ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 5 No. 1 January 2014

CLIMATE CHANGE AND ITS IMPACTS ON THE MILLENNIUM DEVELOPMENTS GOALS (MDGS) IN NIGERIA

C. Festus[1], O. A. Ekpete[2], M. N. Ibor[3]

[1, 2] Department of Chemistry, [3] Department of Biology,
Ignatius Ajuru University of Education, Port-Harcourt, NIGERIA

[1] chidebest86@yahoo.com

ABSTRACT

The main aim of establishing the Millennium Development Goals (MDGs) at the wake of 2000 was to better the life of the poorest poor by creating situations that will make them live in dignity and safety free of hunger, fear and oppression, especially in African countries. Most problems faced by man today are manmade. Man's activities in and within the environment has greatly influenced the statistical distribution of weather patterns, thereby causing climate change. Climate change which is a global challenge with no country, region or tribe in exemption has its major cause established as a result of green house gases (GHGs) emissions. This paper accesses the impact of climate change on the achievement of MDGs over the past one decade and has suggested that except emissions/flaring of GHGs are reduced or eradicated, climate change will continue, MDGs will not be achieved and the people will suffer more.

Keywords: Millennium Development Goals (MDGs), Green House Gases (GHGs), environment

INTRODUCTION

The protection of the global climate for the present and future generation is evocative. On daily basis, the climate is what everyone has a feeling of no matter the race, age, sex or region. Hence, whatever happens with the climate affects the activities and well being of man. Scientists all over the world have shown that human activities carried out within or outside the environment directly or indirectly affect the composition/status of the climate. Just like the popular saying 'change is the only permanent thing'. The global climate has/and is still witnessing a lot of changes.

Climate change which is the change in statistical properties of the climate system when considered over a period of time (Glossary-Climate Change, 2001) was first discussed in 1992 in New York by the United Nations. The changes of global climate are seen in 'increased intensity of solar energy (temperature rise), volcanism oceanic circulation cycles (flooding), biosphere impact, ultraviolet radiation variability, reflectivity, rotational variation, galaxy positional differences, etc'. Today, climate change represents one of the greatest environmental, social and economic challenges threatening the earth's planet generally and a major threat to sustainable development mostly in Africa. In affirmation to this, Ban Ki-Moon asserted that the effects of climate change are felt around the world but with greater effects experienced by those who are the least-able to cope.

The global change of the climate is a global challenge and cannot be addressed by anyone individual, state, country or continent but requires a global framework and action. IPCC (2007) in a released report opined that climate change and its resultant reduction in the environmental carrying capacity in terms of food, water and energy will quickly lead to

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 5 No. 1 January 2014

security issues. However, considering the challenges posed by climate change, the millennium development goals (MDGs) were conceived.

The MDGs' agreement was first signed in 1995 but had a better and modest take-off in the wake of 2000 during a three day millennium summit. These which was hatched behind closed doors by 189 countries, 147 heads of state and government and 3500 accredited non-governmental organizations (NGOs) in the presence of other world leaders (http//www.un.org.millennium/declaration/ares552e.htm), were set as means of creating a global monitoring platform towards implementation of human development projects. The MDGs is a fifteen years implementation plan intended as a feasible framework to improve the lives of the poorest people in the world (OHCHR and CESR, 2011) by creating conditions to enable people live in dignity, safety, free of hunger, fear and oppression. Making these goals was a holistic promise by the United Nations' (UN) leaders, mostly when 2015 was attached as a deadline for their achievements. The MDGs which is targeted to promote basic human rights; i.e. right to education, health water, security and shelter had eight (8) goals, eighteen (18) targets and fouty-eight indicators (Table one below).

