Pressure Points:
Environmental Degradation,
Migration and Conflict

Astri Suhrke
Chr. Michelsen Institute

The environmental refugee has appeared in the literature on environment and security, and with it the refugee as both a cause and victim of conflict. Some fear environmental degradation will produce "waves of environmental refugees that spill across borders with destabilizing effects" on both domestic order and international stability (Homer-Dixon 1991:77). Others focus on Africa, as the presumably most vulnerable area, arguing that deepening desertification already has displaced millions of people and generated acute as well as long-term structural conflict (Hjort af Ornäs and Salih 1989, Bennett 1991).

This paper attempts to systematize the links between environmental degradation, migration and social conflict that are present in the literature. The starting point is one of skepticism towards the catastrophic notion that environmental degradation will generate massive population displacement which in turn will ignite social conflict. Conflict is obviously not a necessary consequence of migration; nor is it clear that environmental degradation by itself is a major cause of population movements. To determine under what conditions the sequence of degradation–displacement–conflict develops, we must address two central questions: first, is environmental degradation associated with particular migration patterns, i.e., are there environmentally driven migrations? And, second, when do such migrations result in conflict?

Common forms of environmental degradation include desertification, land degradation, rising sea levels induced by global warming, and deforestation with its many consequences. Recognizing the importance of these processes, preparations for the United Nations Conference on Environment and Development (UNCED 1992) identified four fragile eco-systems of the world — i.e., regions with severe deforestation or desertification, the low-lying coastal areas and the "vanishing" islands.[1]

Only environmental degradation in the developing world will be discussed in this paper. The consequences of environmental change are particularly severe in poor, agricultural communities whose production system is most dependent on natural cycles and who lack the means to protect themselves through technological innovation.[2]

Environmental Degradation and Migration

While the literature on environmental change and population movements is quite limited, two different and opposing perspectives can be discerned. One — which I will call the minimalist view — sees environmental change as a contextual variable that can contribute to migration, but warns that we lack sufficient knowledge about the process to draw firm conclusions. The other perspective sets out a maximalist view, arguing that environmental degradation has already displaced millions of people, and more displacement is on the way.

The Minimalists

The minimalists are primarily found in migration studies (e.g., Kritz 1990, National Academy of Sciences 1991, Bilsborrow 1991). In one respect, the minimalists are indisputably correct. While environmental factors are of increasing interest to students of migration — as a recent state-of-the-art survey notes (Kimberly & Kimberly 1991) — little substantial research has been produced on environmental change as a cause of migration. More is known about the environmental impact of migration. Partly because it is readily observable, this dimension has received much attention, one example being the damage inflicted on Brazil's forests by new settlers.[3]

Environmental change does not figure as a separate, causal variable in the general migration literature, although older theories did allow for natural disasters under the category of "physical" factors. Now-classic theories emphasize economic factors and rational-choice analysis without noting environmental variables per se (Todaro 1969, Stark 1991).[4] The same applies to migration theories in the tradition of neo-Marxist international political economy (Adler 1977, Portes and Walton 1981). Among demographers, the case study literature fares little better. For instance, observing the recent sharp increase in migration in Indonesia — a nation with serious environmental problems and known for its high and complex patterns of population movements — the eminent demographer Graeme Hugo concludes: "Employment-related motives predominate in shaping how many people move, who moves, where they move from and where they move to" (Hugo 1991:28).

Yet, common sense as well as catastrophes such as the Sahel drought tell us that environmental change obviously can cause outmigration by affecting structural economic conditions. Environmental change can also be

> While environmental factors are of increasing interest to students of migration . . . little substantial research has been produced on environmental change as a cause of migration.

the proximate cause of population displacement, as the devastating floods in Bangladesh demonstrate. One analytical solution, as Bilsborrow (1991) suggests, is to treat the environment as a contextual factor which manifests itself in the decision calculus of the potential migrant. Land degradation, for instance, can mean reduced income; frequent flooding brought about by upstream deforestation translates into higher risk for families living downstream. More systematically, Bilsborrow suggests three categories of manifestations. Environmental change may induce outmigration via income effects (by reducing average incomes), by risk effects (by increasing the instability of income, and — one might add — other utilities), or by making the environment less pleasant or healthy, i.e., by social effects (Bilsborrow 1991:9-10).

This is a useful elaboration of the classic decision-making models of migration. Environmental degradation finds its place as a contextual variable that affects the economic, risk and social calculus of the migrant. The effect may be felt at the level of the individual, the community or, conceivably, an entire nation.

More narrowly, Kritz (1990) focuses on climate change as a cause of migration. Reviewing a series of contemporary case studies from the developing world, she concludes that it is difficult to demonstrate that climate change is a primary engine of migration. For rural people, migration is one of several coping strategies to deal with poverty which in itself reflects a combination of social, economic and political conditions. Exceptional cases aside (e.g., the Dust Bowl in the United States), the effect of climate on migration cannot be easily isolated. Perhaps the most specific characteristic of climate change as a causal variable, Kritz argues, is that its impact on population movements has been reduced over time due to policy intervention. Since the ability to modify climate impact is conditioned by the distribution of wealth, poor countries are more vulnerable than the rich. This conclusion is echoed in a study Kritz helped to prepare for the National Academy of Sciences (NAS 1991).

Like Kritz, Bilsborrow makes only a modest claim for the importance of environmental degradation per se as a cause of outmigration. In two of his three case studies (Indonesia and Guatemala), environmental degradation appears as only one in a cluster of causes, although it is given more weight in the third case (Sudan).

As the name suggests, the minimalists focus on the impact of a particular process such as land degradation, deforestation or changing climate on migration. But since migration, like social processes generally, is not a monocausal phenomenon, the minimalist premise skews the discussion towards a negative answer: environmental degradation by itself is not important as a cause of migration. Nor does it lend itself to easy quantification that permits a multiple regression analysis to isolate the relative weight of individual variables.

The minimalists focus on the impact of a particular process such as land degradation, deforestation or changing climate on migration.

The Maximalists

The maximalists, by contrast, tend to extract the environmental variable from a cluster of causes and proclaim the associated outmigration as a direct result of environmental degradation. This was evident in the early writings of environmental analysts (El-Hinnawi 1985, Jacobson 1988, Tuchman Mathews 1989, Myers 1991), and was echoed in popularized versions. "Drought in Africa and deforestation in Haiti have resulted in waves of refugees," as a *Time* article proclaims.[5]

The maximalists produced the first generation literature on "environmental refugees." In a now-classic study prepared for the United Nations Environment Programme in 1985, El-Hinnawi wrote that "all displaced people can be described as environmental refugees, having been forced to leave their original habitat (or having left voluntarily) to protect themselves from harm and/or to seek a better quality of life" (p. 4). El-Hinnawi then recognized three subcategories of environmental refugees: 1) those who temporarily have to leave their traditional habitat due to a natural disaster or similar event; 2) those who have been permanently displaced and re-settled in a new area; and 3) those who migrate on their own. The definition erased the customary distinction between refugee and migrant, i.e., those who moved voluntarily as opposed to those who were compelled to flee (Kunz 1973, Stein 1981) — thereby violating common sense and inflating the numbers.

A subsequent paper by Jodi Jacobson on environmental refugees by the Worldwatch Institute dramatized the problem and was given wide publicity (1988). Like El-Hinnawi, Jacobson based her analysis on a very general notion of refugee — "people fleeing from environmental decline" (p. 6) — and made no distinction between internally and internationally displaced persons. Nevertheless, the paper moved the debate forward by identifying major types of "unnatural disasters" and the associated displacement of people, namely floods, droughts, toxification, deforestation and rising sea levels. About the same time, the report of the International Panel on Climate Change (IPCC) focused international attention on the greenhouse effect and rising sea levels, suggesting that tens of millions of people might be displaced in the future.

Since broad categorizations invite large numbers, the estimates of environmental refugees ran into the millions. El-Hinnawi reported that 15 million people were affected by flood annually in the 1970s. Jacobson aggregated quite diverse cases, discussing the victims of Love Canal and Chernobyl alongside the 24 million Egyptians who, under a worst case scenario, might be displaced by rising sea levels by the year 2100.

The problem with these initial studies was obvious. Uncritical definitions and inflated numbers had a short-lived shock-effect on the public debate but were rejected as unserious by scholars. In the U.N. and policy community, it was feared that alarmist thinking would frighten a public already suffering from "compassion fatigue" towards refugees. From a

policy perspective, the categorizations were so broad as to be useless; institutions and relief measures relevant to industrial pollution in the United States were hardly applicable to peasants displaced by floods in Bangladesh, or driven by famine across international borders in Africa.

Unable to marshall a critical mass of social scientific interest, the scholarly discourse on environmental refugees nearly died. This was unfortunate as the notion covered important and relatively unexplored issues that were amenable to critical analysis.

To revive the debate, I propose a two-step rescue operation: 1) transcend the dichotomy between minimalists and maximalists by anchoring the analysis of causes in the broader development process, and 2) restore the distinction between migrants and refugees, thus infusing some realism in projections of future flows.

Environmental Degradation and the Development Process

From a broader development perspective, environmental degradation appears as a proximate cause of migration. The underlying causes are found in increasing population pressures on land and the patterns of resource use. Demography and political economy, in other words, are the most salient causal factors. Yet, these obviously interact in critical ways with specific environmental variables. Sometimes the result is stress of a kind that leads to massive outmigration. But to understand why, it is necessary to focus on the broader development process. For instance:

In Haiti, deforestation is most fundamentally a result of population growth in a political economy characterized by systematic oppression and gross corruption. Yet, deforestation leads to soil erosion which has an independent and accelerating effect on poverty. The total situation has produced large-scale outmigration for several years (Catanese 1990/91).

In the Sahel, expanding commodity production encroached on land traditionally used by pastoralists, forcing them into smaller areas. The weakness of pastoral societies in relation to the emerging African state precluded effective protest. This combined with rapid demographic and livestock growth to produce intense pressure on smaller grazing areas. Given the fragile, semi-arid nature of the environment, the margin for disaster was narrow. Deepening drought, desertification and outmigration followed.

In large parts of Brazil's Northeast, progressive conversion of land use from small scale, subsistence agriculture to cattle ranching meant *inter alia* reduced ground cover provided by a local xerophytic plant (the *caatinga*), known for its ability to recover after long, dry spells (Sanders 1990/91). Simultaneously, population increase forced small landholders to shorten the fallow period which traditionally had allowed the plant to come back. As the *caatinga* disappeared, the land eroded, and the region's drought-prone conditions grew worse. Local farmers turned increasingly to outmigration.

8

In all these cases, degradation took place in environments that at the outset were fragile (semi-arid regions, tropical forests). But the degradation was impelled by population pressures and the result was mediated by patterns of resource use. These patterns are often identified dichotomously, as in the recent World Bank *World Development Report* on the environment: some forms of environmental degradation are a result of poverty (e.g., air and water pollution), others stem from economic growth (e.g., deforestation and industrial pollution). The relationship appears in three basic models. Certain types of degradation will on average decrease with rising income (e.g., urban waste pollution), others will increase (e.g., carbon dioxide emission), and yet others take a curvilinear form (deforestation) (IBRD 1992:13).

Population increase appears as a central, underlying cause of both environmental degradation and migration. For instance, numerous studies have shown a close relationship between population growth and deforestation (Birdsall 1992); growing desertification in the Sahel has been closely linked to the rapid increase in both people and livestock. In Mauritania, a "spectacular increase in livestock" was cited as a cause of environmental degradation and massive migrations to urban areas well before the onset of the 1969 drought (Tamondong-Helin and Helin 1990-91:4). The same applies to the oft-cited "environmental refugees" from Bangladesh's coastal areas. Due to demographic pressures, population concentrations develop in marginal areas where they are vulnerable to even small changes in the environment.

Once set in motion, environmental degradation may of course acquire a momentum of its own. More needs to be known about the linkages of degradation to patterns of both resource use and migration. But to escape the trap of environmental determinism, it is necessary to focus on the interactive essence of the development process. The distinction between proximate and underlying causes, moreover, is central for both analysis and policy formulation. Otherwise, remedial policies will address symptoms rather than causes, as the recent *World Development Report* argues.[6] For instance, if change in Haiti's political economy is a prerequisite for reducing the island's deforestation and related outmigration, this must be recognized.

