

POLITICS OF CLIMATE CHANGE

By

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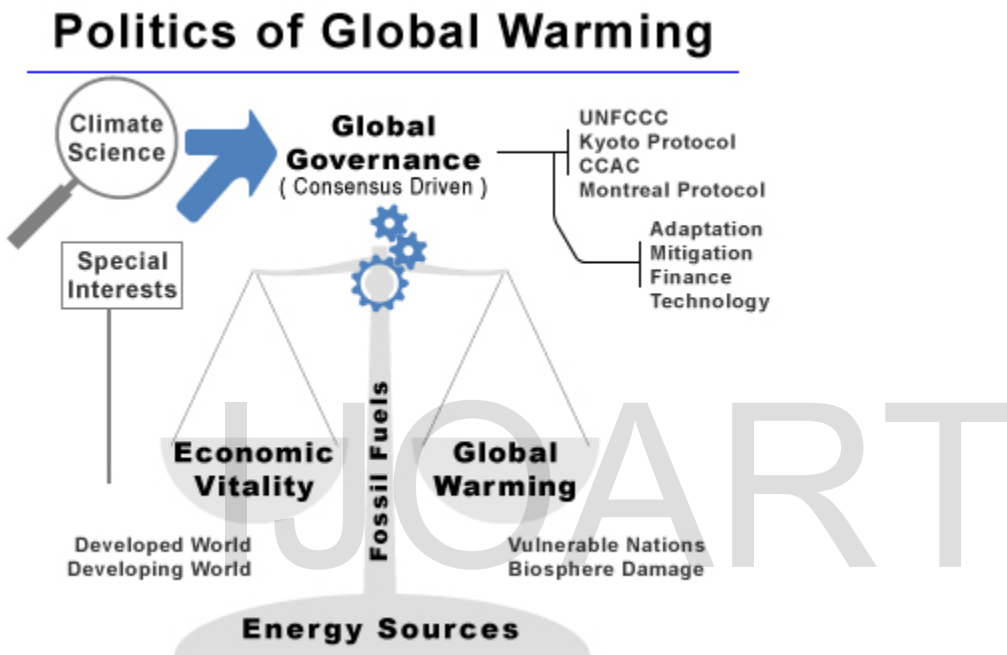
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The politics of climate change are complex due to numerous factors that arise from the global economy's complex interdependence on carbon dioxide emitting hydrocarbon energy sources and because carbon dioxide is directly implicated in global warming making global warming a non-traditional environmental challenge. Climate change is a straight forward science which is understood by many scientists and non-scientist alike. But climate change science, evidences, impacts, mitigation and adaptation have been unduly politicized because of the economic, developmental and strategic interests of nations (developed and developing) and multi-national oil companies who benefit from the fossil fuel-driven economy. This paper highlights how United States of America, the largest emitter of greenhouse gases in the world failed to ratify the Kyoto protocol which is a global treaty entered into since 1997 to reduce the global emissions of the four principal greenhouse gases (CO₂, NH₄, NO₂ and CFCs). Also highlighted is China which is currently the 2nd largest economy and projected to surpass USA as the highest global emitter of greenhouse gases in the next two decades. The areas of discord that have stalled many climate change conferences and negotiations between the developed countries and developing countries such as transfer of technology, intellectual property rights, payment of reparations, green funds, mitigation versus adaption have all been carefully treated in this paper. The position of this paper is that the politics of climate change is a major distraction and it amounts to the proverbial fiddling while Rome burns. The global community should therefore jettison politics and face the reality of climate change headlong with a view to saving humanity and the environment from this “global time bomb” called climate change.

INTRODUCTION

Global climate change is caused by the greenhouse effect, an effect related to the heat trapping character of some gases such as carbon dioxide, methane, nitrous oxide, water vapour and chloroflouro carbons. The above named gases are naturally present in the troposphere and tend to absorb some of the infrared radiation and reradiate it back to the surface of the earth. These named gases play roles that are analogues to the glass in a greenhouse; hence the name greenhouse gases (Wright, 2005). The science of greenhouse effect is not new. It was first recognized in 1827 by a French Mathematician, Jean- Baptiste Fourier. John Tyndall, an Irish Scientist, later took on the idea for further investigation. Then in 1898, Svante Arrhenius, a Swadish Scientist actually coined the phrase “greenhouse effect” and went on to predict that if the concentrations of carbon dioxide in the atmosphere doubled, the global climate would warm by 4⁰ c to 6⁰ c(Bruges 2007). Though the global temperature has not warmed as Arrhenius had

predicted about 114 years ago, observable warming of the global climate system has been established recorded by individual scientists and corporate ones such as the Intergovernmental Panel on Climate Change (IPCC). The IPCC was established in 1988 by the World Meteorological Organization and the United Nation Environment Programme as a network of the world's leading climate change scientists and experts (IPCC, 2007).



Politics of Global Warming Pictogram

In the 2nd Assessment Report of IPCC, the increasing concentration of three greenhouse gases, carbon dioxide (CO₂) methane (CH₄) and nitrous oxide (N₂O) were reported. The three gases have significantly grown by about 30 percent, 145 percent and 15 percent respectively (value for 1992). These increase according to the IPCC (1996) can be attributed largely to human activities especially the burning of fossil fuels, land use changes and agriculture. One of the outstanding findings of the IPCC 4th Assessment Report (IPCC 2007) was that the warming of the climate system is unequivocal, as it is now evident from observation of increase in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea levels. The report equally noted that eleven of the twelve

years (1995-2006) rank among the 12 (twelve) warmest years in the instrumental record of global surface temperature since 1850. Despite all the evidences, impacts and likely impacts of climate change on the global agriculture and food security, water resources, energy, human health, sustainable development and extreme weather events and vital ecosystems that sustain human economic base, the global communities individually and collectively are still playing dangerous politics with global warming and association climate change issues. The truth is that adverse impacts of climate change are already manifesting in different parts of the world but more so in the developing countries where these impacts are hitting hardest because the people are very vulnerable. The focus of this paper is therefore to highlight and analyze these political angles of climate change with a view to redressing them and to redirecting efforts to achieving equitable, all inclusive and just climate change mitigation and adaptation programmes for the betterment of man and his environment.

