

Causes & Effect of Global Warming on Good Governance of Nepal

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ABSTRACT

Global warming means a scientific phenomenon of rising of temperature of earth. This rise of temperature is catalyzed with the increase of carbon emission in the environment. It is why world has witnessed an identical change in the global climate in the last quarter of the twentieth century. Human activities are the main causes for this change. Climate change specially characterized with global warming is the greatest challenge of the 21st century to the mankind. It has already shown adverse effects on the various aspects of the life and the world is scary about its consequences such as deteriorating eco-system, worse draughts, and alteration in agriculture system, contamination in soil and water bodies, loss of biodiversity and many others, which we have to accept in upcoming future. In general, the degree of global warming and its future projection has threatened the very existence of human life. Though, the effect of the global warming is global, the immediate effect to the developing countries is daunting. Number of reports on the scientific findings regarding global warming has resulted in political and economic debate. Poor region, especially the developing countries appear at the greatest risk from the projected effects of global warming, while their emissions have been small as compared to the developed world. The impending threats have been duly identified and attention initiated on a global scale on the table at least for now. Since the treaty provisions were denied by some western world including the US, the challenges of global warming remain and continue to threaten the very existence of the life. Today, climate change has evolved as a socio-political issue, a marked departure from environmental and scientific concerns. Global warming is the current increase in temperature of the Earth's surface (both land and water) as well as it's atmosphere. Average temperatures around the world have risen by 0.75°C over the last 100 years about two thirds of this increase has occurred since 1975. In the past, when the Earth experienced increases in temperature it was the result of natural causes but today it is being caused by the increase of greenhouse gases in the atmosphere produced by human activities.

The natural greenhouse effect maintains the Earth's temperature at a safe level making it possible for humans and many other lives. However, since the Industrial Revolution human activities have drastically enhanced the greenhouse effect causing the Earth's average temperature to rise by almost 1°C. This is creating the global warming we see today. To put this increase in perspective it is important to understand that during the last ice age, a period of massive climate change, the average temperature change around the globe was only about 5°C. Global warming has already threatened the human existence in some regions of the world. Projected submergence of the Maldives by 2025 is one burning example. South Asia is the most vulnerable region to global warming due to its geographical location and under-development, while Nepal remains at the forefront. At this moment, it is imperative that the causes, effects and challenges of global warming are assessed and effective measures are taken before any disaster.

KEY WORDS: Geographical, Agriculture, Protection, Transparency, Environmental, Multitude

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I. STATEMENT OF THE PROBLEM

The global warming is real, so are its impacts; thus is threatening human existence and the eco-system at large. Lack of commitment from all has made the issue more complex - putting existence of mankind at stake. The major factor for global warming is human being however non-human factor i.e. natural process also contributes for global warming which is yet to be researched in detail. Here human factor is given more emphasis since human factor has disturbed the ecological balance. Many developed and developing countries are the major carbon emitters thus the main reason for global warming. There is multitude of problems rising from global warming ranging in the various domain of national security. The researcher has however made an attempt to analyze and surf answers to the following research problems:-

- a What is global warming?
- b What are the effects of global warming on national security of Nepal?

Objectives of the Study

Basically, the objective of this study is to analyze causes of global warming and the question of human existence due to its impacts and consequences. The paper will also aim to achieve the following specific objectives:-

- a. To examine the causes and consequences of global warming.
- b. To examine the effects of global warming on national security of Nepal.

Methodology

The study should be based on qualitative research for finding out the perception; attitude and practices towards cause and effect of global warming in the world. This papers based on descriptive and explanatory method of research design for finding how affect. In this study area, there are most affected from “global warming”. The sample size has been selected among affected country of judgemental sampling procedure according to the situation of good governanc in the study area.

II. INTRODUCTION

Nepal only houses 0.4 percent of the total global population and is responsible for only 0.025 percent of total GHG emissions in the world, however global warming is impacting Nepal very adversely. In Nepal, overall glacier area and ice reserve have declined by 21% and 28%, respectively, between 2001 and 2010 (Bajracharya, 2011). Nepal's mountains which are called the water tower of Asia are under threat as a result of impact of global warming because of retreat of glaciers (Basnet, 2014). As glaciers recede from rapid snow and ice melting, glacier lakes are expanding. Climate-induced disasters and other effects have caused damages and losses to life, property, and livelihoods impacting national security as a whole. The major causes of global warming are described in the following paragraph.

