

New Issues in Security #5

**CRITICAL ENVIRONMENTAL
SECURITY: RETHINKING THE LINKS
BETWEEN NATURAL RESOURCES
AND POLITICAL VIOLENCE**

Edited by

Matthew A. Schnurr and Larry A. Swatuk

Centre for Foreign Policy Studies
Dalhousie University
2010

CHAPTER 1

INSTITUTIONAL CONSTRAINTS, VIOLENCE AND ENVIRONMENTAL INSECURITY: SOME CONCEPTUAL AND EMPIRICAL OBSERVATIONS

Jorge Nef and O.P. Dwivedi

For many years, the prevailing notion of security has been associated with the ‘realist’ military side of conflict management, understood as ‘national security.’ For us the term does not just mean the interplay of deterring, compelling, defensive and offensive force in the pursuit of a self-defined national interest. Above all, and at a fundamental level it includes the safety and quality of life of all human beings and their ecosystems. Conceptually, we could define such security as the reciprocal value of insecurity. It refers to all those trends and factors – environmental, economic, social, political and cultural – that increase risk, exposure and vulnerability for a given population. In earlier works¹ we contended that in highly complex and interconnected systems, the security of the whole, including that of its seemingly most protected components, paradoxically depends upon the system’s weakest links. We called this thesis ‘mutual vulnerability.’ It intentionally stood in clear opposition to the abovementioned notion of national security. In many cases around the world, and contrary to the prevailing discourse, national security and its prescriptions have been and remain a major cause of human insecurity. Simon Dalby explains this contradiction by arguing that security is not solely about protecting a stable status quo from an external threat. Rather, it is about reducing fears of the future. In addition, it is about control, certainty and predictability in an uncertain world. As Dalby says, “it is about maintaining certain collective identities, certain senses of who we are, of who we intend to remain, and more than who we intend to become.”²

In a number of previous studies³ we emphasized the close connection between the explicit and implicit institutional setting, policies and actions (as well as lack of policies and inactions) and outcomes in the realm of environmental and human security. Such political economy connection has been discussed by other authors too.⁴ These authors have centred their main critique on the lack of political analysis in the literature and its inability to link consumption patterns in the North with resource conflicts in the South. Environmental insecurity and unsustainability have a crucial and often devastating impact upon economic, social, cultural and political security. This interconnectivity creates a chain of multiple and often self-sustained dysfunctions, affecting collective well-being and what moral philosophers define as the ‘common good.’

This brief interpretative essay intends to present and articulate a number of research tracks undertaken by both of us during the last two decades around the unified concept of human security in its multiple dimensions. It also intends to relate security and insecurity to the modes of conflict management that underpin the various aspects of security, namely consensus, rebellion, repression and stalemate. We propose that there are significant relationships among the various levels of governance – local, national, regional and global – and prevailing ideologies and forms of organizational and institutional design. These, in turn, affect the policy process and its outcomes.

The term ‘human security’ is most commonly associated with the 1994 United Nations Development Program (UNDP) *Human Development Report*, which defined it as the summation of seven distinct dimensions of security:

- economic,
- food,
- health,
- environmental,
- personal,
- community and
- political.

By focusing on people and highlighting non-traditional threats, the UNDP made an important contribution to post-Cold War thinking about security. That definition broadened the focus of this term from being narrowly seen as protection of territory from external aggression or from the threat of nuclear holocaust; instead the new term related more to people and their quality of life, including human dignity, more than the interests of nation states (i.e., the ‘national interest’). This new and encompassing concept is people-centred, universal and interdependent. It is attainable through early prevention rather than through belated intervention.⁵ The very breadth of the UNDP approach implies that as a policy instrument, it involves taking preventive measures to reduce vulnerability and minimize risk. Remedial action here mostly comes in where and when prevention fails.

