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Global Warming and Human Health: A Reflection

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Abstract: Increased anthropogenic activities have contributed to the high increase in the rate of gaseous emissions into the atmosphere. The rapid increase in world population has been a major factor. The current world population of 7.13 billion started with a few millions some 2,016 years ago. This increased environmental pollution which, in turn, has caused climate change. The inconsistency in government policies and lack of understanding of the major factors of climate change in developing countries would appear to have encouraged the continued dependence on fuelwood by the population to meet their domestic energy requirements. Tree planting efforts to decrease the effects of ozone layer depletion can only yield desired results if all countries strictly adhere to the Kyoto Protocols.

Keywords: Global warming, Population Increase, Fuelwood and Human Health.

Introduction

Increased anthropogenic activities worldwide ~~has~~ contributed to the high increase in the rate of gaseous emissions into the atmosphere in recent times. As a matter of fact, this constitutes the major source of atmospheric pollution and it is also a fact that pollution has been the major cause of climate change (Hart, 2005). Climate change according to Adeyemi (2000) is any form of "climate inconsistency", while Cunningham and Barbara, (1999) see it basically as a description of the long pattern of weather in a particular region. The Intergovernmental Panel on Climate Change (IPCC) emissions inventory methods also consider the unsustainable use of fuelwood to be a source of net carbon dioxide (CO₂) emissions (UNEP *et al*, 1995). Ironically, the burning of fuel wood is still the primary source of energy for most of sub-Saharan Africa (Anderson, 1986) - the majority of the rural population even in relatively developed countries such as South Africa, still use wood as their primary source of energy. It was estimated that approximately 11 million metric tons of fuelwood are consumed annually in South Africa (Gander, 1994). Also in Mexico, fuel wood usage accounts

for 3 times the total commercial timber legally harvested (Masera, 1996). Interestingly, about 56.9% (16,063,532) of the total households (28,197,085) in Nigeria according to the Nigerian Household Survey relies on fuel wood as cooking fuel (NPC, 2011).

However, there is the need to continuously enlighten the populace about the environment, its quality and the impact of mans' habits and attitudes on its sustained quality. Practices like tree planting exercises (i.e. Afforestation and Reforestation schemes in the Northern fringe of Nigeria) should be augmented with policy decisions like affordable pricing for kerosene as a fuel in domestic cooking to safeguard our forests (Abdullahi *et al* 2009). Also, the Stern Review and IPCC Fourth Assessment Reports both state the adverse impacts of climate change on people's health, safety and livelihoods. The predicted climate change will create barriers to future poverty reduction and reverse many of the important socio-economic gains made by developing countries. Climate Change knows no borders and those without forests may even be greater victims and perhaps find it more difficult to adapt (Maathai, 2009).

To make matters worse, the most rigorous mitigation will not prevent near-

term impacts because significant temperature rises and climate change are already locked in from past emissions. This makes the case for vigorous adaptation measures to be in place over the next few decades to improve the resilience of vulnerable communities.

How Did it Begin ?

World Population Growth

The major concern about population growth today is the rate of growth. Before the agricultural revolution, the world

population was some 1-5 million. At this time, development was mainly along the riverine areas. World Population gradually rose to about 20 million and became 30 million some 2005 years ago. During these early periods, the rate of population increase was between 6-10% per 100 years. By 1650 just before the agricultural revolution, the world population was estimated at between 470-545 million. By 1750, agricultural revolution has been established and indeed the industrial revolution had started. Let us now see what happened thereafter. See Table 1

Table 1 World Population Growth and Doubling Years

Year	World Population	Population Doubling Years
1850	1.0 billion	-
1950	2.5 "	100 years
1970	3.6 "	20 "
1981	4.4 "	11 "
2000	6.0 "	19 "
2009	6.77 "	9 "
2011	7.0 "	2 "
2013*	7.14 "	2 "

Source: Belewu and Orire (2011). * PRB (2013)

While it took about 2000 years (1850) for world population to reach the first billion, it took only 100 years to get to 2 billion. Indeed, the next 1 billion was added in only 20 years and the next in 11, and 9 years respectively. The rate of growth, the pattern of living, energy consumption e.t.c, therefore becomes the real issues. Incidentally, most of the increases are occurring in the developing nations of the world.

What is Climate?

From the foregoing, human activity has become a major force in affecting the process of climate change. What really is

climate all about? Climate refers to the average weather conditions of a given geographical area studied over a period of time (usually some 35/40 years), (Britannica Concise Encyclopedia, (2010); Belewu and Orire, (2011). Usually, parameters such as temperature, rainfall, humidity, the wind (Speed and direction), evaporation, evapotranspiration e.t.c are used in expressing weather conditions. It is when noticeable changes are observed that, experts bring this to the notice of mankind.

