THE ENVIRONMENT AND SECURITY:

WHAT ARE THE LINKAGES?

Edited by

Alan Dupont

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ABSTRACT

In November 1997 the Australian Institute of International Affairs held a seminar in Canberra to explore the impact of environmental problems on Australia's security environment. The idea for the seminar arose during discussions about the meaning of environmental security and its regional consequences at meetings of the Australian National Committee of the Council for Security Cooperation in the Asia-Pacific (AUS-CSCAP), of which the Institute and the Strategic and Defence Studies Centre are members.

The seminar brought together scholars, policy makers, defence officials, members of the environmental community and the interested public to listen to presentations from Australian and international speakers on various aspects of the environmental security problematique. The chapters in this monograph touch on most of the key themes running through the contemporary debate on environmental security and, in particular, the relationship between the environment and conflict.

A number of chapters analyse the theoretical arguments between those who believe that environmental degradation is a significant and growing cause of conflict and sceptics who respond that the environment is at best a marginal factor in conflict and war. Other chapters look at the impact of ecological stress on the developing states of East Asia, and explore in some detail how water scarcity, deforestation and the depletion of renewable and non-renewable energy resources can aggravate existing political and social tensions and territorial and resource disputes. The last two chapters discuss the implications of environmental security issues for the Australian Defence Force and for foreign policy.

The papers in this monograph confirm the extent to which the literature on environmental security has become an established part of the lexicon and discourse of international security studies. They also reveal the complexity and interconnectedness of the policy issues associated with the impact of environmental degradation on national and international security.

NOTES ON CONTRIBUTORS

Peter Dauvergne is a lecturer in the Department of Government and Public Administration, University of Sydney. He specialises in the environmental politics of the Asia-Pacific. He is the author of *Shadows in the Forest: Japan and the Politics of Timber in Southeast Asia* (The MIT Press, Cambridge MA, 1997), which was awarded the 1998 Harold and Margaret Sprout Award, presented annually by the International Studies Association for the best book on international environmental affairs. He is also the editor of *Weak and Strong States in Asia-Pacific Societies*.

Alan Dupont is the director of the Asia-Pacific Security Program at the Strategic and Defence Studies Centre, Australian National University. He has worked on Asia-Pacific security issues for over 25 years as an academic, consultant and government official and has published widely on a range of traditional and non-military security issues, including the environment. He has recently completed an Adelphi Paper for the International Institute for Strategic Studies in London entitled *The Environment and Security in Pacific Asia*.

Lorraine Elliott teaches in the Department of Political Science at the Australian National University. She is also a member of the Australian National Committee of the International Human Dimensions Program through which she is continuing her work on environmental and human security issues in Southeast Asia. Her most recent publication is *The Global Politics of the Environment* (Macmillan, London, 1998).

Ian Finlayson was awarded the Chief of the Defence Force Fellowship in 1997. During his fellowship year he researched the broader implications of environmental security issues for the Australian

Defence Force. His monograph on this topic is expected to be published by the Australian Defence Studies Centre in 1998. Major Finlayson is currently a student at the Australian Army's Command and Staff College, Queenscliff.

Peter Gleick is the president of the Pacific Institute, California, USA, which is devoted to studying the links between economic development, the environment and security. Dr Gleick is a world authority on water security issues and has published extensively on this subject. His publications include a seminal study on 'Water and Conflict: Fresh Water Resources and International Security', written for the journal *International Security*, Vol.18, No.1, Summer 1993. His new book, *The World's Water 1998-1999* (Island Press, Washington DC) also has a chapter on water and conflict.

Stuart Harris, convenor of the Northeast Asia Program in the Research School of Pacific and Asian Studies at the Australian National University, has served in many high-level positions in the Australian government, academia and public affairs. Professor Harris has published widely on economics, the environment and international relations. He is also co-chair of the Australian Committee of the Council for Security Cooperation in the Asia Pacific.

PREFACE

One of my last duties as executive director of the Australian Institute of International Affairs (AIIA) has been to write a preface for this collection of papers from the Institute's environmental security seminar of November 1997.

The seminar was conceived as a means of introducing Australians, particularly those in the policy-making community, to environmental security. We live in a time when non-military threats are jostling more familiar issues for position on the security agenda. As the recent White Paper *In the National Interest* observed:

> Nor should Australia's security interests be seen exclusively in terms of potential military threats or regional conflicts. Over the next fifteen years it is likely that even more attention will be paid to so-called non-military threats such as pandemics, illegal migration, refugee flows, environmental degradation, narcotics and transnational crime. For many countries these are a more immediate concern than the prospect of invasion or military intimidation. They reinforce the importance of taking a broad view of security which goes beyond military and defence issues.[1]

The idea arose from the Institute's membership of the second-track diplomacy forum, the Australian National Committee of the Council for Security Cooperation in the Asia Pacific (AUS-CSCAP). Those who planned the seminar saw it as launching further consideration of this subject in Australia and, perhaps, shaping an Australian perspective on this subject.

For many people there is still a case to be made that there is such a thing as environmental security. It is the Institute's role not to tell them one way or the other but to give them the information and leave them to reach their own conclusions. Perhaps, though, the fires which were then burning in adjacent parts of Southeast Asia, and which have recurred lately, may underline the usefulness of the discussion.

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[1] Commonwealth of Australia, Department of Foreign Affairs and Trade (DFAT), *In the National Interest: Australia's Foreign and Trade Policy*, White Paper (DFAT, Canberra, 1997), p.3.

Several people were involved in planning the programme: Sam Bateman of the Centre for Maritime Policy at the University of Wollongong; Alan Dupont of the Strategic and Defence Studies Centre (SDSC) and Lorraine Elliott of the Political Science Department, both at the Australian National University. I would like to thank all who addressed the seminar - Lorraine Elliott, Alan Dupont, Peter Gleick, Peter Dauvergne, Ian Noble, Stuart Harris and Ian Finlayson. Peter Gleick travelled from the United States for the seminar.

The Institute would also like to thank both the Department of Foreign Affairs and Trade and the United States Information Service for their contributions.

Finally, let me thank Alan Dupont, who willingly assumed the task of editing these papers for this joint SDSC and AIIA volume, as well as Helen Hookey and Elza Sullivan of SDSC for their sub-editing and word processing contributions.

Lesley Jackman
March 1998

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INTRODUCTION

Alan Dupont

Environmental issues have begun to intrude into the arena of foreign policy and national security with increasing frequency since the end of the Cold War. However, not all analysts are convinced that there are identifiable links between the environment and war or that environmental degradation can lead to serious conflict. Indeed the whole notion of environmental security is contested. As Lesley Jackman writes in her preface, perhaps it is time for Australia's foreign policy and strategic community to take a hard look at some of the issues associated with these debates. To help inform the intellectual and policy judgements of the official community, as well as academics and the interested public, the key paper givers at the November 1997 AIIA-sponsored seminar on environmental security have fleshed out their views and arguments in this monograph, which is one of the few Australian publications to deal with this important subject in a comprehensive and practical manner.

In her overview chapter Lorraine Elliott makes the point that not only is the meaning and conceptualisation of the term 'environmental security' contested but so are the processes it describes and the policy prescriptions it engenders. Should the emphasis be on the environment or security? What are the causal links between the environment and conflict? And what is the appropriate referent point of security? The state, the individual or humanity at large? Fortunately, and unlike many who pose such intellectual conundrums, Elliott addresses each of these questions in her engaging and lucid style and ventures some answers. She concludes that the notion of environmental security is a useful conceptual vehicle for 'enabling us to identify and understand new kinds of threats and instabilities and for thinking about security in more than military terms'. More prosaically, ecological stress contributes to conflict, including military conflict. For this reason, new kinds of resource scarcity - whether of food, water or arable land - will henceforth have to be factored into national security planning. These scarcities may be relative, rather than absolute, and their security impact may be mitigated or

complicated by differences in 'environmental endowments', and the vulnerabilities and response capacities of individual states.

However, not all accept these propositions, nor the associated idea that the military can play a prophylactic or regenerative environmental role. The opposition to a 'green' military comes from those who see a disconnect between protecting the environment, and military organisations which actively target the environment for destruction and which are disproportionate users of scarce resources as well as major polluters. There is also resistance to the notion of environmental security from some elements of the defence and strategic community. Such notions are dangerous and distracting, it is argued, because they serve to weaken and dissipate the core war-fighting energies of armed forces. Elliott's final word on the conceptual debate is that ultimately, states, peoples, and economies 'cannot be secure unless the ecosystem is secure'.

Alan Dupont looks at the way in which environmental degradation is contributing to conflict formation in East Asia. He begins by identifying three distinct schools of thought and activities which fall within the rubric of environmental security. The first focuses on the use of national defence forces to monitor environmental change and to assist in protecting or rejuvenating the environment. Second is environmental warfare - 'the explicit targeting of an adversary's resources or physical environment aimed at degrading or destroying his capacity to prosecute war'. Finally, there is the role environmental factors can play in contributing to acute sub-national or international conflict.

