Redefining Security: An Environmental Approach

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"The earth has enough resources for our need, but not for our greed."

-Mahatma Gandhi

Abstract:
"The relationship between environment and security has been under consideration since the 1980s mainly by two groups:
1. The environmental policy community, addressing the security implication of environmental change and security, and
2. The security community, looking at new definitions of national security, particularly in the post-cold war era. It was soon acknowledged that global impacts of for example environmental change, the depletion of the ozone layer and transboundary pollution, have clear security implications. This in turn made the military authorities to re-evaluate the security dimensions of environmental issues.
Security was traditionally seen as a synonym for national security with two main objectives:
1. To preserve the territorial integrity of the state and
2. To maintain the preferred from the government, by political and military means. When political scientists took up the environmental aspects of security, they defined environment impacts as being part of the security issue. This approach attempted to re-define the concept of national security completely. In the early 1980s the Independent Commission on Security and Disarmament Issue (ICSDI) developed and introduced the concept of common security, giving the idea of national security a broader perspective. Additional to the traditional security aspects, other non-traditional threats to security , e.g. economic decline, social and political instability, ethnic rivalries and traditional dispute, international terrorism, money laundering and drug trafficking as well as environmental stress, have been incorporated. In recent years environmental security has been understood extensively, included human, physical, social and economic well being, giving the scope hardly any limitation for interpretations. At present, however, there is no consensus on a clear definition of environmental security. For the purpose of this paper, the scope of the issue is limited on how environmental impacts may affect conflicts, rather than security as such. In this respect, environmental security has basically a main dimensions: environmental stress may be a cause as well as a result of a conflict."

***Keywords*: Environmental Security, Issue of Conflict and Redefinition, Climate Change, Natural Resources, Security threat, Environmental Politics, Carbon Emission, Environmental degradation, Green house effect.**

Introduction

According to Jon Barnett, environmental security emerged as an important concept in security studies because of some interrelated developments which started in 1960s. The first one was the increasing level of environmental consciousness in so called developed countries Various occurrences and events triggered the growth of the environmental movement during this period of time. Rachel Carson's well-known book *Silent Spring* was one of the extraordinary publications of that time and brought greater degree of environmental awareness among ordinary people by warning them of the dangers to all natural systems including animals and food chain from the misuse of chemical pesticides such as DDT. Whilst Carson undoubtedly contributed to public debate at the time she was arguably not amongst the more radical 'social revolutionaries' who were also urging greater public awareness of environmental issues. Moreover, the number of largest well-known environmental non-governmental organizations such as the World Wildlife Fund (1961), Friends of the Earth (1969), and Greenpeace (1971) were founded during that time.[1]

The second notable development which brings the emergence of concept of environmental security was number of scholars started to criticize the traditional notion of security and mainstream security debates in their work from 1970s by emphasizing its inability to handle environmental problems at national and international security level. First commentators were Richard Falk who published 'This Endangered Planet' (1971), and Harold and Margaret Sprout who wrote 'Toward a Politics of Planet Earth' (1971). These two commentators asserted in their book that the notion of security can no longer be centered only on military power, rather nations should collectively take measurements against common environmental problems since they pose threat to national well-being and thus international stability. These main ideas about environmental interdependence between countries and common security threat have remained key themes of environmental security studies. However, not until Richard Ullman publishes an academic article named "Redefining Security" (1983), radical departure from the dominant security discourse haven't happened.[2] Ullman offered the following definition of national security threat as "an action or sequence of events that (1) threatens drastically and over a relatively brief span of time to degrade the quality of life for the inhabitants of a state, or (2) threatens significantly to narrow the range of policy choices available to the government of a state, or to private, nongovernmental entities within the state". Significant other scientists onward also linked the issue of security by focusing on the role of environmental degradation in causing violent conflict.

Others, while recognizing the importance of environmental problems, argued that labeling them 'environmental security' was problematic and abandoned analytical rigor for normative and emotional power.

Environmental Change and National Security

Even though environmental degradation and climate change sometimes cause war and violent conflict within and between countries and other times not, it can weaken the national security of the state in number of profound ways. Environmental change can undermine the economic prosperity which plays big role in country's military capacity and material power. In some developed countries, and in most developing countries, natural resources and environmental services tend to be important factors for economic growth and employment rate. Income from and employment in primary sectors such as agriculture, forestry, fishing, and mining, and from environmentally dependent services like torus, may all be adversely affected by environmental change. If natural capital base of an economy erodes, then so does the long-term capacity of its armed forces. Moreover, changes in environmental condition can exposes people to health threats, it can also undermine human capital and its well-being which are essential factors of economic development and stability of human society.[3] Climate change also could, through extreme weather events, have a more direct impact on national security by damaging critical infrastructures such as military bases, naval yards and training grounds, thereby severely threatening essential national defense resources.

Why is Environmental Security Important?

To the extent humankind neglects to maintain the globe's life-supporting eco-systems generating water, food, medicine, and clean air, current and future generations will be confronted with increasingly severe instances of environmentally induced changes. Such events will test our traditional concepts, boundaries, and understandings of national security and alliance politics and, if taken for granted, may lead to conflict, including violent conflict, from the global to the regional, national, local or human level. Environmental security, broadly defined, affects humankind and its institutions and organizations anywhere and at anytime. When Resources are Scarce Environmental scarcity is determined by environmental change, population size and growth, and unequal distribution (or access to) resources. Of these factors, unequal access to resources is not bound by physical limits alone. It is also a reflection of societies' preferences, beliefs and norms. Leading examples of emerging environmental change are: depletion and pollution of fresh water supplies, depletion of fisheries, degradation and disappearance of biodiversity, degradation and loss of agriculture lands, food and health safety, stratospheric ozone depletion, and global warming.[4] Of these major environmental changes facing humankind, the first five are now, or will likely be, growing threats to environmental security in the near term; the latter two will increasingly affect human security in the coming 50 years. The interaction among and between the determinants of environmental scarcity sets the stage for addressing the environmental security challenges humankind will be confronted with. Our ability (or lack thereof) to make innovative institutional arrangements and/or technological advances for managing the environmental security challenges we face, will increase or decrease global environmental security.