Table 1. MDGs targets and indicators

Goals and Targets	*Indicators for measuring MDG progress*
G_1: Eradicate extreme poverty and hunger T_1: Halve ½ proportion of people whose income is less than $1 per day between 1990-2015.	I_1: Proportion of population below $1 per day I_2: Poverty gap ratio (incidence and depth of poverty) I_3: Share of poorest quintile in national consumption
T_2: Halve, between 1990 and 2015, the proportion of people who suffer from hunger	I_4: Prevalence of underweight children under 5 years of age I_5: Proportion of population below minimum level of dietary energy consumption.
G_2: Achieve Universal Primary Education T_3: Ensure that, by 2015, children everywhere, boys and girls alike, will be able to complete a full course of primary schooling	I_6: Net enrolment ratio in primary education I_7: Proportion of pupils starting grade 1 who reach grade I_8: Literacy rate of 15–24 year-olds
G_3: Promote Gender Equality and Empower Women T_4: Eliminate gender disparity in primary and secondary education, preferably by 2005, and in all levels of education no later than 2015	I_9: Ratio of girls to boys in primary, secondary and tertiary education I_{10}: Ratio of literate women to men, 15–24 years old I_{11}: Share of women in wage employment in the non-agricultural sector I_{12}: Proportion of seats held by women in national Parliament
G_4: Reduce Child Mortality T_5: Reduce by two third so, between 1990 and 2015, under five mortality rate	I_{13}: Under-five mortality rate I_{14}: Infant mortality rate I_{15}: Proportion of 1 year-old children immunized against Measles
G_5: Improve Maternal Health T_6: Reduce by three quarters, between 1990 and 2015, the maternal mortality ratio.	I_{16}: Maternal mortality ratio I_{17}: Proportion of births attended by skilled health personnel

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 5 No. 1 January 2014

G_6: Combat HIV/AIDS, Malaria and other Diseases T_7: Have halted by 2015 and begun to reverse the spread of HIV/AIDS	I_{18}: HIV prevalence among pregnant women (15–24 years). I_{19}: Condom use rate of the contraceptive prevalence rate I_{19A}: Condom use at last high-risk sex I_{19B}: % of population (15-24 years) with comprehensive HIV/AIDS knowledge. I_{19c}: Contraceptive prevalence rate I_{20}: Ratio of orphans to non-orphans school attendance (10–14 years).
T_8 :Have halted by 2015 and begun to reverse the incidence of malaria and other major diseases	I_{21}: Prevalence and death rates associated with malaria I_{22}: Proportion of population in malaria-risk areas using effective malaria prevention and treatment measures I_{23}: Prevalence and death rates associated with tuberculosis I_{24}: Proportion of tuberculosis cases detected and cured.
G_7: Ensure Environmental Sustainability T_9: Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources	I_{25}: Proportion of land area covered by forest I_{26}: Ratio of area protected to maintain biological diversity to surface area I_{27}: Energy use (kg oil equivalent) per $1 GDP (PPP) I_{28}: Carbon dioxide emissions per capita and consumption of ozone-depleting CFCs I_{29}: Proportion of population using solid fuels
T_{10}: Halve, by 2015, the proportion of people without sustainable access to safe drinking water and basic sanitation	I_{30}: Proportion of population with sustainable access to an improved water source, urban and rural
T_{11}: By 2020, to have achieved a significant improvement in the lives of at least 100 million slum dwellers	I_{31}: Proportion of population with access to improved sanitation, urban and rural I_{32}: Proportion of households with access to secure shelter
G_8: Develop a Global Partnership for Development T_{12}: Develop further an open, rule-based, predictable, non-discriminatory trading and financial system Includes a commitment to good governance, development and poverty reduction – both nationally and internationally	I_{33}: Net ODA, total and to the least developed countries, as a percentage of OECD/DAC donors' gross national income I_{34}: Proportion of total bilateral, sector-allocable ODA of OECD/DAC donors to basic social services (basic education, primary health care, nutrition, safe water and sanitation)
T_{13}: Address the special needs of the least developed countries Includes: tariff and quota free access for the least developed countries' exports; enhanced programme of debt relief for heavily indebted poor countries (HIPC) and cancellation of official bilateral debt; and more generous ODA for countries committed to poverty reduction.	I_{35}: Proportion of bilateral official development assistance of OECD/DAC donors that is untied I_{36}: ODA received in landlocked countries as a proportion of their gross national incomes I_{37}: ODA received in small island developing States as proportion of their gross national incomes Market access

