

FROM NATIONAL SECURITY TO ENVIRONMENTAL SECURITY: A
HISTORICAL OVERVIEW

by

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From National Security to Environmental Security: A Historical Overview

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Declaration

I hereby declare that this dissertation is entirely my own work, carried out under the supervision of Dr. Colm Regan.

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List of Abbreviations

ECOSOC: Economic and Social Council

EPA: Environmental Protection Agency

FAO: Food and Agriculture Organization of the United Nations

GHG: Green House Gases

ICJ: International Court of Justice

ILRI: International Livestock Research Institute

UDHR: Universal Declaration of Human Rights

UNEP: United Nations Environment Programme

UNGA: United Nations General Assembly

UNHCR: United Nations High Commissioner for Refugees'

UNIDO: United Nations Industrial Development Organization

SOPAC: South Pacific Applied Geoscience Commission

WCED: World Commission on Education and Development

WHO: World Health Organization

Abstract

FROM NATIONAL SECURITY TO ENVIRONMENTAL SECURITY: A HISTORICAL OVERVIEW

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The study attempts to provide a historical approach to the role of the environment in security studies. Contemporary security challenges have shown that the narrow definition given to national security is no longer adequate. Instead, there was the emergence of newer security conceptual frameworks, such as human security, to account for transnational security challenges. In this scenario, the role of the environment in security changed as well. As a non-military threat, environmental degradation comes with its own challenges. These challenges include overcoming the ambiguous nature of the concepts of human security or environmental security and finding ways to scientifically measure these concepts, in order to propel policy and legislative changes to protect environmental security. In this respect, further debate should revolve around the task of operationalizing environmental security.

Chapter 1: Introduction

1.1 Preamble

Although environmental security is not uncharted territory, the term remains ambiguous and difficult to define (McNeil & Manwaring, 2002; Barnett, 2001). This study aims to review the literature on the subject with a historical perspective and give a breakdown of the main schools of thought. The starting point would inevitably be the separation of environment and security followed by the framework of human security. Finally the study delves into the concept of environmental security.

1.2 Rationale

This thesis attempts to review the literature on environmental security and investigate the role of the environment in security studies. The rise of environmentalism meant growing a green conscience and creating awareness of the dangers of environmental degradation. Inevitably, the link between the environment and security started being forged. Eventually with time the environmental argumentation evolved and grew more complex. Hence the study first takes into account the earliest works that included the environment into security studies. Then it notes the shift in security studies from the traditional national security concept to the broader human security concept, keeping an eye on the role of the environment. Finally the study will reflect the modern literature involving environmental security, providing a typology of environmental indicators incorporating previous efforts.

1.3 Methodology

Data on environmental security was collected through various means and analysed for the underlying themes of the subject. It is qualitative research in nature and takes a historical perspective of the role of the environment in security studies, especially the shift from traditional national security to the modern human security concept. The study is an examination of the various interpretations of environmental security and their implications on discourse surrounding the subject.

1.4 Overview of chapters

Chapter one embodies the introduction of the subject and rationale of the approach chosen. Chapter two delves into the earliest works that proposed the environment as a security matter. Chapter 3 discusses the traditional national security paradigm and the absent role of the environment within that framework, including the function of the military within national security. Chapter 4 discusses the emerging paradigm of human security and its implications. The person-centred emphasis shift uncovered other factors which were previously ignored, such as the environment. As research investigated the relationship between environmental degradation and conflict, the framework of environmental security gained momentum. Chapter 5 delves into the existing frameworks and surrounding arguments on environmental security, including the efforts to operationalize (or measure) it.

Chapter 2: The environment as a Security Issue – The Earliest Works

2.1 Introduction

Traditionally the term *security* was used to refer to the nation's defence against foreign military threats. The extension of the remit of security from the classical Cold War rhetoric to the modern concept of human security sheds light on the need to revisit certain assumptions which characterised security thinking. In order to make sense of the concept, one has to start from the origins of the meaning of security and the shift from thinking about national security to human security.

2.2 Environment as a Security Issue

Research in relation to environmental security dates back to the eighteenth century with Brown's work "Redefining National Security" (1977), describing the need to broaden the spectrum of security studies. He wrote about the need to assess threats originating from the relationship between man and nature. The unsustainable human claim on the Earth's limited natural resources has challenged governments' survival, including the old dynasty in Ethiopia in 1974, the Polish government in 1976 and President Anwar Sadat's Egyptian government in 1977. The Arab oil embargo of 1973 paints a clear picture how natural resources influence national security, or to put it in broader environmental context, how energy independence in a time of shrinking energy supplies secures the nation state.

The sense of urgency in Brown's writing is evident as he quotes scientific reports pointing out the pollution caused by coal and oil economies. The deterioration of biological systems through human activity such as overgrazing, deforestation and overfishing means that the "demand exceeds the sustainable yield" (ibid., p. 20) and the environment is not able to replenish its resources. Brown argues that the threat of climate modification brought about by human influence can slash food production and a country's national security. This indirect secondary effect of environmental degradation on national security is seen repeatedly in many works on environmental security. This means that environmental degradation creates the context for conflict and civil strife, endangering national security in the process.

Brown makes another important point, when discussing food scarcity in the seventies "the brunt of the crisis was borne by the poorest (countries)" (ibid. p. 27). The distinction between the richest countries which are able to adapt to the environmental degradation (which many a time they helped to create) and the poorest nations who suffer the inadequacies of their economies, is important. This is seen by the fact that the rises in death rates induced by famine far outweigh the death rates induced by military conflict.

The last point he makes revolves around the relationship between the economy and the environment. Brown explains that the prices of commodities increased in the seventies. As a result the hike in non-renewable and renewable resources prices created a global double digit inflation. As the natural resources are depleted their value increases. In turn, such economic stresses exasperated social divisions between

the poverty-stricken and the opulent. Rising unemployment is inevitable with rapid population growth and global workforce growth. The ecological stresses are converted into capital scarcity and monetary instability, leading to “social unrest and political instability” (ibid., p. 37).

The second earliest work in this area of done by Ullman in 1983. He attested that the use of the term *national security* by Washington administrations to refer to military terms dates back to the Cold War. Politicians find it easier to focus on military dangers – whether real or imagined – as opposed to non-military dangers. This is due to the fact that military solutions are more electorally rewarding and far easier to reach agreement upon (as witnessed through the Carter Administration in later years). Ullman argues, however, that adopting this form of definition to national security proves to be misleading and dangerous, as it reduces total security, whilst contributing to militarization of international relations, which ultimately decreases global security.

Ullman (1983) makes reference to Hobbes’ *Leviathan*, wherein the latter describes security. Working with this definition, one notes that Hobbes idolizes security as an absolute value, breaking down the boundaries which limit it solely to one’s own nation. However, as idealistic as Hobbes’ definition might present itself at face value, for most people security is not an absolute value; rather, many tend to balance it out against national interest. Having presented Hobbes’ definition to security and argued against the notion of security as an absolute value, Ullman proceeds to what he refers to as a more useful non-conventional definition. A threat to national security is an action or sequence of events that has two repercussions. First of all it threatens the life

of citizens of a state, where Ullman gives the example of external wars, internal rebellions, blockades, boycotts, raw material shortages and natural disasters. Second of all it threatens significantly the range of policy choices available to the government of a state or to private, nongovernmental entities (persons, groups, corporations) within the state, the prime example being military threats.

The less apparent a security threat may be, the more political controversy the preparations to meet it will incur. It is easy to note that the vast differences between threats to national security emerging from military threats, and those emerging from natural disasters. The latter, originating from no human mind – as opposed to the former – cannot be deterred. Nonetheless, the potential damage caused by natural disasters can be reduced drastically by the application of foresight and the expenditure of resources. This truth still applies today, with how the Bush administration dealt with hurricane Katrina in 2005. Although America was involved in two wars on two different fronts, it was not able to adequately protect its own citizens before and after disaster stroke. This problem with dealing with environmental threats to security because they are less apparent will be discussed further when dealing with environmental security.

Like Brown (1977), Ullman (1983) took into account the role of the environment in natural resource wars; “at the root of most of the violent conflicts in history has been competition for territory and resources” (p. 139). As years have gone by, conflict over territory has diminished but the same cannot be said about conflict over resources. Rather this sort of conflict is expected to grow more intense, as the

demand for essential commodities increases despite the decreasing supplies. Ullman notes that resource-conflicts will be likely to take the form of overt military confrontations, with short, sharp shocks of violent phases, probably between neighbouring states such as China and Argentina, Iraq and Iran, Greece and Turkey, and many others. Although none of these conflicts are expected to involve America directly, it is likely that American firms will be caught up in the dispute. If national security were to be defined in the conventional way, then it can be said that the national security of the US will not be affected directly by such disputes. However this will leave everyone disillusioned since resource disputes are expected to have large impacts on American national security; supplies of essential commodities will be temporarily disrupted, local regimes would be likely to fall, with the possibility of being replaced by others less friendly to the US and outside powers hostile to American interests might intervene to support local clients. Ullman took America as an example to show how distant resource wars can still affect its security.

Continuing on the notion of resources, Ullman (1983) clearly points out that the global mechanisms for managing resources are not effective in order to prevent disastrous failures, or to prevent the consumption of crucial renewable resources before they are completely depleted. Such resources would include tropical forests, the ozone layer, and the global supply of clean air and water. Population growth also takes its toll on the demand for resources: overall demand is rising far more rapidly than population growth itself. In addition, developing countries are increasing in their 'modern sectors', and raising their living standards; thus resulting in the same wasteful consumption patterns as those of the industrialized world. Consequently,

we find additional strain on world resources. Naturally, for virtually every raw material, there exist substitutes with similar properties, making replacement possible. However, the only way in which such replacement can occur in a non-disruptive manner is by adequately foreseeing the shortage in supply of the original resource. Considering the extent to which the quality of life in the US has degraded by resource scarcities and by deterioration in the quality of life beyond its borders, Ullman notes, Americans should be concerned. Nevertheless, shifting the focus of national security from the military aspect to that regarding resources, would require political leadership of the highest order, as well as consensus. In conclusion, Ullman states that as political will and energy are shed on military solutions in relation to national security, environmental threats are becoming even more dangerous.

Subsequently Mathews (1989) wrote a similar paper noting that after the 1970s it became clear that the economy of the United States was strongly affected by the economic policies of other countries. This meant a shift to include international economics in the equation of national security. However as the 1990s drew near, the need to include resource, environmental and demographic issues into the framework began to emerge. Environmental strains transcending national borders called for a redefinition of national security, and the adequacy of such terminology in security studies. Although the late 1980s featured significant environmental concerns, such as climatic extremes, accelerating deforestation and flooding, population growth has not been altered. Indeed, Mathews states that the year 2100 is likely to face an additional five or six billion people (it has in fact surpassed that mark). Such a drastic increase in population is bound to bring with it more energy use, more waste, more emissions, as

well as more conversion of land from its natural state; it is questionable whether our planet will be able to cope with the environmental strains and demands posed at that time, especially if current means of production remain unchanged. Faced by this reality, the remit of national security had to be extended.