A focus on the broader development process also helps to explain the contradictory impact of environmental degradation on migration patterns. For instance, land degradation in an agricultural economy is often associated with outmigration — in the extreme, creating Sahelian visions of emerging wastelands that mercilessly expel its people. In fact, of course, land degradation can be associated with both in- and outmigration. In the Indian state of Punjab, agricultural modernization since the early 1970s has created such severe salinity problems that the entire region appears as a disaster area on a recently completed soil map (GLASOD 1990). At the same time, Punjab's rapid economic growth — of which land degradation is but one result — has given the state one of the heaviest inmigrations in all of India, both of a seasonal and permanent nature (Oxford University Press 1978). One can

Population increase appears as a central, underlying cause of both environmental degradation and migration.

imagine, however, a point where degradation will reduce economic returns so as to stimulate outmigration.

Another common sequence appears in traditional slash-and-burn cultivation as practiced under contemporary conditions of demographic pressure. In Indonesia, for instance, poor farmers commonly settle on marginal land on hillsides, but after a few years of intensive cultivation find that declining yields force them to move on (WRI 1989). At the onset of the cycle, the land is still good, attracting an inflow of settlers. As the land becomes exhausted, a saturation point is reached, outmigration commences, and land degradation changes from being a consequence to a cause of migration. The process represents in effect a pure form of unsustainable development (see Brundtland Commission 1987).

Environmental Migrants and Refugees

Accepting environmental degradation as at least a proximate cause of outmigration, the logic yields two kinds of population movements: the involuntary, sometimes called distress migration, and the more voluntary kind. The distinction between the two types is controversial, yet essential.

If it is to have a meaning at all, the concept of environmental refugee must refer to especially vulnerable people who are displaced due to extreme environmental degradation. While all economic change involves an element of degradation, the critical question is whether a renewed equilibrium will develop, as analysts of frontier studies argue (CREDAL 1981). In extreme situations, environmental change can remove the economic foundation of the community altogether (as when indigenous people lose their forests or fishing grounds). To survive at all, they must move. Responding primarily to push-factors, they become refugees in much the sense that current sociological and legal terms define the condition (Zolberg, Suhrke, Aguayo 1989). The environmental refugee thus would include agricultural communities displaced by dams, coastal communities flushed out by floods, and pastoralists displaced by drought.

Others migrate before the situation becomes so desperate as to yield no choice. Using conventional terms, they would be environmental migrants who respond to a combination of pull-and-push factors. Migration here is part of the solution rather than the problem. For the environmental refuge, by contrast, movement itself is fundamentally the problem. The refugee condition denotes sharp impact, but reduced time and few resources to respond; it entails little choice, great vulnerability, and commensurate need for assistance to avoid suffering or social conflict (Harrell Bond 1989).

The ideal-typical categories of migrants and refugees correspond to distinctions observed between migrations in time of famine and those in more normal times (Hugo 1989). In his classic study of the Solomon Islands, Raymond Firth depicts the labor migration from outlying islands to the plantations on the main islands as a typical out-and-up mobility. When famine struck, a different kind of migration took place. Unable to resist the

> The concept of environmental refugee must refer to especially vulnerable people who are displaced due to extreme environmental degradation . . . To survive at all, they must move.

labor-recruiters; all able-bodied men had to go. It was an all-push and no-pull situation, as expressed in a local islander's lament: "I who sit here, I look on my children who are starving; I get my canoe and get ready to go" (Firth, cited in Rangasami 1985:1592).

Similarly, in her studies of rural migrant communities in Tamil Nadu in Southern India, Amrita Rangasami found famine-related migration to be distinct from more ordinary "modernization migration."[7] This was evident both in the composition of the migrants and the terms of exchange for their labor. During the 1974-75 (local) famine, whole families in the Tanjavur district packed up to seek work, even girls and unmarried women went along. Families separated to find work, and men took women's jobs. Customary conventions governing migrant or seasonal labor broke down in favor of the employer, both in terms of wages and contract. The forced nature of the migration process was reflected in daily language; the laborers referred to themselves as "slaves of the famine." In more normal years, migration followed a pattern of seasonal, mainly male migration for better wage and working conditions.

Whether a population movement consists essentially of migrants or refugees has great significance for the impact on the receiving areas. Refugees — having moved involuntarily and unprepared — are more likely to be seen as a net burden in the receiving areas and typically require assistance.[8] Migrants are more likely to be absorbed in the market, to which their movement at least in part is a response. Refugees tend to be powerless; migrants have greater resources to mobilize and are often feared as competitors. As a result, the implications for social conflict varies between the two. We shall return to this question in the next section. The point here is to note the distinction between migrants and refugees and ask whether there is something about the nature of environmental degradation that tends to produce one rather than the other?

It has been argued that most forms of environmental degradation are "slow-onset" processes, often hidden, that suddenly reach a threshold (RPG 1992). The result of a sudden, and by implication absolute and irreversible, environmental degradation would indeed be a forced displacement of people, i.e., a refugee type. The notion, as forcefully articulated by Myers (1992), assumes a steep population growth curve and a discontinuous process of environmental change. A forest, for instance, may be exploited on a given level for centuries and "all is well" until the number of collectors reach a point where the self-renewing capacity of the trees is exhausted. "Quite suddenly... the tree stock starts to decline" (Myers 1992:9). But then what happens?

The discontinuity argument itself concedes that the decline is gradual. "Season by season the self-renewing capacity becomes ever-more depleted" (Myers 1992:9). Nor is it a hidden decline which suddenly bursts into view only when well advanced. Deforestation is a visible process that impresses itself upon the local people in very concrete terms. People have to walk further or collect less wood, or both. In economic terms it means diminishing

returns over a period of time. As this occurs, some individuals may respond by migrating in search of alternate or additional work, i.e., they become indistinguishable from ordinary migrants. Many will probably feed into established migration flows toward urban centers or other rural areas. Only the least resourceful will be unable to get out, compelled to wait for the end of a process in which they have become passive objects. These are the environmental refugees. Depending on the situation, the end may be death, starvation or migration in search of relief.

The distinction between environmental migrant and refugee operates with respect to the following discussion of the five most common forms of environmental degradation: deforestation, rising sea levels, desertification and drought, land degradation, and finally, water and air degradation.

Deforestation

Uphill deforestation, through a process of soil erosion that induces cycles of flood and drought, will cause economic loss downstream. As farmers experience a loss of harvest, they will tend to make less investment in the land, leading to less productivity and less output.[9] A typical response would be for one or more family member to migrate on a seasonal or permanent basis, thereby inflating existing migration streams. The process is exemplified in the case of Thailand's rural-to-urban migration (Hurst 1990).

Deforestation affects the indigenous inhabitants of the forest differently. Tribal peoples are bound to the forest in a cultural, social and economic sense and highly vulnerable to change. Whether they are physically displaced or "reintegrated" as laborers in the new economic activity, the result is the destruction of the community and impoverishment of the individual. This has been observed among peoples of the rainforest in Central America and the Amazon basin (Barraclough and Ghimire 1990) and in India (Fernandes, et al. 1988). These are no-choice refugee-like situations.

Rising Sea Levels

Rising sea levels are expected to affect coastal populations in exposed areas, especially in China, Bangladesh and Egypt, as well as the populations of the South Pacific atolls and the Maldives. By all accounts, rising sea levels is a slow process. According to the International Panel on Climate Change, sea levels might rise by one meter by the year 2100, affecting 360,000 km of coastline (Fairclough 1991:88). The social impact is indicated by estimates that over the next 60 years, 13-15 percent of Bangladesh's population would be displaced in a worst case scenario (Jacobson 1988:34). If the displacement occurs at a steady rate, the first "installments" would be on the order of 200,000-300,000 persons annually. While a sizable figure, it is less than one quarter of the new arrivals who annually enter Bangladesh's labor market due to population increase alone. The slow process, moreover, gives coastal

The five most common forms of environmental degradation [are]: deforestation, rising sea levels, desertification and drought, land degradation, and finally, water and air degradation.

12

people time to adjust. Many will try to migrate within the country or to neighboring areas. Rising levels can also be expected to inflate existing migration streams from the Pacific Islands to Australia and New Zealand (Connell 1987), and of Egyptian workers to the Gulf states.

In addition to the migrant streams, two kinds of refugee situations can be envisaged. The remaining communities will be exposed to more frequent and destructive floods and tropical storms. The process is already under way (Islam 1991). In the aftermath of disaster, the survivors will turn to national and international relief until the water subsides, then return to their homes. For some, however, their home has disappeared for good. Shifting sandbanks along the coast and riverside, the *char*, cultivated by marginal Bengali peasants, may be permanently submerged. Displaced by floodwater, coastal farmers constitute an irreversible flow of refugees.

Desertification and Drought

Desertification is typically a cumulative process, stemming from overgrazing, deforestation or overuse of common land over an extended period of time. The impact is gradual, manifesting itself in declining productivity, smaller pasture areas, and worsening droughts that gradually deplete the reserves of people and livestock. A range of coping strategies exists, including migration to new grazing land or towns. Thus, massive pastoralist migrations in the Sahel developed gradually as the deepening effect of drought and desertification were felt (El-Hinnawi 1985). Studies of responses to desertification show that households resort to multiple survival strategies, each carefully tailored to the gravity of the situation (Watts 1983, Bilsborrow and DeLargy 1991). Peasants cultivate other crops and nomads shift to new grazing land; both send family members out to look for work.

As conditions on the land get worse, herds are killed, the seeds consumed and the land abandoned. The remaining population migrates to relief camps or urban squatter quarters in what is a refugee-type situation.

Land Degradation

Land degradation is associated with both deforestation and certain agricultural practices. In the latter case, irrigation problems are commonly cited: over time, salinization and waterlogging of irrigated land will sharply reduce productivity.[10] Improper drainage can also cause debilitating diseases such as malaria and schistosomiasis. In extreme cases, the rising incidence of schistosomiasis has been known to put over 80 percent of the population at risk (notably the Gezira in the Sudan); more often the risk factor is 5-10 percent (Barghouti and Le Moigne 1991).

The gradual nature of land degradation makes coping and survival strategies possible, including migration. Although no one has tried to estimate how much of the contemporary rural-to-urban migration in the developing world is specifically due to land degradation in sending areas, there is

rich case study material that documents the dynamic. In Latin America, for instance, population pressure and overuse of ecologically vulnerable land in hill areas feed a permanent rural to urban migration (IBRD 1990:30).

Water and Air Degradation

A dualism also operates with water and air degradation. Worsening air and water pollution can reduce economic productivity (e.g., through polluted fishing grounds and vegetation destroyed by acid rain). This would contribute to outmigration of a steady kind. Pollution may also take the form of a local calamity that destroys existing economic patterns. The Aral Lake in the former Soviet Union is drying out; commercial fishing and shrimp farming in South India and the Philippines have devastated the grounds of traditional fishermen (Porter 1988, Broad, et al. 1990-91). In these situations, refugee-type conditions would prevail.

The above analysis suggests that common forms of environmental degradation will give rise to two kinds of population outflows: environmental migrants and refugees. The latter have little or no resources to cope with deepening degradation; in other words, they constitute those who are already the most marginalized and impoverished in their own society. It follows that relative to the population as a whole, they would not be very numerous. The category of environmental migrants might be expected to be much larger, equivalent to "the poor" in relation to "the very poor."

Many forms of environmental degradation can be remedied, moreover, to increase the range of survival strategies and reduce the number of people who find themselves in refugee-type situations. While only macro-level policies can deal with the underlying causes, remedial policies include a number of strategies, including: flood control by building of embankments and improving drainage (e.g., in Bangladesh, IBRD 1990a:18); soil erosion control through terracing, closing areas for regeneration, tree planting and water harvesting (e.g., in the northern highlands of Ethiopia, Ståhl in UN-RISD 1990); regenerating an entire ecological system (e.g., the Loess plateau of China, IBRD 1990:72); and drought relief through work-for-food programs (e.g., Botswana, IBRD 1990:97).