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 5 No. 1 January 2014

T_{14} : Address the special needs of landlocked countries and small island developing States (through the Programme of Action for the Sustainable Development of Small Island and Developing States and the outcome of the twenty-second special session of the General Assembly)	I_{38}: Proportion of total developed country imports (by value and excluding arms) from developing countries and from the least developed countries, admitted free of duty
T_{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	I_{39}: Average tariffs imposed by developed countries on agricultural products and textiles and clothing from developing countries I_{40}: Agricultural support estimate for OECD countries as a percentage of their gross domestic product I_{41}: Proportion of ODA provided to help build trade capacity Debt sustainability I_{42}: Total number of countries that have reached their HIPC decision points and numberthat have reached their HIPC completion points (cumulative) I_{43}: Debt relief committed under HIPC Initiative I_{44}: Debt service as a percentage of exports of goods and services
T_{16}: In cooperation with developing countries, develop and implement strategies for decent and productive work for youth	I_{45}: Unemployment rate of young people aged 15-24 years, each sex and total
T_{17}: In cooperation with pharmaceutical companies, provide access to affordable essential drugs in developing countries	I_{46}: Proportion of population with access to affordable essential drugs on a sustainable basis
T_{18}: In cooperation with the private sector, make available the benefits of new technologies, especially information and communications	I_{47}:Telephone lines and cellular subscribers per 100 population I_{48A}: Personal computers in use per 100 population and I_{48B}: Internet users per 100 population

Adapted and retrieved from http://www.un.org.millennium/declaration/ares552e.htm

G= Goals, T= Targets, I= Indicators (Indicators 33-48 are specially monitored for least developing countries), HIPC= Highly indebted poor countries, ODA= Official development assistance, OECD= Organisation for economic cooperation and DAC= Development assistance committee.

Timely and successful implementation was the deep conviction behind the setting up of these goals targeted as UN contribution against extreme poverty, hunger, diseases, but towards provision of basic human needs such as quality drinking water, health, education, employment and empowerment, security, etc. To what extent has the MDGs been achieved considering a deadline of 2015. Consequently, this paper is poised to access the extent to which MDGs have mitigated the human challenges caused by climate change or otherwise investigate the effects of climate change on the effective implementation of MDGs.

CAUSES OF CLIMATE CHANGE

With about 1.5 century of industrial and agricultural operations which includes but not limited to clear felling of trees/forests, use of certain farming methods, exploration of oil, etc

undesirable quantities of greenhouse gases (GHGs) are generated and emitted into the atmosphere. Researches (IPCC, 2007; UNFAO, 2006) have shown that the major causes of climate change are GHGs. The cumulative level of these GHG emissions continues to grow on daily basis as production, economic and standard of human living increases. These GHGs, some of which are carbon dioxide (CO_2), chlorofluorocarbons (CFCs), methane (CH_4), nitrous oxide (N_2O), tropospheric ozone (O_3) and water vapour (H_2O) are released by man-related activities daily. Apparently, as the earth's surface is heated up by the sunlight (shortwave radiation) which passes through the atmosphere, part of this radiation is absorbed by the planet's surface and the rest which combines with GHGs are emitted as long-wave radiation. These GHGs are said to create a canopy in the atmosphere when emitted from the earth's surface, leading to atmospheric and climate change.

Recent data reveal that GHG emissions caused by human activities increased globally by 25% (1990-2005) and by 14% (1990-2008) in United States alone (Sundt, 2010). CO_2 accounts for most of GHG emissions but not the only GHGs which has contributed to climate change. Hence, water vapour caused about 30-70% green house (GH) effect, CO_2 causes 9-26%, CH_4 causes 4-9% and O_3 causes 3-7% GH effect (Kiehl and Kelvin, 1997). Consequently, factory farming is also rated another major contributor to climate change challenge as it produces vast volumes of GHGs throughout the supply chain i.e. bush clearing processes releases soil and vegetable-stored gases. Livestock farming accounts for about 18% of global GHGs emissions (UNFAO, 2006), with 37% and 65% of global CH_4 and N_2O emissions respectively (IPCC, 2007).

The continuous use of fossil fuels to meet the world's energy needs is a serious contributor to an increase in GHGs mainly CO_2 and CH_4. This leads to increased climate change with attendant adverse effects on the environment. Ekpete (2009) outlined a list of GHGs sources to also include:-

1. Release of halogenated gases (CFCs) and halons to the atmosphere during operations and maintenance of appliances and equipments with coolants and propellants as molecules
2. Power stations based on fossil fuels are significant major spread sources of manmade CO_2
3. Burning of fire wood and deforestation are the major sources for the production of CO_2.
4. A large fleet of automobiles, aircraft etc use immense quantity of diesel and petrol releasing amount of CO_2 every year into the atmosphere.