Non-traditional Environmental Challenge

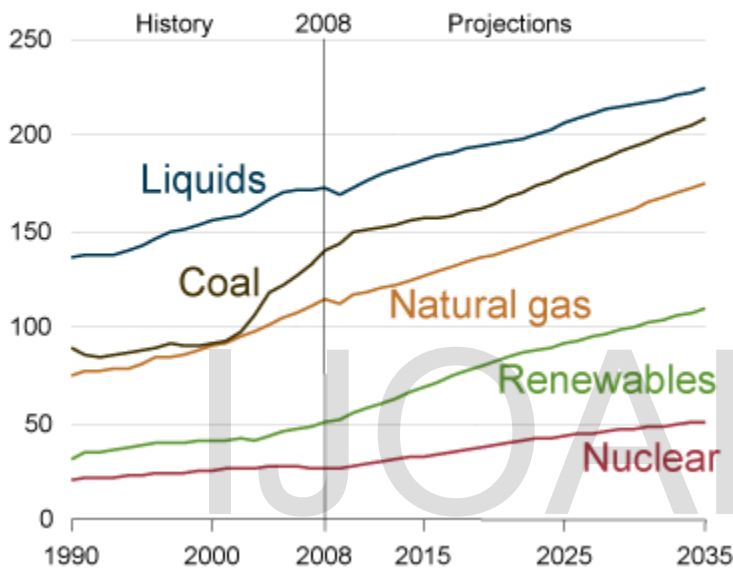
Traditional environmental challenges generally involve behavior by a small group of industries who create products or services for a limited set of consumers in a manner that causes some form of damage to the environment which is clear. As an example, a gold mine might release a dangerous chemical byproduct into a waterway that kills the fish in the waterway: a clear environmental damage. By contrast, carbon dioxide is a naturally occurring colorless odorless trace gas that is essential to the biosphere. Carbon dioxide is produced by all animals and utilized by plants and algae to build their body structures. Plant structures buried for tens of millions of years sequester carbon to form coal, oil and gas which modern industrial societies find essential to economic vitality. Over 80% of the world's energy is derived from carbon dioxide emitting fossil fuels and over 91% of the world's energy is derived from non-carbon-neutral energy sources. Scientists attribute the increases of carbon dioxide in the atmosphere to industrial emissions and scientists have linked carbon dioxide to global warming. However, the scientific consensus is difficult for the average individual layperson to readily see and grasp. This essential nature

to the world's economies combined with the complexity of the science and the interests of countless interested parties make climate change a non-traditional environmental challenge.

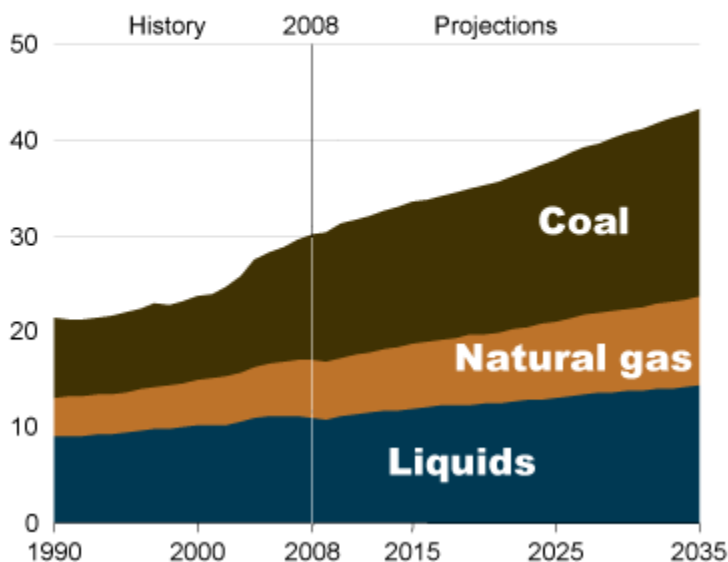
Carbon dioxide and a nation-state's economy

Energy Consumption Linked to CO2 Emissions

**World energy consumption by fuel
1990 - 2035 (quadrillion Btu)**



**World energy-related CO2 emissions by fuel
1990 - 2035 (billion metric tons)**



Source: USDOE EIA IEO 2011

The vast majority of developed countries rely on carbon dioxide emitting energy sources for large components of their economic activity. Fossil fuel energy generally dominates the following areas of an OECD economy:

- agriculture (fertilizers, irrigation, plowing, planting, harvesting, pesticides)
- transportation & distribution (automobiles, shipping, trains, airplanes)
- storage (refrigeration, warehousing)
- national defense (armies, tanks, military aircraft, manufacture of munitions)

