of two words 'global' and 'warming'. According to Oxford Advance Learners Dictionary (2005) 'global' means covering or affecting the whole world: considering all parts of something while 'warming' is becoming warm or warmer. Global warming therefore means the increase in temperature of the earth's atmosphere that is caused by the increase of particular gases especially carbon dioxide (Oxford Advance Learners Dictionary, 2005:633). Greenhouse effect which is the problem of the gradual rise in temperature of the earth's atmosphere caused by an increase of gases such as carbon dioxide in the air surrounding the earth which trap the heat of the sun is a synonym to global warming.

Accepting this synonymy, Balogun and Salami (1995:41) stressed that the current widespread concern about global warming at various scales and the implication of those changes for life on this planet earth should not be much on the natural causes but on the changes which might have been brought about by human activities. The anthropogenic action of man especially since the emergence of industrial revolution of the nineteenth century (1850AD) has, no doubt led to the sustained rise in world's temperature which consequently is affecting the oceans, seas, lakes, rivers, continents, islands, vegetation, animals, birds, insects, micro organisms and human beings either directly or indirectly. Global warming is certainly not unconnected with man's interaction with the physical environment since his emergence on planet earth. It actually took a long time for global warming as an environmental hazard to be noted, established and even received international attention.

The greenhouse effect occurs when the heat of the sun rays reaching the earth surface is trapped in our atmosphere by certain gases which act like a kind of one-way permeable blanket. Without these heat trapping gases, the sun rays would radiate back into space. The natural gases are mainly carbon dioxide, nitrous oxide, water vapour and methane all exist in small amounts in our atmosphere. However, the trouble ensues when they are being produced in vast amount by something humans have devised in an attempt to solve immediate needs without recourse to the future.

2. Current Trends in Global Warming

Climatologists in recent times have reconstructed the earth's climate history. They have estimated that since the earth was formed about 4.6 billion years ago, it has gone through considerable changes in its climate. It is believed that about ten ice ages have come and gone since man appeared on planet earth and each period had its own unique characteristic climate conditions where for example, the peak of it was around 18000 years ago (Balagun and Salami 1995:41)

At the interglacial period which began about 8000BC, the Polar atmospheric temperature could have been just over freezing point in summer while the temperatures of the continents were warmer than it is today. Records of mean annual temperature and rainfall show that the main increase took place from 1910 to 1940 and again after 1975 (Kemp 1998:170). The basic cause of this warming is seen as the enhancement of the greenhouse effects over the same period brought on by rising levels of anthropogenically produced greenhouse gases (such as carbon dioxide emission, methane, nitrous oxide and chlorofluoro carbons). The heat-trapping gases have the ability to retain terrestrial radiation in the atmosphere and thus produce global warming.

Kemp (1998:178), further said there are about twenty (minor less than 1% of total) gases responsible for the greenhouse effects through their ability to absorb long wave radiation where carbon dioxide is the most abundant, followed by methane, nitrous oxide, chlorofluoro carbons and ozone. Water vapour also exhibits greenhouse properties but has received less attention than others.

Despite rising greenhouse levels between 1940 and 1975, global temperatures declined. However, the warming between 1960s and 1980s was said to be more rapid than that between 1880s and 1940. James Hansen of the Goddard Institute for space studies claimed in 1988 that global greenhouse signal is sufficiently strong for a cause-and-effect relationship between the anthropogenically produced carbon dioxide increase and global warming to be inferred (Kemp 1998:170). His position though, not widely accepted at the time but in 1996, the Intergovernmental Panel on Climate Change (IPCC) accepted the human influence in the current global warming.

Since the beginning of the twentieth century, rising levels of these gases in atmosphere associated with increasing fossil fuel use, industrial development and agricultural activity have brought about an enhancement of the greenhouse effect. The amount of carbon dioxide recycled during photosynthesis is also being reduced because the worldwide deforestation allows the extra gas to remain in the atmosphere. The net result has been a gradual global warming, projected to continue as long as the volumes of greenhouse gases in the atmosphere continue to rise.