A cursory view of the current global predicament gives copious empirical information about the aforementioned reciprocating dysfunctions:

- dramatic climate change;
- the loss of forests;
- soil erosion and depletion;
- growing water scarcity;
- the seemingly irreversible damage to oceans and large bodies of water;
- epidemics;
- growing pauperization, combined with concentration of wealth and power; and
- unsustainable and ever more monopolistic exploitation of resources.

All these traits point at scenarios in which policies are subservient to narrow interests intent in maintaining a catastrophic status quo, where a few benefit in the short run from the exploitation of

the many. Violence, lack of democracy and instability are the political corollaries of the combination and multiplication of such multifaceted and deepening insecurities. In this context, the prince and the merchant, not the citizen, are the iconic figures, while stalemated, repressive and also insurrectional forms of conflict management tend to prevail over consensual modalities. In one word, the politics of violence prevails over the domains of reason and popular rule.

Our central argument is that institutions and politics matter when it comes to producing effective (as well as ineffectual) strategies to cope with environmental challenges. As said at the onset, such challenges go beyond a conventional characterization of defence and military 'national' security. Rather, they relate to a much broader framework that explicitly connects the micro with the macro, the synchronic or structural with the diachronic, or historical. We just need to look at issues such as climate change, epidemics, forced migrations, food insecurity and the like, to realize that conventional and even asymmetrical, non-conventional uses of force are generally useless, if not often counter-productive. But conventional thinking, prescriptions and ideologies (as well as vested interests) die hard. Nowhere is this more dramatic than with the 3-D (defence-development-diplomacy) approaches to insurgencies in Iraq, Afghanistan and now Pakistan, and their New World avatars in Plan Colombia, Plan Mexico and other forms of counter-insurgency and low-intensity operations.

We propose a multi-dimensional and multi-layered view of human security that focuses on environmental security as a major concern. This way of looking at the problem of security/insecurity allows for policy analysis, design and implementation, including alternative, more democratic, comprehensive and more universalistic forms of institutionalization and management. This integrative paradigm goes beyond traditional views of development management and offers an integrated understanding of the interface among social forces (both internal and external), ideologies and cultures, power, institutions, policies and outcomes. In this context, scarcity-driven violence can be seen as dialectically related to the role that resource-abundance plays in driving conflict and violence

For us, following the analysis we proposed to study environmental policies⁶ diverse social actors have different interests. These interests are articulated in cultures and ideologies. The actors (including external constituencies) clash and coalesce among themselves to acquire power positions and build alliances in their respective political configuration, or regime – whether global, regional, national, or local. Once in positions of power, the alliances of actors will transform their ideologies and platforms into policies (decisions, non-decisions, actions and inactions). Policies, in turn have effects on growth, distribution, the nature of political power, as well as support and opposition to the coalition's project. What is crucial here is the degree of inclusiveness and of exclusiveness of the political process, as actors have either preferential access, or are systemically excluded from meaningful participation.

Impact of Environmental and Resource Scarcity on Human Security

As previously stated environmental insecurity is often but not exclusively caused by resource scarcity. Thomas Homer-Dixon identifies three ways humans cause a scarcity of renewable

resources. The combination of these three comprises environmental scarcity. The first is decreased quality and quantity of renewable resources at higher rates than they are naturally renewed (supply-induced scarcity). The second is sharp population growth or per capita consumption (demand-induced scarcity) and the third is unequal resource access (structural scarcity).⁷ For Homer-Dixon, in order to avoid the downward spiral to poverty and violence, contemporary societies adapt to rapid modernization and the accompanying environmental degradation that goes with it, by generating new economic structures and making necessary technological and social innovations.⁸ However, this adjustment is by no means smooth or automatic and often generates further dysfunctions. The impact of resource scarcity can be felt as a result of climatic changes, declining agricultural production, decreased economic productivity, population displacement, disrupted institutions and social tensions. It can also be the result of policies and interventions. Given the relationship between conflict and resource scarcity, it is clear that environmental security is an important feature of current and future social, economic and political trends. Far from advocating for a sort of environmental determinism, related to Malthusian population biases, we propose looking simultaneously at the interface between relative scarcity and abundance of resources in the context of global monopolization.