Dupont contends that environmental degradation is creating a new kind of resource scarcity which is qualitatively different from that of past eras: scarcity of renewable resources, such as water, fish, forests, soil and air. In East Asia, population growth is placing additional stresses on the region's developing states and exacerbating existing ethnic, religious and communal divisions. People pressure is responsible for accelerating rates of environmental degradation and illegal migration. Environmental factors are also raising the level of strategic uncertainty over East Asia's energy supplies, and contributing to resource and sovereignty disputes, particularly at sea. Dupont considers the impact of ecological stress on food security. He is critical of 'alarmist' views, such as those of Lester Brown, who

contends that China's rising population and standard of living will cause food prices to rise. Dupont accepts, however, that under certain circumstances, environmental factors can diminish the capacity of states to feed themselves which can in turn lead to conflict. Diminishing stocks of fish in the seas of Pacific Asia is one reason for the increased level of maritime disputation evident over the past decade. Thus, environmental degradation and resource scarcity - especially of so-called 'renewable resources' like fish and forests - can contribute to conflict both within and between states.

Peter Gleick's focus is on water, particularly the connection between increasingly scarce reserves of fresh water and international conflict. Gleick points out that conflict over fresh water has a very long history, dating back to early civilisation. In the seventh century BC, Ashurbanipal of Assyria seized the wells of his enemies in order to deny them water. Cyrus the Great redirected the flow of the Euphrates in order to successfully take Babylon. In more recent times, Turkish control of the headwaters of the Euphrates has been a source of friction with neighbouring states, particularly Syria and Iraq. Extrapolating from these historical and contemporary examples, Gleick postulates four discrete links between water and conflict: water can be a military and political goal; an instrument or tool of war; a target of war; and, the source of political contention and conflict.

What can be done? Gleick extols the virtues of dealing with water conflicts through political and legal instruments which minimise conflict by maximising the gains for the affected parties. There is an important role here for the United Nations and international conventions and laws which deal specifically with water sharing and water boundaries. Many of the water security issues in the Middle East and drier regions of the world involved multiple states as claimants and users. Water security is essentially a transnational issue and can only be satisfactorily resolved through international cooperation and mediation. This is one of Gleick's central messages. The other is that water scarcity is getting worse and the security risks are therefore increasing.

Peter Dauvergne is worried about the rate and scale of deforestation in Southeast Asia and the capacity of forest loss to create community insecurity, which may translate into political and social conflict. Dauvergne has good reason to feel concerned based on the

data he provides in his thoroughly researched chapter, which deals with deforestation and state responses in the Philippines, Indonesia and Malaysia. The vast old forests of the Philippines have been decimated by environmentally disastrous logging practices. The culprits? Commercial logging interests with impeccable political connections. Occasionally, the politicians are more directly implicated. During the Marcos era the defence secretary, Juan Ponce Enrile, and armed forces chief-of-staff, General Fabian Ver, were closely involved in illegal logging. The same story, with local variations, is being played out in Malaysia and Indonesia, where expansive tracts of commercial forests still remain, although they too are disappearing at a rapid rate. Dauvergne assesses that Sarawak is likely to have logged most of its valuable commercial timber stocks within the first years of the new century and Indonesia is cutting down its trees at an unsustainable rate.

This will result in serious environmental degradation, which in turn will aggravate existing social and ethnic divisions, 'triggering everyday resistance, protests and even violence'. Yet the state, rather than acting as the protector of the forests and the communities they support, is often responsible for illegal and unsustainable logging practices. Worse still, says Dauvergne, governments throughout the region have employed the language of environmentalism to control dissident and outlying communities and to encourage activities which contribute to community insecurity. Fortunately, there are signs of change, as public opinion becomes more critical of such practices and democratisation encourages accountability and transparency in decision making. But there is a long way to go. Until regional governments demonstrate a greater commitment to environmentally sensitive development, whether in forestry practices or other bio-physical harvesting, then environmental degradation will not be arrested and environmental reforms will be undermined and circumscribed.

Why should the Australian Defence Force (ADF) be concerned with environmental security? There are at least four compelling reasons, according to Major Ian Finlayson. First, environmental problems have the capacity to cause conflict in Australia's primary area of strategic concern. Second, Australia must adopt a whole-of-nation approach to containing regional environmental conflict which

will increasingly involve the ADF in support of diplomatic and economic initiatives. Third, the ADF must be prepared to adapt itself to changing community expectations about its future role which will mandate a greater commitment to non-combat tasks, including those related to protection of the environment and dealing with the security aspects of environmental degradation. Finally, the ADF needs to think about the 'intellectual, doctrinal and organisational implications of environmental security issues'.

In practice this means that the ADF might in future be called upon to engage in a range of environmental security missions. They could include participation in multinational operations for the protection of the international environment; peace-support operations for environmentally 'failed' states; enforcement of Australian environmental protection laws; and participation in disaster relief and what Finlayson calls proactive environmental defence. These themes are fleshed out in the rest of what is a thought-provoking chapter. Among the more interesting points Finlayson makes is that the acceptance of an environmental security role for the ADF presupposes a high degree of intellectual flexibility and a change of philosophy as to what constitutes 'real soldiering'. In Finlayson's view, the acceptance of a greater role for the ADF in non-combat tasks like environmental protection does not have to detract from its core function of fighting and winning wars. The ADF should be able to do both. In his sections on the implications for doctrine, force structure and command and control, Finlayson spells out how this marriage of combat and environmental security tasks could be made to work.

The eminently qualified Stuart Harris, a former head of the Australian Department of Foreign Affairs and Trade, canvasses the foreign-policy implications of environmental security in a thoughtful and sometimes sceptical analysis. Harris contends that natural resource conflicts have been with us for much of human history. Rather than being a discrete source of conflict, resource disputes are more often symptomatic of other, deep-seated tensions between states which are the real or underlying causes of interstate conflict. His second key point is that the broad definition of security employed by environmentalists is not particularly helpful because it stretches the definition of security and distracts us from looking 'at the instrumental

question of what we do about resolving environmental issues, and how we address them in foreign policy terms'.

Harris takes the view that environmental impacts are mostly unintended consequences of human actions, which very few countries can control or influence individually. Hence there is a strong need for collective action in dealing with ecological stress and a need to differentiate between the nature and scale of environmental problems. Harris believes that there are few truly global environmental issues and those which can be so classified, such as climate change, ozone destruction and the dumping of hazardous substances at sea, are unlikely to affect national security as he defines it. In addition, much has already been done to develop regimes for understanding and managing such issues at a global and regional level. In order to persuade governments to deal seriously with environmental problems they must be convinced that the threats are clear and certain, the causes apparent, the costs of doing nothing significant and measurable, and the technological solutions affordable and available. In conclusion, Harris argues that most environmental problems 'will continue to be addressed through traditional diplomatic rather than traditional security processes'.

I am sure that those readers prepared to consider and analyse the arguments and data presented by the contributors to this monograph will find it a rewarding and illuminating experience. There is clearly much to ponder and no doubt the debates will continue. However, whatever one's view about the causal links between the environment and conflict, it is difficult to escape the conclusion that environmental security, for all its conceptual imprecision, is rapidly become part of the lexicon and discourse of international security studies.

CHAPTER 1

WHAT IS ENVIRONMENTAL SECURITY?
A CONCEPTUAL OVERVIEW

Lorraine Elliott

The phrase 'environmental security' is a relatively new one in the lexicon of both global environmental politics and international security studies. A conceptual overview of environmental security reveals little that is straightforward: if it illuminates anything, it is that the meaning of the term, the processes it describes and the policy prescriptions it engenders are contested.

The dominant approach to the connections between environment and security might best be understood as 'environment-*and*-security', a position which argues that there is now an environmental dimension to the security problematic. In what Finger calls the 'military model'[1] of environmental security, resource scarcity, environmental degradation, the impact of differential environmental endowment and relative environmental deprivation, are analysed in strategic terms. The problem is not environmental degradation *per se*. Rather, the environment, or at least environmental services, become a new strategic resource and environmental degradation becomes a 'non-military threat' to national and international peace and security. Ecological damage becomes, as the UN Secretary-General's *Agenda for Peace* suggested, a new risk for stability.[2] The answer to the question 'what is environmental security?' is, therefore, that it is a vehicle for enabling us to identify and understand new kinds of threats and instabilities and for thinking about security in *more* than military terms.

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1   See Matthias Finger, 'The Military, the Nation-State and the Environment', *The Ecologist*, Vol.21, No.5, September/October 1991.