Mathews (1989, 1990) highlights the paradox to the terms 'renewable' and 'non-renewable' resources. The author argues that in an economic sense, renewable resources are more finite than the non-renewable resources. This is based on the assumption that as non-renewable resources get scarcer, the prices associated with their consumption go higher. As a result the demand decreases and is replaced by the emergence of substitutes and alternative technologies. Renewable resources, on the other hand, if consumed beyond a certain point will not be able to recover; a species driven to extinction will not reappear and eroded natural resources will only replenish over a given geological time. A major concern proves to be deforestation, as tropical forests are fragile ecosystems, with the entire ecosystem going astray once disrupted. Soil degradation holds as another serious concern, being a cause and consequence of poverty. A problem in this regard lies in the fact that many a time, governments are far more willing to address the issue of poverty as a stand-alone issue, rather than tackling the cause to such a problem. In this way, the environmental concern is pushed aside and left unattended.

Mathews (ibid.) notes a new environmental concern arising from "mankind's new ability to alter the environment on a planetary scale" (p.168). The resulting climate change will undoubtedly take its toll on the entire planet, with developing countries

struggling to adapt, thus increasing the gap between the developed and developing world. In the face of the environmental crisis, Mathews reminds that the future of the planet is not necessarily destined to environmental chaos. If feasible technical, scientific and economical solutions are employed, environmental degradation could be drastically toned down. For this to be done, though, an urgent, sharp political change is essential. Thus, an ever-more pressing need for new diplomacy, new institutions and regulatory regimes, so as to cope with the world's growing environmental interdependence.

Mathews (1990) states that unless a drastic change in population trends and usage of resources is brought about, the year 2050 doesn't look too promising. However, she proceeds to acknowledge that this is not a prediction, but a projection based on current trends. Therefore such projection is bound to reflect more of the current wrong trends, than the possible trends in 2050, which would hopefully have taken a large turn for the better. In order for this to be done, there must be the reassessing of political frameworks, and a better understanding of the global ecological tie. In addition, another advance to be made is to discount "the notion that environmental protection and economic growth are antagonistic goals. To the contrary, if economic growth is to be sustainable, resource conservation is essential." Another imperative necessity is a "set of indicators by which global environmental health can be measured." (pp. 24 - 25).

The report "Our Common Future" by the World Commission on Environment and Development (WCED, 1987) is based precisely on the premise of sustainable

development and is included in this list because it officially introduced the concept of environmental security (Schrijver 1989; Barnett, 2001). Although the entire world depends on the same biosphere in order to sustain its life, very few countries seriously consider the impact their development is having on the others. Consequently we find those countries consuming far more resources than advisable in consideration of future generations, and those who consume far too little, resulting in malnutrition, health problems and early death. According to the report, in time the development gap is being shortened as improvements on most grounds are gradually being made. “The failures that we need to correct arise both from poverty and from the short-sighted way in which we have often pursued prosperity” (Chap 1, para 3).

In the past, pressures were largely restricted within the national borders. Today, however, due to economic interaction, the decisions of one country results in a ripple effect over to the neighbouring countries and beyond. In particular, this holds in relation to the irreversible damage being caused to the human environment; damage causing deep concern to all nations. Apart from the growing demands on resources and the pollution generated by the relatively affluent states, poverty can also acts as a cause of environmental pollution. This is due to the fact that those who are poor are far more likely to destroy their immediate environment for survival. Environmental stress, albeit normally unintended, is sometimes also the consequence of economic growth; for example one could mention the extensive use of fossil fuels, central to a developed country’s economy, as well as the growing interventions in water cycles. As our requirements for natural resources increases, we tend to forget about the fragility of nature. It is very easy to forget that once certain thresholds are crossed,

the integrity of the system is endangered. As time goes by we are getting closer to these thresholds, increasing the number of threats to life support systems; including the greenhouse effect, the depletion of the ozone layer to air pollutants “killing trees and lakes and damaging buildings and cultural treasures” and desertification whereby “productive arid and semi-arid land is rendered economically unproductive” (Chap 1, para 28). The environment and development are two concepts which should not be considered separately, “development cannot subsist upon a deteriorating environmental resource base; the environment cannot be protected when growth leaves out of account the costs of environmental destruction” (Chap 1, para 40). It is to be borne in mind that the environmental stresses in themselves are interlinked with patterns of economic development. Moreover environmental and economic problems are linked to many social and political factors; and that the all form of environmental stress transcends all national boundaries.

In order to move further towards international security and sustainable development, the vision normally adopted must be broadened. It is to be noted that conflicts do not only arise as a result to political and military threats to national sovereignty, but also from environmental degradation and the pre-emption of development options. Naturally, no military solutions may be found to environmental insecurity, and neither should they be dealt with as confined within national borders as the national state proves to be insufficient to deal with threats to shared ecosystems. There is the unquestionable need for international cooperation and joint management between states. Already, we find various institutions set up to focus on specific environmental issues and threats, thusly encouraging cooperation among nations. Cooperation by

developing countries, unfortunately, has often proven difficult due to poor communication.

One of the main authors in the realm of environmental security is Homer-Dixon. Scholars have noted that “human-induced environmental pressures may seriously affect national and international security” (Homer-Dixon, 1991, p. 76). This, unfortunately, comes hand in hand with the problem in defining security. In an attempt to narrow the topic, Homer-Dixon suggests focusing on how environmental change affects conflict, rather than security. Conflicts may include war, terrorism, or diplomatic and trade disputes. The author states that throughout his paper, he focuses solely on acute national and international conflict, which means conflict with a high propensity for violence. He proceeds to review the importance of environmental issues, noting examples of links between environmental change and acute conflict.

Whereas environmental damage has progressed incrementally, rather than abruptly, attention given to it has been sudden. Homer-Dixon boils this down to three factors why this has happened. The first factor is that a space for other issues has opened in public discourses in Western societies with the waning of the ideological and military confrontation between superpowers. The second factor revolves around the public and media awareness of global environmental change catalysed in North America in 1988. Moreover during this last decade, there was the development of the third factor, “the genuine shift in the scientific community’s perception of global environmental problems” (ibid., p. 79). This has led to scientists, policymakers, as well as laypeople

to interpret data about environmental change in a more progressive light, having more regard to the degradation of environmental systems.

Although many scholars have voiced their opinion about the social impacts of environmental change, there is very little literature with regard to environmental change and acute conflict. MacKay writes about the relationship between climate change and civil violence in Spain, stating that in the 15th century there was popular unrest due to climate-induced food shortages. Homer-Dixon proceeds to make reference to William Durham who speaks of the ecologically driven 'Soccer War' between El Salvador and Honduras. Durham, makes a number of interesting observations such as that migration was brought about not simply because of population growth (as was the popular belief). It was brought mostly because of changes in agricultural practice and land distribution, which proved to be detrimental to the farmers. Also land scarcity was not a factor for migration because there wasn't enough for all, but due to "a process of competitive exclusion by which the small farmers were increasingly squeezed off the land by large land owners" (ibid., p. 82).

Homer-Dixon (1991) notes that studies about environmental change and conflict pose a number of difficulties, although these are to be encouraged nonetheless. The first of such difficulties noted is that scholars tend to emphasize human-induced climate change and ozone depletion, whilst neglecting other severe problems such as deforestation, soil degradation and fisheries depletion. The second difficulty lies in the fact that many of such writings on the links between environmental change and conflict are unclear, failing to distinguish between the ways of how environmental

degradation lead to conflict or possible locations of where such conflicts will occur. Thirdly, Homer-Dixon notes that environmental-social systems are hard to analyse. The fourth problem is “the prevailing ‘naturalistic’ epistemology and ontology of social science may hinder accurate understanding of the links between physical and social variables within environmental-social systems” (ibid., p. 84). The fifth difficulty lies with the requirements of researchers; for them to carry out such studies, they must possess detailed knowledge in a large range of disciplines, such as atmospheric science, agricultural hydrology, energy economics and international relations theory. The final difficulty noted is that scholars are often tempted to pigeon-hole environmental issues into territorial and state concepts, failing to address the global, trans-boundary issue to environmental problems.

Homer-Dixon proposes a research agenda with regard to the study of environmental change and acute conflict. He starts off by displaying a diagram (see figure 1), which “suggests that the total effect of human activity on the environment in a particular ecological region is mainly a function of two variables: first, the product of total population in the region and physical activity per capita, and second, the vulnerability of the ecosystem in that region to those particular activities. Activity per capita, in turn, is a function of available physical resources...and ideational factors, including institutions, social relations, preferences, and beliefs. The figure also shows that environmental effects may cause social effects that in turn could lead to conflict” (ibid., p. 85).

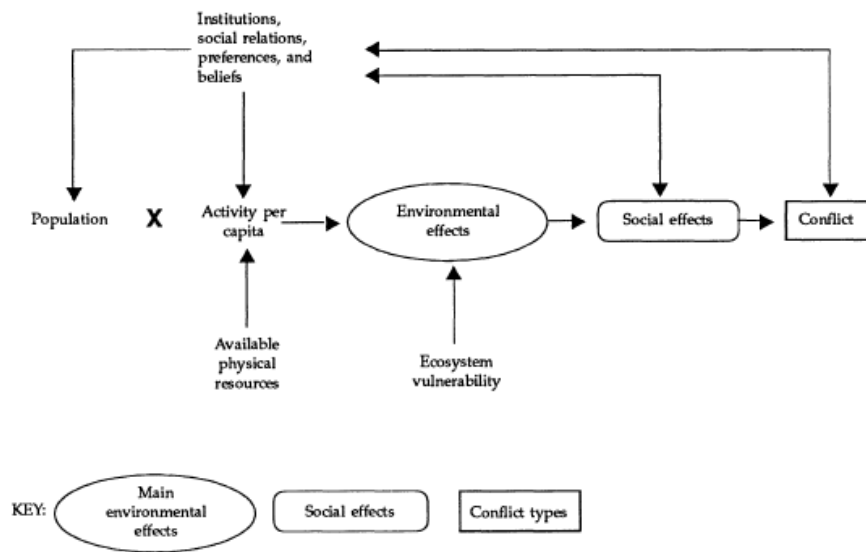


Figure 1. Environmental Change and Acute Conflict

The ways of how environmental degradation leads to conflict can be broken down into the social effects reverberated by environmental change and the types of intractable conflict that are most likely to result from such changes. This framework poses a link between environmental effects and social effects, and another between social effects and conflict. The other linkages, however, are not to be sidelined, as they are equally important; and the role of population growth, demographic structure and patterns of population distribution must be taken note of. It is of utmost importance that intervening factors, such as patterns of land distribution, family and community structure, economic and legal incentives to consume and produce goods, are fully understood, as otherwise it would be impossible to “grasp the true nature of the relationships between human activity, environmental change, social disruption, and conflict” since “these factors largely determine the vulnerability and adaptability of a society when faced with environmental stresses” (ibid., p. 87).

Developing countries are more likely to be affected by environmental change than the developed countries. This is due to the fact that they do not have the necessary resources, financial, material or intellectual, of the developed countries to adapt to environmental change. Homer-Dixon points out seven major environmental problems which could lead to conflict in developing countries, i.e. greenhouse warming, stratospheric ozone depletion, acid deposition, deforestation, degradation of agricultural land, overuse and pollution of water supplies, and depletion of fish stocks. All of these seven could be considered as human-induced problems, having irreversible consequences. However this does not mean that all problems hold the same time scale, as the consequences of some will take their toll far quicker than others.

Homer-Dixon identifies four principal social effects which may, alone or combined together, increase the probability of acute conflict in developing countries; (i) decreased agricultural production, (ii) economic decline, (iii) population displacement, and (iv) disruption of legitimized and authoritative institutions and social relations (ibid., p. 91). The question remains whether poor countries will be able to cope with environmental change quickly enough to avoid disaster. In considering the question about food availability, the author states that although aggregate values may give a positive answer to this question, it is important to note that such values “hide significant disparities in food availability among and within developing countries” (ibid., p. 98). Since the 1960s, for example, the rate of increase

in global cereal production has declined by over 40%; between 1987 and 1989 global cereal consumption exceeded production levels.