Global Warming: True or False?

The Earth's Climate has always changed naturally, and equilibrium has

always been found. The major concern today is the effect of anthropogenic activities on the process of warming of the climate. That there is global warming is unequivocal. A report by 600 Scientists from 40 Countries concluded in summer of 2007, that, even the most skeptical opponents of climatic change cannot easily deny it anymore (Begley, 2007). With the broad variety of its impacts to human health, climate change "has been described as one of the most significant environmental challenges the world has ever faced" (Chan, 2006). At the local level, you will notice that when many people sleep in a room, the temperature is usually warmer. It is also warmer in urban centres than in the villages. The reasons are not farfetched. It is the same concept of increased heat generation that has resulted in climate change. However, the process is different.

Concept of Greenhouse Effect

Our atmosphere is but a thin layer of gas around a huge bulky planet. This gaseous outer ring and its greenhouse effect make life on earth possible- and could destroy life as we know it. About one-third of the solar energy derived from the sun is reflected back into the universe by shimmering glaciers, water bodies, and other bright surfaces. Two-thirds, however, is absorbed by the Earth, thus warming land, oceans, and the atmosphere. Much of this heat radiates back out into space, but some of it is stored in the atmosphere, as Figure 1 depicts. This process is called the greenhouse effect. Without it, the Earth's average temperature would be a chilly -18 degrees Celsius, despite the sun's constant energy supply (Pidwirny, 2006).



Figure 1. Greenhouse gases trap some of the sun's energy within our atmosphere and increase the temperature of the earth's surface. This is regarded as the greenhouse effect (Source: Allianz).

A typical and easily understandable description of the green house effect is given by what happens when a car is parked outside in the sun. The interior part of the car becomes heated up (Oyegun, 1982; Belewu and Orire, 2011). Indeed, studies have shown that items such as Candles,

Vaseline and the like can melt depending on the time of the day and length of parking. What happens in such a situation is that, the sun's ray that enters the car gets trapped inside the car. Thus, the sun's ray which comes in the form of short waves becomes heat in form of long waves, which cannot escape through the glass of the car. The trapped radiation is what generates the heat that melts the candle and damages some other items kept in the car. Can we for a moment imagine the car as the Planet Earth! Indeed, the scenario just printed is similar to what happens on earth.

The Planet Earth.

The Earth which is the third of the nine planets known to mankind has an average temperature of 15-degree centigrade. It is also about 150, 000, 000 km away from the sun, the same distance as the moon from the sun. While the moon is cold, the earth is hot. What then can be responsible for this? The only plausible explanation is the fact that the Earth has the atmosphere whereas the moon does not. Surrounding the earth are layers of heat absorbing gases (greenhouse gases). Such gases include Nitrogen, Oxygen, Carbon dioxide, Ozone and the like. These gases together form a type of layer or blanket surrounding the earth and they help to moderate the atmospheric temperature on the surface of the earth. The ozone layer in particular acts as an absorbent layer for ultraviolet rays from the sun.

What Causes Global Warming?

However, with an increase in human population; increasing industrialization and transportation and increased consumption of hydrocarbon, the emergence of petrochemical industries; CFC gases used in refrigerators; nuclear power and generation of carbon monoxide have resulted in the increased production of ozone depleting gases. These ozone depleting gases and some photochemical reactions tend to reduce the ozone layer. In other words, there is a reduction not only in its thickness but in addition, it also punctured holes in the ozone layer. The consequence is that an ultraviolet ray which hitherto was absorbed by the ozone layer now have the opportunity of direct access to earth. This has led to an increase in the occurrence of skin cancer and increased temperature. Huge volumes of fossil fuels in the form of gasoline, oil, coal and natural gas that are consumed everyday end up releasing carbon dioxide into the atmosphere. These emissions generated by human activities accentuate the natural 'greenhouse effect'.

The unprecedented speed of change in greenhouse gases and effect is threatening social and environmental systems that cannot adjust at the same pace. More extreme weather events are occurring worldwide, sometimes in unexpected ways – such as the flooding in the dry regions of Ethiopia in 2007; the onset of the rainy season in Nigeria; drying of some rivers and less productive lands, among others. A false start of the rains, for example, may lure farmers to plant crops early and this can turn out to be disastrous for them if the first rains are followed by a long period of drought (Adejuwon and Odekunle, 2004). The great loss suffered by farmers practicing "dry farming" especially in the dry belt of Nigeria, resulting from the false onset of the raining season is a common phenomenon.

The Health Effects of Climate Change

Direct:

Deaths and illness due to thermal extremes.
Injury resulting from floods and storms.

Indirect:

More widespread vector – borne infections.
The increase in other infectious diseases.
Respiratory effects of worsening air pollution.
Poor nutrition due to agricultural disruption.
Ill-health due to social dislocation and migration.

