

Dealing with Climate Change Crisis

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Abstract

Climate change and its impact on human survival have been today's major challenge and key topics of discussion globally. When considering the catastrophic impacts climate change will bring to earth, in-depth studies on the mechanics and chemistry of climate changes has been emerging. Simultaneously, international and national policies to reduce the vulnerability from climate change have been developed. This article discusses environmental retrospect and climate change issues and highlights efforts taken by global community to reduce GHG. An analysis through an equity lens is made between developed and developing nations and distinction of science and post normal science, and how skeptics revolve around the myth of climate changing 'naturally' is discussed. A brief status of climate change in Nepal has been mentioned and some mitigation and adaptation measures that can be carried out at the institutional and individual level to start solving the climate crisis conclude the paper.

Key Words: Global warming, Climate change, International policies, Intra- generational equity, GHG, Renewable energy, Individual adaptation

Background

The emission of Green House Gas (GHG) in the industrialized world and its impact on atmosphere has been researched since early 1960's. Large body of scientific literature and research results are available on the potential impacts of climate change. As a follow on from the research, countries in the world are asking questions on how to develop coping and adapting strategy. In the process, international policy frame works have been developed and debated, the question on reducing GHG has not yet been clear. This is because, so far the entire industrialization and industrial products we use today are developed based on the energy that generates GHG and non significant amount of energy is derived from clean sector i.e from flow resources. Therefore, governments in the developed and developing countries are debating the methods of reducing GHG thereby curbing the climate change impacts. When considering the scientific understanding on potential impacts on climate change, it is not surprising to note that the fate of our modern capital cities like Kathmandu, Delhi, Beijing, Dhaka and Thimpu, centuries later will be no different than of the archeological sites of Mohenjo-Daro, Harappa, Indus valley civilization and Easter Island in the Pacific Ocean, if we do not deal with the challenges of climate change appropriately in time

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Policy makers struggle with the choice of pathways to development in a country that presents a spectrum of lifestyles that ranges from the very rich, comparable with those of the most developed countries, to those that are among the poorest. The complex poverty issues in the country force large number of people to remain at low levels of resource consumption. One needs to consider linkages within the 'sustainable development' concept. The decision – making for policy makers is generally biased towards economic and social values, especially with environmental issues such as climate change. So therefore, there should be a balance among the triple bottom line i.e. environmental, social and economic perspectives.

This article gives a brief account on climate change, the efforts so far taken by the global communities to curb this problem, its impacts, and recommends to the responsible world citizens to change their habits of consumerism and make rationale choices to curb the impact of climate change. It also discusses, the problems facing the international community in envisioning and implementing environmental laws, whilst at the same time maintaining equity between developed and developing nations.

Environmental Retrospect and Climate Change

Climate change phenomenon is often related to many societal collapses. Past studies indicate that many civilizations collapsed due to various reasons (Diamond, 2005). One such strong viewpoint is that, ecological degradation, a manmade disaster led to collapse of many civilizations. This means the destruction of the very environmental resources in which societies depends on, can be the primary cause for collapse. The phenomenon may be different ranging from smaller to larger events. The impacts however ranges from minor political/social/economic restructuring of any individual societies, to another society conquest by close neighbor or its decline linked to neighbors rise without change in total human population or the replacement or overthrow of one governing elite by the other. We have witnessed in history, the collapse of the civilization of Mohenjo-Daro, Harappa, Indus valley civilization and Easter Island in the Pacific Ocean. How did such rich civilizations collapse? The scale of the collapse in questions warrants an in depth study into these civilizations, perhaps it could be linked to unintended catastrophic environmental events resulting in such disasters.

After the last ice age human civilization was geared more towards sedentary life style and farming. Development of technology for protecting crops for pests and the use of pesticides such as DDT, use of modern technology for increased industrial products accelerated the production of elevated levels of Chlorofluorocarbon and increase in GHG which contributed to increase global warming. Scientific research and modeling on different scenarios on the rise in temperature and its impacts on the climatic explained different probabilities. If the current rate of human activities and industrial output of CFCs and other green house gas continues to rise, and methods for curving this trend are not available, sixth wave of collapse or mass extinction will be the foregone conclusion. Elizabeth Kolbert (as cited in Ignatius, D, 2006) "explains about the indication of potential disaster; a shrinking of Arctic sea ice by 250 million acres since 1979; a thawing of the permafrost for what appears to be the first time in 120,000 years; a steady warming of Earth's surface temperature; changes in rainfall patterns that could have presage severe droughts of the sort that destroyed ancient civilizations". The

release of methane from permafrost and under-sea clathrates will in no time lead to higher temperatures, thus resulting in destruction and affecting life on this planet our earth.