Homer-Dixon introduces the terms ‘cornucopian’ and ‘neo-Malthusian’. The former refers to optimists like Simon, who “do not worry much about protecting the stock of any single resource, because of their faith that market-driven human ingenuity can always be tapped to allow the substitution of more abundant resources to produce the same end-use service” (ibid., p. 99). The latter refers to pessimists like Paul and Anne Ehrlich, who tend to be more cautious, assuming that resources are finite and irresponsible and unsustainable practices will lead to grave consequences. *Cornucopians* have been known to be right in criticizing the idea that development will be limited by resource scarcity. However, *cornucopians*, in doing so, have overlooked a number of factors. In the past, serious scarcities of resources appeared on their own and increased at a slow rate thus allowing time for adjustment. Today, multiple serious scarcities appear at once, having much larger effects and due to the large population growth, resource scarcity is increasingly drastically without allowing time for adjustment. Moreover, this results in an increase of the level of consumption rate. Another factor overlooked by the *cornucopians* is that the free-market price mechanism is a bad gauge of scarcity, especially for resources held in common. In the past, resources seemed plentiful, however today the knowledge of resource scarcity has proved to be a major issue. “Market-driven adaptation to resource scarcity is most likely to succeed in wealthy societies, where abundant reserves of capital, knowledge, and talent help economic actors invent new technologies, identify conservation possibilities, and make the transition to new production and

consumption patterns” (ibid., p. 101). There is no reason to believe that human scientific and technical ingenuity can always prevail over scarcity problems

Homer-Dixon continues to state that severe environmental degradation will result in three types of conflict – what he refers to as “ideal types” since they are not found in the real world. Simple scarcity conflicts are the “conflicts we would expect when state actors rationally calculate their interests in a zero-sum or negative-sum situation such as might arise from resource scarcity”; Group-identity conflicts refer to “conflicts likely to arise from the large-scale movements of populations brought about by environmental change”; Relative-deprivation conflicts come about “as developing societies produce less wealth because of environmental problems, (so) their citizens will probably become increasingly discontented by the widening gap between their actual level of economic achievement and the level they feel they deserve” (pp. 106 - 109).

The author notes that environmental stresses and conflicts may result in revolutionary regimes. However, he also notes that other results may be expected too, for example the management capacity of institutions in developing countries may be overwhelmed from environmental stresses. The control of governments over territories may be weakened as the political direction of many developing countries would sway towards extremism, undermining the interests of the North. Ullman, however, disagrees with this last hypothesis, stating that “this concern is overstated,” since “third world nations are unlikely to confront the North violently in the face of the ‘superior destructive capabilities of the rich’” (p. 113).

Dalby (2008) and Barnett (2001) consider one of the most meaningful essays in the subject of environmental security belonging to Kaplan (1994), referring to “The Coming Anarchy”, which quotes much of Homer-Dixon’s works. In his treatise, Kaplan presents West Africa as the model to be followed in establishing and analysing the issues which he believes will confront the rest of civilization. He believes that West Africa is plagued by most of the environmental threats which will eventually take their toll on the rest of the world. The author’s “coming anarchy” – African and global – will be brought about by cultural and racial clashes, geographic destiny, war and environmental scarcity.

Kaplan introduces the subject of the environment by referring to it as “the national-security issue of the early twenty-first century”, due to surging populations, spreading disease, deforestation, soil erosion, water depletion, air pollution, and the possibility of rising sea levels. The pressing scarcity of resources, he notes, is increasingly posing itself as the ground to war. Worryingly, Kaplan continues, it might only be as a result of such wars that policy in this regard will be formed, rather than policy as a form of prevention. In support of this position, the author refers to Homer-Dixon (1991), holding the view that “future wars and civil violence will often arise from scarcities of resources such as water, cropland, forests, and fish”, resulting in refugee flows, as well as environmentally induced hostile regimes.

Kaplan, by way of continuous reference to Homer-Dixon, appeals to the end of separation of politics from the physical world - the climate, public health and the

environment. While at present part of the world's population is living comfortably and the other part is already struggling in the face of environmental stress, it is of utmost importance to bear in mind that ultimately, both parts will be affected, even if the comfortably-living sector succeeds in enduring the environmental crisis for longer. The "instability in the South may spill over into the zones of prosperity in the North" (ibid., p. 263).

Chapter 3: The Challenge to Traditional Security Definitions

3.1 Introduction

Scholars have referred to security as an “essentially contested concept” (Baldwin, 1997, p. 10) because it is very difficult to reach consensus over one meaning. As many authors pointed out in the previous chapter, the traditional conceptual framework of security was borne from the Cold War era to describe a narrow worldview of risk and threats. The origin of security is important as it provides a greater perspective on the meaning given to modern concepts of security. Moreover it will address the role played by the military in security; a role which would later be undermined by newer versions of security.

3.2 Traditional National Security

In the narrowest form security revolves around the nation-state and the threat of attack from foreign armed forces (Brown, 1977; Baldwin, 1997). Sachs (2003) explained that this changed in the post-Westphalian era as most threats to national security arose within the state. Indeed the number of deaths caused by civil strife is far greater than the fatalities from inter-state wars. It was in this context that the need to modernize the out-dated notion of security emerged. Ullman (1983) notes that national security automatically denotes states concentrating on military threats and “contributes to a

pervasive militarization of international relations” which in the long run decrease global security.

Security is a highly politicised term and efforts to redefine security are more concerned with redefining the security policy agendas of nation-states rather than with the concept itself (Baldwin, 1997). In this respect various authors (such as P.G. Bock, Morton Berkowitz among others) have referred to the notion of security as a neglected concept. Buzan (as cited in Baldwin, 1997) suggests possible reasons why little attention is paid to security, including the fact that the concept of security is becoming more difficult to define. The “apparent overlap between the concepts of security and power” (ibid., p. 9) is also problematic as although both concepts are distinguishable, there still lacks scholarly work to clarify the differences. Moreover scholars give lower priority to conceptual or abstract issues, giving the impression that there is a lack of interest in the concept of security. Instead, scholars pay more attention to new developments in technology and policy. Considering that traditional security belongs to the realist worldview, many critics of realism have not addressed the concept in their research. However, unlike scholars, policy makers find the ambiguity of security useful. “Buzan’s puzzlement as to how a central concept like security could be so ignored disappears with the realization that military force, not security, has been the central concern of security studies” (ibid., p. 9). On the other hand, some researchers still ventured into the realm of security as they felt that the concept of national security was not meeting the demands of the modern world.

In fact even if security had to be classified as an essentially contested concept, “one cannot use the designation of security as an essentially contested concept as an excuse for not formulating one’s own conception of security as clearly and precisely as possible” (Baldwin, 1997, p. 12). Not only have authors come forward with a framework of security, but some have also attempted to include the environmental factor into it. Schrijver (1989) makes use of the notion of national ecological security to describe environmental problems becoming security problems. Mathews (1990) quotes the former British Prime Minister Margaret Thatcher and the former president of Georgia Eduard Shevardnadze who both assert the importance to protect their respective nations from environmental threats. Indeed from 1975 to today the environment was always discussed in G7 and G20 meetings, as the most affluent countries never denied the fact that environmental degradation is a threat which transcends their national borders. “The traditional notions of security are giving way to contemporary understandings of the term” (World Bank, 1999, p. 7).

The interdependence of many systems (including the economic and environmental systems) of the modern world is a reality which challenges the boundaries of national security. What happens in one economy will affect another; for example the Eurozone debt crisis affects every EU member state. This also applies to the environment where nuclear accidents such as the Chernobyl and the Fukushima disasters affected the environment surrounding them through harmful radiation. Security threats in themselves are interdependent as well (such as rapid increase in waste production and overpopulation or land pollution and biodiversity) and the benefits in addressing these threats jointly are recognized. “In a world that is not only ecologically interdependent,

but economically and politically interdependent as well, the concept of “national” security is no longer adequate” (Brown, 1977, p. 41).

Would environmental problems enter the traditional framework of security? Much of the national security rhetoric involves risk and threat. Focusing on the environment, “the possibilities of climate change disruptions are serious enough that they need to be treated as security threats by governments around the world” (Dalby, 2006). Therefore, the rhetoric of risk and threat of the traditional outlook of security can be applied to the environment as well. However environmental degradation, a phenomenon which transcends national borders, will not be sufficiently addressed within a national security framework. Although a country can identify environmental threats such as water scarcity or resource scarcity, it cannot defeat and overcome them on its own.

Indeed Deudney (1990; Fidler, n.d.) definitely disagrees with the option of addressing environmental threats as security threats. He claims that we should not confuse environmental concerns and military matters as they are too different. Particularly in the US, liberals, progressives and environmentalists have taken on the trend of applying violence and war-related terms to environmental issues. Deudney notes that Lester Brown, Jessica Tuchman Matthews, Michael Renner and others have proposed to redefine national security to encompass resource and environmental threats. Also, Ullman has called for the inclusion of threats such as earthquakes and environmental degradation to the notion of security. Hal Harvey spoke of “natural security” and US Senator Albert Gore favoured the idea of including the environment within the remit

of national security. Therefore the debate was moving towards inclusion of the environment within the scope of national security.

However Deudney (1990) notes that national security revolves around notions of organised violence – there is no doubt that security from violence is at the forefront of human needs. According to him, military violence and environmental degradation are linked in three ways. The first way he argues is that in order to pursue military security a country spends resources (fiscal, organisational and leadership) which could have been spent on environmental restoration. The second argument is that war directly degrades the surrounding environment. The third and last connection between the environment and military is that “preparation for war causes pollution and consumes significant quantities of resources” (p. 462). Apart from these connections, warfare is not the prime culprit causing environmental degradation. Deudney (ibid.) further examines the ways environmental degradation can be a security threat. He proceeds by noting four major dissimilarities between security from violence and security from environmental threats; (i) Environmental degradation and violence are two very different types of threats: both have the potentiality to kill people, yet not all threats to people are to be seen as a threats to security; (ii) The scope and source of threats from environmental degradation and violence are significantly different. There is nothing national about environmental degradation, as it is a trans-boundary problem, even though the victims of environmental degradation are often found within borders of a state; (iii) The degree of intention involved differs drastically between the two, as violent threats are highly intentional, whereas environmental degradation is largely unintentional; (iv) “Organisations providing protection from

violence differ greatly from those in environmental protection” (p. 464). In previous efforts to re-define national security these differences are dismissed and in doing so a conceptual muddle is created.

The rationale behind wanting to include environmental challenges to the national security realm was to stimulate action in this respect. Nevertheless one should consider the disadvantages. Sentiments tied to national security are often powerful ones, since they relate to war and which run deep in the human psyche. It may also seem attractive to transfer the sense of urgency attached to national security to environmental threats, which should result in a political will (to carry out appropriate policy changes) and personal efforts (to curb environmental degradation). Yet national insecurity is an unstable situation as the people are motivated to return to the normal state of affairs, and for the issue to be definitely resolved. The situation with regard to environmental degradation differs drastically, as environmental security cannot be achieved overnight, and degradation will persist, regardless of human efforts to lessen it. Thus when applied to environmental issues, the time period being asked of people is far too long, and cannot promise anything close to the desired result.