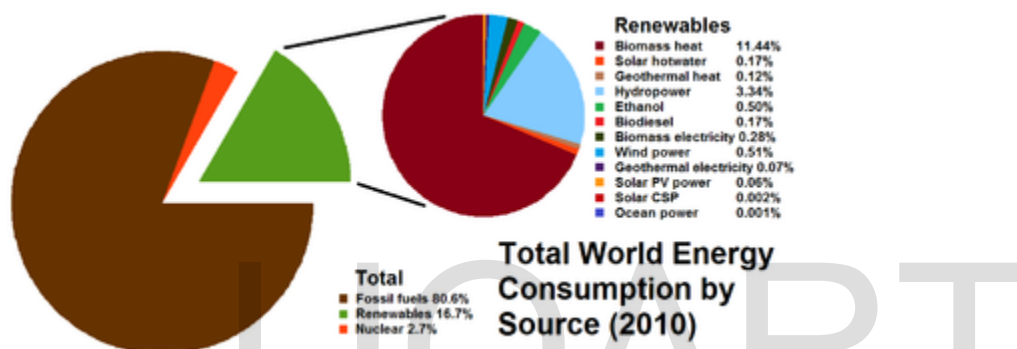
In addition, carbon dioxide emitting fossil fuels many times dominate the utilities aspect of an economy that provides electricity for:

- lighting
- heating & cooling
- refrigeration
- production of products
- computing and telecommunications

Also, activities like cement production, deforestation, brick production, livestock raising, refrigeration and other industrial activity contributes greenhouse gases that together are believed to account for 1/3 of global warming. Because carbon dioxide emitting fossil fuels are intrinsically connected to a developed nation-state's economy, the taxation of fossil fuels or policies that decrease the availability of cost-effective fossil fuels is a significant political matter for fear that those taxes might precipitate a decrease in economic vitality. The replacement of cost-effective fossil fuels with more expensive renewable energy sources are seen by many as a hidden tax that would achieve the same result of depressing economic vitality and lead to impoverishment. Beyond the economic vitality of a single

nation, some are concerned that taxation would depress economic activity in a manner that could affect the geopolitical order by providing incentives to one set of countries over another. In developing countries the challenges are slightly different. Developing countries see carbon dioxide emitting fossil fuels as a cost effective and proven energy source to fuel their growing economies. Sometimes renewable energy technologies are not readily available to developing countries because of cost or due to export restrictions from developed countries who own those technologies.

Perceived lack of adequate advanced energy technologies



In 2010 renewable energy accounted for 16.7% of total energy consumption but Biomass energy which releases carbon dioxide and is not carbon-neutral accounted for 11.4%, leaving only 4.9% for carbon-neutral renewable (hydropower 3.3% and 1.56% for all others). Carbon dioxide emitting fossil fuels continue to be abundant and their prices are consequently low accounting in 2010 for over 80% of the world's energy needs. Advanced recovery technologies like horizontal drilling, offshore oil production, and oil sand recovery technologies continue to push back the threshold of Peak Oil and with it the high prices seen necessary to foster the development of viable alternative energy technologies that can replace fossil fuels in a post-hydrocarbon economy. Renewable in 2010 accounted for 16.7% of the world's energy, however Biomass energy accounted for 11.4% meaning that non-carbon dioxide producing renewable accounted for only 4.9% of the world's energy use with the vast majority of that renewable energy coming from hydroelectric production at 3.34% further leaving 1.56% of renewable

energy derived from newer advanced technologies like ethanol, biodiesel, wind, solar, ocean power and geothermal.

The biomass is carbon-neutral proposal put forward in the early 1990s has been superseded by more recent science that recognizes that mature, intact forests sequester carbon more effectively than cut-over areas. When a tree's carbon is released into the atmosphere in a single pulse, it contributes to climate change much more than woodland timber rotting slowly over decades. Current studies indicate that "even after 50 years the forest has not recovered to its initial carbon storage" and "the optimal strategy is likely to be protection of the standing forest". After adjustment, carbon neutral renewable account for 4.9% of the world's energy needs in 2010 with solar accounting for .23% and wind for 0.51% of total world energy need. Recent optimistic projections from the EIA and the IEA show that renewable will account for one sixth of global energy production in the next few decades (which includes Biomass energy). Without help developing countries usually do not have access to the advanced energy technologies like wind and solar that they require for development forcing them to rely on hydrocarbon energy sources like fossil fuels and biomass. Without adequate and cost effective post-hydrocarbon energy sources, it is very unlikely the countries in developed or developing world would accept policies that would materially affect their economic vitality or economic development prospects. To date, developing countries have resisted adopting verifiable carbon dioxide targets for fear of impacts to their economies and the United States, Russia, Canada, Japan, New Zealand, Belarus and Ukraine have either not ratified the Kyoto Protocol, withdrawn from the Kyoto Protocol or have chosen to not accept a second commitment period leaving the Kyoto Protocol extension covering only 15% of global carbon dioxide emissions. A strong contributor to these decisions is that the existing technologies are not yet adequate to replace the role of fossil hydrocarbon fuels.