More than 90% of the world's total of anthropogenic, human-generated greenhouse gases come from heavily populated industrial regions of North America, Europe, India, China, Japan, North Korea and South Korea. The United States is the world's greatest emitter of greenhouse gases with 4% of the world's production; Britain emits 3% about the same quantity as India which has 15 times as many countries do. Clear evidence of global warming indicates that in the past century, temperature rose by 0.74°C globally while Africa in particular gained 0.5°C warmer than it was during the same period (Okogun and Awe 1992:22).

The greenhouse effect has led to the prediction of increasing temperatures on the earth as a whole by about 1.3°C by 2030 and 3°C by 2070. This will bring greater climatic changes that have occurred over the last 10000 years and will copiously result in sea level rising, leading to inundation of shorelines up to 300m (ibid). The effects of this would hit developing countries hardest as Nile delta, Niger delta, the Ganges delta, the Coral atolls and the whole Indian ocean would be particularly vulnerable with over 200 million people losing their homes and property.

3. Causative Factors of Global Warming

The causes of global warming can be broadly categorized into natural and human generated. The natural causes are greenhouse gases, El_Nino, solar variation and vulcanicity while human generated causes include increased world population, industrialization, communications, deforestation and use of carbonated chemical products.

3.1. Greenhouse Gases

These are wastes from power plants, domestic works, generators, industries and vehicular traffic. These heat-trapping gases like carbon dioxide, chlorofluorocarbons, methane and nitrous oxide heat trapping gases are usually loaded into the atmosphere to cause global warming. They are minor gases that all together make up just 1% of total volume of the atmosphere (Kemp 1998:178) namely, carbon dioxide, chlorofluoro carbons, methane and nitrous oxide.

- Carbon dioxide (CO₂): This is responsible for about 45% of all the greenhouse gases. The gas is emitted as a result of man's activities of bush burning, tree felling, burning of fossil fuels by automobiles and industries.
- Chlorofluoro Carbons (CFCs): - These are synthetic chemicals responsible for about 14% of all the greenhouse gases. They are used as aerosol propellants, blowing agents for plastic foam refrigerants and solvents. Once released into the atmosphere, they are 10,000 times more efficient than carbon dioxide as absorbers of energy capable of remaining in the atmosphere for the next 74-150 years (Balagun and Salami 1995:41).
- Methane (CH₄): - This is responsible for about 12.5% of all the greenhouse gases. The gas is produced by bacterial decay of organic material, released by swamps, paddy fields, digestion of grazing animals and by mining coal especially where it had been trapped for millions of years.
- Nitrous Oxide (NO₂): - This is responsible for about 6% of all the greenhouse gases. The gas is released by both bacterial processes in the atmosphere and by combustion of fossil fuel burned in power stations, vehicles and use of nitrogenous fertilizer.

3.2. *El-Nino Events*

This is a natural perturbation to global warming which is usually characterized by the development of warm oceanic waters in the eastern part of tropical Pacific Ocean. It is a reversal of the trade winds and weakens the equatorial ocean currents. El-Nino events reoccur periodically fourteen times in a century which affects the atmosphere and global temperature by injecting heat energy into atmosphere. During the events, the normal condition of equatorial up-welling of deep oceanic waters are diminished significantly leading to the release of carbon dioxide into the atmosphere as carbon dioxide-rich deep water reaches the surface (Gotom and Datong 2008:350).

3.3. *Solar Variation*

The earth's position and orientation relative to the sun varies periodically where in aphelion its orbit is far away from the sun, being about 152 million km but comes closer to sun during perihelion, 147million km away. The earth receives more heat energy at perihelion than at aphelion, hence the presence of greenhouse gases in the troposphere lead to global warming (Dachal and Guse 2008:310).

3.4. *Vulcanicity*

Volcanic eruption spews out large quantities of volcanic bombs, ash, cinder, dust particles, carbon dioxide and sulphur dioxide. The emissions tend to block sunlight and reduce infrared rays escaping the earth's surface. Hence contribute immensely to global warming through sustained increased in temperature.

3.5. *Increased World Population*

Although human beings have always been procreating throughout history, the number never exceeded ten million from the origin of man to the discovery of agriculture about 8000BC. From that time to early stage of industrial revolution of the nineteenth century in Europe and North America, (1850AD). The population had slowly increase just to one billion and to two billion in 1930AD. From then the world population kept rising to three billion in 1960, six billion in 1999 and within a mere space of twelve years, another billion was added to become seven billion in 2011. Reasons for the rapid growth in world population have been attributed to the rapid transition from long historical era characterized by high birth rates to one in which death rates have fallen sharply (Arongol and Rinmak 2008:305). With daily increase in human numbers, there is need for increase industrial production, improved transport system, increased need for farmland, more use of fossil fuels, increase urbanization which in turn means more forest clearance, hence resulting in greater carbon dioxide emissions and global warming.

