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Environmental Refugees: Defining Environmental Migrants and Long Term Solutions to Deal with Environmental Migration

Alena Perout

A Thesis

in

The Department

of

Geography

Presented in Partial Fulfilment of the Requirements
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ABSTRACT

Environmental Refugees:
Defining Environmental Migrants
and
Finding Long Term Solutions to Deal with
Environmental Migration

Alena Perout

Environmental degradation and population migration is becoming growing concern to the international community. An increasing number of environments around the globe are suffering from deterioration and an increasing number of individuals survive in an environment which can barely support life. As environmental degradation continue, many will have to migrate to a new location. Some will move within their own countries. Others will cross international borders. Those who have the means might leave at an early stage of environmental deterioration. Many, often women and children, will wait until the last possible moment to leave their homes and will feel a sense of desperation similar to that of the millions of refugees around the world today who flee political and social unrest. Those who migration due to the degradation of their environment are environmental refugees.

Environmental refugees will only be created if certain conditions exist in a region. This form of migration is also mostly the result of drastic changes in

the environment and is more likely to occur in developing nations that are not able to cope with relatively rapid changes in the environment. In addition, situations of environmental migration seem to be more common. The goals of this thesis are to provide a definition of environmental refugees and to identify potential source regions of environmental refugees. These are clearly the first steps towards finding short term and long term solutions to prevent further suffering and to curtail future environmental refugee flows.

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Many thanks to the following individuals and organizations for their support and patience during the last few years: members and staff of the Canadian Human Rights Foundation; Ruth, Leanna, Yolande and Max; Marnina, Suzanne, Louise and Shirley; Vanier College, Rosalie, and Pauline; Alan Nash and Jackie Anderson at Concordia; Dave for the maps; the Centre for Refugee Studies; the Centre for Sustainable Regional Development; the lake; Provo. I would also like to thank Lena Perout and Lena Gartenmann. Most of all, thanks to my husband, Jon, for supporting me financially and emotionally through all the inspirations and frustrations.

This thesis is dedicated to Petr Perout.

Until the philosophy that holds one man superior
and another inferior
is finally and permanently discredited and abandoned.

Until there are no longer first class and second class citizens
of any nation.

Until the colour of a man's skin is of no more significance
then the colour of his eyes.

Until basic human rights are equally guaranteed
without regard to race.

There is war.

Until that day, the dream of lasting peace,
world citizenship,
rule of international morality,
will remain a fleeting illusion,
to be pursued but never attained .....

Bob Marley, **War.**

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GLOSSARY OF ABBREVIATIONS

EEC	European Economic Community
ICIHI	Independent Commission for International Humanitarian Issues
ICRC	International Red Cross and Red Crescent Society
IDRC	International Development Research Council
NGO	Non Governmental Organization
OAS	Organization of American States
OAU	Organization of African Unity
RPG	Refugee Policy Group
UNCED	U. N. Conference on Environment and Development
UNDRO	United Nations Disaster Relief Organization
UNEP	United Nations Environment Programme
UNHCR	United Nations High Commissioner for Refugees
UNPROFOR	United Nations Protection Force
USAID	United States Aid Programme
WFED	World Federation for Environment and Development
WCED	World Commission on Environment and Development

CHAPTER 1

INTRODUCTION

The most common definition of environmental refugees, provided in a 1985 United Nations Environment Programme (UNEP) report [a list of abbreviations is provided on the previous page], is

> those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life (El-Hinnawi, 1985:4).

For the first time, this definition attempted to explain a term that had been increasingly appearing in documents dealing with migration and environmental degradation. Yet this definition was faced with several criticisms; it was too broad, too vague, and to some, it could not be linked to existing tools which already deal with refugees. This thesis will attempt to clarify the concept of environmental refugees by establishing guidelines which could assist in identifying the onset of a situation which could result in environmental refugees. These guidelines will then provide the basis for a comprehensive definition of environmental refugees and suggest ways of providing a solution to the problem.

Towards achieving this objective, Chapter 2 of this thesis, will examine published literature on refugees, mass exodus and, environmental degradation and migration. The first part of Chapter 2 will show how thoughts on environmental refugees have evolved over the past decade. The literature reviewed will demonstrate that many authors have attempted to identify, define and categorize groups of environmental refugees. Their approaches have evolved from a broad definition of those fleeing environmental degradation to an analysis of

causes of environmental flight. Therefore the term environmental refugees has been defined as being a result of specific causes rather than examining the group of people affected. Although listing the reasons of environmental flight does not provide a definition in the traditional sense, it will be extremely helpful when looking at ways to find solutions to future environmental migration.

The second section of Chapter 2 will examine aspects of international refugee law. International refugee law is well recognized, and many categories of refugees are already protected by the provisions outlined in the 1951 Convention and the 1967 Protocol. It is essential therefore to examine how environmental refugees are specifically recognized within these documents. While many authors believe that environmental refugees have a right to basic assistance under the present system, others contend that all information on this form of migration is not conclusive. Thus, they consider it presently impossible to grant protection to those fleeing enviromental deterioration. Environmental refugees tend to travel in large numbers, often from problems in southern countries, a fact helping to create an ever increasing rift between the North and South. The sheer magnitude of these events make most international relief organizations ill-equiped to deal with mass exoduses. Chapter 2 will thus provide a basic understanding of the issues, as well as existing definitions which will be used as a basis to define further environmental refugees and the reasons behind their formation.

Chapter 3 of this thesis will provide the foundation for a detailed analysis of the problem by examining four case studies to illustrate situations where environmental degradation has caused migration or refugees, and that could worsen in the future. Whether a country is part of the developed or developing world, it will be affected by environmental change. However, source countries

of environmental refugees will mostly be those suffering from poverty, high population growth, and "underdevelopment".

This chapter will first briefly describe particular concepts, theories, and definitions related to global environmental change — i.e., change that will affect all nations no matter what their level of development — as well as some of the reasons why such global changes are occurring. This is followed by an analysis of the environmental situation in four regions of the developing world and former Eastern Bloc, including Haiti in the Caribbean, Bangladesh in Southern Asia, the Sahelian zone of Africa, and the "Triangle of Death" in Central Europe. The reasoning behind the selection of case studies will also be examined.

The fourth chapter of the thesis provides an overview of the environmental situation and attempts to review and explain definitional problems previously identified. This chapter also attempts to explain why the international community has difficulty recognizing this growing group of migrants and in particular the dilemma facing the United Nations as to who should provide assistance and protection to environmental refugees and migrants. In this chapter, information from previous chapters will be used to help determine ways by which the international community can deal with environmental refugees. The chapter classifies the various levels of causes of environmental exodus into structural, root, and immediate causes. Structural causes include aspects of development, poverty, social chaos, mismanagement, or political instability where all are often associated with developing nations. Root causes are often gradual changes in the environment, such as desertification and contamination, throughout which people can continue to survive. Although the environment is degrading, it is still possible to intervene by providing technological help and thus alleviating the suffering of people living under environmental stress. Finally, immediate caus-

es are environmental events which create a situation where people have to flee in a relatively short period of time, as is the case for catastrophic events such as floods. The discussion attempts to describe how a solution to environmental flight can be obtained by intervening during the evolution of environmental degradation. Following a proactive approach, through intervention at the source, rather then a reactive approach, as was the case with most international conventions and agreements, is the only way to curtail mass exodus from an affected region.

Chapter 5 concludes the thesis by providing a flowchart outlining the formative process for environmental refugees as well as definitions of environmental refugees, environmental migrants, development migrants, and development refugees. This chapter thus presents a more comprehensive definition of environmental refugees and defines a stepwise procedure towards defining this group of migrants. Finally, the chapter examines future directions which should be taken by international organizations or governments towards preventing or limiting the occurence of this situation. These groups should now react in a tangible manner to changes in the environment, and solve problems related to environmental stress before they force more individuals to leave their hostile environments and thus become environmental refugees.

CHAPTER 2

ENVIRONMENTAL DEGRADATION AND MIGRATION

2.1. Introduction

This chapter includes a review of the literature which pertains to the topic of environmental refugees which has been divided into two sections. The first section provides a general overview of the evolution of the concept of environmental refugees by reviewing literature which shows the development of the concept, describing literature critical of the concept, and finally studying literature which responds to these ongoing criticisms.

The second section deals with international refugee law and how the international legal system can cope with problems associated with environmental refugees by first, examining the concept itself and second, dealing with its application — i.e., the determination of status.

2.2. Identifying environmental refugees

The problem of environmental degradation causing migration was first examined in detail by Sadruddin Aga Khan in 1981, in his *Study on Human Rights and Massive Exoduses*. This study, conducted at the request of the United Nations Commission on Human Rights, was mandated to investigate the increase in refugees and displaced persons, particularly in Asia and Africa. Massive exoduses often lead to economic, social and ecological problems in host countries and further exacerbate the refugee situation in these regions. The study observed that "the international community is increasingly concerned with causes behind mass exodus and measures to avert new flows of refugees" (ibid.:58). An additional concern of the Commission was that traditional solutions, for example, voluntary repatriation, resettlement locally and resettlement

in a third country, were now no longer feasible. As stated in an article by Simmance, "the isolated individual fleeing from political persecution has become numerically insignificant compared to an exodus of major populations groups" (Simmance, 1987:9) .

While Sadruddin Aga Khan's study clarified many aspects of "mass exodus", such as classifying *mass exodus migration* in quantitative[1] and qualitative[2] terms (Sadruddin Aga Khan, 1981:12-13), there still remained a lack of any comprehensive terminology describing the various groups of migrants. "Various categories of people are lumped together under the same general heading" of refugees, whether they are fleeing political persecution or are victims of natural disasters (i.e., environmental refugees) (ibid.: 13).

The study also emphasized the point that countries with unstable political situations, mostly situated in the developing world, were bearing the brunt of refugee migration by stating that

> All mass exoduses which took place during the decade under review [1971 to 1981] poured forth from regions where the prevailing situation prevented citizens from exercising their political rights (ibid., 1981:26).

"People flee their native lands for a variety of reasons, and usually as a result of a combination of factors" (ibid.: 31). Therefore, environmental degradation is only one, although an essential factor among the many factors that contribute to population migration. Sadruddin Aga Khan notes that in developing countries, traditional *push factors* such as political or religious persecution and civil strife should be viewed against the backdrop of other fundamental problems such as uncontrolled population growth, food scarcity, insecurity and unemployment. In addition, "ecological deterioration which natural or [hu]man-made disasters

have wrought" (ibid.: 36) seems to be increasing in importance and is therefore contributing to the problem of mass exodus. This includes "[t]he process of deforestation which has gone on for centuries, overgrazing, severe drought conditions [which] have led to a worsening of conditions in many countries of the South" (ibid.: 37).

While Sadruddin Aga Kahn introduced the concept of environmental degradation causing migration in 1981, the actual term "environmental refugee" was only introduced in 1985, in a report published by the United Nations Environmental Programme (UNEP). According to El-Hinnawi, the author of this report, the term "environmental refugee" refers to

> those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardized their existence and/or seriously affected the quality of their life. (El-Hinnawi, 1985: 4).

He further identifies three broad categories of environmental refugees, as seen in Figure 2.1.: Those who are "temporarily displaced"; "those who are permanently displaced or resettled" within their own country; and, those who "migrate from their original habitat (permanently or temporarily) to a new location, whether foreign or domestic" due once again to environmental stress (ibid.: 4-5).

The first category includes individuals fleeing natural disasters, such as earthquakes, cyclones or floods, and tends mostly to affect the poor in developing countries. In these situations the majority of refugees will return to their country or region of origin once the crisis has passed.

The second category includes people who are permanently displaced within their own country due to the construction of a dam, a mine, or other large project which might affect a previously inhabited area of land. In such situations

Environmental Refugee:
Evolution of the concept over the last decade.

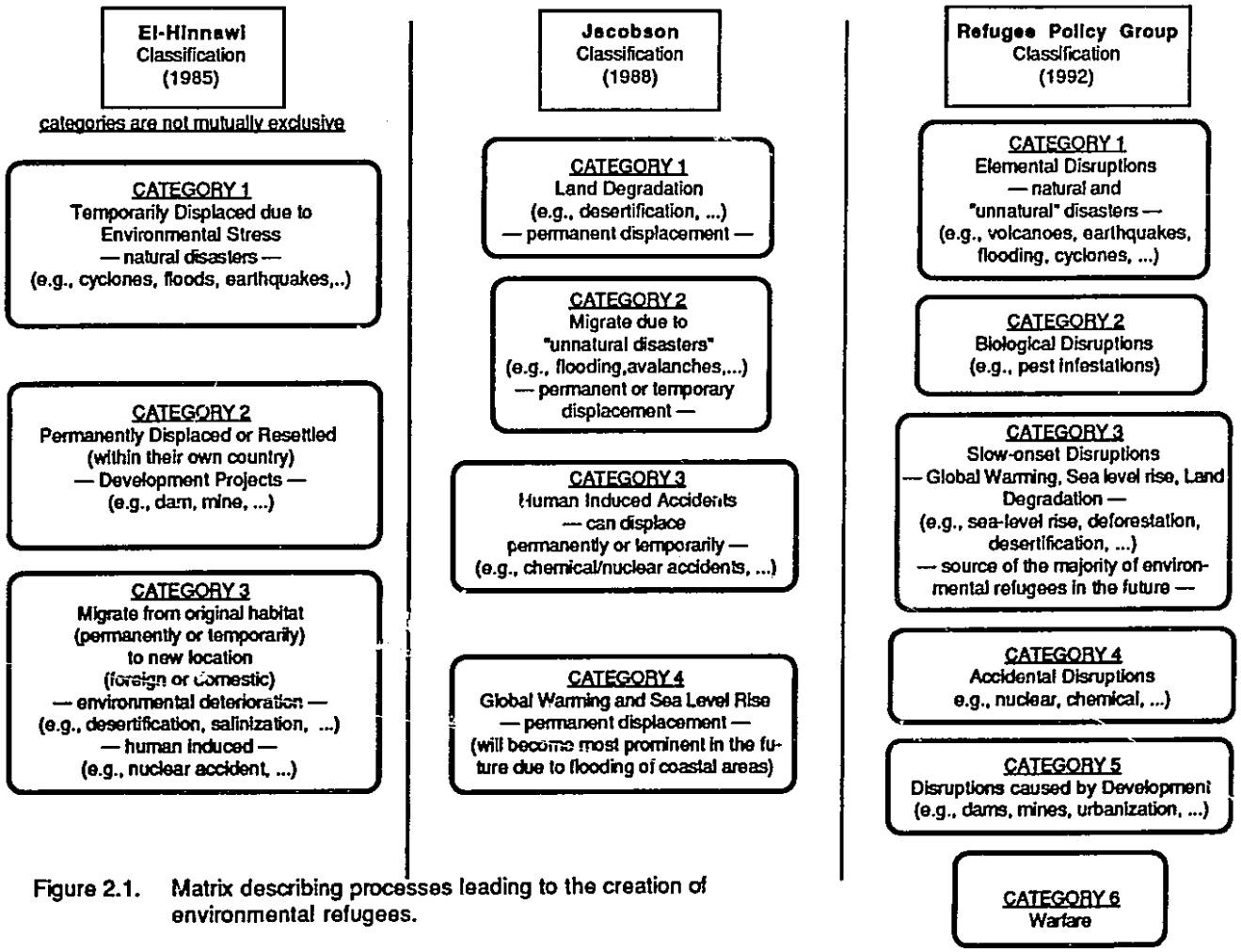


Figure 2.1. Matrix describing processes leading to the creation of environmental refugees.

governments usually resettle these individuals as part of overall government policy and planning programmes.

Finally, the third category of environmental refugees includes those individuals who flee areas undergoing gradual processes of environmental degradation, such as desertification, salinization or soil erosion. El-Hinnawi adds that this category includes people who flee disasters induced by human activity (ibid.: 5). It is important to note the extent and variety of processes which could have the potential to produce environmental refugees as defined by the author. El-Hinnawi concludes by stating that none of the three categories is mutually exclusive and therefore in many, if not most instances, a combination of situations could arise at any one location.

El-Hinnawi's ideas are further developed by Jacobson in a report published by the Worldwatch Institute (see Figure 2.1.). Jacobson states that

> [b]ecause migration is a last resort — when conditions become so poor that life itself is in imminent danger — the rising number of environmental refugees should be seen as an important indicator of the extent and severity of worldwide environmental deterioration (Jacobson, 1989:60).

Jacobson bases her environmental refugee producing criteria on the categories of environmental refugees developed by El-Hinnawi, and reorganizes his scheme into four categories which she relates to the major causes of environmental refugees. These categories are land degradation, *unnatural* disasters (classified as natural disasters in El-Hinnawi's scheme), human-induced accidents, and the threat of global warming and sea-level rise (ibid.: 7-8).

Jacobson argues that an increasing number of individuals worldwide are living on deteriorating land. This, combined with the fact that "[m]ost governments do not recognize environmental decline as a legitimate cause of refugee

movements", creates a situation where the migrants in question continue to move on to increasingly marginal lands. In addition, they continue to cultivate land which should be in fallow, and thus large-scale migration becomes the only alternative available to them.

Jacobson goes on to suggest that some "natural" events, such as recent changes in global weather patterns or increased flooding in areas prone to flooding, have actually been caused by human intervention in the environment. "[M]ore people are being killed or displaced by avalanches, cyclones, earthquakes and floods", and this indicates a "strong human component" (ibid.: 16).

Her third category, which includes chemical or nuclear accidents and volcanic eruptions, clearly demonstrates the important point that El-Hinnawi's categories are not mutually exclusive, as these events can displace individuals temporarily or permanently, and are both natural and human induced.

Finally, the threat of global warming and accompanying sea-level rise is seen by Jacobson as a very important process which will affect many developing countries, in particular island communities and shoreline communities located at lower elevations (ibid.: 18). She argues that those environmental refugees displaced by a rise in sea-level will become the most prominent group in the relatively near future and all environmental refugees resulting from this situation will be permanently displaced.

Jacobson concludes by stating that the "permanently displaced" is the largest and fastest growing group of refugees in the world today, due mostly to large scale land degradation in developing countries of Africa and Asia (ibid.: 38). However, some authors working in the area of environmental migration feel that this statement is impossible to prove because no numbers are available to support such a conclusion (Mougeot, 1992; Kritz, 1990; Lonergan, 1995).

For example, Mougeot states that when movements of people are reported they are general and approximate numbers. In addition, criteria defining displaced individuals are not specified and the source of this information is never identified (Mougeot, 1992:2).

A recent framework which could permit a greater understanding of the relationship between environmental degradation and refugee flows was proposed in January 1992 by the *Refugee Policy Group* (RPG) (see Figure 2.1.). The RPG identified six causes of environmental migration:

elemental disruptions;

biological disruptions;

slow onset disruptions;

accidental disruptions;

disruptions caused by *development ;* and

environmental warfare.

Elemental disruptions including volcanic eruptions, earthquakes and other "natural" disasters, tend to occur rapidly, and are prompted by natural forces (e.g., tectonic activity). In most cases the migration which could result will depend on the number of individuals living in the affected area (RPG, 1992:5). The RPG also included cyclones and flooding (excluding flooding caused by sea-level rise) as elemental disruptions. While these occurences have a "rapid onset," not all authors believe they are exclusively "natural" phenomena as their frequency could be influenced by human factors (Islam, 1991:12).

The second cause of environmental migration, biological disruptions initiated by insects or pests, are no longer much of a concern according to this report because of the introduction of various pest controls. However, some recent

events of pest infestations in both developed and developing countries clearly contradict this belief as thousands of acres of crops have been destroyed following large-scale pest invasions. In fact, Briggs (1993:189) states that

> losses to agricultural pests have doubled or tripled since the introduction of the new synthetic toxins. Former innocuous insects have become pests when their predators and parasites have been killed by pesticides, and many kinds of pests have become resistant to pesticides.

In addition, Furtick states:

> Although the magnitude of losses from pests has not been adequately measured even in the most highly developed countries, these losses are recognized as being substantial (Furtick, 1993:181).

Yet, on-going use of pesticides is necessary for continued agricultural growth (ibid.:182). Because there is only limited testing done on the effects of pesticides and herbicides on the environment, long-term environmental change due to pesticide use will continue to be difficult to predict (Briggs, 1993:193).

Slow-onset disruptions, including global warming with sea-level rise, deforestation, land degradation and desertification, are caused by a combination of ecological and human activities over extended periods, and tend to leave large numbers of people vulnerable (RPG, 1992:6). These disruptions could become the major source of environmental refugee flows in the future, not only because of their gradual appearance (i.e., individuals feel they can continue to cope with the situation until it is too late), but also because they could affect large portions of the Earth's land mass (Independent Commission on International Humanitarian Issues [ICIHI], 1986a:31).

It is apparent from this literature that accidental disruptions and disruptions caused by development are generally caused by industrial development,

extreme poverty, or by urbanization. Accidental disruptions, such as the chemical leak in Bhopal (India, December 1984) — which resulted in over 3,500 deaths and 200,000 injuries (Goldfarb,1993:179) — have not as yet officially caused the migration of environmental refugees (Jacobson, 1988:12). However, these events have disrupted the lives and displaced more than 200,000 people who have had to flee their immediate environment (RPG, 1992:9).

Development projects and urbanization also affect the most vulnerable of populations i.e., the rural poor and indigenous populations. Large scale development projects, such as the Three Gorges dam project in China (Whitney, 1992:24; Zmolek, 1992:33, Fearnside, 1988:617-618), could cause the resettlement of approximately 1.4 million people, including 330,000 farmers. In addition, in excess of 400,000 "illegal residents" of urban areas will not be compensated by the Chinese government since they migrated to the area without permission.

Urbanization and poverty have been rapidly increasing since rural-urban migration reaches uncontrollable proportions in most of the developing world. For example, in Latin America the growth of urban centres did not occur in a gradual and organized manner. In addition, urban growth was highly unequal as the rural poor flocked to the urban slums of larger cities (Portes, 1989:7-8). According to Lazarus (1990:13), by the year 2000, 77 percent of Latin America's population will be urban, and will further contribute to environmental change in the region.