The world security has been defined by scholar in different ways indifferent periods of history. As the Global scenario keeps on transforming the discourse in international politics on the definition of security also changes its track, "In its generic and literal meaning, security conveys the state or feeling of being free from fear, care, worry threat, danger etc, ensuring a sense of safety However, the concept of security has changed its can notations over time. During Nineteenth century, it was primarily defined in terms of state security and the government solely responsible for upholding the security of the state. This concept of security underwent further change in the aftermath of the first world war, which threatened the security of nations and this compelled the global community to look for a multilateral organization which will make security a collective concern. This led to the establishment of the "League of Nations" in 1919 and it was anticipated that it would work in averting another war.[5] The league soon proved ineffective and the world witnessed yet another world war. The experiments with collective security were however not abandoned and by 1945, the U N was established as a multilateral body to ensure international security and peace. Nevertheless, the concern with national security or security of the state defined primarily in military security terms was control to the concept of security and it was not until the close of the twentieth century that the concept broadened its scope to include non- militarist dimensions of security within its conceptual domain.

The years following the second world war led to a more complicated insecure world because of the initiation of cold war. During this period the term security was primarily defined on the basis of military and nuclear strength, "Cold war understandings of security emphasised military, ideological and technological definitions of social problems security was connected with state secrecy, nuclear power and military strength." The state was the primary actor and the dominant interpretation was that if the state security was assured, individual security was of little consequence. The deterioration of environment and occurrence of natural calamities during 60s made the scholars of international relations to review the definition of security. No substantial progress was made on this front other than creation of United Nations Environment Programme. UNEP following the 1972 Stockholm conference. If worked as catalyst in generating awareness over environmental issues, which gradually led to shift in the paradigm of security. This conference raised awareness about the global environment and tried to established a relationship between development and the environment.[6]

The major shift in the paradigm of security was witnessed after the end of cold war, one of the issues that become significant was environmental security and led to scholars to state that "welfare not warfare" will shape the rules and "global threats like ozone holes and pollution will dictate the agenda." It is said so because "extensive deforestation, desertification, salination, denudation,

water security etc., are no larger seen as local, state or even vegional problems, but have broader international ramifications; for they undermine the economic base and social fabric of weak and poor states by generating or exacerbating intra-interstate tensions and conflicts." The importance of environmental security in international relations has led to growing participation and importance of non-state actors in global environmental politics. International governmental organization, non-governmental organization, advocacy groups have all become vital players in the process of international environmental regime formation.[7] The complexity of environment problem has provided increasing role to these advocacy groups. It is now almost universally accepted that global environmental threats can be successfully addressed only through the active cooperation of these key actors. The down of the 21st century is witnessing earth's physical and biological systems under unprecedented strain. The world's population is over 6 billion and is likely to reach 10 billion mark by the middle of the 21st century. The global warming has increased to alarming levels due to the presence of increased amount of carbon dioxide and other green house gases in atmosphere owing to the increased level of pollution. Scientists believe that a mass extinction of plants and animals is underway and predict that as many as 20 percent of all species could disappear within next thirty years. Without question, the human impact on the atmosphere will be one of the most critical issues of the 21st century. Although threats to earth's flora and fauna, water systems and atmosphere have been recognized by scientists and conservationists for more than a century, it is only in the past three decades that nations have begun to address these issues on a global scale.[8]

The impact of environmental degradation and consequences of environmental change are increasingly associated with non-conventional notions of security. Considering the environment as a threat to individual, national, or global security has created a new agenda in the discourse of security studies. The increasing scope of international security now readily includes environmental degradation, global warming, and climate change. These issues have extended human understanding of environmental change, conflict and vulnerability and explored the roles of conservation and sustainable development in promoting peace, stability and security.[9] This is a broad definition of environmental security, as considered by a large number of academics and proponents. The importance of understanding environmental security is two-fold. First, one has to understand the transformations in the theoretical developments of the concept of 'security'. Second, one also has to envisage the link between environmental change and livelihood strategies of human being on the local level and the broader impact of environmental changes on a society. These two dimensions help define environmental issue as important factors of security.

The academic strength of environmental security and its current position in the international security discourse largely depend on the answers to a few essential questions: "What is security?", "Whose security are we talking about?", "What counts as a security issue", and "How can security be achieved?" Environmental security offers intricate relationship between the contemporary environmental changes in the world and environmental threats and cooperation.

Looking at the question-is environmental degradation a security threat?-, this paper argues in favor of a revised framework of security that includes environment as a key determinant. Later, the paper explains the conceptual linkages between environmental degradation and security through several theoretical viewpoints. The paper primarily focuses on the contributions of the constructivist school of thought to explain the idea of environmental security. The paper also establishes a link among environmental degradation, threat to life and vulnerability. This linkage helps to understand the relationship between environmental degradation potential conflicts.[10] Primary information on the prevalence and effects of ecological degradation and climate change are utilized to support the thesis. Finally, the paper includes with the argument the environmental change hamper individual security by affecting livelihood and promotes transnational security crises for states and regions. Hence, environmental degradation is a significant threat to security for both individuals and nation-states.

Aim and Objectives

The main objective of the study is know to energy security, global warming, climate change and its impact on human life. This paper is based on the following objectives:

1. To understand security awareness on issue related to environment, development and energy.
2. To analyze recent changes in the environment and development.
3. Since energy security is becoming the world's biggest challenge in the present situation. So what kind of safety should be. The main purpose of this research paper is to study this fact.
4. To find out the major challenges on ecosystem and nature.
5. To find out some beneficiary steps taken by the deferent countries at global level.
6. To find out some beneficiary steps taken by the Indian government to remove challenges.
7. To analyze relation between climate change, energy security and sustainable development.

Hypothesis

The pollution haven hypothesis posits that, when large industrialized nations seek to set up factories or offices abroad, they will often look for the cheapest option in terms of resources and labour that offers the land and material access they require. However, this often comes at the cost of environmentally unsound practices. Developing nations with cheap resources and labour tend to have less stringent environmental regulations, and conversely, nations with stricter environmental regulations become more expensive for companies as a result of the costs associated with meeting these standards. Thus, companies that choose to physically invest in

foreign countries tend to (re) locate to the countries with the lowest environmental standards or weakest enforcement. Three scales of the hypothesis:

1. Pollution control costs have an impact at the margins, where they exert some effect on investment decisions and trade flows.
2. Pollution control costs are important enough to measurably influence trade and investment.
3. Countries set their environmental standards below socially-efficient levels in order to attract investment or to promote their exports.

Scales 1 and 2 have empirical support, but the significance of the hypothesis relative to other investment and trade factors is still controversial. One study found that environmental regulations have a strong negative effect on a country's FDI, particularly in pollution-intensive industries when measured by employment. However, that same study found that the environmental regulations present in a country's neighbours have an insignificant impact on that country's trade flows.

Research Methodology

To gather the information about the above objectives secondary data is used. The research paper, journals, magazines and newspaper are studied to get the relevant information about the topic. This paper is based on the conceptual nature. Every effort has made for getting the relevant information about the concept.

