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Environmental disputes

Environmental security

The concept of environmental security (also referred to as ecological security) represents an alternative to the current accepted paradigms for addressing threats related to environmental degradation in the post-Cold War world (Dabelko and Dabelko, 1995). Environmental security can also help explain the security needs surrounding freshwater resources while not being limited to these resources.

The study of environmental security is hampered by a lack of consensus on its definition. The literature on environmental security reflects a debate between the security-oriented school of thought and the environment-oriented school of thought.

History

The issue of environmental security has been gaining recognition as a legitimate geopolitical problem since the end of the Cold War. This type of ''security'' is as significant to countries as defence security. El-Ashry stated, ''Nations are discovering that no matter how powerful or rich they are, they are hostage to environmental trends far from their shores'' (1991: 16).

As early as 1977 environmentalist Lester Brown argued for a redefinition of national security that would include the environment. Following

suit, Richard Ullman sought a similar objective in a 1983 article entitled ''Redefining Security.'' The concept termed environmental security was officially introduced at the 42nd session of the United Nations General Assembly in 1987. The concept gained greater recognition in 1988 when former Soviet Foreign Minister Eduard Shevardnadze told the General Assembly that global environmental threats are quickly ''gaining an urgency equal to that of the nuclear and space threats'' (El-Ashry, 1991).

Defining the concept

The concept of environmental security raises several intriguing questions: what is environmental security? To whom is it important? Why? Is a concept like environmental security essential for linking environmental degradation or resource scarcity to intra- and interstate conflict? If environmental change and degradation do pose a security threat, whose security does it threaten and how? Should ''security'' be redefined to incorporate environmental issues and threats, or should environmental issues be seen as a variable of conflicts?

Another area being questioned centres on defining what the threats are that environmental security is attempting to resolve. On one hand, these threats are in the form of violence and conflict. Conversely, others contend that the threat is degradation of environmental resources leading to a decline in the quality of life.

In 1994, Dalby described environmental security as ''policies to protect the integrity of the environment from human threats, and simultaneously, to prevent political conflict and war as a result of environmental change and degradation'' (in O'Loughlin, 1994: 72). In addition, the definition found in the *Dictionary of Geopolitics* notes that environmental security may also include threats that arise from political instabilities resulting from large numbers of people displaced due to environmental degradation. It can also refer to the environmental damage done by military preparations for the Cold War and damage in the aftermath of the Gulf War (1994: 72).

At the outset, this definition would appear to satisfy both the security view and the environmental view, it is, however, inherently contradictory. On one hand it suggests that we need to protect the environment from human threats, it then indicates we must protect humans from interacting in conflict and war, caused by changes and degradation of the environment.

Kumar (1995) suggests that to define the concept environmental security, one must begin with identifying the components of an ecological

crisis that might threaten a state's security. The components of ecological crises start with some kind of human activity that impacts on the environment, may or may not cause a major environmental change, and might lead to large-scale social disruption. It is the social disruption that might cause the various kinds of conflict. Kumar clarifies that "it is only when conflict is created that we have a threat to security" (1995: 154). In his view, the key to analysing environmental threats to security is to determine the variables that allow or prevent the transition between component stages.

A debate has been taking place for the past several years between Homer-Dixon and Levy concerning the definitions and analysis of "environment" and "security" (see 1995, 1996). Levy (1995) proposes a definition of environmental security with "environment," emphasizing the connection with physical and biological systems, and "security," emphasizing protection of national values against foreign threats. He has come to the conclusion that the reason the analyses thus far have been unable to understand the role of the environment in sparking regional conflict is because we do not fully understand what causes conflict. The focus of future research should therefore focus on conflict and not the environment. In Levy's continuing work, the emphasis is on calling for analysis of the causes of regional military conflicts (several articles in 1995).