Major causes of Global warming

Global warming is the result of GHE. GHG are emitted to the atmosphere both by natural and artificial means. Based on the data collected during research my respondents have given their view on cause of global warming as shown below.

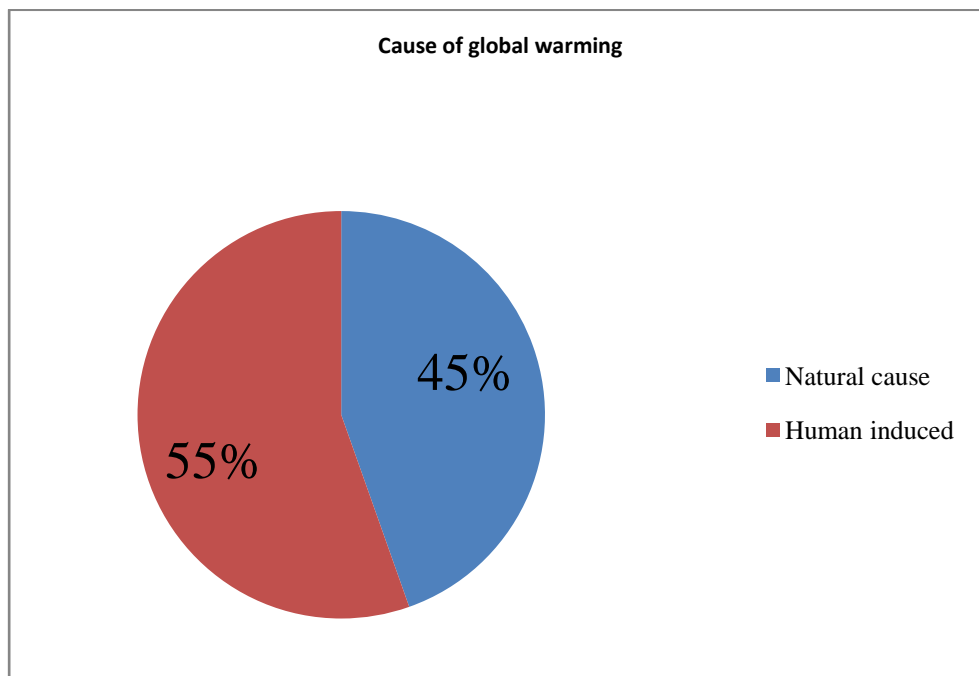


Figure 1 .Figure showing the main cause of global warming prepared by researcher based on survey conducted among 240 respondents in Kathmandu in 2019

S.No	Natural cause	Human induced
1	107	133

Table 1. Table showing the main cause of global warming prepared by researcher based on survey conducted among 240 respondents in Kathmandu in 2019

Looking at the result of survey done with 240 respondents studying different faculty at teaching institutions of Kathmandu, it is seen that 44.58 % of the students believes that the major cause of global warming is natural and 55.41% opine that it is human induced.

Natural phenomenon contributes for global warming which are volcano, ocean current, earth's orbital change and solar variations. Volcanic eruption release huge amount of carbon gases in the environment which in the long run acts as the GHG and contribute for global warming (www.bionomicfuel.com). Ocean currents move vast amounts of heat across the planet. Winds push horizontally against the sea surface and drive ocean current patterns. Changes in ocean circulation may affect the climate through the movement of CO₂ into or out of the atmosphere (www.climatechangechallenge.org). Earth's rotation changes orientation of earth to the sun and affects the amount of sunlight reaching higher latitudes, particularly the polar regions (Stricherz,2014). As a result of earth's rotation, certain areas may get more or less radiation from the sun, and affect the temperature (www.bionomicfuel.com). During cycles of increased sun spots and solar flares, the temperature of the earth does warm up but this is usually temporary (www.bionomicfuel.com). Water vapor is the most significant greenhouse gas. Atmospheric humidity is associated with water vapor. Water vapor absorbs the majority of rays across the infrared spectrum while carbon dioxide only absorbs three narrow bands that overlap with those being absorbed by water vapour.