Not too long ago we argued that environment is becoming the national and global security issue of the early 21st century. There will be political and strategic impacts of surging populations, over-exploitation of resources, spreading disease, deforestation and soil erosion, water depletion, air pollution, and, possibly rising sea levels which may lead to mass migrations and increasing social conflicts.⁹ Water scarcity, we argued, will be a growing conflictual arena in areas such as the Middle East, Central Asia and the southwestern United States. A reduction of water supply could drive states to conflict, not only around issues of access to fresh water, but also over the damming of rivers (as evidenced by continuing conflicts between India and Pakistan, Bangladesh and India). Writers like Wendy Barnaby refute the assertion that water wars might take place. Instead, as she explains, other shortages such as oil have immeasurably higher and serious strategic significance than water.¹⁰ Nevertheless, it is also true that due to the melting of Antarctica and northern glaciers, populations living in low-lying areas will be likely forced to move when sea levels rise. Both the scarcity of natural resources and a rise of sea water levels could be considered one of the underlying causes of future violent conflict, as resource-scarce states will be impelled to look for ways to deal with calamities such as tsunamis, earthquakes, avalanches, floods, droughts and a myriad of man-made disasters. All such perils result in loss of lives, diseases, disruptions in social and economic structures, and divert precious government resources from basic nation-building activities. Conflict-oriented disruptions include problems pertaining to destroyed food crops as a war tactic and the presence of landmines in fields and forests which people depend on for their livelihoods. In a similar line of reasoning, Robert Kaplan foresees an apocalyptic view of impending environmental security threats. He asserts that the environment is one of a terrifying array of problems creating new threats in the 21st century for human security, by inflaming existing hatreds among nations and neighbours and by affecting power relationship for dominant powers.¹¹

Understanding environmental security within the context of human security moves the notion of environmental security from a more narrow state-centred perspective to the larger security of humans. This brings with it, by necessity, a regional and global perspective. Forging a new understanding of environmental security through a human security lens brings people into international

discussions, highlighting issues and concerns about the safety and environmental security of people; not just a narrow view centred on national territories. Environmental security becomes inserted into global and broadly speaking, human security. The role of the state is still central but the emphasis shifts from protecting the state from environmental insecurities to an emphasis on protecting the citizens from environmental and other form of human insecurity. The role of the state then becomes geared to ensuring that people have the capacity and opportunities to access resources and to manage or control those resources in a sustainable way. Most importantly, it means that civil society is involved in the decision-making process about how resources are distributed, protected, regenerated and controlled. This inclusion versus exclusion issue is basically the crux of the 'democratic challenge' as we defined it not too long ago.¹²

Environmental Threats to Human Security

As mentioned earlier, a significant policy shift towards environmental security has occurred in recent decades largely as a result of several factors. These include: the end of the Cold War, which opened new conceptual vistas; and highly publicized disasters, such as the spill of the Exxon Valdez off the coast of Alaska, Bhopal, Three Mile Island and Chernobyl. There was a realization in the collective consciousness that resource scarcity and the uncontrollable use of resources would damage even advanced, industrial economies. These events have coincided with a rise in concern about the global nature of ecological issues, moving beyond 'local' through trans-border pollution and resource-sharing questions and into the even more complex realm of ozone layer depletion and global warming. However, this growing public awareness failed to materialize effectively, resulting in a weak and 'toothless' environmental regime. A number of Western industrial interests, led by the United States and Canada, managed to derail a common agreement in 2009 in Copenhagen, which would have replaced and advanced the 1997 Kyoto Protocol on climate change (operational in 2005). On the other hand, the importance of non-state actors, both profit-oriented and issue-related, has become increasingly obvious, providing yet another significant departure from traditional security based on the territorial integrity of a state. For example, multinational corporations (MNCs) fearing the threat of expropriation of their property, or 'unfair' taxation policies, pushed for a largely unsuccessful Multilateral Agreement on Investment (MAI). They were far more successful, however, in rallying Western governments to prevent the abovementioned expansion of the Kyoto agreements. Non-governmental organizations (NGOs), meanwhile, might define security as protection from arbitrary state arrest or torture, freedom from coerced gender roles, or the avoidance of losing lives or limbs to land mines. The idea of directly linking the environment to security concerns was articulated by Peter Gelick, who identified what he saw as primary environmental threats to security, all relevant to resource scarcity. Resource acquisitions are strategic goals in themselves, often constituting a component of military strategies; think of oil and gas in Venezuela, Colombia, Ecuador and Bolivia (and now the largest world deposits of lithium in Bolivia). Resources can be utilized as military tools ('eco-sabotage' is gaining currency as a concept, but this category has equally sinister implications in the older use of food and water as weapons), and, finally, various disruptions to environmental services, such as water supply, are obvious threats to the well-being