Review of literature

The following scholarly and literary reviews of the books and journals of the authors have been prepared in preparation of the research paper: Brown, L., 1977. "Redefining Security," World Watch Paper 14 (Washington, D.C.: World Watch Institute), Ullman, R.H. 1983. "Redefining Security," International Security 8, No. 1 (Summer 1983), Westing, A.H. 1986. "An Expanded Concept of International Security," In Global Resources and International Conflict, ed. Arthur H. Westing. (Oxford: Oxford University Press), Myers, N. 1986. "The Environmental Dimension to Security Issues." The Environmentalist 6 (1986), Ehrlich, P.R., and A.H. Ehrlich. 1988. The Environmental Dimensions of National Security. Stanford, CA: Stanford Institute for Population and Resource Studies, Gleick, P.H. 1990. "Environment, resources, and international security and politics." In E. Arnett (ed.) Science and International Security: Responding to a Changing World. American Association for the Advancement of Science Press, Washington, D.C.)., Homer-Dixon, T.F. 1991. "On the Threshold: Environmental Changes as Causes of Acute Conflict, International Security 16, No. 2 (Fall 1991); Romm, Joseph J. 1993. Defining National Security: The Nonmilitary Aspects (New York: Council on Foreign Relations) Swain, A (1996). "Displacing the Conflict: Environmental Destruction in Bangladesh and Ethnic Conflict in India". Journal of Peace Research. 33 (2). Dodds, F. Higham, A. Sherman, R. 2009. (edited) "Climate Change and Energy Insecurity: The Challenge for Peace, Security and Development", London. Earthscan., Djoghlaf, Dodds, F. Bartram, J. 2016 (edited) "The Water, Food, Energy and Climate Nexus: Challenges and an agenda for action", London, Routledge.

The Environment–Development–Security Triangle

At least since the late 1980s and early 1990s the relationship between environment and development has been enshrined in governmental domestic and foreign policies and international relations. Following the appearance of the Brundtland Report in 1987 and the convening of the Earth Summit in 1992, it would be hard to find a government or international/intergovernmental organization that does not officially recognize that environmental protection and sustainable human development go hand and hand and which does not incorporate the linkages between these two objectives at least to some degree in its legislation, initiatives, programmes and projects.[11]

Perhaps more recently greater official recognition has also begun to be given to another relationship subject to decades of study which is the relationship between development and security and the need for conflict sensitive development cooperation policies and practices. Economists, political scientists and now politicians are seeking to better understand roots of insecurity in underdevelopment as well as the positive reinforcing relationship between security and development.

While it is helpful to analyse policies and practices in terms of the attention paid to each of the three dichotomies shown on the triangle on the right, ultimately we are even more interested in analysing each of the areas of overlap between the three goals of policy which are better illustrated by the Venn diagram below.

Of course, even more circles and sub-circles could be added to draw an even better picture of overlapping policy goals including, for example, democracy, governance, human rights, health, education, etc. – not to mention visualising separately also the domestic and foreign dimensions of policies and practices.

The focus of the current study and the accompanying *EnviroSecurity Action Guide* is to catalogue the extent to which selected governments and international agencies have or have not incorporated the relationship between environment, resources, security, conflict and peacemaking into their foreign and security policies and actions.

As Michael Renner points out in his introductory essay to this report, for the past 20 or 30 years there has also been an ongoing discourse regarding the interaction between security and environment. However, there is little evidence that governments and the international community have yet really incorporated this third side of the triangle of environment–development–security into official policies.[12] Never-the-less, as Mr. Renner concludes, "Even where governments have not advertently or intentionally addressed the topic of environmental security, a range of relevant policy actions are developing and a variety of on-going practical governmental and non-governmental programmes and projects are having a noticeable impact on improving the interplay between environment and security in many critical areas in the world."

Defining Environmental Security

A recent comprehensive overview of the environmental security field observes that the environment is the most transnational issue, and its security is an important dimension of peace, national security, and human rights; over the next 100 years, one-third of the current global land cover will be transformed; hence the world will be facing increasingly hard choices among consumption, ecosystem services, restoration, preservation, or degradation; and environmental security is central to the national security, comprising the dynamics and interconnections among humans and natural resources.[13] Based on these assumptions, there are many different approaches to define environmental security, most of them originating in international policy debates. Some of the respective definitions have been documented in. Traditionally, there are two main definitions of security according to the two main points of view:

- **Environmental security.** The major challenge concerns the global environmental change, focusing on the interactions between ecosystems and mankind, the effects of global environmental change on environmental degradation, the effects of increasing social request for resources, ecosystem services, and environmental goods.

- **Human security.** This item addresses different security aspects like social or political security. In this context, values at risk are the survival of human beings and their quality of life.

The relevant objects of environmental security are complex, adaptive systems with two main components–the social, characterized by human intent, and the ecological, rising without intent; these have interacted historically, and society strongly determines the landscape ecological components of such systems. To introduce environmental security with reference to SESs, it is useful to refer to the definition provided by Arnold Wolfers in 1962, stating ''Environmental security, in an objective sense, measures the absence of threats to acquired values, in a subjective sense, the absence of fear that such values will be attacked.'' Basically, it is necessary to consider that:[14]

- security of SELs must be assessed both objectively and subjectively, because security is meaningless unless there is somebody perceiving it;
- security is value laden, and what we consider values is related to our normative systems that nowadays recognize concepts like ecosystem functions and services, ecosystem integrity, and sustainability as fundamental values for the survival and well-being of mankind; and
- humans have been historically providing threats to those values from local to global scale, but there are also threats coming from natural hazards and disasters.

Theoretical Aspects

The diminishing role of state in the global order coincided with the shift in emphasis from 'Realist' to 'Neo-liberal Institutionalist' perspective at the conceptual level. Realist emphasised on fashioning national interest in terms of power, war or threat perception, (in contrast) the Neo-realist (perspective) begins by proposing a problem-solving approach, seeking to help develop, the concept of system's structure which at once bounds the domain.

The realists believe that international anarchy fosters competition and conflicts among states inhibit their willingness to cooperate even when they share common interests. They, while focused on states as units of analysis, do not take into account the environmental issues and tend to downplay internal factors as well as indirect trans-boundary effects of environmental degradation. The realists also favour unilateral action if an environmental problem is recognized as a potential threat in order to optimize the state is access to scarce resources of water, oil and soil.[15]

On the other hand, the 'Neo-realist' perspective enables the policymakers to see how the structure of the system and variations in it, effect the interacting units and the outcomes they produce. Thus 'Neo-realist theory' helps us to focus on the conflicting aspects of the negotiations, and elucidates some of the reasons why co-operation has been difficult to achieve. It leads the policymaker to think in terms of a collective action problem, through its conceptualization of anarchy.[16] However, the neorealist also has draw backs and its primary weaknesses are its neglect of international institutions and domestic politics and its effective structure determinism, which leaves us unable to account for the process and for agenda setting.