In addition, the national security mentality is bound by the zero-sum thinking, wherein ‘our’ gain is ‘their’ loss, and where trust between states is at a minimum. Environmental problems, on the other hand, call for maximum trust between states, such that these could aim to achieve a common good. This notion of us versus them stands as a key reason as to why national security thinking shouldn’t be transposed to

environmental problems. Going back in history, it becomes evident that the distinction between 'us' and 'them' is very sharp in society. The contrast is also evident as national security organisations tend to be short-term based, seeking to pursue near-term objectives; whereas environmental organisations are long-term and may seek a multitude of long-term objectives. Deudney (1990) suggests that rather than considering national security in order to raise awareness and call for action in relation to environmental problems, environmentalists should emphasise the need for national grouping. Environmental awareness should not depend on co-opted national security thinking, given that there already exists a powerful set of values and symbols based on ecological awareness, due to concerns about human health and poverty values. "These already-existing values draw upon basic human desires and aspirations and are powerful motivators of human action" (ibid., p. 469).

In other words, Deudney (1990) outlines the fact that national security means security from violence. Subsequently military resources can be used to address violence and protect the nation. By dissociating environmental degradation and violence, he is showing that military resources cannot be used to mitigate environmental problems. Therefore the two terms of national security (and ultimately military resources) and environmental degradation cannot be mixed within the same conceptual framework. The drawback of his analysis is his assumption is that environmental degradation and national security hold universal static definitions which are not susceptible to change. Indeed, this study attempts to show a conceptual evolution of security.

3.3 The Military in National Security

If national security entails protecting the nation from foreign armed attacks then the military (forces and budget) plays a vital and fundamental role in security studies. The twentieth century saw the linking of economic development and military security, two different aspects of foreign policy. Territorial sovereignty meant the use of warfare to protect the natural resources (vital for economic development) found within that territory. Therein lies the relationship between the nation states, the military and the environment. Natural resources are commodities which needed protection through military means.

Brown (1977) points out that in light of non-military threats governments rather than controlling their inflated military budgets do the opposite. However he does not argue for budget cuts, but merely to take into account other non-military threats to national security. “Today, security comprises two interrelated concepts: the state’s role in protecting its borders from external threats and its role in ensuring “human security” for its citizens under the broader umbrella of human rights – meaning that every person is entitled to be free of oppression, violence, hunger, poverty, and disease and to live in a clean and healthy environment” (World Bank, 1999, p. 7). Large amounts of money have been allocated to and used as military spending. Yet as time went by, both scholars and policy makers came to realize that security based on the military is not enough to ensure the security of the citizens within the state. Absence of war, however, does not result in an automatic implication of peace; insofar as global military spending remains sky-high, insecurity subsists, and misdirection of scarce resources continues. In the words of President Eisenhower, “every gun that is made,

every warship launched, every rocket fired represents, in the final analysis, a theft from those who hunger and are not fed, who are cold and not clothed” (as cited by the WCED, 1987).

The presence of the military in comprehensive security has been criticised, both because of disturbing environmental effect it brings with it, as well as human rights and abuses thereof (Eddy, 2004). Today we have moved from military security to political, economic, social, environmental, or human security (Alkire, 2003).

Chapter 4: Exploring New Security Definitions

4.1 Introduction

Humanity has advanced remarkably over the past 50 years. In addition threats to human security have evolved to a personal, regional and a global level. The new global perspective, in contrast to national security, knows no borders, with consequences to poverty, environmental problems, terrorism and nuclear proliferation, amongst other things. Consequently, we find a redefinition of security towards human security (Human Development Report, 1994).

4.2 Human Security

Although security was traditionally thought of as the state protecting its citizens from foreign military threat, considering that more people have been killed by their own governments (Rummel, 1994) it became evident that there was a need for a deeper level of security understanding. Death by government or '*democide*' carried out by repressive regimes uncovered the fact that national security does not necessarily mean securing its citizens. Indeed the trait of belligerence of unrestrained power sheds light on the need to reconstruct the security paradigm around the needs of the individual. The end of the Cold War brought about conceptual turmoil for the aspects of territorial sovereignty and military security. This led to the emergence of the notion of human security which as noted in the UNDP 1994 report, means "freedom from fear

and want” (UDHR). Human security has been at the centre of the debate ever since then.

Alkire (2003) notes that there have been empirical changes in the nature of security threats. Today, people tend to think of insecurity less in the military terms, than in relation to jobs, income, health, the environment and crime. Human security, in fact, is something which affects people everywhere, even if the threats to such security may differ (Human Development Report, 1994). Rothschild (1995) notes that the twentieth century brought with them the emergence of new security principles. However Baldwin (1997) challenges the notion that new ideas about security are indeed new at all. He proceeds to discuss the origins of these holistic person-centred ideas that date back to the eighteenth century; “the multidimensionality of security is not a new discovery...The dimensions of security have not changed with the end of the Cold War, but the substantive specifications of these dimensions that were appropriate during the cold War are likely to differ from those appropriate for the 1990s” (ibid., p. 23). Whether the origins of human security are modern or ancient, the concept is attracting a growing interest in security studies.

It is easier to ensure human security through early prevention (Alkire, 2003). When people’s security is attacked, it is highly likely that other nations will get involved. In this way, a country can no longer hide insecurity within its borders. Although human security is a global concept, most of the time, response to threats remains largely national. Hence the proposal to set up a “global human security fund to finance an international response” (UNDP, 1994, p. 6). The fund would be used to address issues

of environmental pollution, natural resource depletion and natural disasters, amongst other threats. Indeed King & Murray (2001/2002) consider that human security is best ensured through prevention.

The shift towards a broader concept of security inevitably brought about new theoretical frameworks where the emphasis shifts from the state to the individual (MacLean, 2001; Rothschild, 1995). Human security is more than just safety from hostile attacks; it includes the universal protection of the quality of life of people (Thakur, 1997), safeguarding the “vital core of human lives from critical pervasive threats consistent in long-term human fulfilment” (Alkire, 2003, p. 2) in freedom and dignity and the conservation of civilization from internal violence (Huddle, n.d., as cited in Romm, 1993; Ogata, 1998; Hammerstad; 2000). It is people-centred and “encompasses human rights, good governance, access to education and health care and ensuring that each individual has opportunities and choices to fulfil his or her potential” (Annan, 2000, p. 1), It is a precondition of sustainable development (World Bank, as cited in Alkire, 2003). A new development paradigm of human security “puts people at the centre of development, regards economic growth as a means and not an end, protects the life opportunities of future generations as well as the present generations and respects the natural systems on which all life depends” (UNDP, 1994, p. 4). Security has been extended from the security of nations to the security of the international system to supranational physical environment (Rothschild, 1995). Conceptual frameworks breaking down human security are abundant, with each one proposing various components. In addition, it would be beneficial to have a world social charter drawn up at this point in time in order to give an exact meaning to the

term “human security” as is understood today. It is proposed that this world social charter “would encompass a broad range of human security issues in both industrial and developing countries, such as universal primary education, reduced adult illiteracy rates, primary health care for all, family planning services, safe drinking water and sanitation for all, credit for all to ensure self-employment opportunities” (UNDP, 1994, p. 4). Perhaps King & Murray (2001/2002) propose the most measurable definition of human security, as “the number of years of future life spent outside a state of “generalized poverty””, wherein “generalized poverty occurs when an individual falls below the threshold of any key domain of human well-being” (p. 585).

The common approach to defining human security is to include every aspect of past humanitarian crises, starting by compiling a list. This may serve as a good start, yet it does not provide a definition to the concept, nor a way of evaluating such crises. A report by the UNDP (1994) identifies seven dimensions of human security, i.e. economic, food, health, environmental, personal, community and political security. Although it proved to be useful, the report fails to create a single coherent conceptualization. Other researchers (Nef, 1999; McLean, 2001) had also proposed an approach to define human security by organizing descriptive lists. King and Murray (2001/2002) continue by writing about off-record interviews conducted with politicians and officials responsible for foreign policy in various countries, asking them about policies based on human security. Interestingly, they found out that every person they came across made a reference to the drawback of the ambiguity of human

security, so it was difficult to include certain aspects of human security into foreign policy.

It is argued that “most people instinctively understand what security means. It means safety from the constant threats of hunger, disease, crime and repression. It also means protection from sudden and hurtful disruptions in the pattern of our daily lives – whether in our homes, in our jobs, in our communities or in our environment” (UNDP, 1994, p. 4). Despite having a definition, it is still useful to establish operational indicators of human security, as these, together with early warning systems based on the indicators, could help countries avoid a crisis point.

Rothschild (1995) exposes the idea that the extension of national security preceded human security in that different security concepts may exist other than human security. Global security and common security are such examples which carry the same currency as human security. As noted in the international Commission on Global Governance, “Global security must be broadened from its traditional focus on the security of states to the security of people and the planet” (p. 56). The UN Development Program, on the other hand, speaks of the transition “from nuclear security to human security defined as safety from “such chronic threats as hunger, disease, and repression and protection from sudden and hurtful disruptions” (p 56). Albeit their growing importance in the 1990s, these extended concepts of security could hardly be considered new. Rather, they could be considered a development of the idea of common security mentioned in the 1982 Report of the Palme Commission. In this report, common security was considered in a restricted sense, presented as a

way for nations to organize their security in the presence of nuclear weapons; “states can no longer seek security at each other’s expense; it can be attained only through cooperative undertakings” (p. 56). The report continued by noting that security should not be restricted to military security, but extended to economic and political terms, as the former is the means leading to the economic and political end. It comes across clearly, through this report that the idea of prevention of nuclear war was of central importance to the notion of common security.

Alkire (2003) attempts to show the relationship between human security and state security, human development and human rights. With regard to *state security*, to date, human security advocates have focused solely on an agenda without considering motivation or economic competition. The latter are important because they proceed between entities cooperating in human security matters. Shifting the human security approach to one recognizing distribution of power and economic competitiveness will strengthen the concept considerably. Human security and *human development* differ in scope, with the former being far narrower than the latter. They also differ in their emphasis and time span. In relation to *human rights*, both human security as well as human rights establish and address a set of rights and freedoms which cannot be ignored – indeed, human security addresses what many would deem to be the most basic and fundamental of universal human rights. Another connection between human security and human rights is that they both speak of duties and obligations: “human rights provides a more basic framework of universal obligations; human security refers quite pointedly to a certain cross-section of such obligations” (p. 39). Finally, one notes the indivisibility of human rights, wherein each of the human rights

is equally fundamental and the list cannot be picked at and chosen from. This stands in contrast to *human security*, which “recognises the need for on-going prioritisation and discussion of elements of human security”. This last relationship between human security and human rights, as with the other two relationships, holds strong since a gain for human security translates in a gain for human rights, and vice versa.

Sustainable development leading to human security lies as the foundation to the achievement of peace, environmental protection, human rights, democratization, and social integration. This calls for the need of humanity to restore its perspective and redesign its agenda; although doing so is much easier said than done, as perspective is easily lost as one crisis succeeds another, with the result of policy agendas focusing on the immediate issues, rather than the important ones.

The UN Human Development Report 1994, in its effort to define human security proposed a set of components making up the construct of human security (one of which is environmental security). Moreover, these components of human security are interdependent (Alkire, 2003.) Fundamental critiques of comprehensive security advocate in favour of human welfare as the appropriate security referent for environmental security, wherein “human welfare refers to the satisfaction of essential material and cultural needs, which form the basis of human rights” (Eddy, 2004, p. 25).