Only in some instances would the flows of environmental refugees be dramatically large. This happens, first, when entire social segments are marginalized by the development process and made vulnerable to even small changes in the environment. In these cases, large flows of a refugee kind may emerge, as has happened to the pastoralists of the Sahel.[11] Secondly, when a society is unprepared for periodic droughts, large-scale famine migrations may occur, as presently is feared in large parts of southern Africa. Thirdly, protracted warfare in poor societies and a fragile environment typically create massive, long-term, and self-perpetuating refugee problems. Environment can make repatriation difficult even when peace formally returns, as in the Horn of Africa (Lake 1990).

Common forms of environmental degradation will give rise to two kinds of population outflows: environmental migrants and refugees.

14

Pressure Points

Having sketched the sociological profile of environmental migrants and refugees and assessed their relative numbers, it remains to be asked: where are they most likely to appear?

The environmental pressure points of the contemporary world are indicated by the recently completed global soil assessment maps (GLASOD 1990). Prepared by the International Soil Reference and Information Centre in the Netherlands in cooperation with the UNEP, the maps use a color code to plot human-induced soil degradation. A few crisis areas stand out.

In Africa, the Horn has the dark color code of crisis. Wind and water damage associated with loss of vegetative cover and overgrazing has caused "extreme" loss of topsoil. Large areas of badly degraded soil appear also in all of eastern Iran (due to wind erosion and salinization), and large patches of Iraq around the Euphrates and Tigris Rivers (salinization due to intense agrarian cultivation). Moving eastward into Asia proper, the northwestern and northeastern corners of the Indian subcontinent are equally badly degraded for different reasons, and a broad strip of extreme deforestation runs between them along the Himalayan foothills. In the rest of Asia, China has several large, dark splotches. A sizable triangle extends from Shanghai to Szech'uan and northwards towards Beijing, showing heavy loss of topsoil and terrain deformation caused by water erosion. In addition, two big pockets north and northeast of Beijing, with one extending well into Mongolia, show extreme wind erosion due to overgrazing. In South America, the heavily deforested areas of Central America and the Amazon basin stand out.

In aggregate terms, Africa is the most severely affected region. Of the damaged area plotted, 1 percent has extreme and probably irreversible degradation; another 25 percent suffers from "strong" degradation. The most common causes are wind and water damage associated with overgrazing. In Asia, 1 percent of the plotted area is listed as extremely degraded, but "only" 14 percent falls in the next category of strong degradation. South America is comparatively better off. No area is yet deemed to be extremely damaged; 10 percent of the total falls in the "strongly degraded" category. Water erosion, due to deforestation and grazing, accounts for most of the damage. Intensive agriculture has also caused considerable chemical deterioration and loss of nutrients.

The maps confirm what recurring famine in the Sahel already has demonstrated. In a semi-arid region with a growing agricultural population dependent on highly variable rainfall, there is a narrow margin for disaster.

Yet, the outcome is variable. Similar pressure points elsewhere have produced little migration due to governmental restrictions (Mongolia and China), or steady movement of a migration kind. Also, Northeast Brazil and Northeast Thailand are poor, semi-arid areas with difficult soil and climate conditions. Agricultural practices combined with increases in population or livestock have intensified pressure on the land and induced severe degradation, as the GLASOD maps show. It is no coincidence that the northeastern

In a semi-arid region with a growing agricultural population dependent on highly variable rainfall, there is a narrow margin for disaster.

regions of both countries have large outmigration. However, these are not refugee-type movements of the Sahelian kind. Many migrants find a place in a growing economy or an expanding frontier.

The social consequences of environmental pressure points, in other words, are highly variable. Whether a given population ends up as destitute refugees or can transform themselves into successful migrants will in the first instance depend on conditions of social peace and the resources available for policy intervention. In this respect, the Sahel (and the Horn in particular) seems uniquely situated near the disaster point.

Environmental Migration and Social Conflict

Returning to the question posed at the outset — will environmental degradation produce waves of refugees that will cause conflict or instability. — it is now clear why the distinction between migrant and refugee is critical.

If environmental refugees are destitute but few in numbers, they would hardly be a cause of conflict in the receiving areas. Too weak to make demands, and too few to be an agent of destabilization, they are more likely to become passive victims than a source of conflict. Famine victims die quietly. Migrants, by contrast, possess more resources to make demands, but may also be more readily absorbed in the market to which they are responding. Cumulatively, however, large population flows may be destabilizing by overwhelming the administrative apparatus of the state or the absorptive capacity of urban areas. In this case, receiving areas may become centers of endemic tension that periodically erupt in violence. Given their projected rapid growth to the end of the century, urban areas in the developing world are particularly exposed.

Historically, migration has certainly been associated with violent conflict. Ancient migrations and colonial expansion involved conquest of territory and peoples; later, spontaneous or colonially induced migrations in Africa and Asia contributed to ethnic conflict that has persisted in the post-colonial states. Current conflict in the Indian subcontinent alone suggests the range: native peoples and new settlers fight over land (the Northeast hill areas), old and new arrivals clash over political power in urban areas (the *Mohajir* and the *Sindhi* in Karachi), nativist movements turn violent to exclude newcomers (from Assam to Bombay), and industrial workers fight with displaced tribals over employment (e.g., in Bihar). (See following paper by Sanjoy Hazarika.) International migration has an additional conflict potential as it involves two distinct sovereignties. Particularly difficult are illegal movements and those which follow international adversarial lines, as Myron Weiner demonstrates (1991).

But the history of migration is also a history of new forms of co-existence, of integration and assimilation, and of non-violent relations. Migrants — including refugees — have historically brought valuable new labor and skills to the receiving area. There seems to be no reason why

The social consequences of environmental pressure points . . . are highly variable. Whether a given population ends up as destitute refugees or can transform themselves into successful migrants will in the first instance depend on conditions of social peace and the resources available.

environmentally induced migrations should be — on balance — less bene-ficial.

To sort out the conflict potential of environmentally related popula-tion movements, we shall look at a number of cases that show both environ-mental degradation and population outflows, but have different social consequences. The case studies will also help to clarify the causality question posed earlier concerning the relationship between environmental degrada-tion and the broader development process.

The Sahel

Half a century ago, the colonial government of Sudan warned against degradation of the environment, pointing to pressures from expanding crop cultivation in rainfed areas, increasing wood-cutting, and a proliferation of new boreholes for water (Ahmed 1989:91). Since then, pressures on a fragile environment mounted rapidly. In some areas, new export markets for cattle encouraged boring of numerous water holes which, coupled with improved management of livestock and veterinary services, led to a dramatic increase in grazing. In the lush Haud plateau of the Ogaden, for instance, livestock started to graze year round as pastoralists dug new waterholes in response to the burgeoning meat demand of the oil-rich Gulf states. Previously protected by scarce rainfall which limited grazing to the rainy season, the ecological equilibrium of the Haud quickly disintegrated (Markakis 1989:162). In other places, steady expansion of cultivated land for export markets took place, requiring large-scale clearing of vegetation. This was most marked in Sudan. In slightly over ten years (1956-1968), mechanized farming increased four-fold to eight million hectares. In the process, large areas of the Upper Nile province were cleared of brush cover (Salih 1989:107). The rapid expansion of mechanized farming put pressure on both pastoralists and smaller farmers. With less land available, existing areas were exploited more intensively and marginal land was brought into use.

The process repeated itself throughout the Sahel — the belt separating the desert of North Africa from the tropics and usually taken to include Senegal, Mauritania, Mali, Niger, Burkina Faso, Chad, Sudan, Somalia and Ethiopia. The result was soon evident. A fragile environment was pushed to the limit, or beyond. Rain had long been highly variable in the Sahel, but increased vulnerability to drought magnified the consequences. Failed rains could spell disaster as denuded and exhausted soil failed to retain water. At the same time, the population in the area increased rapidly to a total of 115 million in 1988. The nine countries of the Sahel had an average population growth of 2.5 percent annually, with the Horn of Africa and Sudan at the high end (over 2.7) and the less populous interior states of Chad, Mali and Burkina Faso at the lower end. While the average was actually a decimal point below the average for low income countries (excluding China and India), it was a rising curve which reached the higher average of 2.8 percent for the 1980s (IBRD 1990). In the Sudan, Chad, Ethiopia and Somalia, protracted warfare

also took its toll on the environment, particularly in areas where large concentrations of refugees congregated.

The combined pressures were reflected in severe droughts in the 1970s, and again in mid-1985, as exhaustively documented in the literature.[12] Less is known about the social impact of resource scarcity, but a dual pattern of conflict and submission seems evident (Hjort and Salih 1989; Bennett 1991; Bilsborrow 1991).

Among the most vulnerable were the pastoralists. Traditionally based on extensive use of land, pastoralism in the Sahel came into sharp conflict with land-hungry, foreign-exchange earning commodity production during the late colonial period and increasingly after World War II. The nomadic mode of production also clashed with the modern African state which regarded the nomads as a pre-modern, anarchic element, elusive to bureaucratic control. But these same characteristics enabled many pastoralists to resist initial pressures on their land and ecological space. With small arms readily available in the continent, the nomads fought back.

Initially, pastoralists fought each other or equally vulnerable groups. Faced with the loss of customary grazing land, nomads intruded onto the land of other nomads. Territorial competition was of course not new, but the increased pressure on resources made the stakes higher; and the proliferation of small arms — facilitated by the intrusive large power competition of the Cold War — made the outcome deadlier.[13]

Pastoralists also came into increasing conflict with small, sedentary farmers. As both became more numerous and competed for a smaller share of national resources, the traditional symbiosis between the two groups broke down. The small farmer needed to cultivate every available piece of land, even fallow areas or passages traditionally used by visiting nomads for grazing their livestock. In Senegal, conflicts of this kind, reinforced by long-standing ethnic rivalry, led to violent clashes between the Fulani and the Wolof peoples in the wake of the 1973 drought.

Unable to arrest the underlying forces that threatened them, many pastoralists struck back at proximate and vulnerable targets or dissolved their anger in anomic violence. The old tradition of desert raiding was revived, and banditry became widespread. When accelerated by other conflicts, this posed a serious threat to the existing state. In the Sudan-Ethiopian border region, banditry developed into warlordism as a way of life. In the border region between Mali and Niger, disenchanted Touareq raided government posts as well as settlements. By early 1991, the Malian government had recognized them as "rebels" and agreed to a cease-fire along with limited regional autonomy.

As this suggests, pastoralists were in some cases able to strike back at the state itself, as opposed to weaker targets. The dynamic is illustrated by the more complex case of Chad. Here, nomads of the desert zone formed bands of *suwaar* — revolutionaries — that preyed on everyone in an escalating spiral of violence (Zolberg, Suhrke, Aguayo 1989:56-62). Traditionally pastoralists-cum-slave raiders, the nomadic Muslims of the desert

zone had been ruled with benign neglect by the French until 1965. The successor Chad regime, constituted by black Africans, sought to incorporate the zone into the Chadian state, demanding that the nomads convert to sedentary agriculturalists. Conscious of their history as a rich and aristocratic people where only slaves toiled in the fields, tribal leaders responded angrily. With old weapons obtained from neighboring Libya in 1966, they attacked government troops. Given the weakness of the Chadian state, this was sufficient to precipitate a long cycle of civil war.

The nomads of the Chadian desert were hardly environmental refugees. They struck before being displaced or concentrated in enclaves of sedentary farming, while still possessing the means to resist. The point can be formulated more generally. Confronted with socio-economic forces of modernization that are fundamentally hostile to traditional nomads, traditional nomads can resist on the upswing of the conflict cycle, before they are displaced, disempowered or marginalized; in effect, before they become refugees. The result is a range of manifest conflict, including civil war. However, given the strength of the forces of modernization, including the state itself, resistance more commonly takes the form of violence against other weak groups, or banditry.

When rural communities are actually displaced by drought and famine, the condition of powerlessness makes resistance difficult. Even requests for services or the formulation of political demands require resources which refugees typically lack. The result will be suffering rather than manifest conflict. This apparently happened to the uncounted hundreds of thousands of Sahel's pastoralists and farmers who, following the drought of the 1970s and the 1980s, became what today would be considered environmental refugees.