The Neo-liberal institutionalist has appropriately elucidated the role of international institutions in solving the global problem. They argue that the realists have overemphasized conflicts and underestimated the capacities of international institutions to promote co-operation. Neo-liberal institutionalists believe that states cooperate to cope with environmental problems by creating new international regimes and organizations. These institutions always reinforce their legal sovereignty and very often enhance their problem solving capacity as well. They believes that even in the prevailing state of anarchy in global order, state can work together and can do so especially with the assistance of international institutions.[17]

For the neo-liberal security is essential and institutions help to make security possible. Institutions provide guaranteed framework of interaction, they suggest that there will be an expectation of future interactions. These interactions will occur not just on security issues but on a whole suit of international issues, including human rights, the environment immigration and economics. Therefore, the neo-liberal institutionalist perspective is appropriate to deal with the issue of environmental security in the international relations.

However, there are divergences among countries regarding their approaches to security. Some are influenced by the realist and some by the neo-liberal institutionalist perspective. For example, the US position on environmental security is influenced by the realist theory and argues and it would be irrelevant for it to take substantial action on environmental issues if developing countries would not also undertake similar commitments. It is exemplified by the act of US walking out from the Kyoto Protocol in March 2001. It proves that US has no faith in the framework prepared by the international organization, on the other hand, the developed and developing countries have shown faith in international organization to solve the menace emanating from environmental degradation. These countries have taken number of mitigation and adaptation measures suggested by the international organization.[18] The Gulf war of 1991 and ongoing war in Iraq at the moment for the control of oil resources proves that US action are influenced by the realist perspective, as it favoured unilateral action to optimize the state's access to scarce resources.

Behavioural Aspects

Environmental security as a concept encompassing non-military aspects was officially mentioned for the first time in the international conference on the relationship between disarmament and development, convened by the United Nation General Assembly in the New York from 24th August to 11th September, 1987. In the member states the recently non-military threats to security have moved to the forefront of Global concern. The Palme Commission, suggested that there are global dangers which threatened the community of nations and which cannot be solved by mere boundary protection. By emphasizing common dangers, it bases its appeal for co-operative behaviour, not altruism, but on the larger sense of collective self interest. In the similar vein the report entitled, "Our Common Future" released during world commission on Environment and development, pointed out that, environmental stress is both a cause and effect of political tension and military conflict. It also maintained that traditional nation of security is no longer applicable.[19]

The inclusion of environmental threat to security has significantly expanded the scope of the instruments by which security threats can be addressed. It has also cast a shadow on the existing national priorities and challenged the prevailing nations of security. There has been a slow but steady realisation that environmental threats may have serious socio-economic and human costs, hence, they cause insecurity and that they cannot be solved by the unilateral decisions of states. In simple word one could say that post-cold war security was defined from the perspective that includes measure to enhance the long term health and welfare of the human family educing human suffering to the minimum.

Environmental security unlike the cold war period has raised question of, "Who takes initiatives, coordinators cooperation and shoulders costs." During cold war period developed countries were seen at the fore-front in shouldering the global problems and

military power was the solution for everything. However, when the world is reeling under severe environmental degradation there is no unanimity among the countries regarding tackling the menace, as a result of which many global conventions under the auspices of united nation are yet to be implemented.[20]

Acknowledgeing the threat emanating from environmental degradation and to make the global community secure, the Resolution 44/228. The Resolution recognized that the members of the international community must act together to address global environmental challenges and to prevent the occurrence and escalation of international environmental conflicts. It also decided to conveyed the United Nation Conference on Environment and Development in 1992. Since then, Scores of conferences have taken place but very little headway has been made due to differences between developed and developing countries. Developed stats were of view that it is a common technological and economic problem. It could be tackled by providing aid and encouragement of new technologies in developing states.[21] On the other hand, South states were view that it is a western problem. It is caused by consumption patterns. It cannot be dealt with without looking into the problems inherent in the development paradigm and at distribution issues.

Apart from this issue, developing countries have apprehension that in the name of eco-friendly objectives, developed countries would try to impose various restrictions on the developing countries that would implicit impede their development process. Most notable amongst these are trade, access to natural resources, restriction on forest resources on which many depend for their livelihood. It would indirectly promote interference in internal matter of developing countries. These are basic issues and due to these issue, the multilateral organizations have failed miserably.[22]

Apart from international organization there is a need for a role to a played by non-state actors. The success of Vienna Convention was possible due to convergence of scientific and political opinion for regulatory action. If was in 0970_s scientists discovered that depletion of the ozone layer was being caused by human made chemicals called chloro-floro-carbons (CFC_s). The scientific evidence led to serious action, which ultimately led to the phasing out of the ozone depleting substances.

One could perhaps say that the absence of certainly, i.e., scientific evidence, has created dilemma on the issue of climate change. Other important non-state actors are the non-governmental organizations (NGO_S). They work as a pressure group and influence the environmental negotiations at large extent. Best example could be cited of the Indian NGO_S, it is primarily their contribution that today India has the largest non-polluting CNG transportation fleet in the world.[23] Other important group is the corporate section. The significance of corporate sector in the conservation of environment was lauded by UN Secretary General Kofi Annan, during world summit on sustainable development at Johannesburg 2002. He stated that, today there is growing recognition that lasting and effective answers can only be found if business is fully engaged. And more and more we realise that it is only by mobilizing the corporate sector that use can make significant progress. It is to be seen how this community is going to play an action role for the conservation of environment because it has been found that they influence the US stand on environment as they play an important role during electioneering period due to their economic might. For example the industry lobby group, the 'Global Climate Coalition', have spent 13 million Dollar a year since its establishment in 1989 persuading people and politicians that the threat of climate change was exaggerated, and fanning fears about the costs of talking action.[24]

One more very significant aspect that has come out into sharper focus with the redefinition of security is the importance of the role played by women groups in various movements aimed at conservation of the environment. Earlier Feminists were of the view that discourses on security have neglected women, making them feel insecure in society. It was so because military and national security of the state, have always been viewed from a masculine perspective. Now when the security is getting re-defined in multidimensional terms, they have joined the global movements with renewed zeal and enthusiasm.