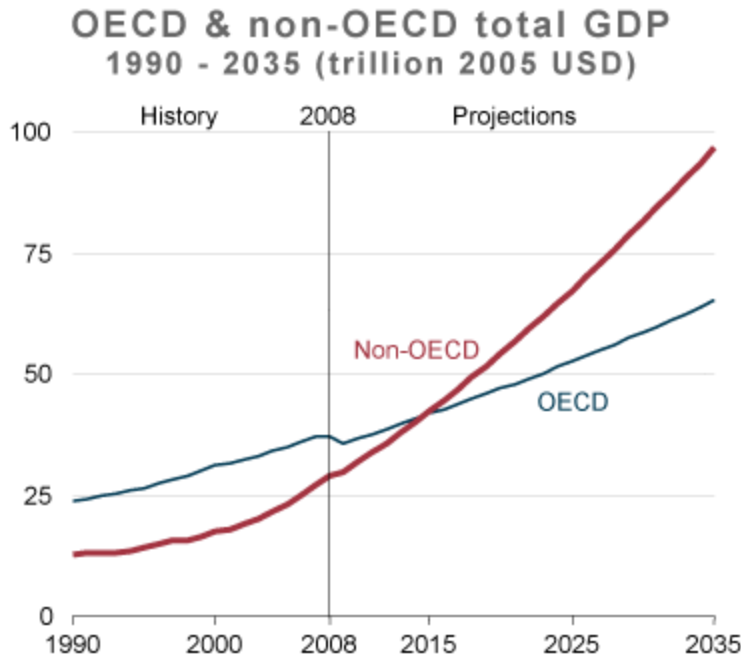
Arguments have been made that fostering renewable energy through subsidies and other adoption-mechanisms are the path towards increasing the percentage of carbon-neutral renewable technologies that are used. According to IEA (2011) energy subsidies artificially lower the price of energy

paid by consumers, raise the price received by producers or lower the cost of production. "Fossil fuels subsidies costs generally outweigh the benefits. Subsidies to renewable and low-carbon energy technologies can bring long-term economic and environmental benefits". In November 2011, an IEA report entitled *Deploying Renewable 2011* said "subsidies in green energy technologies that were not yet competitive are justified in order to give an incentive to investing into technologies with clear environmental and energy security benefits". The IEA's report disagreed with claims that renewable energy technologies are only viable through costly subsidies and not able to produce energy reliably to meet demand. "A portfolio of renewable energy technologies is becoming cost-competitive in an increasingly broad range of circumstances, in some cases providing investment opportunities without the need for specific economic support," the IEA said, and added that "cost reductions in critical technologies, such as wind and solar, are set to continue."

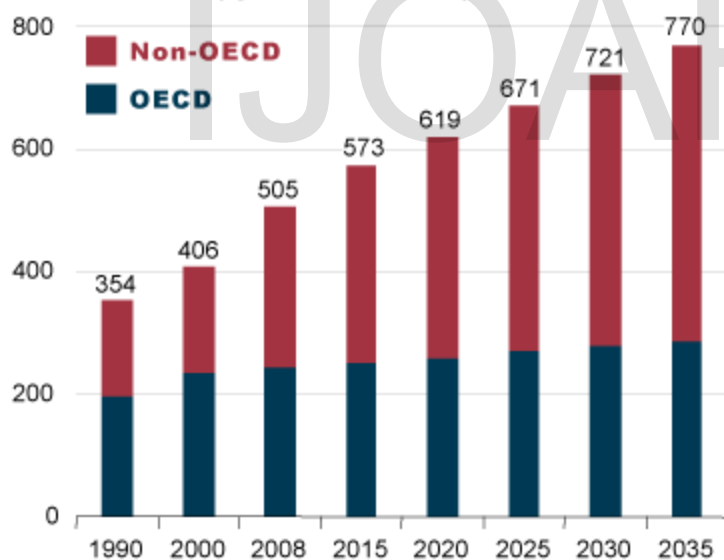
By contrast, Fossil-fuel consumption subsidies were \$409 billion in 2010; oil products carry half of it. Renewable-energy subsidies were \$66 billion in 2010 and will reach according to IEA \$250 billion by 2035. Renewable energy is subsidized in order to compete in the market, increase their volume and develop the technology so that the subsidies become unnecessary with the development. Eliminating fossil-fuel subsidies could bring economic and environmental benefits. Phasing out fossil-fuel subsidies by 2020 would cut primary energy demand 5%. Since the start of 2010, *at least 15 countries have taken steps to phase out fossil-fuel subsidies.*

Industrialization of the developing world

Economic Development Linked to Energy Consumption



World energy consumption, 1990-2035
(quadrillion Btu)



Source: USDOE EIA IEO 2011

The developing world sees economic and industrial development as a natural right and the evidence shows that the developing world is industrializing. The developing world is leveraging the use of carbon dioxide emitting fossil fuels as one of the primary energy sources to fuel their development. At the same time the scientific consensus on climate change and the existing global governance bodies like

the United Nations are urging all countries to decrease their carbon dioxide emissions. Developing countries logically resist this lobbying to decrease their use of fossil fuels without significant concessions like:

- advanced energy technologies
- advanced adaptation technologies
- Monies to adapt to climate change.

Historical Perspective: - The non- acceptance of the connection between Global Warming and climate change. The economic and corporate interests of nations and corporate organizations have tended to becloud the basic science of global warming and climate change. For example, many developed countries have sponsored many studies to discredit the simple science of global warming and climate change by capitalizing on the complex nature and some uncertainties of the cycles and processes that drive the global climate systems. The climate change skeptics still argue that observed temperature increase and other signs of climate change have not been convincingly proven to be as a result of humanity's greenhouse gas emissions (Athanasius and Baer, 2002). The climate change skeptics have also tended to discredit all the four Assessment Reports so far issued by the IPCC. The attitude of these skeptics is not helping climate change response and this is also strange because unlike Ozone layer depletion regulation that had long started when there was only a laboratory demonstration that halogenated compounds could destroy ozone layer and Rolanda and Molina then started to theorize that human created CFCs could migrate to the stratosphere where the ozone shield is located (Desombre, 2002). The truth is that before any conclusive scientific evidence was arrived at in respect of the control of ozone layer depletion, the international community had already agreed to control all the substances that were identified as capable of depleting stratospheric ozone. In the same vein, the international community should recognize climate change as resulting partly from human- induced greenhouse gases.