Human Causes of Climate Change

Agriculture has significant effects on climate change, primarily through the production and release of greenhouse gases such as carbon dioxide, methane, and nitrous oxide. Agriculture alters Earth's land cover, which can change its ability to absorb or reflect heat and light (www.climatechangechallenge.org). The high rate of application of nitrogen-rich fertilizers for increasing agricultural products creates 'dead-zones' in our oceans and enhances greenhouse gases (www.planetsave.com). Rainforests every year help to absorb almost 20% of manmade CO₂ emissions therefore deforestation can be taken as a major contributor of global warming. Cutting down rainforests faster than they can be replaced has a devastating effect on the carbon emission cycle by producing an extra 17% of GHG (www.climatechangechallenge.org). With the introduction of industrial era, ratio of burning fossil fuel is increasing. Increased dependency on power created with burning of fossil fuel like coal, oil and gas to create power for automobiles, domestic use and industrial use has increased GHG emission. During survey respondents have given mixed opinion on gases responsible for global warming as follows

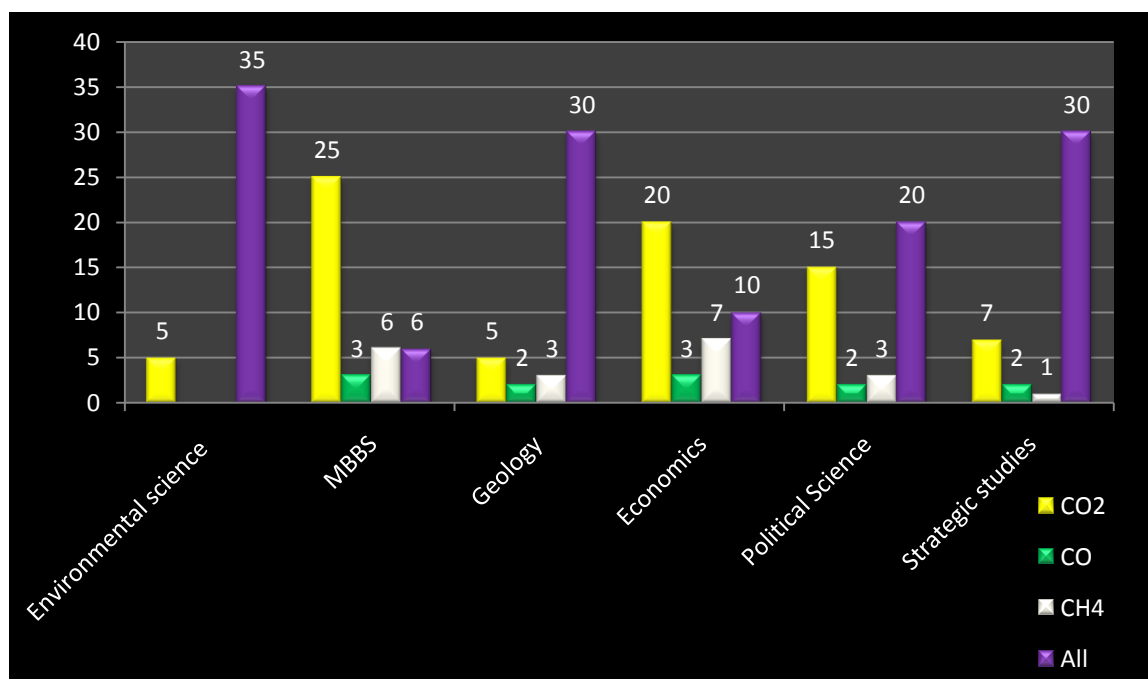


Figure 2. Figure showing opinion of respondents on the gases responsible for global warming based on survey conducted among 240 respondents in Kathmandu in 2019.