Homer-Dixon, as lead researcher for the Peace and Conflict Studies Program at the University of Toronto and the American Academy of Arts and Sciences, has attempted to identify links between environmental scarcity and acute conflict. He defines environmental security as:

> A condition with two dimensions: The first dimension is safety from chronic threats caused by environmental problems, such as hunger and disease. The second dimension is protection from sudden and hurtful disruptions in patterns of daily life induced by environmental problems. Such threats can exist at all levels of income and development and can occur in homes, in jobs, or in communities. (1996: 56)

Homer-Dixon uses the term scarcity rather than security in a majority of his published work, focusing rather on the links between environmental stress and violence (1991, 1993, 1994, 1995, 1996). His definition of environmental scarcity examines the sources of renewable resource scarcity: supply-induced, demand-induced, and structural.

Due to the lack of consensus concerning the definition of environmental security, many sources include some discussion of the different viewpoints from the available literature (for example, see Dabelko and Dabelko, 1995).

The debate

Redefining security

It is apparent after examining the literature that both sides agree that the environment is a variable of conflict and security issues. This linkage does not mean that the environment is the primary trigger of the conflict or that it is a security issue in and of itself. The debate is over the details of where to place the environment and its problems into our established ways of thinking of conflict and security.

Many who are studying environmental security are arguing for a more holistic definition of security (Brown, 1977; Ullman, 1983; Mathews, 1989; Renner, 1989; Myers, 1993). This new definition would move security away from the traditional model of state behaviour. Mathews (1989) subscribes that the definition of national security should be broadened to include resource, environmental, and demographic issues. Dabelko and Dabelko offer that the ''conception of security must instead be changed to reflect the new threats of environmental degradation'' (1995: 8). Myers points to the idea of ''one-world'' living and thinking. In his opinion, growing environmental deficiencies generate conditions that yield and make conflict more likely. These deficiencies have and will serve to determine the source, aggravate core causes, and shape the nature of conflict (1993: 23).

Others oppose a redefinition of security but support the identification of environmental degradation as a major concern (Deudney, 1990, 1991; Dalby, 1992, 1994; Conca, 1994). Deudney questions the causality issue between environmental change and degradation and interstate conflict (Dabelko and Dabelko, 1995). Deudney's argument revolves around his belief that interstate violence, the traditional focus of national security, has ''little in common with either environmental problems or solutions'' and that ''environmental degradation is not very likely to cause interstate wars'' (1990: 461). He then claims that only when security from violence and environmental threats are similar can identifying environmental degradation as a threat to national security be useful. He then proceeds to argue that they are in fact different in nature, scope, origin, and degree of intentionality (1991: 23–4). Conversely, Gleick (1991), using very narrow definitions of environmental problems, argues that they are in fact related to violent conflict.

Westing (1989) perceives security as a legitimate quest for all but indicates one cannot look solely at the environmental component for success. His view is of a comprehensive human security (based on the Universal Declaration of Human Rights) that includes both environmental security and political security. Both of the sub-components must be satisfied to

achieve security. Westing suggests that there are two prerequisites to achieve environmental security: (1) a protection requirement, the quality of the human environment; and (2) a utilization requirement, the sustainable use of renewable natural resources.

The military

Many authors are concerned about using a vocabulary that lends itself to military involvement with the overlap between environmental security and national security (Deudney, 1990; Dalby, 1992; Conca, 1993). Matthew suggests that one argument for this viewpoint is that ''environmental security risks diluting the concept of national security which must be kept narrowly focused on military threats if it is to be usefully and effectively operationalized'' (1995: 19). Another area of debate revolves around the military support effort for enforcement of this ''security.'' Some suggest that military activities are major offenders, causing environmental degradation; according to this view, the military should be seen as part of the problem and not part of the solution. Still others are concerned ''that this emphasis on environmental protection will hinder military readiness or war-fighting capabilities'' (Matthew, 1995: 19).

Cause of conflict

Does environmental stress cause conflict? Many authors would respond with a resounding yes. In their argument for placing environmental change at the top of the priorities list of international politics, several authors have attempted to demonstrate the links through case studies (for example see, Westing, 1986; Myers, 1987; Gleick, 1993; Kumar, 1995; Homer-Dixon, 1991–1996).