Finally, warfare has made the environment a major target of conflict (RPG, 1992:9). According to Goldfarb (1993:179), evidence of environmental devastation due to military conflict is clear in Vietnam, where 5 million hectares of land was destroyed through the use of Agent Orange, a dioxin-based defoli-

ant. The environmental consequences of *environmental warfare* have been discussed for some time and have therefore been incorporated into the responsibilities of the International Red Cross (ICRC): The Geneva Convention and Protocol II forbids the use of chemical weapons, and general environmental destruction during wartime (ICRC, 1977; Rogge,1992:31; Lundberg, 1989:202).

Since the publication of the RPG report, the literature has shown an increased interest in environmental refugees. During the World Womens' Congress for a Healthy Planet, a prelude to the Earth Summit held in Miami in November 1991, several authors, including Dr. Wangari Maathai, founder of the *Greenbelt Movement of Kenya*, attempted to tackle the problem of environmental refugees. Dr. Maathai stated that continued environmental degradation such as "soil erosion and loss of soil fertility (well known particularly in Africa)" has led farmers "to practice subsistence agriculture, forcing them to mine their resource base and exacerbate poverty and continued degradation of the environment" until migration is the only recourse.

Subsequently, at the International Institute of Environmental Degradation, Population Migration and Global Security held at Whistler, British Columbia in August 1992, workshops and presentations were organized to debate the concept of environmental refugees, and whether such migrants actually exist. Although many authors still had difficulties using the term "environmental refugee", due mostly to the fact that "people displaced by disruptions in the natural environment ... are not officially classified as refugees". An Institute report estimated that up to 10 million people are presently displaced through the degradation of their environment (Kavanagh, et al., 1992:8). According to the report, large numbers of refugees can also have a significant impact on the environment Thus, environmental degradation can be both a *cause* and an *effect* of mi-

gration. Finally, it should be noted that both Kavanagh et al., (1992) and Suhrke et al., (1991) distinguish between *environmental refugees*, which they define as people who are displaced due to sudden and catastrophic environmental change, and *environmental migrants*, which are those displaced due to gradual deterioration of the environment. In both cases the results can be devastating, and often irreversible.

Environmental change is not a new phenomena and human populations have often migrated to escape environments which could no longer support them (Goudie, 1983:19). Yet today, in many parts of the world, *changing climatic conditions* combined with *increased population* — over 6.1 billion by the year 2000 (World Commission on Environmental and Development, WCED, 1990:101) — have exhausted the environment , and people have consequently needed to move (Gleick (quoted in Bush, 1990:22)). Those living in developing nations where population growth is at its highest, will be most affected by environmental decline. This inspires some authors, such as Kumar et al. (1992:3), to ask whether the Earth has the "carrying capacity" to sustain the growing global population into the next century. Other authors believe carrying capacity should be seen as "an empirical notion" which has been "faulted so many times that it should already have been discarded" (Brookfield, 1992:29). People and countries are no longer solely dependent on local food production, agriculture, or their natural resource base for their basic needs, and increased international exchange will reduce this dependance even further (Norse, 1992:10). But although "we are supporting the largest number of humans ever to have inhabited the planet at one time" (Sadik,1992:21), many are surviving while having an inadequate standard of living. Therefore, the threat of further environmental deterioration and the continuing creation of environmental refugees remains a prob-

lem for the future.

This section has examined relevant literature on the topic of environmental refugees. Over the last decade there has been a steady evolution of the concept, as an increasing number of authors have attempted to describe and define the processes which could create environmental refugees flows. Many scholars, however, remain critical of this concept as is demonstrated in the next section.

2.3. Literature critical of the concept of environmental refugees

While many authors believe in the existence of environmental refugees, and therefore believe that the term should be defined, others doubt that it is possible to find a clear definition of environmental refugees and to prove their existance. According to Luc Mougeot of the World Bank (1992:1), the lack of a definition, and more importantly the lack of information on the number of refugees affected by environmental degradation, are some of the reasons why large international organizations such as the World Bank are reluctant to accept environmental refugees as legitimate refugees.

In a document written in June 1992, Mougeot examined the literature on environmental refugees and determined that not only do authors not quantitatively demonstrate that flight is caused by environmental degradation, but that those described as environmental refugees are leaving their home regions due to a combination of factors, only one of which is environmental degradation. This tendency only accentuates the vagueness of the concept of environmental refugees. In addition, much of the research on the production of environmental refugees remains speculative, dealing with phenomena (such as substantial sea-level rise) that have yet to occur. Mougeot states that

> given the lack of basic knowledge it is premature to argue the validity of the concept of environmental refugee based on speculative extrapolations about people who will leave areas currently populated that could be "lost" [...]. In any case this remains an exercise in projections into the future, rather than evidence of the present (ibid.: 6).

He observes that if researchers dealing with environmental refugees see the influencing of national and international policy as one of their major goals, theories of environmental flight based on actual evidence are required. Therefore, according to Mougeot because "no logical typologies, concepts and definitions" (ibid.: 6) are available, informed decisions are impossible. In addition, few areas of the globe seem to exist where environmental degradation has worsened to such an extent and with such speed, that local solutions could not be found (ibid.:12).

The belief that there is a need for additional research on the concept of environmental refugees is reiterated by Mary Kritz in her paper on "Climate Change and Migration Adaptations" prepared for the Population Association of America where she deals specifically with climate change and the production of environmental refugees. Kritz states that

> [f]urther research is clearly needed on climate and migration relationships and frameworks need to be developed that would assist us in carrying out that task. To move that work ahead, it is important that migration scholars begin to incorporate measures of climate and physical environment into their studies (Kritz, 1990:11).

Kritz believes that "climate per se is seldom the root cause of migration" but rather one more factor that contributes to already difficult living conditions in developing countries (ibid.: 10). In addition, "no mechanism exists so far to carry out an impartial refugee population census" for all forms of refugees (Saddrudin Aga Khan, 1981:38).

Although Mougeot doubts the existence of environmental refugees, he concedes that there are a "limited number of extreme situations of local environmental degradation which have already forced people out of their habitual places of residence (Mougeot, 1992:10)". One possible case are dryland situations in the Sahelian zone, but, he argues that although there is probably movement of people due to environmental deterioration, it is surprising (especially considering the number of relief agencies working in the area) that very little empirical data is available (ibid.)

2.4. Responding to critical views on environmental refugees

There are different points of view in the literature that respond to those critical of the concept of environmental refugees. For example that of Islam who, in 1992 introduced the term "ecological [r]efugees" in reference "to people fleeing natural disasters such as earthquakes, hurricanes, floods, volcanic eruptions and the like" (1992:2). Although he points to the fact that many authors will refer to these individuals as "environmental migrants". He argues that *refugee* is more appropriate than *migrant* because it gives a greater impression of the desperation experienced upon flight from a region. He also argues that classifying these individuals as "economic [r]efugees" further minimizes the helplessness and desperation of people fleeing areas of environmental crisis (ibid.: 6-7).

Other authors taking the same approach to the matter include Otunnu who specifically looks at the refugee situation in Africa, a continent which has 10 percent of the world's population and 25 percent of the world's refugees (Otunnu, 1992:11). While many factors lead to the creation of large numbers of refugees, Otunnu feels that African refugee movements are often caused by environmental factors, such as deforestation, drought, and desertification. He states

that in most African nations there are problems of population growth, poverty, and lack of environmental education. He also adds that "environmental" concerns must become an important part of the economic and social policies if environmental degradation and subsequent refugee flows are to be curtailed in the near future (ibid.: 4). He observes that if the international community is to control the flow of environmental refugees

> an understanding of climatic behavior that allows for early warning systems to operate adequately is urgently required for the region (ibid.: 14).

He adds, in conclusion, that if environmental refugees are to be protected by the international community, under the auspices of the United Nations,

> the word "refugee", given its meaning under international law, is too inadequate to accommodate environmental refugees (ibid.: 14).

It is interesting to note that the suggestion of providing a clear definition and an early warning system to identify potential refugee-producing areas dates back to Saddrudin Aga Khan's 1981 report.

An alternative point of view comes from Europe where "migration resulting from environmental harm" is often "viewed as an issue of international concern" (RPG, 1992:43). Europe's proximity to major refugee producing areas has made many European nations increasingly apprehensive about keeping their relatively "open" immigration policies. This is due to a perception that more individuals who should not be eligible for refugee status are trying to enter their countries.

In D. Joly and R. Cohen's publication entitled Reluctant Hosts: Europe and Its Refugees (1989), the authors show how Europe is dealing with the increasing problems which recent immigration has produced. According to the

authors, the difficulties encountered include increased racism, increased anti-semitism, and the growing belief that others are taking advantage of the generosity of the European Community. According to Wolfers (1991:32) although economic conditions in Asia and Africa remain a strong "push factor", more individuals are migrating due to environmental degradation and, if current trends continue, environmental refugees could make up the majority of refugees to Europe. Europe's reaction so far has been to further limit the number of refugees accepted within its borders (Newman: B3). It seems that this has not resulted in a reduction of migrants trying to enter, but rather in an increase of illegal immigration, particularly from Africa, which in turn creates the potential for additional turmoil (Altmann, 1991:38; Heinrichs, 1991:50-54).

As the first part of this chapter has demonstrated, there is an ever increasing volume of available literature describing the concept of environmental refugees. Yet many still feel that this group of migrants has not been clearly not accurately defined. To respond to this lacunae, efforts are being made to provide an accurate definition and classification system to understand fully the reasons and consequences of environmental flight and the majority of efforts are concentrated within the realm of international refugee law.

2.5. Environmental Refugees: The Legal Perspective

2.5.1. The concept of refugees

The standard document in international refugee law is the 1951 *Convention relating to the Status of Refugees* (Hathaway, 1991:6). Article 1A(2) of the Convention states that the term "refugee" shall apply to any person who

As a result of events occurring before 1 January 1951 and owing

> to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his [or her] nationality and is unable, or owing to such fear, is unwilling to avail himself [or herself] of the protection of that country; or who, not having a nationality and being outside the country of his [or her] former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it (United Nations, 1978:86).

Thus, factors which confirm refugee status according to this definition include fear of being persecuted due to race, religion, nationality, political opinion, or membership of a particular social group (Nash, 1989:6). According to the Convention, refugee status provides individuals with such protection as freedom of movement (Article 26), and non-expulsion and non-return (by force) to their country of origin (Articles 32 and 33). This latter protection, the principle of *non-refoulement* (Article 33 of the Convention), will be examined in detail later in this section.

Providing protection to refugees, and in some cases determining refugee status for those who fall within the scope of the Convention, is the responsibility of the office of the *United Nations High Commissioner for Refugees* (UNHCR). The UNHCR's statute mandates it to seek

> permanent solutions for the problem of refugees by assisting governments and, subject to the approval of governments concerned, private organizations to facilitate the voluntary repatriation of such refugees, or their assimilation within new national communities (United Nations, 1978:95).

According to Hathaway (1988:183), recent history has demonstrated that the UNHCR is broadening the protection it offers, and moving towards a more flexible interpretation of the Convention. Refugee law was originally designed to control the "flow of migrants across European borders, as well as provide a compromise for restrictive immigration policies" (Hathaway, 1991:2), which ap-

peared throughout the European continent following the Second World War. In addition, Hathaway (1988:184) states that refugee law did "not derive from a commitment to either humanitarianism or human rights," but was linked to the national goals of the more powerful states. In 1950, state efforts concentrated on "trying to limit the ... scope of refugee protection in ways that suited their particularized national interests" (ibid.).

The 1951 Convention was therefore designed to deal with events in the years immediately following the Second World War and events within the European continent. To remove this restriction, on October 4, 1967 the *Protocol Relating to the Status of Refugees* came into force. It stated that

> new refugee situations have arisen since the Convention was adopted and ... the refugees concerned may therefore not fall within the scope of the Convention [and] it is desirable that equal status should be enjoyed by all refugees covered by the definition in the Convention irrespective of the dateline 1 January 1951 (United Nations, 1978:93).

The Protocol is applied by the States Party to the Convention without any geographic or time limitation (ibid.). Today, over 100 states have ratified the 1951 Convention and its 1967 Protocol (Cohen, 1990:6), and thus should adhere to these regulations.

International refugee law finally recognized the increasing number of refugees located outside the European continent but the 1967 Protocol still had one major limitation. While the literature now recognized migrants from all continents, many Third World migrants were still excluded as their flight was more often prompted by factors unrelated to "persecution," such as natural disasters, famine, or drought. This relatively recent realization by the legal and scientific communities that other factors were increasingly causing refugee flows has giv-

en more importance to the study of "environmental migration" in international law.

In 1980, for example, the Executive Committee of the UNHCR noted with concern the "continuance of large-scale movements of uprooted individuals and groups seeking refuge from man-made and natural disasters" (Goodwin-Gill, 1988:151). In response to such statements, the UNHCR has now been authorized to aid the full range of involuntary migrants, including the victims of all forms of disasters, and to contribute to the resettlement of these individuals in their efforts to return home (Hathaway, 1991:13).

Since the establishment of the Convention and the Protocol, organizations such as the UNHCR, the International Committee of the Red Cross (ICRC), and the Washington-based Refugee Policy Group, have encouraged research on the issue of environmental refugees. Considerable contributions to the field have been made by authors such as Howard Adelman (1988; 1990), director of the Centre for Refugee Studies at York University; Guy Goodwin-Gill (1990; 1988), of the Department of Law at Carleton University and Rabbi W. Gunther Plaut, whose document entitled Refugee Determination in Canada: Proposals for a New System (1986) was written in view of introducing Canada's new refugee determination process.

Literature focusing on international refugee issues has demonstrated that many refugees are no longer seen as only fleeing traditional factors (i.e., political and civil strife, religious persecution), although these are still considered the major causes of migration. Increasingly, a major preoccupation in the literature — first raised by the noted legal scholar Guy Goodwin-Gill — focuses on the questions: "who are refugees?", and "what is causing large-scale migration?"

(1988:150).

According to Hathaway (1991:27), international law now recognizes four categories of refugees. First, Convention or Protocol refugees; second, those protected by regional agreements (i.e., by organizations such as the Organisation of African Unity (OAU), or the Organization of American States (OAS)); third, "refugees who fear harm as a result of serious disturbances of public order"; and finally, a group which includes all persons who are involuntary migrants as a result of natural or "man-made causes." This last category, Hathaway argues, may claim institutional support from the UNHCR by way of material assistance, aid in voluntary repatriation or resettlement, and in some cases legal protection (Hathaway, 1991:27). However, Hathaway observes that while their *existence* is recognized, this fourth class of refugees still has no special claim to *protection* under international law (ibid.).

According to Goodwin-Gill (1988:150), the question as to whether such protection could be granted to this fourth class of individuals, sometimes called "displaced persons", has yet to be determined [3]. To correct this problem, some of the literature has demonstrated an attempt to redefine refugee groups by considering the root-causes of their flight. Zia Rizvi (1988:110) — the Secretary General of the Independent Commission on International Humanitarian Issues — divides the factors that create refugee flows into three major categories: "primary factors" (i.e., those enumerated in the 1951 Convention), "secondary factors" (i.e., military, ideological and cultural, enumerated in the 1967 Protocol), and "auxiliary factors," including economic, demographic and ecological phenomena. According to Rizvi, in recent years, "auxiliary factors" have become increasingly important, and have begun to dominate the refugee scene (1988:113). More importantly, Rizvi claims that victims of drought, crop failures,

famines, have dramatically increased, and many have crossed international borders "simply because of geographical proximity or tribal affiliations," and often end up in UNHCR refugee camps (ibid.).

According to Smyser (1987:17), since the creation of the UNHCR, global, regional and local cases of environmental deterioration has forced

> the General Assembly [to] consistently expand the range of persons included within the High Commissioner's responsibilities and functions, thus at the same time further widening the scope of the types of persons who were to be treated as if they were refugees even if the legal definition was not changed (Smyser, 1987:17).

Consequently Goodwin-Gill states that in the eyes of the UNHCR "the refugee in flight from persecution and the refugee in flight from the violence of a 'man-made disaster' are alike" (1989:13), and the range of individuals included within the formal Convention refugee definition can easily include those who flee environmental deterioration.

2.5.2. Application of the concept of environmental refugees

The literature suggests that there are basically three factors within the internationally recognized refugee determination process that are making the conceptualization of "environmental refugee" more difficult: first, the individualistic nature of refugee determination; second, the principle of *non-refoulement*; and finally, the tendency of western nations to regionalize refugee flows and the causes of those flows.

2.5.2.1. individual status

According to Goodwin-Gill, the strengths and weaknesses of the 1951 Convention and the 1967 Protocol lie in their individual approaches to the criteria of refugee status and protection (1991:28). He suggests that the Convention

and Protocol strongly protect individual human rights, but often seem to ignore newly arising situations of need, such as one which might arise in the case of environmental refugees. More refugees in Africa and Asia tend to migrate in large groups (Sadruddin Aga Khan, 1981:38). Currently, it is difficult, costly and lengthy, for such groups to proceed through the official refugee determination process. In addition, according to documents prepared by (Coles, 1986:DocF8), the Executive Committee of the UNHCR stated that

> large-scale influxes frequently create serious problems for States, with the result that certain States, although committed to obtaining durable solutions, have only found it possible to admit asylum seekers without undertaking at the time of admission to provide permanent settlement of such persons within their borders.

The UNHCR has committed itself to updating its protection for refugees travelling in large groups by providing adequate assistance to them (ibid.:DocF-8). In addition, the Organization of American States (OAS), the Organization of African Unity (OAU), as well as non-governmental organizations such as the International Red Cross (Krill, 1988:145), have agreed to change their international refugee policy to more strongly provide rights to protection to groups of refugees when a situation of mass migration arises. Indeed, Goodwin-Gill suggests that the UNHCR has also adopted this way of thinking, although this is not yet officially recognized (1988:151). Undoubtedly, until this is accomplished, the international community's ability to respond adequately and rapidly to situations of mass movement sparked by environmental collapse is severely hampered.

2.5.2.2. non-refoulement

The second factor which the literature suggests makes the status of "environmental refugee" more difficult to determine is the *principle of non-refoulement*. As stated in Article 33 of the 1951 Convention,

> [n]o Contracting State shall expel or return ("refouler") a refugee in any manner whatsoever to the frontiers of territories where his [or her] life or freedom would be threatened on account of his [or her] race, religion, nationality, membership of a particular social group or political opinion (United Nations, 1978:91).

Although this article limited those who could receive protection Grahl-Madsen argues that in today's context of humanitarian assistance, non-refoulement also

> applies ... to situations where forcible return would expose displaced persons to warfare, civil disturbances or other conditions of disrupted social order... . Moreover, there can be no doubt that we cannot exclude conditions of famine or natural catastrophe from the ambit of the principle; in the face of certain or almost certain death, or serious harm to body and health, the quality of being a human being in distress must override considerations of citizenship and strict treaty obligations (Grahl-Madsen, 1991:8).

Most authors, including Stein (1991:192), continue to believe that voluntary repatriation of refugees to their homeland remains the ideal and preferred solution to a refugee situation Yet Stein also sees the increase in the number of refugees fleeing natural or "man-made disasters," as a factor which makes this more difficult to achieve[4].

2.5.2.3. regionalization

Recently, many developed nations have attempted to "regionalize" refugee problems, therefore keeping those in need of protection within their regions of origin and away from their own borders. Hathaway (1988:188) believes that the "primary function of the legal component of the protection system was the promotion of the national interest of states, not refugees," with the goal of preventing undesired flows across their borders. However, such measures contribute nothing to the responsibility of the international community to find solutions to the problems of refugees, as Goodwin-Gill notes (1988:153). According to Kumar et al. (1992), environmental deterioration should not be examined in a

strictly regional or local context. Major causes of changes to the environment are often global in nature, and thus the only way to reduce global environmental deterioration is through continued negotiations and international agreements (such as the Montreal Protocol on Substances that Deplete the Ozone Layer[5] drawn up by the United Nations) (ibid., 1992: 150).

2.6. Summary

This literature review has demonstrated that over the last ten years many authors have attempted to identify, define, and categorize groups of environmental refugees. Environmental degradation seems to be of particular concern to some authors, as an ever increasing number of people seem to be affected by changes in their environment. As yet, environmental refugees do not receive the same protection under international law as those fleeing for political, social, or religious reasons — in large part because a legally recognized definition is not yet available. The evolution of literature on the topic demonstrates that recognition of environmental refugees in international law will not be immediate. In lieu of this recognition, a system designed to cope with this growing group of migrants is needed to prevent further damage to the environment and further conflict between nations.

Because environmental refugees tend to travel in large numbers — often as part of a massive exodus — and stem from environmental situations in developing nations, international organizations are not able to adequately deal with them. While many authors, as we have seen, believe that environmental migrants have a right to basic assistance (i.e., food and shelter), others still feel that all information on this form of migration is not as yet conclusive and therefore it is impossible to grant protection to those fleeing environmental deteriora-

tion on any large scale. The World Bank is one of the major international organizations which holds this view. However, even those who doubt the existence of environmental refugees, such as Mougeot, agree that not all evidence has as yet been collected, and it is very possible that "the potential for mass displacement" is growing as "populations have been coping with reduced environmental potential" for some time (Mougeot, 1992:12).

A second problem associated with the recognition of environmental refugees by the international community is the reaction from countries within the developed world, in particular western Europe. In most cases the West has ignored long-term solutions in favour of short-term responses, which are a long way from contributing to a solution to the problem. So far, as this review has shown, these responses have included legal debates on the validity of the issue, as well as the most dramatic response of limiting immigration into western European countries.

There are several reasons why Europe has had difficulty dealing with the existence of environmental refugees. First, as this review has indicated, the European fear of being the favored destination of environmental refugees has brought many countries to insist that there is no such event as an environmental exodus. In addition, scholars suggest environmental degradation often occurs in conjunction with other factors. In particular, it often causes economic and social chaos in the affected region, and therefore the primary push-factor — environmental degradation — is practically impossible to identify. Many Western nations also feel that a substantial number of individuals are taking advantage of international refugee laws and are claiming refugee status when they are actually fleeing economic conditions in source countries.