“It may seem impossible to imagine that a technologically advanced society such as of today, could choose, in essence, to destroy itself, but that is what we are now in the process of doing.”- Elizabeth Kolbert. Human induced climate change, built up of toxic chemicals in the environment, energy shortage and the alarming exploitation of the earth photosynthetic capacity (Diamond, J, 2005) clearly reflects Elizabeth statement that we are building these threats which are becoming globally critical. Thus, the challenge ahead is to face these threats very cautiously. Industrial civilization will gradually decline if the root cause of the problem is not carefully studied and addressed. The current environmental problems have been vigorously discussed and debated. It seems that risks are either exaggerated or under estimated. Questions are inevitable to be asked; will modern technologies solve existing problems or create more problems? Will the human population growth be stabilized as growth being stabilized in some developing countries? Efforts to understand the process are underway. Evidences shows that present modern people are more conscious of environmental damage than those from decades ago.

Climate Change: Causes and Impacts

Studies on climate change and its impacts are ongoing since the early 1960's and is continuous. In the ancient Hindu mythology, AKASH (Space) is considered one of the key elements for the entire life support system and within this the influence of sun has paramount importance. Without sun the entire gaseous cycle in the atmosphere is impossible and without gaseous cycles the climatic cycle is not possible. Therefore any activity that impacts on the atmosphere through either natural process such as eruption of volcano releasing billion tons of CO₂ and dark cloud, large scale earthquake and anthropogenic activities (such as industries releasing excessive green house gases), to minor human activities of burning coal, fuels and producing dark CO₂ leading to excess accumulation of green house gases in the atmosphere beyond its assimilative capacity can result in climatic imbalances. Such imbalances can impact the natural ecosystems thereby impacting to the survival of human civilization as the human civilization is closely associated with its natural ecosystem, which in - turn is closely linked with the climate cycle. From the beginning of the appearance of *Homo sapiens* and since 50,000 years ago, man has been constantly fighting for its survival against the nature. Specifically after the last ice age of about 13,000 years ago, this process has been accelerated. The sedentary nature of man and his invention and development in agriculture means encroaching more on nature and fighting against the natural forces such as pests of crops, floods and others is continuous. Expansion of more land for arable cropping means fewer resources for environmental services causing ecological imbalances. Initially, such phenomenon is not visible distinctly, but gradually develops over period of time. Almost all the ecological degradation is unintentional but they result in intentions. Recent discoveries from archaeologist, climatologists, historians and others confirm ecological degradation have resulted in the collapse of civilizations. Climate change and its impact can be through different reasons; Air pollution/toxic waste and burning of fossil fuels to be the major contributor followed by deforestation/degradation of forests, land use

change and damage to the ozone layer. Energy produced by hydropower stations, greenhouse gas emissions and natural variability are also considered to be contributing the least to climate change/global warming.

What we have been witnessing in these present days does not seem different from the past process of collapse. For example in Somalia and Rwanda, wars have broken out and massive genocides have occurred. Similarly in Darfur and Sudan, wars continue, and millions of people are displaced. This has been carried out to grab power and oil resources. The other vivid example is the war on terror in Iraq. All this leads to ecological imbalances and have become a matter of serious concern. Many fear that such issues will overshadow the nuclear war or emerging catastrophic diseases as a threat to global civilization. Growth in population, forces people to adopt intensified agriculture (such as high use of energy, increased cropping intensity and extension of agricultural activities from prime land to marginal land to feed more people). This leads to a rise in unsustainable practices and environmental damages, while degrading the marginal lands. Gradually, the ecosystem services these lands provided in the past have declined. This leads to food crisis and starvation, eventually leading to war where many compete for the finite/scarcce resources, and disillusioned mass overthrow the government and governing elites. This leads to abandoning their social, economic and cultural complexities which they have developed in the past. Historical evidences on the collapse due to different ways in climate changes are also emerging.