3.6. *Increased Industrial Production*

Manufacturing industries are on the increase since the industrial revolution of the 1850AD in Europe and North America when fossil fuels were discovered. The use of fossil fuels like petrol, liquefied gas and coal for manufacturing activities is contributing immensely to global warming because the combustion of these fuels turn out large quantities of carbon dioxide and sulphur dioxide into the atmosphere to add to the green house effect and global warming.

3.7. *Increased in Vehicular Traffic*

A conservative estimate as at 2013 put the number of vehicles plying the world's road at one billion, with Nigeria contributing twelve million vehicles. Road transport is the dominant means of moving passengers and goods especially in less economically developed nations of the world, including Nigeria. Apart from the fact that they cause deaths of passengers and loss of property in frequent road accident, the vehicles are known to be the primary source of pollutants and by extension, greenhouse effect. Osuntokun (1999:3) identify the relative contribution to greenhouse effect from vehicular traffic in Nigeria are as follows: carbon dioxide contributes 40.18% of emission, carbon dioxide 82.80%, nitrogen oxides 58.60%, sulphur oxide 97.74%, volatile organic compound 21.97%, nitrous oxide 77.06%, particulate matter and lead 77.02%. Because these vehicles use a lot of fossil fuel in their old engines, they emit substantial quantities of greenhouse gases that exacerbate global warming.

3.8. *Increased Deforestation*

Forests are resources being exploited all over the earth faster than nature can replace. Global rates of forest destruction are estimated to be as high as one hectare per second, or sixty hectares per minute amounting to a yearly destruction of about thirty-one million hectares of land (Flinder, Belfied and Gobourn 2010:186). Forests are being cleared for the purpose of agriculture, mining, lumbering, development of towns, communications and industry without recourse to the multiplier effect the action might have on the environment. Forests are carbon sink that mitigate global warming however, the dwindling forestland caused by mass clearance is giving room for increase buildup of carbon dioxide which consequently exacerbate greenhouse effect.

3.9. *Increased Production of Carbonated Chemical Products*

Chloroflouro carbons (CFCS) are a group of carbonated chemicals that were developed in 1930s for their wide range of application in industry, commerce and within the household (Emielu 2014:138). This group of chemical is non-toxic, non- inflammable and non-creative with other chemical substance compounds. These safety attributes together with their stable thermodynamic properties make it ideal for many applications especially as coolants for commercial, industries and home refrigerators, aerosol (propellants),

electronic cleansing, solvents and blowing agents. Hence by 1973, it was discovered that these carbonated chemicals have damaging effect on the ozone layer. It has been estimated that over 20 million tonnes of chlorofluoro carbons are already released into the atmosphere where each chlorine in the group is capable of destroying thousands of ozone molecules to give way for ultra violet radiation from the sun to reach the earth's surface (Dachal and Guse 2008:311). About 35% of the chlorofluoro carbon molecules in the stratosphere are expected to be there till up to 2100 and have atmospheric life time of between 74 and 150 years. Evidence of 20% ozone depletion primarily masterminded by the presence of chlorofluoro carbons was first noticed in Antarctic in 1982. The relatively recent assessment of the ozone hole in 1989 showed that the ozone depletion is increasing with consequent bombardment of earth's surface by ultra violet radiation, leading to rise in global temperature from increased carbon dioxide emission.

4. Consequences of Global Warming

Global warming has far reaching consequences on the ecosystem as well as human welfare. The Intergovernmental Panel on Climate Change (IPCC) suggested that environmental problems such as rising sea level, change in rainfall patterns and extreme weather are eminent, in addition to the effect of increase in insect borne diseases and vulnerability of agricultural ecosystems.