EFFECTS OF GHGs

Climate change like many other global and social problems in directly associated with emission of GHGs through burning of oil, coal or gases. Fossil energy burning results into GHGs build-up (mostly CO_2) in the atmosphere (Lohmann, 2006). Research result (Nilson and Pitt, 1994) has shown that the most industrialized and developed countries contributes about 90% of the total GHGs build up in the atmosphere while the developing countries account for about 45%. In realizing this, Michael (2012) posited that for the planet earth and its inhabitants to stay below an average temperature rise of over 2^{o}C, the developed countries have to reduce GHG emission at least by 80% by 2050.

The effects associated with GHGs are better experienced than imagined. These effects will continue to have economic, social, health and psychological implications and impacts unless;

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 5 No. 1 January 2014

the challenge of climate change is tackled through reduction in emissions and flaring of GHGs.

Emitted GHGs pollutes, degrades and dehumanizes habitations, dehydrates surroundings, habitants, ecosystem, food chain, nitrogen cycle, oxygen cycle, flora and fauna, animals and vegetations, thereby causing their actual deaths or poor yields of environmental resources (Amadi 2010).

Carbon dioxide (CO_2) which is a naturally occurring chemical compound with two oxygen atoms covalently bonded to a single carbon atom causes:

a. Ocean acidification since it dissolves in water to form carbonic acid.
b. Shortness of breath (respiration) and dimmed sight to man.
c. Hypercapnia when the blood becomes saturated with too much carbon dioxide
d. Asphyxiation to man
e. Increase in the rate of global warming and leading to anthropogenic climate change

Nitrogen dioxide (NO_2) which is a reddish-brown toxic gas with a sharp biting odour, is a prominent air pollutant and causes:

a. Increased chances of asthmatic attacks on man
b. Decrease in lung function and increase in the risk of respiratory diseases.
c. Death when inhaled because NO_2 is a toxic gas
d. Increase in response to allergens in sensitive individuals.

Methane (CH_4) is a colourless, odourless and flammable gas with the following effects

a. CH_4 contributes to potential global warming which is harmful to man
b. It increases asphyxiation risk in enclosed areas
c. CH_4 gas poisoning can lead to hydrogen sulphide poisoning
d. CH_4 can cause cancer in man.

Halocarbons are organic chemical molecules composed of at least one carbon atom bounded covalently to one or more halogen atom(s). Halocarbons:

a. Are toxic and carcinogenic to man.
b. Can cause liver disease
c. Destroy the upper atmosphere and protective ozone
d. Causes skin cancer and agricultural crops damage
e. Cause headache, rapid heartbeat and light headedness when exposed to it.

Research has shown that prolonged emission of GHGs pose significant and major risk of respiratory track diseases when oxides, sulphides and acids are associated with the emitted poisonous GHGs, and lots of health and environmental problems results (Satyl et al., 2004). For example:

I. Carbon Monoxide (CO): This forms carboxyhaemoglobin when it combines with haemoglobin (HB) which prevents normal transportation of oxygen by red blood cells in the body, hence rendering the body functionally anemic.
II. Sulphurdioxide (SO_2) causes irritations of the respiratory system of humans, damages the lungs and fades away fabrics, papers, paints, etc easily.

III. Nitrogen dioxide (NO_2), very corrosive, causes extensive leaf drop in plants, increases loss of appetite, attacks the skin, helps in the formation of smog which causes irritation of the eye and nose due to the presence of ozone (O_3).

IV. Nitric acid produced by nitrogen oxide corrodes the internal system of the body and destroys organic matters.

CLIMATE CHANGE AND MDGs

Experts over the years have maintained that climate change affects efforts directed towards achievement of MDGs. The MDGs which was originally initiated in 2000 include "eradication of extreme poverty, achievement of universal primary education, promotion of gender equality and women empowerment, reduction of child mortality rate, improvement of maternal health, combating of HIV/AIDS, malaria and other diseases, ensuring environmental sustainability and development of global partnership. All these goals in one way or the other have been adversely affected by climate change. Ban (2012) asserted that the impacts of climate change could undo investments made to achieve MDGs. IPCC (2007) affirmed that the achievement of MDGs will cost more now in terms of both human and material resources due to climate change.

