GLOBAL ENVIRONMENTAL CHALLENGES AND THEIR EFFECTS IN 21st CENTURY: A CASE STUDY OF USA

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ABASTRACT

Global environmental challenges in 21st century are more threatening than traditional national security threats on the world because it has had effects globally and victims are completely in a state of natural disaster. The only things which can be secured from these threats are the precautionary measures before these threats occur. The excessive number of natural disaster particularly in past ten year horrified the world and transfers their attention more towards the environmental changes. The geographical location of American continent and growing military activities and WMDs testing of USA needed to focus on the rapid environmental changes around the world especially after the 20th century, because these changes affected the entire world in the shape of excessive rains, tornados and cyclones. The paper analyzes the various challenges of environment for North America particularly for United States by its own actions and in general to the world faces today, as well as measures that have been taken by entire world and United States and their future impact.

KEYWORDS: Ozone depletion, Global warming, Acidification, Global green politics, Environmental diplomacy

INTRODUCTION

The environmental concern started to be enunciated in the US as well as in the world during the Nixon and Carter's regimes but the actual realization of severity of environmental threats and their effects on entire living being were very late. The need of Global cooperative efforts has taken further two decades. Global environmental problems were treated as major issues by world powers after 1980s, because of the rise of green movements in the industrialized nations and publications on global environmental threats such as the depletion of ozone layer, rise of global temperature, and deficiency of world's fisheries, etc. Rachel Carson's report on effect of pesticide on countryside by the title of Silent Spring (1962) initiated the UN Human Environment Conference at Stockholm in 1972. The Brundtland Report and many scientific papers relating to global warming and ozone reduction have had the effect of informing decision-makers and the wider public about environmental security (Garner, 1996: 6). Therefore, throughout 1970s and 1980s, the environmental apprehension raised and activists fought to placed environmental threats on the policy agenda (Doyle, & Doug, 2nd Ed 2001: 32). This awareness not only increased international cooperation to hold or reduce ecological degradation but also unleashed a new political force, thus by the early 1990s, the global environment had emerged as the major policy issue in US foreign policy and in world politics. Although United States is the super power of the world but it suffered from every kind of environmental threats now, on one hand it has serious internal environmental problems and on other hand the global environmental changes strikes on the coasts of America with full force.

ENVIRONMENTAL THREATS FOR AMERICAN CONTINENT

The continent of North America faces many environmental issues in the region, the danger of such kind of multiple problems intensify the tension in entire continent and stressing the capacity of all US administrations to meet the basic needs of the people.

OZONE DEPLETION

Ozone layer reduces due to the disturbance of natural balance of ecosystem. Although natural procedure of chemical release also become the reason of momentary ozone loss, but the discharge of chlorine and bromine from human made CFCs (chlorofluorocarbons) severely damage the natural layer and become the major cause of huge amount of depletion (Angell & Korshover, 2005: 426–43). The research of California and Colorado researcher suggested that the depletion will be increases with the excessive rocket

launches because during the launching process extreme amount of CFCs are released which will caused the exceed losses ozone. The depletion has profound effects on human health and instigated many ailments such as eye and infectious diseases and skin cancer. It also affected the terrestrial vegetation. It can be very dangerous on to early development stages of fish, shrimp, crab, amphibians and other animals and ultimately create devastating effects on aquatic ecosystem. In addition it disturbed the bio-geo-chemical cycle due to the increased of solar ultra violet radiation. The reduction of stratospheric ozone can be caused of damage of air quality because it leads to nuclei cloud condensation and nucleation of Sulphur. It has contrary effects on synthetic polymers and biopolymers and some other goods of viable concern but the most severe effect of ozone depletion occurred on climate change. It has two kind of effects on the temperature balance of the earth, firstly it absorbs ultraviolet radiation and secondly it also absorbs infrared radiation Therefore, the climate impact of changes in ozone concentrations differs with the elevation and ozone changes occur. These changes increase the pollution thereby contributing the greenhouse effect. Greenhouse gases like a blanket for the troposphere and make the stratosphere colder, thus it can make decrease much worse at the time when it is expected to begin its recovery during the next period of time. In fact, global warming (climate change), acid rain, ozone layer depletion, and ground-level ozone pollution all create major threat to the life on globe.