of citizens.¹³ From this perspective, it is necessary to view environmental threats within their proper context, as challenges to national interests, but, more importantly, they can be seen as threats to a broader conception as well: the interests and well-being of humankind itself.

Challenges and Potential Conflicts

So far, we have sketched a tentative systematization of areas of resource and environmentally related issues with the potential of evolving into either highly conflictive scenarios, or opportunities to affect positive change by altering the cultural software of global civilization. The prescriptive statements we outline below entail a significant idealistic – but possible – alteration of ways of thinking and acting: a new consciousness in Freire's terms. This new global consciousness provides the foundation for new forms of political mobilization by transnational social movements. This change in the way of viewing and acting upon the world is within the possibilities of cultural adaptation, along the lines of human evolution discussed by Gordon Child in *Man Makes Himself* back in the 1930s.

Unprecedented Climate Change Triggering a Global Food Crisis

The effects of global warming on agriculture are likely to constitute greater threats to humanity than the submerging of coastal areas due to melting of ice sheets in the Arctic, as well as Antarctica. A study conducted by two scientists, Drs. David Battisti and Rosamond Naylor, predict that by the mid-21st century, extreme heat will wither crops that are heat-sensitive such as wheat, rice and corn, having dire consequences for other food crops particularly in the tropics and sub-tropics where people are already malnourished.¹⁴ Although the heat wave may extend the growing season in Canada and other northern countries such as Russia, crop production would not balance the deficit in the rest of the world. As such, it could evolve into a massive explosion of global food insecurity. In addition to having an impact on cereals, other natural resources such as forests and grazing areas may also be affected. One way to address a global food crisis would be the traditional one relying on technological fixes, for instance Green Revolution-type of interventions by breeding high heat-resistant varieties. Yet, by far the best and most effective strategy would be the immediate control of gaseous emissions, both ozone-related carbon emissions, and methane – something that the current institutionalized regime failed to accomplish in Copenhagen.

Limiting the Ecological Footprint

Sustainability requires human actions to limit ecological footprints rather than belated technical solutions that might simply reduce some specific harm or symptom to the environment. While technology has been and should prove to be helpful, the main culprit is the culture of possessive individualism: greed and the unquenchable appetite for material goods and demand for related services.¹⁵ Without proposing a quixotic concept, as global citizens, we have a shared responsibility for the common good because we share a common destiny by living on the same planet, and therefore, we must pay attention to the ethics of ecological sustainability. As Europe has demonstrated, we may not need to charge against elusive windmills, but build them. Ever-increasing demands for

material goods and the wasteful ways of consumption in the West are being replicated in the rest of the world. What would happen if states such as China, India, as well as those of South America and Africa, become modernized and their middle classes pursue similar consumptive growth? Unless the unpropitious exigencies of rising consumption can be curbed – first within the wealthy states – planetary sustainability remains in jeopardy. The dysfunctional prime directive is ‘more is never enough’; its end result is entropy. The continuation of accumulating more must give way to desiring less. This will require a change in value systems, ethics, teleologies and lifestyles. The grim reality that we face in the 21st century is that the globalization of American-style consumerism is now leading everybody to an unsustainable future and ecological catastrophe. This involves the realization of something obvious, namely that the status quo is unsustainable.