If environmental refugees are to be eventually recognized, this review

has shown that further research is clearly required to acquire a greater understanding of the causes of environmental flight. Although the literature has not provided us with any conclusions, it has provided some basic understanding of the issues. Acknowledging this fact, and providing a clear definition for those who are affected, will be a potential and logical first step towards clearly identifying and subsequently solving the continued problem of mass exoduses due to environmental deterioration.

CHAPTER 3

ENVIRONMENTAL CHANGE AND POPULATION MIGRATION: REGIONAL CASE STUDIES

3.1. Introduction

The previous chapter has demonstrated that although there is an interest in environmental refugees, there is still very little recognition of this class of migrants. This fact is due primarily to a lack of solid and indisputable evidence which many organizations, individuals, and nations require to make a precise determination of their status. Thus, it must be borne in mind that the category of environmental refugees can only be created if environmental degradation occurs. Clearly, there are many worldwide situations where environmental degradation is occurring, where people are migrating and thus possibly creating environmental refugee flows. However, it is impossible to cover all such situations within the scope of this thesis and, therefore, four specific regions have been chosen for in-depth analysis. Criteria for case study selection have been detailed in Table 3.1.

As illustrated in Table 3.1., the countries and regions described in each of the four case studies were selected due to particularly strong evidence of environmental degradation — related to a variety of causes — as well as an association with Canada, where the Canadian government has at one time provided aid to the country or accepted a large number of immigrants and refugees from the region. The first case study examines the environmental situation of several islands in the Caribbean and focuses on the Republic of Haiti in particular. If global warming were to accelerate beyond current levels, many low lying is-

Country and/or Region	Description of natural environment	Most prominent causes of environmental degradation	Most prominent results of environmental degradation	Relationship with Canada and Canadian Aid
Haiti (Caribbean-Antilles)	- Tropical island originally covered with tropical forest vegetation. - Previous agricultural activities including coffee and other tropical crops, have clear cut most of the island.	- poorest nation in America. - high population density. - clear cutting for export of lumber and agricultural extensification. - past government policies.	- severe soil erosion. - serious flooding during rainy season. - desertification. - sedimentation and siltation. - mud slides, etc....	- receives substantial aid. - important source of immigrants to Quebec. - presently under UN and US protection — recently established democratic government.
Bangladesh (Southern Asia)	- seasonal monsoons. - mostly low-lying area. - located in a deltaic region of three great rivers: the Ganges, the Brahmaputra and the Meghna.	- severe poverty. - high population density. - deforestation in the Himalayas (Bangladesh, Nepal, Bhutan, and India) and other hill areas.	- regular and serious flooding during monsoon season. - cyclonic storms and tidal surges. - sedimentation, siltation. - salinization and waterlogging of soil.	- Was one of the first countries to receive aid through the Commonwealth - Since 1950s has received more aid from Canada
The Sahel (Sub-Sahara Africa)	- transitional semi-arid environmental zone. - low rainfall. - sparse vegetation.	- fragile environment prone to deterioration due to grazing and trampling. - growing population. - increasing sedentary farming practices replacing traditional methods.	- drought followed by severe famine. - firewood scarcity leading to more deforestation. - no grazing land for livestock	- receives more international aid per capita than other region. - many countries are part of the Francophonie and therefore receive aid from Canada.
Central and Eastern Europe	- varied environments. - mostly deciduous forest cover. - extensive river systems used for transportation.	- highly polluting industries concentrated in designated areas (e.g. The Black Triangle). - regulated yet uncontrolled dumping of toxic and other waste.	- severe water, land and air pollution leading to various chronic illness. - acid rain. - radioactive contamination due to nuclear fallout and dumping.	- since the "fall of the Berlin Wall" is receiving substantial aid from Canada and other western nations — mostly to promote "democratization".

Table 3.1. Case Studies Overview

lands would lose most or all of their best agricultural land due to sea-level rise, as well as drastically alter the availability of fish stocks in the region. Changes in climate patterns could also increase the intensity of tropical weather disturbances. Haiti, the poorest nation in the Americas, was chosen as a case study because the country is suffering from severe soil erosion due mostly to the fact that the majority of forested land on the island has been clear-cut. This is bound to continue as the population of the nation increases and more people desperatly seek to cultivate increasingly unfertile land. With every storm, tons of topsoil are washed away into the ocean. Although Haiti is one of the nations which received the most aid from Canada, the future prospects of a safe and productive environment are very poor. Haiti's present mass exodus can perhaps be blamed on political and social unrest as well as serious environmental degradation.

The second case study deals with one of the world's poorest countries, Bangladesh, in the Southern Asian region. The Canadian International Development Agency (CIDA) provides more aid to Bangladesh than to any other country (Abbott, 1991:40). Therefore cases of environmental degradation in this region should be of great interest to Canadians, as more aid will probably be needed to cope with the degrading situation. Bangladesh was chosen as a case study as occurances of flooding are becoming more frequent, population in low-lying areas continues to rise, and more people seem to be leaving the area due to environmental disasters.

The third case study reviews the problem of desertification and focuses on the Sahelian zone of Africa. The Sahel has been chosen as a case study because throughout the past three decades, the region has suffered through several lengthy periods of drought which not only have disrupted social and ec-

onomic systems in the region, but also have created several periods of migration to neighbouring countries. A growing population, combined with increasing desertification, will no doubt create situations of environmental refugees flows in the future.

Finally, the chapter will conclude with an analysis of environmental conditions in Central and Eastern Europe. Former Eastern Bloc countries have produced a large number of refugees throughout the Cold War period, but rarely were they associated with environmental decline. Since the end of the Cold War, however, studies have indicated that environmental decline, due mostly to industrial pollution — including atmospheric, water, and soil pollution — is very common. Sources of decline in these regions can be attributed to facts as common as agricultural waste or as devastating as nuclear fallout from reactor accidents or testing of nuclear weapons. The region will therefore have to make effective decisions about its future environmental policy in order to slow the adverse affects to the health and welfare of its population. In the meantime there has been an increased awareness of environmental problems in the area and increased involvement from western nations to find solutions to some of these problems. Further degradation could of course lead to masses of people leaving the region to seek a more healthful environment elsewhere.

As stated previously this chapter will examine various case studies which illustrate how situations of environmental degradation could lead to the creation of environmental refugees in the future. To begin with, the first section of this chapter will provide an overview of common themes associated with environmental change including global warming, population growth, urbanization, and will briefly define the concept of *carrying capacity* to provide the reader with a greater understanding of these issues if required.

3.2. Global environmental change and migration

There are many situations of environmental decline throughout the world. One of the significant factors when dealing with environmental degradation is the fact that global environmental effects will affect all nations no matter what level of development. The distinction which can be made however, is how each nation deals with the results and often how much effort and funding they can provide to prevent some of the serious consequences associated with environmental degradation. This section will thus discuss matters of a global nature which affect all nations, no matter what their political and economic status.

3.2.1. Global warming, population growth, and urbanization

Throughout the 1980s, the average yearly temperatures of the planet have gradually increased. According to climatologists, 1990 was the warmest year on record (Bongaarts, 1992:3; Grubb, 1990:67). This trend is not proof positive that global warming is occurring, but many scientists believe that continued increases in greenhouse gases in the earth's atmosphere will cause temperatures to rise, resulting in changes in weather patterns, and warming heating up of the oceans, leading to melting of ice caps, and thus a substantial rise in sea-level.

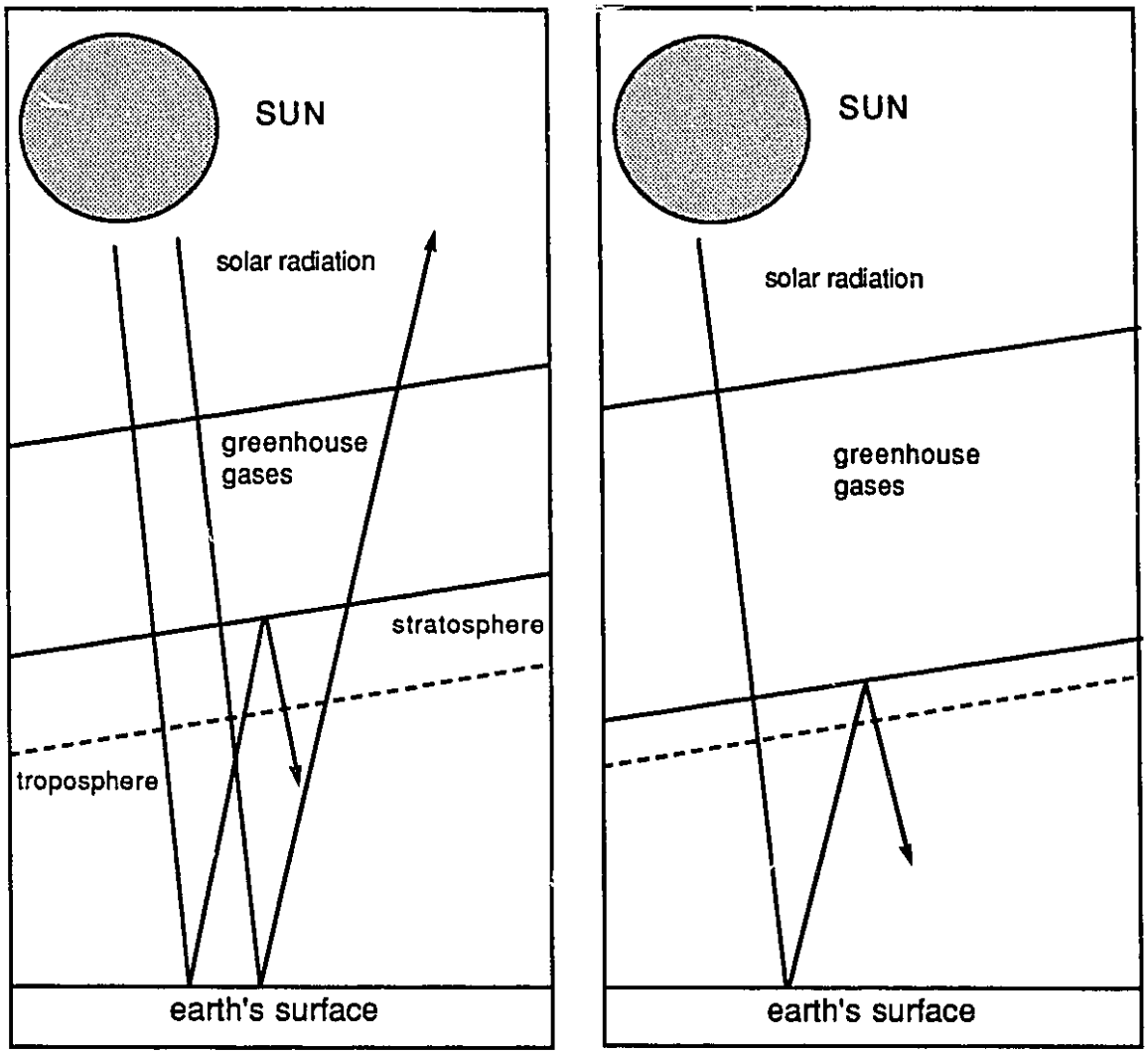
Global warming (see Figure 3.1.) is due to an increase of greenhouse gases in the atmosphere — carbon dioxide (CO_2), water vapour (H_2O), nitrous oxide (NO_2), methane (NH_4), and chlorofluorocarbons (CFC) — which provide a naturally occuring "protective blanket" that regulates the earth's temperatures (i.e. the "Greenhouse Effect"). Since the dawn of industrialization, and especially since the 1950s, the principal gases (mostly CO_2, Chlorofluorocarbons (CFCs) and NH_4) responsible for this phenomenon have been rapidly accumulating in the atmosphere (IDRC, 1992:10). The level of CO_2 in the atmosphere

PRESENT

A natural concentration of Greenhouse gases in the atmosphere regulates the Earth's average temperature due to a balance between solar energy trapped in the atmosphere and energy re-radiated into space.

FUTURE

Accumulation of these gases will prevent more radiation from escaping into space which could result in an increase in global temperatures.



"Greenhouse gases" include CO_2, H_2O (vapour), CH_4, NO_2, Chlorofluorocarbons (CFCs, O_3 (ground level).

The burning of fossil fuels, and other industrial chemicals has contributed to the increase in greenhouse gases in the atmosphere. Also, cutting down and burning of forests and poisoning of oceans has eliminated a major carbon dioxide sink. Carbon Dioxide (CO_2) accounts for 50% of the Greenhouse Effect and levels are increasing rapidly. CFCs are also devastating as there are no naturally occuring cycles of CFC on the planet and no method of removing the gas from the atmosphere.

Figure 3.1. The Greenhouse Effect and Global Warming

Sources:
Kumar, R., Murck, B., 1992; Gabler, R.E., Sager, R.J., Wise, D.L., p.66, 1994.

today is 20 to 25 percent higher than the pre-industrial level due mostly to the burning of fossil fuels. If these components continue to be added to the atmosphere at the projected rates, significant warming of the globe will continue to occur throughout the next century (Bongaarts, 1992:4; Grubb, 1990:68)[6]. Although many researchers feel that it is too late to stop global warming, most believe it can be slowed and its suddeness blunted if actions to control or curb emissions of greenhouse gases are taken now (IDRC, 1992:10)[7].

Unfortunately, there is virtually no way of predicting the effects of global warming on local or regional climate and weather patterns ahead of time and there can only be speculation as to what actually will occur in the future (ibid.:8). Most studies suggest that some of the results from this phenomenon will be drier continental interiors, rapid northern migration of ecosystems, fiercer tropical storms because of greater temperature differences in the atmosphere, and finally rising sea-levels (Grubb, 1990).

The reason why this situation exists is simple: the earth's resources have been exploited for decades without taking into consideration its possible degradation. According to Grubb (1990:77),

> [the earth] has been treated as a free and infinite resource, and humanity is now faced with the realization that it is weaker and actually has been partially used up.

Yet despite increasing evidence, there is no agreement among scientists nor politicians that the earth's warming will be serious enough to create situations of migration (IDRC, 1992:8).

Whether there is a serious change in climate or not, Bongaarts (1992:5-6) identifies two important steps which will assist in dealing with the effects of global warming. The first is recognizing and quantifying the relative contribution of

developed and developing nations to global warming and environmental degradation. The second is limiting population growth, which, in conjunction with global warming, has the effect of worsening many of the situations of environmental decline faced by developing nations today.

Traditionally, global warming is blamed on the activities of the developed world — 70 percent of global fossil fuel emissions originate in countries of the developed world (ibid.:3) The future, however, also depends on actions taken by developing nations as they are presently contributing to global warming by releasing CO_2 when cutting down trees or burning forests. Tropical forests usually constitute a large carbon sink which is now adding 10 to 20 percent of CO_2 emissions to the atmosphere as it is being destroyed (Flavin, 1990:7; IDRC, 1992:10-11). Yet global warming is not a priority in the southern hemisphere which has more pressing concerns to deal with — such as survival. As a result many traditional development organizations in the North are not concerned either. For example, in a 1989 policy paper, the World Bank did not include reforestation in its recommendations stating that "the economies of rigorously pursuing reforestation are probably not favorable at this time" (Flavin, 1989:59). Yet environmental change will affect the environments in both northern and southern regions, although southern countries will suffer most. Already income disparities within countries of the developing world, and between countries of the North and South are substantial. With continued environmental degradation these disparities will inevitably increase (Ireland, 1990:18), and in turn their refugee creating potential will increase.

It is no longer constructive for the North and South to argue about who is to blame and who should carry the expense of taking care of the world's environment. To succeed, the North must take most of the responsibility for past

mistakes, but both sides must realize that the majority of devastating effects, will affect the poorest nations of the world. Solutions also lie in the South, however, (Bongaarts, 1992:8), and because global warming is a global problem, a global agreement like no other will be required to ensure the earth's future (Bongaarts, 1992:3; Grubb, 1990:69).

Uncontrolled population growth has created a situation where climate change will affect a greater number of people and more will migrate to escape environmental catastrophe. A growing population and its associated demand for energy, land and other resources will also increase carbon emission and aggrevate global warming (Flavin, 1989:31). Given present populations and their growth rates, the United Nations Environment Programme (UNEP) anticipates that in the next 25 years global warming will affect at least 100 million people worldwide who will be flooded off their land, or who will suffer through storm surges and cyclones (Myers, 1993).

Potential migration due to climate change in specific countries and regions will depend not only upon the magnitude and rate in change of each country (Ireland, 1990:17), but also on its level of urbanization, population and development. As migration to large coastal urban areas continues (most large cities being located in coastal areas), pressure on the environments of our cities will increase. Cities in developed nations, such as New York, Boston, Miami, Melbourne, or Tokyo — all with relatively large population concentrations which produce excessive stress on land in the area — will be affected by problems associated with sea-level rise. However, these cities will be able to deploy engineering skills and finance projects designed to hold back the sea. Even in the worst circumstances, port facilities can be adjusted to higher sea-levels, coastal structures can be replaced or reinforced, and cities can slowly be moved inland

to compensate for lost shoreline (Ireland, 1990:13; Myers, 1993:196). Yet, these options will hardly be open to developing nations, such as island communities of Bangladesh, because of their lack of financial resources.

3.2.2. Carrying capacity

The concept of carrying capacity is discussed separately for several reasons. It is a concept with which many scholars do not agree and is also difficult to define because it entails a consideration of the implications of technological change. For the purposes of this thesis, the **natural carrying capacity** of a region is defined as

> the maximum population of a given species that can be supported indefinitely, allowing for seasonal and random changes, without any degradation of the natural resource base that would diminish this maximum population in the future (Norse, 1992:53).

In addition, "a region's human carrying capacity can be increased by raising land and labor productivity or through trade with better endowed regions (ibid.)". Yet, according to the World Commission on Environment and Development (1987:95), population growth (most prominent in developing regions) is already compromising "many governments' abilities to provide education, health care, and food security for people" and therefore their chances for development. In such a situation, as these countries' populations grow closer to their carrying capacity, greater land and labour productivity, as well as increased trade are difficult if not impossible to attain.

The criteria mentioned above (i.e., land and labour productivity and trade) can be increased using very different means and are considered essential when dealing with refugee situations. For example, agricultural productivity (a combination of all factors) is "perceived as one of the three durable solutions to the refugee problem" and has "received considerable attention and funding

from the international community (Lassailly-Jacob, 1994:4)" in the form of technological input or inexpensive grain. However,

> [i]mplementing agencies usually do not pay enough attention to the sustainable carrying capacity of a site as well as the local environmental impact of a high concentration of ... a population. They often forget that considerable pressure on natural resources will inevitably lead to competition and conflict (Ibid.:15),

which could eventually bring about exodus. To prevent this exodus the "carrying capacity of environments and regions" can be used as a tool in development and prevention of massive exodus (Brookfield, 1992: 51).

Finally, it is important to note that the human carrying capacity of the planet has become increasingly dependent on inputs from non-renewable resources such as fossil fuels and mineral elements, which, in turn, threaten the planet's biosphere and lead to environmental degradation.

Keeping the above definitions and global environmental problems in mind, the following sections contain four case studies illustrating potential problems of environmental degradation and migration.

3.3. Case studies

Environmental degradation which could potentially create environmental refugees is occurring in multiple regions around the planet. These four case studies, selected for further in-depth study, have been chosen to provide proper and definitive evidence of the occurance of these phenomena. In addition, criteria including the type of environmental change, the region's importance to Canadian foreign policy funding and trade, as well as its previous record as a source area of refugees, have been considered in their selection for study. Finally, in each case chosen, environmental migration has been extensively do-

cumented by researchers.

The following four regions have been chosen for study: the Caribbean, Southern Asia, the Sahel, and Central Europe.

3.3.1. Islands of the Caribbean

Island states are of particular interest to the study and creation of environmental refugees for several reasons. First, when dealing with global issues such as increasing levels of greenhouse gases which could result in an increase in the planet's global temperature, many island states are rightfully concerned about predictions of rising sea-levels. Some estimates suggest that a one metre rise in global sea-level could completely cover many islands in the Pacific, Indian and Atlantic oceans and resuit in the creation of as many as 50 million environmental refugees (Jacobson, 1988:29). In addition, changes in global temperature patterns could contribute to an increase in the number of tropical storms — most small island nations are located in the tropics — while also increasing their intensity and destructive potential.

Many island states are nations of the developing world and do not have the necessary funds to provide themselves with protection against these phenomena. They often depend on external trade for their survival and population levels clearly exceed the "natural carrying capacity" of many islands. Their relationship with the outside world is essential, and if it is not sustained, the pressure for people to emigrate will increase. Unfortunately, receiving additional aid will not solve the situation. Island states which have been seriously affected by population pressure, deforestation, urbanization, pollution, or changes in weather patterns will have to find local solutions if they are to save their environments for future generations.