Gases	Envt science	MBBS	Geology	Economics	Pol Science	Strat Studies
Carbon-dioxide (CO ₂)	5	25	5	20	15	7
Carbon-monoxide (CO)	-	3	2	3	2	2
Methane (CH ₄)	-	6	3	7	3	1
All	35	6	30	10	20	30

Table 2: Table showing opinion of respondents on the gases responsible for global warming based on survey conducted among 240 respondents in Kathmandu in 2018. Looking at the result of survey done with 240 respondents, it is seen that majority of samples i.e. 54.58% of students opine that gases related to carbon family are responsible for global warming. Whereas the shared opinion on global warming was also seen which indicates 32.08% find CO₂ responsible, 8.33% opine CH₄ as major contributor and 5% think CO is responsible for global warming. Large scale mining contributes for emission of GHG through the use of fossil fuel based vehicles, large construction plants, generators and blasting activities are likely to release huge amount of methane and hydrogen sulfides along with fugitive dusts (NaikLast, 2011). Current mining practices involve significant deforestation. As forest is huge carbon sink, its destruction for mining purpose is accelerating emission of GHG in atmosphere (Center for environment Concerns, 2014).

National Security

National security is the protection of nation and people from various threats. The United Nations has defined security as freedom from wants and fear which means the citizens get everything that is due to them from the state and the state is also responsible for their safety and security. The classical realists believe in the concept that as long as the state is secured, everything within it will be secured. National security has been the main concern of the political states from the beginning of the human civilization even till today. Previously, the states were supposed to be safeguarding the national security through the use of their military strength and national security itself was regarded as the security of national boundary, independence and sovereignty. This concept remained predominant for nearly two thousand years, especially in Europe but after the fall of one of the most powerful actors of the world system in 1990, the traditional thinking about the national security gave way to the non-traditional thinking.

As an alternative to the traditional conception, human security discourse along with the other security conceptions like political security, economic security, community security, health security, environmental security and food security were adopted as the method of analysis in the national security studies as well as in dealing with the newly emerging problems of the world. The best method of ensuring national security is by striking balance among these traditional approach and non traditional approach. After the end of Cold war and the, acceleration of globalization, the definition of national security threats has been widened and deepened. There are many new dimensions and issues, which include ethnic and religious conflicts, terrorism, migration, environmental degradation, communicable diseases, democracy, human right violation, gender, crime, poverty, hunger and deprivation. In other words National security is a concept that a government, along with its parliament(s), should protect the state and its citizens against all kind of national crises through a variety of power projections, such as political power, diplomacy, economic power, military might, and so on (Palleri, 1996). The challenge of today's states is not only to defend their territorial integrity and independence. People in the country may be threatened by unavailability of food, water, various health problems, poverty, education security, environmental factors, energy insecurity.

An Anglo-American concept that emphasizes the supremacy of the law and restricts the discretionary power of public officials, the rule of law particularly stressed the protection of individual rights from the arbitrary interference of officials. The rule of law provides the foundation for democratic constitutionalism (Brautigam, 1991). The rule of law refers to 'the subordination of the behavior of state officials to rational, predictable, and publicly recognized procedures'. It implies standard operating procedures, clearly promulgated and indiscriminately applied rules, non-personalized decision making with modest levels of discretion, and regularized procedures for establishing and implementing policies. The civil service is insulated from politics rather than penetrated by it, when political leadership changes the civil service acts as a stabilizing sources of continuity. In this context, it would be interesting to give reference of study on corruption in the developing countries. A London based research institute "Panos" (Esta. 1997) in their latest briefing document, "Crime or Development: who calls the shots?" has analyzed the state of crime and corruption in the developing countries and even questioned the present emphasis of these countries on political and economic liberalization. Panos cites one recent study (by the University of Sussex conducted by Barbara White and Gordon white) which argues that 'corruption is being 'privatized' with politicians and a new economic elite replacing state officials as the prime agents of corruption". In addition, the study makes the following observation:

- Corruption is being made easier by the growing use of tax havens and off shore financial centers, which

facilitate the covert laundering of illegal gains.

- Far from improving things in the short-term, democratization may increase the sources and scale of corruption without strengthening political and institutional capacity.
- While democratization involves the spread of freedom it can also open up an era of license without responsibility.
- The prospect of quickly eradicating corruption looks bleak, given that most anticorruption laws and regulation are not worth the paper they are written on without the political impetus to make them effective.