Sustaining Human Security by Balancing Basic Needs and Environmental Quality

Whatever its limitations, progress in human security and development has been accomplished during the past 50 years. On average people even in developing states are healthier, wealthier, better fed and more literate. Furthermore, life expectancy has risen, great advances have been made in primary education and food security has been achieved in several countries. These changes have also given rise to a demand for better human security and appropriate environmental quality. Nevertheless, wide disparities have become dramatically evident. For example, the amount spent by Europeans on mineral water in one year is enough to provide primary education in developing countries for the next 10 years. There are still one billion people who cannot read and write, and among them two-thirds are women. And when we talk about wealth, we should note that the income gap has risen between the top 20% and the bottom 20% poorer nations from a ratio of 30:1 in 1960 to 78:1 in 1994.¹⁶ Thus, human security has not kept an even pace because millions still face substantive deprivations such as starvation, undernourishment, or premature mortality. Building better human security means also creating conditions to mutually reinforce necessary changes in the quality of life so that people all over the world are able to receive the basic services (such as education, primary health care, adequate supply of food, clean water and sanitation). It also means participation in governance and distribution of resources to benefit the most needy (especially women and other marginalized persons). It involves too mobilizing and energizing citizens – not subjects – to be proactive in environmental conservation, and participate in the global economy.

Planetary Survival through Ecological Diversity

In March 2006, the United Nations released its report, *Global Biodiversity Outlook 2*, which painted a sombre picture of life on Earth, given the current extinction rate of biodiversity at 1,000 times faster than in the known historical record.¹⁷ That spiralling extinction rate of biodiversity is mainly the outcome of the juxtaposition of several factors. One is increasing global demand for bio-resources exceeding the planet’s capacity to renew them by about 20%. Another is the introduction of invasive alien species (including bio-seeds). And yet another is the overuse of nutrient loading. Last, but not least, all this is accelerated by climate change. There is an urgent need to take unprecedented worldwide efforts. Diversity is directly linked to the adaptability and survivability of species. For example, people migrating from one geographic system were able to adapt to another totally different kind of environment, and this has been happening since the beginning of human

history. That new environment in which those migrant people sought stability and prosperity was born out of diversity. It is diversity which impels us to adapt and seek survival and benefits from new surroundings. On the other hand, uniformity creates dependency, inflexibility and inadaptability to new and challenging situations, leading to entropy. Human ingenuity is based on such challenges. In the absence of such challenges, creativity, genius and ability to survive inexorably fade away. The strongest societies are those that are the most diverse, as is the case with ecosystems.

A Future Model of Sustainable Development

Sustainable development cannot be equated with perpetual growth when one considers the fact that world resources are limited and can be exhaustible; and yet it cannot be 'zero growth.' And so, we should have to ask ourselves what kind of purposeful growth (even a negative one) we can plan for the 21st century, and whether such a growth could be accommodated within the existing Earth resources and the space required for managing waste created in the wake of such a growth. Writing a 30 year update of the book, *Limits to Growth* (published in 1972) which forced the world to consider its wasteful ways of consumerism and materialism and highlighted a very dystopic scenario of impending ecological catastrophe, the three original authors – Donella Meadows, Jorgen Randers and Dennis Meadows – revised their assessment and suggested in 2004 a model of a sustainable society. It included the following features:

[a] A sustainable society would not lock the poor permanently in their poverty.... [b] [A] sustainable state would not be a society of despondency and stagnancy, unemployment and bankruptcy that current economic systems experience when their growth is interrupted.... [c] [A] sustainable world would not and could not be a rigid one, with population or production or anything else held pathologically constant.... [d] [A] sustainable world would need rules, laws, standards, boundaries, social agreements, and social constraints.... [Those] roles for sustainability, like every workable social rule, would be put into place not to destroy freedoms, but to create freedoms or to protect them.... [e] [Finally] ... there is no reason for a sustainable society to be uniform. As in nature, diversity in a human society would be both a cause of and a result of sustainability.... Cultural variety, autonomy, freedom, and self-determination could be greater, not less, in such a world.¹⁸