A large number ended up in the shantytowns of their own or neighboring countries. Some became agricultural labor in labor-importing states like the Ivory Coast. The striking aspect of this movement is that it did not create widespread, manifest conflict. In receiving areas, hospitality traditions and cross-border kinship generated considerable tolerance and even support (Nnoli 1989). Elsewhere, the migrants moved into shantytowns and made a new living of sorts. Faced with imposed poverty and general powerlessness, the migrants themselves had little choice but to submissively accept their fate. Powerlessness, moreover, was enhanced as traditional social organization was fragmented by flight. Studies of the *Beja* tribals displaced to the shantytown of Khartoum, for instance, show progressive disintegration of social bonds and customs, and hence the necessary organization to mobilize politically (Bennett 1991, ch. 7).[14] Similar social disintegration was observed among southern Sudanese refugees who had fled from the war to the slums of Khartoum (Baddal 1992).

Yet, large, uprooted and destitute populations represent a source of long-term tension that can be exploited for political purposes and erupt in discontinuous social violence. When concentrated in urban areas, squatters constitute a ready clientele for intra-elite rivalry. In Sudan, for instance, rapid

Traditional nomads can resist on the upswing of the conflict cycle, before they are displaced, disempowered or marginalized; in effect, before they become refugees. The result is a range of manifest conflict.

and uncontrolled urbanization — fed in large part by a stream of refugees and migrants fleeing war and drought in the countryside — exploded in food riots, anomic violence, and probably contributed to the downfall of president Nimeiri in 1985. Fears that political rivals would mobilize the squatter population of Khartoum impelled the Sudanese authorities in 1992 to forcibly return some of them to the countryside.

Tribals of India

Contemporary forces of modernization have increasingly marginalized indigenous peoples, often physically displacing them as dams, roads and settlements encroach on their traditional habitat. While no longer very numerous, they are the quintessential victims of "development." Prominent contemporary cases are the indigenous peoples of the Amazon rainforests, the tropical forests of Southeast Asia, and the tribal communities in the Indian subcontinent.

India's many scheduled tribes have suffered as deforestation and commercial exploitation of forests have restricted their own access. While not always physically displaced from the forests, the result is often the same. In areas studied in Orissa (Fernandes 1988), a receding forest meant that tribals had to walk much longer to carry on their customary forest-based economic activities. For some, the distance was prohibitive. In other cases, both the area and the usage of the forest were heavily restricted. With limited access to a smaller area, tribals were forced into damaging patterns of shifting cultivation, such as shorter fallow periods and burning even small plants to obtain ashes for the exhausted soil. Often, firewood was cut indiscriminately. The tribals' ecologically functional system of beliefs in relation to the forests also eroded. As Fernandes argues, the tribals had to change from a constructive to a destructive dependence in order to survive. "Instead of living from forests as earlier, they now live on forests" (1988:82). Industrial interest groups saw it differently, arguing that tribals had become part of the problem and needed to be restricted further from using the forest.

The Orissa case study shows that population increase among tribal groups was not a factor in the increasing pressure on the forest. Modern health care had barely reached the forest peoples; mortality rates were still high and women practiced traditional methods of birth control. Indian census records indicate that population growth among scheduled tribals was lower than for other groups in the post-independence period. It was outside demand on the forest and its products that had grown rapidly.

Most Orissa tribals passively accepted the impoverishment and social marginalization which occurred as the forests receded. A few tried to stop industrial incursions by brandishing bows and arrows in a futile gesture of protest. Some migrated in search of work, often as part of a bonded labor system that reflected and simultaneously deepened their fundamental powerlessness. A self-perpetuating indebtedness bonded children of the workers as well, laboring under excruciating conditions. The scale of the oppression

is indicated by the finding that 10,000 of the workers on a big construction project in New Delhi in 1992 were bonded tribals from Orissa (Fernandes 1988:232).

A similar dynamic was observed in Gujarat where drought, deforestation and irrigation projects physically displaced a large number of tribals (EPW 1988). Many became workers on sugar cane plantations that were established in former tribal areas. The terms of their "reintegration" in the new economy, however, were dismal. As chronicled by a special Supreme Court Committee, the laborers were bonded and received wages that did not even cover the reproduction of labor. Living "worse than dogs," as the workers themselves said, they had no resources for social mobilization or political resistance.

Studies of communities displaced by dam-building in India suggest similar outcomes. While the state in principle accepts an obligation to provide compensation, in practice payments are often deferred, do not materialize and when disbursed, are rarely adequate to prevent the communities concerned from sinking into greater poverty (Maloney 1990-91, Raju and Maloney 1992). Similar problems of economic compensation and reintegration have been observed more generally in development projects (Cernea 1985, Cernea 1990).

In general, then, displacement of numerically small and socially marginal peoples typically causes oppression rather than manifest conflict. Given the small numbers of tribals in India (only 7.7 percent of the total population according to the 1981 census), these groups can in fact be oppressed almost silently, without generating much notice or destabilizing effects in society as a whole. It is precisely to prevent this oppression that an increasing number of non-governmental organizations have engaged themselves on behalf of the tribals, using social and political struggle methods to resist displacement.

> Displacement of numerically small and socially marginal peoples typically causes oppression rather than manifest conflict.

Thailand's Northeast

The Northeast region of Thailand — called Isan in the local Thai-Lao dialect — has long been considered naturally poor. When the Thai kings in the late 1800s started to modernize the country, Isan was one of the most backward regions; a century later it remains so. The Northeast provided Bangkok with a steady stream of migrants in search of work, and for almost two decades was the scene of a protracted insurgency as impoverished peasants turned to armed rebellion.

Isan's turbulent history has been closely studied. By approaching it from an environmental perspective, a new interpretation of an old story emerges.

Deforestation in the Northeast has probably proceeded more rapidly than in the country as a whole. Plausible estimates suggest forest cover in the region was cut in half from 1973 to 1982, leaving only 21 percent of the total area forested (NESDB 1977, Hurst 1990:220). Villagers in Isan today

can still remember when "there were forests everywhere" (ODII 1990). This resembles *farang* (foreigner) descriptions half a century ago of the region as one of gently undulating country, with vast expanses of infertile soil unsuitable for agriculture but covered with slow-growing forests of hardwood, and with paddy cultivation on lower valley slopes (Pendleton 1943:21, cited in Keyes 1967:2). There was little irrigation and sparse rainfall. Peasants cultivated sticky-rice, extracting a small surplus from the sandy soil.

Despite its "natural poverty", the region was increasingly pulled into the cash-crop economy which provided the mainstay of Thailand's modernization in the 20th century. Sparked by world demand for rice, paddy production spread from the Central Plains and outward, decisively reaching the Northeast when railroads started to connect the region to national and international markets in 1920. Isan's peasants changed from cultivation of sticky-rice for home consumption to wet-rice for export.

But natural conditions in the Northeast were poorly suited to wet-rice cultivation. Over time, yields declined, and a larger amount of land was put under cultivation to compensate. As the land was of progressively poorer quality, this did not halt the decline. Over a thirty year period ending in 1950, the total area under paddy cultivation increased about three times, but the total yield was almost cut in half (Ingram 1971:50). To survive, a family needed to clear more land for cultivation. The Northeast became "an area of large farms and low yields," as well as diminishing forests (Wijewardene 1967:79).

Clearly, it was a case of unsustainable development driven by external demand. Neither soil nor water conditions were suitable for paddy. Deforestation destroyed watersheds and intensified the cycles of flood and drought. A major World Bank study in 1959 sounded the alarm. Noting that the fragile environment in the Northeast makes it "the most difficult area in Thailand to establish a satisfactory relationship between water resources and crop patterns," the report warned against further deforestation (IBRD 1959:43).

> If it is not controlled, the drought in the Northeast will gradually increase and more areas will be turned into semi-desert. This is not a problem for some future date; it is of immediate urgency if the steady destruction of the natural resources of the Northeast is to be stopped (p. 47).

Only two years earlier, in 1957, an exceptionally severe drought had hit the region. Hordes of desperate people descended on Bangkok and invited comparison with the locusts which came to finish off in Isan whatever the drought had left. Most migrants came by railroad and created chaos at the railway station. Monks and students set up emergency stations to help the refugees who poured in daily (Chaloemtiarana 1979:111). The government was less impressed. That Northeasterners eat frogs and lizards and migrate to the capital is nothing new, said the Minister of Agriculture.

The fragile environment in the Northeast makes it "the most difficult area in Thailand to establish a satisfactory relationship between water resources and crop patterns."

The drought underscored the poverty of the Northeast and its political ramifications. Worried about long-standing leftist movements in Isan, and fearing that dissident leaders might link up with Chinese communists to generate a local revolutionary struggle, the government was prepared for a new policy initiative. So was the United States, a close ally of Thailand and worried about threats to stability in the area. The opening came in the form of the 1959 World Bank Report which had warned against environmental deterioration. In its conclusion, the Bank mission outlined the framework for an economic "take-off" policy for Thailand.

An unprecedented growth period followed. During the 1960s and the 1970s, agricultural growth changed the face of the Thai peasantry, the economy and the landscape. In the Northeast, new upland cash-crops were introduced, especially *kenaf* (a jute-like product), cassava and sugar cane. These crops were better suited to local climate and soil conditions, and were supposed to move the backward, insurgency-prone area towards greater prosperity and stability.

It became the success story of the time. Assisted liberally by U.S. funding, the government expanded the infrastructure and promoted the new crops. Local farmers and a favorable external market did the rest. Largely thanks to vigorous expansion of cultivation in Isan, Thai agricultural exports diversified beyond rice.

By the end of the 1970s, and certainly in the early 1980s, the expansion came to a halt. The area under cultivation had more than doubled, or well above the national average, according to conservative estimates (NESDB 1977, Feeny 1988). It had been an essentially expansive growth, and as the limit of idle, arable land was reached, the costs were revealed. In essence, the expansion of cultivated area had meant deforestation to the point that sustainability of development in the future was questioned. While the concept was not yet in vogue, the problem was obvious. A 1979 report of the U.S Agency for International Development underlined the problems of environmental degradation. Noting increasing salinity of the soil and the "extreme importance" of protecting watersheds in the area, the report continued:

> Water timing and quantity is already problematic due to natural climatic conditions and the lack of high mountain watershed. Thus the maintenance of existing upland watershed is important in helping to prevent wet season flooding, excess siltation, and dry season drought. *This upland watershed has been significantly reduced over the past decade by massive cash-crop encroachment* (USAID 1979:20, emphasis added).

For the population of the Northeast, the economic results were mixed. Poverty was reduced from almost 50 percent to include only 38 percent of the rural population, and less in urban areas. But inequalities had increased. From the early 1960s, when the growth period commenced, to its near-conclusion in the mid-1970s, Isan fell behind the rest of the nation in terms of income and social welfare measures such as education, infant mortality and

drinking water (Meesook 1978). When a minimum wage was introduced in 1975, it was 16 *baht* in the Northeast and the North, but 25 *baht* in Bangkok and the surrounding provinces of the Central Plain (Girling 1981:89). And Isan's share of the country's 11 million that were classified as "absolutely poor" had actually increased 5 percentage points from 1975 to reach exactly 50 percent.

The growth period also led to greater inequality within the region. Farmers who adopted the new crops prospered, with some increasing their income by 70 percent. The approximately half of the farming population who continued to grow rainfed rice remained poor. By the end of the boom period, the lower 40 percent on the income scale found that their relative share of income actually had fallen from 23 percent in 1962-63 to 15.2 percent (Adulavidhaya and Onchan 1985:431).

In short, the expansive growth period reinforced long-term problems of erosion and the flood-drought cycle in the Northeast. The regional incidence of poverty decreased, but five to six million people remained under the official poverty line and inequalities widened. One result was increased outmigration.

Poverty at home and opportunities elsewhere had long produced seasonal outmigration from Isan. When the Thai government in 1949 limited the intake of Chinese labor to 200 persons per year, it encouraged a pattern of local labor migration that would persist for decades. Between 1947 and 1954, at least 37,800 persons arrived annually in Bangkok from the country-side; a large but undetermined number were Northeasterners (Keyes 1967:37). The early migrants, as described by Keyes (1967) and Textor (1961), were primarily men in their twenties and upwards who sought temporary work in the capital region during the slack agricultural season, typically for a three month period. Later, numerous young women came for long-term work in what euphemistically was called the service sector.