The Non-Binding Nature of Kyoto Protocol: - The Kyoto Protocol of the United Nations Framework Convention on Climate Change (UNFCCC) was adopted on 11th December, 1997 and entered into force on February 16th 2005 following ratification by Russia (World Bank 2003). As of September 2011, 111 countries and regional economic integration organizations have ratified, accepted approved or acceded to the Kyoto Protocol. In Article 3 paragraph (1) of the UNFCCC, the parties agreed that:

-The largest share of historical and current global emissions of greenhouse gases has originated in developed countries.

-Per capital emissions in developing are still relatively low.

-The share of global emission originating in developing countries will grow to meet their social and developmental needs under the protocol. Industrialized countries (called Annex 1 countries) have to reduce their combined emission to 5 percent below 1990 levels in the first commitment period 2008-2012.

The truth is that the Kyoto protocol has so many untied ends which many of the industrialized countries exploited to stall its implementation in the first instance. First, the United States of America and Australia, two major annex I emitters signed the protocol but refused to ratify it. Canada another Annex I country ratified the protocol but in December 2011 made a u- turns and announced their discontinuation with the protocol.

Second, the protocol failed to specify any policy or strategy that each country should adopt to achieve agreed reduction targets. These strategies are left at the whims and caprices of the individual nations to determine. Thirdly, the non-inclusion of developing countries in the protocol created the first point of weakness because some of the Annex I countries in their emission levels (Table 1). The table shows that China and India emission combined contribute about 18.66 percent of the world CO₂ emissions but five major industrialized countries combined (Japan, Germany, UK, Canada and Italy) contribute about 15.15 percent of the world CO₂ emissions (Table 1).

Table 1: Share of Top 10 Emitting Countries in Global Co₂ Emission

S/N	World Ranking	Percentage share of World population	Percentage share of World Co ₂ Emissions	Percentage Cumulative Share of Co ₂ Emission
1	USA	4.76	24.45	24.45
2	China	21.47	13.91	38.36
3	Russia	2.55	6.44	44.81
4	Japan	2.18	5.07	49.88
5	India	16.97	4.75	54.63
6	Germany	1.42	3.70	58.33
7	United Kingdom	1.03	2.43	60.76
8	Canada	0.52	2.09	62.85
9	Italy	1.00	1.86	64.71
10	Mexico	1.62	1.68	66.39

Source: The World Bank World Development Indicators (2003)

Political and Economic Interests of Oil Producing Countries and Oil Companies

The importance of oil in global economy and global politics cannot be over emphasized. Bruges (2007) stresses the importance of oil by rightly observing that global economy would be determined by the amount of energy available and the economy of each country would depend on much energy it can command. Trade, manufacturing, services, exchange, everything would be limited not by money but by its energy use. In fact oil has elevated many poor countries especially from the Middle East to both political and economic prominence. Before the era of petroleum economy, the Arab world was unknown except for the age long territorial disputes with Israel. But the 1970s marked a watershed and oil started to be reckoned with both politically and economically. The Israeli- Arab War of 1973 led to the Arab world placing oil embargo on countries that supported Israel and price of oil sky rocketed. This factor affected the global economy very profoundly. The major oil producing nations of the world benefitted immensely

from this boom. The Arab world was never remained the same politically, economically and strategically. Instant millions of US Dollars were made, millions of jobs were created and serious infrastructural transformation was achieved in all the oil producing nations from Kuwait to United Arab Emirates and from Iraq to Qatar. With the possible exception of the United Arab Emirates, all the oil producing countries are monoculture economies that virtually depend on oil and gas. With fossil fuels as the life wire of the oil producing nations any talk of alternative to oil or reduction in demand of oil have met with all manners of resistance such as discrediting the impacts of burning fossil fuels on global warming and climate change. What is said about oil producing countries is also true for oil producing companies whose businesses start and end with oil and gas. These companies employ millions of people and their combined asset and turnovers run into trillion of American dollars. To these oil firms, business as usual scenario is what they crave for. Consequently, some of the companies have sponsored counter researches and publicity to counter any link between fossil fuels burning and climate change. The oil companies are also not interested in investing in research and development of renewable energy as doing so would amount to compromising their economic and business interest.

The economic interest of major emitters of Greenhouse Gases

The greatest emitters of greenhouse gases are also the largest economic power of the world. These super emitters are the industrialized countries of the world who benefit from the power of mechanical power driven by fossil fuels since the industrial Revolution of the 1750s to achieve high level of industrialization as well as high standard of living among others. These countries include the USA, the European Union, Australia, Japan and the Russian Federation. Rich countries dominate the carbon dioxide emission of the world. The United State is the largest emitter accounting for about one-fifth of the total emission. The five top emitters are China, India, Japan, the Russia Federation and the United State account for more than 50 percent of the emissions (Human Development Report 2007). The top ten emitters (figure 1) collectively account for more than 60 percent of the total emissions

The industrialized economies of the world also rank very high in historical emissions per capita. For example, USA and Britain averaged 1,100 tons of CO₂ per capita compared to China's 66 tones per capita and India's 23 tones in respect of historical emissions (Human Development Report 2007). The position of the top greenhouse emitters is clear and understandable because reducing emissions to them would amount to compromising their economic interest and this is capable of slowing down their economic growth, economic competitiveness and lowering the standard of living of their people. The position of United States as forcefully represented by their president, George W. bush in 2001 is unequivocal:

“The approach taken under the Kyoto protocols would have required the United States to make deep and immediate cuts in our economy to meet an arbitrary target. It would have cost our economy up to US \$400 billion and we would have lost 4.9 million jobs. As the president of the United States to charge with safeguarding the welfare of the American people and American workers. I will not commit our nation to unsecured international treaty that will throw millions of our citizens out of work (Brown 2004).”