Apart from the role of the aforementioned groups, the role of the government is of immense importance. It is found that the countries of Eastern Europe and the former Soviet Union are unable or unwilling to enforce the hundreds of regulations and state promulgations aimed at environmental protection primarily because the elites in these countries lack the sense of responsibility in these matters. Many Asian countries have written environmental protection policies into their constitutions and even made environmental laws legally enforceable.[25] However, in reality, there is a clear enforcement-log in this field due to state commitments to high rates of economic growth and other more pressing problems like poverty, unemployment etc. It was rightly stated by then Prime Minister of India, Mrs. Indira Gandhi during Stockholm conference of 1972 that, "*Poverty is the biggest Pollution*" There is need for integrating environmental issues with social issues, which ultimately influence the policies of developing countries on environment. Developed countries can contribute meaningfully in this domain by providing financial assistance and green technology to the developing countries and most vulnerable countries, i.e., the coastal countries whose existence are at stake due to rise in sea level and frequent occurrence of natural hazards.[26]

The unfolding discourse challenged orthodox assumption about national security, deepening it "upwards"(from national to global security) and "downwards" (from territorial security focused on states and governments to people security—individuals and communities),and widening it by arguing that non-military dimensions, such as social wellbeing and environmental integrity, are important prerequisites for ensuring security. There is now growing recognition of the important inter-connections between environment, development and security.[27]

Environmental Stress as a Cause of Conflict

The predominant focus of recent research and writings about environmental security has been on whether there are casual links between environmental change and conflict. Various authors have tried to demonstrate these links through case studies, and have often argued for putting environmental change at the high table of international politics (Earthscan 1984; Timberlake and Tinker 1985; Gurr 1985; Westing 1986; Myers 1987; Molvaer 1993; Libiszewsk 1992; Boge 1992; Gleick 1993; Kumar 1993; Saviano 1994).

At the forefront of this effort, Thomas Homer-Dixon and his colleagues (1991;1993;1994) have attempted to identify links between environmental scarcity and acute conflict without formulating a precise definition of environmental security. His multi-year project focused on extensive, single case studies in developing countries suspected to be the most likely to exhibit environmental conflict.

At the beginning of the project, Homar-Dixon postulated an initial conception of the links between environmental degradation and conflict as environmental change precipitation social change. This social change would then figure prominently as a cause of international conflict. Environmental change presented a possible but not necessary antecedent for acute conflict. Homer-Dixon extended his theory by specifically relating individual types of environmental change to different types of conflict. However, the link between environmental change and conflict was not considered to the exclusion of intervening variables that mediated outcomes. Homer-Dixon cited ethnicity, class, religious structures, and regime legitimacy as factors that could affect this causal relationship.[28]

Among the result of his investigations, Homer-Dixon found evidence of environmental scarcity serving as an underlying yet strong cause of intra-state conflict. This "sub-national" "diffuse'' and "persistent" conflict took the form of ethnic clashes due to environmentally-induced population movements, and civil strife stemming from environmental scarcity that affected economic productivity and therefore livelihoods, elite interests, and state capacity to confront these challenges. These internal conflicts could lead to a fragmentation of the state or conversely to a more authoritarian "hardening" of the state.[29] Few cases, however, supported the interstate conflict hypothesis in terms of renewable resources as the source of conflict. Homer-Dixon also downplayed the possibility that global issues such as climate change and ozone depletion will make significant contributions to conflict in coming decades.

In response to the research on environmentally- induced conflict, some military security thinkers now consider environmental stress as an additional threat to state stability that must be anticipated and planned for. In addition, these considerations have found their way into official U.S. documents and institutions. For example, environmental issues have received more and more attention as security interests in each iteration of the U.S. National Security Strategy since 1991. Furthermore, the Department of Defense created a new Deputy Under Secretary position for Environmental Security in 1993, the intelligence community created an environmental Task Force in 1993, and Congress allocated over $420 million (beginning in 1992) for the Strategic Environmental Research and Development Programme.[30]

These policy developments emphasize different goals under the environmental security banner. The office of the Deputy Under Secretary of Defense for Environmental Security has focused on cleanup and "greening" future military activities with its mission of "compliance, conservation, cleanup and pollution prevention plus technology". Environmental Task Force discussions have sought to identity procedures to "scrub" and declassify intelligence data gathered for other purposes in order to be released for scientific study. Defense intelligence analysts are being trained to be aware of environmental stress as a potential threat to regime stability. Finally, the armed forces and intelligence agencies have participated in relief missions to allay human suffering that is symptomatic of environmental catastrophes.[31]

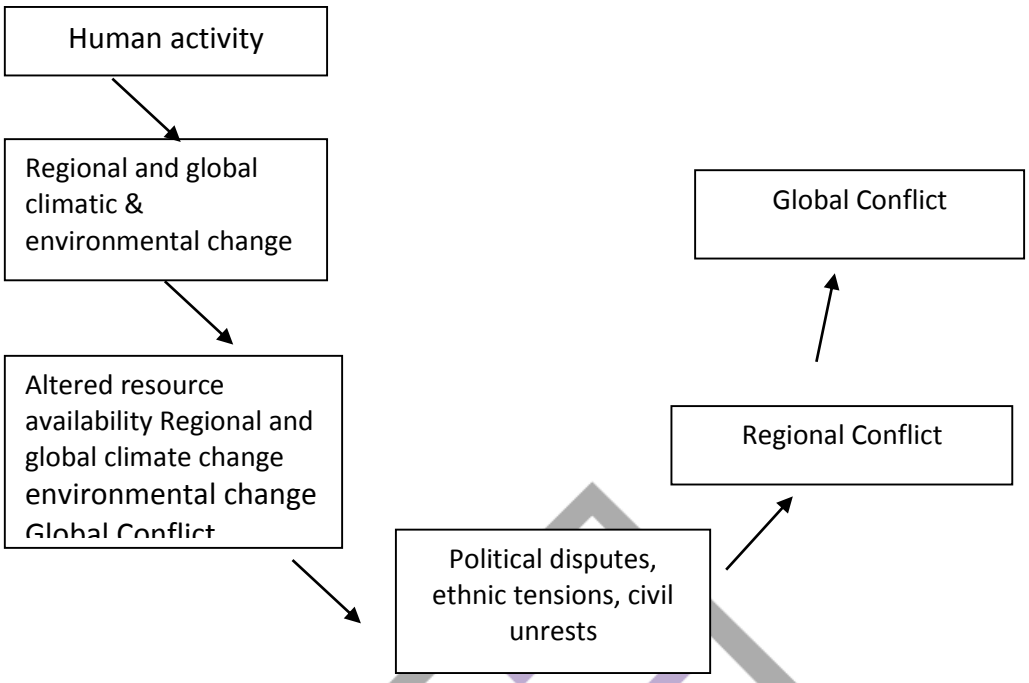

Figure 1: Environmental Routes to Conflict (Chalecki, 2009)