4.1. Sea Level Rise and Melting of Ice

More water in the oceans means sea level rise where it will inundate many low-lying river basins, including the Ganges (Bangladesh), Nile (Egypt), Mekong (Indo-China), Indus (Pakistan), Limpopo (Mozambique) and Niger Delta (Nigeria) to disrupt socio-economic activities and displace many people of their abodes. Melting of ice and ice sheets due to global warming will aggravate the doom of mankind in the long run because it will cause excessive rainfall and flooding which may drown continental upland regions in different parts of the world. This means coastal, hinterland and Island locations will be envisaged by this incidence of glacial melt water which will be akin to the biblical Noah's flood' (Upla, Ibiang and Ibiang 2013:36). A satellite imagery of an Antarctic ice melt taken in 1998 shows a considerable crack attributable to global warming (Flinder, Belfied and Gobourn 2010:208). In the same vein, Emielu (2014:13) reported that the thickness of ice cap in the Arctic region has reduced by 40% during the last 50 years while glaciers on the top of mountains Kilimanjaro and Kenya shrank by more than 50% over the last 100 years.

4.2. Climate Change

Heat trapping gases are causing a shift in climate belts on a global scale while cyclones are equally shifting Northwards, resulting in the expansion of the subtropical high pressure system. This implies that equatorial belts will shift northwards by about 10° , leading to widespread dislocation of ecosystem across geographical regions (Upla, Ibiang and Ibiang 2013:36). Severe weather is becoming common with droughts in Africa, more often and more powerful heat waves and hurricanes accompanied by strong winds, waves and currents in the Caribbean, USA and Asia. This incidence is already worsening the poverty situation of billions of people in less economically developed countries across the world. In warmer world, people get sick more and the aged become vulnerable to heat stress hence die easily due to hotter days as evidenced yearly in recent times in Asiatic and European countries where people die in hundreds. Increase in the intensity and frequency of hurricanes and storms results in the loss of lives and property caused by global warming and other weather related disasters.

4.3. Decline in Crop Yield and Increased Hunger

Climate change accentuated by global warming in places like Southern Canada may actually benefit from more rainfall and longer growing season however, Semi-tropical farmlands especially in Africa may become further impoverished. This is because impregnation of soil water with sea salt and severe erosion with excess heat can reduce crop yield, leading to poor harvest from such farms; consequently, food deficiency diseases can affect people.

Furthermore, less crops may be grown in some areas as present day crops will not be well-suited to the changed climate especially if the areas used to be drier. This will be characterized by severe food scarcity and increased food deficiency diseases which in the interim, will affect mostly young people, pregnant women, nursing mothers and babies everywhere. In that case, children will bear the heaviest brunt of inadequate nutrition as their growth and stature are prone to the affected plus their eye sight, teeth, bones, the hair texture of their head and their mental development. The widely publicized famine in many parts of Africa and Asia are clear evidence to the impact of crop failure accentuated by global warming and other weather-related disaster.

4.4. Biodiversity Loss

One third of the world's forests are at risk of losing their biodiversity because global warming accentuates more forest and bush fires that put more carbon dioxide into the atmosphere and make global warming more hazardous. More so, crop plants may be afflicted by plant diseases while many wild game will have to migrate towards the poles and uplands, seeking for new areas because their old habitats grow too hot. However, where human developments such as built-up fences, dams and cities prevent this out-migration, some animal species may die at the disadvantage of humans who will need them for meat, raw material, entertainment and tourism development.

4.5. Set Back to Tourism Industry

Tourism often relies on climate, less snow cover on high lands will mean fewer skiers. This will in turn result in loss of job by service provider to the tourists. The worse hit will be the less economically developed countries whose tourist sites are mostly on beaches and

coral reefs which, because of rising temperature will be inundated by rising and expanding warm waters. The implication of the incidence of melting glaciers and sheets will also threaten bears and other cold loving creatures that form the basis of tourism development.

4.6. Colossal Economic Loss

Considering the dense coastal population of the world's cities located in low-lying coastal areas, a significant rise in sea water may either inundate Calcutta, Shanghai, Bangkok, Jakarta, Tokyo, London, New York, Miami and Lagos in increase marine erosion such that governments will have to divert their lean financial resources meant for human welfare to evacuate and relocate the societies affected. Beside government may spend huge financial resources in construction of sea walls, dikes, groynes and other marine-erosion control structure to protect coast lands and their teeming population from the impending disaster.