Homer-Dixon's investigations (1993, 1994) found evidence of environmental scarcity serving as an underlying cause of intrastate conflict. This ''subnational'' conflict was primarily based on ethnic clashes created from environmentally induced population movements, and civil strife originating from economic productivity that was affected by environmental scarcities.

Concerning interstate conflict, Westing (1986) maintains that there were 12 conflicts in the twentieth century that contained distinct resource components. Homer-Dixon found that only a ''few cases ... supported the interstate conflict hypothesis in terms of renewable resources as the source of conflict'' (1994: 39).

Bringing it together

Several authors have seen their way through the debate and have made relevant reminders to those who study this concept of environmental

security. Conca (1994) reminds that one must distinguish three ways that people or institutions might be viewing environmental security: (1) rhetorical endorsement; (2) institutional changes that reflect changing priorities; and (3) acceptance of fundamentally new conceptions of security.

Shaw (1996) advises that those who study environmental security must use the appropriate context. He indicates that there are three considerations for developing the relationship between environment and security:

> First, it is important to recognize that both security and environmental issues are contextual; the extent and impact of a given problem is relative to its location and sensitivity of the system affected. Second, it is the security issue that provides the context for understanding the impacts of environmental issues and, third, the analysis of environmental issues must be compatible with the analyses of related security issues. (1996: 40)

The example Shaw uses to illustrate this point is that a water problem between Israel and Jordan would have vastly different implications if there were a similar problem between Canada and the US. He cautions that to establish a direct causal link between a ''generic'' environmental problem and the creation of violent conflict is problematic because of the uniqueness of the context in the different regions of the world. Dabelko and Dabelko support the idea of context when they suggest that ''All issues of environmental degradation should not be forced to fit into the matrix of security and conflict'' (1995: 8).

Water (transboundary resources)

Scholars are recognizing the importance of transboundary resources in the study of environmental security (Holst, 1989; Mathews, 1989; Lipschutz, 1992; Dabelko and Dabelko, 1995). An important fact is that the states primarily responsible for the problems are often not the ones who endure the majority of the damage. Dabelko and Dabelko point out that ''What may be environmental hazards or resource shortages created entirely within one country, can dramatically affect neighboring states'' (1995: 9). Mathews maintains ''environmental strains that transcend national borders are already beginning to break down the sacred boundaries of national sovereignty'' (1989: 162).

Water is becoming an extremely important environmental issue to many nations as demands upon it continue to increase. Although freshwater is a renewable resource, it is also a finite one. Each year, nature makes only so much water available in a given region. This supply can significantly drop below average in times of drought. In addition, as human need for water increases with population and industry, water demand can meet or,

through mining groundwater, surpass, replenishable supplies (Postel, 1993: 10). This lack of water is a point of contention for many downstream states that fear not only quantity but also quality issues (for example, the Euphrates, Ganges, Nile, and Rio Grande rivers).

Lipschutz suggests the perspective that if "people" believe that water rights are distributed inequitably or that the debate over these rights may be an issue in the future, this perception could lead to more conflict than the actual state of the water supply (1992: 5). Dabelko and Dabelko offer further that the nature of transboundary global environmental problems suggest that the best strategy for addressing these challenges between states is cooperation, not competition (1995: 5).