Green House Gas and its Impact on Human Civilization

As stated in the preceding paragraph, the biggest contribution of modern industrial growth in the environment is through the emission of green house gas such as chlorofluro carbon, methane and carbon dioxide. The emission leads to a rise in temperature, which has big impacts on earth, leading to climate change. The change in climate alters rainfall patterns leading to erratic rainfall causing droughts, floods, and flash floods and melting of snow and glacial lakes that are on the verge of bursting. This has consequences for food production that is lowered. When lower crop production are stressed due to predicted changes in climate, the prices goes up, and stays high for a longer period and even increase (New Scientist, 11 June, 2008, p 28). This will first hit the poor section of the population and poor countries. It also leads to war in the famine zones of the earth.

Since climate change is a continuous process and in recent decades, it has been accelerated by anthropogenic factors primarily by excessive release of GHG from the industries, burning of fossil fuels and intensive agriculture; largely adopting unsustainable life style of the people. When considering the natural events, Antarctica has been warmer because it was once much closer to the equator. This was accounted due to continental drift some 250 million years ago. Forty to hundred million years ago, dinosaurs roamed the almost tropical forest of an ice free Antarctic. Conditions on the other side of the planet were even more remarkable; the Arctic Ocean was a gigantic freshwater lake habituated with crocodile – like reptiles (New Scientist. 21 June, 2008, p. 34). The water of this mega lake were a surprisingly warm 10 degree centigrade, the core of the surface water 55 million years ago was 18 degrees centigrade peaking at incredible 23 degree centigrade (Ibid). Thus, it is clear that both Arctic and Antarctic

were ice free and warm from about 40 to 100 million years ago. Climate model have predicted such warm poles was due to high level of CO₂ in the atmosphere turning the earth into sweltering green house. Some model suggests CO₂ levels were 16 times as high as pre-industrial level during Cretaceous and Eocene hot house. Whatever the case may be, climate change is highly sensitive to the rise in carbon dioxide. Given the amount of CO₂ we are emitting into the atmosphere, it appears to double from pre-industrial level. If we fail to curb emissions, it could increase by 4 times within 200 years, and then we are half way towards CO₂ levels that will turn the world into cretaceous hot house, leaving the modern human civilizations in the dustbins of the history.

While the rise in the level of CO₂ has been at a rise in the atmosphere, a recent research carried out in the river basin of South and Southeast Asia by Polizzotto, M.L., Kocar, B.D., Benner, S.G., Sampson, M and Fendorf, Scott (2008) shows that millions of people routinely consume ground water that has unsafe arsenic levels. It is believed that arsenic is naturally derived from eroded Himalayan sediments, and is believed to enter solution following reductive release from solid phase under anaerobic conditions. The impact of human activity in the process is not clear and still being studied in the delta of river Ganga and Brahmaputra. This is due to uncertainty and poor understanding of the underground water flow of paths altered by human action of extensive irrigation, pumping in the Ganges Brahmaputra delta. It has been reported that continued and impending anthropological disturbances are sensitive to the release of arsenic. Changes in agricultural practices, ground water pumping, sediment excavation, upstream dam installation will have impacts on the arsenic level and thereby impacting human health. It therefore appears that, the impact of human interference in the use of natural resources not only has on the terrestrial bioresources, it also has equal impacts on the underground water resources.

Efforts and Implementations in Compliance with International Climate Conventions

When considering the catastrophic impacts climate change will bring to earth, in- depth studies on the mechanics and chemistry of climate changes has been emerging. At the same time, policies and international legal instruments to curb this process has also been developed. In the 1992 Earth Summit in Rio, The United Nations Framework Convention on Climate Change (UNFCCC) was signed by 54 countries which was a non-binding commitment. In the Conference of Parties (COP) meeting 3 of UNFCCC, considering the urgency to act on the impact of climate change, the FCCC was expanded and the Kyoto Protocol was introduced. The Kyoto Protocol is a progressive document aiming to curb climate change, highlight its causes from human induced activities, and its urge to reduce these emissions of GHG's. However, it is not easy to ratify and enforce the protocol, as many industrialized developed and developing countries have their development and economic base on the use of fossil fuels, harvest of natural resources, use of coal in energy generation, which leads to polluting large quantities of CO₂. Enforcing the Protocol means loss of billions of jobs in the industrialized and developed countries, leading to big hues and cries at the political level. Till date, the Kyoto Protocol has been signed by 178 members. Under the Protocol, 37 states, consisting of highly