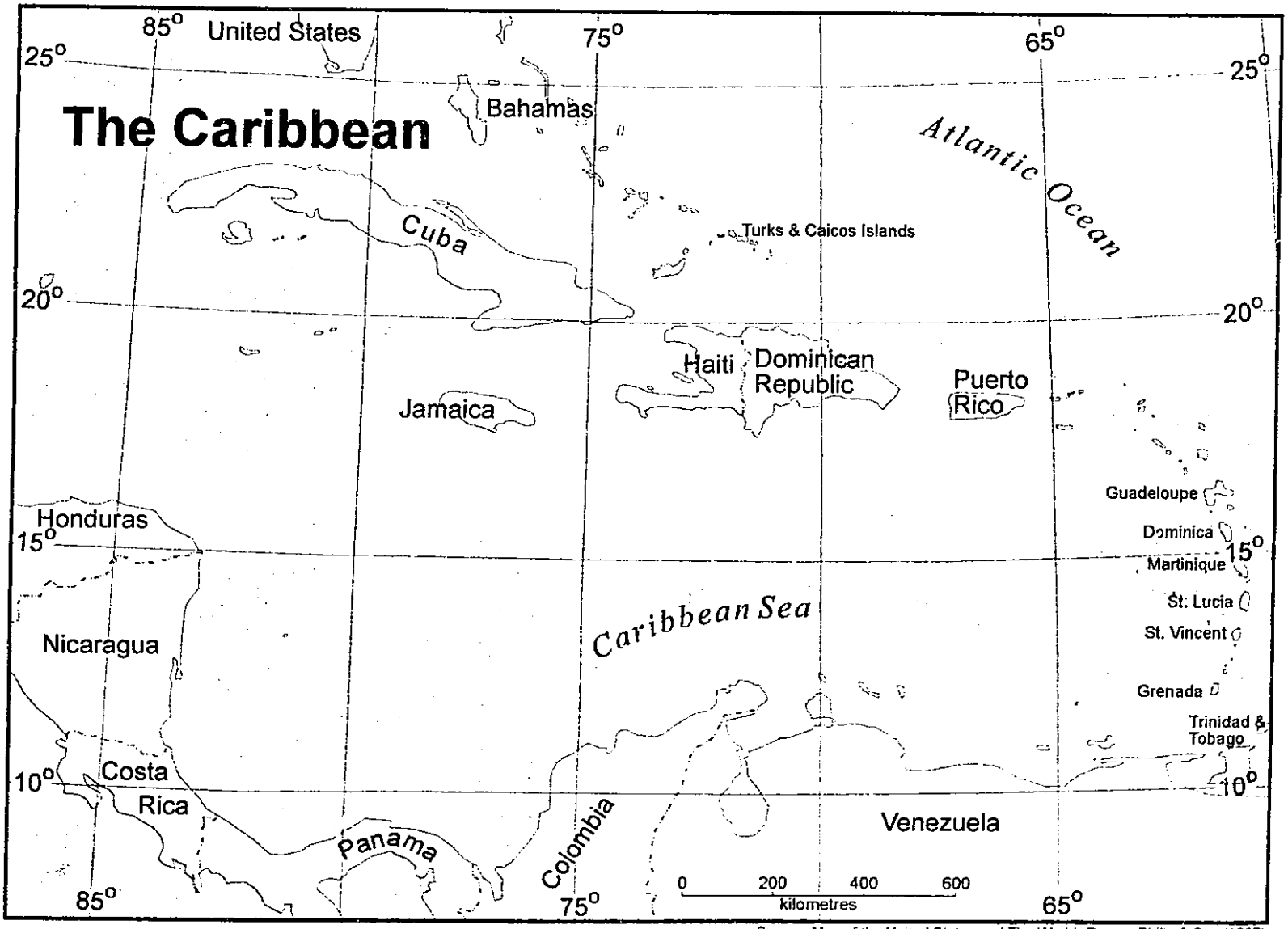
To illustrate the challenges just described, this section will first look at low-lying islands which will have to deal with environmental change and sea-level rise. Particular interest will, however, be given to the island of Hispaniola shared by the Dominican Republic and the Republic of Haiti — considered the poorest nation in the Americas and perhaps the first to produce a recent large scale environmental exodus.

3.3.1.1. Low-lying islands

As stated previously, one of the major concerns of island states world-wide is the potential rise in sea-level due to global warming. Those concerned include over a dozen island states of the Caribbean (Myers, 1993) (see Figure 3.2.).

To illustrate the problems which can affect Caribbean nations, one example is the Turks and Caicos Islands which lie about 600 kilometres southeast of Miami and 150 kilometers north of Hispaniola. Famous for its reef structures, the islands are made of two enormous limestone plateaus which rise from depths of over 3500 metres to form the islands. Most land is less than 6 metres above sea level, the highest point being about 50 metres in elevation. Finally, due to its absence of mountains, top soil, or rivers, there is no sediment run off to disrupt coral reef ecology (Gascoine, 1991:10), but at the same time there is no topography to disrupt tropical storm surges, hurricanes, and other climatic phenomena. If a rise in sea level of one metre occurs, the tourist industry of the islands, their only source of international income, would be devastated, and over 5,000 of its 8,000 inhabitants would be displaced.

With an increase in global temperature, sea level will rise, and many islands may become subject to hurricanes (which occur almost every summer) of greater frequency and intensity, "sufficient to render [some] islands much less



Source: Map of the United States and The World, George Philip & Son (1987)

Figure 3.2. Map of the Caribbean

suitable for permanent human habitation (Myers, 1993:198)". As islands, all Caribbean nations are susceptible to these harmful weather conditions on an annual basis. In 1979, Hurricanes David and Frederic ravaged the region with winds of up to 240 kilometres an hour and heavy rainfall. They first reached the islands of Martinique, Guadeloupe and Dominica, and continued northward towards the Dominican Republic. In all, about 2,000 deaths were reported in the Caribbean, and about 2 milion people were affected, including 125,000 families which were left homeless. During the first five months of 1979, above-normal rainfall was observed in western Jamaica. Thundershowers, which developed during the first week of June, saturated the soil, causing the rapid runoff of subsequent heavy rains. The following days were characterised by tropical depression associated with heavy rains. The flood waters swept away homes, roads, bridges, and crops. About 160,000 people were affected and from 35,000 to 40,000 people were reported homeless (UNDRO, 1980, quoted in El-Hinnawi, 1985:13). Since that time, hurricanes have hit the islands on a yearly basis, including in 1992, Hurricane Hugo, during which wind speeds, rainfall levels and cost of overall devastation, exceeded all previous records.

In the past, changes in weather conditions and sea-level rise forced islanders to travel to neighbouring islands where they could easily resettle (Kritz, 1990:10). But because travel was unrestricted, the urgency of this type of exodus was absent. In the future, sea-level rise will become a source of environmental refugees because islanders will have nowhere to go.

3.3.1.2. The Island of Hispaniola and the Republic of Haiti

The island of Hispaniola, the second largest island of the Caribbean after Cuba, is shared by the Dominican Republic and the Republic of Haiti. (see Figure 3.3.) Although most islands of the Caribbean are relatively featureless, His-

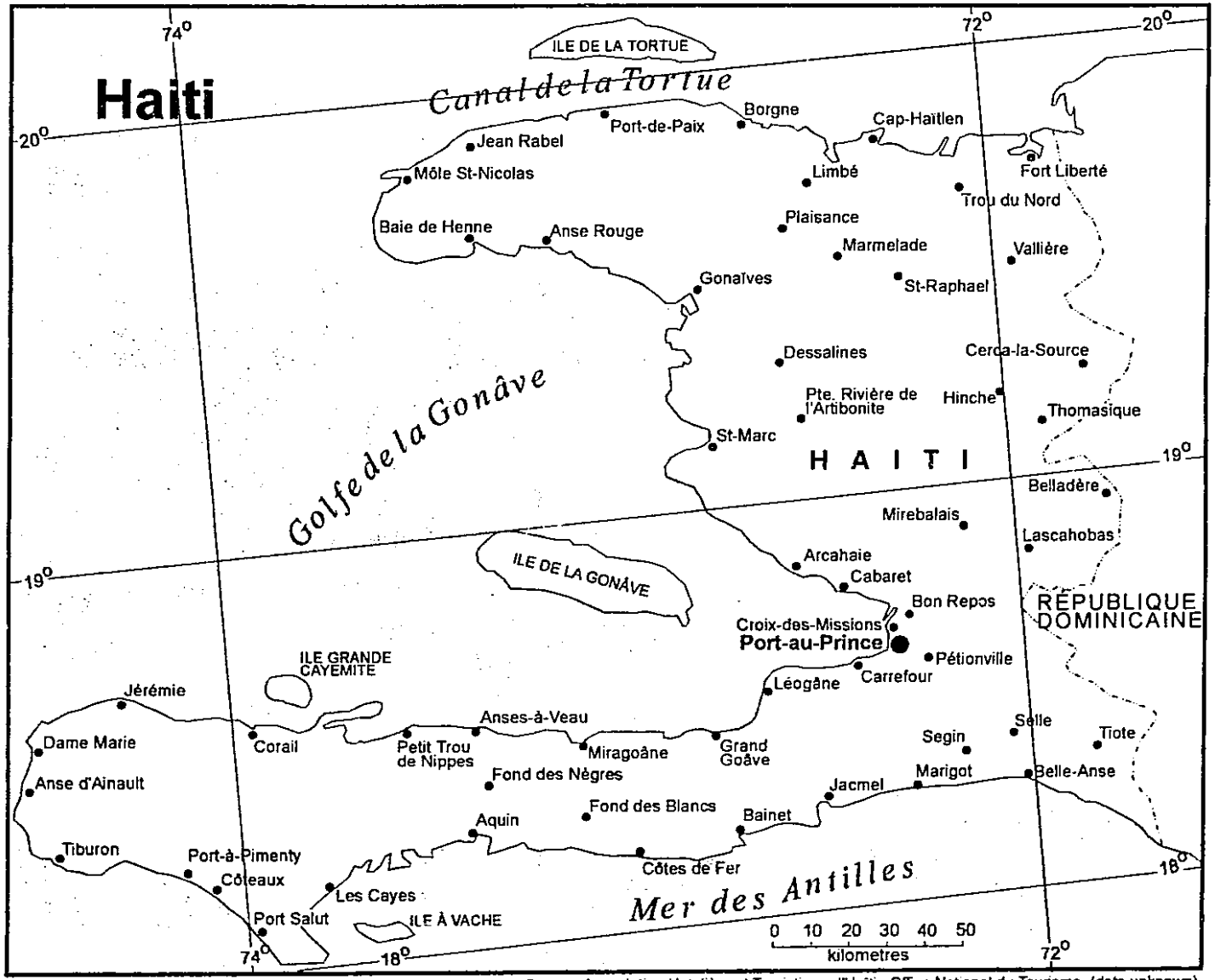


Figure 3.3. Hispaniola and Haiti

Source: Association Hotelière et Touristique d'Haïti; Office National du Tourisme, (date unknown)

paniola is covered with mountain peaks. In fact, "the western part of the Dominican Republic and the whole of Haiti are highland areas, with little available flat land for agriculture" (Hepner, et.al., 1992:336). Like all the countries of the region, Haiti and the Dominican Republic suffer periodically from hurricanes and in turn, the island's economies reflect seasonal damage faced by the agricultural and tourist industries, homes and public property, following a hurricane or tropical storm (Sottas, 1990). The Republic of Haiti is located on the western part of the island, where its total land surface, which also includes some small islets, covers an area of about 27,800 square kilometers of which only 32.6 percent is considered arable land (see Table 3.2.). Once considered a tropical Eden, the nation of Haiti has gradually been transformed into an environmental wasteland (Sottas, 1990:86; Abbott, 1991).

Haiti is of particular interest to Canada due not only to the large number of Haitians applying as immigrants and refugees to this country — Haitians have become one of the most important groups of new immigrants in cities like Montreal and Toronto — but also because Canada regularly provides assistance to the country. In 1987 and 1988, $19.9 million in aid and multilateral assistance was provided (Abbott, 1991:38-39). Over the past two decades, the United States has also increased its attention to Haiti, as Haitian 'boat people' land on the Florida coastline and are perceived as a threat to US immigration policy. By the end of 1980, nearly 40,000 Haitians were known to have arrived in Florida without immigration visas, and roughly 15,000 more may have entered the United States undetected by the government. In addition to those Haitians going directly to the US, about 40,000 went to the Bahamas, using this country as a temporary transit point before seeking new lives somewhere else (Catanese, 1991:1). Overall, it is estimated that over 680,000 Haitians, or 12% of the popu-

COUNTRY PROFILE: **HAITI**

Land Area: 27,800 km^2

Population (aprox.): 6.3 million

Population density: 226

Population growth rate (%): 2.2

Urban population (%): 30.3
Capital: PORT-AU-PRINCE
Population: 1,143,626 inhabitants (1988)

Life expectancy (yrs): 53
Adult literacy (%): 38
(lowest rates in the Caribbean)
Infant mortality rate — per 1000 live births (1985-90): 117

Per Capita income: $380 US
External Debt (millions): $823
Per capita GDP in dollars (1987): 365

Share of agriculture in GDP (1987): 32%

Rate of growth in per capita food production
80/88: -0.4%

80/81: -1.2%
81/82: -0.7%
82/83: 1.8%
83/84: 0.6%
84/85: 0.5%
85/86: -0.7%
86/87: -2.5%
87/88: -4.0%

Percentage of population with access to drinking water:
urban areas: 55% rural areas: 36%

Table 3.2. Country profile: Haiti

Sources: Sottas, E., p.15, 1990; Catanese, A.V., p.8, 1990.

lation, were living abroad in 1980, including 450,000 in the United States alone (DeWind, et al., 1988:16). To combat the flow of refugees in 1981, the United States began to "interdict Haitians on the high seas" and return them to Haiti (DeWind, 1990:123), a practice which was condemned by many, including international organizations such as the UNHCR. Today, United States reconnaissance blimps leave the Bahamas without forewarning to identify boatloads of refugees who are subsequently stopped by the United States Coast Guard. Processing centers have even been established on ships in the region as the United States continues to claim that as long as Haitians are far from reaching the 200 mile limit, they do not require protection in accordance with international refugee law.

According to the World Commission on Environment and Development (1990:292), by 1990 the number of Haitian 'boat people' who had left the island had reached almost 1 million; one-sixth of the country's entire population. This mass exodus of people is generally seen as a cause of political oppression and economic deprivation (DeWind, 1988:17), but Myers (1993) goes beyond these traditional views by suggesting that the exodus is fueled, in part at least, by large scale environmental degradation. He feels that Haitians fleeing their country might actually have the "dubious distinction of being North America's first group of environmental refugees" (ibid. :189). The main reason why he makes this assumption is the deplorable state of the environment of this once ecologically rich, tropical country.

There are many reasons why Haiti's environment has reached the state it is in today. These include laws of succession and parasitic tax policies which continue to discriminate against small farmers, an always growing population which has now reached over 8 million people (Abbott, 1991; Grossfeld, 1993),

and an uncontrollable rural-urban migration which has created some of the worst urban slums in the world where population densities can reach 700 people per square kilometre.

Haiti's laws of succession date back to the country's independance and follow the Napoleonic code where property must be divided among all male children following the death of their parents. Although many first generation Haitian farmers owned sufficient land, by the early 1970s the average property size was only about 1.3 hectares, and over 80 percent of properties were even smaller. In addition, land continues to be unevenly distributed among the population — 30 percent of the population owns 75 percent of the land (De Wind., 1988:20,89). Finally, 30 percent of the agricultural land in Haiti is used for multiple-crop production, and as the population continues to grow and resources continue to dwindle, Haitian peasants have become more desperate for arable land and are using larger expanses of mountainous and less fertile lands for agriculture. Haitian farmers have cleared almost all arable and non arable land for agriculture: In 1923, 60 percent of the country was covered by forests, while in 1974, only 7 percent of forested land remained. And today, only 3.5 percent of the nation's woodland remains and 30% of the land which has been uncovered is completely unproductive (Abbott, 1991; IDRC, 1992:52).

This over-exploitation of the forest to meet the population's agricultural demands, as well as those from other nations to receive lumber from Haiti, has caused drastic ecological imbalances. Until relatively recently, Haiti continued to be responsible for providing France with large quantities of raw materials including timber products (De Wind, 1988; IDRC, 1992). Damage to forests is due not only to agricultural extensification, but also due to the use of trees for cooking and other household purposes due to the lack of fossil fuels.

Deforestation can be considered as the worst environmental problem on the island. Deforestation causes soil erosion, loss of soil fertility, sedimentation of waterways, depletion of water resources, and extinction of animal and vegetation species — i.e., destruction of the ecosystem and its genetic resources (IDRC, 1992:51-52; Sottas, 1990:86). According to Grossfeld (1993:A8), "when driving to the border of the Dominican Republic, one can see a distinct line where the trees start to flourish again". When food production per person began to decline in the fifties, farmers began adding to their incomes by selling charcoal. In addition, because Haiti has no other forms of fuel available within its borders, and the poor cannot afford to purchase imported fuels, the search for fuelwood continues. The recent economic boycott of Haiti by the United States and some western governments, particularly limiting foreign imports of fuel, made the long term environmental situation worse. Indeed, experts predict that at current rates of clearance, the last fringe of forest is destined to disappear in the middle of the next century (Abbott, 1991).

Haiti also suffers some of the world's most severe soil erosion, down to bedrock over large parts of some regions. "Every rainstorm creates flash flooding and carries topsoil down the slopes and into the ocean, where it is burying the reefs alive (Grossfeld, 1993:A8). Due to the poor soil quality, even farmers with reasonable amounts of land cannot make a living. A United States Agency for International Development (USAID) report estimates that as much as five percent of Haiti's topsoil is lost every year (DeWind, et.al., 1988).

Finally, one should note that Haitian leaders are also to blame for the economy as well as the environment. Little has been done over the years to ensure the renewal of natural resources and agricultural land (DeWind, et.al., 1988:21) and continued high taxes for the production of food for export, such as

coffee, have made agriculture a very unprofitable business. As stated by Catanese (1990:3)

> Haitian migrants may be considered environmental refugees because the root causes of their migrations are land degradation and the government's unwillingness to act in the interest of the general population.

The final effect of environmental degradation in Haiti is that it contributes to the growing outflow from rural areas. Thousands of rural Haitians leave their homes each year for Port au Prince — the fastest growing city in the Caribbean (DeWind, et.al., 1988:120). Most are searching for employment and better living conditions, but instead Port-au-Prince can now be described as a graphic example of urban degradation (Lazarus, 1990:15). Over the past ten years, the city's population has nearly doubled to over a million people and more than half live crowded in the slums (El-Hinnawi, 1985:24).

Urbanization and land abandonment has not only created changes in deep traditional lifestyles and family ties but has also caused a large number of deaths. As much as 40 percent can be attributed to one factor: diarrhea from bad water (Grossfeld, 1993:A1/A8). In fact, one of the greatest environmental problems in Port-au-Prince is the lack of potable water. In addition, the USAID has estimated that as many as 30 percent of Haitian children are undernourished (DeWind, et.al., 1988:90). Grossfeld clearly shows the desperation of the population by stating that

> there are few places on Earth worse than Cité Soleil, a ramshackle section of Port-au-Prince. No water. No electricity. No sanitation. Two hundred thousand human beings in a seaside slum trying to keep their dignity while surrounded by raw sewage bubbling in the Caribbean sun (Grossfeld, 1993:A8).

Fort-au-Prince has become a wasteland, where the garbage is piled waist-high and blocks streets to cars. In addition, during every rainfall garbage is washed away through the streets of the capital (ibid.)

Finally one last environmental difficulty which adds to Haiti's problems is its climate. From 1965 to 1980, Haiti experienced 16 natural disasters including droughts, hurricanes or floods. This amounts to one disaster per year which is astounding by any standards (Catanese, 1990:4). Haitian farmers are therefore faced with the problem that it is difficult to look at long term investments as daily conditions are problematic enough.

Although Haiti is known for the many political and human rights abuses through which its people have endured, the environmental consequences of poverty have possibly destroyed its environment for the next 400 to 500 years (ibid.). Whatever international pressure is placed on the present government, the ecosystem is still on the verge of collapse, the environment continues to deteriorate, and Haitian society edges toward total chaos. Although democracy has recently returned to Haiti, the island's carrying capacity still cannot sustain the population. Starvation , poverty, and disease will continue and more of the population will eventually decide to flee their country rather than face what it has to offer. Modern technology does have the potential to remedy the situation, but unfortunately at present, the necessary tools are not available to Haitians in despair. In all probability, in the years to come, Haiti will continue to produce a large number of environmental refugees before modern technology is able to increase the carrying capacity of the island.

The following section will examine the situation in Southern Asia where environmental changes and constraints, in combination with population pressure, could already have created environmental refugees.

3.3.2. Environmental degradation in Southern Asia: Bangladesh

The following section examines the problem of environmental degradation and migration in Southern Asia, specifically in the country of Bangladesh. There are various causes of environmental migration in this region including, climate change, natural disasters, development projects, and industrial accidents. Bangladesh, one of the world's poorest nations, where global warming could have devastating effects and continued population growth is already creating a situation of environmental stress. The country has suffered through several environmentally related disasters in recent decades. The threat of sea-level rise, cyclonic storms and other weather disturbances, flooding, erosion, siltation and salinization, are constant reminders of the country's vulnerability to natural events. In addition, continuing increases in population will only make the situation worse. As was done in previous sections, possible linkages to the creation of environmental refugees will be identified.

Bangladesh is a country the size of Newfoundland, located in southern Asia and completely surrounded by India — except for a short border with Burma and the coast of the Bay of Bengal. Bangladesh is situated at the confluence of the Ganges, Brahmaputra and Meghna rivers, where to the east of the country lies the Chittagong Hill Tracts and further to the North, the Himalayas (see Figure 3.4.). In 1993, Bangladesh had an estimated population of 104.6 million people, in an area of 144,000 square kilometres. Its population density — 726 people per square kilometres — is the highest among developing nations, and twice that of the Netherlands (Myers, 1993:191). By the year 2050, Bangladesh is projected to have a population of around 220 million people, and this will become one of the major pressures on the country's environment (Myers, 1993:192) (see Table 3.3.).