Summary

Even though environmental security is an evolving concept, there are already some common trends emerging. First, most researchers recognize the relevance of studying how environmental change and degradation impacts humans, whether or not it is caused by humans, and at all levels. Second, the general consensus appears to be that there is a need for understanding how to resolve natural resource disputes through both traditional and alternative dispute resolution techniques. Third, whether one wants to change the traditional paradigm of security or merely examine the environment as a contributor that can threaten one's security, there is an underlying theme that resource scarcity will probably lead to conflict in the future. Perhaps it is Matthew who has stated it best:

> The environmental integrity of the planet and the welfare of humankind require tough choices between using resources and institutions that are at hand and forging new ones, reforming current practices and avoiding new stresses on the environment, and protecting the privileged position of industrial states and redistributing wealth and expertise. There is no clear path towards an environmentally secure future, but there are many routes likely to lead to conflict, violence, and misery. Avoiding these will demand innovation, pragmatism, and sacrifice. (Matthew 1995: 20)

Other resources

As pointed out by MacDonnell (1988), there are several sources and types of conflicts related to natural resources. The sources for disputes are rooted in the different values and importance people may associate with a particular resource (religious, production, etc.), their present and

future use, and negative externalities associated with their use. Disputes may arise between private parties and government agencies, they may involve many private parties, and they also may involve different governments. The source and the type of the dispute may help in selecting the resolution technique (as is described in other parts of this review).

The overarching problem of resource scarcity

The availability of natural resources has decreased over time both in terms of quantity and quality as a result of industrial development, and the expansion of urbanization and agriculture. The inevitable consequences of increasing the demand for various natural resources represent an increase in the value for the use of these scarce resources and their services. A general review of the evidence of the growing scarcity of natural resources can be found in Young (1991). Antle and Heidebrink (1995) estimate the environment-development trade-offs faced by countries during the process of economic growth. What Young and Antle and Heidebrink do not discuss, which can easily be assessed from the growing volume of literature, is the increase in the number of disputes over these natural resources. A general discussion that also addresses other dimensions of sustainable development can be found in Redclift (1991). In addition to the economic dimension, Redclift introduces the political dimension and the epistemological dimension (which seeks ways of acquiring knowledge and incorporating it into the conceptual systems). A more focused review of settlement of public international disputes on shared resources can be found in Alheritiere (1985). There are several peaceful means of settling resources disputes, including direct negotiations, good offices, mediation, enquiry and conciliation, consultation, arbitration, and judicial settlements. Alheritiere also discusses the advantages and disadvantages associated with each option and with each resource.

The following sections address specific disputes associated with several resources as they were documented in the literature.

Oil

The case of oil disputes has several dimensions. On the one hand, disputes may arise on the basis of production rights, oilfield boundaries and extraction rights. On the other hand, disputes associated with oil pollution are becoming common. Disputes may arise also with regard to prices of oil within OPEC countries (Toman, 1982a, 1982b), but will not be discussed here.

Mitchell (1994) discusses two international oil pollution control alternatives: the discharge and the equipment subregimes. The discharge

subregime – aimed at protecting coastlines by regulating oil discharge zones – is demonstrated using case studies of disputes between the United Kingdom and Germany, the Netherlands, and the US. The equipment subregime regulates types of vessels and safety equipment on vessels (e.g. segregated ballast tanks). Although opposed by several governments representing public shipping interests (France and Japan), and private shipping interests (Denmark, Germany, Greece, Norway, Sweden), an agreement was eventually approved. The compliance with the treaty is questioned in the paper. Several mechanisms are suggested that include enhancing transparency of the subregimes, facilitating potent but low-cost sanctions, and coercing compliance rather than deterring violation.

Devlin (1992) describes the relationship between the oil extraction policy of a political system and the style of governance in totalitarian regimes, using case studies of Iran and Iraq. Although not directly related to the problem of dispute resolution in natural resources that is reviewed here, the relevancy of domestic policies to the understanding of disputes is essential (LeMarquand, 1977) in the resolution process.

Valencia (1986) describes international conflicts over oil and mineral resources in overlapping claim areas across world regions. Similar to transboundary aquifers and fisheries, the problem here is a lack of sufficient definition of property rights. A preferred solution to such disputes, as demonstrated in the paper, is the agreement for joint development in areas of overlapping claims. Using numerous examples, common elements of such agreements include: definition of the extent of the area; the nature and functions of the joint management body; the contract type (duration and termination rules); financial arrangements; the process of selection of concessionaires or operators, procedures, and principles for conflict resolution, and transfer of technology.