CLIMATE CHANGE

Climate change is a transformation in the "average weather" that any specific area experiences. It includes all natures such was temperature, wind patterns, precipitation and greenhouse gases which contains Carbon Dioxide, Methane, water vapor and Nitrous Oxide (Gaan, 2008: 38). The fossil fuel burning released CO_2 into the atmosphere, which increases heat and average air temperatures. USA was the second top emitter of fossil fuels CO_2 in 2009 which was 5,420 mt (17.8% world total), and hold the 2nd place of all other greenhouse gas emissions in 2005, which was 6,930 mt (15.7% globally). Since 1850 to 2007 the rise of GHG emission placed US on top position in the world Because of it released 28.8% of the world total (, Guardian, 31 January 2011). The effect of climate change on American coastal areas are growing more devastating with the time in 21st century; four very devastating thunder storms devastated the coasts of Virginia, New Jersey, New York, Colorado and California. On the other hand crops and livestock production is also decreasing. The March 2012 report of Intergovernmental Panel on Climate Change (IPCC) confirmed that global warming will increase and turn into heat waves in future as well as, rise in periods of heavy precipitation, and more frequent coastal flooding will also be seen more often in future(Justin, March 13, 2012). Due to the increase of global warming 2012, is the warmest year recorded after 20th century. US

Climate Change Scientists predicted that the region will face more heat waves and heavy downpours with increasing frequency and intensity in future. Large portion of continent already facing more frequent and devastating droughts almost every year. Hurricane wind speeds, rainfall intensity, and storm surge levels are increasing. Long term projection of changing emissions patterns indicates that the warming impact of black carbon will outweigh the cooling impact of Sulphates. The predictions are quite alarming for the region because it already seriously suffered by the devastations of climate change in terms of thunder storms, cyclones and heat waves.

BIODIVERSITY

Biologists define biodiversity as the "whole sum of genes, species, and ecosystems of a region"(Larsson, 2001: 178). Basically it is the diversification of life on Earth which includes assortment at the genetic bases, such as individuals in a population or varieties in plants, thus it is the diversity of species, ecosystems and habitats (Brundtland Commission **report, 2007).** The plant life in America from tropical to Arctic is very different. The region has more than 17,000 recognized natural types of flora, including 5,000 in California. More than 400 mammal, 700 bird, 500 reptile and amphibian, and 90,000 insect species are found. Florida and surrounding areas are the base of this diversity. A large number of plant and animal species became obsolete soon after initial social settlement and many others have also gradually superseded since European settlement. The major reason of this annihilation was climate change which affecting US biodiversity and ecosystems. The impact of biodiversity in later century includes shifts in growing season, phenology, primary production, and species division and diversity. The marine biodiversity is the more concerning area for the continent of US because due to the misuse of living resources; diminish aquatic quality; coastline progress; shipping; intrusive species; escalating temperature and accretion of CO_2 in the ocean. Other effects, like fluctuating currents; rise in amount and magnitude of hypoxic and anoxic zones; as well as increased number and spell of injurious algal blooms is the costs of global change. The maximum maritime diversity ever documented was on the east slope of Charleston in the Southeast US Continental Shelf LME (large marine ecosystems) and the Straits of Florida in that same LME has the lushest Ichthyofauna in the Atlantic (Fautin, et al, 2010). The loss or damage of biodiversity along US coasts is interlinks with degraded ecosystem services specially, its impact on tourism and other cultural attributes are severe. In addition it dropped property values, and expand perils to human and animal.