The diagram shows the linkage between human activities and the regional and global climate and environmental changes. Further, this relationship escalates towards political, ethnic and civil wars. This dispute leads to inter-state or intra-state conflict with regional or global implications. Chalecki has explained how the patterns of human behaviour and its interaction with the economic variables of society can bring climatic change both regionally and globally. The relevant example is the increase of carbon dioxide gas emissions due to industrialization in many part of the world. Climate change and ecological degradation hamper the natural flow of resource supply and lead to political disputes as well as ethnic and civil unrests. Due to the transnational nature of resources, conflict due to security affects the regional or global level in the long-run. Homer-Dixon has investigated the relationship between population growth, renewable resources scarcities, mitigation and violent conflict and thus has contributed in framing a nexus among environment, threat and vulnerability. He mentions three reasons that connect the environment with conflict. These are the degradation and depletion of renewable resources, the increased consumption of those resources, and their uneven distribution. This annotation establishes environment as the core referent object of security.

Environmental Security as a Socio-ecological Perspective

A Socio-ecological Perspective of Some Recent Threats to Environmental Security In this article, the notion of environmental security is developed from a system ecology perspective, namely with reference to threats to social–ecological systems and ecosystems services. The overall conception of environmental security is based on some general principles of human environmental interactions:

- Human well-being has several key components: the basic material needs for a good life, freedom and choice, health, good social relations, and personal security.
- How well-being is expressed and experienced is context and situation dependent, reflecting local social and personal factors such as geography, ecology, age, gender, and culture. These concepts are complex and value laden.
- Ecosystems are essential for human survival and wellbeing through their provisioning, regulating, cultural, and supporting services. Evidence in recent decades of escalating human impacts on ecological systems worldwide raises concerns about the consequences of ecosystem changes for human well-being.
- Human well-being can be enhanced through sustainable human interaction with ecosystems on the base of appropriate instruments, institutions, organizations, and technologies. The creation of these items through participation and transparency may contribute to people's freedoms and choices and to increased economic, social, and environmental security.
- There are direct and indirect pathways between ecosystem change and human well-being, whether they are positive or negative. Indirect effects are characterized by more complex webs of causation, involving social, economic, and political threads. The dynamic spatial configuration resulting from human appropriation of regional landscapes can have a variety of ecological effects at multiple scales.

For example, a direct effect of urbanization is the alteration of local ecological processes through the modification of land cover: converting desert to residential land cover alters many environmental parameters, such as soil physical and chemical properties, water availability, vegetation, and associated animal and microbial communities. Additionally, urbanization alters the spatial

configuration of land-cover patterns within a region. New land-cover types are juxtaposed within increasingly fragmented native land-cover types. Changes in the structure of the landscape can have ecological effects such as modifying nutrient transport and transformation and affecting species persistence and biodiversity. In the recent historical development of social-ecological systems, there is an increasing superimposition of Environmental security is the relative public safety from environmental dangers caused by natural or human processes due to ignorance, accident, mismanagement or design and originating within or across national borders. Environmental security is the state of human–environment dynamics that includes restoration of the environment damaged by military actions, and amelioration of resource scarcities, environmental degradation, and biological threats that could lead to social disorder and conflict. Environmental security is the proactive minimization of anthropogenic threats to the functional integrity of the biosphere and thus to its interdependent human component.[32] By ensuring environmental security we mean guarding against environmental degradation in order to preserve or protect human, material, and natural resources at scales ranging from global to local. The term environmental security refers to a range of concerns that can be organized into three general categories: (1.) Concerns about the adverse impact of human activities on the environment. (2.) Concerns about the direct and indirect effects of various forms of environmental change (especially scarcity and degradation) which may be natural or human-generated on national and regional security. (3.) Concerns about the insecurity individuals and groups (from small communities to humankind) experience due to environmental change such as water scarcity, air pollution, global warming, and so on.

Combining these we might conclude that the condition of environmental security is one in which social systems interact with ecological systems in sustainable ways, all individuals have fair and reasonable access to environmental goods, and mechanisms exist to address environmental crises and conflicts. Environmental security is the maintenance of the physical surroundings of society for its needs without diminishing the natural stock. Environmental security is protectiveness of natural environment and vital interests of citizens, society, the state from internal and external impacts, adverse processes and trends in development that threaten human health, biodiversity and sustainable functioning of ecosystems, and survival of humankind. Environmental security is an integral part of Russia's national security. Environmental security is comprised of restoration, compliance, conservation, pollution prevention, environmental security technology, and international activities. Environmental security is the state of protection of vital interests of the individual, society, natural environment from threats resulting from anthropogenic and natural impacts on the environment.[33] Scientific problems related to environmental security including the reclamation of contaminated military sites, regional environmental problems and natural and man-made disasters; affordable cleanup technologies are of particular interest. techno-structure, bio-structure, and eco-structure called 'techno-sub substructure', which leads to an increase in thermodynamic flows and sinks. This has large consequences on ecological patterns and processes, and thus on ecosystem services and sustainability. In short, the previous statements could be tentatively reformulated to define environmental security according to the following: environmental security, in an objective sense, aims to evaluate the level of threats to acquire and sustain ecosystem values in terms of ecosystem goods and services at multiple scales and, in a subjective sense, represents the level of fear that such values will be attacked and possibly lost. In the above definition, environmental security has to do with risks or fragility (vulnerability) of losing ecosystem goods and services as well as the perception of those risks. Thus, fragility is deemed multilayered, multi-scale, and complex, existing in both the objective physical and social realms, as well as in the subjective realm. Often it exists because of the choices we make. As well, it is often imposed upon people and communities because of our political or social-economic systems. The perception of security is quite fundamental at all levels of human organization, from the individual to the governments. As to environmental security in the subjective sense, the 'threats' are of an abstract nature, in the domains of feelings and cognition. The level of fear that such values will be attacked and possibly lost much depends on the correct information and the consciousness of the role and significance played by ecosystem goods and services.[34] In this respect, given that both objective and subjective measures provide reliable estimates of environmental security through, for example, efficient indicators and sampling designs, it is interesting to judge the concordance between 'objective' and 'subjective' evaluations. As an example, the environmental security of the same location might be evaluated differently in objective and subjective terms (Table 2). In cases (a) and (d), there is concordance between objective and subjective evaluations; for case (a), both agree on positive (high) environmental security, whereas for case (d) both agree on negative (low) environmental security. In contrast, cases (b) and (c) are discordant; in the first case, there is no fear that values such as ecosystem goods and services will be attacked and possibly lost, while the objective evaluation says just the opposite. This is very dangerous but common in the real world because people are often unaware of the environmental degradation they cause. In contrast, in case (c), there is fear that ecosystem goods and services will be attacked and possibly lost (low environmental security) but there is no objective reason for such fear. For example, certain Mediterranean beaches are often naturally covered by seaweed leaves (Posidonia oceanica), which is an indicator of good coastal ecosystem quality. However, most tourists wrongly perceive beaches covered by leaves as 'dirty' and 'insecure', so leaves are removed becoming a waste. Departing from the individual perspective, security can be derived through different livelihood strategies of which the environmental strategy is one. Although fragility, as the capacity to cope with external stress, is a concept that deals with problems and stress situations – the lack of security–in local people's lives, the focus on livelihood strategies and security can be seen as the opposite. Studying the factors that make people feel safe and secure gives us a deeper understanding of their day-to-day thinking when making decisions that affect their livelihood. It also puts focus on the strategies that work well and could be further developed and encouraged from a management and planning perspective. Regarding the family perspective (the family level), security is related to the feelings of safety, assurance, and confidence in that the family will be able to secure a livelihood for itself in the future, and the precautions that the family members take to ensure this. The concept of security is thus closely connected to what is most important for local people–their everyday survival. This applies to each hierarchical level of social organization. Climate change is likely to make many threats worse, especially heat waves, drought, and flood, and that occurs in a context where many global and social trends are also creating fragility.[35] Where it is safe and ethical, the explicit inclusion in social–ecological studies of people living and working in a study area can promote scientific realism and reveal non intuitive causal