Land

Similar to the case of oil, land disputes may arise on the basis of land rights, oilfield boundaries and extraction rights, or soil erosion problems. A study in Haiti demonstrates the cooperative approach towards the management of a common property resource – land in a watershed that is subject to transboundary erosion effects by upstream mismanagement. The analysis of this case study demonstrates that incentives associated with land conservation triggered a cooperative effort on the farmers' side. The flexible set of rules, consisting of small investments or labour inputs in the construction and maintenance of small dams, allowed all parties to cooperate. Factors contributing to better cooperation of the individual parties that may be relevant for other cases included: potential direct or indirect benefit; level of effort needed to maintain cooperation; land

tenure; religious affiliation; initial wealth; and existing investment in soil conservation.

Claims by Alaskan natives over vast amounts of land date back to 1867 when Alaska was sold to the US. The natives protested the sale arguing that they owned the land. When Alaska became a state in 1958, it was important to settle the conflict with thought given to cultural and traditional considerations. Federal laws and policies have recognized the right of Alaskan natives to land and wildlife for subsistence. A process of hearings was established (Berger, 1988), which in turn established the Alaska Native Review Commission. This commission started a consultative process among Eskimo villages and NGOs. The commission prepared a document that includes all the testimonies and recommendations regarding the native ownership of land. Since the conflict has been handled in the form of a commission, it is not clear whether the parties involved have accepted its recommendations.

Irrigation schemes that are served by the same source of water can create land and ecological degradation disputes, as is the case in Chokwe, Mozambique (Tanner et al., 1993). The study identified several sources of disputes over the use of land and water resources, over damages to irrigation structures, and over yields. In the specific case of land, these disputes were resolved by authoritative powers such as local family leaders, the executive council of the project members, and by the representatives of the irrigation management company.

Roads

Sources of road disputes represent different values that residents and local or national governments assign to the land that is to be developed. Harashina (1988) reviews several disputes/case studies associated with the Tokyo Bay Area Artery Project. One important conclusion from the case studies is the need to start mediation at the same time as the planning of the project. This need means not only involving the stakeholders in the process of identifying and evaluating various options, but also assigning a mediator to resolve potential conflicts as they arise.

Fishing

Gramann and Burdge (1981) test the complementarity between recreation and fishing. Surveying visitors in Lake Shelbyville, Illinois, they found conflicting goals between skiers and fishermen who used the lake. The authors used discriminate analysis to describe the conflict between the two groups of visitors. Although the analysis showed only weak antagonism between the goals of skiers and fishermen, Gramann and Burdge's study allows us to understand the dynamics of conflict in recreation.

Air pollution

Acid rain

Acid rain pollution, caused by the burning of fossil fuels, is an international transboundary issue. Although acid rain has been recognized nationally and internationally as a polluting problem for some time, it was not until 1979 when the Convention on Long-Range Transboundary Pollution was signed, and then ratified in 1985 by 54 countries, that the issue gained international recognition. The convention establishes a data-gathering network and data-sharing system, and it provides regulations to deal with polluting substances (McCormick, 1985).

China is one of the primary coal users in the world, and produces the greatest amount of sulphur dioxide in Asia. In contrast, Japan uses several sources of energy, of which coal is only 16 per cent. It was found that cross-border pollution from China might contribute to acid rain in Japan (Matsuura, 1995). To manage this problem, Japan, through its Development Assistance programme, has developed a strategy to provide technical assistance to China so that it can improve its technological capability in reducing emissions that affect Japan.