DEFORESTATION

Deforestation is an ongoing environmental issue in the region because it is the biggest reason of global warming. Half of the United States was covered with forest before the Europeans colonization. It was approximately 4,000,000 square kilometers (990,000,000 acres) in 1600, today it is only about 3,000,000 square kilometers (740,000,000 acres) (Lecture in University of Michigan 01/04/2010). The large portion of this deforestation took place before 1910. During the 20th century the deforestation in the region mostly for the harvesting and not very excessive or remain constant. Forest cutting was reduced after cultivating land reached on stabilized position then cutting of forests for this purpose was gradually decreased which increased the forests growth and it reached up to 3,080,000 square kilometers (760,000,000 acres). Since 1963 to 1997 there has been a sturdy decline of woodland again which continued in a more rapid speed due to the urban development and in 2005, United States has attained the seventh highest rate of primary forests loss. The huge amount of deforestation has many reasons, such as legal or illegal logging cutting and transferring lumber; manufacturing wood chips in the field, because America is the leading manufacturer and consumer of woods products holding one-fourth of the world's production and consumption. USA is the largest producer of softwood and hardwood planks in the world (Oakes & Mehrdad. 2004: 71). Another cause of deforestation is the sheer negligence of government and non-serious behavior of people. It continues on such a high ratio due to indulgent rules of the government and material approach of those people who destroy the woods for their own benefits. Thus it turned into to the grave environmental threat to United States and if the excessive cutting of forest does not stopped then the life of flora and fauna will be in danger as well as melting of ice will be increase which rise the water level and it might create havoc.

AIR POLLUTION

It is the outline of chemicals, particles, matter, or biotic materials that cause damage or distress to entire living beings, also causing change in nature of climate. It is a serious problem since the industrial revolution particularly for urban population, as poor air quality can become a contributor in health issues. Major portion of US population lives in countryside regions where hazardous levels of smog or particle pollution is existed. Smog is more dangerous because it is directly affected on lungs, causing respirational infection, lung inflammation and exacerbation of breathing disorder. According to American Lung Association (ALA), approximately 142.7 million US citizens of counties suffering from degradation of lungs because of this aerial pollutant (West, 2006). Reports of Environmental Protection Agency stated that federal air standards are violated more by African Americans then white living in same counties (Whyte, April 22, 2010). Living in polluted airborne causing high blood pressure eye infections, as well as asthma, which is activated by high amount of such substance. Due to the air pollution the death ratio from

asthma is three time higher in blacks than whites. In addition, poor air quality rises the danger of sudden infant death syndrome (SIDS) and grave respirational problems.

THREAT OF HAZARDOUS AND HOUSEHOLD WASTE

Garbage become the mounting areas of concern for ecologists. House hold trash and industrial leftover are escalating with the increases of population. Scientists refer the floating garbage in an ocean as 'plastic soup'. In accordance of UK's newspaper report, the travelling soup resides on two connected areas on both side of the Hawaiian Islands, identified as the Western or Eastern Pacific Garbage Patches. They expands through northern Pacific, about 500 nautical miles from the coast of California and almost reaching near of Japan. The scrap includes "everything from footballs and kayaks to Lego blocks and carrier bags." Almost 1/5 of this waste castoff off by ships and oil tankers, whereas, the rest dumped from lands (Marks & Howden. February 5, 2008). Plastics are not decomposable and continue to be the perpetual fragment of the ocean therefore, imperiling the aquatic life. Experts estimated that almost one million seabirds and 100,000 maritime creatures and sea turtles perish every year by consumption or by tangling in rubble (Hohn. 22June, 2008). On the other side Organization of Economic Cooperation Development (OECD) declared that every US citizen produced 450 kilograms domestic waste in 2005, which tied them on 7th rank with Australia in the top waste producing nations group (Ranking America. October, 2009). The hazardous waste is increased with the growth of high-tech manufacturing and green energy products. Modern technology and its created items like, electric auto vehicles, fast charging tools, wind turbines, cellphones and plasmas, augmented the demand of highly significant minerals and rare elements such as lanthanum, cerium, lithium, neodymium, indium and gallium. Excessive use of rare rudiments has resulting its decrease in United States and now it is reliant on China and others. Another concern is that the dumping of harmful waste of these synthetic products are creating new waste management problems. The waste streams from the industrial, use and discarding electronic waste' or 'e-waste' contain dangerous mix of mercury, lead and other metals; endocrine disrupting matters like brominated flame retardants; and other toxic elements (Nnorom & Osibanjo. 2010). In the meantime, e-waste has become a peril to health and the environment of the world. Thus, advancement of technology implies their positive and negative effects on USA.