The Economic and Development Interest of the Two Largest Economies- The United States of America and China.

United States of America and China are now the two largest economies in the world. China recently overtook Japan as the second largest economy. Table 2 shows the five largest economies in the world using their purchasing power parity (United States, China, Japan, India and Germany).

Table 2: Biggest Economies by Purchasing Power Parity (PPP)

Country	GDP Using PPP in US billion Dollar
United States	11,651.1
China	7,642.2
Japan	3,737.3
India	3,389.7
Germany	2,335.5

Source: Pocket World in Figures (2007)

The implication of China becoming an economic and industrial giant is that its carbon footprints would also be very high if not higher than those of the United States. The politics of historical emissions versus

current emissions has raged between the United States and China plus the 77 group of developing nations. This debate has stalled all the major conferences of parties (COP) of the United Nations Framework Convention on Climate (UNFCCC).

In 2009, COP 15 in Copenhagen Denmark ended without any major outcome. The same with COP 16 and 17 in Cancun (Mexico) and Durban (South Africa) respectively, Also politicized is the issue of who should pay reparations for causing global warming and climate change. The developing world who did not contribute much to global warming in the first instance asked the industrialized countries to pay reparations as they are most vulnerable to impacts and likely impacts on climate change. The developed world on the other hand asked some rich developing countries such as China, India and Brazil to contribute as their large economies and their poor pollution controls are projected to emit greenhouse gases into the atmosphere and possibly surpass whatever was emitted in the past by the industrialized countries of the world. The bickering between USA and China and their allies amount to the proverbial fiddling while Rome burns and this is very dangerous for the global human community as uncontrolled emission of greenhouse gases would overwhelm the earth's atmosphere and climb above the tipping point of 2⁰C. Scientists have warned that global warming of 2⁰C or more would happen in the business as usual scenario in the next 100 years and this portends serious danger to man and his planet.

The Politics of Climate Change Mitigation versus Adaptation

Policy makers have two principal instruments for dealing with climate change. These are mitigation and adaptation. Mitigation involves limiting the amount of greenhouse gases emitted into the atmosphere. Adaptation on the other hand is all about easing the impact of a given change with appropriate protection measures such as development and deployment of heat-resistant crops, change in agricultural and forest management systems, building of dykes and sea walls, the construction of water storage and irrigation system as well as adaptation of houses (Frankhouser, 1995). Since the climate change response debate started, more attention has been expended on mitigation to the detriment of adaptation. The focus has always been how to limit greenhouse gases but especially carbon dioxide (CO₂)

) concentration from the highest safe level which is 445 to 490 parts per million which is also the same as limiting average global temperature to increase of between 2.0 to 2.4⁰c. All the climate change negotiations since Kyoto have concentrated on mitigation costs, mitigation technologies, protection of intellectual property rights of developed countries, etc. But mitigation is only targeting future emission without recognizing that past emissions especially from the developed economies are already wrecking incalculable havocs on people and their supporting means of livelihood especially in the developed countries of the world. If significant mitigation measures are taken, little action may be needed in respect of adaptation. Conversely, if the consequences of global warming can easily and cheaply adapt to, there may be little need for preventive carbon abatement. The two sets of policy measures should thus be carefully coordinated and vigorously pursued (Frankhouser, 1995). Analytically, the optimal combination of prevention and adaptation can be found by minimizing the total costs of climate change consisting of the costs of emission abatement PC, the costs of adaptation AC and the costs of greenhouse damage D represented in equation 1 (Frankhouser 1995).

$$\text{Minp, a } AC_{(a)} + PC_{(p)} + D(T,a) \text{-----1}$$

Subject to $T=f(p)$

Where: P denotes the level of prevention (emissions abatement)

A is the degree of adaptation

D is the greenhouse damage and depends positively on temperature level T, and negatively on the amount of adaptation.

AC is the cost of adaptation

PC is the cost of prevention.

From the above equation, climate change damage cost is minimized when both the increment costs of mitigation and adaptation are lower than the additional benefits. This optional level of mitigation, action is represented graphically in (figure 2). The graphic and the equation representations underline the importance of both mitigation and adaptation measures. They are two sides of the same coin and efforts should therefore be geared toward ensuring that none is promoted at the detriment of the others. Moreover, the developed nations of the world should live up to the commitment which they freely made and signed during the United Nations Framework Convention on Climate Change (UNFCCC) in 1992 when they agreed to help the developing countries that are particularly vulnerable to meet their costs of adaptation to climate change (Human Development Report 2007).

Politicization of Extreme Weather Events by not linking them to Climate Change

Extreme weather events including heat waves, frosts floods, droughts severe storms such as hurricanes, cyclones, tornadoes have intensified in many parts of the world. The magnitude, frequency and character of these extreme weather related events have significantly changed especially in the last three decades. For example, in Africa and East Asia drought has intensified and equally prolonged in duration, heat waves have not only intensified, but have come with more with more disastrous consequences. For example, in 1995, summer heat waves affected both US Mid-west and India. More than 700 people died in Chicago from heat exhaustion when temperatures exceed 32⁰c (90⁰F) in July 1995 about 500 people died in Northern India when June temperatures soared to 50⁰c (122⁰F) (Enger and Smith, 2004).