Migration also increased during the boom period of the 1960s and the 1970s. In a review of migration patterns from 1955 to 1980, the Goldsteins found that migration from the Northeast had steadily increased, and noted that regional inequalities and some indicators of rural poverty had worsened in the same period as well (cited in Richter, et al. 1991:3). Another study using data from the 1960 and 1970 census found that the rate of five-year migration streams into Bangkok had almost doubled, with the Isan people constituting about half of all those who had migrated within the last five years (Tirasawat 1985:412-413). Most of the migration from the Northeast continued to be temporary labor migration to Bangkok and the Central region (Manusphaibool, 1991). All studies point to local poverty, both in absolute terms and relative to the Central region, as the principal explanation for outmigration from Isan. Underlying demographic pressures are also significant. Until well into the mid-20th century, Thailand was considered a land with ample resources relative to people. Isan covers one third of the territory and has about one third of the national population. When massive land-clearing started in 1960, the population density was only 50 persons per

> The expansive growth period reinforced long-term problems of erosion and the flood-drought cycle in the Northeast [of Thailand].

24

square kilometer. In 1980, density had doubled to 100 persons per square km. And at a time when population growth was reduced in Thailand as a whole, the rate in Isan did not (USAID 1979:10). Already in 1967, a close observer had concluded that while Isan's population density was low compared to areas like Java and Bengal, it was rather high "for the character of the country" (Silcock 1967:2).

For the migrants, and to some extent for the economy as a whole, the move to the city represented a solution rather than a problem. Several studies show that most migrants successfully found work and housing in the city (Richter 1991:4). A government survey of over 85,000 who had migrated to Bangkok in a two year-period between 1979 and 1981 showed that an entire 97 percent of those in the labor force had found work (Manusphaibool 1991).[15]

Rapid growth and diversification of the Thai economy had created a demand for local labor and made it possible to absorb most migrants. Except for a down-period in the early 1980s, Thailand became one of Southeast Asia's successful newly industrialized countries. The migrants from Isan provided cheap labor for a growing city, especially in construction and service work; for the migrants it meant added income and little opportunity cost during the agricultural off-season.

The main problems were related to the excessive growth rate of the capital city. Bangkok became a worst-case scenario for urban growth in the developing world — literally sinking under its own weight and suffering from severe traffic congestion and pollution. Only a small part of this was due to migration from Isan, however. By the late 1970s, migration was estimated to account for one third of the city's annual population increase; seasonal migration would be even less (WRI 1989:39). Nevertheless, several national five-year plans called for urgent measures to stem the rate of Bangkok's growth by developing secondary cities and promoting rural development (NESDB 1977, Richter, et al. 1991).

Environmentally related migration from Isan has not led to observable social conflict in the urban areas largely because the flows have been seasonal and absorbed in a growing economy. In the home region, however, migration helped to shape a conflict that fed on diverse and deep grievances.

Based on anthropological research, Keyes argues convincingly that the typical Northeastern migrant returned to his arid home-region embittered, with greater awareness of economic and social inequalities:

> The returned migrant carried home with him feelings of class and ethnic discrimination directed towards him as a Northeasterner by Central Thai inhabitants of Bangkok and an enhanced awareness of the common culture and problems which all Northeasterners share. In brief, the pattern of increasing temporary migration of Northeastern villagers to Bangkok beginning in the postwar period greatly spurred the developing [*sic*] of "we-they" attitudes among Northeasterners (Keyes, 1967:39).

Environmentally related migration from Isan has not led to observable social conflict in the urban areas . . . In the home region, however, migration helped to shape a conflict that fed on diverse and deep grievances.

The radicalizing impact of migration sharpened an older conflict between the Isan people and the authorities in Bangkok. Since the turn of the century, tension had gradually mounted as Thailand's modernizing kings tried to establish a firmer grip on the outlying areas. Bangkok's assertive rule met with resentment in Isan, where a sense of separate regional identity was rooted in a distinctive Lao — as opposed to central Thai — culture. The resentment took hold immediately after World War II when the central government systematically repressed regional political opposition. Leading Northeastern politicians were killed on charges of being alternately communists and separatist. Regional economic disparities made matters worse. When the conflict in neighboring Vietnam developed into the Second Indochina War in the early 1960s, Thailand was also pulled in, and a full-scale insurgency developed in the Northeast.

The Isan case demonstrates the complexities of the relationship between environmental degradation and "downstream" social conflict. First of all, environmental degradation itself followed the integration of the regional economy into the national and international market. In a later phase, this was accelerated by an economic growth policy that in turn was driven by political fears of insurgency in a sensitive region. The environmental costs showed up in terms of rapid deforestation and destruction of watersheds.

> The Isan case demonstrates the complexities of the relationship between environmental degradation and "downstream" social conflict.

Outmigration from the Northeast increased during the boom period. A common explanation is the parallel increase in income inequalities, both within the region and inter-regionally. It is also reasonable to assume — but difficult to demonstrate from available data — that environmental degradation indirectly contributed to outmigration by penalizing the poorer farmers who were least able to protect themselves against problems of drought and flood brought on by the progressive destruction of watersheds in the area.

As for the conflict variable, to the extent it showed up at all it was in the sending rather than the receiving area. By and large, the migrants were absorbed in a growing economy; hence, migration was fundamentally a solution rather than a problem. Migration did have a radicalizing effect by sharpening political consciousness about regional problems, but this occurred mainly in a period when such problems already were magnified by a major international war in the area.

Guatemala

As in Thailand's Northeast, economic development in Guatemala's *altiplano* and northern forests took an increasingly unsustainable path when the economy entered a phase of rapid growth after World War II. Growing pressure on the land compelled poor, largely Indian peasants to migrate in larger numbers to work on lowland plantations and in towns. As in Thailand, migration at one point had a radicalizing impact as demonstrated by the social activism of *campesino* migrants in the late 1970s.

The most fundamental aspect of Guatemala's economy is a skewed pattern of land ownership. This factor conditions the nature of poverty,

environmental degradation and migration alike. In 1964, 44 percent of the farmers controlled only 3.4 percent of total farmland, while 2 percent held two-thirds of the land. Fifteen years later, this *minifunda-latifunda* pattern was even more pronounced: 60 percent of the farmers owned only 3.7 percent of the total farm area (Bilsborrow 1991:22). The figures point to the central contradiction in Guatemala's political economy — a large, impoverished peasantry was concentrated on a progressively smaller land area, locked in a classical spiral of agricultural involution. Most of the country's productive land was used for agro-export that did not absorb the vast numbers of un- and underemployed. Low salaries kept those employed in poverty (Manz 1988).

Environmental degradation combined with landholding patterns give the downward spiral of poverty extra force. Over time, the ratio of land to people in traditional Indian areas had steadily worsened. There is disagreement about whether land loss or demographic expansion is most important, but it is beyond doubt that both trends operated.[16] The process of land alienation among Indians followed the introduction of cash crops. In order to liberate land for coffee plantations, the government in 1877 abolished communal holdings. By law and poverty, Indians were forced to become seasonal plantation workers. The migration cycle also made it necessary to adjust cropping patterns at home. Gradually, Indians came to practice a monoculture of beans and corn, leaving out the more renumerative onion, garlic and cucumber crops (Swetnam 1989).

A new phase in the steady onslaught on Indian land occurred one hundred years later. Starting in the late 1960s, the military in cooperation with the commercial sectors promoted a massive development plan in the so-called Northern Transversal Strip, the northern entrance to the low-lying Petén area. The scheme became a vehicle to develop the infrastructure for the mining and oil industry, and for the elites to acquire large parcels of land for cattle ranching. Land claimed ancestrally by Indians was taken by force and terror as the military displaced entire communities. Particularly badly affected were the northern areas of the departments of El Quiché and Alta Verapaz (Aguilera 1983, Manz 1988, Jonas 1991, Stanley, 1991).

The secular trend of less land for more people put great pressure on the land itself. Poverty limited the possibility for technological upgrading through fertilizers, terracing, etc. Under these conditions, intensified cultivation meant land degradation and declining yields. Productivity of some staple crops fell in the late 1980s; for beans the yield actually fell below the 1973 level, reflecting reduced fallow time and the lack of needed inputs (Bilsborrow 1991:23).

Pressed by deepening poverty, small landholders also turned to extensive agriculture by clearing new land on forested hillsides. In many cases, this included land unsuitable for farming, leading to a familiar cycle of erosion, soil exhaustion and abandonment. In the large-scale land colonization of Petén, north of the Transversal Strip, small farmers again lost out. Promoted officially to benefit Guatemala's land-hungry peasantry, the state

> Environmental degradation combined with landholding patterns [in Guatemala] give the downward spiral of poverty extra force.

sponsored clearing of forests paved the way for another *minifunda-latifunda* pattern. In 1980, about twenty years after the scheme was established, half of the settlers held 22 percent of the land; only three years later their proportion had shrunk to a mere 13 percent. At the same time, the top 5 percent of the large landowners and cattle ranchers held 56 percent of the land. Even skeptics admitted it was an alarming trend (Schwartz 1987:169).

Guatemala's high population growth rate (3 percent in the 1950s and 1960s and only tapering off to 2.8 percent in the 1985-90 period) was cited as a reason for opening up the North. Yet, in retrospect the demographic pressures seem secondary. The agro-industry in cooperation with the military ensured that relatively few people actually occupied the new land.

Seasonal migration from the *altiplano* to the coastal plantations had long been a necessity for hundreds of thousands of landless or impoverished Indians. For the contemporary period, some estimate 600,000 people migrate (Stanley 1991:15); others suggest 260,000-400,000 (Manz 1988:51). Work and living conditions on the plantations were harsh. Although many stayed only for a few months, disease took its toll on people accustomed to the climate and altitude of the highlands. Compared to the Northeastern Thai's three month trek to Bangkok, these resembled distress migrations.

As in Thailand, migration had a radicalizing effect by sharpening political awareness of deep-seated problems. The process came to a head in the late 1970s, after a decade of rapid economic expansion when the manufacturing and plantation sector grew rapidly, and with it the labor force. Simultaneously, the demand for land increased sharply. So did social conflict, and activist movements that had been suppressed since Guatemala's anti-reformist coup of 1954 were revived.

> As in Thailand, migration had a radicalizing effect by sharpening political awareness of deep-seated problems.

A series of urban strikes in 1976-77 marked the return of trade unionism (Fried, et al. 1983). Simultaneously, forceful land acquisition by the military in the Northern Transversal Strip provoked Indian leaders to assert their rights.[17] Their struggle was carried institutionally by the new peasant organization CUC (Committee for Campesino Unity) and a guerilla movement (EGP) that worked on a different level in the northern mountains. The backbone of both organizations was hundreds of thousands of *campesino* workers from the highlands.

Support from migrant labor made the CUC "the most formidable peasant organization in Guatemala's history" and transformed social protest into a serious political force (Manz 1988:14). Their greatest achievement was the first successful strike on the sugar cane plantations. Demonstrating the power and visibility of labor, the strike also accentuated the link between workers and peasants that the seasonal migrants actually embodied. *Campesino* labor also helped the guerilla movement to become, for the first time, more than a remote nuisance for the military regime.

The social movement could not sustain itself when the repression came. In what was later known as "*la violencia*", the military launched a suppression campaign that lasted from 1981 to 1983. Approximately 2 million people were internally or internationally displaced. Maybe 70,000

were killed, primarily Indians. For the time being, social activism and protest was finished.

The term environmental refugee hardly captures the essence of the process which compelled Guatemala's Indians to migrate seasonally in search of work. Environmental degradation did play a part by contributing to their crushing poverty. While data is limited, the general picture seems clear: forced into progressively smaller areas, the smallholders over-exploited the land or moved into hill areas that could not sustain cultivation. The deterioration of the environment was reflected in declining yields. More fundamentally, population growth combined with a highly skewed landholding pattern to generate a condition of poverty that in itself was an integral element of a political economy based on agro-industry and cheap labor.

In a given period, migration contributed to social conflict in the sense that it had a radicalizing effect. By fighting back, the migrants helped to transform structural oppression into manifest conflict. From this perspective, of course, social conflict had a progressive function.

The Migrant, the Refugee and the State

So far, various social outcomes of displacement have been considered. Some groups resist before being fully marginalized, while others are too weak to protest. Delayed tension from displacement may erupt into anomic violence or be mobilized by political entrepreneurs; the act of moving may also be radicalizing, enabling the subjects to assert their demands. In yet other situations, conventional notions of mutually beneficial migration flows apply.