ACID RAIN AND ACIDIFICATION

It is a considerable environmental issue that has creating multiple problems for the large region of United States and Canada in recent years. It damages lakes, streams, forests, plants and animals that live in these environments. The minimal amount of Acid in

rainfall is usual and has natural reasons such as existing CO_2 in the air combines with water and form carbonic acid as well as those areas where Volcanoes and forest fires occur released sulfur compounds into the atmosphere that form sulfuric acid. These natural acidic rain has minimal effect on environment. The destructive level of acid rain was starting in modern age by human activities when industrial country sides received heavy amount of sulfur dioxide with the rain which destroy natural habitat on those areas. Today more than 90% sulfur dioxide released into the air by burning of fossil fuels. Power plants running by Coal become the major cause of sulfur dioxide damaging the atmosphere. The sulfur dioxide collides with water and produces sulfate ions and become the cause of acidification of land which causes the reduction infertility of soil. It also caused the lower pH levels in many water reservoirs in the northeast United States and others. Acid rain is deadly for aquatic wildlife, including phytoplankton, mayflies, rainbow trout, small mouth bass, frogs, spotted salamanders, crayfish, and other creatures of food cycle. It also makes worse the respiratory diseases like asthma or chronic bronchitis. Acid rain also damages soil and devastating for forests tree because roots, leaving them unable to draw enough nutrients to support it.

DESERTIFICATION

Deserting is not just an issue for Africa and Middle East but gradually it turned into a global issue because of excessive materialistic human activities. Today a huge land of America is at risk just like Australia, South America and some parts of Asia. The Southeast and Southwest situated 17 states of USA are facing arid, semi-arid or dry climatic weather which intensifying with the time. New Mexico, Texas, and Arizona are the most effected states. Weather experts' research on past 30 years and indicated that the Southwest has become warmer and arid, placing almost half of the region in danger of severe drought. An alarming US model of desertification is the "Dust Bowl" which turn into desert during 1930's drought in the Great Plains. Drought was not the only reason of desertation, but Modern agricultural methods and use of artificial pesticides and seeds played mighty contributing role as well. To get more and more crops with minimum effort and man power a large population leave their agricultural ways and find modern techniques, because of shortage of water and desire of more earning. Luckily, in this case, the US government declared it a national problem immediately after knowing severity of situation and it began providing financial support and resources to put appropriate agricultural practices applied in these places with better agriculture methods and smarter techniques of managing water. States, federal agencies and NGO's together work with private farmers and developers on technologies helping reduction in soil erosion along with effective irrigating system and active renewable energy sources.

GLOBAL ENVIRONMENTAL CHALLENGES & DUAL POLICIES OF USA

United States played a very important role in global environmental politics. In fact USA was the chief expounding developed country who did the inclusive lawmaking and organized governing body as US Environmental Protection Agency (EPA). It was established in 1970 to deal the extensively dispersed programs of environmental development along with its ongoing challenges. EAP immediately became a role model for the rest of the world during 1970s. With that initiative USA always played dual face policy on one hand it has participated actively in every green movement as well as contributed in the creation and design of global environmental body but on the other hand it uses unilateralism as an approach in environmental diplomacy and always shown its will to go alone. Whereas, many environmentalists in the world believes, that the United States has emerged as the new ‘‘rogue state’’ in global green politics because of its increasingly unilateralist and obstructionist foreign environmental policy. Ever since it back off from their stance on environmental challenges at the UN Conference on Environment and Development (UNCED) in 1992, US environmental policy has appeared to be halfhearted and often look aggressive to, multifaceted environmental policymaking (Falkner. 2005: 585). Due to the refusal of the Convention on Biological Diversity (CBD) and the parting from the Kyoto Protocol on climate change, the Washington has exhibited its concerns more with domestic financial interests than international environmental threats. White House first time ever pursued a multitrack approach, in 1972 UN environmental conference, which has contained multilateral environmental policymaking also the use of independent pressures and sanctions. Secondly, American environmental policy is much dependent on domestic sources and can be assumed as an attempt to globalize domestic environmental policy. Thus, US environmental efforts are struggling because of its dual strategies. The efforts were suffering due to the differences between US executive and Congress which became apparent in 1990s when Clinton Administration failed to get Congressional support for CBD and Kyoto Protocol. Congress's obtained a very strong position on foreign matters due to three constitutional rights; first its power to ratify international treaties; second its financial and fiscal controls that mark plans for environmental levy, global ecofriendly aid, and other ecological spending agendas; and third its overall statutory role in forming and reviewing environmental protocols (Falkner. 2005: 593).