relationships. This integration may provide social benefits, including a better public perception of science and scientists. A holistic or 'integrated risk management' approach is needed, to reduce fragility and deal with risk effectively. Environmental security is such an integrated risk assessment and management approach.

Impact of Environmental Degradation and National and International Response

The German watch Global Climate Risk Index reveals that more than 650,000 people died worldwide from extreme weather events, and losses of more than $2.1 trillion occurred Globally during 1990-2009. The state of the world 2010 and 2007 Inter-governmental Panel on Climate Change reports provide detailed information on environmental degradation and its impact on human life and biodiversity. According to the reports, 50 % of forests have been cleared. Only one-fifth of the earth's forests remain intact. Forest area has increased slightly since 1980 in industrial countries, but has declined by almost 10 % in developing countries. The rapid industrialization of developing countries has had an inverse effect on its forests.

Carbon dioxide emissions are a big crisis. Two major sources of carbon emissions are coal and petroleum. Global carbon emission raised the average temperature of the world. The 19th century Swedish scientist Svante Arrhenius found that human activities were responsible in the large emission of CO^2 to the atmosphere, which could cause to global warming and sea level rise. This global warming theory found another strong advocate in the 20th century, when an English engineer, Guy Stewart Callendar, researched a doubling of CO^2 could gradually bring a 2^0C rise in a future centuries. Recent literature shows that with the current rates of emissions, the earth will experience 1^0C (1.8^0 F) warming by 2030 at the latest, and 3^0C (5.4^0F) increase in temperature before the end of the next century. This can have tremendous consequences, such has wide sphere extinction of plant and animal species, sea level rise, and coastal flooding. It is projected that by 2050 the sea level will rise approximately 1.5 meters, flooding low-lying countries like Bangladesh, Singapore, and the Maldives. Numbers of storms and other climatic disorders such as hurricanes, cyclones, and typhoons will increase due to global warming. Biological diversity will be severely hampered. The ocean plays a vital role in maintaining biodiversity, regulating climate and weather patterns, and providing food and livelihood for millions of people worldwide. These roles will be hampered significantly. Coastal areas are increasingly experiencing habitat loss due to sea level rise and severe storm events. As a result of the rise in sea- water temperature, the intensity of extreme weather events such as hurricanes, typhoons, and cyclones is expected to rise. Climate change and ocean acidification create negative impacts on marine and coastal ecosystems. Overfishing, pollution, coastal destruction, and declining water quality cause this degradation, which is already limiting coastal and marine ecosystems in performing their functions.[36] A sharp rise in urbanization also creates pressures upon nature and makes the process of resource distribution uneven. Hence, environmental degradation is caused by depletion of natural resources and damages to the ecosystem.

There are policy options as response measures to these environmental crises. One of these responsive policy measures is known as adaptation strategy. This is considered as the central focus of the environment-based development activities. Adaptation refers to adjustments in ecological, social, or economic system in response to actual or expected climatic stimuli and their effects or impacts. This strategy refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. As part of the national response, countries usually go through a consultative process to integrate environmental and climate change issue into sectoral policies. The government also conducts needs assessments of the availability of resources to implement relevant policies. Industrial capability at the state level has been identified as a major constraint in implementing policy and enforcing environmental acts and regulations.

Recently, the international community has paid much attention to the security implications of environmental problem and climate change. In 2004, the Chief Scientific Advisor of the U. K., Sir David King, suggested that "Climate change is a far greater threat to the world's stability than international terrorism." His assertion was further supported by several statements made by Margaret Beckett, the British Foreign Secretary, between May 2006 and June 2007. During her stay at the Foreign Office, she openly declared, "Climate security as the central plank of British Foreign Policy." A group of eleven high-ranking retired American military officials released a report in April 2007. They argued that climate change would act as a "threat multiplier" that makes existing concerns, such as water scarcity and food insecurity, more complex and intractable and presents a tangible threat to the national security interests of the United States. In the 15th Conference of the Parties (COP) of the UNFCCC in Copenhagen, the participatory nations have agreed to explore further collective approaches to include environmental policies and adaptation measures as a part of their national strategy. The 16th COP was held in Cancun, Mexico in 2010. Governments of participation countries renewed their hopes for a concerted effort to combat climate change. They negotiated a "balanced package" (six-pack package), which combines progress on mitigation, transparency, adaptation, finance, technology, and REDD (reducing emissions from deforestation and forest degradation). Finally, the governments set up a new "*Green Climate Fund*" to manage $100 billion in aid by 2020 to nations who are affected by climate change. The fund will be monitored by a 24 member board chosen evenly from developed and developing nations. Unfortunately, the Cancun Declaration could not address the crucial question of by how much all nations will cut carbon emissions, which are chiefly responsible for global warming.[37] Nevertheless, on the success of the Cancun Conference, Christiana Figures, the Executive Secretary of UNFCCC, mentions that "nations have shown they can work together under a common roof, to reach consensus on a common cause. This effort has restored the faith of the policy-makers on a multilateral approach to combat climate change and environmental insecurity. The 17th, 18th, 19th, 20th,21th COP was also held in different countries in the world as like Durban (South Africa), Doha (Qatar), Warsaw (Poland), Lima (Peru), Peris (France).