2   Boutros Boutros-Ghali, *An Agenda for Peace: Preventive Diplomacy, Peacemaking and Peace-Keeping*, Report of the Secretary-General pursuant to the Statement adopted by the Summit Meeting of the Security Council on 31 January 1992 (United Nations, New York, 1992), p.5.

A second major strand in the literature and policy debate suggests that this places too much emphasis on security, modified or not, and not enough on the environment. In this view, the answer to the questions, 'who or what is being made secure?' and 'from whom (or what)?' is not 'us' and 'the environment' (directly or indirectly) but rather is, or at least should be, 'the environment' and 'us'. In other words, environmental security not only stands as a metaphor for securing the environment in the context of a common security agenda but is a goal that cannot be achieved unless the normative assumptions of orthodox views about environmental security are exposed and challenged. The answer to the question 'what is environmental security?', then, is that it is a vehicle for harnessing the rhetorical power of security in pursuit of environmental protection and for thinking about security in *other* than military terms.

There is a third category of views on environmental security, one which invokes a rather curious company of fellow-travellers. The answer to the question 'what is environmental security?' is that it is an unhelpful and perhaps even dangerous conceptual invention (although quite differing reasons for so arguing are, as I explore later, offered by critics of the concept).

The Environment and Security: Militarising Environmental Politics

Much attention has been paid in the scholarly literature and the policy community to the 'potential [for] major environmental changes to generate and intensify conflict between and within states'.[3] For some, based on historical evidence, the relationship between conflict and environmental degradation is self-evident although rarely straightforward. This version of the environmental security project seeks, therefore, to understand better the dynamics of this causal relationship and to identify the kinds of environmental degradation which might disrupt national (or sometimes regional or even global) security or political stability.

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3   Martin S. Soroos, 'Global Change, Environmental Security and the Prisoner's Dilemma', *Journal of Peace Research*, Vol.31, No.3, August 1994, p.318. For more detail on this literature, see Lorraine Elliott, 'Environmental Conflict: Reviewing the Arguments', *Journal of Environment and Development*, Vol.5, No.2, June 1996; and Lorraine Elliott, *The Global Politics of the Environment* (Macmillan, London, 1998), chapter 9.

The most direct causal link is anticipated to arise from resource scarcity. As the World Commission on Environment and Development (WCED) predicted, 'conflicts are likely to increase as ... resources become scarcer and competition for them increases'.[4] Conflict is expected to take one of two forms - direct conflict over already-scarce resources or intervention to ensure access to resources which might become scarce at some time in the future. Control of resources for strategic purposes has long been associated with the security of the state, seen as integral to that security and important in denying a source of power to potential or actual enemy states. The new strategic environmental resources, however, may well be those which have for so long been thought of as being in plentiful supply, either because they were renewable or because they were, at least, non-depletable: resources such as water, arable land and the environmental services, including food production, which those resources support and supply. Water and arable land are subject to continuing degradation and depletion through pollution, soil erosion, over-use, desertification and deforestation as well as from the impacts of global environmental change in the form, especially, of climate change. These problems are exacerbated by population growth although that, in turn, is complicated by global inequities in access to and use of resources and environmental services.

Global demand for water is increasing as the world's per capita water supply continues to decline. By the end of the 1980s, 80 countries with 40 per cent of the world's population were already facing water shortages.[5] Water scarcity is forecast to be one of the major causes (perhaps even the most likely cause) of inter- and intra-state tension and possibly outright conflict in the future, a problem highlighted by the fact that 155 major river systems are shared by two countries and a further 59 are shared by between three and twelve countries.[6] Much attention has focused on the Middle East, where

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4 World Commission on Environment and Development (WCED), *Our Common Future* (Oxford University Press, Oxford, 1987), p.290.

5 ibid., p.293.

6 The Niger, for example, runs through ten countries. Both the Nile and the Congo are shared by nine countries, the Zambesi by eight and the Chad and the Volta each runs through six countries (Johan Jørgen Holst, 'Security and the Environment: A Preliminary Exploration', *Bulletin of Peace Proposals*, Vol.20, No.2, June 1989, p.128). For more on water and conflict, see Peter Gleick, 'Water and

scarce water - not plentiful oil - is the strategic resource. Control over the water resources of the Euphrates, the Jordan and the Nile has been a factor in strategic posturing in the region and remains a likely source of tension.[7] Tensions and possible conflict over water resources are not, however, confined to the Middle East but extend to the Mekong River basin and the Ganges as well as river systems in South America and Northwest Africa.

The total amount of cropland in the developing world is growing only minimally, per capita arable land globally is in decline and scarcities are likely to occur predominantly in those parts of the world which are already poor and where land is under increasing environmental pressure.[8] The extent of possible future cross-border conflict over arable land (between neighbouring communities or between states) is not clear. However the possibility that states might seek either to acquire or to reclaim arable land, or that arable land inequities might be an exacerbating factor in other kinds of tensions, is not to be completely discounted.

Water and land scarcities also contribute to food scarcity, a problem which is made more potent by inequitable land tenure, especially within developing countries, and because food surpluses and scarcities are unevenly distributed. A decline in the important food resources of the oceans, as stocks are overfished by long-distance fishing fleets and local commercial fishing industry, is a further possible source of conflict as countries compete over fisheries or seek

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7   Conflict: Fresh Water Resources and International Security', *International Security*, Vol.18, No.1, Summer 1993.
      For more on water conflict and strategic posturing in the Middle East, see Norman Myers, *Ultimate Security: The Environmental Basis of Political Stability* (Island Press, Washington DC, 1996); Thomas Homer-Dixon, 'On the Threshold: Environmental Changes as Causes of Acute Conflict', *International Security*, Vol.16, No.2, Fall 1991; Kent Hughes Butts (ed.), *Environmental Security: A DOD Partnership for Peace*, Strategic Studies Institute Special Report (US Army War College, Carlisle Barracks Pa, 1994); and Peter Gleick, 'Environment and Security: The Clear Connections', *Bulletin of Atomic Scientists*, April 1991.

8   In the 1980s the total amount of cropland in the developing world grew by only 0.25 per cent a year, a growth rate half that of the 1970s; per capita arable land dropped by almost 2 per cent a year (Homer-Dixon, 'On the Threshold', p.93). That decline was unevenly distributed. Predictions suggested that the 1992 global per capita average of 0.28 hectares would decline to 0.17 hectares by 2025. In Asia, that figure was projected to drop to as low as 0.09 hectares of arable land per person (Richard H. Moss, 'Resource Scarcity and Environmental Security', *SIPRI Yearbook* (Oxford University Press, Oxford, 1993), p.32).

to protect their access to such resources. Oswald argues, for example, that the 'issue of the policing and protection of the world's fish stocks is likely to be one of growing importance in the future'.[9] The decline in the world's fish catch may be further exacerbated by the impacts of ozone depletion and climate change and the cross-border conflict potential in fisheries resources is exacerbated because marine ecosystems and the migratory patterns of straddling stocks are not restricted by the Exclusive Economic Zones of coastal states. The transnational pollution of coastal waters may also provide 'a potent source of trouble in the future'.[10]

The web of causality which links environmental degradation with conflict outcomes is further complicated by what the WCED called 'differences in environmental endowment':[11] inequities in the global distribution and use of resources, in the causes of environmental degradation and resource depletion, in disproportionate impacts and relative vulnerabilities and in response capacities. Climate change is an exemplar case. Environmental decline may exacerbate already-existing disputes between rich and poor countries and between rich and poor peoples, resulting in what Homer-Dixon refers to as 'relative deprivation conflicts'.[12] Yet, as Ullman has argued, poor countries are unlikely to confront the militarily well-resourced countries over relative deprivation.[13] What is perhaps more likely, in the short term at least, is that relative deprivation could lead to conflict between neighbouring countries, especially in the poorer parts of the world, or to tension and violence within countries as governments and peoples attempt to adjust to the local impacts of local and global environmental stress.

The social and economic consequences of environmental degradation and resource scarcities, such as increasingly limited access to food or potable water, will exacerbate the misery and despair which already exists in the poorer parts of the world. Where this is

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9   Julian Oswald, 'Defence and Environmental Security' in Gwyn Prins (ed.), *Threats without Enemies* (Earthscan, London, 1993), p.120.
10 Crispin Tickell, 'The Inevitability of Environmental Security' in Prins (ed.), *Threats without Enemies*, p.19.
11 WCED, *Our Common Future*, p.292.
12 Homer-Dixon, 'On the Threshold', p.109.
13 Richard H. Ullman, 'Redefining Security', *International Security*, Vol.8, No.1, Summer 1983, p.143.

compounded even further by internal migration, environmental pressures on land that is already marginal, or competition for the services of scarce urban infrastructure it may contribute to a disruption in what Homer-Dixon calls 'legitimised and authoritative social relations'.[14] 'All too often', Norman Myers has argued, 'the result is civil turmoil and outright violence, either within a country or with neighbouring countries'[15] or, as former Norwegian defence minister Johan Holst put it, 'soil erosion leads to political erosion'.[16]

Both environmental decline and internal instability result in movement of peoples. There is little disagreement that the category of displaced persons now includes environmental refugees, although this is still a rather loosely defined category and one not formally recognised in international refugee law. The numbers of environmental refugees are uncertain but those numbers do seem to be on the increase.[17] Byers suggests that the 'conflict-stimulating potential of such massive numbers of refugees is obvious',[18] although too simplistic an analysis can cast environmental refugees as the cause of tension rather than as the victims of environmental degradation and other forms of economic, social and political marginalisation. As people move within countries, as noted earlier, greater environmental and social stresses can result. When those people move across (or transgress) territorial borders, environmental refugees are then defined as a threat to national security (and perhaps to international peace and security), illuminating state-based concerns about encroachment and the difficulty of protecting borders.