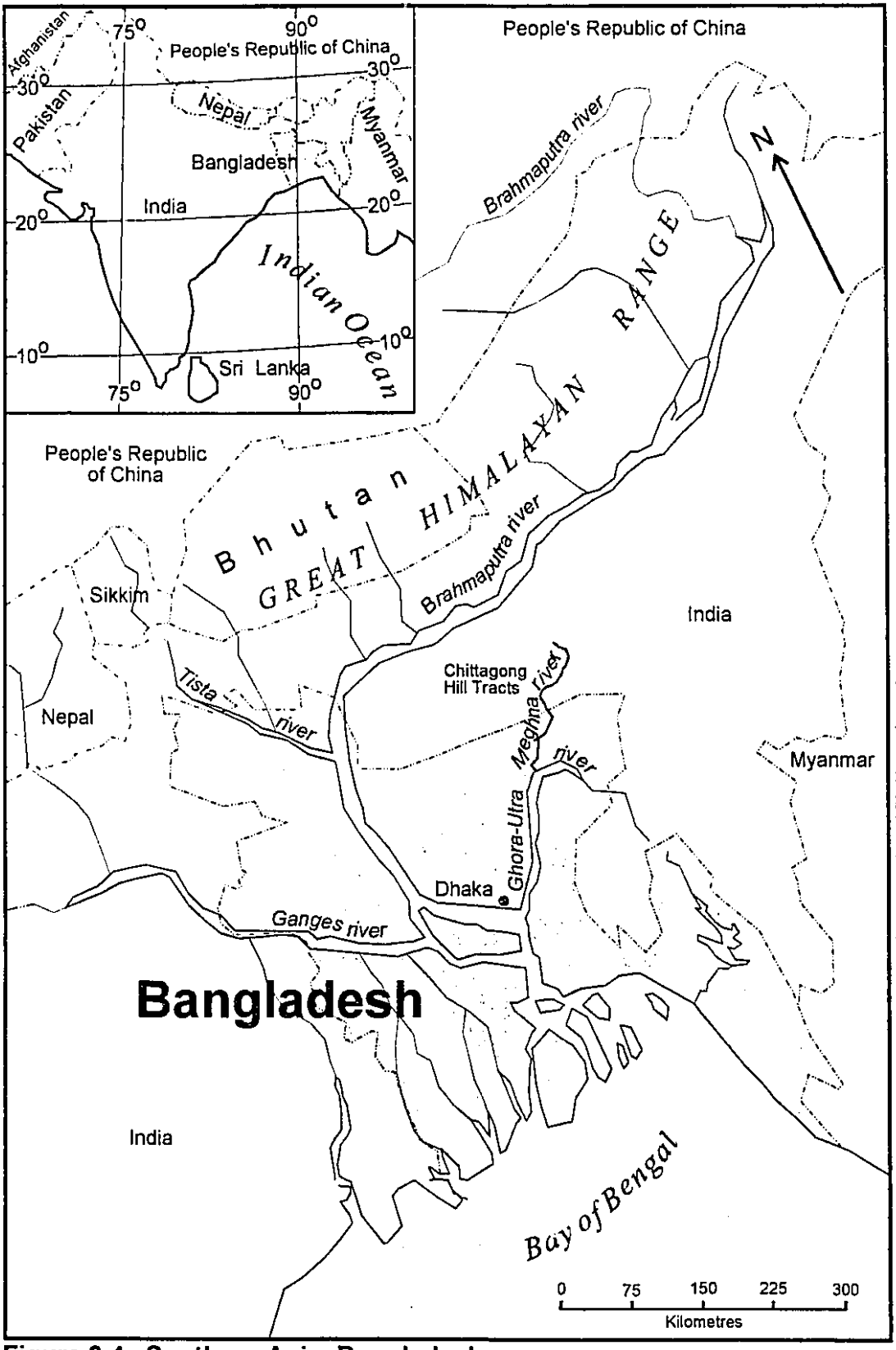


Figure 3.4. Southern Asia: Bangladesh

COUNTRY PROFILE: **BANGLADESH**

Land Area: 144,000 km^2

Population (aprox.): 104.5 million (1988)

Population density: 726

Population growth rate (%): 2.1

Capital: DHAKA
Population: 3,430,632 inhabitants (1981)

Life expectancy (yrs): 51
Adult literacy (%): 33
Infant mortality rate — per 1000 live births (1985-90): 119

Per capita GDP in dollars (1987): 172

Share of agriculture in GDP (1987): 47%

Rate of growth in per capita food production
80/88: -0.7%
80/81: -2.4%
81/82: 1.5%
82/83: 0.1%
83/84: -1.1%
84/85: 1.0%
85/86: -0.6%
86/87: -1.7%
87/88: -5.6%

Percentage of population with access to drinking water:
urban areas: 25% rural areas: 66%

Table 3.3. Country profile: Bangladesh

Source: Sottas, E., p.8, 1990.

Because of the abundant water resources in the area, and the fact that the country is located in one of the most fertile areas of the world (Hazarika, 1991:75), the majority of the population (71 percent) depends on the agricultural sector to survive. But frequent flooding and various catastrophic events in recent decades — including cyclonic storm, storm surges, flooding, siltation, erosion and even the threat of sea-level rise— has created a situation where crops are destroyed, and the Bangladeshis have become increasingly vulnerable to starvation (Sottas, 1990:52; Hepner, et al., 1991:580). As these stresses continue to grow, an increasing number of people will decide that migrating is the only solution, thereby creating the potential for an unparalleled mass exodus from the country.

While global warming is projected to cause the sea level to rise everywhere around the world, Bangladesh is more vulnerable than any other country on Earth as over half of it lies less than four metres above sea level (Myers, 1993:191). This combined with a coastline prone to land subsidence due mostly to human activity, could create a rise in sea-level of over 1 metre on the coast of the Bay of Bengal and flood up to 18 percent of the country's land area. Such a rise in sea-level threatens to displace as many as 17 million people (Flavin, 1989:21; Lazarus, 1990:14). If tidal waves or storm surges are also taken into consideration, more than half the country could be flooded (Myers, 1993:192). In this second scenario, Bangladeshis could actually see their immediate environment disappear within a matter of days (Flavin, 1989:21) as their country can deploy little in the way of engineering capacity to resist these natural disasters (Myers, 1993:192).

Many researchers are still skeptical about the future conditions in Bangladesh. They note, for example, that estimates of population displacement ignore

such factors as variations of coastal areas and conditions under which people prefer defending their settlements rather than abandoning it to the sea(Kritz, 1990:3). As global warming increases, some scientists believe that increased differences in temperature between sea and land will cause cyclones to become stronger and more frequent (Myers, 1993:192). Table 3.4. lists some of the major cyclonic storms and tidal surges which occurred in the area throughout the last decades.

Cyclonic storms are not the only events that are affecting Bangladesh as the country continuously suffers from flooding associated with soil saturation, widespread river and sea erosion, and siltation (Islam, 1991). Floods are regular phenomena in Bangladesh and are sometimes welcomed events as flooding replenishes the soil with nutrient carrying sediments. The three great rivers pouring into Bangladesh from the Himalayas — the Ganges, Brahmaputra and Meghna — carry about 90 percent of the water which originates in the Himalayas. If global warming creates changes in weather patterns as predicted, seasonal monsoons will become more powerful and violent in their impact, and rivers flowing into Bangladesh could double their water flow during the monsoon season (Myers, 1993:193). In fact, the flood of 1974, as described in Table 3.3., was largely held responsible for the famine of 1974 which killed an estimated 1,000,000 people in the northern districts of Bangladesh (Islam, 1991:14). In many ways, floods can be more damaging to the economy than cyclones because of the much larger area of devastation and longer duration of the ordeal (Ibid., 1991:14). As stated by Islam (1992:5), "almost all economic activities in such an ecosystem are virtual gambles with nature", and thus it is clear why many people decide to move. Finally, one should note that some researchers have blamed the devastating floods of recent years on continued deforestation

Date	Region	Phenomena	Death toll
1960, Oct. 9-10	Eastern Meghna Estuary	Severe cyclonic storm, wave 10ft	3,000
1960, Oct. 30-31	Chittagong	Severe cyclonic storm, surge height 20ft	8,149
1961, May 9	West Meghna Estuary	Severe cyclonic storm, wave 8-10ft	11,468
1963, May 28-29	Chittagong, Cox's Bazaar	Severe cyclonic storm, wave 8-12ft	11,520
1965, May 11-12	Barisal	Hurricane, wave 12ft	19,270
1965, Dec. 15-16	Cox's Bazaar and Teknaf	Severe cyclonic storm, wave 8-10ft	873
1966, Oct. 10	Sandwip	Severe cyclonic storm, wave 20-22ft	850
1970, Nov. 12-13	Meghna Estuary	Hurricane, storm surge 10-33ft	300,000-500,000
1985, May 24-25	Chittagong, Noakhali Coast	Severe cyclonic storm, surge height 14ft	11,069
1988, Nov. 29	Khulna	Severe cyclonic storm, surge height 14.5ft	5,708
1991, April 29	Chittagong, Cox's Bazar	Hurricane, storm surge 20-30ft	140,000

Table 3.4. Major Cyclonic Storms and Tidal Surges in Bangladesh

Source: Islam, M., "Natural Calamities and Environmental Refugees in Bangladesh, Refuge, p.4, 1992.

in the Himalayas (Hazarika, 1991:76). Deforestation in the countries of Nepal and Bhutan is believed to be the main factor behind the growing severity of floods and their increased toll on human lives (Widgren, 1990:759).

Some of the solutions suggested to reduce the problem of flooding include the building of dams and large scale irrigation or hydroelectric projects. These solutions have both advantages and disadvantages. On the one hand they provide energy without causing as much pollution, while also controlling the waterflow. On the other hand, the Himalayas is one of the world's most active seismic zones and this, along with siltation could create problems when building dams (Hazarika, 1991:77). Population displacement following the flooding of large tracts of land for dam reservoirs must not be forgotten, and conflicts can easily arise when water management affects the environment downstream. For example, the construction of the Farakka Barrage on the Ganges in India, affected water conditions and availability in Bangladesh (Gleick, 1992:12). Also, a recent agreement signed between India and Nepal outlines cooperative programmes on hydroelectrical, irrigation and flood control projects. Yet this agreement does not include Bangladesh which will obviously be affected by any changes to the flow of the Ganges (Ibid., 1992:22).

The decision of many Bangladeshis to migrate is generally not a matter of choice: It is brought forth by the sheer need for survival (Islam, 1991:4). Thus, initially, they move to higher ground, to better-protected villages and towns, or to regions inside the country where land is available. Eventually, millions of people leave their country behind, driven by hunger, land scarcity, and work (Hazarika, 1991:75). Although some might believe that migration within the country is preferable to crossing international borders, as in the case of Haiti, internal migration is often the source of ever expanding urban slums. According to Islam

(1992:6),

> a family whose entire property, both homestead and cultivable land, is lost to river erosion, may be fortunate enough to move to a safer place in the same locality, but more often that family has no option but to move to an urban slum.

Generally the decision to become a squatter in an urban area is never a matter of choice. Yet in 1983, a survey estimated that 18 percent of the migrant population living in Dhaka slums and accounting for more than 8 percent of the squatter poor, were often forced to migrate because of hardships caused by environmental calamities (ibid., 1991:19). For the last two decades, ecological refugees have also been moved to the relatively inaccessible and sparsely populated hilly areas of the Chittagong Hill Tracts (Figure 3.4.), where they are used as pawns in the first line of defence against armed insurgents in the area (ibid.:20). The fact that certain districts located in ecologically distressed zones show greater emigration is no coincidence. Ecological phenomena tend to accelerate the process of marginalization of the poor people of Bangladesh (ibid.:5). Furthermore, economically deprived areas of society tend to accelerate the process of environmental degradation.

Most would agree that Bangladesh is an extreme situation when dealing with environmental change and migration (Ireland, 1990:15). Therefore, if problems of environmental degradation in this country are to be solved and the associated growth of environmental refugees thwarted, international cooperation will be necessary and Northern support will be crucial. However, aid is not the solution, since most of it is absorbed by the country's bureaucracy (Islam, 1991). Land pressure and poverty at home combine with opportunities abroad and encourage cross-border migration. The migration itself increases pressure on land where the migrants settle, and in the case of Bangladesh often displace

aboriginal inhabitants as in the Chittagong Hilis, which in turn leads to further environmental degradation and increased social tension (Hazarika, 1991:76).

3.3.3. Environmental refugees in Africa: The Sahel

In 1989, the African continent hosted approximately four million refugees, which included an estimated 2.7 to 2.9 million *internally displaced* persons not recognized as legitimate refugees by international organizations (Widgren, 1990:756; Khasiani, 1990:369,371). According to Lord Judd of Portsea, former Director of Oxfam, during his presentation at the Canadian Conference on United Nations Reform in March 1995, it is estimated that there are over 6 million actual refugees in Africa today, as well as an additional 4 to 5 million internally displaced people, and "neglect and abuse of the environment is one of the reasons" for this large scale population migration (Lord Portsea, 1995). Thus, the African situation is particularly critical as most refugees are forced to migrate because of economic hardship, poverty or political instability, whose root causes are often linked to ecological disasters and environmental calamities (Khasiani, 1990:371). The most prominent of these environmental calamities are periods of severe drought leading to desertification in several regions of the continent.

Since the late 1960s and early 1970s, following the Sahelian drought, desertification has received substantial attention from national and international interests, as well as the media. The Sahel is at the forefront of research on desertification — although desertification is occurring on every continent, and in over 100 developing and developed countries (Ireland, 1990:8; Rhodes, 1991:1137) — because nowhere else but Africa is the relationship between desertification and migration so evident.

This section will therefore examine the problem of desertification in Africa

and its implications on human migration and the creation of environmental refugees. Although many regions of the African continent could have been chosen for this case study, this section will focus on selected countries located in the Sahelian zone. Traditionally, the sub-Saharan region of Africa was always prone to periods of low rainfall. However, present population and livestock levels and environmental conditions have created a situation where even minor changes have devastating effects on the population, often leading to economic chaos, human hardship, and mass migration.

The Sahel is a semi-arid transitional climatic zone 200-400 kilometers wide located south of the Sahara Desert and north of the tropical regions of Africa, between 10° and 20° north latitude (see Figure 3.5.). The Sahel spans the entire African continent and covers sections of Cape Verde, Senegal, Mauritania, Mali, Burkino Faso, Niger, Chad, and Sudan (Rhodes, 1991:1137). Typically the region is subject to two or three years of abnormally low rainfall, followed by successive years of average or higher than average rainfall, and therefore one of the most valuable resources in the region is water. Today, over half of the population of Africa are still without access to safe, clean water, and as populations grow, the demand for water increases (Gleick, 1992).

Since the beginning of the fifteenth century the Sahel has suffered through six periods of severe drought. Half of the world's people most directy affected by desertification live in the Sahel (ICIHI, 1986b:32). This variability in climate is therefore a permanent feature of the region and indigenous inhabitants, consisting mostly of nomadic cattle herders and grain farmers, have, throughout the centuries, adjusted their lifestyles to the natural variability (Strahler, et al, 1993: 170-171).

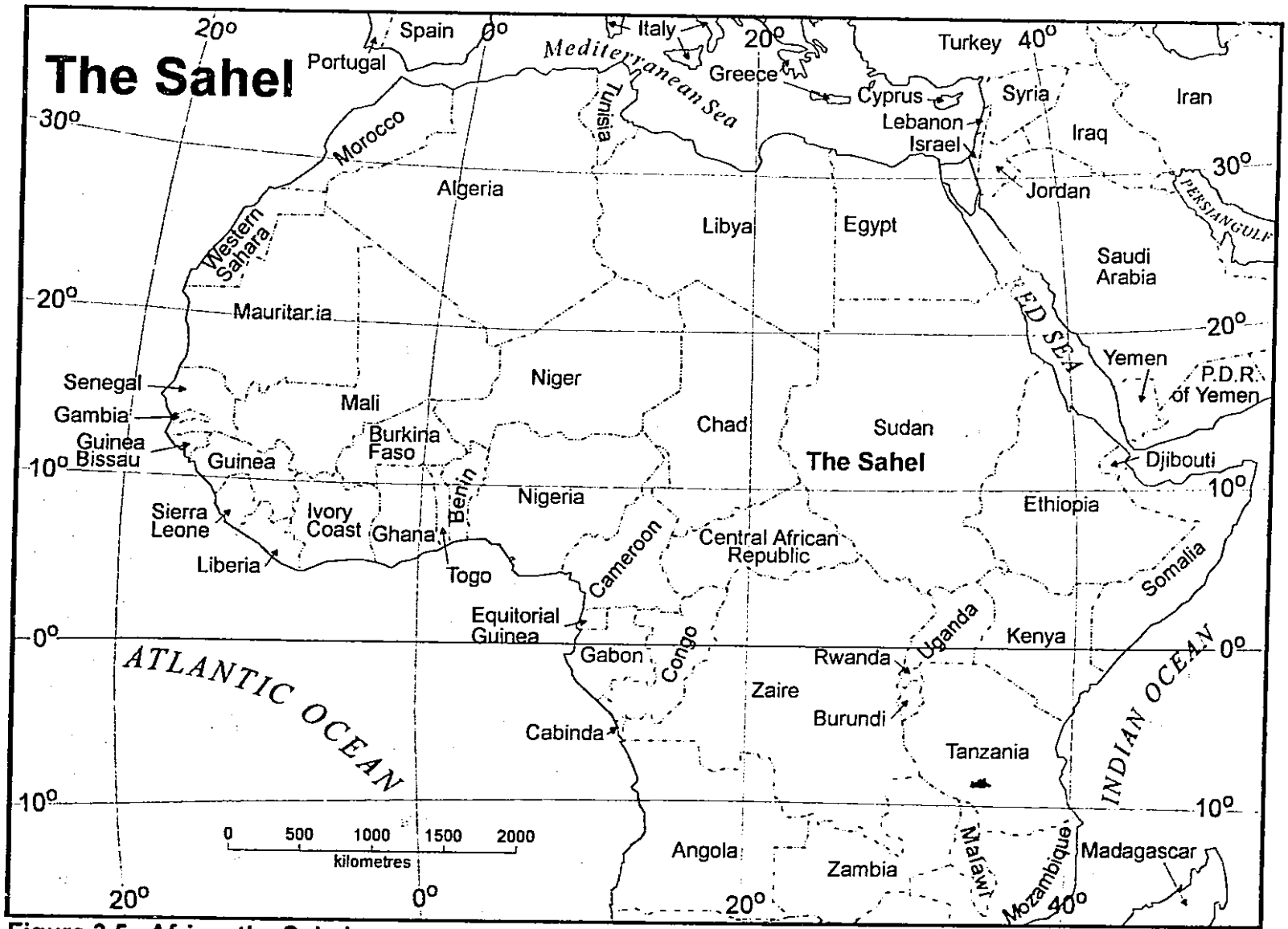


Figure 3.5. Africa: the Sahel

Source: Strahler & Strahler (1994): Introducing Physical Geography, p. 170

Over the past two decades, two major droughts have occured in the Sahel, one from 1968 to 1973 and the other during 1982 to 1984. During the first recent drought, estimates indicate that more than 10 million cattle perished, 100,000 to 250,000 human lives were lost, and thousands fled to neighbouring countries (Rhodes, 1991:1138). Considering the natural variability in climate just mentioned, many researchers feel that the drought of the late 1960s could have been forecast. The 1950s and early 1960s saw a period of time where rainfall was up to 30 or 40 percent above average (ICIHI,1986b:142). During this period, cultivation of a greater quantity and variety of cash crops — on which most countries from the South have developed an increasing dependence (ibid.:35) — was extended northwards and natural climatic variability was ignored. For the first time, environmental strain created large scale starvation and marked the beginning of Africa's dependence on outside assistance to feed its people. It is interesting to note that a report commissioned by the Ethiopian government blamed the country's 1972-74 famine not on "a drought of unprecedented severity" but rather on a combination of continued bad land use and steadily increased human and stock populations over decades. As a result of these factors, a greater number of people and their animals were vulnerable when drought struck" (Ibid.:26). From 1975 to 1980 the Sahel and other affected areas received over $7.46US billion in aid (i.e., $40 per African per year vs. $19 average for the rest of the world) (ICIHI, 1988; Jacobson, 1988), yet the environment still deteriorated. During the 1970s, it was estimated that over 100,000 hectares of land were lost to the desert each year (Eckholm, 1978:61). Although it is impossible to determine why this discrepancy occured, it is probable that the methods used by the development community were inadequate for the environmental conditions of the region.

Climatically, the second major period of drought in the early to mid-1980s was not as severe but the results — destruction of livestock, starvation, desertification, etc. — were more serious for several reasons. First, in the preceeding period, the human population and the number of livestock increased. The situation also worsened because of growing population pressures. However, effective population control is a long way off and Africa must deal with environmental problems now (IDRC, 1992:35). According to Widgren (1990:758),

> [t]he accumulated effects of such increases [in population] will already reach critical levels in the present decade. The human environment in many [African] countries is already beginning to be unsustainable, since available resources do not sufficiently relate to the number of people.

Of 24 countries whose population grew by an average of 3 percent or more between 1970 and 1978, 15 were suffering from desertification. In addition, every year since this period, the combined population of the Sahelian countries of Senegal, Mauritania, Mali, Burkino Faso, Niger and Chad has increased by an average of 1.4 million inhabitants (ICIHI, 1986b:28). Population growth therefore has had a serious impact on desertification by straining the relationship between the local population and an already degraded environment. "Migrants are forced to move to drier areas and this creates greatest stress on the area in question" (Dietz quoted by Kritz, 1990:9). The following example briefly illustrates the problems of population pressure on marginal lands.

Sudan

In a case study of Es Shiqeiq (a small village of approximately 4000 people, located in the semi-desert region of Sudan and only 30 kilometers from the Nile floodplain), Trilsbach and Wood (1986) determined that although drought was always a problem, the situation of this market town's hinterland had

seriously worsened. The Es Shiqeiq market is one of Sudan's largest and covers approximately 1.5 square kilometres. It regularly attracts great numbers of nomadic hearders who usually bring an average of about 10,000 head of livestock with them per week. According to the authors of the study, the area surrounding Es Shiqeiq

> suffered from overgrazing, overcultivation and excessive firewood collection. The concentration of animals at the market, however has exacerbated the effects of overgrazing and trampling and these have undoubtedly been the main causes of desertification in the area (Ibid., 1986:52).

The increased need for fuelwood in the Sahelian region has also become an important contributor to environmental deteriorations and is perhaps the main cause. Firewood scarcity has always been an acute problem in the Sahel. Today over 90 percent of people depend on firewood and agricultural waste as their chief source of fuel and this figure can reach almost 100 percent in some areas (Eckholm, 1978; ICIHI, 1986a). Deforestation is a concern as it exposes the already vulnerable area to solar radiation, to the winds and rains, and therefore to increased erosion. During the 1970s, several possible solutions to halt the disapearance of wooded areas in the Sahel were developed. Although some projects (for example trees planted to anchor the topsoil between the Sahel and the savannahs or to form a barrier to winds) temporarily curtailed desertification, others had the opposite effect. Following the first period of drought many African nations sought to begin a commercialization of firewood. It was hoped that entrepreneurs would establish tree planting campaigns in order to develop a profitable, sustainable, and labour-intensive business. The result however was the depletion of woodlands (Eckholm, 178:60). Today, throughout the Sub-Sahara, people living in towns like Niamey (Niger) are con-

tributing to the creation of desert conditions of their environment whenever they buy firewood, as wood is not shipped thousands of miles, but rather from short distances away. Because the Sahel's urban population has quadrupled in the last 20 years (Jacobson, 1988:11), the firewood situation around urban areas will only become worse in the future.