The 2015, CPO 21 conference negotiated the Paris Agreement, a global agreement on the reduction of climate change, the text of which represented a consensus of the representatives of the 196 parties attending it. The agreement will inter into force when joined by at least 55 countries which together represent at least 55 percent of global green house emissions. On 22 April (Earth Day), 174 countries signed adopting it within their own legal system (through ratification, acceptance, approval, or accession). According to the organizing committee at the outset of the talks, the expected key result was an agreement to set a goal of limiting global warming to less than 2ºC compared to pre- industrial levels. The agreement calls for zero net anthropogenic greenhouse gas emissions to be reached during the second half of the 21st century.[38] In the adopted version of the Paris Agreement, the parties will also "pursue efforts to" limit the temperature increase to 1.5ºC. The 1.5ºC goal will require zero emissions sometime between 2030 and 2050, according to some scientists,

Prior to the conference, 146 national climate panels publicly presented draft national climate contributions called INDCs (Intended Nationally Determined Contributions). These suggested commitments were estimated to limit global warming to 2.7ºC by 2100. Foe example, the EU suggested INDC is a commitment to a 40 percent reduction in emissions by 2030 compared to 1990. The agreement establishes a "global stocktake" which revisits the national goals to "update and enhance" them every five years beginning 2023. However, no detailed timetable or country-specific goals for emissions were incorporated into the Paris Agreement- as opposed to the previous Kyoto Protocol.[39]

International pressure along with national awareness is rising to protect the global climate and environment. National governments are collaborations with their international development partners. The government of Bangladesh is implementing long-term planning to manage environmental risks with the help of the international development agencies. The Asian Development Bank, the World Bank, Department of Foreign and International Development (UK), Canadian International Agency, and other development partners are involved in building the capacity of government and non-government organizations to produce a effective and efficient governance mechanism to fight against environmental threats. Therefore, managing environmental security has become a significant policy issue where the stockholder is not only the government of a state; various non-governmental and international development agencies are also involved in the process.

This Figure explains the policy formulation process of adaptation strategies regarding environmental management. This becomes a collective process to attain environmental security. Environmental adaptation strategies today are formed and implemented collectively by different stockholders, governments, NGOs, the international donor community, and experts from home and abroad. The above figure also portrays the number of responsible actors who are involved in the context of securitizing environment.[40] Addressing environment security is no longer dependent only on the national actors—it becomes transnational considering the context of further cooperation among the divergent actors. This cooperation framework may embrace a new idea of "collective security" from the perspective of 21st century. Here, all the actors are willing to design a framework of security to decipher the codes of environmental threats and promote mutual engagements.

From the securitization perspective, one can also relate environment and security through this framework. Numbers of securitization actors are increasing from the vulnerable population group to more active agencies like NGOs and international donor communities (e.g. donor countries, the U N, international NGOs).[41] These actors formulate policies that are foremost concerns of the national strategy of a country. "Speech act" (i.e., the politicization factor of securitizing the environment) is significantly present when these actors are involved to create a framework of environmental security and influence this framework to be incorporated to the national security strategy. Therefore, both national and international responses to negate environmental risk factors are significant to justify environmental change as a prominent security threat.[42]

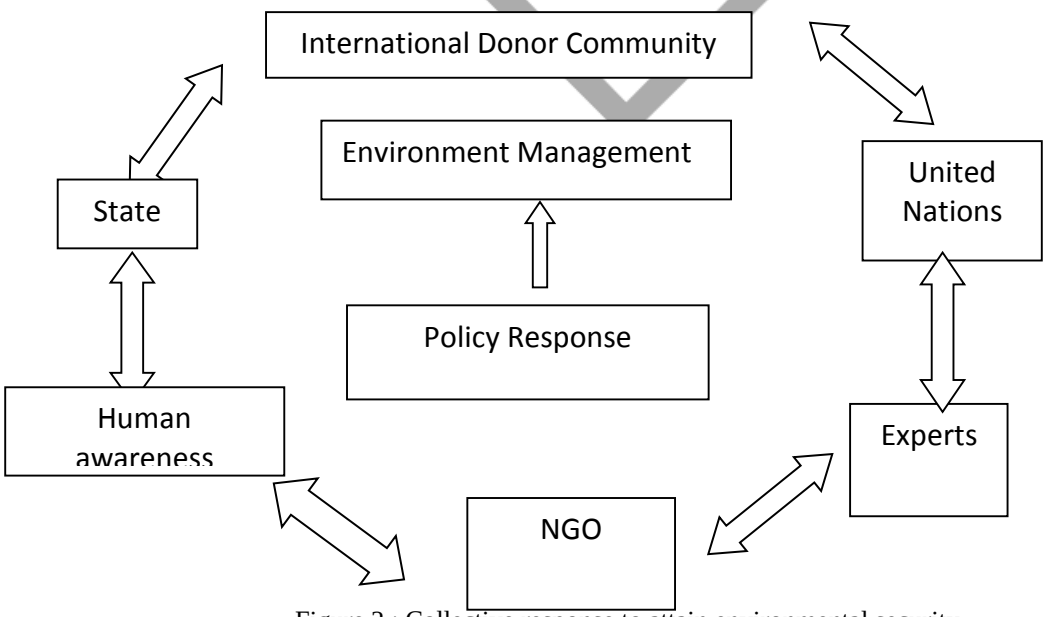

Figure 2 : Collective response to attain environmental security

Conclusion

In conclusion one could say that the players who were earlier included from the security paradigm have been entrusted with major role to play in the changed scenario. The threat of environmental security has brought both the developing and developed countries to the negotiating table. It has become clear that co-operation is required between developing and developed countries to minimize the threat. 'Pressure Politics', which was earlier used by developed countries have lost relevance instead parity with equity has gained importance and consequently spectacular transformation has taken place in the field of International Relations. It is also being slowly but surely-realized that the issue of global security can ignore the environmental security issue only at its own peril.

The issue of environmental protection has thus assumed tremendous importance in recent years and generated world-wide-civil-society movements compelling governments to arrange environment friendly policies into their developmental agenda. The pressures on developed countries are mounting and the realisation is fast going ground that environmental pollution anywhere is threat to human existence everywhere. It is very likely that very soon there will be an integrated approach to address this issue, in involving key stake holders-local governments, NGOs, private sector groups and those segments of the population directly and indirectly affected by proposed projects or policies.

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