industrialized countries, and those undergoing the process of transition to a market economy, have adopted legally binding emissions limitations and reduction commitments. Most of the industrialized countries realize the need to change, but in reality this may not happen easily and very soon. Carbon - free, or carbon - neutral technologies are yet to be invented and operationalised in an economic scale. Supplementing fossil fuels, coal and other forms of green house gas emitting energy systems with new renewable source of energy is a daunting task. The global opinion is framing in this direction *albeit* with little success.

In the proceedings of UN Climate Change conference in Bali, Indonesia 2007, no structured binding agreements on combating climate change were achieved. United States, Japan, Canada and Australia demanded issue of emission targets to developing countries (exempted under Kyoto). United States signed on the new road map of climate change only after all reference to specific emissions targets were dropped (O'Connor, P. 2007). Bali did not make much progress. In another meeting of the G8 leaders held in Heiligendamm, Germany in June 2007, all the states except United States agreed to seriously consider reducing global emission to 50 % of 1990 levels by 2050. In another G8 meeting held in June 2008 in Hokkaido, Japan, the party discussed on climate change among other global problems. In this meeting, the soaring prices of oil and the global food crisis discussion reinforced the climate crisis. These leaders have declared their commitment to halve emission by 2050 measured against 2005 green house gas levels rather than UN standard level of 50 percent cut in greenhouse gas emissions worldwide by 2050 against 1990 levels (Nature, 10 July 2008, P. 42). They have not specified dates or levels of emissions. This means that the idea is moving like a pendulum; one step back and one step forward. In the Bali meeting, countries that had ratified the Kyoto Protocol agreed to work towards 25-40 % reduction by 2020 but in Hokkaido, they did not even refer to specific numbers. However, Japan, a powerful member country of G8 has strongly endorsed taking up "bottom up" approach to achieve reduction by slashing emission on an industry-by industry basis. Countries like China made it clear that prior to it signing up for halving emission by 2050, developed countries should have specific mid-term goals ready.

Political economy, followed by the absence of effective alternative sources of energy, rapid action is not taking place. To discuss the matter further, over 40 climate negotiators from Asia, Europe and USA met in Washington DC at the end of July 2008. Under the scenario set in 2015, green house gas emissions are on the rise and the latest climate model paint a grim picture of the future if the business were to continue as usual. The UN is calling for international cooperation on emission reductions, adaptations, disaster reliefs and shortages of crucial resources such as food and water. In this lengthy negotiation, the United States and the EU, agreed to a 30% reduction in emission by 2025. They also agreed to finance a portion of emission reduction by developing worlds. China refused to accept any specific emission targets while India committed itself to reduction, but only with a number of contingencies (NATURE/ vol 454/7 August, 2008, p.673)

Challenging Stereotypes

It is to be noted that, issues of human environmental impacts are full of controversies and the opinions falls into different but opposite camps or schools of thought. However, recent opinion on the impact of climate change is converging in the positive direction. Whatever is the case,

the current environment problems are serious, and there is an urgent need to address it. The other school of thought or skeptics believe, that continued economic growth should be a priority, and consider the current myth of global warming and climate change are only natural phenomena. This perception needs to change, and send alarm bells, with the current physical and scientific 'peer- reviewed' evidences on climate change.

The phrase of 'climate change' itself can have contradictions, and this is why people who are in the swindle perhaps perceive this as a natural phenomena. There are people who still argue about this issue, and refer to it as 'climatic' conditions 'changing'. It has recently been debated that 'climate change' should be referred to as 'climate disruption', perhaps then only will those who do not agree, specially the skeptics realize, that it is not a natural cause that is effecting our climate, but 'human induced' climate disruption that is leading to warming of this earth.