The potential for acute conflict in these situations seems most likely if the displaced groups obtain support to organize and make demands, and thus overcome the weakness inherent in the condition of displacement. This happens when state power aligns itself with the displaced, or the state becomes adversarially engaged in illegal migration. The state may have several reasons to do so, perhaps most commonly on grounds of ethnic politics or economics which makes it useful to support a displaced group.

One version of this dynamic is found in the Northeastern corner of the Indian subcontinent. Here two contemporary population movements have caused great strife: Bengali migration into the Indian states of Assam and Tripura, and Bengali settlements in the Chittagong Hill tracts of Bangladesh (Weiner 1978, Phadnis 1989, Hazarika 1991, Islam 1991).

With 109 million people and a GNP per capita equivalent to 170 dollars, Bangladesh is one of the world's most densely populated and impoverished states. It is also a delta-state without a hinterland. Successive partitions of Bengal left the present nation in a small delta area prone to flood and cyclones. The non-agricultural sector is much too small to absorb surplus labor, leading to long-standing, but since 1951 illegal, outmigration to neighboring Indian states. How much and what kind is disputed.

The Bangladesh government consistently denies that illegal migration to India occurs at all. Many Bengali-speakers in Assam are descendants of labor migrants who came there to work in the tea gardens or the civil service during the colonial period, it is argued. Later Bengali migration comes from India's West Bengal, not Bangladesh.

Analysts arguing the other side use demographic data to make a strong case. The exceptionally high population growth rates of Assam is due to inmigration. Assam's population of 18 million people, according to the 1991 census, is considerably greater than what all-Indian rates of population growth would suggest. Nativist movements claim that four million of them are illegal migrants who mostly arrived in the 1961-81 period. They concede, however, that the movement has tapered off in the last decade due to increased restrictions and anti-Bengali violence on the Indian side.

This migration is not primarily a result of specific environmental calamities such as floods, tropical storms and drought that regularly affect Bangladesh. These events do cause distress migrations, but the victims typically "rush to the city for survival" (Islam 1991:19). Here, their marginalization is compounded by the loss of property and often they lack the resources to migrate into neighboring states.

Whatever the origin, the migrations into Indian hill states has caused considerable and acute social conflict. The Bengalis became the target of Assamese nativist movements which feared the immigrants were taking both land and middle class positions from the indigenous population. Since India has free internal migration, it was politically difficult to demand restrictions on migration from one Indian state to another. Migration from Bangladesh, however, was formally illegal and rapidly became the main issue. In formulating its strategy, nativist agitation primarily focused on the political access of immigrants and tried to prevent them from voting. While generally a peaceful agitation, an undercurrent of violence rose to the surface, erupted in riots and, most starkly, a massacre of 3,000-5,000 immigrants in the Brahamaputra valley in 1983. Subsequently the nativist movement split. A radical faction went underground and launched an insurgency fight for independence. A moderate faction compromised with the central government to institute reforms that would restrict immigrant voting rights, but would not permit large-scale expulsions as the nativists initially had demanded.

The focus on voting rights points to a critical aspect of the problem. It was widely assumed that local politicians in Assam, who were members of the all-Indian Congress Party, in fact facilitated illegal inmigration because it enabled them to build up "vote-banks" of clients. By registering the migrants as voters, a stable supply of votes could be had. The structure of political competition in Assam rendered the migrants particularly useful to the nationally dominant but locally weak Congress Party. This also explains why it might have been possible for millions of illegal migrants to take up residence in a rather short period. For illegal migrants it opened a formal entry to civil society and associated benefits such as ration cards, the right

> Whatever the origin, the migrations into Indian hill states has caused considerable and acute social conflict. The Bengalis became the target of Assamese nativist movements.

to squat or purchase land and to exist without some form of regular bribes. While Indian society in some respects has large informal sectors, it is also a highly structured society where weak groups such as illegal migrants need protection in order to survive.

A more classic case of conflictual and state-sponsored settlement took place in Bangladesh's Chittagong Hill Tracts (CHT). As elsewhere in the Northeast of the subcontinent, British colonial rule had served to protect tribal highlanders against pressure from lowland settlers. After independence, the tribals faced a postcolonial state intent on greater administrative penetration in the name of integration and modernization. The tribal zones were opened up for trade, civil servants and settlers. Starting in the late 1950s when Bangladesh was still East Pakistan, the policy changed after secession in 1971 to a more active state sponsorship of settlements. The rhythm is reflected in census data: in 1951 more than nine-tenths of CHT's population was tribal, mainly the Chakma; in 1974 the non-tribals — i.e., Bengalis — represented 12 percent of the population, and in 1980 they had grown to 35 percent. Subsequent data is limited, but the inflow rose further when the Zia-government ordered a massive resettlement. Tens of thousands of families were moved into the region. Many of these were environmental refugees from the coastal area, victims of floods and tropical storms. By resettling them in the hills, the government eased the pressure on urban slums and simultaneously served a long-standing objective of weakening a potentially rebellious tribal population in a sensitive border area.

Faced with conquest-by-settlement, the tribal people countered with guerilla warfare. A campaign of violence started in the mid-1970s and the Bangladesh army responded with brutal suppression. As Chakma refugees fled into India and regrouped, the conflict escalated into an international dispute between India and Bangladesh.

The protracted violence in the Chittagong Hill Tracts reflected the fact that the migrations juxtaposed two organized forms of power — new settlements backed by the central state, versus tribal society fighting for its territorial and social existence. This case resembles other migrations that have led to confrontation between institutionalized forms of power.[18]

A similar dynamic unfolded in the Senegal River Valley in 1989-90 (Wilkinson 1991, Bennett 1991). Long troubled by progressive desertification, large areas of Mauritania were devastated by the Sahel-wide droughts in the 1970s. Thousands of nomadic herders pushed southward, giving an entirely new dimension to an older southward drive by the country's pastoralists. But unlike most other pastoralists in the Sahel, Mauritanian nomads were backed by the state in their search for new land. The main reason lies in ethnic politics. Already in the 1960s, the Mauritanian government had instituted an Arabization policy designed to redress the imbalance between the country's main ethnic groups. The African tribes, who constituted 40 percent of the population and had been relatively privileged during French colonial rule, were to give way to an ascendant Arab majority. Faced with restricted opportunities, the African minority responded by launching both a

civil rights movement and an armed struggle against the military, Arab-dominated government. As desertification pushed more Arab nomads southward into African farming areas in the Senegal River Valley, tension across the main ethnic divide rose markedly. At the same time, damming of the Senegal River Valley had made extensive irrigation possible and increased the value of land, thus raising the stakes further. Since some of the land was in dispute between Mauritania and Senegal, the conflict also acquired an international dimension that involved both inter-ethnic riots and armed clashes across the border.

In this manifold struggle, the Mauritanian state placed itself unambiguously behind its Arab pastoralists and kept large armed forces in the south. A campaign to deny land rights to African Mauritanians "of Senegalese origin" and expel them to Senegal, led to border incidents in the Senegal River Valley in 1989. The conflict escalated into violent attacks on the minority communities in both Senegal and Mauritania. An estimated 150-200 Senegalese were killed by mobs in Mauritania, while 50-60 Mauritanians were killed by mobs in Senegal. After 50,000 people belonging to the minority population on both sides were "exchanged", mediation by the Organization of African Unity temporarily calmed the situation. But border incidents continued, and Mauritania saw a new wave of repression against black Africans. Citing Senegalese backing for coup plans prepared by Mauritania's African community, President Taya purged the army, arrested hundreds and killed an estimated 200 black Mauritanians. It was the same General Ould Taya who in the 1960s had instituted the Arabization policy.

Conclusion

The two questions posed at the outset — does environmental degradation cause population displacement, and if so, under what conditions does this lead to acute social conflict — do not have easy answers. There is obviously a need for more research on how environmental degradation is related to the development process, and how it figures in the causes of migration and the patterns of social conflict which may result. Yet, the cases examined here suggest some useful categories and points of departure for future study.

The most relevant forms of environmental degradation can be categorized in terms of general processes (air and water pollution, land degradation and deforestation), degradation of specific ecological areas (low-lying coastal areas, islands in danger of being submerged, and semi-arid areas threatened by desertification), and impacts of specific development projects (dam-building, irrigation schemes, etc.).

The case studies examined one case of desertification in a general manner (in the Sahel), one case of deforestation (in India), and two cases of land degradation (in Thailand's Northeast and Guatemala's *altiplano*). In all cases, environmental degradation reflected the specific forms which the local

There is obviously a need for more research on how environmental degradation is related to the development process, and how it figures in the causes of migration and the patterns of social conflict which may result.

development process took. In the Sahel, desertification was related to complex patterns of population growth, resource use and political power. In India, commercial use of forests (in Orissa), or conversion of forests to plantation land (Gujarat), reduced the forest or restricted the access of indigenous people to their traditional habitat. In Thailand, poverty and instability in the Northeast region encouraged the government to launch a policy of expansive agricultural growth. This involved large-scale deforestation and put intense pressure on a region long vulnerable to the cycle of flood and droughts associated with natural soil and climate conditions. In Guatemala, poverty forced Indians into a classic pattern of cultural involution where a progressively smaller area was cultivated more intensely. Demographic pressures were a significant factor as well. In Thailand and Guatemala, land degradation reflected patterns of land ownership and cultivation which in turn were conditioned by structures of political economy.

In all the cases studied, environmental degradation appeared as a proximate cause of outmigration. That is, particular constellations of economic growth with poverty, alongside demographic growth, created pressures on the environment which translated into degradation of various kinds. From an analytical as well as policy perspective, the significance of these underlying factors must be recognized. It is, of course, not a simple one-way relationship. Environmental degradation in turn affects patterns of resource use, and can have the effect of "locking" poverty into a downward spiral. As soil becomes exhausted, yields decline, forcing poor cultivators to exploit the land more intensely, etc., as noted in the Guatemalan case.

It may be most useful analytically to consider environmental degradation as one factor in a complex of causes that leads to outmigration. One should also figure into this complex the opportunities available elsewhere. The "pull"-factor will affect the magnitude and direction of outflows, especially in the period before conditions become so desperate as to resemble a refugee situation.

> It may be most useful analytically to consider environmental degradation as one factor in a complex of causes that leads to outmigration.

A distinction between types of outflows was evident. Some environmentally-related migrations were indistinguishable from economically motivated migrations in a classic pull-push model. In other cases, the individuals did not move until the situation reached a point of no return: immediate migration was necessary in order to survive. The typical cases entailed flight from flood or famine that essentially resembled refugee flows. In other words, the common distinction between migrants and refugees which appears in the literature is also relevant in environmentally-related situations. As with other kinds of population flows, those related to environmental change also divided into reversible and irreversible movements.

So far, then, it is difficult to argue that environmental degradation produces particular forms of outmigration except in one respect: the appearance of distress migrations occasioned by sudden or extreme environmental degradation. Driven by flood, famine or the loss of traditional conditions for economic survival, these individuals became in effect environmental refugees. Their fate varied, from dependence on national or international relief

(some victims of the Sahel drought), to bonded labor (tribals in India), or improvised residence in urban slums (West-Sudanese tribals in Khartoum).

The magnitude of environmentally related migrations is difficult to estimate, and in some situations impossible. When displacement is closely related to a concrete environmental change, the numbers can be assessed (e.g., displacement due to dam-building or rising sea levels). Where environmental degradation appears as one among several prominent causes of poverty and related migration, the environmental factor can be viewed as having a magnifying effect. To characterize general poverty migration as "environmental" migration seems misleading.

It is possible to identify particularly vulnerable ecological and geographic areas where environmental degradation indeed is a prominent and proximate cause of migration. These include areas prone to desertification, the threatened islands, the low-lying coastal areas, and forests with indigenous populations. These become in effect environmental pressure points. Unless remedial measures are taken, outmigration becomes necessary — the only question is the time and form of the outflow.

> It is possible to identify particularly vulnerable ecological and geographic areas where environmental degradation indeed is a prominent and proximate cause of migration.

Several of these pressure points also have very small populations. The low-lying South Pacific islands are inhabited by tens, not hundreds of thousands of people, the indigenous tribes of receding forests have long since been sharply reduced; and large parts of the Sahel are quite thinly populated. The number of people displaced from these areas will therefore be fairly low — a point which is important with respect to an examination of the social consequences of migration.