A second factor which made the 1980s Saheliian drought more devastating is that when the second drought hit, many of the affected countries had not as yet recovered from the first drought and were still depending, in part at least, on aid packages for the survival of their people. By early 1984, more than 150 million people all over Africa were on the brink of starvation. In Mali and Burkino Faso, one-sixth of the population was uprooted to Senegal and Ivory Coast. A World Bank report indicated that deserfication in Burkina Faso resulted in a massive migration of almost one million men and women, reducing population growth rates by 40 percent. Similarly, in Niger, the number of children born was reduced by one-third due to migration.

Although it is often difficult to prove the linkages, in some cases migration was also followed by declining land productivity due to increasing labour shortages. In Burkino Faso in 1982, traders were able to buy the harvest at a price of 30 CFA [Franc de la Communauté Franco-Africaine, used in former French colonies of West Africa] per kilo, and seven months later the same would have to be purchased at 120 CFA per kilo. Those who stayed behind — mostly women — had to devote more time to survival activities and thus agricultural productivity and economic activity declined. In the Sahel, women had to work over 18 hours a week, to collect wood for their families (ICIHI, 1986b:31-33). Some estimates show that by 1985, 10 million people were forced to abandon their homes in search of food (Jacobson, 1988:12).

Clearly, the 1980s drought was different from previous ones: "traditional adaptive strategies" were no longer adequate and had often been changed to fit "modern" social and economic conditions. Throughout the centuries interaction between ecological disasters and social and political conditions in countries south of the Sahara was a regular occurrence (Rubenson, 1991:182). As early as the ninth century, medieval writings in Ethiopia referred to environmental events which, in addition to causing mass deaths and starvation, created mass migration to neighbouring regions. Several periods of famine and migration followed but the worse case was in the late 1880s when a combination of natural disasters, including drought, locusts and other pests, struck at the same time as the Italians embarked on their quest for Ethiopia. Foreigners at the time estimated that 90 percent of the cattle died and nomadic tribes had to relocate to other areas to survive (Ibid.:181).

Today, the destruction of the relationship between people and their environment has become the most notable problem in the Sahel. The partnership which existed for centuries has been altered and in many cases destroyed (ICI-HI, 1986b:31). Nomadic pastoralism, a method of livestock grazing perfectly developed to deal with fluctuations in climate and extended periods of drought, has been replaced by "modern" methods. Many development projects encouraged local people not only to take on a sedentary lifestyle, but also promoted increasing the size of their herds to sell excess meat to growing urban areas of Africa. In the long term this was to provide a sustainable source of income. The result however was a serious deterioration of the semi-arid environment and the destruction of the area's human potential (IDRC, 1992:17).

Human beings are therefore both the partial cause and the victims of desertification and the droughts which throughout these past few decades have af-

fected vast regions of Africa, and have exposed the structural weaknesses which exist in developing countries on that continent (ICIHI,1986b:141). Yet, although droughts may now force African peasants from their Sahelian farms, in decades to come many believe that farmers may be able to return to the Sahel. Some ideas which have been suggested include shifts toward use of ecologically sound technology, and planting crops which are more resistant to low moisture (Kritz, 1990:11). The Sudan, for example, is considered one of the few nations with great potential for increased irrigation. There is sufficient arable land and, in theory, sufficient water in the Nile to irrigate vast areas (Gleick, 1992:11). Many small NGOs have also been successful in planting trees, establishing windbreaks and observing changes in the environment, mostly because they depend on the involvement of local people (ICIHI, 1986b:103)

But in reality, effecting changes in old ways is not so simple. Technically many changes can be achieved, but drought often overwhelms all efforts (e.g. 5 million seedlings died in 1988 in Ethiopia (Ibid.:104)). Local governments are also not always willing to make the necessary effort nor provide suitable cooperation. In Sudan, withdrawing water from the Nile would be possible but would also require renegotiating a treaty signed in 1959 with Egypt, something that the latter might not be willing to undertake (Gleick, 1992:12). Desertification in the Sahel has already significantly reduced the amount of usable land available to agricultural and other land intensive economic activities, and a substantial number of people have already relocated to other areas (Ireland, 1990:19). These short term, local consequences, must also be analyzed in conjunction with potential long term consequences which can have an international dimension. Even if desertification is a local process, it is also caused by processes in the atmosphere, and has added to an increase in atmospheric dust, changes to the

hydrological system, lost production, climatic change, less genetic variety, and a less productive society. All this cannot be changed over the period of a few years but rather over a period of decades. The scale of the problem is such that it can only be tackled globally.

This section has described the situation of environmental change and associated population displacement in Sub-Sahara Africa. As in previous case studies, population growth and poverty had serious effects on the environment and made coping with the situation much more difficult. The fact that most of the African continent lives well below the poverty level makes predictions about Africa's future more unclear. Africa, which already supports the greatest number of all groups of refugees today could easily become one of the primary sources of environmental refugees in the relatively near future.

The final section of this chapter examines the environment in former Eastern Bloc countries. Although Central and Eastern Europe might suffer some conditions similar to those of developing countries, the most prominent environmental problems are linked to years of uncontrolled industrial pollution which has rendered some regions among the most polluted areas in the world.

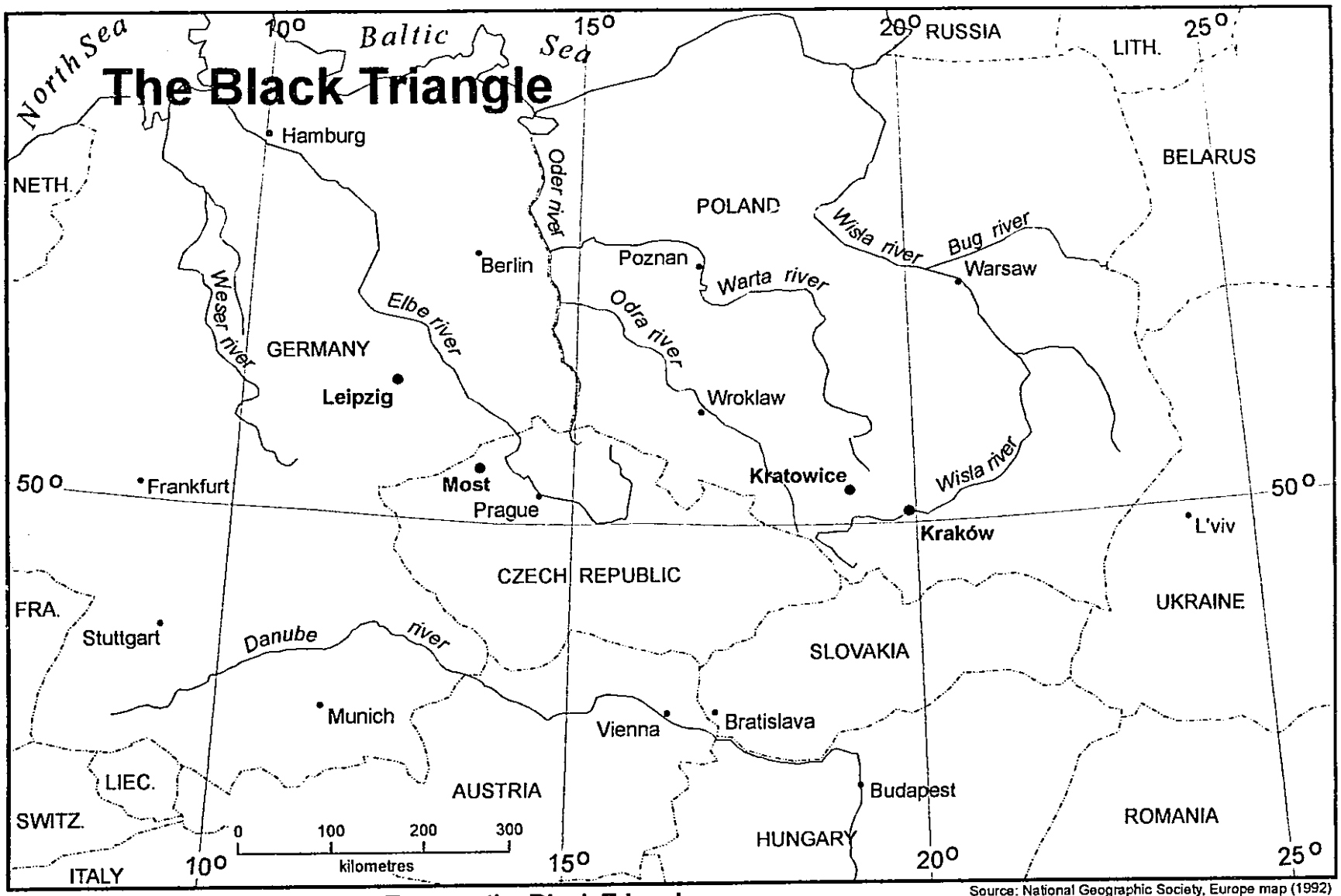
3.3.4. Environmental degradation in Central and Eastern Europe

Since the fall of the Berlin Wall, the number of political refugees seeking asylum in western countries has decreased, mostly because western nations no longer feel the need to protect people from *oppressive political regimes*. The end of the Cold War and the fall of most communist regimes in Central and Eastern Europe brought about a feeling of hope for the future. But since this first "taste of freedom", much of the hope has waned due not only to difficult econom-

ic times, but also the realization that throughout the regimes' hold on power, industrial development and growth were pursued no matter what environmental effects they produced. Today, some regions of Central and Eastern Europe are among the most polluted places on Earth where just breathing air is detrimental to human health.

This section will describe the environmental situation in countries of Central and Eastern Europe and their potential for creating environmental refugees. Although environmental degradation, particularly due to industrial and military activities, is rampant all across the region, emphasis will be placed on countries which were part of the former Soviet realm. Particular emphasis will be placed on a region which covers parts of Poland, Germany, and the Czech Republic, and has been given the ominous name of "Black Triangle" or "Triangle of Death" (see Figure 3.6.) (Walter, 1990). Many believe that this is actually the most polluted place in the world and restoring the environment to its former glory will be a formidable task which few of these new economies can afford to pay for, yet none of these countries can afford to ignore.

Though their environments do not show it today, the former Soviet Union and Central and Eastern European countries had stringent environmental regulations. Official standards were stricter than those of Western nations and were based on scientific research rather than politics (French, 1990b:34). Throughout their childhood, citizens of the Eastern Block were told that "environmental protection is of primary concern" (Walter, 1990). In Western countries, on the other hand, political opinion and lobbying groups (rather than scientists) controlled the implementation of environmental standards. Although this created severe lacunae in terms of accurate environmental data, the democratic process did provide the public with a voice in decision making, and thus some environ-



Source: National Geographic Society, Europe map (1992)

Figure 3.6. Central and Eastern Europe: the Black Triangle

mental standards (such as permissible levels of pollutants produced by Western plants) were implemented all across the West. Generally, the more stringent Eastern standards were never enforced —something that perhaps can be explained by the fact that the *regulator* and the *regulated* were both the central government — and thus the environment was allowed to continue to deteriorate (French, 1990b:34).

For the first time, following the introduction of new political regimes, restricted environmental information was released to the public. No one had imagined the extent of ecological devastation in some regions. "Hazardous waste disposal has been largely unregulated" (ibid.:10), industrial by-products not pumped into the air were dumped into bodies of water at levels almost unimaginable in the West, and sixty five percent of Poland's river water was made unfit for industrial use, let alone drinking (ibid.:11). Today, in the Commonwealth of Independent States, "there are about 300 regions — twenty percent of the former USSR — where ... there are acute dangers to human life due to environmental pollution" (Rybizki, 1990:22). Unfortunately, however, public awareness still remains low (Walter, 1990) and in today's difficult economic times many are more concerned about keeping their jobs rather than protecting the environment (McIlroy, 1990:E1).

It is definitely not lack of knowledge that prevented Eastern governments from acting on researched findings and stopping destructive practices which could have prevented environmental decline. For example, as early as 1982, a team of scientists analyzed the environmental situation of the Elbe river which runs from the Czech Republic (formerly Czechoslovakia) through Germany (formerly East Germany). The study demonstrated that the Elbe was probably one of the most polluted rivers in Europe (Walter, 1990). For decades waste waters

from pulp and paper plants as well as urban sewage were dumped, untreated, into the river. The Buna chemical plant in former East Germany discharged 20 kilograms of mercury into the river every day (French, 1990b:17). The river was also used to extract often untreated drinking water for over 500,000 people. The Elbe was also infested with high levels of various viruses poisonous for human cells and overall the risk of getting cancer when drinking the water was six times greater than in other areas (Walter, 1990).

Another area which clearly illustrates extreme problems of air, water and land pollution is commonly known as the "Black Triangle" or the "Triangle of Death" (see Figure 3.6). Throughout Central and Eastern Europe, highly polluting heavy industries were established during post-war industrialization and were often grouped in isolated geographical areas (French, 1990b:16). At first these areas had relatively low population densities, but the promise of jobs created an influx of population throughout the years. The Triangle is one such area which covers the Silesia region of Southern Poland (including the cities of Kraków and Kartowice), the Northern region of Bohemia in the Czech Republic (including the cities of Most and Usti), and a section of the former East Germany. The area has been fuelled and devastated by some of the dirtiest coal in the world — lignite or brown (immature) coal — taken from the ground through open pit mining. Huge steel, cement and chemical plants, power generating stations, and other decaying industries in the area require 100 million tons of lignite coal and heavy (anthracite) coal per year. These factories, mostly built in the 1950s and 1960s are aging and release one million tons of sulphur dioxide into the atmosphere per year (Walter, 1990).

According to Renate Walter (1990) a physician at the Institute for Environmental Medicine in Vienna, Silesia — which covers 2 percent of Poland's land

area and containing 10 percent of its population and over 3000 industrial plants — is a region where "childhood is usually a time of illness" and "air quality permanently exceeds" acceptable limits. It is estimated that air pollution in the area is 100 times greater than that of most Western European countries (Walter, 1990). Some statistics include an infant mortality rate of over 3 percent (two to three times higher than most European countries); a 20 percent rate of congenital malformation in cities like Krakow; four percent of children never reach their first year and by the time they are four years old, many are diagnosed with various illnesses related to pollution. Finally, by the age of 10, 75 percent of children need regular treatment for chronic illnesses which include leukemia, anemia, low weight, and various lung diseases (McIlroy, 1992:E1; Walter, 1990). School children living in polluted areas are regularly taken on special vacations to breathe clean air (French, 1990b:5). People living and working in polluted northern Bohemia, where residents die younger than elsewhere in the country, are offered financial compensation termed "burial money" or "a cancer dividend" due to dangerous living conditions. On average, adult lifespan in the Triangle is five to seven years shorter than that in the rest of Europe (McIlroy, 1992:E2).

The public is increasingly demanding immediate results in dealing with the environmental situation. A recent poll conducted in Russia found that 47 percent of those surveyed considered environmental pollution to be the nation's most urgent problem (French, 1990b:9), but very few knew to what extent "people were dying from pollution" (ibid.:10). Factories that produce dangerous chemicals are now bigger than ever and most important of all, the number of potential victims of any accident — people living within the danger zone — has risen dramatically as urbanization has brought more people into the vicinity of industrial zones (ICIHI, 1988:170). So far, the easiest response for the

government has been to simply close plants. In 1989, 240 factories in the Soviet Union were shut down for environmental reasons. As a result, 1990 output was reduced by 5.2 million tons of fertilizer, 951,000 tons of soda, 400,000 tons of cellulose, 387,000 tons of methanol, 500,000 tons of polymers, and over 250,000 tons of synthetic rubber (French, 1990b:36).

Yet the concern is not only where heavy industry is concentrated. The most critical areas are forty-seven underground nuclear testing and waste disposal sites located thoughout the former Soviet Union (Rybizki, 1990:22). As stated by French (1990b:20),

> when 300 children attending two kindergartens began to lose their hair, residents were horrified but baffled. Eventually, after months of speculation, the former director of a local factory revealed that his company had dumped radioactive wastes where the schools were later built.

Furthermore, these industries know little, or care little, about the long-lasting effects on the environments they pollute and the people they poison. For example, the Black Sea is already at a level of ecological crisis. Contaminated water from nuclear power stations, oil sludge from refineries, as well as effluent from heavy metals and nuclear waste buried by the military, are seeping into the sea and have already brought the ecosystem to the brink of collapse (Rybizki, 1992:23).

In the past, nuclear power was considered an important and infinite source of energy which could decrease a country's dependance on fossil fuels and reduce pollution levels in a region. Many therefore believed that opting for commercial nuclear power was humane and that safe reactors were environmentally benign (ICIHI, 1988:161). But recent events such as contamination from nuclear accidents have changed people's perceptions and have made

some wonder whether there is such a thing as a safe reactor. Radioactive clouds, like winds, respect no national borders and have afflicted wide regions causing cancer, genetic disorders and birth deformities in millions of people (ibid. :162). Following the Chernobyl disaster in April 1986, people began to protest in a fashion never before witnessed (French, 1990b:30-31). According to Rybizki (1992:23)

> due to the Chernobyl catastrophe on April 26, 1986, an area of over 10,000 square kilometers, which includes 640 towns and roughly 120,000 people, who directly took part in the clean-up work at Chernobyl, was contaminated with radioactive materials. More than one thousand have died from effects suffered from that work, and some estimates go as high as seven to ten thousand, including 120 cases of leukemia in children due directly to nuclear radiation.

From the situation just described it is quite clear the environment in many Central and Eastern European countries have reached a critical stage. If nothing is done to curtail further environmental deterioration the results could be devastating not only for the region but also for the world as a whole. As environmental deterioration continues, a social time bomb ticks, and the potential number of environmental refugees continues to increase.

According to Josef Varousek, former environment minister for the federal government of Czechoslovakia, the region of the "Black Triangle" has

> high abortion rates, high divorce rates, high rates of family violence, crime and drug use. Educated people flee, hoping to escape. The social system has eroded along with the environment (McIlroy, 1992:E1).

As yet, the number of people trying to leave is limited, due both to regulation and lack of opportunities elsewhere, but with further environmental decline, more individuals will flee. In the mean time, those leaving consist of an educated elite who would be those most likely to contribute to finding ways of restoring

the environment to a more hospitable state. In some regions, a resettlement of inhabitants from contaminated areas to "ecologically clean" regions was considered. But due to the large number of people and cost involved, it was deemed an impossible task by the governments concerned.

It is clear that the only solution is an environmental clean-up on a scale never before seen. Recently, the European Community Cabinet Council put forth a resolution which included a prohibition on ecological dumpings and the export of unclean technologies to Central and Eastern countries (Rybizki, 1992:23). Some countries, such as the Czech Republic, have taken steps towards repairing the damage, but most feel they do not have the funds available to take on such a formidable task. With time, however, if a cleanup is not done, more and more individuals will want to leave their homes and move to environmentally clean areas and, if other industrial or nuclear accidents occur, the exodus could become massive. Whatever is done, it is clear that these areas should no longer wait for the environment to be completely unlivable and therefore the inhabitants have no alternative but to flee.

3.4. Summary

This chapter has examined four environmental situations in separate regions of the globe. Although the geographical location and levels of industrialization of each region are very different in each case study, the results often bear many similarities, demonstrating that the reasons for environmental decline, leading to the creation of environmental refugees, vary according to specific circumstances in each region of the planet. It is essential to note that one factor which is common to each case study, is human intervention which is most often an underlying cause of decline. Keeping these examples in mind, the following

chapter will clarify the concept of environmental refugees by providing a structure which explains the various causes (i.e. structural, root and immediate causes) of environmental refugee flows.

CHAPTER 4

ENVIRONMENTAL REFUGEES:

IDENTIFYING REASONS FOR FLIGHT

4.1. Introduction

The previous chapters have shown that not only is there a growing concern about the phenomena of environmental refugees, as demonstrated by the fact that an increasing number of experts and scholars are trying to deal with the issue, but also that there are a growing number of situations where environmental stress has clearly become a cause of mass exodus. This chapter will provide an overview and analysis of previous chapters. The status of environmental refugees in international law, their access to humanitarian protection, and present definitions of environmental refugees will be briefly reviewed. Environmental flight will be analyzed and classified into structural, root causes and immediate causes. Finally, push and pull factors will be clarified.

4.2. Overview of the situation

Although millions of people have been forced to leave their homes because the land on which they lived became uninhabitable (UNHCR, 1993:18), the international community has yet to truly respond to flows of environmental refugees. The dilemma is mostly caused by continued confusion: confusion about the causes of flight in such large numbers; confusion about the definition of environmental flight; and, confusion about what international body should take responsibility for the mass exodus of environmental refugees, and should protect those individuals and groups already displaced due to environmental change. As long as these confusions remain, the international community will continue to delay dealing with environmental migration and will continue to ig-

nore causes of flight — causes which could be valuable clues to finding ways to prevent further occurrances of environmental flight.

The following sections will first describe existing definitions of environmental refugees, identify their lacunae, and the causes of flight and briefly clarify who should provide protection to those who flee environmental circumstances beyond their control.

4.2.1. Categorization of environmental refugees

There are several definitions available to describe environmental refugees as seen in Table 2.1. of Chapter 2. El-Hinnawi (1985:4) first descibed them as people "forced to leave their traditional habitat [..] because of a marked environmental disruption". These individuals were both permanently or temporarily displaced, and found asylum either within the borders of their country of origin or in another country. In both situations their lives were at risk. With time, from this very broad definition, the RPG developed an extensive framework in 1992 which described *situations which could create* environmental refugees rather then classifying the refugees or displaced persons themselves.

Overall, the "international community is now advocating increased attention to the environment and the ecological impact" on refugees. "Today, refugee policies are more and more environmentally aware" (Lassailly-Jacob, 1994:2). Since the introduction of this classification scheme, many have grappled with the problem, but few have come up with a succinct structure to define environmental refugees. Clearly, it is necessary to start from the causes because, as will be seen on later pages, this is where the solution lies.