Tahovnen et al. (1993) studied the acid rain dispute between Finland and the Soviet Union [*sic*]. Similar to the case of China and Japan, the asymmetry between the two countries introduced some interesting aspects to the dispute. The long border between these two countries introduced severe transboundary air pollution problems. Soviet sulphur emissions into Finland from industrial activity amounted to 651,000 tons per year. These emissions resulted in the acidification of forest soils. Although there are some transboundary Finnish air pollution effects on Soviet territory, these have not been properly documented. Solutions to the problem may include reduction of the emissions by reducing the industrial activity, improving the industrial processes to produce fewer emissions, or improving fuel standards. In reaching an agreement the paper employed both non-cooperative and cooperative approaches. A 50 per cent emission reduction agreement was the actual (real-life) resolution of the conflict. However, the agreement did not specify whether the 50 per cent reduction was in all pollution-contributing regions and this discrepancy could greatly affect the outcome of the agreement.

Additional readings on acid rain pollution can be found in Hawdon and Pearson (1993), Postel (1984), Kowalok (1993), Forster (1989), and Bhatti et al. (1992).

Global warming

The emission and accumulation of carbon dioxide in the atmosphere not only creates immediate air pollution problems, but also affects our global

climate. Although it is very difficult to identify and measure the individual impact by one country on the climate of another, the cumulative effect over time can be observed. Cline (1992) believes that only an international cooperative strategy can be useful in managing this problem. He suggests that this international framework should draw upon economic, legal, institutional, and social factors. According to Cline, a cooperative approach that is unique to the global warming phenomena is for industrial countries in the northern hemisphere to invest in emission reduction technologies in developing countries in the southern hemisphere. By doing so the developed countries contribute to the reduction of global warming.

Summary

The literature reviewed in this section illustrates that other natural resource issues offer lessons that may be applied to the resolution of water conflicts. At the regional level, actors often have fared better at protecting their seas and fisheries and other common pool resources (i.e. deep seabed mining, grazing lands, fisheries, oilfields, rainforests, outer space, acid rain, and air pollution), than they do in protecting their transboundary waters. A systematic analysis of successful common pool resource institutions can lead to the development of design principles that may be applicable to other cases.

An analogy has been made between solutions to energy disputes and water disputes, suggesting that the ''soft path'' approach be used in terms of vital needs, supply-demand and pricing, and environmental damage. When dealing with aquifers, the comparison with underground oil is even more appealing, especially in border areas between two countries. However, one must acknowledge the many differences between the two resources.

Another field that offers lesson is that of domestic water agreements and national water law which, in the developed world and some developing countries, is much stronger and more resilient than international law. When asking ourselves what the main differences are between domestic and international watershed disputes, we are clearly extrapolating issues within the realm of the social sciences, including the dominant concept of sovereignty, the lack of enforcement mechanisms, the weakness of international law, the absence of the federal state as a built-in mediator, the disparities among the riparian in types of political regimes, the social structure, the chauvinistic attitudes of stakeholders, the cultural value system, and other issues.

This obvious but intriguing relationship requires more attention in our

study. On the one hand, the relevance of the idea of national sovereignty clearly emerges as an obstacle, but working across national lines could generate other types of collective identity, overlapping interests of domestic groups of different riparians, and adherence to other regional configurations. The problem remains, so far, as to how the development of additional identities can be perceived not as threatening but as complementing the primordial national identity. On the other hand, it has been mentioned that domestic water management is ''fragmented among sectors and institutions with little regard for conflicts or complemetaries among social, economic, and environmental objectives'' (Serageldin, 1995). If that is the case at the domestic level, clearly its multiplication by the numbers of riparians and in different internal configurations makes the probability of a comprehensive but only technical approach rather slim.

A more thorough review of agreements signed among disputing provinces and states within federal governments raises some interesting points from the question of adaptation, to the guiding principles in international disputes. Nevertheless, many conclusions are significant in their work at the international level, both in determining the approach to conflict management as well as in drawing inferences from small to large-scale planning.

The learning of methods for solving territorial issues are of great importance. Granted that the intrinsic fluid and seasonal nature of waterways generates an interdependence that makes dispute-solving more difficult than resolving issues on set and fixed borders, let alone that rivers may also fulfil the added dimension of a national frontier. Perhaps because the differences are obvious, not enough sufficient lateral thinking about commonalties seems to have been done about this comparison.