Another factor which serves to limit the number of so-called environmental refugees is the gradual nature of environmental change which gives the relatively more resourceful individuals in the affected populations time to move out and merge in established migration streams.

The truly problematic areas are those where fragile environments are inhabited by large and poor populations which engage in civil strife. This combination leaves a very small margin for disaster, as demonstrated repeatedly in the Indian subcontinent, the Horn of Africa, Southern Africa, and the Northeastern wing of the Indian subcontinent. By comparison, a single-phenomenon development such as rising sea levels in China seem manageable. It will certainly create problems for the coastal population, but the country's vast territorial expanse, economic growth, and functioning political system suggest considerable capacity to deal with the situation even in the absence of international assistance.

The consequences of migration in terms of social or international conflict will also be most severe in these environmental pressure points. If few resources are available to deal with distress migrations, the result can be disorder and social conflict. Tension in the Sudan, and recent evictions from the capital Khartoum, point to one possible sequence: in-migration inflates urban slum populations, overwhelms the capacity of existing social services, and generates a population of *deracinee* that is a potential element of urban violence — either as frustration explodes in anomic violence or is mobilized

in inter-elite struggles. [19] Similar scenarios can be envisaged for a number of cities in Africa and the Indian sub-continent. Yet, it should be recognized that the cities in some respects have the capacity to deal with inmigration, especially in comparison to rural areas. An urban, elastic economy can accommodate inmigration more easily than a subsistence-based landed economy. In the latter case, competition over fixed land resources may explode in violence, as the Bengali-Assamese conflict demonstrates.

One can also envisage a scenario borrowed from political refugee situations: international distress migrations overwhelm local services and, by their very existence, generate resentment and violence in the receiving areas. In fact, however, this scenario belongs more in the realm of local fears than in social reality. Whether the flight is sparked by political violence or environmental degradation, whenever a substantial group appears across the border, two developments typically occur. Relief and protection is not delivered, as a result of which the refugees die or are pushed back across the border. Or, precisely to prevent social conflict and disorder in the receiving areas, national or international relief is brought in. The condition of weakness, which is inherent in the refugee condition, makes it difficult for the refugees themselves to organize to make demands. While numbers are important here, refugees generally are too weak to be a threat, not to mention an active party to a conflict. A combination of these factors help to explain why large-scale distress migrations generated by drought and desertification in the Sahel did not visibly destabilize the receiving areas, nor generate acute social conflict.

When environmental degradation displaces populations that are politically weak and numerically small, the result is most likely to be structural conflict — silent misery, exploitation and death. As the fate of Indian tribals indicates, entire communities can be pushed into bondage without causing overt social conflict or even having "destabilizing effects." On the contrary, such displacement may generate cheap labor that is useful in the prevailing structure of political economy (as in Guatemala). Insofar as the environmental pressure points involve areas inhabited by socially marginal and numerically few people, misery rather than conflict will be the typical result. As the case studies demonstrated, the most destitute and marginalized peoples did not even have the capacity to trigger a conflict, but became the passive object of relief or exploitation.

Some groups with a territorial base or strong social structure did resist violently. Once uprooted, however, environmental refugees like most other refugees found that displacement meant dependency and marginalization. At this point, the role of the state was crucial. Displaced groups that obtained backing from the state were able to assert themselves more strongly. In all cases violence followed. As shown in the case studies, the state had several reasons unrelated to humanitarian concerns for backing a displaced group. And while the support helped the displaced community out of its predicament, this help was typically at the expense of another community, resulting in acute conflict. Thus, the Mauritanian state rescued black Arab pastoralists,

> When environmental degradation displaces populations that are politically weak and numerically small, the result is most likely to be structural conflict — silent misery, exploitation and death.

but only at the expense of African farmers. The Indian state facilitated the registration of illegal immigrants on the voter rolls in Assam, thereby provoking both a nativist movement and an ethnic massacre. The Salvadorean state engaged itself ostensibly on behalf of its displaced peasants, whose only solution to poverty and oppression in El Salvador itself had been to settle illegally in neighboring Honduras.

The immediate policy challenge is to transform such situations into a non-zero sum game. From a longer-term perspective, attention to root causes and remedies for environmental degradation is essential. From this vantage point, it is important to assess the long-term structural tension related to large-scale migration, and the social costs of large scale rural-to-urban migration. While it is difficult to demonstrate that acute conflict results, rapid urbanization and the growth of megacities pose enormous problems all over the developing world. It will constitute an increasingly serious challenge to development in years to come.

A major conclusion of this study is that environmental degradation, insofar as it causes displacement of people, is more likely to generate exploitation rather than acute conflict. The main reason is that those who are most victimized by environmental change are also likely to be weak and numerically few. Aid to these populations, therefore, must primarily be seen as a humanitarian obligation rather than a policy based on security considerations.

> A major conclusion of this study is that environmental degradation, insofar as it causes displacement of people, is more likely to generate exploitation rather than acute conflict.

Notes

1. Nitin Desai, UNCED Secretariat, Speech, Geneva, 19 January 1992.

2. Commenting on the narrow margins in the developing world, Ted Gurr writes: "When natural or man-made disasters disrupt the delicate balance between agricultural productivity and survival needs, the results are famine, disease and death." (1985:56)

3. This is one reason why the 1992 World Bank's *World Development Report*, which focuses on the environment, notes the impact of migration on the environment, but does not discuss the reverse (IBRD 1992).

4. For instance, in a recent, major work Oded Stark claims to model afresh the processes of labor migration, but makes no reference to environmental variables (1991).

5. Cited in Hoagland and Conbere, (1991:31).

6. Along these lines, the report advocates among other things that education of women is an essential environmental policy, as it helps to reduce population and associated pressures on the environment.

7. I am indebted to Dr. Amrita Rangasami of New Delhi for this information (Washington, May 1991).

8. By international legal conventions, political refugees are victims of persecution in their homeland, and must therefore be aided outside the reach of their own state. This condition constitutes the premise for the international obligation to aid refugees (Goodwin-Gill 1983).

9. I am indebted to Ashok Gulati for discussion of this point.

10. Environmental costs of large-scale irrigation projects, especially in those without proper safeguards, have increasingly come to light. The "twin menace" of water logging and salinity, caused largely by lack of drainage and poor water management, lead to the progressive deterioration of soil and lower productivity. The World Bank estimates that about 7 percent of the world's irrigated land is "seriously affected" by these problems. Areas badly affected are found in China, Egypt, India, Mexico, Pakistan, the USSR and the western United States (Barghouti and Le Moigne 1991). The Bank study also found that "waterlogging and salinity have reduced yields of major crops by 30 percent on 15 million hectares of irrigated land in Pakistan and 3.5 million in Egypt. In India, about 20 percent of the 40 million hectares of irrigated agriculture is reported to suffer from this problem." (*Ibid*, p. 32).

11. Indigenous peoples of the forests and mountains in the developing world have been subjected to a similar marginalization process, but have not constituted numerically large communities.

12. See bibliography in Hjort and Salih (1989:101).

13. Even relatively early conflicts could lead to protracted violence, such as in the case of the Hargaga conflict in Somalia. When drought struck, northern based tribes drove their cattle south, armed with the argument that the clouds which dropped rain on the rich, southern Nugal valley had formed in the north, thus giving them grazing rights. Unconvinced, the southern tribes resisted, and violence continued intermittently for years until peace was concluded in 1957 (Bennett 1991:33).

14. This point recalls what Owen Lattimore once observed in relation to traditional nomadic peoples of Asia. Scarcity of people relative to land makes clan and kinship the dominant principle of social organization (Lattimore, 1951). Transformed into shantytown dwellers, nomads lose their basis for traditional social organization.

15. The high figure is astounding and was questioned by another, government-sponsored study (Kosit and Somchai, cited in Adulavidhaya and Onchan 1985:451).

16. In later decades, demographic pressures in the largely Indian area of the altiplano was probably lower than national levels, held down by poor health care, high mortality, and a consequent life span that at 41 years was considerably below the national average of 59 years (Manz 1988:48). A similar point has been documented in the case of the South Asian Indian tribes, as discussed above.

17. To call attention to the land issue, reformist and Indian leaders held a demonstration in the Spanish Embassy in Guatemala City, which ended with a military order to trap and burn the demonstrators. The massacre became an early landmark in the Indian campaign to protect their lands.

18. An obvious example from Latin America is the so-called Soccer War in 1969. Honduras and El Salvador went to war, ostensibly over a soccer match but more importantly because of 300 000 illegal Salvadorean settlers in Honduras. As in the India-Bangladesh case, relations between the two states were already strained for a number of unrelated reasons. In this context, the migration issue served to engage state power on both sides of the border in a brief but violent test (Durham 1979).

19. Students of modern revolutions are increasingly incorporating such scenarios in developing theoretical models for contemporary revolutionary struggles. See Goldstone (1991), and Goldstone, Gurr and Moshiri (1991).

Bibliography

Adler, Stephen. *International Migration and Dependence.* Westmead: Saxon House, 1977.

Adulavidhaya, Kamphol and Tongroj Onchan. "Migration and Agricultural Development of Thailand: Past and Future," in Philip M. Hauser, et al. *Urbanization and Migration in ASEAN Development.* Tokyo: National Institute for Research Advancement, 1985.

Aguilera Peralta, Gabriel. "The Militarization of the Guatemalan State," in Jonathan L. Fried, et al. *Guatemala in Rebellion: Unfinished Story.* New York: Grove Press, 1983.

Ahmed, Abdel Ghaffar M. "Ecological Degradation in the Sahel: The Political Dimension," in Anders Hjort af Ornas and M.A. Mohamed Salih (eds). *Ecology and Politics: Environmental Stress and Security in Africa.* Uppsala: Scandinavian Institute of African Studies, 1989.

Baddal, Raphael K. "Impact of War Upon Displaced Southern Sudanese Communities in Khartoum." Paper presented to the conference on Consequences of War in Africa. Bergen, Norway, 6-9 April 1992.

Barraclough, Solon and Krishna Ghimire. *The Social Dynamics of Deforestation in Developing Countries: Principal Issues and Research Priorities.* United Nations Research Institute for Social Development (UNRISD), Geneva, No. 16, 1990.

Barghouti, Shawki and Guy Le Moigne. "Irrigation and the Environmental Challenge," *Finance and Development*, June 1991.

Bennett, Olivia (ed.). *Greenwar: Environment and Conflict.* London: The Panos Institute, 1991.

Bilsborrow, Richard. "Rural Poverty, Migration and the Environment in Developing Countries: Three Case Studies." Background paper prepared for the World Development Report, Chapel Hill, NC, 1991.

Bilsborrow, Richard and Pamela D. DeLargy. "Land Use, Migration, and Natural Resource Deterioration: The Experience of Guatemala and the Sudan." Carolina Population Center, The University of North Carolina, 1991.

Birdsall, Nancy. "Population and Global Warming: Another Look," IESA\P\AC.34\4. U.N. Expert Group Meeting, New York, 20-24 January 1992.

Broad, Robin, Walden Bello and John Cavanagh. "Development: The Market is Not Enough," *Foreign Policy*, no. 81, 1990/91.

Brundtland Commission. *Our Common Future.* World Commission on Environment and Development. New York: Oxford University Press, 1987.

Catanese, Anthony V. *Haiti's Refugees: Political, Economic, Environmental.* Natural Heritage Institute/Universities Field Staff International. Field Staff Report, no.17, 1990-91.

Cernea, Michael (ed). *Putting People First: Sociological Variables in Rural Development.* Oxford University Press for the World Bank, 1985.

_____. *Poverty Risks From Population Displacement in Water Resources Development.* Harvard Institute for International Development, Discussion Paper no. 355, 1990.

Chaloemtiarana, Tak. *The Politics of Despotic Paternalism.* Bangkok: Thai Khadi Institute, Thammasat University, 1979.

CREDAL. *Les Phénomènes de "frontière" dans les pays tropicaux.* Paris: Centre de recherche et de documentation sur l'Amérique Latine, 1981.

Connell, John. "Paradise Left? Pacific Island Voyagers in the Modern World," in James T. Fawcett and Benjamin V. Carino (eds.), *Pacific Bridges: The New Immigration from Asia and the Pacific Islands.* New York: Center for Migration Studies, 1987.