Alkire (2003) argues “the operationalization of human security by committed institutions in a way that is relevant to their contexts has naturally given rise to

somewhat narrower interpretations of human security,” (p. 20) as nations include the notion of human security in their foreign policy. Canada, Norway and Japan are to be found at the forefront in “incorporating concepts of human security in their official foreign policies” (King & Murray, 2001/2002, p. 589). Canada, for example, who has incorporated the notion of human security into its foreign policy, focuses its interpretation of human security on “freedom from pervasive threats to people’s rights, safety or lives” (Alkire, 2003, p. 90). Norway too focuses its definition of human security on the idea of freedom from fear. Japan holds an even broader definition, which “comprehensively covers all the menaces that threaten human survival, daily life and dignity...and strengthens efforts to confront these threats” (ibid., p. 90). Although other countries may follow, we are now faced with an array of inconsistent and ill-defined terms.

Whilst acknowledging the importance being drawn to the newly-established concept of human security, Paris (2001) identifies two fundamental problems which tend to limit the usefulness of the concept for policymakers and scholars. The first problem is that the concept lacks a precise definition; it is too vague. In this regard, Paris (2001) states that human security is much like sustainable development: “everyone is for it, but few people have a clear idea of what it means. Existing definitions of human security tend to be extraordinarily expansive and vague, encompassing everything from physical security to psychological well-being, which provides policymakers with little guidance in the prioritization of competing policy goals and academics little sense of what, exactly, is to be studied” (p. 88). The second problem is that the term seems to have been kept purposely ambiguous and expansive. In saying this, the

author clarifies that he does not wish to imply that human security is “merely ‘hot air’ or empty rhetoric”, since the human security proponents have undoubtedly achieved significant accomplishments – such as the antipersonnel land mines convention; “but to say that human security has served as an effective rallying cry,” continues Paris, “is different from claiming that the concept offers a useful framework for analysis, as some of its proponents maintain” (pp. 88 - 89). Hand in hand with this goes yet another criticism, being that “human security is considered to be straightforwardly too wide to use” (Alkire, 2003, p. 22).

Hammerstad (2000) commented upon the shift by the UNHCR from an institution concerned with providing international protection for refugees, to a humanitarian body. She discusses the changes which were to be made in order to adjust to this new role. She notes that the UNHCR took on an “ambivalent conceptualization of security” (p. 396), as it is difficult to establish with whose security the UNHCR is concerned when it speaks of ‘human security’, ‘national security’ and ‘international peace and security’. In fact, UNCHR’s security discourse reveals two concepts of security; the first with regard to the traditional state security, the second concerns human security. UNHCR takes its definition to human security from the UNDP’s Human Development Report, which sees security “as the prerogative of the individual, and links the concept of security inseparably to ideas of human rights and dignity and to the relief of human suffering” (ibid., p. 397). The understanding of security in relation to the state, on the other hand, stands in contrast with the notion of human security, holding a politico-military understanding to the term. Having determined the two meanings given to security by the UNHCR, Hammerstad proceeds

to determine the problems with such security discourse. Recently, UNHCR has been using 'human security' to accommodate state security concerns, as well as the protection of refugees. However, there are two problems in using the term in this manner. First of all it is being used to denote an "all-encompassing nature of the concept of human security" (ibid.) which dilutes any effort to produce a tangible definition and framework of human security. The second problem is the "complex, and sometimes unavoidably conflictual, relationship between the security of the individual and that of states" (ibid., p. 398).

As noted, the problems pointed out above limit the usefulness of the concept. Policymakers, in fact, face the challenge of moving beyond the all-encompassing terms, and focus instead on specific solutions to specific political issues. With regard to the all-encompassing nature of human security, UNHCR's definition includes in it all that is "good and desirable" (p. 398), such as human rights, democracy, social welfare, social justice and environmental protection, amongst other things. The problem with this is that it incorporates far too many things, and fails to focus on the most salient aspects and issues. In addition, "the broadness of the concept entails the risk of underestimating the conflicts and contradictions that can arise between the many goals that are subsumed within "human security"" (Hammerstad, 2000, p. 398). The other problem mentioned is that of contrasting human and state security. There is a contradiction between UNHCR's "attempt to establish a higher form of 'human' security.....and on the other hand, the agency's acknowledge that there is a link between states' perceptions of refugees as security problems and deterioration in international refugee-protection standards" (ibid., p. 399). Such a contradiction cannot

be resolved within the concept of human security. The author therefore suggests that it would be wiser to keep the concepts of human security and that of state security separate.

According to Paris (2001) this problem holds mainly due to the fact that proponents of human security are reluctant in prioritizing the goals and principles making up the concept. This acts as a direct draw-back to decision-makers, who are to allocate scarce resources amongst competing goals. As Owens and Arneil (1999) claim (as cited in Paris, 2001), human security “is too broad and vague a concept to be meaningful for policymakers, as it has come to entail such a wide range of different threats on one hand, while prescribing a diverse and sometimes incompatible set of policy solutions to resolve them on the other” (ibid., p. 92).

On the other hand are those who study international politics, who find that the “task of transforming the idea of human security into a useful analytical tool for scholarly research” (ibid., p. 92) rather enigmatic. Given the large number of principles and objectives thrown in to define the term, it is unclear what academics should be studying at all. Virtually, Paris (ibid.) argues, human security is capable of supporting any hypothesis, together with its opposite, depending on the prejudices and interests of the researcher. He continues by arguing that since “human security” covers both physical security as well as more general notions of social, economic, cultural and psychological well-being, “it is impractical to talk about certain socioeconomic factors causing an increase or decline in human security, given that these factors are themselves part of the definition of human security” (ibid., p. 93).

Although one has to bear in mind that “vagueness” and “arbitrariness” have been mentioned as criticism to the definition to human security, Alkire (2003) proceeded with an attempt to identify the elements of human security nonetheless. One must take into consideration the institutional environment and views of the people, as the elements differ depending on these variables. Despite acknowledging the importance of consensus between international institutions and the identification of threats, Alkire (ibid.) insists that the foundation should lie at the “vital core”, which “implies that the institutions that undertake to protect human security will not be able to protect every aspect of human well-being, but at very least they will protect this core” (p. 24). This vital core will be established through people’s reflections, and as a result of their own experiences and knowledge, values and needs. As an example of the vital core, the author speaks of freedom from premature preventable death.

Chapter 5: Environmental Security

5.1 Introduction

In the beginning of the discourse on environmental security, the main theme revolved around environmental degradation threatening *national security*. However, as the discourse evolved, the emphasis changed to environmental degradation threatening *humans*. It is for this reason that the evolution of national security to human security is imperative in this study. In addition, not only have non-military threats such as environmental degradation increased, but so did the opportunities to encounter such threats (Romm, 1993; Alkire, 2003). Deudney (1990) starts out by establishing that “humans are vitally dependent upon their physical environment” (p. 461), but humans have always taken for granted certain environmental conditions, such as clean air, and this is the reason as to why such conditions are now in jeopardy.

5.2 Environmental Security

The contested concept of environmental security (Barnett, 2001) was first raised by the geopolitical security community, with the aim of noting growing concerns in relation to violent conflict arising from environmental change and natural resource scarcity. The question of whether the environment should be considered a security issue arose at the end of the Cold War. The rhetoric evolved from security of nations to security of the biosphere and the physical environment. The elusiveness of the

terms “environment” and “security” means it is difficult to make sense of these ambiguous terms (McNeil & Manwaring, 2002; Barnett, 2001). Hence no consensus is found on the definition of environmental security. “Environmental or ecological security is an evolving concept; consequently an established definition does not yet exist. The concept obviously emerged in response to serious threats to the global environment” (Schrijver, 1989, p. 115). However there appear to be three main schools of thought combining security and the environment which offer separate definitions.

The environmental conflict approach has the primary concern is the potential for violent conflict over resources. “Most authors who examine environmental conflict focus on the possibility that groups within society will engage in violent conflict as natural resource stocks diminish due to environmental degradation” (Detraz, 2009, p. 347). The central point in this regard is the concept of scarcity. Homer-Dixon (1994; 1999) writes about three types of scarcities: supply-induced scarcity, demand-induced scarcity, and structural scarcity.

The **environmental security approach** is also a human-oriented approach, but its primary concern is the negative impacts of environmental degradation for humans. “Environmental security is a broader notion than environmental conflict because it is concerned with all of humanity, not just those directly susceptible to environmental conflicts” (Detraz, 2009, p. 350).

The ecological security approach emphasizes the security of the environment from human interference and negative impacts leading to degradation. The primary concern is the earth's ecosystems. Indeed, Deudney (1990) explained how the environment is directly damaged from warfare. Rogers (1997) states that when speaking of ecological security, one refers to the state where the natural human habitat sufficiently provides subsistence in a sustainable manner without diminishing its natural stock. Therefore the ecological security framework includes every organism (not only humans) that is supported by the surrounding physical environment. In this approach humans are not featured as the most important species, "species and ecosystems are preserved for their own sake, not for their value to humans" (Detraz, 2009, p. 351). Ecological security is a separate concept from environmental security borne from the amalgamation of theoretical ecology and security. It is the "human impacts of the security of the environment itself" (Barnett, 2001, p. 12).

Environmental degradation is a burden carried by the entire world, transcending national borders (Dalby, 2008; Barnett, 2001; Eddy, 2004). The interdependence of different economic regimes in the world created the momentum to look beyond the national sovereignty to face contemporary security challenges. The international arms trade, transnational organized crime, terrorism and environmental changes among others are all examples of this phenomenon. Eventually the growing concerns in relation to environmental change such as scarcity of resources, conflict over water and climate refugees entered the security studies rubric. Mathews (1990) notes how environmental problems have become an issue to all states, and these cannot be tackled by each separately. It is a problem which goes beyond all form of national

borders, and respects no boundaries to the traditional concept of national sovereignty. “The once-sharp dividing line between foreign and domestic policy will be blurred, forcing governments to grapple in international arenas with issues that were contentious enough when they lay solidly within the domain of domestic choice” (Mathew, 1990, p. 11).

Upon further analysis, it permeates that environmental degradation does not have the same effect on everyone, but socially disadvantaged groups are punished more than others (Barnett, 2001). In fact, according to Simon Dalby, the main effort to overcome environmental degradation should derive from the most prosperous states since “environmental damage is caused by affluence not poverty” (Dalby, 2008, p. 260). Some elements of the environment have always been subjected to intergroup competition (Deudney, 1990); “In the last several decades...alarming evidence has accumulated that both the developed industrial countries and those striving to achieve this state are dangerously damaging the ecological systems that underpin all human life” (p. 461). It is due to this that environmental issues have now claimed their place on international political agendas. It would seem highly unlikely that an individual nation would unilaterally accept responsibility for its contribution towards the deterioration of the global ecosystem (due to self-interest), if there was no guarantee that other nations would do the same. Moreover, although environmental degradation has global consequences, the poorer states in the global South are more vulnerable as they are less equipped to cope with climate stress (Kahl, 2006).

The central argument in this subject is whether environmental degradation causes conflict. The causality was always disputed because the implications on foreign and internal policies and budgets are great. Kaplan (1994) and Barnett (2001) argue that “the environment-conflict thesis considers that the depletion and contamination of various resources, as well as rapid population growth, will induce violent conflict” (p. 8). Empirical evidence is difficult to come about in this respect. In the past the common sense was that the link between environmental degradation and conflict was obvious as people fought over resources. Homer-Dixon challenged this view by reviewing case studies, concluding that there was little evidence that environmental matters caused wars. However he did not deny the fact that there exists a relation. Environmental stressors “contribute to conflict within and among nations, although environmental damage is not the sole cause of conflict” (McNeil & Manwaring, 2002, p. 3). “When the economic costs of environmental decline are steep enough, political stability can be threatened.” (Mathews, 1990, p. 17) Mathews mentions Haiti as a textbook example to this, as it was once known as the Pearl of the Antilles because it was particularly forested and fertile. Today, however, Haiti is faced with the impossible task of farming bare rock, and causing people to flee elsewhere. Only with the replenishment of natural resources (through reforestation) can Haiti regain its political stability.