4.2.2. Analysis of causes of environmental flight

Taking into consideration the above classification, one can see that there are several possible causes of environmental displacement. Although identify-

ing types of environmental flight provides some understanding, the categories are too broad to provide an adequate structure to deal with the situation. A narrowing of the definition is thus required. Clearly, there is a difference between the flooding of a habitat as a result of dam building and the slow erosion of topsoil due to agricultural activities which eventually lead to desertification. Both examples however are *disruptions caused by development.* Desertification is a permanent event that follows several years of drought and, is different from a volcanic eruption which temporarily displaces individuals and curtails agricultural productivity. Both events however have similar short term results: a potential situation for famine. A volcanic eruption may be an entirely natural disaster, but its consequences will change depending on human activities in the affected region. Flooding is human induced when it is due to the construction of a dam, but a natural occurence if it is due to a monsoon which hits the region. Drought, in many respects natural, may be accentuated by underlying economic and social problems. Some instances of drought and desertification have even been blamed on global environmental change. Finally, with the proper technology and emergency preparedness measures, the disaster may be curtailed and prevented and individual lives saved, and in some instances a safe environment can be re-established.

These examples have shown the difficulty in identifying the causes, but one thing is clear: some countries have the social and economic development to cope with rapid as well as slow changes in the environment, and others do not. Los Angeles is the perfect example, where, aproximately one year after an earthquake which devastated the city, most of the damage has been repaired and, in general, the toll on human life was small. Hence developed nations will **not** be producers of environmental refugees, unless the disaster is truly catas-

trophic. Underlying causes of environmental change and refugee flows thus include poverty, 'underdevelopment', population growth, political unrest, and social and economic instability — all characteristic of developing nations and the results of humankind's economic, social, and political structures, which discriminate against those nations with less power and wealth (Sadruddin Aga Khan, 1981:36). As stated by the UNHCR (1992:18),

> It is no coincidence that those parts of [Africa] that are most affected by soil erosion, drought and other environmental problems, are also the main theatres of armed conflicts, recurrent famine and consequent refugee movements.

It is also not a coincidence that the poor in many instances create a greater stress on their immediate environment, while the wealthy place more stress on distant environments. Thus, the most important aspect of the problem of environmental refugees is that

> [e]nvironmental refugee problems are created not by ecological factors alone (i.e., natural calamities) but by both ecological and political factors that have interacted and reinforced each other over long periods (Lee, 1993:8).

As long as the world continues to function as it does and this dichotomy exists, the **structural causes** of environmental stress — including social and political instability, poverty, economic biases, as well as other general characteristics of developing nations — will not disappear (see Table 4.1.1.), and the potential for creating environmental refugees will remain.

Can environmental degradation alone create environmental refugees? According to Trolldalen, et al. (1992:14), in a report prepared for the World Foundation on Environment and Development (WFED), "cases of movement of people caused solely by environmental factors are rare." Rather, they typically reflect a "combination of natural causes that are exacerbated by human activi-

Causes	Examples
STRUCTURAL	- "underdevelopment" - social/policial instability from previous regimes due to government corruption - poverty
	generally characteristic of developing nations

Table 4.1.1. Examples of structural causes which can contribute to the creation of environmental refugees.

Source: Author's clarification of term.

ties (ibid., 1992:6)". The report divides the causes of environmental refugee flows into **"root causes"** and **"immediate causes"** (Trolldalen, et al., 1992:13) (see Table 4.1.2.). In the context of this thesis they are added to the structural causes just defined.

Root causes and immediate causes can include purely environmental factors, as well as factors initiated by human activities. For example, drought and desertification, the immediate cause of flight in the Sahel, were initiated by root causes such as deforestation, overgrazing, or modern agricultural practices (which did not take the natural environment into consideration), and structural causes such as poverty and "underdevelopment". In Bangladesh, the immediate cause of flight might be flooding — once again a natural phenomena — yet root causes include high population density, deforestation in the Himalayas and changes in global weather patterns and sea-level rise due to global warming. Once again structural causes such as population growth and poverty are present. At first glance this seems to make defining the term environmental refugee more difficult, yet it does clarify the fact that environmental flight is a multifaceted phenomenon.

One should note at this point the clear difference between high population growth and high population density. Population growth is generally a characteristic of developing nations and a *structural cause* of environmental stress (i.e. most developing nations have high population growth), whereas population density (i.e. generally a more localized phenomenon) is more of a *root cause* leading to environmental stress and environmental refugees.

In attempting to further define the concept, Suhrke and Visentin (1991:73), describe environmental refugees as

causes	ROOT	associated	IMMEDIATE
EXAMPLES	Increased Greenhouse gases Global warming	sea-level rise (slow flooding)	Storm surge (rapid flooding in already vulnerable area)
	Deforestation	desertification (slow)	Severe drought (final stages of desertification)
	Urbanization	population density	Catastrophic event (greater number affected due to population concentration)
	Political negligence	technological mismanagement	Nuclear accident (affecting large area)
	Deforestation	Watershed retention affected	Flooding

Table 4.1.2. Examples of root and immediate causes which contribute to the creation of environmental refugees.

Source: Author

people or social groups displaced as a result of sudden drastic environmental change that cannot be reversed.

There are two important points made in this statement: first, that the cause of displacement is sudden; and second, that the cause of displacement cannot be reversed. To clearly understand this definition both concepts must be explained.

It has already been determined that environmental change can be rapid or slow-onset (see RPG classification, Table 2.1.). It is true that when environmental flight does occur, the situation seems desperate and change drastic. This is not always the case. The speed of environmental degradation can be linked to root and immediate causes. The root cause of degradation will persist for decades while people are still able to cope. One catastrophic event, which might be deemed the immediate cause, can however incite people to flee, and this is where flight is rapid. For example, a poor island nation of the developing world (structural cause) might experience sea-level rise for decades (root cause), but a sudden storm surge (immediate cause and also an accelerant of the situation) might make the island uninhabitable within a few days. As discussed in Chapter 3, in this case a developed nation will be able to cope relatively well with the root cause and prepare for potential devastating effects, whereas a developing nation will not.

The second point, the non-reversal of environmental change, is important but difficult to defend as a requirement of environmental refugee status. For example, when populations flee due to a volcanic eruption or earthquake, they return when geologic activities have ceased. When cyclonic storms hit the coast of Bangladesh, thousands are usually affected, but as soon as the cyclone season passes they return to what is left of their homes. But does this mean that

they should not be considered environmental refugees? And if not, have there actually been cases of environmental refugees — i.e., people who have permanently been displaced from their homes due to environmental degradation?

Before continuing this discussion it should be noted that in the not so distant future, more people will be affected by environmental conditions and will decide to flee, whether temporarily or permanently, as areas prone to disasters are attracting ever increasing numbers. In addition, although there are none today, there will be situations in the future where return will be impossible. We generally have the technology to prevent environmental change from affecting populations, but in some cases it will be impossible to bring the environment back to a healthy state within the scope of a human lifetime. For example, contamination from a nuclear accident (such as Chernobyl), from nuclear testing or waste dumping (as is the case for some areas of Eastern Europe or the Pacific), will last for centuries. Also, if Haiti looses all topsoil — a situation likely to occur in the next few decades — the Eden which once existed will be very difficult to recreate. In this and other situations, provisions will have to be made when fewer people will be *able or willing* to return home following an environmental crisis.

In addition to root and immediate causes of flight, there are also push and pull factors (see Table 4.2.) which could create environmental migration and are important elements in understanding environmental refugees. For example, Suhrke, et al. (1991:74) believe that the term "environmental refugee" should be reserved for those individuals with least resources who must wait until the crisis is at a later stage to move — i.e., those individuals who wait until the situation is so bad that they are pushed out of their home regions. That is "people who reside in overpopulated areas vulnerable to floods and earthquakes" and "take

	PUSH factors	PULL factors	level of URGENCY
Convention Refugee (1951 Convention)	Medium to High	Low	Medium to High
Environmental Refugee	High	Low	High
Environmental Migrant	Medium	High	Low
Development Refugee (defined in Chapter 5)	High	Low	Low
Development Migrant (defined in chpater 5)	Medium to High	Medium to High	Low

Table 4.2. Table showing level of urgency in selected situations of displacement.

Source: Author

their unhealthy conditions for granted" and only leave when the *immediate cause* has occured and death is imminent (Lee, 1993:27). This somewhat reiterates Islam's belief, noted earlier in this thesis, that the term *refugee* shows the desperation felt by those facing environmental decline. But once again, use of the term "refugee" to describe persons who are displaced for environmental reasons is problematic. Although such persons are in desperate need of assistance, they often do not satisfy the criteria that have historically justified Convention refugee status (Trolidalen, et. al., 1992:2).

Those who are able to leave early in the crisis, when the environment has not reached a critical stage, should therefore not be given environmental refugee status as they are fleeing only a *perceived* future threat to their lives. Root causes in this instance have been initiated, but there still is time to act against further environmental deterioration. As was stated earlier, those leaving an affected region consist of an intellectual and financial elite who could most likely contribute to restoring the environment, but rather decide to migrate. William B. Wood (quoted in Lee, 1993:10) "coined the phrase *ecomigrant,* to refer to those who are not only pushed by deteriorating environment or natural disasters but pulled by the perceived opportunities afforded by resource-rich environments". Although this term is intended to show the "dilemmas that tie together all migrants" (Ibid., 1993:10), his argument does not show that the urgency faced by refugees is not always faced by migrants.

When examining push and pull factors, some see a clear distinction between environmental migrant and environmental refugee. If pull factors are stronger than push factors — i.e., the individual is migrating to a better environment and not from one which can no longer sustain life — he/she is an environmental migrant and not an environmental refugee. Determining which is the

strongest factor is a difficult task, yet if there are factors which pull individuals towards regions not suffering from environmental decline, the reasons for movement should be examined in detail. These reasons might provide insight on, and forewarning of, a critical environmental condition in both the source region and the region where they have moved, which could give rise to environmental refugees in the future. For example, in many developing nations an increasing number of people are attracted to areas which have rich soils, but are environmentally unstable and potentially dangerous. Such areas include the deltaic area in Bangladesh — prone to flooding — or rich volcanic soils in geologically active areas in the Philippines. As more are attracted to a region, first environmental stress on land will increase due to population density, and if a disaster is to occur, more people than before will be affected. As stated earlier, because most governments do not recognize environmental decline as a source of migration, marginal lands are increasingly being cultivated, and large scale migration is increasingly becoming the end result (Jacobson, 1988:16).

While the above examples might be relatively clear, others are not as straightforward and involve even more complicated socio-political factors. For example, some believe that migrants displaced by the construction of a dam do so on a voluntary basis (Surhke, et. al., 1991:74) and therefore should not qualify as environmental refugees. The push factor is clear — flooding of land previously inhabited — and flooding is the result of an overall development plan. It is in many ways difficult to agree with this statement. Whereas in some instances individuals are compensated for their displacement, not all situations of displacement due to development are acceptable to those who are displaced. Many governments force individuals to leave their land without their consent or adequate compensation. This often occurs when dealing with the relocation of

indigenous populations whose way of life is closely associated with the land they use to survive. Frequently, no effort is made to truly compensate them, and in many cases no adequate compensation for the loss of their traditional land can exist (UNHCR, 1993:18). Should they therefore be considered environmental migrants who willingly leave, or environmental refugees who are forced to leave by push factors beyond their control?

To conclude this discussion the following should be restated: whether push or pull factors are stronger — as "environmental migrants are responding to both push and pull factors" (Lee, 1993:9) — as long as there is one environmental cause which has influenced migration, the movement of people should be looked upon as indicating a potential area which is experiencing environmental decline and could be a source of environmental refugees. This way of dealing with the situation might respond to those critical of the concept, such as Mougeot, by clearly distinguishing when the environment is finally the cause of flight. In some cases migration can also be part of the solution rather than part of the problem (Ibid., 1993:9). But as long as people are leaving regions because they believe the environment is better or worse in any location, environmental migration might occur.

Finally, one should note that many of those displaced due to changes in their environment move within their national borders. Today, the majority of migrants remain within their own countries, followed by "the next largest share" who "move across national boundaries within the less developed world, and a relatively small share" who "cross borders to industrially advanced countries (Meissner, 1992:66). According to Lee (1993:3),

> [a]n estimated 17 million are displaced within the borders of their own country ... because of war, ethnic strife, or because of forced

relocations by their governments.

Until recently, it was assumed that refugees were outside the country of persecution, and work on refugees always took this as a given criterion. The internally displaced were mostly ignored. Today, this is no longer possible and there have been various responses to the problem. For example, as quoted in Lee (1993:8) the RPG stated that

> while environmental migrants may require humanitarian assistance from the international community, environmental refugees, whether internally or internationally displaced would need protection as well (1992:24,42).

Some authors however feel that

> in order to gain universal acknowledgement of a definition of environmental refugees, the international community must first focus on preventive actions, protection and assistance of the externally displaced (Trolldalen, et al.,1992:7).

This way of thinking might respond to migration pressures in Europe where, although the share of those who cross over European countries is "proportionally small, migrations ... are sizable and have led to fierce political debate and calls for dramatic policy changes" (Meissner, 1992:66-67). But this fact remains: most environmental refugees are and will be internationally displaced and the largest growth of migration is among those who are internally displaced.

To respond to this, the United Nations Commission for Human Rights has placed the issue of protection of internally displaced on its agenda. Through the eyes of some, this was done hoping that the new agenda will deal with them separately, thereby not associating them with Convention Refugees. UNEP, on the other hand, recognizes the limitations of the conventional notion of refugees and feels that the definition of a refugee should extend beyond the persecuted individual to entire groups of people fleeing dangerous situations (Lee, 1993:5).

Perhaps Otunnu (1992:14) was correct in stating that the word refugee was "too inadequate to accommodate environmental refugees", but as yet, it is the only word that truly expressed the stress experienced by these individuals when migrating.

As the situation becomes increasingly critical, and more individuals are displaced internally, we can no longer ignore them in the name of state sovereignty. Clearly, not all states will protect their own members and therefore the argument that the international community should provide some protection to all people living on the planet is becoming more valid. However, the problem of who should provide protection remains.

4.2.3. Who provides protection?

Although aid agencies will unconditionally provide food and attempt to satisfy the immediate needs of those who are displaced, it is easier and more efficient when the agency responsible for providing help is clearly identified. As was discussed, there can be several structural, root and immediate causes which could create environmental refugees. If the cause includes war or civil strife, the ICRC or the UNHCR would clearly be within their mandates. Natural disasters on the other hand are officially within the mandate of the United Nations Disaster Relief Organization (UNDRO). In many instances, persons fleeing environmental change might seem more like economic migrants and thus will "not qualify for refugee status, UNHCR protection, or assistance, and will have to survive in whatever way they can" (Lee, 1993:4). Although their existence is recognized (Goodwin-Gill, 1990:27), this lack of clarity also drives organizations to delay in acting on impending flows of environmental refugees. In addition if they stay within their country of origin, the "first recourse remains their own governments and societies" (UNHCR, 1993:18).

Therefore, the burden of protection is increasingly being placed on the country of origin, and more countries — especially in the West — are hoping to find ways to ensure that potential environmental refugees do not leave regions affected by environmental decline. As seen previously, European countries clearly hold this view. But are western countries providing source countries with the means of protecting their people and their environment? Should they be protected by the international community when their own governments do not protect them? Since short term assistance is a much less problematic area of international action than long term international protection (Trolldalen, et al., 1992:8), should the international community limit itself to assisting these individuals when the need is greatest and not worry about the environmental factors which caused the flow? Although western nations created the bulk of global environmental problems, western interests are clearly not able to deal with structural, root and immediate causes of environmental refugee flows, just preventing the resultant flow itself, which of course will not provide a clear solution.

The only way to ensure that people are not forced to leave their country of origin due to environmental degradation is to institute a system which forecasts environmental degradation thereby halting potential flows of environmental refugees, while keeping in mind that environmental refugees are often linked to other problems in the socio-political realm. Perhaps a "strong, separate, and well-institutionalized international organization" responsible for forecasting environmental decline and the refugee creating potential of an area "can play a vital role in monitoring and correcting harmful governments' developmental policies" (Lee, 1993:27). One recommended structure is similar to that of the Department of Humanitarian affairs, an inter-agency organization, which coordinates the efforts of UNHCR, UNDRO, and the United Nations Protection Forces

(UNPROFOR). Because of their particular circumstances of flight, an organization coordinating the efforts of UNHCR, UNEP, and UNDRO for example, could be set up in the short term, but in the long term a greater effort has to be made.

4.3. Summary

Migration due to environmental change is probably already occurring. Enough time and efforts has been focused on discussing the situation and it is now time to react and take steps towards providing assistance and protection to those affected, and searching for concrete solutions to the problem. Because it is still unclear who should be responsible for the protection of environmental refugees, the following chapter will provide a flowchart showing the development of environmental migration and two possible steps, which taken by the international community, could lead to a solution to environmental degradation and environmental flight. In the long term, this structure and way of thinking might even lead us to an early warning system of environmental refugee flows.

CHAPTER 5

GENERAL CONCLUSION:

DEFINING ENVIRONMENTAL REFUGEES

5.1. Introduction

The final objective of this thesis is to develop a clearer understanding of the process which can lead to the creation of environmental refugees, as well as provide a definition that could be more acceptable to the international community. Throughout the thesis an understanding of the processes that lead to environmental degradation and migration was developed. This in turn has shown that in most situations one can intervene while environmental degradation is progressing to curtail future mass migration caused by the environment. Clearly, intervention is the only way to provide a long term solution.

5.2. Environmental refugee: a definition

The concept of environmental refugees has evolved from a broad definition of "people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption" (El-Hinnawi, 1985:4), to the underlying reasons of environmental refugee flows — structural, root and immediate causes. To clearly view the processes and steps involved, the flowchart in Figure 5.1., has been designed to describe the steps leading to the creation of environmental refugees.

Based on the flowchart, this author defines an environmental refugee as

> an individual who has been affected by environmental decline in his or her region; whose government is not able to deal with changes to the environment due to political, social and economic

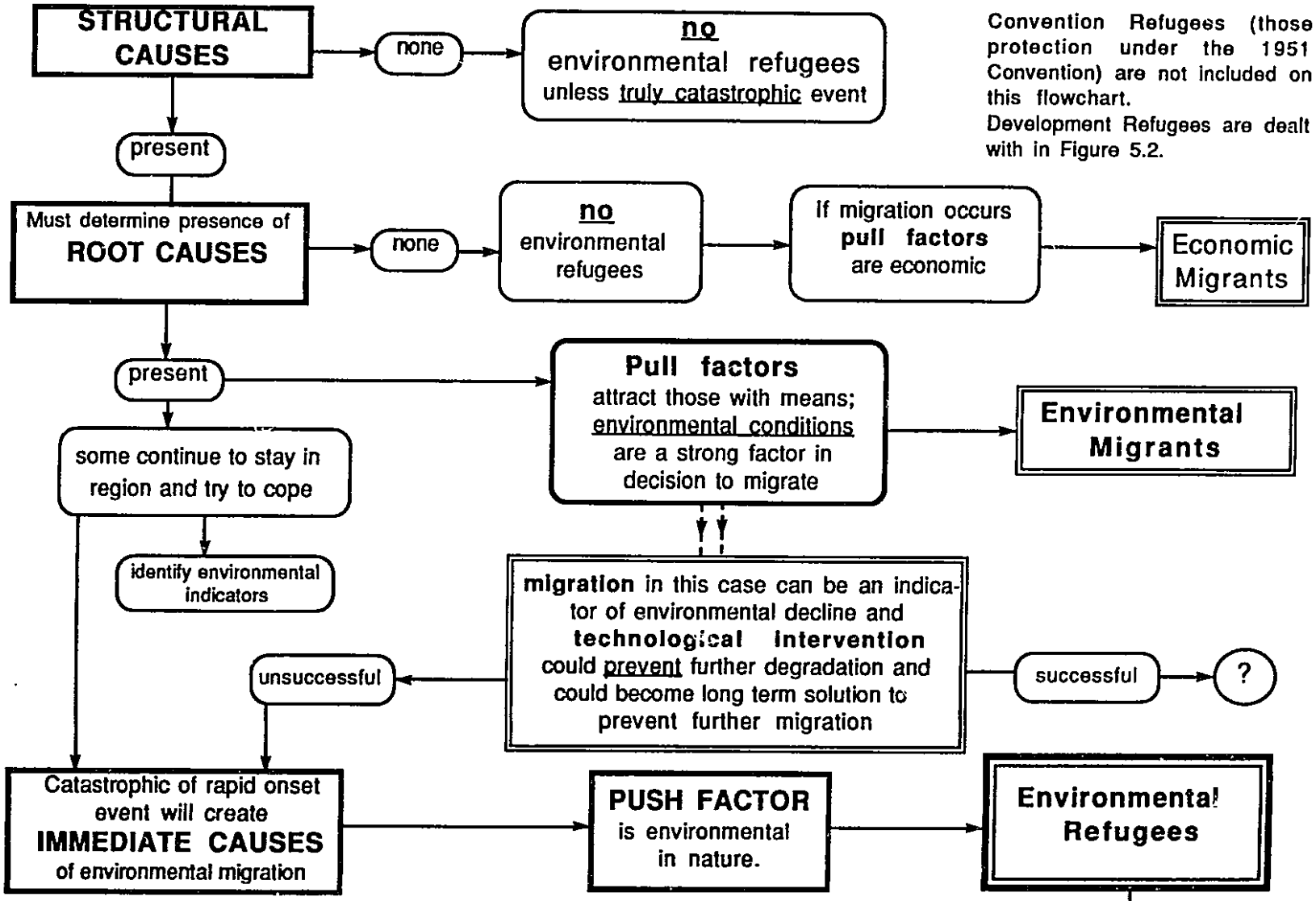


Figure 5.1. Flowchart showing how environmental refugees can be generated following environmental degradation.
Source: Author

conditions in the region; who has been pushed away from his or her region due to a natural or human-induced event related to the environment of the region; and, is unable or unwilling to return to the area in question, and unable or unwilling to avail himself or herself of the protection of his or her own government.