Tornados have also been occurring more frequently and with more fury. In the United States alone, nearly 1000 tornados have ripped across the heartland killing more than 500 people and inflicting a billion US dollars in damage. The Midwest of the United States suffered the wettest April in 116 years, forcing the Mississippi to flood thousands of square miles. Texas suffered the driest month in a century (Bergley, 2011). Hurricanes have also intensified and have come with more disaster especially in the North Atlantic sea Board. During the Atlantic hurricane season of 2004, 15 named tropical storms

developed (the average is around 10). Six were major hurricanes. One of the six was Hurricane Jeanne that killed more than 200 people in Haiti (World Climate News 2005). Then came Katrina, a category 5 Hurricane that devastated the ancient city of New Orleans. Katrina was the costliest hurricane in US history. In March, 28, 2004, the South Atlantic recorded her first hurricane off the Brazilian States of Catrina. Hurricane Catrina was a category one hurricane with central winds of 121-129km/hr. The amazement caused by the first recorded hurricane in the South Atlantic in recorded history made Climate Change Scientists at the United Kingdom Meteorological Office, Hadley Centre for Climate Prediction and Research to start to focus more on climate models that could possibly throw some light on the various links between climate change and the behavior of tropical storms (World Climate News 2005). In spite of the available documented evidence linking Climate Change to recently observed extreme weather events, Climate Change skeptics especially in USA and Australia are still not convinced to link these extraordinary events of global warming- induce climate change. The denial of climate change especially during the Bush Administration contributed negatively to the development of adaptation and mitigation structures and institutions in United States of America. In fact, climate change denier argued that global warming was a hoax and as a result, there was no need to figure out any adaptation plans (Bagley 2011).

The Politics of Technology Transfer from Developed To Developing World

The technological transfer debate between the rich North and the poor South has been on for a long time. The rich north are far ahead in cutting edge research and development in all the relevant fields of human development. Millions and Billions of dollars are expended on these researches and development process annually. The politics of technological transfer between the industrialized countries and the poor developing countries of the world affected the early deployment of antiretroviral drugs on HIV/AIDS that were developed in the United States of America. The pharmaceutical firms that first developed the drugs imposed high patented- protected prices as the main incentive for the companies to engage in research and development in the first place. The patented- monopoly price for antiretroviral regimen was about \$10,000 per year compared with actual productions costs of less than \$1,500 per year.

The difference is the patent incentive for the pharmaceuticals (Sachs, 2005). Just as in the transfer of patents in respects of HIV antiretroviral drugs from the north to the south was very problematic because of issues relating to protection of intellectual property rights, pricing incentives, etc. Property rights and pricing are already affecting the transfer of climate change mitigation and adaptation technologies developed in the laboratories and incubation centers of the developed world. For example, there are many renewable energy and energy efficient technologies, improved biotech seedlings etc. that are already in the market place but whose prices and deployment are very prohibitive and are therefore very inaccessible to the poor countries of the world who really need these technologies to reduce their vulnerabilities and to cope with some of the adverse impacts of climate change. The issue of technological transfer has been a knotty one between the developed and developing countries of the world during climate change negotiation conferences. The developed countries have always pledged that climate change mitigation and adaptation technologies would be easily transferred to the developing countries but these pledges have most of the time been breached by the industrialized world. One of the ways of resolving this problem is that both the developed and developing countries of the world should enter into serious dialogue with patent holders of climate change mitigation and adaptation technologies to consider lower prices for products entering third world countries by charging only production costs and not the higher patent/monopolistic prices.

Industrialization of the developing world

The developing world sees economic and industrial development as a natural right and the evidence shows that the developing world is industrializing. The developing world is leveraging the use of carbon dioxide emitting fossil fuels as one of the primary energy sources to fuel their development. At the same time the scientific consensus on climate change and the existing global governance bodies like the United Nations are urging all countries to decrease their carbon dioxide emissions. Developing countries logically resist this lobbying to decrease their use of fossil fuels without significant concessions like:

- advanced energy technologies
- advanced adaptation technologies
- Monies to adapt to climate change.

The Politics of Climate Change Mitigation and Adaptation Instruments Such as Green Funds, REDDS, Clean Development Mechanism (CDM) Etc.

The various instruments and mechanisms for mitigating and adapting to climate change such as the Green Funds Reduced Emissions from Forest, Deforestation and Forest Degradation (REDD) clean development mechanisms (CDM) etc. have been designed and structured to protect the interests of the developing countries of the world. For example, the CDM was one of the flexible instruments designed by the Kyoto protocols. The CDM is a project- based mechanism structured to allow Annex 1 parties in meeting their emission limitation commitment by investing in emission reduction projects in non- Annex 1 countries. But CDM projects have been skewed to favour few countries especially China, Brazil and India. Few of the CDM projects that have been approved went to Africa. The truth is that CDM board is dominated by the developed countries of the world and project screening procedures are not only rigorous but also entails very expensive and time consuming documentation and processes. CDM required high administrative and transacting costs plus very weak financial incentive and difficult reporting processes. Consequently, African countries that need CDM projects most because of their more vulnerability to impacts of climate change turn out to benefit least from this global warming mitigation mechanism. The developed countries of the world have also made pledges to raise green climate funds, first, to contribute at least 30 billion US dollar annually from 2010 to 2012 and thereafter 100 billion dollar from 2020 to developing countries to address the impacts of climate change. But the pledges are not legally binding and most of the countries have not honoured their pledges.