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14   Homer-Dixon, 'On the Threshold', p.91.
15   Norman Myers, 'Environment and Security', *Foreign Affairs*, No.74, Spring 1989, p.24.
16   Holst, 'Security and the Environment', p.125. In its 1994 *Human Development Report*, the United Nations Development Programme (UNDP) identified Afghanistan, Haiti, Angola, Iraq, Mozambique, Burma, the Sudan and Zaire as countries in which internal crises could be linked to environmental degradation and food insecurity (often compounded by inequitable internal resource distribution). See UNDP, *Human Development Report 1994* (Oxford University Press, New York, 1994), pp.41-3.
17   See Tickell, 'The Inevitability of Environmental Security', p.21.
18   Bruce Byers, 'Ecoregions, State Sovereignty and Conflict', *Bulletin of Peace Proposals*, Vol.22, No.1, 1991, p.70.

Many of the examples of the conflict potential of environmental degradation explored in the literature focus on the developing world. The social and political tensions and possible conflict which might arise from environmental decline in the Third World are made cause for concern for developed countries (or their governments) because they might require intervention, contribute to international instability (including economic instability) or because, as Mathews suggests, countries suffering from environmental degradation and beset by internal conflict as a result are considered to be potentially ripe for 'authoritarian government or external subversion'.[19] This then becomes an issue for developed countries, not on environmental or humanitarian grounds but because the '[security] interests of the North may be directly threatened'[20] if countries develop in the direction of extremism. North-South tensions and the economic consequences of environmental degradation have also tied the environment to national security interests that now include development and economic competitiveness. This 'economic security' agenda recognises that the survival of the state over the longer term depends as much (and perhaps more) on economic capability as on military capacity and that environmental degradation, both local and global, can result in global economic instabilities which in turn can undermine national economic security.

The environmental dimension to conflict and security has been accepted and recognised within traditional security forums, especially since the end of the Cold War. Paragraph 10 of NATO's 1991 Strategic Concept observes that:

> [r]isks to allied security are less likely to result from calculated aggression against the territory of the Allies [than from] the adverse consequences of instabilities [and that] security and stability have [inter alia] environmental elements as well as the indispensable defence dimension.[21]

The US government's 1991 National Security Strategy also recognised the environment as a national security interest, arguing that 'the stress

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19   Jessica Tuchman Mathews, 'Redefining Security', *Foreign Affairs*, Vol.68, No.2, 1989, p.168.

20   Homer-Dixon, 'On the Threshold', p.113.

21   See North Atlantic Treaty Organisation (NATO), *The NATO Handbook* (NATO, Brussels, 1996) at <http://www.nato.int/docu/handbook/index.htm#3>.

from ... environmental challenges is already contributing to political conflict'[22] and in 1992 the UN Security Council heads of state meeting acknowledged that 'non-military sources of instability in the economic, social, humanitarian and ecological fields have become threats to peace and security'.[23]

Securing the Environment: Demilitarising Security

For many, however, this conceptualisation of environmental security, and what seems to be its easy acceptance within traditional defence and security establishments, presents a number of problems. It is a problem because it continues to takes the state as the referent object of security and does not give enough attention to what is, or should be made, secure: that is, the environment.[24] In effect, understanding environmental security in security terms rather than environmental ones diverts attention from the more immediate and real insecurity problems of environmental degradation; narrows policy options by focusing on symptoms rather than causes; engenders policy responses that are inadequate for dealing with environmental 'threats', even in a narrow sense; legitimises the use of force as a response to environmental decline; and reinforces a security mindset which continues to be a direct and indirect cause of the very problems (environmental degradation and resource depletion) to which it purports to respond. Environmental security remains, in effect, a conventional view of security even if it identifies a non-conventional set of threats.

While the propositions about conflict over scarce resources and depleted environmental services seem persuasive, they are not universally accepted and questions are asked about whether the images of scarcity and conflict can be sustained. Finger suggests, for example, that defining scarcity in strategic terms runs the risk of

22 See Kent Hughes Butts, 'Why the Military Is Good for the Environment' in Jyrki Käkönen (ed.), *Green Security or Militarised Environment* (Dartmouth Publishing, Aldershot, 1994), p.86.

23 Cited in Betsy Baker, 'Legal Protection for the Environment in Times of Armed Conflict', *Virginia Journal of International Law*, Vol.33, No.2, 1993, p.356.

24 See Monica Tennberg, 'Risky Business: Defining the Concept of Environmental Security', *Cooperation and Conflict*, Vol.30, No.3, September 1995, p.239.

transforming 'every single resource into a potentially strategic one'.[25] In turn, if what is considered strategic is then linked to the pursuit of national security, then *any* resource defined as strategic or scarce becomes a potential source of conflict. Yet, as Brock points out, scarcity is often determined by politics rather than the '*physical* limitations of natural resources', suggesting that (particularly in the case of non-renewable resources) there is often 'no scarcity as such: it exists only in specific political, socio-economic and cultural contexts'.[26] Technological capacity and financial incentives, along with public concerns about the increasing profligate use of resources, should in this view ensure that substitutes are developed long before a state of scarcity is reached.

Nor do confident predictions about resource scarcity and environmental degradation as proximate or contributory causes of conflict go unchallenged. Brock cautions that 'a military conflict which involves resources is not necessarily a struggle *over* resources'.[27] Johan Holst takes the view that environmental degradation is 'seldom if ever the only cause of major conflict within or among nations'.[28] Deudney goes somewhat further when he argues that it is unlikely that environmental degradation will ever lead to conflict[29] and Jessica Mathews suggests that it is more likely that the impact of resource scarcity on national security will arise through overall economic decline rather than conflict.[30]

Much of the challenge, however, rests not so much on questioning the internal logic of the causal analysis but in examining the consequences of conceptualising environmental security primarily in terms of instability and conflict.

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25 Matthias Finger, *Unintended Consequences of the Cold War: Global Environmental Degradation and the Military*, Occasional Paper No.10 (Program on the Analysis and Resolution of Conflict, Maxwell School of Citizenship and Public Affairs, Syracuse University, Syracuse NY, 1991), p.5.

26 Lothar Brock, 'Peace through Parks: The Environment on the Peace Research Agenda', *Journal of Peace Research*, Vol.28, No.4, November 1991, p.410 (emphasis added).

27 ibid. (emphasis added).

28 Holst, 'Security and the Environment', p.125.

29 Daniel Deudney, 'The Case against Linking Environmental Degradation and National Security', *Millennium*, Vol.19, No.3, Winter 1990, p.461.

30 Mathews, 'Redefining Security', p.166.

The first question, is what (if any) is a legitimate role for the traditional defenders of security in addressing environmental (in)security? Some of the analysis suggests a precautionary role for militaries and defence forces, such as environmental data gathering, technology assistance or disaster relief, drawing on organisational abilities and 'financial, human, research and development, and technological resources'.[31] In other cases a more 'traditional coercive task'[32] is anticipated for the military in the name of environmental defence. Thus defence forces might engage in defensive or pre-emptive action in cross-border resource conflict as a way of gaining control over scarce resources or maintaining control over resources against the threat of incursion from another state. There is, nevertheless, a persuasive counter-argument that military action is both ineffective and inefficient as a strategy for gaining or maintaining access to resources.[33] Possible military action is also invoked to secure borders against environmental refugees or to maintain internal security in the event of environment-related (and often other kinds of) instabilities. Military capabilities or the threat of their use are also anticipated to prevent activities in or by another country which could have a transboundary environmental impact. Military power might be garnered on behalf of the international community against environmental renegades, or as a means of enforcing international environmental law - a kind of environmental collective security.[34]

However this overlooks (or downplays) the extent to which military activity in the traditional pursuit of security is a major cause of environmental degradation. Where the relationship is acknowledged, solutions are usually sought in a 'greening of the

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[31] Butts, 'Why the Military Is Good for the Environment', p.106. See also, for example, T.P. McClement, 'The Environment, Green Issues and the Military', *The Naval Review*, Vol.80, No.3, July 1991.