But these authors have also argued that in order for such a model to function, people would have to control their 'unquenchable' appetite for material things by finding non-material ways to satisfy them. This will entail a profound cultural challenge for the generations living in the 21st century "not only to bring their ecological footprint below the earth's limits, but to do so while restructuring their inner and outer worlds."¹⁹

The Impact of a Worldwide Profound Structural Contradiction

A profound structural contradiction has emerged lately in various geo-political regions of the world where elected governments face relentless opposition and sabotage from domestic and international elites regarding democratic governance, equity, majority rule and the relevance of civil society, leading to the eventual ineffectiveness or even destabilization of the governing system. Using the corporate sector values in the garb of New Public Management (NPM) movement, the public sector is being slowly dismantled, and the efforts of civil society are also being ignored in the name of

result-based management. The emphasis of this allegedly new movement has been to reform the public sector management structures and processes, and its rise was closely related to the election of right-of-centre politicians like Margaret Thatcher in Britain, Ronald Reagan in the United States, Jacques Chirac in France, Brian Mulroney in Canada, and John Malcolm Fraser in Australia. These leaders wanted to restrain or cut back public service spending and employment, and to roll back the boundaries of the welfare state. They also thought that over the years, the exercise of political power to control and allocate state resources had created imbalances causing poverty and bad governance. For them and those academics who converted into their kind of rhetoric, the word government was seen as too restrictive, and something intrinsically ‘bad.’ A new emphasis was given to the word ‘governability’ which essentially meant a minimal ‘receiver state’ with emphasis on less government through privatization of government operations, ensuring debureaucratization, treating citizens as clients, and using private sector techniques in achieving results.²⁰ These ideas imported from business sector values started dominating the governmental reform policy agenda, not only affecting the Organization of Economic Cooperation and Development (OECD) countries but also developing states as a part of structural adjustment conditionalities attached to debt-management schemes. With business values – and coalitions – dominating government thinking, a major collateral damage was the weakening of the environmental security blanket. By sidelining environmental issues, soon it was evident that the world faced many global environmental threats, generating even greater mutual vulnerability between North and South (as well as within North and South). In this context, if we are to arrest or reverse the serious threats to human security, what is urgently required are profound changes in the perception, behaviour and institutional structures of both the South and the North. This means not only structural and behavioural change, but profound cultural change. Above all, this transformation means a renewed and truly inclusive form of conflict management: not just a world safe for democracy, but a real and just democracy for a safe world. Alternative forms of institutionalization and management will require a redefinition of the social contract and democracy itself, away from meaningless plutocracy and low-intensity democracy to a new definition of citizenship and ‘the civic.’

Concluding Remarks

The continuing global warming and overall climate chaos has raised a threat of planetary proportions for us all, towards which each state (big or small, poor or immensely wealthy) must act. At a minimum, some forms of action are required in the years ahead. One is avoiding the existing international institutional complexities by being at ‘ahead of the curve’ in order to rise above the narrow national interests so that a wide-ranging international framework is ready for adaptation with support from all. Another is the need for a high level of leadership (particularly by bringing on board China, India, Brazil, South Africa and the USA) along with unparalleled international cooperation. Last, but not least, there is the urgency for exploring broader and longer-term mechanisms to devise and strengthen global governance so that world stability, security, social justice, sustainability and well-being for all are guaranteed. If these minimal steps are not taken now, continuing and expanding environmental insecurity will force us to face serious deterioration in water security, food pro-

duction and human health, as well as an exponential growth of social conflict. This state of conflagration has the potential to cause irreparable damage to the Earth's biosphere (both human and natural) and to our well-being as a species. If dysfunctions accumulate, it may well bring not just a clash, but for all intents and purposes, a crisis of civilization.