Research reports (Friends of the Earth, 2003; IPCC, 2007) indicate that climate change exerts some impacts on the United Nations Millennium Development Goals (UNMDGs). Some of which are:-

Eradicate Extreme Poverty and Hunger

Poverty and hunger are both global and social challenges hence cannot be 100% eradicated without adequate production, provision and availability of agricultural products. The question now is, can agriculture strive in the presence of flooding, drought, cyclones, etc? Flood simply implies a large area that is usually dry or a flow above the carrying capacity of a channel (NOAA, 1998) while drought is an increased periods of extreme dryness. Climate change in these forms have negatively affected agriculture in terms of destruction of roads, bridges, markets places, ports, farm lands, diminished/death of crop yields, livestock, increasing soils salinity, reduced fisheries due to coral bleaching. These forms of climate change greatly impacts on food systems and jeopardize food security.

To Achieve Universal Primary Education

"Education, they say is the right of every child". This was first initiated in 1979 in Nigeria by the then military administrator Olusegun Obansajo's military administration and re-echoed in 2000 as one of the major UNMDGs. Climate change has over the years impacted on education standards and accessibility. For instance, educational standards cannot be maintained in the phase of food and water scarcity, interruptions of academic calendars, destruction of infrastructures, lack of resources and needed services –all caused by climate change (i.e flooding, drought).

People who are made homeless by climate change can hardly maintain regular schooling for kids, mostly where there are no foods, roads and markets to transport and sell agricultural products, insufficient money to pay fees, hospitals to treat sickness etc.

Promote Gender Equity and Empower Women

Experts have asserted that climate change affects improvement of women's health, economic status and political empowerment. Most women involved in some form of agriculture may be put on the baseline due to decline in crop productivity. In affirmation, Antonio (2010) opined

that the MDGs cannot be achieved if 50% of the world's population is sidelined. He further maintained that women and children make-up more than 50% of the world's population.

Climate change has more multiplier effects on the women and children, who are more prone to death and injury from extreme weather events, communicable diseases and much reliance on agriculture.

Reduce Child Mortality

It is no longer news that the effects of climate change has impacted on every aspect of human endeavour; child mortality not an exemption. Maternal and child health are affected by heat related deaths, shortages of drinking water and increase in diseases. Climate change has adverse health challenges on children as they are more prone to vector borne and hunger related diseases. Antonio (2010) realizing the impact of climate change and poor commitment of both developing and developed countries to children's health, affirmed that if the MDGs are well directed, 2.5 million children would have not died in 2008 but maintained that about 12 million children can still be saved from death and climate related diseases.

Improve Maternal Health

Climate change affects most of the MDGs related to health, gender and issues of water and sanitations. Effects of flooding, drought etc are felt in food production and availability decline, causing hunger and poverty and as well beget water-borne diseases which cause malaria and death. Flood and drought also leads to human displacement causing climate refugee, sickness (i.e. dengue fever), high temperature rise which comes with vector borne diseases, etc. Research evidences (IPCC, 2007; Friends of the earth, 2003) have shown that the above affects maternal health. With less 1000days to the deadline of 2015 much is yet to be achieved in the improvement of maternal health in Nigeria.

Combat HIV/AIDS, Malaria and Other Diseases

Chuma Aeneas, the UN coordinator for Zambia affirms that HIV is not a health issue, rather a developmental issue and accessing its socio-economic impact shows that there is a direct link with what is happening in the weather and agriculture caused by climate change . He concluded by saying that rural people infected by HIV will end up being climate refugees, denied of access to farming, food and rural health treatments.

World Health Organization (WHO) scientists in a report affirmed that 160000 people die every year as a result of climate change (global warming). The report further asserted that global warming related deaths resulting from malaria, malnutrition and food scarcity will be doubled by 2020.

Ensure Environmental Sustainability

Recent reports has it that there is increased water shortages as a result of oil pollution and crude spills, changes in rainfall patterns, greater periods of drought and salt water incursion in the fresh water reserves. All these are simply linked to the continuous flaring of gas and use of fossil fuel based technology. The consequences above are witnessed in loss of arable/agricultural lands, increased scarcity in sea foods, high rise in diseases mostly water borne diseases like malaria. In this light it is quite difficult to protect and sustain the environment except emissions of GHGs are greatly reduced and eradicated.