Transparency is another important aspect of good governance. The quality of good governance is largely determined by the public access to government information. It has been considered as the nerve of the government except for such knowledge that has to be kept secret according to law; it is within the constitutional right of a citizen to demand for information relating to a matter of public interest, and it is the constitutional duty of the public authorities to supply the information accurately. Although such information is utilized by the so-called *taatha baatha* (elite class) only, the illiterate, poor and the marginalized have no access to it. Compared to that in the past, the present constitutions set up provision for a sound basis for transparent governance. Internally, the Nepalese have made the system transparent by including the right to information in the constitution. Similarly, they are also granted press and publication right. There is no censorship. The concept of independent media has been accepted, although in practice the government owned media are not so open and they disseminate little and limited information. Constitutionally, all the activities of the government must be kept open and transparent for public knowledge. Nevertheless, in the practice, it has not happened. Mere constitutional and legal provisions are not sufficient, their effective implementation and strong political will of the ruling elite too are necessary. However, we may say that at least there is such constitutional provision, which could promote good governance (Dahal, 1999). The right to information, as provided for in the constitution, is one of the key factors, which facilitate and support the process of making governance more open. However, the practices of providing open access to information of government business is dependent on political attitudes and the application of laws. The result of good governance is development that 'gives priority to poor, advances the cause of women, sustains the environment, and creates needed opportunities for employment and other livelihoods' (Re-conceptualizing Governance). Governance is good when it subscribes to the following nine characteristics: All men and women should have a voice in decision making, either directly or indirectly or through legitimate intermediate institutions that represent their interests. Leaders and the public have a broad and long-term perspective on good governance and human development, along with a sense of what is needed for such development. There is also an understanding of the historical, cultural and social complexities in which that perspective is grounded. Legal frameworks should be fair and enforced impartially, especially laws on human rights. Transparency is built on free flow of information. Processes, institutions and information are directly accessible to those concerned. Institutions and processes try to serve all stakeholders. Good governance mediates differing interests to reach a broad consensus on what is the best interest of the group and, where possible, on policies and procedures. All men and women have opportunities to improve or maintain their well-being. Processes and institutions produce results that meet needs while making the best use of resources. Decision-makers in government, the private sector and civil society organisations are accountable to the public, as well as to institutional stakeholders. This accountability differs depending on the organisation and whether the decision is internal or external to an organisation.

ADB identifies four basic elements of good governance: accountability, participation, predictability, and transparency (ADB, 1999). By accountability is meant the imperative to make public officials answerable for government behavior and responsive to the entity from which they derive their authority. Accountability also means establishing criteria to measure the performance of public officials, as well as oversight mechanisms to ensure that the standards are met. The principle of participation derives from the acceptance that people are at the heart of development. Development is both for and by people; hence they need to have access to the institutions that promote it. Participation also relates to such issues as 'ownership' and the interface between public agencies and both private individuals and private entities.

Elements of National Security

The national security has number of component elements which, when individually satisfied, provide a nation with security of its values, interests and freedom to choose policy. Besides the military aspect of security, the aspects of politics, society, environment, energy & natural resources and economics are commonly listed elements by various authorities (Elements of national security, 2015). Prabhakaran Paleri, an Indian academician has listed Military security, Economic security, Resource security, Border security, Demographic security, Disaster security, Energy security, Informational security, UNDP viewed 'Governance' as the exercise of economic, political, and administrative authority to manage a country's affairs at all levels. It comprises mechanisms, processes, and institutions, through which citizens and groups articulate their interests, exercise

their legal rights, meet their obligations, and mediate their differences in HDC 1999. Food security, Health security, Ethnic security, Environmental security, Cyber security Genomic security as the elements of national security in his book National Security: Imperatives and Challenges. It has become equally important for a state to protect its people from security vulnerability, guarantee their livelihood , provide them sufficient foods, clothes, shelters, health care ,education and also guarantee them fundamental rights like freedom of expression , organization and freedom from fear and violence. Global warming remains as a major factor which is likely to aggravate the existing volatile security situation of developing countries like Nepal.



Figure 3: Figure showing the impact of Global warming

Source: Author's own creation with ref to National Security: Imperatives and Challenges

National Security is concerned with the protection, preservation and furtherance of the core values of a nation against both internal and external threats. National security covers a broad range of activities to prevent a nation from traditional to non-traditional threats (Katzenstein, 1996). Threat to security may occur in form of military, culture, environmental degradation, terrorism, acts of social violence etc. The problems of today, such as drought, forest fires, and flooding is the result of climate change influenced by global warming (Dixit, 2009).