Hence, to identify an environmental refugee using Figure 5.1., one must first, demonstrate the presence of *structural causes* of environmental flight. If there are none the region in question will generally not produce environmental refugees unless a truly catastrophic event occurs. If structural causes are identified, the second step — the identification of root causes — can be initiated. Once again, if progressive environmental decline (i.e. root cause) does not exist, yet migration from the region persists, pull factors are strongest and **economic migrants** are the result. If root causes which could lead to flight exist, pull factors might still attract those with the financial means to migrate (i.e. **environmental migrants**). Migration should be used as an indicator of environmental decline and a prompt response is required by the international community to prevent further environmental deterioration.

The final scenario described in Figure 5.1., examines the situation when both structural and root causes have been identified and individuals continue to stay in the affected region and try to cope with the changing environmental situation. At this time, environmental indicators can be used to provide greater information about the nature of the decline in environmental conditions. The final reasons for flight, the immediate causes, are the major push factor and force individuals to move outside their area of origin. Because push factors are strongest, **environmental refugees** are the result. These migrants do not necessarely have to cross borders, thereby being internally or externally dis-

placed, and should receive international protection if their governments do not, or cannot, provide such assistance. They remain environmental refugees until the time when their home environment is once again hospitable, they are willing to avail themselves of the protection of their governments or return to their home nation to perhaps help cope with the environmental problem.

To add to the flowchart of Figure 5.1., Figure 5.2. describes groups of migrants resulting from the specific situation of a development project and includes **development migrants** (those who are compensated when the environment in their area of origin has been changed due to a development project); and **development refugees** (often indigenous communities, who are *forced* to leave their land after it has been altered by their governments, due to a development project).

The above definitions go a long way towards more clearly defining environmental refugees. Yet, should they be incorporated into existing international organizations, systems and aspects of international law, or, should new structures be created to deal with these individuals? The following sections will provide two possible alternatives.

5.3. Defining Environmental Refugees: options for classification

Since "there is a growing consensus that the number of environmental refugees around the world is increasing" (Trolldalen, et. al., 1992:2), a clear and precise definition, like the one just provided,

> is important for practical, legal and institutional reasons if there are to be any serious proposals for action at international or intergovernmental levels (ibid.:5).

Such a definition is of no use however if it is not incorporated into the appropri-

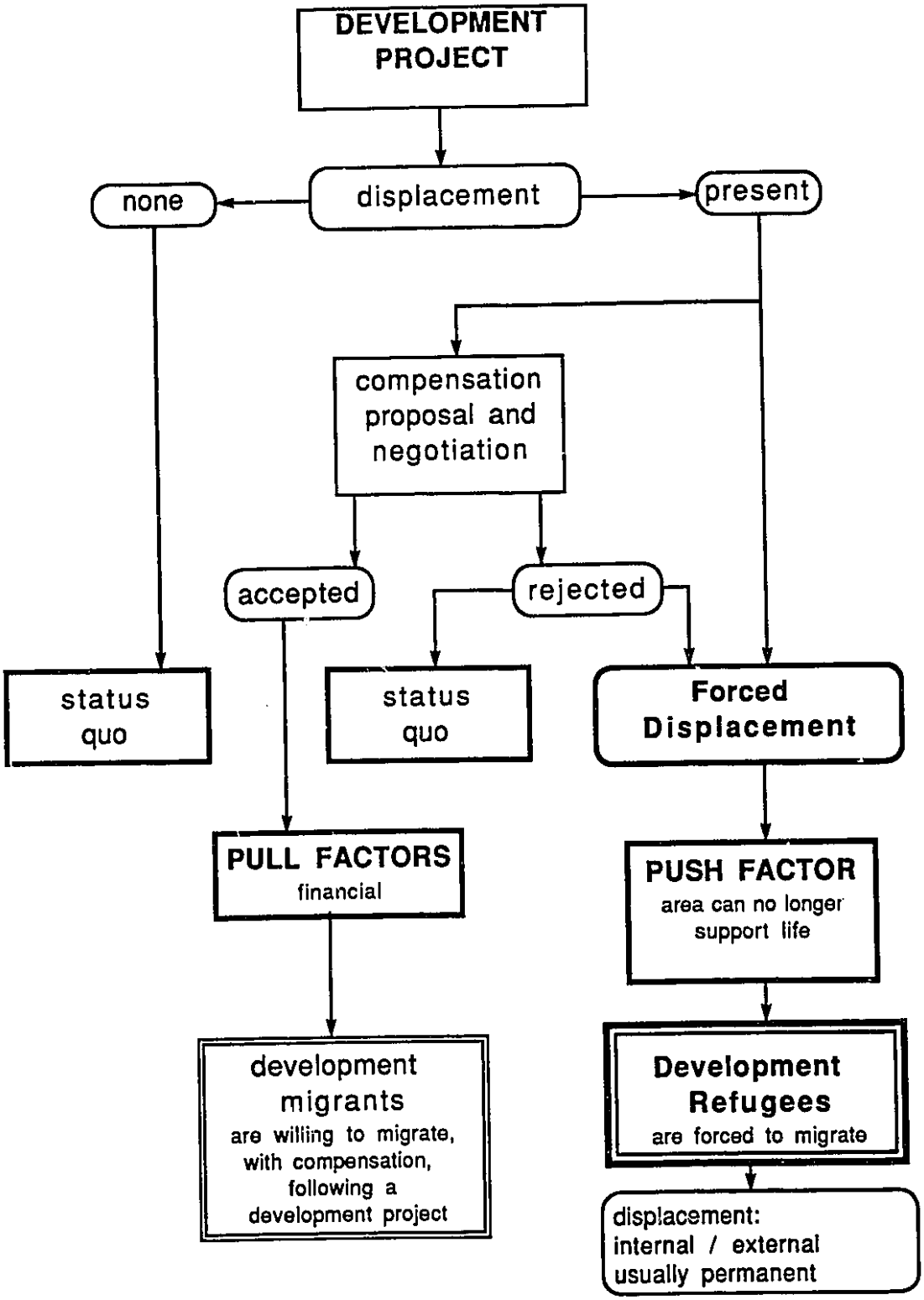


Figure 5.2. Flowchart showing a scenario for the creation of development migrants and development refugees.
Source: Author

ate sector of international affairs. Two possible alternatives are: (1) incorporating environmental refugees into an International Charter of Environmental Rights; or, (2) expanding existing tools to include environmental refugees as people needing some form of assistance or protection.

5.3.1. Environmental Rights Charter

A possible solution is to use the definition of environmental refugees presented and venture into a new form of international agreement such as a Charter of Environmental Rights. Some steps have already been taken to initiate such a document. For example, the Republic of South Korea was the first country in the world to recognize environmental rights as a human right (Chae Shik, 1995 via Lazarus). The principle listed in the Constitution of the Republic of South Korea include that "all citizens shall have the right to a healthy and pleasant environment, and "the State and all citizens shall endeavor to protect the environment" (ibid.). Among developed nations, Ireland requested that the European Community approve the first international document which identifies humankind's "basic environmental rights" (Lazarus, 1990:14). According to Lazarus (ibid.), its principles include

> the right of citizens to clean air, safe drinking water, soil and adequate food, and the right to obtain information about the environment and to take part in decisions on environmental matters.

How would an environmental charter deal with environmental refugees? First, a charter would define minimum environmental standards for all humankind — i.e., basic environmental rights. If these rights were not available to some, the country or region affected by environmental decline could be identified at an early stage. This method has the advantage of being **proactive** rather than **reactive**. In addition, the identification of these **critical zones** of envi-

ronmental decline and acting on their identification is the first step towards analyzing the declining relationship between the human race and the environment. There are several levels of progression when doing a critical zone analysis and intervention is possible at any of these levels (Meredith, et al., 1994:5). In some situations, environmental refugees could be the final result of such a progression. Also, when examining Figure 5.1., areas of possible intervention can be identified (e.g. technological intervention) and this could possibly prevent environmental refugee flows. Finally, realizing that there is a progression towards environmental deterioration is also an important step towards identifying regions which have a potential towards political and social instability. After all, environmental problems which affect economic and social structures in a society often lead to situations of social and political unrest. Giving assistance to regions which are identified this way could curtail any further problems, including environmental migration.

According to computer modelling developed by Onishi (1994) (who uses four major variables including; the destruction of the environment; failures in development; displaced persons coming from specified regions; and human rights abuses), identifying critical environmental areas is possible. Although any model will not be able to forecast exact numbers, due mostly to the lack of coordination between various bodies of the United Nations and governments — a fact which once again provides justification for a coordinating body specifically designed to protect environmental refugees — such models could give us the necessary information to provide help to areas suffering from environmental degradation.

Although this modelling does seem logical in many ways, there are many problems associated with its smooth functioning. For example, if the organiza-

tion responsible for environmental rights is formed within the structure of the United Nations (perhaps as part of UNEP), state sovereignty will always be an issue. Technological and scientific assistance designed to cope with environmental change will only be initiated if the country in question is willing to accept it. Because the environment is often used as a tool to control minority populations (e.g., indigenous populations in the Chittagong Hills of Bangladesh), many nations will not accept any outside intervention (Chittagong Hill Tracts Commission, 1991; Löffler, 1991). It is also clear that in many instances it will be impossible to reach the affected population in time. If they eventually leave their home country, they will require and more easily receive assistance and protection. A provision will therefore have to be made within the charter for environmental refugees who cannot depend on their countries for assistance or might require permanent resettlement (e.g. displacement due to sea level rise).

There are also several advantages to creating an Environmental Rights Charter. First, because Convention Refugees are processed on an individual basis and environmental refugees tend to travel as part of a mass exodus, existing efforts are not able to process potential environmental refugees properly. Because the creation of environmental refugees is caused by several factors rather than one, and they are often internally displaced and sometimes require permanent resettlement, a charter designed to explain the unique circumstances of environmental decline can take all factors into consideration. David Barker, a former UNDP official, provided this alternative definition of environmental refugees:

> Environmental refugee refers to those who are compelled to move from a combination of environmental and political factors and/or who are unable or unwilling to avail themselves of the protection of their own countries in dealing with the impacts of environmental

disruptions (Lee, 1993:7).

An organization responsible for controlling the state of the environment and identifying zones which could produce refugees could clearly protect this group of migrants whether they are internally or externally displaced, or even whether the push or pull factors are the strongest. The only important criterion to an environmental organization is that one cause of flight — whether root or immediate — has something to do with environmental change.

We could be facing a situation where environmental degradation will become the world's worst problem. Thus, should an independant international body not take full responsibility for the potential results and prepare for the worst case scenario and thus increase our coping potential? By taking care of the environment will we not contribute to improved conditions and political stability? Such questions will remain until a decision is made.

5.3.2. The expansion of existing tools

A second alternative to deal with environmental degradation and the creation of environmental refugees is to expand existing tools so they would include environmental refugees as a group in need of assistance and protection. International agreements including provisions designed to protect groups, individuals, children, or women, to name a few, already exist and have been ratified by many nations. The major problem faced by the international community is the difficulty convincing national powers to adhere to existing agreements. Rather than creating new charters and declarations, the implemention of those that already exist should be a priority. Would it truly be possible to surpass the provisions described in the Universal Declaration of Human Rights or the 1951 Convention in today's context of protectionism and silent agression among nations? Would any western country be willing to open its door to individuals flee-

ing newly described circumstances?

According to Trolldalen, et al. (1992:5),

> environmental refugees should be viewed as a category of displaced persons that *supplements* the categories of persons defined in the 1951 Convention Relating to the Status of Refugees .... The creation of a new category of 'environmental refugees' should *not* compromise the status and standing of the refugee definition in the 1951 Convention.

In this case environmental refugees should refer to individuals "who are *coerced* or *forced* to leave their homes for environmental reasons that threaten their lives and, only persons "who have *crossed an international border*" should be eligible. This second statement (crossing international borders) reiterates the problem stated in the previous section — as long as the United Nations is responsible, state sovereignty will be at issue.

If environmental refugee status was an extension of already existing refugee protection, provisions for environmental refugees should be (1) temporary asylum, an essential criteria for Convention Refugees; (2) technological transfer; and (3) reclamation of lost land (ibid.:11). Under this structure, asylum, although temporary, is only necessary when the area has already been affected by environmental decline.

> In the same way as causes of environmental disaster are considered to be man-made ... they are also likely to be seen by governments as 'temporary' causes of displacement. This factor, in addition to the large numbers of persons displaced by such disasters, *makes it quite unlikely that governments worldwide will accept third country resettlement as a solution* (Ibid., et al. ,1992:11).

However, environmental refugees will have the right to non-refoulement as do other refugee groups (UNHCR, 1993:20), and technically they could not be forced to return home. One should note that this structure also takes into consideration the fact that political and social conditions of unrest also are contribu-

tory causes to environmentally harmful conditions. In this scenario, individuals would have access to refugee status under the present Convention, yet, it should be noted that Trolldalen, et al. (1992) also believes that since the UN is not able to cope with the responsibilities it faces it would be difficult to expand its mandate to deal with this new group as well.

Once again prevention is probably the most important solution to the problem of environmental refugees, and technological transfer is part of this prevention. Often, when the environment is threatened, technology can sustain and repair a weak environment and can also increase a region's carrying capacity if the population is increasing. When dealing with technological transfer one should note *a priori* that many **structural causes** of environmental degradation and environmental migration must be eliminated, or at least reduced. First, political stability is a must when technological transfer is used to stabilize the environmental situation. Controlling population growth is also essential if technological transfer is to be successful. Development projects should continue to promote women's education because population growth — a structural cause — can be controlled only if women are involved. Also, women and children are those who are the most affected by environmental degradation as they are often left behind to cope with root causes of flight and leave only when they have no other alternatives.

When the environment can no longer sustain life in a region, a provision to reclaim lost land has been added to the scenario described by Trolldalen (1992). This is once again done through scientific and technological means and will be essential for many countries to regain their stability. For example, Haiti can survive in the future only if technological know-how, designed to regain its agricultural base, is introduced. If sea level rise does occur, Bangla-

desh will only be able to regain land if a system of dams of dykes are built along the shoreline. The Black Triangle will only become livable if serious changes are made to the industries in the region. In all of these situations however, "the later the intervention, the less effective the efforts become" (Abedel R. Oman quoted in Lee, 1993:9).

Once again there are both advantages and disadvantages to this solution of expanding existing tools to deal with environmental refugees. On the one hand, the current system already gives minimum standards of assitance and protection to all persons fleeing areas of stress. Some even argue that environmental refugees may already be protected by the "right of refuge in the case of *real distress* or *force majeur* amounting to an *urgent and grave necessity* for refuge (Trolldaien, et al., 1992:10; Hathaway, 1991). On the other hand, Convention Refugees (i.e. those protected by the 1951 Convention) are given temporary refuge, an interim stage, which may not be the case for environmental refugees in years to come. One advantage of expanding the present protection however is that a search for solutions is a major goal when dealing with Convention Refugees, and will also be a goal when dealing with environmental refugees.

5.3.3. Overview of options

Both options — incorporating environmental refugees into a Charter of Environmental Rights or expanding existing documents which now deal with convention refugees — have the potential to adequately deal with growing numbers of environmental refugees. Yet one thing should be clear no matter what option is chosen: under any circumstances a Charter of Environmental Rights, which describes the fundamental environmental rights of all people, should be developed. In addition, environmental refugees should be recognized as a le-

gitimate result of environmental instability, and, although they will not be those most affected, developed nations should take the initiative when dealing with environmental rights.

Why is a Charter of Environmental Rights so essential? Mostly because environmental refugees, the main focus of this thesis, are simply one component of environmental degradation. The root causes — whether they be deforestation, drought, cyclonic storms, increasing carbon dioxide emissions, or air pollution — must be dealt with immediately. According to Grubb (1990:69), all environmental problems can be coped with only within the framework of a global agreement which would include international research, monitoring, and would also recognize the need to take action when necessary. Whether environmental refugees are recognized or not,

> [t]he international community has every interest in responding to the need to preserve and rehabilitate the environment before degradation leads to violence and persecution — and a mass of displacement people who easily meet the conventional definition of refugees (UNHCR, 1993:20).

A continuous survey of the environmental status of nations would therefore be an integral part of the Charter, in addition to trying to control the levels of environmental damage worldwide. Admittedly, international targets to reduce everything from carbon dioxide or CFC emissions to controlling dumping in the oceans have been tried. As the recent Canada-EEC "Fish War" has shown, suitable results are difficult to attain without some compromise by all parties involved.

The third issue, the involvement of developed nations, is critical. Clearly Southern and Northern environmental priorities are not the same. While northeners worry about global warming, ozone depletion, various forms of pollution,

and biodiversity (including species extinction), southerners must cope with desertification, lack of food and clean water, and basic survival in a hostile environment (IDRC, 1992:25). The poorest of the world live in the world's most fragile environments and it is of global concern if the environment in these regions further degrades. Why should northern countries get involved? One reason is that northern trade policies with the south introduced monoculture and green revolution techniques, and were often the reason for environmental decline. In addition, northern consumption of fossil fuels is the main cause of global climate change. Also, northern countries will have to face the possibility of global instability and massive migration across borders. In a recent article of The Atlantic Monthly written by Kaplan (1994:46), the author uses Africa as an example of what should be expected the world over if our problems, environmental and other, are not attended to. He states,

> West Africa is becoming *the* symbol of worldwide demographic, environmental, and societal stress ... [and] provides an appropriate introduction to the isues, often extremely unpleasant to discuss, that will soon confront our civilization.

According to Kaplan (ibid.: 58) mentioning "the environment" in foreign-policy circles is still not viewed as an important criteria, even though it might be "*the* national security issue of the early twenty-first century."

Developed nations are those who have the technology and the funds available to curtail further environmental decline. Technical transfer is actually a more fundamental issue than many realize: "Developing countries could 'leapfrog' directly to more advanced and efficient technologies" (Grubb, 1990:78), and by providing an adequate and safe standard of living, social systems in most regions will remain stable, most people will not want to displace themselves, and fewer will become environmental refugees. If things remain as

they are today it is clear that fewer and fewer people will be recognized as refugees, and Convention Refugees will become a small fraction of those moving. How will it be possible to explain why the official number of refugees is decreasing when larger numbers of people will circulate the globe searching for an environment which will support them?

5.4. Summary

This chapter has attempted to more precisely define the concept of environmental refugees and to analyze reasons for the creation of this group of migrants. Although the concept has been greatly clarified, further research will be required and more information on these migrants must be collected to ensure their protection in the future. For now the following steps are clear. The international community must:

1) Take a proactive approach and deal with the situation before it occurs, thereby alleviating human suffering and political instability;

2) Continue to work on developing an Environmental Rights Charter. Such a charter would identify basic environmental rights and thus, regions where basic rights are not attainable can be identified by the international community;

3) Intervene in such regions by providing aid such as technological and educational help which could prevent further progression of environmental degradation.

If environmental degradation is too far progressed, according to international standards, it will then be advisable to provide individuals with temporary or permanent asylum, whether they are externally or internally displaced. At this time, migrants can be identified as environmental refugees, environmental mi-

grants, development migrants or, development refugees, depending on their situation and the international agreement which is used.

Although it is doubful that the international community will suddenly accept either approach, it is hoped that the provisions developed in this thesis will form the focus for more informed discussion which might respond to questions related to the creation of environmental refugees. The proactive approach proposed, is designed to prevent greater confusion and further misery for those seriously affected by environmental change. Were it possible to visit Earth from another planet on an anthropological expedition, it would be impossible to explain current human behavior towards the environment. Neglect and abuse of the environment has lead to a situation where an increasing number of regions can no longer sustain its population. Our planet's environment is stressed to the limit and the world is not willing to share its resources as equal partners. As long as these inequalities exist, many millions will leave their homes because they cannot cope with the local environmental conditions. Change will hopefully come, sooner than later if a proactive approach as proposed here is adopted and implemented.

Endnotes

1. i.e., where the number of persons is high in relation to the country of origin or the country of asylum.

2. i.e., where the majority of migrants specifically belong to one religious or ethnic group.

3. One should note that the term "displaced person" was reserved for individuals who were displaced within their own country, often by a human-induced disaster, while the term "refugee" in accordance with the definition of the 1951 Convention, only included those who crossed international borders (Goodwin-Gill, 1988:150), therefore providing a clear distinction between the two groups. Over time however, the factors that were found to create refugee flows varied and the definition of a displaced person was extended to some groups who crossed international borders, thereby making the classification much less clear.

4. While the authorities agree that permanent and durable solutions (including voluntary repatriation or assimilation in new national communities) should be the ultimate goal, it is recognized that the conditions which gave rise to refugee flight, in particular environmental deterioration and environmental catastrophes, require more detailed study (Goodwin-Gill, 1991:29).

5. Parties agreeing to the terms of the Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal, September 16, 1987) must ensure that: 1) emissions of identified substances which may affect the ozone layer remain at their 1986 levels; 2) if increases are necessary, they be no higher then 10%, and; 3) from the period of July 1993 to June 1994, emissions should decrease by 20%. Importing or exporting these substances are banned. Special provisions are also made for developing countries in that developed nations are encouraged to "facilitate access to environmental safe alternative substances and technology" to developing countries (External Affairs, 1990).

6. Although most experts believe that an increase in the amount of greenhouse gases will bring about increased temperatures and global warming, recent studies have brought about the idea that perhaps long term increases could reduce the amount of solar radiation which penetrates the atmosphere and therefore reduce the average temperature of the planet, in the long term. This hypothesis stems from research done on Arctic ice sheets which showed an increase in greenhouse gases before periods of glaciation. This could mean the beginning of a new ice age.

7. At a recent global environment conference in Berlin (March-April 1995) a global agreement on air pollution and climate change seemed more remote than ever. The conference was set up to create a framework for new cuts on industrial emissions — mainly carbon dioxide. Industrialized countries con-

tinue to argue about what kind of cuts are necessary, while developing countries — especially rapidly developing countries such as India and China — as well as oil producing countries generally felt that these limitations will slow economic growth. At this stage the chances of ever developing a global policy on industrial emissions is doubful.

(p. A2, The Globe and Mail, April 3, 1995)

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