Roles of Developing and Developed Nations

Principle 5 of the Rio Declaration places emphasis on Intra- generational equity. It not only means to decrease disparities in the standards of living but also to meet the needs of majority of the world's populations. (UNCED, 1992). The main aim of the intergenerational equity is to maintain the equity between developing and developed countries, in their right to exploit resources as well as their responsibility to control pollution and the liability for compensation when such breaching does occur. In contrast to the Intra – generational equity the "Common but differentiated responsibilities" stated in Principle 7 of the Rio Declaration has different perspectives and interpretations in the argument of maintaining equity between developed and developing nations. States have common responsibilities to protect the environment and promote sustainable development, but due to different social, economic, and ecological situations, countries must shoulder different responsibilities. The Principles therefore provides for asymmetrical rights and obligations regarding environmental standards, and aims to induce broad State acceptance of treaty obligations, while avoiding the type of problems typically associated with a lowers common denominator approach.

The Principle of differentiated responsibility has also been applied to treaties and other legal instruments for developed countries. Differentiation within developing countries is specified, in the Frame work Convention on Climate Change, (CISDL). Under the 1987 Montreal Protocol the special situations of developing countries entitles them, provided they meet certain condition's to delay their compliance with control measures. Under the Climate Change convention, the principle of common but differentiated responsibilities requires specific commitments only for developed country parties at this time, and allows for differentiation in reporting requirements. The relevant treaty provision is under Article 3 in the UNFCCC illustrates this differentiated principle. (CISDL – World Summit, 2002) Here it has been specific Parties shall be guided to protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibility and respective capabilities. Accordingly, the developed countries should take the lead combating climate change and the adverse effects thereof. This Principle recognizes the special needs of developing countries. It contains an obligation for those countries

with the ability to protect the environment to provide supporting measures for less developed countries. It also implies a different responsibility and injustice between developed and developing countries. Developing countries are likely to suffer most from environmental degradation (Lang, 1995); this is because poverty is a key source of environmental problems and because those countries have the least capacity-financially, scientifically and technologically to adapt to any global environmental change.

Post Normal Science and Climate Change

With complex global issues such as climate change, experts argue that a different approach — post-normal science — is necessary. With these issues, uncertainties are great, values are absolutely relevant and in dispute, and the stakes are very high. ‘Science’ is seen as separate from values and cultural context. When the world faces such overarching complex issues as climate change, it is debated that a new sort of science is needed, which is called ‘post normal science’. Post normal science can be applied to different fields such as ecological economics, food safety, and medicine as well as climate science.

In these fields, and especially with climate change, action on issues depends on many value driven decisions made in the face of uncertainty. Complex problems such as climate change will never be fully understood before action is needed to address them: a ‘post-normal process’ includes enabling these actions through joint learning and research with those who will carry out the actions, through participation of different stakeholders which include: policy-makers, decision makers, scientist, environmental ‘think tanks’, academia’s and institution to lobby for a cause. It is more of a ‘peer-reviewed process’ working jointly to a consensus. The IPCC is a classic example of post-normal science. Although much of the heavy lifting is done by scientists, experts from government, business, and the policy world become involved in the process too, and ultimately the assessment reports are handed off to government officials for comment and amendment before the final drafts are published.

Status of Climate Change in Nepal

The mighty Himalayan mountain range straddles many countries and is home to a host of ethnic groups. But all along the Himalaya local communities are finding that their way of life is threatened by changes in their environment. As industrial powers debate climate change, some experts say that some of the greatest concerns lie in the remote Himalaya, often called the ‘Water Tower of Asia’ or ‘The Third Pole’ due to the huge size of snow, ice and water stored within. Although the Himalayan people hardly contribute towards global warming, the negative effects of it are affecting the mountain communities and the fragile mountain ecosystem. Nepal is on the forefront of Climate Change and variation which is now being recorded. According to the Department of Hydrology and Meteorology, temperature in Nepal is rising at the rate of approximately 0.06 degree Celsius per year. Nepal’s contribution to green house gases is very small (0.025 percent of global) but impacts on livelihood is very significant. Sector like agriculture and water resources are likely to suffer the most. There are about forty Himalayan glacial lakes that are close to bursting due to ice melt induced by climate change; the United Nations Environmental Programmer (Clean Energy Nepal, 2002)

has sent warnings on this. Mountain glaciers are the source of fresh water for hundreds of millions of people in Nepal. These are retreating at an alarming rate that will ultimately lead rivers to trickle during later summer and fall.