Notes

1. Jorge Nef, *Human Security and Mutual Vulnerability* (Ottawa: International Development Research Centre (IDRC), 1995); Jorge Nef, *Human Security and Mutual Vulnerability: The Global Political Economy of Development and Underdevelopment* (Ottawa: IDRC, 1999).
2. Simon Dalby, *Environmental Security* (Minneapolis: University of Minnesota Press, 2002), p. 164.
3. O.P. Dwivedi, Renu Khator and Jorge Nef, *Managing Development in a Global Context* (New York: Palgrave Macmillan, 2007); Nef, *Human Security and Mutual Vulnerability: The Global Political Economy of Development and Underdevelopment*.
4. Ian Thynne, "Climate Change, Governance and Environmental Services: Institutional Perspectives, Issues and Challenges," *Public Administration and Development*, Vol. 28 (2008), pp. 327-339; Dalby, *Environmental Security*.
5. United Nations Development Program ((UNDP), *Human Development Report 1994* (New York: Oxford University Press, 1994); Richard Jolly, Louis Emmerij and Thomas G. Weiss, *UN Ideas that Changed the World* (Bloomington: Indiana University Press, 2009), p. 177.
6. Jorge Nef and Wilder Robles, "Environmental Issues, Politics and Administration in Latin America: An Overview," in Joseph Jabbra and Onkar Dwivedi (eds), *Governmental Response to Environmental Challenges in Global Perspective* (Amsterdam: IOS Press, 1998), pp. 42-62.
7. Thomas Homer-Dixon, "Environmental Scarcities and Violent Conflict: Evidence from Cases," *International Security*, Vol. 19, No. 2 (1994).
8. Thomas Homer-Dixon, *Environmental Scarcity and Violence* (Princeton: Princeton University Press, 1999).
9. Jorge Nef, "Political Economy of Globalization, Exclusion and Human Insecurity in the Americas: Historical and Structural Perspectives," in Dhirendra K. Vajpeyi and Renu Khator (eds), *Globalization, Governance and Technology: Changes and Alternatives* (New Delhi: Deep & Deep Publications, 2008), pp. 141-169.
10. Wendy Barnaby, "Do Nations Go to War over Water," *Nature*, Vol. 458, No. 19 (2009), pp. 282-283.
11. Robert D. Kaplan, *The Coming Anarchy: Shattering the Dreams of the Post-Cold War* (New York: Random House, 2000).
12. Jorge Nef and Bernd Reiter, *The Democratic Challenge: Democratization and De-democratization in Global Perspective* (Houndsmills, Basingstoke, Hampshire, UK: Palgrave/Macmillan, 2009).
13. P. Gelick, "Environment and Security: The Clear Connections," *Bulletin of the Atomic Scientists*, Vol. 47, No. 3 (1991), pp. 16-21.
14. David Battisti and Rosamond Naylor, quoted in *The Globe and Mail*, 9 January 2009, p. A4.
15. C.B. MacPherson, *The Life and Times of Liberal Democracy* (Toronto: CBC Lectures, 1962).
16. O.P. Dwivedi and Renu Khator, "Sustaining the Development: The Road from Stockholm to Johannesburg," in Gedeon M. Mudacumura, Desta Mebratu and M. Shamsul Haque (eds), *Sustainable Development Policy and Administration* (Boca Raton, Florida: Taylor and Francis, 2006), pp. 113-133.

Chapter 1: Institutional Constraints, Violence and Environmental Security

17. United Nations Environment Program, *Global Biodiversity Outlook 2* (UN-UNEP, 2006).
18. Donella Meadows, Jorgen Randers and Dennis Meadows, *Limits to Growth: The 30-Year Update* (White River Junction, VT: Chelsea Green Publishing Company, 2004), p. 255.
19. *Ibid.*, p. 263.
20. O.P. Dwivedi and James Iain Gow, *From Bureaucracy to Public Management*. Peterborough (Toronto: Broadview Press, 1999).