4.7. Poor Health

The warm temperatures coupled with adequate supply of moisture through rainfall will provide fertile grounds for breeding of mosquitoes, tse-tse flies and blackflies that transmit debilitating diseases like Malaria, trypanosomiasis and schistosomiasis respectively. Health scientists have posited that about 45% of the world's people live where they might get bitten by mosquito-carrying the parasite that causes malaria which may increase to about 60% if tropical diseases including dengue fever, yellow fever and encephalitis. Increased temperature encourages the incidence of cataracts, suppress immune system, increase skin cancer and worsens respiratory illness. A rise in ultra violet rays of the sun is estimated to cause about 23% rise in skin cancer – a scenario that explains the emergence of new cases of skin cancer in South Africa in recent times (Dachal and Guse 2008.312).

4.8. Desertification

Global warming can exacerbate desert encroachment, characterized by severe temperature extremes but not significantly wetter. High temperature can threaten organisms that exist near heat- tolerance limit and even lead to their death. Desertification is in most instances not usually reversible especially if the environment becomes drier and soil becomes further degraded through soil erosion and compaction.

5. Efforts Made So Far towards Mitigating Global Warming

Global warming is real. In view of the fact that one country cannot tackle the menace alone, an intergovernmental panel on climate change (IPCC) was set up in 1988 by the world meteorological organization in Geneva so that countries could work together. Since then international conferences on the topic of enhanced greenhouse effect have been ongoing, resulting in signing of several agreements to reduce the emission of carbon dioxide and other heat- trapping gases. One of such was the Earth Summit held in Rio de Janeiro, Brazil in 1992, with 150 countries in attendance. The countries all agreed to curtail emissions of green house gases through signing of a treaty.

Similarly, the world climate programme (WCP) workshop was earlier held in 1985 at Villach, Austria, and a consensus was reached that the concentration of carbon dioxide in the atmosphere could double by 2030 which will raise the global temperature from 1.5⁰C then to 4.5⁰C hence advocated for measures that will mitigate the risk (Adini 2008.301). Barely five years after the Earth Summit held in Brazil, the United Nations held another conference in 1997 at Kyoto in Japan.

Targets were set to reduce green house gases responsible for global warming and climate change. All the countries that attended the summit from all the continents of the world, signed an agreement known as the Kyoto Protocol for reducing emission of gases that scholars copiously posit, are responsible for the rapid rise in world temperature with consequent global warming and climate change. Despite these ongoing efforts by many countries of the world, few others have done little to cut back.

Global warming is linked to the development of industries in more economically developed countries which has made them rich. Now, less economically developed countries want to raise their standards of living however, with more industries more emissions may certainly ensue hence aggravate global warming and climate change. The current challenge now is to achieved equal emission per person by the year 2050. Thanks to the various International Organizations like the United Nation's Environmental Programmes (UNEP) and the European Community who together with Intergovernmental Panel on Climate Change (IPCC) are working untiringly hard to ensure countries curtail the emission of dangerous greenhouse gases to the barest minimum. These efforts will yield results as world leaders of G- 8 countries in recent past met at Rusutsu, Japan and endorsed halving world emissions of greenhouse gases in the fight against global warming. Leaders, particularly that of China, India, Mexico, Brazil and South Africa in their own contribution called on the G- 8 countries to reduce greenhouse gas emission by 45% by the year 2012 and then by 95% by 2050. In response to the Clarion call, Japan has accepted and has set a national target for cutting emissions between 60 and 80% by the year 2050. Similar Brazil, has planned to reduce emission of Greenhouse gases by 43% by the year 2030 (Dutch Welle News, September 27, 2015).

6. Ways of Mitigating Global Warming

As global warning cannot be totally stopped, measures could be taken to lessen its effects and develop adaptive capacity to cope with it. The following measures are recommended in order to mitigate the menace.

6.1. Banning the use of Chlorofluoro Carbons

The use of CFCs as aerosol propellants, blowing agents for plastic foam refrigerants as well as solvents should be stopped in order to checkmate global warming since carbonated chemicals accounts for about 14% of greenhouse gases in the atmosphere when it is released from refrigerators (Gotom and Datong 2008.352). In pursuit of this objective, old refrigerators containing CFCs should no longer be dumped indiscriminately. But carefully removed and recycled. Failure to comply should attract heavy sanction to serve as deterrent to others who have the intention not to comply with the ban. In place of CFCs, new refrigerants and aerosols like butane should be developed and made accessible.