Therefore the Congressional opposition is the major reason of backing off from several promises by White House. Devolution and separation of power in US political system made difficult for Washington to hold its leading position in international environmental regime, for example the global biodiversity policy exhibited the weak stance of White House in front of Congress, because despite the fact that Clinton Administration achieved

notable concessions at the 1992 Erath Summit in Rio di Janerio, it did not signed CBD mainly because Congress refused to ratify the convention, same thing happened at the time of Kyoto Protocol in 1997 which was signed by USA but not ratified. United States signed the Rotterdam Convention and Stockholm Convention on Persistent Organic Pollutants in 1998 and May 2001, also hosted the Inter-American Tropical Tuna Convention, in November 2002 for the treaty designed to protect migratory fish but practically not participated on any of them. US government continues financial assistance of eco-friendly efforts in third world states, for example, in restoration of Congo Basin Forest US the financial Partner and as well as support green efforts in tropical countries (Falkner. 2005: 596). This shows that US environmental diplomacy has fluctuated between global environmental pledges and one-sided nonparticipation. The vacillation dented the American image and its leading place in international environmental regime. It proved when Kyoto Protocol came into force in 2005 after the US withdrawal in 2005.
Today North America is not just facing the traditional environmental threats but it is also affected by new kind of threats which create more problems for its citizens daily life and US governments should step forward to deal with these threats with best available resources in addition, to retaining its position in green politics of the world pursuing aggressive environmental objectives.

CONCLUSION

United States is the leading promoter of global peace and prosperity in 21st century hence it is not appropriate for the super power to get the back step on the most important challenge faced by for the entire world today. The world need robust and aggressive leadership of the most powerful country of the world on the global environment on which that prosperity and peace eventually be contingent. The foremost environmental challenge today is climate change which is unprecedented in world history and no human being is exempted from this inescapable commons. Generally, the climate shift is a financial issue, largely disturbing indigenous regions through hurricanes, famines, and heat waves, effect on agriculture and other climate-dependent activities (Schwartz & Randall. Oct, 2003). The weather pattern is getting severe day by day to threaten the interconnected global society or United States national security. By 2030, the carbon dioxide absorptions will have doubled as equated to pre-industrial levels (Flower. April, 2006). This is chiefly because of fossil fuel incineration. To halt this process nations of the world are now working on a use of alternative source of non-fossil-fuel energy which would be environment friendly. One of those sources is renewable hydrogen energy that can produce the radical reduction in harmful environmental effects. The transfer in to the hydrogen energy economy may be the hub of energy in the 21st century to avoid serious climate changes in the world. The world, particularly United States should pay more

attention on these environmental issues otherwise the earth will face weather related disasters with more devastation in terms of more storms, cloudbursts, tidal wave, and dry-spells in all regions. Democrat administration though focused in both awareness of the seriousness of this threat and a commensurate change in government policy, has to play an effective role by first acting internally through the enactment of inland regulation. This is, maybe, the most vital lesson to be erudite from the Kyoto Protocol process: acceptance of national lawmaking is indispensable to give US foreign policy both global reliability and a national political ground (Bodansky. Jan, 2009). Therefore America will need to find a medium ground, to get financial power along with environmental security not only for their own people but the entire region.

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