During survey respondents have given their combined opinion on whether global warming has any bearing on national security or not as depicted by the picture below.

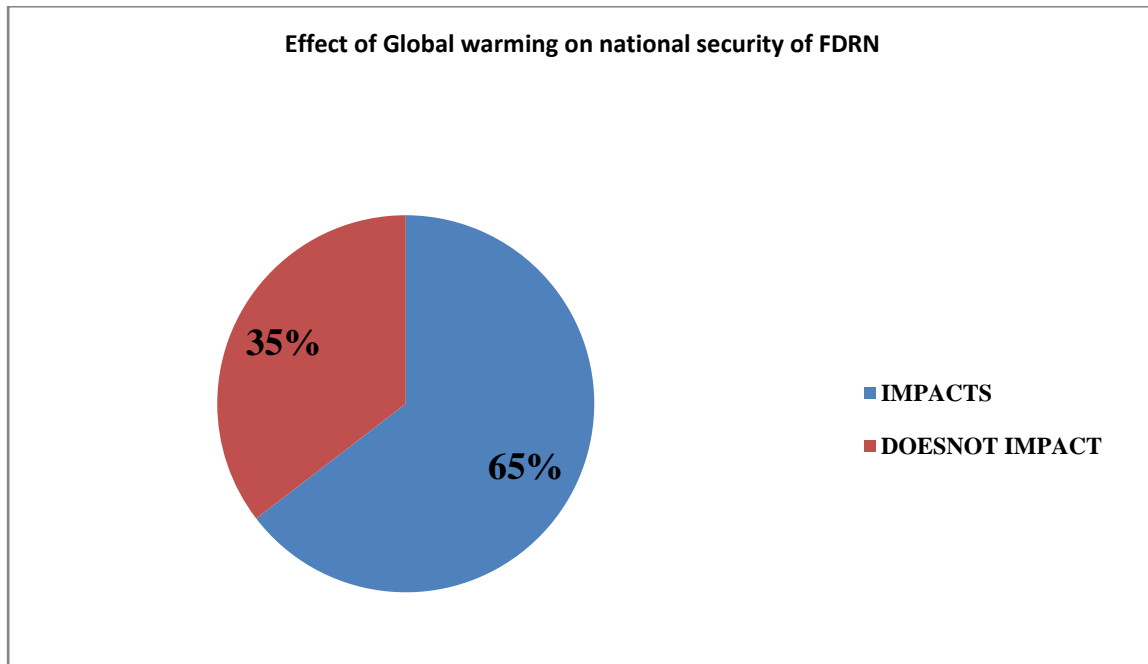


Figure 4: Figure showing opinion of respondents on whether global warming has any effect to national security of FRDN or not based on survey conducted among 240 respondents in Kathmandu in 2019.

There is a worldwide consensus that global warming is a real, rapidly advancing and widespread threat facing humanity this century. Scientists have presented evidence and tested models to substantiate this truly alarming fact (Permesan 1996, Pounds et al. 1999, IPCC 2001, Woodward 2002, Klanderud and Birks 2003, Hall and Fagre 2003). The evidence confirms that man-made factors such as deforestation, agriculture, industries, automobiles, and the burning of fossil fuels, are contributing to Greenhouse Gas (GHG) emission, a major cause of global warming (IPCC 2001). The warming has manifold impacts on ecosystems and biological behaviours. Some widely discussed impacts include snow melting and glacier retreat, drought and desertification, flooding, frequent fire, sea level rise, species shifts, and heightened diseases incidence. These ecological and biological responses can consequently lead to serious consequences for human wellbeing (Easterling et al. 2000, Mehl and Karl 2000). Scientific studies show that snowlines will be higher and snow packs will melt earlier. Winter and night-time temperatures will tend to rise more than summer and daytime temperatures. Many of these trends have already started being observed (NSIDC, 2009). Global warming impacts different sectors as illustrated below

Within small territory Nepal has diverse climatic conditions, ranging from tropical in the south to alpine in the north. Nepalese hydrology is dependent on SAM. The livelihood of over three-quarters of Nepali is based on agriculture and forest resources, and almost 65 percent of agriculture is rain-fed (MoPE, 2000). Yet only 21 % of Nepal's area is cultivable and irrigable. Agriculture depends on the nature of land, most likely to be affected by erratic rainfall. This shows that climatic condition had direct bearing on food production of Nepal. Nepal has a wide variation of climates from subtropical in the south, warm and cool in the hills to cold in the mountains within a horizontal distance of less than 200 km (DHM, 2005, p.32). The climate of Nepal is dominated by monsoon and about 80% of annual precipitation occurs during the summer (DHM, 2005, p.23). The amount of precipitation varies considerably from place to place because of the non-uniform rugged terrain. However, the amount of rainfall generally declines from east to west (DHM, 2005, p.26). The main reason of climate change is global warming.