Source: Woodward *et al*, (1998)

The direct effects include injury and illness due to the more frequent heat waves and floods - expected as a result of higher temperatures, extremes of rainfall and thermal expansion of the oceans. Coping with extreme heat waves will be just one of our concerns. In August 2003 for example, when Europe suffered its worst heat wave in recent times and temperatures peaked at about 40° C, many unprepared people for the kind of heat wave, mostly the sick and elderly became victims and so many lives were lost. Nearly 15,000 deaths were recorded in France that summer, due to the high temperatures across Europe. The scorching weather may have claimed as many as 35,000 lives (NOVA, 2004). At the local level, Olorunfemi (1995) discovered obvious seasonal variations in disease pattern in Ilorin, Nigeria.

The indirect effects are more difficult to specify, but will probably be more important in terms of the magnitude of the disease burden they cause. These include:

- Feeling of isolation amongst displaced people due to natural disasters.
- Decrease in nutrition due to poor agricultural yield.
- Increase in disease transmission due to a breakdown in sewerage and garbage services due to flooding.
- Rising sea levels and displacement of people from their natural habitats and the attendant effects.
- Land degradation
- Soil Erosion.
- Loss of biodiversity- loss of species e.g: some yam varieties or plants for medicinal use.
- Urbanization and decreasing arable land.
- Diseases carrying vectors
- Productive agro-eco systems
- Drying up of hitherto existing rivers
- Emergence of Photochemical oxidants
- Increased psychological stress and depression

Adaptation Measures to the Impacts of Climate Change

The Intergovernmental Panel on Climate Change (IPCC) refers to adaptation practices as actual adjustments, or changes in decision environments, which might ultimately enhance resilience or reduce vulnerability to observed or expected changes in climate. Investment in coastal protection infrastructure to reduce vulnerability to storm surges and anticipated sea-level rise is an example of actual adjustments (e.g. Lagos Bar Beach Protection Scheme). The development of climate risk screening guidelines, which might make downstream development projects more resilient to climate risks, is an example of changes in the policy environment (Muthukumara *et al*, 2008).

Adaptation to climate risks can be viewed at three levels: (1) responses to current variability (which also reflect learning from past adaptations to historical climates). (2) observed medium and long-term trends in climate; and (3) anticipatory planning in response to model-based scenarios of long-term climate change.

Adaptation measures can be further classified into proactive and reactive or ex-post (Muthukumara *et al*, 2008).

- **proactive measures** include (1) crop and livelihood diversification, (2) seasonal climate forecasting, (3) community-based disaster risk reduction, (4) famine early warning systems, (5) water storage, (6) insurance, (7) supplementary irrigation and so on.

- **reactive or ex-post measures** include: (1) emergency response, (2) disaster recovery and (3) migration.

Recent reviews indicate that the "wait-and-see" or reactive approach is often inefficient and could be particularly unsuccessful in addressing irreversible damages, i.e. species

extinction or unrecoverable ecosystem damages that may result from climate change.

Conclusion and Recommendation:

Giving the legacy of greenhouse emissions and rising global energy consumption, further warming is unavoidable. Mitigation measures to reduce the extent of global warming are crucial. The Kyoto protocol – the first international agreement on tackling climate change – stipulates that industrialized countries, historically responsible for most emissions to date, must act first to curb emissions, giving time for developing countries to grow their economies and raise their people's living standards. But it also recognized that sooner or later developing countries will have to act.

There are simple practices that we do not notice or often take for granted that cumulatively impact on our environment. The free and automatic promotion system of education of the UPN government of the Old Western Region and the State of Nigeria, for example, in my opinion, partially led many to abandon the farms. Automatic promotion can only be counter-productive. The system has a way of allowing school drop outs fix themselves in some other vocations. The technical schools and colleges; the farm settlements; schools of agriculture; polytechnics and vocational schools are of practical applications to our needs in Africa, Nigeria and many African nations are basically consumer nations. The market is large but have we taken advantage of this? Indeed, does Nigeria have to work to earn foreign exchange courtesy of the Delta Region where Oil is constantly flowing? What lessons can Ghana learn from the oil doom of Nigeria? I have always advised people that whatever job or work they did before becoming rich they

must never abandon it. But in the case of Nigeria, we have abandoned the local rice plantations and neighbouring rice fields, for Okada business; Thuggery; Politics and those values that the Yoruba's cherish- "Omoluabi", "Ise loogun ise" etc are considered irrelevant in contemporary Nigeria. We must go back to our origin. Farming and dependence on our indigenous values will be a step in the right direction. Also, "African governments should have a common stand and resist the temptations for bilateral negotiations because that could lead to exploitation of individual states" (Machini, 2009). We must of necessity look towards.

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