[32] Oswald, 'Defence and Environmental Security', p.118.

[33] See Ronnie Lipschutz and John P. Holdren, 'Crossing Borders: Resource Flows, the Global Environment and International Security', *Bulletin of Peace Proposals*, Vol.21, No.2, 1990, p.122.

[34] Sir Crispin Tickell, a former British diplomat, predicts that 'environmental problems in one country affecting the interests of another could easily come within the purview of the Security Council with its mandate for maintaining international peace and security' (Tickell, 'The Inevitability of Environmental Security', p.23). Oswald canvasses the possibility that 'poor environmental behaviour from the nations of the world' could require a 'direct active response' from military forces (Oswald, 'Defence and Environmental Security', p.129).

military' and a balancing of readiness and stewardship doctrines. Greening the military is probably most administratively and practically advanced in the United States where the Department of Defense (DOD) Environmental Security Program focuses primarily on environmental management and stewardship.[35] Yet questions arise as to whether there is a logical inconsistency in or at least major limitations to the idea of a 'green' military. The military, and military activities, contribute directly and indirectly to environmental degradation in a number of ways: through the direct and indirect environmental consequences of war making; through preparation for war; through resource use and pollution; and through lost opportunity costs.[36] Deliberate environmental destruction in wartime - so-called 'scorched earth' strategies - and environmental 'collateral damage' (both of which are, in practice, poorly regulated in international law) result in direct and indirect damage to local ecosystems and environmental services, damage which may continue long after conflict has ceased.[37] Militaries and defence establishments are disproportionate users of resources, major contributors to pollution and frequently have influential roles in land-use decision making. Arms production, including nuclear production, is a major source of toxic waste and constitutes a costly environmental and financial post-Cold War legacy. Lost opportunity costs are calculated in terms of high levels of military spending, the allocation (some argue the misallocation) of financial and other resources, including scientific and technological capacity, and the relationship between military spending, debt and unsustainable development.[38] Tolba, El-Kholy *et*

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[35]   See, for example, Sherri W. Goodman, 'Vision for Environmental Security', *Defense*, No.3, 1994.

[36]   See Michael Renner, 'Assessing the Military's War on the Environment' in Lester R. Brown *et al.* (eds), *State of the World 1989* (W.W. Norton & Co., New York, 1991); and Michael Renner, 'Cleaning up after the Arms Race' in Lester R. Brown *et al.* (eds), *State of the World 1994* (W.W. Norton & Co., New York, 1994).

[37]   The conduct of war results also in environmental 'collateral damage' as the unintended consequence of conflict. Local ecosystems are damaged or destroyed through the deployment of bombs and military vehicles; through the impacts of waste management and excessive water consumption demands; or through the long-lasting impact of military ordnance such as the millions of land mines scattered throughout the world which prevent the rejuvenation of land for agriculture, thus requiring what land is available to be used intensively and often, therefore, unsustainably.

[38]   The Brundtland Commission expressed its concern about this misallocation of resources when it noted that 'arms competition and armed conflict create major

al. remind us that expenditure for the United Nations Environment Programme in the decade 1982-92 (a sum of US$450 million) was the equivalent of less than five hours of global military spending for the same period of time.[39]

An interpretation of environmental security which focuses on conflict runs the risk of invoking strategies that deal with symptoms rather than causes. The 'underlying cause of turmoil is often ignored' Mathews suggests. 'Instead governments address the ... instability that ... results'.[40] It is failure to take action on environmental degradation that is 'likely to lead to escalating insecurity and instabilities in which the forces of traditional security will be heavily engaged'.[41] The solution, Porter and Brown argue, is 'international cooperation ... not futile conflict over the degraded resource itself'. The real problem, they argue, is the 'mismanagement of the resource'[42] in the first place. Therefore, rather than focusing on conflict and threats to political or national security as a possible or likely outcome of resource and environmental scarcity, attention should be given to *preventing* resource scarcity and environmental decline in the first place. Rather than anticipating the extent to which internal tensions and conflict as a result of environmental degradation may spill over into neighbouring countries and pose a threat to international peace and security, greater attention should be given to mitigating the causes of that environmental degradation. Securing the environment, as a conceptualisation of environmental security, therefore constitutes a political programme for reallocating resources to dealing with the causes of environmental degradation and to pursuing and

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obstacles to sustainable development' (WCED, *Our Common Future*, p.294). Then UN Secretary-General Boutros Boutros-Ghali took up this theme, observing in his *Agenda for Development* that 'preparation for war absorbs inordinate resources ... which diminish the prospects for development' (para.17). Opportunity costs are calculated not just in terms of direct military spending but also in the extent of the world's scientific and technological capabilities which are directed towards military-related activities, a figure which has been estimated at up to 40 per cent (Lipschutz and Holdren, 'Crossing Borders', p.130).

39 Mostafa Tolba, Osama A. El-Kholy *et al.*, *The World Environment 1972-1992: Two Decades of Challenge* (Chapman & Hall, London, 1992), p.592.

40 Mathews, 'Redefining Security', p.166.

41 Oswald, 'Defence and Environmental Security', p.113.

42 Gareth Porter and Janet Welsh Brown, *Global Environmental Politics* (Westview Press, Boulder, 1991), p.110.

implementing strategies for equitable global environmental cooperation.

The UNDP urges that environmental security should be part of a comprehensive approach to security, one that moves away from a narrow military and defensive meaning of security to one which is integrative and focuses on human security.[43] Yet the normative assumptions of the environment-and-security concept remain caught in realist assumptions about states, geopolitics and threat and the political arrangements for pursuing and providing security. Environmental problems are brought within geopolitics when, in fact, they challenge the very assumptions upon which geopolitics are based. It is hardly original to note that neither ecosystems nor environmental degradation respect state borders. Security strategies based on protecting borders, and on them/us, zero-sum games are obsolete when it comes to dealing with environmental insecurities. There is no enemy 'other', whose intent is the deliberate violation of territorial integrity and state sovereignty. Neither is the environment the 'enemy', the source of the threat. Rather, the threat is the everyday activities of humans and corporations, the former primarily in pursuit of quality of life and the latter in pursuit of profit. In effect, we have threats without enemies and non-military threats have to be addressed with non-military responses. Yet, as the Brundtland Commission argued, there are 'no military solutions to environmental insecurity'.[44]

State-centric and national security interpretations of environmental security have also restricted who can contribute to the (environmental) 'security' discourse. Defining and providing security is determined to be the primary responsibility of state actors, nationally and internationally. When this is joined with 'environmental' threats, it can preclude ideas and concepts which do not have states as the key structures. Thus traditional security discourse is not only inappropriate as a way to conceptualise environmental security but it may also stand in the way of creative and successful solutions to environmental insecurity.

There is some resistance to use of the term environmental security from within both the traditional security community and the

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43 UNDP, *Human Development Report 1994*, pp.22-5.
44 WCED, *Our Common Future*, p.301.

environmental community, albeit for quite different reasons. In the former case, some security scholars are concerned at what they consider to be a weakening of 'real' security with the addition of what they often define as welfare concerns. Mohammed Ayoob argues, for example, that moving beyond the traditional military-oriented definition of the term security 'runs the risk of making the concept so elastic as to detract seriously from its utility as an analytical tool'.[45] Scholars such as Brock and Deudney, on the other hand, caution against claiming the term security for the environmental discourse because, in their view, it sends us off in the wrong direction, locking environmental concerns into an inappropriate, state-centric framework.[46] Thus Deudney argues that the 'environmental crisis is not a threat to national security, but it does challenge the utility of thinking in "national" terms'.[47] Brock asks whether 'it make[s] sense at all to talk about environmental matters in terms of aggression and security'.[48] Deudney is concerned that 'efforts to harness the emotive power of nationalism', which he sees as a logical outcome of the use of a security discourse, 'may prove counterproductive'.[49] Mische, on the other hand, argues that there is a sound philosophical and politically practical basis for the term[50] precisely because it invokes deep feelings and portrays environmental concerns as ones which are crucial to the pursuit of safety and survival.

Conclusion

Environmental degradation is clearly a problem, both in terms of the inherent worth of the planetary ecosystem and in terms of the ecological support system on which human activity, for both present and future generations, is based. States, peoples, economies cannot be

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45 Mohammed Ayoob, 'The Security Problematic of the Third World', *World Politics*, Vol.43, No.2, 1991, p.259.

46 See Brock, 'Peace through Parks'; and Deudney, 'The Case against Linking Environmental Degradation and National Security'.