Developing a Global Partnership for Development

Ban Ki-moon, the Secretary-General of the United Nations in an address to UN leaders in 2012 at New York affirmed that 'the unprecedented challenge of climate change demands

unprecedented action and unprecedented leadership. Leadership that is ready to set new directions'. This implies that global framework is required to tackle the challenge of climate change but indications have shown that the wealthy countries are falling on their promises of providing the resources needed to confront climate change challenge. This is because the levels of indebtedness, state of public finances and investments' development in poor countries have not shown any significant improvement.

CONCLUSION

It is obvious that the challenge of climate change is general and given the nature and magnitude of the challenges it posses, no region, nation or tribe can insulate itself from these challenges. Hence, tackling the global challenge of climate change which is majorly caused by the emissions of GHGs such as carbon dioxide, nitrous oxide, methane, halocarbons etc requires a global framework that guarantees international cooperation with highest commitment. This will in turn aid in the achievement of the MDGs as stated and agreed in 2000 by the UN leaders to help the poorest people live life of dignity and safety free of hunger, fear and oppression.

REFERENCES

[1] Amadi, G. (2010). *Effects of Gas Flaring on host-communities in Etche Local Government Area of Rivers State.* An undergraduate project submitted Economics Department IAUE, Port-Harcourt; Unpublished.

[2] Antonio, V. (2010).*Europe's World Summe*r: It's not too late to rescue the UN's MDGs from failure. 1-3.

[3] Ban, K. M. (2012). *An address presented by UN Secretary General*, Ban Ki-moon to high level event on climate change in New York

[4] Ekpete, O.A. (2009). Green House Effect: Fate of the Niger Delta region. *International Journal of Pure and Applied Sciences, 2*(4), 43-47.

[5] Friends of the Earth. (2003). *Social Impacts of Climate Change on Millennium Development Goals; Changing the future of the world's poor.* Australia.

[6] Glossary – Climate Change.(2001). Education Center – Arctic Climatology and Meteorology. NSIDC National Snow and Ice Data Center. Glossary in IPCC TAR WG. http://nsidc.org/arcticmet/glossary/climate change.html

[7] IPCC. (2007). climate change: Synthesis report and contribution of working groups I, II and III to the fourth assessment report of the Intergovernmental Panel on Climate Change, IPCC. http://www.ipcc.ch/publications_and_data/ar4/syr/en/contents.html

[8] Kiehl, J. T. & Kelvin, E. (1997). Earth' Annual Global Mean Energy Budget Bulletin of the *American Meteorological Society, 78*(2), 197-208.

[9] Lohmann, L. (2006). Carbon trading a critical conversation on Climate Change, *Privatization and Power Development dialogue, 48*, 12-30.

[10] Michael, S. (2012). Climate change and the Media: The roles of media in telling environment stories. *Daily independent* 2012

[11] Nilsson, S. & Pitt, D. (1994). *Protecting the atmosphere: The climate change convection and its context.* London: Earth Scan.

ISSN-L: 2223-9553, ISSN: 2223-9944
Vol. 5 No. 1 January 2014

[12] NOAA Coastal Services Centre (1998). Glossary of Coastal Terminolgy Publication no. 98-105.

[13] OHCHR and CESR (2011).Joint conference Publication of 'OHCHR and CESR' on Ensuring access to Health for all Women and newborn-The role Parliaments. *A paper delivered at the Inter-Parliamentary Union and World Health Organisation (WHO)* on 30th Oct; 2011.

[14] Pruneau, D. M; Liboiron, L. &Vrain, E. (2001).People's idea about climate change: a source of inspiration for the creation of educational programs. *Canadian Journal of Environmental Education, 6*, 58-76.

[15] Satyl, P. Tuli, G. D. Basu, S. K. & Madan, R. D. (2004). *Advanced Inorganic Chemistry* (Vol II). New Delhi: S. Chand & company Ltd.

[16] Sundt, N. (2010). *Climate Change Indicators in the United States*: Summary of Key Findings Retrieved from U.S. Environmental Protection Agency Issues Compendium of "Climate Change Indicators" for the U.S.

[17] The United Nations Framework Convention on Climate Change (1994). Climate change http://unfccc.int/essential_background/convention/background/items/1349.php

[18] United Nations Food and Agricultural Organisation (UNFAO). (2006). Climate Change:

[19] United Nations. Millennium Development Goals (UNMDGs). (2000). http://www.un.org.millennium/declaration 552e.htm