On the other hand Deudney (1990) dismisses the idea that the future may lead to resource wars, as he argues that their supply will continue to decrease. His analysis points at three reasons why conflict will not arise from resource depletion. His first reason is that states will no longer experience resource dependency as a major threat

to their military security and political autonomy. The second reason is that states will find it increasingly difficult to exploit foreign resources through territorial conquest. Finally, the world is entering an '*age of substitutability*' (Goeller & Weinberg, 1976), wherein industrial civilization has become all the more capable of taking earth materials and fashioning them into virtually anything that is required. The point is the optimistic outlook that substitutes will be found for the depleted resources. As a result, Deudney concludes (1990; Fidler, n.d.) that the argument that environmental degradation will lead to interstate conflict is not so sound after all.

Having asserted that environmental threats endanger every nation in the world, the way to combat such threats is through international cooperation. The new notion of human security brought about institutional changes both within security structures and at the national and international levels. "Many threats to security require a coordinated international response" in the new theoretical framework of global security (Brown, 1977, p. 41), which leads to the need for supra-national organizations to jointly develop environmental policies. In this respect, international environment treaties and conventions may be a source of power to facilitate environmental-conflict negotiations (Christie, 2008). Treaties may fall short of enforcement mechanisms but they imply the end of the negotiating process and commitment by the signatories. Although a convention has a narrower scope it has the same effect. The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) is one such example of an international agreement to safeguard (an aspect of) the environment. Some would dub it as successful in protecting endangered species while others would judge it as a veiled success for

failure to safeguard more species. Why do some treaties and conventions succeed while others fail? Ferrey's (2004) analysis (as cited in Christie, 2008) points to 3 reasons why nations comply with impossible treaties or conventions knowing that they will not be able to commit to them. The reasons "are (i) consensual treaty agreements are entered into in the belief that it is in a nation's best interest, (ii) where there is a global common interest to comply with the treaty, the expectation for a stable outcome will be facilitated; and (iii) compliance with obligations under a treaty maintains a nation's trustworthiness, international honour, influence, prestige and good reputation" (p. 21).

Despite the evident benefits to international cooperation, conventional critics remain concerned about the loss of national sovereignty through the signing of international conventions and cooperation with supra-national organizations. The application of environmental security entails the application of Galtung's (1969) positive peace as a proactive action to mitigate environmental perils endangering humanity. The stress lies on a global effort to find solutions rather than individual states working alone. However this idea of global hegemony is part of the utopian ideal world view; in practice, is not always viable since summit after summit, nations fail to reach an agreement.

Schrijver (1989) wrote a paper to investigate "how international organization can contribute to the management of environmental problems" (p. 115). He points out that various international institutions that deal with environmental concerns are incapable to address global environmental issues or lack real powers to do so (such as UNEP).

The author came up with a list of different proposals to deal with this problem, which he categorised in 3 groups. The reformist approach “builds upon existing structures”, the idealistic approach “requires the establishment of new organs and procedures” and the pragmatic approach which combines the two.

The first idea within the reformist approach is by incorporating ecological security into international security endowing the UN Security Council’s mandate to deal with such problems. The main drawback is that this solution may create an acceptable excuse for a unilateral use of force by one nation on another without the unanimity of the Security Council, such as what happened when Israel bombed an Iraqi nuclear plant under construction in Baghdad and when the US bombed Gaddafi’s headquarters in Tripoli. Bestowing ECOSOC to deal with environmental concerns seems an appropriate option, although one “should realize that ECOSOC, with 54 members at present, has functioned rather poorly. It certainly did not become the central policy organ for international economic and social cooperation, as was intended in the UN Charter” (p. 117). However during the 1988 summer session of ECOSOC a resolution was passed intended to revitalize it.

Schrijver (*ibid.*) presents the third option would be the use of the ICJ, as it “has (already) dealt on few occasions - and, moreover, indirectly - with environmental issues. The most notable example is its very first case, namely the Corfu Channel case (Great Britain vs. Albania, 1949). The Court then formulated the general obligation of ‘every State not to allow knowingly its territory to be used contrary to the rights of other States’ (p. 117)”. The author argues that a special Environment chamber can be

formed to assist the court through Article 2 of the ICJ's Statute, an idea put forward by Judge Lachs in 1980. Judge Nagendra Singh who was also a member of the Brundtland Commission responsible for the report "Our Common Future" mentioned in the early works section, also supported the idea. However the ICJ is overloaded with work and it can only intervene in legal disputes between states on the premise that the same parties have agreed to submit their disputes to the Court.

As the last credible solution Schrijver (*ibid.*) argues about the use of UNEP, the subsidiary organ of the UN General Assembly established after the first UN Conference on Human Environment. Although "the Governing Council of UNEP has in principle only powers of recommendation, the functions and responsibilities are wide and there is ample room for initiatives" (p. 118). UNEP has the potential to achieve much more with its existing powers. The progressive development of environmental law by "balancing national sovereignty and the duty of States to cooperate for environmental preservation" (p. 118) is a difficult task to carry out but a valid prospect for UNEP. The remaining options are the Trusteeship Council, which is definitely not favoured as it seems to have too many drawbacks, and the permanent Court of Arbitration, which looks like a dead institution.

Schrijver (*ibid.*) presents the first hypothesis in the idealistic approach of creating new institutions by turning the UN Environment Programme into an Environmental Security Council. The origin of the idea came from the USSR Foreign Minister back in 1988, but its feasibility depends on the functions and powers given to such an institution. Will it be equal to ECOSOC and the Security Council? Moreover the UN

Charter needs to be amended; and considering the voting record on various UNGA resolutions on environment issues this looks very unlikely. Another similar idea was that to change the status of the UNEP into a specialised agency, very much like UNIDO. The main drawback would be that member states have the ability to withdraw or not become members at all if they disagree with UNEP's policies, taking away its power of international alignment and making the possibility of an integrated environment policy very slim.

Another option would be the creation of an Economic Security Council, an idea brought about by Bertrand, composed of an intergovernmental panel and a commission of experts. However such an option did not gain enough support. The last idea is to establish a Green UN police force or Green Cross, with a mandate and institutional status authorised on an ad hoc basis by the UN, General Assembly or the Security Council. However the obvious drawback would be the difficulty to reach consensus over the aforementioned mandate for such a 'World' police.

In the pragmatic approach, Schrijver (*ibid.*) combines various options. One example is to strengthen coordination of environmental concerns by revitalizing ECOSOC and increasing administration coordination. Another example would be to strengthen UNEP without changing its constitutional status, by focusing on the further "codification and progressive development of international environmental law" (p. 120). The last example is to have the office of the Executive Director of UNEP evolve to the International Environmental Commissioner or Ombudsman, since the mandate of the office is quite broad.

Case-study methodologies examine the relationship between environment and security, which may help to forecast tensions and future conflicts through risk analysis. Case studies will (i) elaborate specific risks and threats to an economy, society and/or a larger community; (ii) provide examples of specific problems or cumulative environmental degradation acting as environmental stressors that contribute directly to or generate internal and/or external conflict; (iii) Demonstrate cause and effect; (iv) Demonstrate what roles civil society, military government agencies, international organizations, and NGOs can play or might play in mitigating the causes and consequences of environmental degradation. These players may move the issue of environment from the stage of study and rhetoric to the realm of action; making reasonable, specific and actionable recommendations (Ferrey, 2004).

Many women around the world face unique challenges because of their gender and the problems posed by environmental degradation are no exception (Goldsworthy, 2010; Detraz, 2009). Environmental security recently has been a topic of discussion in major international policy venues, and many women experience amplified security vulnerabilities owing to their lower social status and restrictions of their gender roles. If the “structural (gender-stratified social structures) and situational (arising from unique situations such as climate change, violent conflict and forced migration)” (Goldsworthy, 2010, p. 215) gender implications are not acknowledged, an important factor in environmental security vulnerabilities would be overlooked. Women depend on the natural resources more than their male counterparts particularly in developing countries (Goldsworthy, 2010). Detraz (2009) notes the feminists’ approach to environmental conflict, criticizing the narrow definition given to security. However

she introduces the idea that gender may be a possible cause for environmental conflict, especially when one considers the regular and close relation women have in some societies with nature. The eco-feminist perspective led by Shiva and Plumwood among others, point out that the main causes of environment conflict that are usually discussed, such as drastic population growth, human migration, globalization, and unequal resource distribution, may all be intrinsically gendered issues. With regard to population growth, for example, Detraz (ibid.) states that scholars fail to determine the composition of these populations, something which ought to be done in order to obtain a clear projection of the effect of such population growth. The question of gender is omitted when acknowledging the negative impacts of environmental degradation on humans. On the other hand if gender is considered it would transform the analysis of scholars. Detraz (2009) gives an example by stating that environmental security scholars give a lot of importance to sustainable development without taking into account the needs of women. This approach is criticized on the fact that the different effects of environmental degradation on men and women are not addressed. However this perspective has been criticised for the over-emphasis given to women. A milder philosophy would be that of feminist environmentalism (Agarwal, 1992) in which “the link between women and the environment can be seen as structured by a given gender and class” (p. 127). This perspective puts the emphasis on gender as well but it also places equal attention on poverty.

The feminist traditions could be incorporated into the environmental security debate. The resulting framework would be a transformative force if gender is added to the environmental conflict perspective. Detraz (2009) lists a number of issues which are

brought to light when gender is included as a fundamental aspect of environmental security. Rural women have problems with access to education, health care and physical security; moreover they experience restricted financial autonomy. Whether environmental degradation is present in the form of sudden natural disasters or incremental environmental change, women experience heightened vulnerabilities. Multilevel analysis of security and the environment are essential which would lead to critical conceptualizations of security, environment, and scarcity. The case of wildlife conservation in Tanzania serves as an example for the benefits to having gender as a fundamental element of the perspectives on security and the environment. Although environmental conflict is always examined in the light of violent conflict over resources, gender analysis of wildlife conservation considers instances of person-to-person violence, especially where women are concerned. Neumann (1998) reports villagers around the Arusha National Park being abused (beaten and raped) by wildlife authorities. Despite the rape penalties being strict in Tanzania, paramilitary wildlife guards are protected from punishment for wrongdoing. In the Indonesian Tsunami disaster many women who survived had to face discrimination and abuse when seeking aid and shelter; Hurricane Katrina in the U.S. in 2005 increased familial burdens on women by creating unemployment and intensifying their poverty status (Goldsworthy, 2010). While women are in charge of the daily access to natural resources they are not involved in the decision-making process. The combination of structural and situational pressures amplify the vulnerabilities faced by women and taking into account gender issues in environmental security concerns would tap into women's expertise on the subject.

5.3 Typology of Environmental Security

5.3.1 Introduction

“The environmental security concept must be developed into a policy tool from which to identify and address specific risks and their implications for national security” (McNeil & Manwaring, 2002, p. 1).

5.3.2 Attempts to Measure Environmental Security

There have been many attempts to measure environmental security and to define its main indicators. This section should not serve for that purpose, but merely to create a holistic framework in which every environmental threat can be classified into.