47 Deudney, 'The Case against Linking Environmental Degradation and National Security', p.468.

48 Brock, 'Peace through Parks', p.408.

49 Deudney, 'The Case against Linking Environmental Degradation and National Security', p.461.

50 Patricia Mische, 'Security through Defending the Environment: Citizens Say Yes!' in Elise Boulding (ed.), *New Agendas for Peace Research: Conflict and Security Reexamined* (L. Rienner, Boulder, 1992), pp.103-6.

secure unless the ecosystem is secure. It is also quite likely that continued environmental decline will become a source of 'economic disruption, social tension and political antagonism',[51] to say nothing of continued diplomatic conflict. The question is, how *do* we then interpret this as a security problem and what *do* we do about it? To paraphrase Norman Myers, what will 'buy more security - real, enduring, and all-round security'?[52] It is, perhaps, worthwhile concluding by noting Gwyn Prins' answer to the question 'what is environmental security?': he argues that environmental security is 'not something in the here and now. It is a *goal*'.[53] What we have, he reminds us, is environmental insecurity!

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51   Myers, *Ultimate Security*, p.20.

52   ibid., p.218.

53   Gwyn Prins, 'Putting Environmental Security in Context' in Prins (ed.) *Threats without Enemies*, p.xiv (emphasis added).

CHAPTER 2

ENVIRONMENTAL CONFLICT IN EAST ASIA: SOME ISSUES FOR THE REGION

Alan Dupont

This chapter will provide some practical examples of the way in which environmental degradation is contributing to conflict formation in East Asia. I have chosen three areas to illustrate the links between environmental degradation and conflict: population, energy and food. In selecting these three subject areas I do not wish to convey the impression that they are the *only* critical elements in the environmental security nexus. Far from it. However, later chapters will address the security consequences of other key environmental variables, notably water and deforestation.

Although there has been a veritable explosion of publications in the academic world on the subject of the environment over the past decade, and particularly in the past five years, it is unfortunately the case that there is considerable imprecision in the use of the term 'environmental security'. In my view there are three distinct sub-schools of thought and activities which fit within the rubric of environmental security.

The first of these, and the one most commonly embraced by national security establishments, focuses on the use of national defence forces and military assets to monitor environmental change and to assist in protecting or rejuvenating the environment.[1] The dark side of the force is environmental warfare - the explicit targeting of an adversary's resources or physical environment aimed at degrading or

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[1] See Robert K. Ackerman, 'Defence Machinery Gears up to Fight Environmental Threat', *Signal,* December 1990, and the statement by Gary Vest, Principal Assistant to the US Deputy Under Secretary of Defense for Environmental Affairs, summarising the US DOD's view of environmental security. Vest is cited in Nathan Ruff, Robert Chamberlain and Alexandra Cousteau, 'Report on Applying Military and Security Assets to Environmental Problems', *Environmental Change*

destroying his capacity to prosecute war.[2] A third category, and the one which I want to deal with in this chapter, defines environmental security in terms of 'acute' sub-national or international conflict, in which there is a substantial probability of violence or the prospect of serious political and social instability stemming directly, or indirectly, from human activities which reduce the earth's capacity to sustain life.[3]

This definition assumes the acceptance of a broader conceptualisation of security than many realists are prepared to accept. I would argue, however, that the traditional military-centric approach to security which predominated during the Cold War has declining analytical and practical utility. Why? Because realism has insufficient explanatory power to account for a range of emerging challenges to security, of which ecological scarcity is a primary example.

The other point that I want to make - indeed this is one of the central themes of this chapter - is that environmental degradation is creating a new kind of resource scarcity - that of so-called renewable resources. Renewable in the sense that they have traditionally been regarded as 'inexhaustible' for all intents and purposes. Yet as governments and people around the world are beginning to realise, water, fish, forests, soil and air are not inexhaustible. They are being subjected to unprecedented pressures and stresses caused by rising populations and economic development practices which are ultimately unsustainable. It is this assault on the planet's primary renewable

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and Security Project Report (The Woodrow Wilson Center), Issue No.3, Spring 1997, p.83.

2   See, for example, Arthur Westing, 'Environmental Warfare: An Overview' in Arthur Westing (ed.), *Environmental Warfare: A Technical, Legal and Policy Appraisal* (Taylor and Francis, London, 1984), and Environmental Warfare: Manipulating the Environment for Hostile Purposes, paper presented at the Woodrow Wilson Center, Washington DC, 7 May 1996. The most commonly cited examples of modern environmental warfare are the second Indochina War, and the 1991 Gulf War. During the Indochina conflict, the United States sprayed large areas of Vietnamese rainforest with defoliants like Agent Orange in an attempt to deny cover to the North Vietnamese and their Viet Cong allies. The Iraquis deliberately destroyed or disabled a large percentage of the petroleum rigs in Kuwait for punitive and economic reasons, in the process causing substantial damage to Kuwait's environment and the maritime ecology of the Gulf.

3   I have modified the definition used by the Canadian, Thomas Homer-Dixon, here. See his seminal article, 'On the Threshold: Environmental Changes as Causes of Acute Conflict', *International Security*, Vol.16, No.2, Fall 1991, p.77.

resources - what some scholars have referred to as the abuse of 'the global commons' - which differentiates the resource scarcity of this era from that of the past. And, as I will argue, resource scarcity will play an increasing role in future conflict formation, especially in East Asia.

Population

Two hundred years ago, an English economist and demographer named Thomas Malthus drew attention to the link between population growth and conflict. Malthus argued that population will always tend to outrun the growth of production until checked by famine, war and ill health.[4] This gloomy prognosis was not borne out because Malthus failed to recognise the mitigating benefits of advances in health care, education and agricultural production, all of which have contributed to a marked fall in mortality rates and the eradication, or control, of many life-threatening diseases. Yet it is worth recalling that when Malthus made his prediction, in 1798, the world's population was less than one billion. Two centuries on, an explosion in human fertility combined with equally dramatic falls in mortality rates has resulted in a six-fold increase in global population.

Our planet will probably host around 9.4 billion people in the middle of the twenty-first century and perhaps as many 11.3 billion by the century's end. Three important conclusions can be drawn from these figures. First, the rate of population increase in the twentieth century is historically unprecedented.[5] Some 80 million people per annum were being added to global population in the mid-1990s, more than half of them in Asia. Second, the world now supports vastly more people than at any time in human history. Third, these changes have been accompanied by extremely high levels of urbanisation. By 2015, 4.1 billion of the world's estimated population of 7 billion will be urban dwellers.[6] Ninety-seven per cent of the increase in the world's

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4   On this point, see the comments of Neville Brown, 'Climate, Ecology and International Security', *Survival*, November/December 1989, p.121.

5   The annual increase in the world's population has stabilised at about 1.7 per cent. UN Department of International Economic and Social Affairs, *World Population Prospects: The 1992 Revision* (United Nations, New York, 1993).

6   *Asia 1997 Yearbook* (Far Eastern Economic Review, Hong Kong, 1997), p.69.

population over the next century will take place in the developing world, and two-thirds of that increase will occur in cities.[7]

Soaring population levels have fuelled doubts among pessimists about the earth's capacity to sustain a population of 11 billion without radical changes in conventional attitudes to growth, consumption and energy usage. Optimists, on the other hand, reject the notion that population increase inevitably leads to ecological stress, famine or conflict in the way that Malthus conceived.[8] The truth, as is so often the case, lies somewhere between these two diametrically opposed views. No straight-line extrapolation can be made between absolute levels of population, rates of population increase, and the incidence of conflict. If that were so, then the world should now be a far more bloody and violent place than earlier periods of history, when both the rate of growth and the overall levels of population were significantly lower.

However, the rapid growth in global population is now beginning to have a deleterious effect on the availability and quality of critical natural resources and living space. These demographic ills are particularly evident in East Asia's most populous state, China. The sheer size of China's population and its staggering rate of increase in the past fifty years is a strategic issue of the first order for China's government. In the forty years between 1950 and 1990, China increased its population by 571 million people, and from 1990 to 2020 it will add close to 490 million - the equivalent of another Southeast Asia. Its projected population of 1.5 billion in 2017 will approximate that of the total world population in 1900.[9]

These demographic realities pose problems of management, governance and social order on a scale never before experienced by any other state, except perhaps India. Just to feed, house and clothe this many extra people in such a short space of time poses formidable problems for the Chinese government and will test to the limits China's already stressed environment. The example of China

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7   Rahul Singh 'Food for Thought: Too Many People Can Hamper Development', *Far Eastern Economic Review*, 22 September 1994, p.26.

8   Rahul Singh, 'Growing Pains: Cairo Conference Debates World's Demographic Future', *Far Eastern Economic Review*, 22 September 1994, p.20

9   Lester R. Brown, *Who Will Feed China? Wake-up Call for a Small Planet* (Earthscan Publications, London, 1995), pp.35-6.

underlines the broader point that high levels of population growth impose additional burdens on governments, particularly in developing states, where fragile national institutions and indeed the fabric of the state itself may already be under threat from ethnic, religious or other sub-national sources of tension.