Warm temperature can cause significant effect on mountain glaciers around the world including Himalayas & glaciers of Nepal. Ice on the Himalayas reflect sunlight back out to space which has a cooling effect. Water and land, which are darker than ice, absorb and retain more heat. However with the increase in GHG heat is retained in earth's atmosphere causing rapid retreat of glaciers. Global warming of a few degrees may increase agricultural production, but not necessarily in the same places where crops are grown now. Crops and woodlands may also be afflicted by more insects and plant diseases. Agricultural areas will need to adapt to changing conditions, such as by shifting the types of crops grown or investing in drought-tolerant or heat-tolerant varieties. Scientists estimate that warming of up to about 3 Celsius degrees (5.4 Fahrenheit degrees)

could increase global agricultural potential, but that further warming is likely to decrease this potential. Thus, there won't be any negative impact on agricultural production till 21st century. Changed climate pattern has affected food production in Nepal. Prediction suggests by 2020 rice production decreases by 6.1-7.7% whereas by 2050 production is likely to decrease by 10.4-20.7%, and by 2080 it is likely to decrease by 18.7-34.6% from the baseline 1990s (Masutomi, 2009). In Nepal, good rice yield is correlated with timely and adequate monsoon rainfall. In 2006, poor monsoon rainfall led to a 30% drop in rice production in eastern Terai, while heavy rainfall and flooding in western Nepal reduced production by the same amount (Regmi and Paudyal, 2009. p.54). As the precipitation pattern is varying in Himalayas, Nepal is likely to experience decrease in water resources in coming decades. Increasing water temperatures can cause algal blooms and potentially increase bacteria in water bodies impacting health directly (UNEP, 2006). The country is expected to be wetter annually $6.22 \pm 6.56\%$ and in monsoon $14.98 \pm 9.74\%$, but drier in winter $-17.58 \pm 2.53\%$ by 2080 (Agrawala, 2003, MoPE, 2004, Rajendran and Kitoh, 2008). The scenarios indicate 0-5% reduction in monsoon precipitation in northern Nepal (Rupa Kumar, 2006. p. 65). In a warmer world, Scientists have predicted that more people will get sick or die from heat stress caused by intense heat waves. At the same time, there will be some decrease in number of cold-related deaths. Diseases such as malaria, transmitted by mosquitoes and other animal hosts, are projected to widen their range as these animal hosts move into regions formerly too cold for them. Other tropical diseases like dengue fever, yellow fever, and encephalitis may spread as well. Scientists have found that the platelets in Human Blood composition is decreasing, which could be catastrophic for all individual (Parry, Canziani, Palutikof, Linden and C.E. Hanson, 2007. p.87).

III. CONCLUSION

Global warming is a natural process that had taken place since time immemorial. Global warming can be caused with natural process and human induced as well. Climate change has occurred with global warming. Global warming has a direct bearing on the national security. In order to mitigate effect of Global warming prevention on emission of green house gases on domestic and industrial areas is essential. Apart from this public awareness is very essential. Attempt to control global warming needs to start from individual household. At the national level all the three tier of government has equal responsibility to combat against global warming. Developed countries also need to invest on ways to mitigate global warming. Conceptually, the four elements of governance tend to be mutually supportive and reinforcing. These elements of good governance are abstract and conceptual in nature (ADB, 1999). The Urban Governance Initiative (TUGI), UNDP Kuala Lumpur had developed indicators and guidelines to benchmark the current status of governance and to plot the change with regards to each characteristics of governance in the cities. As the indicators are to be developed in the context of the city/country, the guideline is applicable in this context as well. Tests on the indicators will help to see how the country is faring in each aspect at any given time and what needs to be improved (UNDP, 1999).

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