Nepal's contribution to emission of green house gas is very limited. Pollutants and greenhouse gases (GHC) do not respect the political boundaries of the countries. They travel from one country to the other. Thus the climate related problems of GLOF and flash floods are largely contributed from the action of the industrial growth of neighbors and industrialized countries while Nepal is a passive sufferer. Adaptation and vulnerability area is of considerable importance to Nepal. To mitigate climate change impacts on its agriculture and water sector, Nepal needs to carry out vulnerability assessment, scientific analysis to understand impacts, capacity building activities and prepare a GHG inventory, so that, appropriate interventions can be taken to curb or control negative implication of climate change.

Future Interventions: Alternative and Renewable Energy

Energy is essential to economic and social development and to improve the quality of life of the Nepalese people. But according to studies the alternate or renewable energy sector has had a marginal increase of 0.5 % over the past few years. (HMG-MOF, 2004). The important components which can be included, under Alternative and Renewable Energy Technologies, are micro-hydropower, biogas, improved cook stoves (ICS), solar energy (including solar heaters) and solar photovoltaic cells, wind power, and biomass briquetting.

Nepal can explore and develop its alternate and renewable energy sectors in areas like Hydro Power. Experts believe, this could be a major revenue earner for the country and in making itself sufficient with energy production. There are various reasons in considering renewable energy for a land locked country like Nepal. Firstly, it has major Himalayan Rivers that originate here; this benefit in utilizing local available resources has advantages to the country at a national level and reducing emissions at a global level. With abundance of water resources Nepal has capacities to generate electricity without depending much on fossil fuel. These projects can be run of the river generations, as those being practiced in Bhutan, proving to be less intense and more appealing than the myth of building larger Hydro Power plants. There are advantages to hydro power; the fact that hydroelectric systems require no fuel means that they also require no fuel-extracting infrastructure and no fuel transport. This means that a gig watt of hydropower saves the world not just a gig watt's worth of coal burned at a fossil-fuel plant, but also the carbon costs of mining and transporting that coal. (Nature: Vol. 454, 2008).

Carbon sequestration is a critical ecosystem service in the Himalayas. Payment mechanisms could be one of the interventions in the Himalayas. In the global carbon cycle, bamboo ecosystem is considered as a carbon sink. The forest biomass of bamboo stores the largest amount of carbon. It grows fast and releases 35% more oxygen than equivalent stands of trees. Some of the bamboo species sequester up to 12 tons of carbon dioxide from the air per hectare (www.bamboocentral.org/whybamboo.html). Thus in the Himalayas especially in Nepal, bamboo plantation could be beneficial in reducing carbon as well as for carbon credit.

Individual Contribution to Minimize Climate Change Risks

Mitigation and Adaptation strategies have been discussed in great length as interventions to minimize climate change crisis. Mitigation is about lowering the GHG emissions in the atmosphere. UNFCCC (1992), Kyoto (1997), WSSD (2002), Bali roadmap (2007) and Bangkok Talks (2008) are aimed at mitigation occurs at the policy level. Individual adaptation is important in such situation than what occurs at policy level. Adaptation is about preparing ourselves and others to cope up with the impacts of climate change so as to minimize climate change risks. It occurs at individual and societal level. Adaptation is not a new phenomenon. In the past, societies have altered farming system/patterns, migrated, and developed new innovative ideas to adapt to climate change. Therefore this is a natural process that occurs during the lifetime of societies. However, it depends on the capacity of individual and societies to adapt. In case of catastrophic natural disaster, adaptation is difficult as soon as it occurs. However, in the long run, societies may develop some coping systems. In such case, capacity building of communities seems urgent. Technologies, tools such as warning system could be developed to minimize risks.