High levels of unemployment spawn political discontent and social dislocation, and create economic distortions, because states with accelerating populations find it more difficult to eliminate income inequalities and to sustain economic growth rates which are sufficiently high to soak up excess labour. People pressure and environmental degradation are responsible for large-scale population movements, both within states and across state borders. These unregulated flows of people are becoming a significant source of conflict in many parts of the developing world, including East Asia.[10]

Resource Scarcity: Energy

A second argument which I want to advance is that environmental factors are increasing the level of strategic uncertainty over East Asia's energy supplies. The drive to discover and exploit new sources of energy at sea, particularly oil and gas, is clearly linked to widespread East Asian anxieties about how to secure stable and affordable long-term energy supplies in an era of unparalleled population and economic growth. These anxieties are heightening maritime competition between regional states, which has already resulted in significant political and military conflict.

Every state in East Asia, except land-locked Laos, is involved in at least one maritime dispute with a neighbour, and many have multiple, unresolved territorial claims. These disputes have several causes, but the search for energy is a primary factor. It is hardly coincidence that the rise to prominence of the Spratly Islands conflict as a first-order security issue for East Asia has coincided with seismic surveys and oil exploration activities which have reinforced the perception that the island group sits astride large deposits of oil and

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10   For elaboration, see Alan Dupont, 'Unregulated Population Flows in East Asia: A New Security Dilemma?', *Pacifica Review*, Vol.9, No.1, May/June 1997.

gas in the South China Sea.[11] Although geologists believe that the sediments beneath the Spratlys may well only contain modest reserves of oil - as well as natural gas[12] - many regional states, including China, seem to think otherwise. China's Geology and Mineral Resources Ministry estimates that the Spratlys area holds oil and natural gas reserves of 17.7 billion tons, considerably larger than Kuwait's 13 billion tons.[13] The competition for oil and gas is not confined to the South China Sea. The disputes between China and Japan over the Senkaku/Diaoyu Islands in the East China Sea, and between South Korea and Japan in the Sea of Japan suggest that a more complex pattern of regional conflict is emerging.

What is new and troubling about these disputes is that they are occurring against a background of rising energy demand, high economic growth and diminishing energy self-sufficiency. Consider the region's energy fundamentals. While East Asian economies are doubling their economic size every decade or so, their energy use is increasing by factors of between five and ten.[14] By 2010, the overall growth in East Asia's energy consumption could be almost twice that of the rest of the world combined.[15] To put this in context, the anticipated rate of growth in the region's demand for oil alone is estimated to be 12 million barrels per day (mb/d) - approximately the

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11 The first extensive underwater survey of the South China Sea was carried out in the late 1960s under the sponsorship of the United Nations Committee for the Coordination of Joint Prospecting in Asian Off-shore Areas. Esmond D. Smith, 'China's Aspirations in the Spratly Islands', *Contemporary Southeast Asia*, Vol.16, No.3, December 1994, p.278.

12 According to the assessments of economist/geologist Charles Johnson, 'Spratlys: "Only Modest Oil and Gas Potential"', *Asian Oil and Gas*, September 1992, p.12 and E.F. Durkee, the president of Cophil Exploration Corporation. Durkee, who has worked as a geologist for over 40 years, much of it in Asia, argues that there is no hard evidence to conclude that the Spratlys area is oil-rich, and that press comment to that effect 'is largely rubbish' (E.F. Durkee, 'Spratly Islands Not So Rich After All', FBIS-EAS-95-052, 17 March 1995, p.68). See also Mark Valencia, 'Troubled Waters', *Bulletin of the Atomic Scientists*, January/February 1997, p.52.

13 Rigoberto Tiglao, 'Remote Control: China Expands Reefs to Extend Claims', *Far Eastern Economic Review*, 1 June 1995, p.21.

14 *Environmental Digest*, No.87, September 1994, p.13 cited in R.T. Maddock, 'Environmental Security in East Asia', *Contemporary Southeast Asia*, Vol.17, No.1, June 1995, p.27.

15 Kent E. Calder, 'Policy Forum: Energy Futures', *The Washington Quarterly*, Vol.19, No.4, Autumn 1996, p.91.

entire current daily output of oil from Saudi Arabia, the United Arab Emirates and Kuwait combined.[16]

The problem is that on the supply side East Asia is generally deficient in energy resources, especially oil, providing only one-tenth of global oil supply and one-twentieth of estimated oil reserves.[17] Energy self-sufficiency, already low, is expected to fall from 43 per cent in 1995 to 29 per cent in 2015, at which time the region may have to import as much as 70 per cent of its oil, mainly from the Middle East.[18] Even a significant slowing in East Asia's growth rates will not alter the fundamental reality that the region's worsening energy imbalance will increase the level of strategic uncertainty over time. Of course uncertainty does not necessarily translate into conflict. Cooperative impulses in the form of regional confidence-building measures and an emerging multilateral security dialogue hold out the prospect of effective conflict management, if not resolution. Yet the signs are not uniformly propitious. There is no denying that the rise in conflict at sea is being driven in part by the intensifying competition for oil and gas, fuelled by population increases and rising levels of consumption.

Food

The third environmental security issue I wish to touch on is that of food. Like the soil, water, and atmosphere that sustain it, food is a renewable resource, and as with all resources, it is scarcity which links food to security. Food scarcity may occur at the global, national or local level; it may stem from rising demand or falling supply; it may be a function of distribution as well as production, or a consequence of poverty. In 1994, barely four years after record global grain and marine harvests, the United Nations issued this sobering warning:

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[16]   Daniel Yergin, Dennis Eklof and Jefferson Edwards, Energy Security in the Asia-Pacific Region, paper presented at the International Institute for Strategic Studies Annual Conference in Singapore, 11-14 September 1997, p.3. I am indebted to Daniel Yergin for permission to cite the data used in this paper.

[17]   On this point, see Alan Burnett, *The Western Pacific: Challenge of Sustainable Growth* (Allen & Unwin, Sydney, 1993), p.116, and Calder, 'Policy Forum: Energy Futures', p.92.

[18]   *Asia 1995 Yearbook*, p.51, and *Asia 1997 Yearbook*, p.54.

Global agriculture's steady gains in production over the past several decades have not fully overcome the problem of rising demand caused by soaring population growth and uneven production progress among regions. The challenge is immense: by the year 2050, global demand for food may be three times greater than today. Moreover, during the past two decades the production growth rate has declined, dropping from 3 percent annually during the 1960s, to 2.4 percent in the 1970s and finally to 2.2 percent in the 1980s. In 1991, global agricultural production actually fell, the first decline since 1983 ...[19]

In similar vein, the Food and Agricultural Organisation (FAO) reported that per capita food production has declined in over 50 developing countries since the mid-1970s, while food imports have increased.[20] Much of the pressure on world food supplies is coming from East Asia. Incomes have doubled and tripled while the region's ability to feed itself has declined, in some cases markedly so.

At the heart of the debate about food security in East Asia are fears about the impact of China's rising demand on world grain markets. These fears are encapsulated in the writings of Lester Brown, the iconoclastic president of the Washington-based Worldwatch Institute. Brown contends that China may soon emerge as 'an importer of massive quantities of grain - quantities so large that they could trigger unprecedented rises in world food prices'. As China's consumption patterns change and the Chinese eat more livestock products and grain, the subsequent rise in food prices will overwhelm global markets, causing widespread shortages and 'an unprecedented degree of insecurity', especially in the developing world.[21] Brown concludes that food scarcity, 'rather than military aggression' will become the principal threat to security.[22]

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19   *World Resources 1994-95*, a report by the World Resources Institute in collaboration with the United Nations Environment Programme and the United Nations Development Programme (Oxford University Press, New York and Melbourne, 1994), p.107.
20   *Jakarta Post*, 26 October 1996.
21   Lester Brown, *Who Will Feed China?*, pp.132-3.
22   ibid., p.134.

While I believe that Brown's arguments are overstated, he does highlight some disturbing trends that are emerging in East Asia's food production. In 1996, for example, the Philippines Secretary of Agriculture warned that population growth in the Philippines will outpace rice production by the year 2000 because of a decline in arable land. Indonesia, which attained rice self-sufficiency in 1984 after once being the world's largest importer of rice, was forced to return to the world rice market in 1994 and again in 1995 because of rising consumption. North Korea already faces chronic food shortages as its economy slowly disintegrates. Critical rice yields throughout East Asia have also levelled off, or declined, after showing healthy improvements during the 1970s.[23]

However it is at sea, rather than on the land, where the circular relationship between food scarcity, ecological stress and conflict is most evident. Fish is a key source of food for all East Asian states. As populations have increased so has awareness that the oceans constitute one of the last remaining reserves of protein. For an estimated one billion Asians fish is the main source of protein and fishing supports more people than in any other comparable region. Unfortunately, despite its vastness, this maritime rice-bowl is already showing signs of environmental stress from the effects of coastal pollution, over-fishing and the unsustainable exploitation of other forms of marine living resources.