6.2. International Cooperation

Coordinated, concerted efforts to curb global warming should be intensified and sustained by world leaders through continuous research into new ways of cutting down emissions of greenhouse gases. The leaders of countries should all agree to use appropriate clean technologies like atmospheric fluidized bed-combustion, active coke and improved combustion engines in both domestic and commercial vehicles in order to curb the global warming incidence. In addition, the use of public vehicles that use fossil fuels should be reduced from highways and the use of bicycles in urban centres should be encouraged too.

6.3. Improved Energy Efficiency

Planning that relies more heavily on energy conservation and efficiency as well as use of alternative energy source like solar power, wind power, geothermal and ethanol should be encouraged by world leaders. The use of nuclear power as clean alternative power source and others that do not emit greenhouse gases into the atmosphere should be developed and well managed for development

6.4. Improved Agricultural Practices

A wide range of approaches should be adopted to achieve environment- friendly practices to raise food crops and fodder. This could involve adoption of methods like intensive cultivation using better techniques of mixed farming, reducing over-grazing and curtailing the use of methane and nitrous oxide emissions.

6.5. Improved Technology

An advance technology should be developed in order to recapture the chlorofluoro carbons and other greenhouse gases that have already accumulated in the atmosphere, posing a lot of threat to survival on planet earth. Efforts should be made by scientists and engineers to find substitutes for useful chemicals in industrial products like air- conditioners, refrigerators, aerosol cans, fire extinguishers and other electronic products.

6.6. Improved Forestry Management

This involves the adoption of different strategies aimed at curbing excessive exploitation of forest resources. The introduction of other sources of domestic fuel supply may cut down the destructive tendency of exploitation of wood for fuel from the forest. Deforestation and burning of forest to convert land for agricultural and other purposes should be discouraged because forest destruction accounts for about 20% of all the anthropogenic carbon loading into the atmosphere that increase to global warming. Therefore, good forestry management will ensure the introduction of afforestation and reforestation programmes: consequently, purify the atmosphere of greenhouse gases, global warming and climate change.

6.7. Population Control

A policy aimed at curbing population explosion especially in developing countries should be formulated and implemented because high population places more pressure on environmental resources that exacerbate greenhouse gas emission. Although effective birth control cannot be achieved easily in a short time, educational programmes aimed at enlightening the citizens will help to overcome cultural, social and religious resistance and ignorance. Child spacing programme which has the prospect of curtailing daily birth plus avoidance of early and polygamous marriage should be practiced religiously henceforth in order to maintain a slow and steady population growth that would not place pressure on the environment to exacerbate global warming.

6.8. Legislation

This involves enacting laws, that can prohibit emissions of certain greenhouse gases into the environment to accentuate global warming. Legislation may also come in the form of setting standards, principles, guidelines, protocols, treaties or declarations with the aim of regulating the emission of greenhouse gases into the atmosphere. The regulating bodies should ensure all international agreements are fully complied with and implemented; and failure should attract sanctions to deter others who have the intention of non- compliance.

6.9. Environmental Education

Environmental enlightenment should be made a community- based programme in every society to sensitize the citizens to understand the dimensions of human activities that readily contribute to the global warming. This is with a view to curtailing such actions that will aggravate the current problems. Community leaders and religious leaders should be well informed so they can participate actively in enlightening their subjects about the menace of global warming.

7. Conclusion

The paper has examined how the earth in which we live is getting warmer progressively in recent time. Although the antecedents to global warming have been attributed to change in earth's orbital plane, El-Nino events and volcanic eruptions, but increased man-made activities such as rapid population increase, urbanization, industrialization, increased use of automobiles in communication and deforestation are accentuating the menace.

The effects of global warming, which are manifesting on the environment as increased rise heat waves, rise in sea level, flooding, drought and desertification are already leading to biodiversity loss, widespread incidence of diseases, poor agricultural productivity and displacement of people and associated refugee problems.

The paper concluded by recommending the need for improving energy efficiency, population control measures, enactment of appropriate laws, forestry management and massive public enlightenment by countries of the world in order to mitigate the menace.

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