Durham, William H. *Scarcity and Survival in Central America: Ecological Origins of the Soccer War.* Stanford: Stanford University Press, 1979.

El-Hinnawi, Essam. *Environmental Refugees.* New York: United Nations Development Program, 1985.

Economic and Political Weekly. "Migrant Workers, Super-Exploitation and Identity: Case of Sugarcane Cutters of Gujarat," by DN (pseudonym). June 4, 1988.

Fairclough, A.J. "Global Environment and Natural Resource Problems — Their Economic, Political and Security Implications," *The Washington Quarterly,* 14, 1, 1991.

Feeny, David. "Agricultural Expansion and Forest Depletion in Thailand," in John F. Richards and Richard P. Tucker (eds.), *World Deforestation in the Twentieth Century.* Durham: Duke University Press, 1988.

Fernandes, Walter, et al. *Forests, Environment and Tribal Economy.* New Delhi: Indian Social Institute, 1988.

Fried, Jonathan L., et al. *Guatemala in Rebellion: Unfinished Story.* New York: Grove Press, 1983.

Girling, John L.S. *Thailand: Society and Politics.* Ithaca: Cornell University Press, 1981.

Global Assessment of Soil Degradation (GLASOD). *World Map of the Status of Human-Induced Soil Degradation,* Global Assessment of Soil Degradation, International Soil Reference and Information Centre and United Nations Environment Programme, Wageningen and New York, 1990.

Goldstone, Jack A. *Revolution and Rebellion in the Early Modern World.* Berkeley: University of California Press, 1991.

Goldstone, Jack A., Ted Robert Gurr and Farrokh Moshiri (eds.). *Revolutions of the Late Twentieth Century.* Boulder: Westview Press, 1991.

Goodwin-Gill, Guy S. *The Refugee in International Law.* Oxford: Clarendon Press, 1983.

Gurr, Ted Robert. "On the Political Consequences of Scarcity and Economic Decline," *International Studies Quarterly,* 29. 1985.

Hazarika, Sanjoy. "Bangladesh and Northeast India: Migration, Land Pressure and Ethnic Conflict." Paper prepared for American Academy of Arts and Sciences and University of Toronto conference on Environmental Change and Acute Conflict, Ottawa, June 18-19, 1991.

Harrell Bond, Barbara. *Imposing Aid: Emergency Assistance to Refugees.* New York: Oxford University Press, 1986.

Hoagland, Sara and Susan Conbere. *Environmental Stress and National Security.* College Park, MD: Center for Global Change, 1991.

Hjort, Anders af Ornäs and M.A. Mohamed Salih (eds.). *Ecology and Politics*. Uppsala: Scandinavian Institute of African Studies, 1989.

Homer-Dixon, Thomas. "On the Threshold: Environmental Changes as Causes of Acute Conflict," *International Security*, 16:2. 1991.

Hugo, Graeme. "Changing Famine Coping Strategies Under the Impact of Population Pressures and Urbanisation: The Case of Population Mobility." Paper presented at the workshop on Famine Research and Food Production Systems, Freiburg University, Freiburg, 10-14 November 1989.

_____. "Population Movements in Indonesia." Paper presented at the International Conference on Migration, National University of Singapore, 1991.

Hurst, Phillip. *Rainforest Politics*. London: Zed Books, 1990.

International Bank for Reconstruction and Development (IBRD). *A Public Development Program for Thailand*. Report of a 1959 Mission organized by the International Bank for Reconstruction and Development. Baltimore: Johns Hopkins University Press, 1959.

_____. *World Development Report*. New York: Oxford University Press, 1990.

_____. *The World Bank and the Environment*. First Annual Report. Jeremy J. Warford and Zeinab Partow. (eds.) Washington, DC: The World Bank, 1990.

_____. *World Development Report 1192*. Washington D.C.: The World Bank, 1992.

Ingram, James C. *Economic Change in Thailand: 1850-1970*. Stanford: Stanford University Press, 1971.

Islam, Muinul. "Ecological Catastrophes and Refugees in Bangladesh." Paper presented at the Conference on Worldwide Refugee Movements, The New School for Social Research, New York, 8-9 November 1991.

Jacobson, Jodi. *Environmental Refugees: Yardstick of Habitability*. Worldwatch Paper no. 86, 1988.

Jonas, Susanne. *The Battle for Guatemala*. Boulder: Westview Press, 1991.

Keyes, Charles F. *Isan: Regionalism in Northeastern Thailand*. Data Paper, No. 65. Ithaca: Southeast Asia Program, Cornell University, 1967.

Kimberly, A. Hamilton and Kate Holder Kimberly. "International Migration and Foreign Policy: A Survey of the Literature," *The Washington Quarterly*, 14:2. 1991.

Kritz, Mary M. "Climate Change and Migration Adaptations," 1190 Working Paper Series, 2.16. Ithaca: Cornell University, 1990.

Kunz, E.F. "The Refugee in Flight: Kinetic Models and Forms of Displacement," *International Migration Review*, Vol. 7, No. 2, 1973.

Lake, Anthony, et al. *After the Wars*. Washington, DC: Overseas Development Council, 1990.

Lattimore, Owen. *Inner Asian Frontiers of China*, 2nd ed. Boston: Beacon Press, 1951.

Manz, Beatrice. *Refugees of a Hidden War*. Albany: State University of New York Press, 1988.

Maloney, Clarence. *Environmental and Project Displacement of Population in India, Pt. I, II*. Natural Heritage Institute/Universities Field Staff International, Field Staff Report, no. 14, 1990-91.

Manusphaibool, Chuta. "Rural-Urban Migration Trend and Employment Status: A Case Study in the Bangkok Metropolis." Paper presented at the International Conference on Migration, National University of Singapore, 1991.

Markakis, John. " The Ishaq-Ogaden Dispute" in Anders Hjort af Ornäs and M.A. Mohamed Salih (eds). *Ecology and Politics: Environmental Stress and Security in Africa*. Uppsala: Scandinavian Institute of African Studies, 157-168, 1989.

Meesook, Oey Astra. "A Study of Disparities in Income and Social Services Across Provinces in Thailand," unpublished paper. Washington, DC, 1978.

Myers, Norman. "Environment and Security," *Foreign Policy*, No. 81. 1991.

_____. "Population\Environment Linkages: Discontinuities Ahead?" IESA\P\AC.34\3UN. Expert Group Meeting, New York, 20-24 January 1992.

National Academy of Sciences (NAS). "Policy Implications of Greenhouse Warming," Report of the Adaptation Panel, prepublication manuscript. Washington, DC: National Academy Press, 1991.

National Economic and Social Development Board (NESDB). *The Fourth National Economic and Social Development Plan, 1977-1981*. Bangkok: National Economic and Social Development Board, 1977.

Nnoli, Okwudiba. "Desertification, Refugees and Regional Conflicts in West Africa," in Anders Hjort af Ornäs and M.A. Mohamed Salih (eds). *Ecology and Politics: Environmental Stress and Security in Africa*. Uppsala: Scandinavian Institute of African Studies, 1989.

Organizing for Development: An International Institute (ODII). "Women's Organizing Ability: A Case Study of Northeastern Villages in Thailand," report prepared for the ODII, Washington, DC, by the Thailand Development Research Institute Foundation, 1991.

Oxford University Press. *A Social and Economic Atlas of India*. New Delhi: Oxford University Press, 1978.

Peckenham, Nancy. "Fruits of Progress: The Panzs and the Spanish Embassy Massacres," in Fried, et al., 1983.

Phadnis, Urmila. *Ethnicity and Nation-Building in South Asia*. New Delhi: Sage, 1989.

Porter, Gareth, with Delfin J. Ganapin, Jr. *Resources, Population and the Philippines' Future*. Washington, DC: World Resources Institute, 1988.

Portes, Alejandro and John Walton. *Labor, Class and the International System*. New York: Academic Press, 1981.

Raju, K.V. and C. Maloney. "Environmental Refugees in India." Paper presented at a conference on environmental refugees, Nyon, Switzerland, 19-21 January 1992.

Rangasami, Amrita. "Failure of Exchange Entitlements' Theory of Famine," *Economic and Political Weekly*, Vol. XX, No. 42. 19 October 1985.

Refugee Policy Group (RPG). *Migration and the Environment*. Briefing Paper prepared for conference on Migration and the Environment, 19-22 January 1992.

Richter, Kerry. "Migration Policy in Thailand: Needed Data." Paper presented at the International Conference on Migration, National University of Singapore, 1991.

Salih, M.A. Mohamed, "Political Coercion and the Limits of State Intervention: Sudan," in Anders Hjort af Ornäs and M.A. Mohamed Salih (eds.). *Ecology and Politics: Environmental Stress and Security in Africa.* Uppsala: Scandinavian Institute of African Studies, 1989.

Sanders, Thomas. *Northeast Brazilian Environmental Refugees: Why They Leave.* Field Staff Reports, No. 20, 1990/1.

Schwartz, Norman B. "Colonization of Northern Guatemala: The Petén," *Journal of Anthropological Research,* Vol. 43, 1987.

Silcock, T.H. (ed.). *Thailand: Social and Economic Studies in Development.* Canberra: Australian National University Press, 1967.

Ståhl, Michael. *Constraints to Environmental Rehabilitation through People's Participation in the Northern Ethiopian Highlands.* United Nations Research Institute for Social Development (UNRISD), Geneva, No. 13. 1990.

Stanley, William. "State Responses to Central American Migration: The Role of Ideology, Domestic Politics, and Foreign Relations." Paper presented at the conference on the Impact of Migration, MIT, Cambridge, MA, 5-6 December 1991.

Stark, Oded. *The Migration of Labor.* Oxford, MA: Basil Blackwell, 1991.

Stein, Barry N. and Sylvano M. Tomasi, (eds.). "Refugees Today," *International Migration Review,* Spec. Ed. 15. 1981.

Suhrke, Astri. "Ecological Crisis and Population Displacement." Paper presented at the conference on Worldwide Refugee Movements, New School for Social Research, New York, 8-9 November 1991.

Swetnam, John. "What Else Did Indians Have to Do with Their Time? Alternative Labor Migration in Prerevolutionary Guatemala," *Economic Development and Cultural Change,* Vol. 38. 1989.

Tamondong-Helin, Susan and William Helin. *Migration and the Environment: Interrelationships in Sub-Sahara Africa.* The Natural Heritage Institute/Universities Field Staff International. Field Staff Report, No. 22, 1990-91.

Textor, Robert B. *From Peasant to Pedicab Driver.* Southeast Asia Cultural Report Series, No. 9. New Haven: Yale University, 1961.

Timberlake, Lloyd. *Africa in Crisis.* London: Earthscan, 1985.

Tirasawat, Penporn. "Migration in Thailand: Past and Future", in Philip M. Hauser, et al. *Urbanization and Migration in ASEAN Development.* Tokyo: National Institute for Research Advancement, 1985.

Todaro, Michael P. "A Model of Labor Migration and Urban Unemployment in Less Developed Countries," *American Economic Review,* 59:1. 1969.

Tuchman, Jessica Mathews."Redefining Security," *Foreign Affairs,* 68:2. 1989.

United States Agency for International Development (USAID). *Country Development Strategy Statement. FY 1981. Thailand.* U.S. Department of State, Washington, DC, 1979.

Watts, M. *Silent Violence: Food, Famine and Peasantry in Northern Nigeria.* Berkeley: University of California Press, 1983.

Weiner, Myron. *Sons of the Soil*. Princeton: Princeton University Press, 1978.

_____. "Security, Stability and International Migration." Paper prepared for a conference on Migration, MIT, Cambridge, MA, 5-6 December 1991.

Wijewardene, G. "Some Aspects of Rural Life in Thailand," in T.H. Silcock (ed.), *Thailand: Social and Economic Studies in Development*. Canberra: Australian National University.

Wilkinson, Steven Ian, "Senegalese and Mauritanian Migration Since 1989." Paper prepared for a conference on Migration, MIT, Cambridge, MA, 5-6 December 1991.

World Resources Institute (WRI). *World Resources 1988-89*. Washington, DC: World Resources Institute, 1989.

Zolberg, Aristide, Astri Suhrke and Sergio Aguayo. *Escape from Violence: Refugees and Conflict in the Developing World*. New York: Oxford University Press, 1989.