The **Environment Vulnerability Index (EVI)** is a project initiated by SOPAC and UNEP with other partners. The aim is “to provide insights into the processes that can negatively influence the sustainable development of countries.....Therefore, in order to promote sustainability, it has become increasingly important to be able to measure how vulnerable each aspect is to damage and to identify ways of building resilience. With this information to hand, the outcome for countries could be optimised for their unique situations and development goals” (Environment Vulnerability Index, para 2). The EVI contains 50 indicators which are meant to measure the vulnerability of a country (see figure 2), and the final coefficient is calculated by the average of these indicators.

Table 1. Summary of EVI Indicators

(Key: CC = Climate Change; D = Exposure to natural disasters; HH = Human health; AF=Agriculture & Fisheries; W=water; CCD=Desertification; CBD = Biodiversity.)

INDICATORS	TYPES	ASPECTS	SUB-INDICES							
			CC	D	AF	W	CCD	CBD	HH	
1. HIGH WINDS	Weather & Climate	Hazards	CC	D					CCD	
2. DRY PERIODS	Weather & Climate	Hazards	CC	D	AF	W			CCD	
3. WET PERIODS	Weather & Climate	Hazards	CC	D	AF	W			CCD	
4. HOT PERIODS	Weather & Climate	Hazards	CC	D					CCD	
5. COLD PERIODS	Weather & Climate	Hazards		D					CCD	
6. SST	Weather & Climate	Hazards	CC		AF					CBD
7. VOLCANOES	Geology	Hazards		D						
8. EARTHQUAKES	Geology	Hazards		D						
9. TSUNAMIS	Geology	Hazards		D						
10. SLIDES	Geology	Hazards		D						
11. LAND AREA	Geography	Resistance	CC							CBD
12. DISPERSION	Geography	Resistance	CC							CBD
13. ISOLATION	Geography	Resistance								CBD
14. RELIEF	Geography	Resistance	CC						CCD	CBD
15. LOWLANDS	Geography	Resistance	CC						CCD	CBD
16. BORDERS	Geography	Resistance								CBD
17. IMBALANCE	Resources & Services	Damage								CBD
18. OPENNESS	Resources & Services	Hazards								CBD
19. MIGRATIONS	Resources & Services	Resistance								CBD
20. ENDEMIC	Resources & Services	Resistance								CBD
21. INTRODUCTIONS	Resources & Services	Damage	CC							CBD
22. ENDANGERED	Resources & Services	Damage								CBD
23. EXTINCTIONS	Resources & Services	Damage								CBD
24. VEGETATION	Resources & Services	Damage				W		CCD		CBD
25. LOSS OF COVER	Resources & Services	Hazards				W		CCD		CBD
26. FRAGMENTATION	Resources & Services	Damage								CBD
27. DEGRADATION	Resources & Services	Damage				W		CCD		
28. RESERVES	Resources & Services	Hazards				W				CBD
29. MPA's	Resources & Services	Hazards								CBD
30. FARMING	Resources & Services	Hazards								
31. FERTILISERS	Resources & Services	Hazards				HH		W		
32. PESTICIDES	Resources & Services	Hazards				HH		W		
33. BIOTECH	Resources & Services	Hazards								
34. Fisheries	Resources & Services	Hazards								
35. FISHING EFFORT	Resources & Services	Hazards								
36. WATER	Resources & Services	Hazards	CC			HH		W	CCD	
37. Air	Resources & Services	Hazards				HH				
38. WASTE	Resources & Services	Hazards								
39. TREATMENT	Resources & Services	Hazards				HH		W		
40. INDUSTRY	Resources & Services	Hazards								
41. SPILLS	Resources & Services	Hazards								
42. MINING	Resources & Services	Hazards								
43. SANITATION	Resources & Services	Hazards				HH				
44. VEHICLES	Resources & Services	Hazards								
45. POPULATION	Human populations	Damage	CC	D				W		
46. GROWTH	Human populations	Hazards						W		
47. TOURISTS	Human populations	Hazards								
48. COASTAL	Human populations	Damage	CC	D						
49. AGREEMENTS	Human populations	Hazards								
50. CONFLICTS	Human populations	Damage								

Each country has its EVI score and status, but the drawback of this framework is that there were instances where information could not be gathered. For example, the data percentage of Andorra is only 42%, and that of Western Sahara amounts to 48%. None of the countries managed to obtain 100% of the information. The countries which were able to collect the most data were Germany and Canada, among others, with 98%. The statuses of countries ranged from extremely vulnerable to resilient.

The 2010 Environmental Performance Index (EPI) was originally released in Switzerland at a forum meeting by the World Economic Forum. It is divided into two sections; the first objective is 'environmental health' which includes indicators that affect human health, the second objective is 'ecosystem vitality' which includes indicators that directly affect ecosystem health. In total it consists of 25 indicators. The rationale behind such an index is so environmental decision making can be based on an empirical fact-based assessment of the environment. The mission statement reads to "inform but also stimulate debate on defining the appropriate metrics and methodologies for evaluating environmental performance" (EPI, p. 3).

Another project to measure human security index (HSI) was initiated by D. Hastings and in 2010 the second version was issued which incorporated the environmental factor. The aim was to start analysing development by looking at various factors and not just GDP growth. At present, a prototype HSI is being created for sub-national levels in order to be able to assess regional differences within the same country (Hastings, 2011). The real challenge for creating an index was twofold, i.e. the lack of consensus on the meaning of human security and lack of credible and valid data.

However this did not stop the development of the HSI, and UN seems to have made the measure of human security a priority. “Since then a discussion and prototyping process has led to the formulation of the HSI around a trinity of Economic, Environmental, and Social Fabric Indices, with each of those indices comprised of datasets, and indicators produced by the research community” (ibid., para 6). Since this study focuses on the role played by the environment in security studies, the environmental indicators are of utmost interest.

The environmental component evolved from ‘environmental protection’ indicator in the first version to the ‘environmental fabric index’ of the second version. There are 4 data sets determining this component, i.e. (i) Environmental Vulnerability Index (calculated by SOPAC); (ii) Environmental Performance Index 2010 (calculated by Yale University & CIESEN, Columbia University); (iii) Tonnes CO₂ (GHG) Emissions Per Capita (calculated by WRI); (iv) Population growth rate 2010 – 2050 (calculated by government Census, UN Pop. Division & SPC).

The first data set is the EVI which has already been discussed above. The second data set is another index, the EPI which was also already addressed. It is not clear how these indicators are scaled however the mathematical formulas are publicly available. The population density is calculated by dividing the populations by their respective area km², data which is obtained from the CIA World factbook. This indicator is scaled by first dividing the projected 2050 population by the 2010 population, then the resulting number is entered into a formula and the result is an index between 0 and 1. Calculating the greenhouse gas emissions per capita makes sense if the other two

indexes did not already include it. Finally the computation to calculate the total Environment fabric Index involved is done by finding the numerical mean of EVI, EPI, Emissions per capita and Population changed. Indeed the major shortcoming of the HSI is that some data has been doubled and taken into account twice. However it is important to note that one of the project's purposes were to foster discussion on the subject of calculating human security, rather than simply provide a mathematical solution.

The Happy Planet Index is calculated by the New Economic Foundation (NEF), an independent think-tank based in the UK. Although not fully focused on the environment, this Index takes into consideration the human impact on environment. The rationale is that human well-being also depends on the environment. Each country's HPI is calculated by life expectancy at birth, subjective life satisfaction and a country's ecological footprint.

The overlap between indexes is present. For example one of the indicators of the EVI is the number of environmental treaties in force in a country, the subject of the EPI. This means that as a result the EFI is full of double indicators.

5.3.3 Main Indicators

One of the biggest problems in creating a typology framework is dealing with the overlap certain areas create. Any framework, in these early stages of theory construction, are susceptible to change. These main indicators are no exception. However it is imperative that any effort at this point to objectively discuss a measure of environmental security is encouraged.

Biodiversity

Tropical forests are important for humanity for their rich biodiversity, but many human activities put that natural habitat at risk, including deforestation, overgrazing and soil erosion (Ullman, 1983; Kaplan 1994; Romm, 1993; Homer-Dixon, 1991).

Subsequent to the failure of the climate conference in Copenhagen in 2009, Goodland (2010) set out to establish what had been overlooked. He made a reference to a report published in 2006, entitled 'Livestock's Long Shadow', by the FAO which "analyses the climate impacts of livestock – assessing for the first time in a major publication the greenhouse gas emissions attributable to livestock's supply chain from forests cleared to supermarkets" (p. 50). The attestation of the report is that "the only way to increase global supplies of meat and dairy products is through more intensification and more deforestation" (p. 50). That has been followed up and agreed to by others, such as the Director-General of the ILRI. In estimating the greenhouse gas emissions attributable to livestock worldwide, the report draws the conclusion that there are too many livestock in the world today. In response to this, the author refers to another paper (Goodland & Anhang, 2009) which appeared in the 'World Watch' magazine which contains a list of sources of greenhouse gas emissions which 'Livestock's Long Shadow' had failed to consider. "The key ones that we found missing are in the land set aside for both livestock and for food production, along with several other significant sources" (Goodland, 2010, p. 50). The report also notes that livestock's shadow is responsible for over half of the human caused GHG emissions (51%). and

highlights the importance of avoiding emissions by livestock. It also proposes a treatise “for achieving almost as much GHG reduction as was expected to be agreed on in Copenhagen – simply by replacing 25 per cent of today’s livestock products with better alternatives” (ibid., 51).

In 2009, livestock in developing countries had been significantly harmed due to climatic events. Livestock products, however, cannot be considered on national or regional levels. This since they are global commodities which are transported worldwide; in addition to the fact that climate change respects no national boundaries. As already noted above, policymakers must make decisions on the premise that the impact of livestock on climate transcends borders. Although the most efficient way to reverse climate change would be to reduce livestock numbers, due to the “land used for livestock and feed that could regenerate forest, along with the high levels of relatively short-lived methane attributable to livestock” (ibid., p. 51), the most highly considered option has been that of renewable energy. The downside to this is that people would have to wait a long number of years before sufficient renewable energy infrastructure could be developed to reduce emissions significantly. He criticizes the FAO in its plans of assessing greenhouse gas emissions by region and livestock type, due to the fact that there are billions of tons of CO₂ which remain invariable, regardless of the animal type, and also due to more billions of tons of greenhouse gas emissions which remain invariable due to other aspects of livestock production.

Since the Copenhagen treaty was not agreed upon in 2009, regulation would be likely to be left to the local level. Goodland (2010), in this regard, proceeds to discuss

issues present for governments, together with recommendations. So far, governments have sought food security by “boosting productivity on existing agricultural lands in a ‘green revolution’ using inputs such as fertilisers and biocides (and by) converting more forest to agriculture” (p. 53). This, unfortunately, holds in stark contrast with the world’s attempt at reducing carbon. The author proposes a third option to promote an increase in the nutritional value of agricultural lands by ensuring food security to people from existing fertile lands (in order to be able to produce their own food security whilst improving human diets. By the year 2050, governments will be faced with the problem of how to feed the eight or nine billion people expected to inhabit the planet at the time. In order to cater for this situation, food production must double – something which is practically impossible, considering that today, food production is struggling to keep up with the current demand. Depletion of fish stocks is one example (Homer-Dixon, 1991). If governments fail to attempt to reverse climate change in the very near future, coping with 2050 would be impossible. One major problem today, notes Goodland, is that most grain is being used to feed livestock and fuel vehicles, rather than used to feed people. In addition, “there are now more than one billion hungry, yet more than one billion are overweight or obese. The world wastes enough food to feed three billion” (Goodland, 2010, p. 54).