Globally, about 4730 CDM projects have received approval for execution as of 2009. Pacific Asia has the lion share of 3700 projects. Latin America and the Caribbean had 820 and Africa had only 210. In Africa,

South Africa, Kenya, Egypt and Morocco dominate CDM projects in Africa. Nigeria, the giant of Africa has officially registered only 5 projects (see Table 3).

Table 3: Official Registered CDM Projects in Nigeria as of Dec. 2010

Project	Sector	Location
Kwale Gas Utilization Project	Energy	Kwale, Delta State
Pan Ocean, Gas Project	Energy	Ovade- Ogharefe Delta State
save 80 fuel efficient (wood store)	Energy	Spread all over Nigeria
Municipal solid waste	Environment/Agriculture	Epe, Lagos State
Municipal solid waste composting	Environment/Agriculture	Ikorodu, Lagos State

Culled from many sources tabulated by J.C Ajadike (2012)

Conclusion

Climate change a straight forward science that has been turned into something very complex even for the best trained minds in the atmosphere sciences. For example, the oil producing countries of the world that depend on oil earning from fossil fuels for their economic development are pretending that they do not know that burning of fossil fuels generate greenhouse gases that contribute to global warming. The same is true for major oil companies whose business of producing and distributing fossils fuels contribute to global warming and climate change.

There is also the politics of who should pay for the emission of greenhouse gases between the industrialized (developed) countries and poor developing countries of the world. The developing worlds are advancing the augment that the industrialized countries owe them some debt and reparations for polluting the atmosphere since the Industrial Revolution of the 1750s. The developed world accepted to pay something but they quickly came up with their own defense that some emerging developing countries with large economies such as China, India, Brazil and South Africa are equally guilty of pollution and that the future emissions of greenhouse gases may worse than whatever the developed countries have done because of poor environmental controls and weak abatement institutions and process of emerging economies of the world. This paper is suggesting that all polluters should be made to pay appropriately to reflect the polluters must pay principle. Both historical and current emissions should be calculated and those responsible must be made to pay to the last kobo for the sake of justice. There is also the politics of

mitigation and adaptation. It is the position of this paper that both mitigation and adaptation processes and institutions are strengthened to reduce greenhouse emissions and also protect the vulnerable to identified adverse impacts of climate change. The politics of technical transfer including human capacity building should be implemented without any further delay as agreed in Kyoto. The industrialized world should share their knowledge with the developing countries as part of differentiated responsibilities as clearly agreed in Kyoto protocol without attaching so much dehumanizing costs.

The past climate change negotiations especially those of Cops 15, 16 and 17 failed because of selfish national and economic interests of the world leaders. Uptil now there is no replacement to Kyoto protocol whose life span terminates in December 2012. The world leaders should put aside all selfish and myopic interests and work together in the forthcoming COP 18 in Doha, Qatar so as to come out with a binding treaty that is not only effective and efficient but also just, fair and equitable to the entire human kind. With concerted efforts and political will among the world leaders, the fight against climate change would be stepped up and the beneficiaries are the global community and our planet- the only living planet for now.

References

- Athanasiou, T and Baer, P. (2002) *Dead Heat Global Justice and Warming*. An Open Media Book, Seven Stories Press, New York.
- Begley, S. (2011) In a World of Climate Change Freaks, Storms are the New Normal Reported by the *News Week*.
- Brown W. (2004) Global Warming and the Failure of Collective Action. In: Bromley S. Mackintosh, M. Brown, W, and Wuyts, M. (eds) *A world of Whose Making? Making the International: Economic, Independence and Political Order*. The Open University and Pluto Press, London.
- Desombre E.R. (2002) *The Global Environment and World Politics*, Continuum Books, New York.
- Enger, E.D and Smith, B.T. (2004) *Environmental Science- A Study of Interrelationships* MC Graw Hill, New York.
- Frankhouser, S. (1995) Greenhouse Politics and the Cost of Mitigation In Parry, M. and Duncan R. (eds) *The Economic Implications of Climate Change in Britain* Earthscan Publications Ltd, London.
- Human Development Report* (2007) Fighting Climate Change: Human Solidarity in a Divided World A Publication of the United Nations Development Programme (UNDP) Palgrave Macmillan, New York.

IPPC, 1996: Climate Change (1995) *The Science of Climate Change*, Contribution of Working Group 1 to the Second Assessment Report of the Intergovernmental Panel on Climate Change, J.T. Houghton, Y. Ding, D.J Groggs M. Noguera, P.J. Vander Linden X, Dai, K. Maskell and C.A. Johnson (eds) Cambridge University Press, Cambridge.

IPPC, 2007: Summary for Policy Makers In: Climate Change (2007) **The Physical Science Basis**. Contribution of the Working Group 1 to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Solomon S.,D. Qin, M. Manning, Z. Chen, M. Marquise, K.B. A veryt, M. Tignor and H.L. Miller (eds) Cambridge University Press, Cambridge.

Pocket World in Figures (2007) Annual Publication of the Economist Newspaper Ltd (Publishers of the Economist) Profile Books Ltd, London.

Sachs, J. (2005) *The End of Poverty- How We Can Make It Happen in our Lifetime*. Penguin Books Ltd, London

World Bank (2003) *World Development Indicators 2003*, Washington, DC. Available from <http://www.worldbank.org>

World Climate News (2005) A Publication of the World Meteorological Organization (WMO). No 27, pp 1-12.

Wright T.R (2005) *Environmental Science towards a Sustainable Future*. Prentice- Hall of India Private Ltd New Delhi.