While the whole world is discussing about climate change, melting of glaciers, water crises our adaptation interventions should be linked with our own personal practices and our modern values. Crisis of water in the coming years has been highlighted by many scientists. Shortages of drinking water will be a huge issue for millions of people and even to us who are living in the mountains (a haven for fresh water). A recent study shows that flushing toilets are huge consumers of precious, potable water. A research in 2001 showed that annually, a person will waste on average about 4,000 gallons (15,000 l) of drinking water to get rid of 75 pounds (34 kg) of feces and 130 gallons (490 l) of urine (Anitei, S, 2007). Therefore, in such case adaptation at individual level is necessary. This needs personal awareness. In such water crisis, one way of individual adaptation may be the need to stop implementing the water wasting system (flushing toilets) and shift to water friendly toilet designs. Such individual change is required to solve water crisis especially in urban areas where water shortage is a big problem.

Therefore the priorities include water conservation and water pollution treatment, flood management and development of drought resistant crops. This can be achieved both at a personal and collective level. Most of the GHG emissions and large amount of toxic wastes hinder the environment and threaten human survival are generated by big corporations whose aim is to make profit and promote consumerism. This is further catalyzed by the capitalist model of economic development. This eventually promotes consumerist and materialistic culture with never ending wants and desires. As a consequence, human behaviors are shaped to align with capitalistic societal thinking. Our thought processes has been now shaped with materialism and consumerist culture brought about by capitalism accelerated with the process of globalization. Materialism has now become our way of life. Self-sufficiency has been replaced with greed, diverse culture with monoculture. This is what needs to be changed, if we are really serious about doing something for our planet against climate change crisis. More than the changes in technologies, the need of the hour, are behavioral changes, so that we have pride in our environmental friendly practices that are sustainable and self sufficient. We should once again rediscover ourselves and our ancient systems of farming, support local

farmers, local diversity and promote the concept of unity in diversity. We should bring reformation in our thought process by shifting from consumerism to modern spirituality. We should learn to derive satisfaction from our way of living and gain self efficacy so that money, greed does not control us. Ultimately, it is us, who will suffer the most and we are our own saviour.

Conclusion

Protection of the environment and good management of natural resources can only be achieved by compliance with environmental laws. The effective enforcement of environmental law in developing countries involves tightening the legal and regulatory framework, strengthening the state's capacity to implement civil and criminal legal procedures and increasing public awareness and participation in environmental matters. But these are small steps forward. Both rural and urban populations, caught in the daily grind remain disconnected from the debates on climate change. What needs to be enhanced and maintained are the rich cultural identity and biogenetic diversity within parameters of the Himalayan traditions. The mountains have always constituted places where adaptation and resilience are hallmarks of the local people and the landscape they inhabit. This is at stake now, and the aim is to raise awareness of the impacts of climate change, and the new challenges that lie ahead in dealing and mitigating these impacts.

The environmental movement, is no longer, about saving whales, trees or spotted owl's, it is more about changing lifestyles, building partnerships, capacity building, technological transfer and sharing knowledge, working beyond borders and jurisdictions' and saving life as we've known it, for generations to come. To conclude, in O'Connor words "to achieve the reduction in required global carbon emissions, nothing less than the complete reorganization of the world economy is necessary. An internationally coordinated economic plan is needed involving the complete restructuring of the world's industrial and agricultural sectors, as well as the reorganization of energy generation, transportation, and urban planning. As evidenced from the Bali outcome, capitalist order has to be restructured and should be based on the social needs of the majority and the long-term viability of the planet as a whole". (O'Connor, P (2007).

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| IMPORTANT DAYS | DATE |
|------------------------------------|----------------------------------|
| <i>World forest day</i> | <i>21st February</i> |
| <i>World environment day</i> | <i>5th June</i> |
| <i>World tourism day</i> | <i>27th September</i> |
| <i>World human rights day</i> | <i>10th December</i> |
| <i>World population day</i> | <i>11th July</i> |
| <i>World food day:</i> | <i>16th October</i> |
| <i>World health day:</i> | <i>7th April</i> |
| <i>World wetland day</i> | <i>2nd February</i> |
| <i>World bio-diversity day</i> | <i>22nd May</i> |
| <i>Nepal soil conservation day</i> | <i>24th Shrawan</i> |
| <i>Conservation day</i> | <i>23rd September</i> |
| <i>World heritage day</i> | <i>18th April</i> |
| <i>International mountain day</i> | <i>11th December</i> |
| <i>World water day</i> | <i>22nd March</i> |