Population and Land Use

Surging population all over the world is a concern (Ullman, 1983; Kaplan, 1994). Human society has not reached its growth limit and it has been estimated that by the year 2100 the planet would be home to around 10 to 14 billion human inhabitants. At

present, the world is already faced with limitation problems, in particular with regard to resource efficiency. The inevitable question, at this point, is that asking how many people the Earth can support. The quality of life these people will have is yet unknown. Population growth, indeed, lies at the core of environmental trends.

Population is not the only thing expected to grow: with the growth of population, world economic activity is bound to increase drastically too. Economic growth implies greater energy consumption, increased emissions and waste, conversion of land from its natural state, as well as a greater demand for products of natural systems. It is highly questionable whether, when faced with such demands, basic human needs will be able to be met, and whether the planet will be capable of coping with the projected inevitable economic growth.

As Homer-Dixon (1991) notes, degradation of agricultural land use is a problem. “Unfortunately many of the Third World countries plagued with rapid population growth have managed agricultural poorly” (Brown, 1977, p. 29). Food security has as much to do with biodiversity as with sustainable land use. However the problems of land use run deeper (Dodds & Pippard, 2006). For example the use of land mines in conflict zones are a big concern especially after the conflict is over, and the land is too dangerous to be used. In fact “large areas of land would be rendered inaccessible to the local population, leading to reduced land use, loss of livelihoods and displacement” (Rampolla, 2005, p. 159).

Waste Management

The problem of wasteful consumption is interlinked with that of rapid population growth, especially in developing countries' quest to achieve the standards of the industrialized world (Ullman, 1983). The problem in bad waste management may lie with spreading disease (Kaplan, 1994).

The issue is more complicated with regard to nuclear waste. Bae (2005) argues that radioactive waste is a security issue for two reasons. Firstly the perception of radioactive material as a threat exists after the world witnessed the use of the first atomic bomb in Hiroshima, to the Chernobyl disaster and lately to the Fukushima nuclear disaster. Secondly the state would be the principal actor with the responsibility of proper disposal of radioactive material, or at least the state would be responsible of enforcing certain standards.

Land and Air Pollution

Pollution is an all-encompassing term and refers to a variety of environmental problems. There is much information about air pollution nowadays. Humanity should always ensure a global supply of clean air which is essential for survival (Ullman, 1983; Kaplan 1994). There is a long list of dangerous air pollutants, and the American EPA and European Environment Directorate-General have strict regulations to safeguard the environment in this respect. Moreover, the advantage of this indicator is that it is relatively easier to measure than other indicators. For example it is easy to measure the density of hazardous air pollutants in the air, and likewise it is easier to compel targeted objectives. The phase out of Chlorofluorocarbons (CFCs) and

Hydrochlorofluorocarbons (HCFCs) was brought about after discovering the damage these pollutants were doing to the ozone layer and nowadays are banned. Acid rain leading to acid deposition is a problem that gained much attention over the years (Romm, 1993; Homer-Dixon, 1991). It is brought about by harmful emissions in the air reacting with water molecules in the air and their precipitation causes serious damage. The implementation of the national emission ceilings directive in Europe is aimed to reduce harmful emissions in member states and is an example of international cooperation to curb environmental degradation. Indeed these types of problems are best tackled on a regional level in order for countries to complement each other in their efforts to reduce pollution.

Land pollution can also be easily measured and regulated for it is based on scientific calculations. Moreover there is consensus in the scientific community over what constitutes as a polluting substance, which greatly helps to enforce legislation and policies to contain pollution.

Energy Independence

“The demand for energy is increasing at a significant rate due to the exponential growth of the world population” (Demirbas, 2008, p. 41). Energy security entails being able to meet the energy demands of a population in a sustainable and safe way. That is the dilemma brought about by nuclear power plants. These are very efficient but very dangerous and have high maintenance costs as well. Instead energy independence denotes two things; firstly how a specific country or region is able to

provide sufficient energy needs without endangering its own population and; secondly how a country will not depend on foreign economies (such as oil economies) to provide energy. Hence why the title of the main indicator reads energy independence rather than energy security.

Another aspect of energy security that is highly contested at the moment is the dangerous situation of having badly maintained nuclear reactors. This is an important issue that has recently come up with the last nuclear disaster in Fukushima. It has encouraged policy changes to remove the energy dependency on nuclear power. Germany already gave in to the environmental pressure groups and is seeking alternative energy sources. The French presidency has pledged to increase the budget to strengthen safety procedures in nuclear power plants by a billion euros. However, despite a recent power plant explosion in France (which resulted in no radiological consequences), there is still no sign of France changing its energy policy direction. After all, the country contains 58 nuclear power plants and it obtains 74% of its energy from them.

Simpson (2007) mentions three countries in the Global South (Thailand, Burma and Laos) and explains how the powerful elite use the excuse of energy security to go after large-scale energy projects to the detriment of the local community. He termed the whole situation a 'love triangle' to denote the relationship between corporate and government elites in the three countries. These advocate for energy security and for the necessity of large-scale energy projects, which bring about total disregard for human rights linked to degradation of the environment. For example the Salween

River dams in Burma export energy to Thailand but unfortunately destroy the delicate ecological systems in Burma; in Laos the same situation arises due to the Nam Theun 2 dam which also exports energy to Thailand; the Yadana gas pipeline running through Burma to Thailand is another example of this. The local community are not getting any of the energy, and they are the ones paying the brunt of the costs as these large-scale projects induce environmental degradation and it affects their subsistence living. They are oppressed by authoritarian regimes in Burma and Laos, which makes it possible for the elite to reap all the benefits. Therefore, within the realm of human security, these large-scale energy projects are doing more harm than good.

Water Scarcity

When speaking of water scarcity, WHO starts out by establishing that it is a mere misconception to assume that areas having plenty of rainfall cannot fall victims of water scarcity. Rather than depending on the amount of rainfall that there is in a particular area, water scarcity relies solely on the way in which such water is conserved, used and distributed. If water is not properly conserved and distributed, people would automatically be forced to consume unsafe drinking water, which in turn, makes them largely prone to disease. The WHO shockingly points out that at present, “more than 10% of people worldwide consume foods irrigated by wastewater that can contain chemicals or disease-causing organisms” (WHO, n.d.)

Clean water is also important (Ullman, 1983). Ullman, in fact, uses the need for clean water in order to go against Hobbes’ idealism of security as an absolute value: many

would be willing to trade security in the traditional sense for improved quality of water. Indeed, pollution and overuse of water supplies is a major problem, and is one of the seven major environmental problems which could plausibly lead to conflict between countries over the decreasing supplies of water (Homer-Dixon, 1991). Kaplan (1994) notes that this is already evident, as tensions arose between Hungary and Slovakia over the damming of the Danube. In addition, Kaplan also speaks of the ever-growing potential war between Egypt and Ethiopia, over Nile River water.

Droughts are known to cause incredible damages to crops, consequently resulting in famine (Brown, 1977). This situation was seen in relation to the drought-induced ecological deterioration of Ethiopia's food system, as well as in Bangladesh back in the 1970s, when the rice crop was damaged due to extensive flooding, caused by extensive deforestation. Homer-Dixon (1991), like Brown, related the problem of water scarcity to deforestation, as in the Philippines land-clearing decreased the land's ability to retain water during rainy periods. The catastrophic result to this was the emergence of flash floods.

Water Depletion is a reality (Kaplan, 1994). As far back as 1991, Homer-Dixon was already speaking of the problem of water shortage in Syria, having a mere water availability of around 600 cubic metres per capita annually, and a population growth rate at 3.7% acting as a further strain on water supply.

Climate Change and Risk of Natural Disasters

The ozone layer was already an issue in the late 19th century (Ullman, 1983; Romm, 1993). Ozone depletion is one of the major problems that challenges the future of humanity (Homer-Dixon, 1991).

Global warming is caused by atmospheric build-up of carbon dioxide and other greenhouse gases (Romm, 1993; WCED, 1987). These are likely to lead to the disruption of agricultural systems – which would consequently result in mass population movements; the rise of sea levels (Kaplan 1994); as well as the disruption of breeding grounds of economically important fish species (WCED, 1987). Homer-Dixon (1991) considers the human induced GHG global warming to be one of the major problems faced by humanity.

Global warming is affecting marine ecosystems and marine life, terrestrial ecosystems, and the animals and people who depend on them. Likewise, arctic warming is having and will continue to have numerous effects on the arctic environment. The melting ice is causing the rise in the sea level affecting marine ecosystems and marine life. Subsequently the animals and people depending on those resources for their survival are affected as well. That is also the indirect effect which is sometimes overlooked when discussing global warming. Usually people envisage the phenomenon as seen in many blockbuster movies such as the '*Day After Tomorrow*' or '*2012*'; however the effects of global warming include more subtle changes as well. Indeed climate change may cause erosion and damage to coastal communities, and the thawing permafrost may impair housing and other infrastructure on land changing the habitat of the local flora and fauna (West, 2009). In the international climate change debate, the security implications of a changing climate

have been discussed within the context of an environmental security perspective. Many scholars view the potential for climate-related conflict to be a major concern into the future. Global climate change may override other environmental concerns such as food insecurity, water stress and disappearing biodiversity (de Ville, 2008). Climate change leads to mass migration (or climate refugees) as land turns into desert and populated coasts are submerged. Storms and floods destroy the livelihoods of rural populations depending on subsistence farming. Conflicts and tensions are likely to occur in countries hosting the new influx of migrants as ethnic rivalries are amplified to extreme levels. The link between environmental security and climate change has to be more widely acknowledged and due attention must be given to the accelerating effect climate change will have on environmental security (ibid.). On the other hand whilst Detraz & Betsill (2009) agree that this should be on the radar of policy makers, they don't think that environmental conflict should be the driving concern in the climate change debate.

Chapter 6: Conclusion

Running through the environmental security literature shows how difficult it is to ground these subjects into a cohesive theory. Inevitably much of the effort goes into the rejection of the realist perspective on security and embracing more the constructivist lines of thought. The shift from national security to a broader sense of human security has inevitably resulted in changes of the role played by the environment in security. In the Cold War era's national security, the environment was confined to natural disaster relief (in fear of mutual nuclear destruction). The multidimensional and ambiguous human security framework, although difficult to define, offers different descriptions of the functions of the environment. "Despite articulated links to both the development and security fields, alternative definitions abound for human security, and the research and policy agenda for human security remains unclear" (King & Murray, 2001/2002, p. 585). The overlap between human security and sustainable development, human development and human rights are great. Different theoretical schools of thought exist to expound on the links between security and environment.

Several themes appear across the rich literature on environmental security. Environmental degradation transcends borders and for this reason it does not appear within national security. Indeed it could be said that along with other factors it helped the shift towards human security. Poor countries are hit harder by environmental

degradation because the global South does not have the same means to adapt to environmental change as does the global North. For this reason it is the responsibility of the most affluent states to be the driving force behind international cooperation to avert and cope with environmental change.

Despite these theoretical conclusions, there is a growing need to move from abstract thinking to empirical conjectures of security, including environmental security. Emerging frameworks are starting to appear to calculate human security, and the efforts will only intensify in the future. Such a feat can only be accomplished by a multi-professional team endowed with different expertise such as statistical knowledge, biological and scientific backgrounds into different realms such as waste management, energy and climate change to name just a few. Debate and disagreements will continue to evolve until consensus is reached over how to measure environmental security, and in this respect the race is on.

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Curriculum Vitae

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