As traditional fishing grounds are depleted, or exhausted, competition for the remaining stocks has intensified. Countries which once welcomed and even encouraged foreign fishing fleets, now restrict their access and quotas, while fishing nations have become much more protective of their own fish resources.[24] As fishing fleets expand numerically and venture further into the Pacific, the area of ocean open to international fishing is shrinking because of maritime jurisdictional 'creep'. One result has been a steady increase in the frequency and seriousness of clashes and incidents at sea caused by foreign fishing trawlers illegally encroaching into EEZs and territorial seas. In a number of instances fire-fights have broken out between the

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23   *World Resources 1994-95*, p.108.
24   Indonesia established a National Maritime Council in January 1997, to 'protect the wealth and potential' of its seas 'from illegal exploitation by foreign parties'. 'Protect marine resources', *Jakarta Post*, 17 January 1997.

navies of regional states intent on defending the activities of national fishing fleets or preventing perceived territorial violations by foreign vessels.

Inter-state confrontation over fish and other living resources in the disputed seas of East Asia is emerging as a serious long-term security problem for the region and one which bears all the hallmarks of environmental scarcity. On the supply side, from the depletion and exhaustion of traditional fishing grounds caused by unsustainable levels of harvest and the destruction of sensitive marine ecosystems. And on the demand side, from population pressures and East Asia's growing affluence.

Conclusion

In conclusion, it is my contention that a new kind of security paradigm is emerging. One in which environmental factors are interacting with territorial, sovereignty and other jurisdictional issues in a way which transcends and challenges conventional notions of conflict formation. The influence of environmental variables on conflict in East Asia is two-fold.

First, environmental degradation and resource scarcity are precursors of intra-state violence and conflict. They may be the spark which ignites a combustible mix of social, political, ethnic or religious tensions within states.

What is happening in East Asia is that ultimately unsustainable development practices, allied with high rates of population growth, are abrading the ecological capital and health of the physical environment beyond its natural regenerative capacity. Under these conditions energy and food dependency, as well as previously localised and containable environmental problems, are assuming a much wider security significance for the states and people of East Asia. Environmental degradation is beginning to seriously retard economic and social progress as well as to exacerbate existing divisions and tensions within developing states, which national governments may already be hard-pressed to contain and ameliorate. The linkages are not 'tight or deterministic', but they are of

demonstrable and growing salience for East Asia's security, however this is defined.[25]

Second, environmental degradation and scarcity is beginning to assume greater importance as a direct and contributing cause of inter-state conflict in East Asia. There is perhaps no better example of the interaction between traditional and geo-environmental causes of conflict than the maritime disputes which infect the South and East China seas. The hunger for resources, both renewable and non-renewable, has clearly complicated and compounded the jurisdictional and sovereignty issues which are at stake. Without the press of rising populations, high levels of energy dependency and the exhaustion of fish and other marine living resources, the maritime sovereignty and territorial issues in the Western Pacific would almost certainly not have attracted the same degree of prominence nor proved as difficult to resolve.[26]

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25   On this point, see Homer-Dixon, 'On the Threshold', p.78.
26   Francisco A. Magno, 'Environmental Security in the South China Sea', *Security Dialogue*, Vol.28, No.1, March 1997, p.109.

CHAPTER 3

WATER SCARCITY AND CONFLICT

Peter Gleick*

The concept of non-military aspects of security is not new, but there is new interest in it as the Cold War has faded and funding and policy priorities have changed. Simultaneously, there has been a growing recognition of new and dramatic environmental threats with political ramifications: global climate change, ozone depletion, inequities in resource use, population pressures on limited resources, degradation of renewable resources, and a set of links to fresh water, which I will address in this chapter. In fact, the so-called 'traditional' definition of security as conflict between the superpowers is itself new, having applied only since 1946. If you go back even further, definitions of international security have been fairly broad. Around the turn of the century the definition was much broader than it has been since 1946. As a result, the recent widening of the definition, beginning in the mid-1980s, is a return to a definition that includes non-military concerns that are of interest to the international community.

There are many arguments over definitions and terms, but however academic political scientists classify these developments, there is no doubt in my mind that resources and environmental concerns are playing an increasingly important role in regional and international disputes and violent conflicts. I believe the argument and focus must not be on whether environment and security are connected, but on when and where and which ones and how they are connected, and on how best to address those connections. I think this is what the military should be interested in as well. There is a component of the military in the US Department of Defense that is extremely interested in knowing about these issues and in pursuing in

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some detail how these issues are related. Earlier chapters have touched on energy and fisheries, later chapters will discuss forestry and the foreign policy implications of environmental security. This chapter, as noted above, will discuss fresh water and where and when and how these issues relate to international security.

Links between Water and International Conflict

The links between water and international conflicts are particularly clear and strong and I think they are increasing. There is a long history of conflict over water; a very long history of disputes over water. Water is fundamental to ecological and human health, it is connected to food and energy production, as well as transportation, industrial development and disposal of wastes. For that reason I think water is a particularly interesting case. What I will do is focus on four links between water and conflict and then close with some recommendations. The links are these: shared water resources can be a military and political goal; water can be (and has been) an instrument and a tool of war; water-resource systems can be (and have been) targets of war; and water resource allocations and use can be the source of political contention and conflict.

Water as a Military and Political Goal

Let me address the first link: water as a military goal. This falls into the most traditional Cold War/*realpolitik* definition of security. The argument is that in some circumstances, water is the defining factor of the wealth or power of a nation or region. When the economic and political strength of a nation depends on such resources, access to water provides, and has been used as, a justification for conflict. It may not be the sole justification and it may never be the sole reason for conflict but nevertheless it has already proven to be an important factor in some places in disputes that have led to conflict. It may well play that role in the future.

There are four characteristics that are important. The first is whether water is scarce in a region. Where water is not scarce, water conflicts are unlikely. But there are many parts of the world where water is scarce and increasingly so.

The second factor is the extent to which water is shared. Fresh water is very widely shared internationally. There are 220 international river basins where water flows into a river which is shared. Half of the world's land area is in international river basins and some argue that 70 per cent of the useful land area of the world is in international river basins. So, often water is very highly shared. That may not be true in Australia, though I note that New South Wales and Victoria share water resources and concerns over water scarcity.

A third factor relevant to this problem is the relative power of the different states. Some argue that where there are strong disparities in power you are less likely to get disputes - a weak state is unlikely to challenge a strong state over water. On the other hand, a strong nation may well challenge a weaker one, using political or military threats to achieve an uneven distribution of resources.

Fourth, conflict is unlikely where water is scarce but other alternatives are available. Only in regions where alternatives are limited or constrained is conflict likely to occur. The Middle East is a good example of many of these kinds of water-related tensions. In the Middle East there is a tremendously long history of conflict over water which goes back over 5000 years. Every major river in the region is shared by two or more nations - the Nile, the Tigris, the Euphrates and the Jordan are all shared. There is only one river that is not shared, and that is the Litani River in Lebanon. Populations in the region are growing very rapidly, putting pressure on the already-scarce resources in the region. And there are strong regional disparities in power. All of these factors lead to growing tensions and growing competition over water in the region.

Let me give one example in this first category of water as a military and political goal: 2700 years ago, around the seventh century BC, there was a conflict when Ashurbanipal of Assyria seized control of wells in the area in order to deny water to his opponent. One of the earliest examples of water as a goal, the resource itself became a part of the conflict. In the 1960s there were efforts by members of the Arab League to divert the headwaters of the Jordan away from Israel which led to military action by Israel. In the 1967 war, water was a fairly important component of a number of different aspects of the war. During this war Israel occupied the headwaters of the Jordan in the Golan Heights and took control of the groundwater resources of the

West Bank. These issues continue to be a major source of political dispute. Water is certainly not the sole issue in this region, but it remains an important one. It continues to be a classic issue of high politics in the region and was a focus of the recent multilateral and bilateral peace talks there. Another example is the Nile, which is shared by 10 million people and is the sole source of supply for Egypt. Egyptian leaders have repeatedly made statements that they will go to war over the Nile if upstream development or nations threaten that supply.

Water as an Instrument or Tool of War

The second issue is water as an instrument or tool of war. The usual instruments of war are military weapons, not resources, but the use of water as both offensive and defensive weapon also has a very long history. The earliest example is the ancient Sumerian myth, very much like Noah and the flood, where deities used water to punish humanity's sins. Herodotus wrote in 400 BC about how Cyrus the Great in 539 BC actually used the Euphrates in his military campaign against Babylon. He had his army divert the Euphrates out of its bed during a festival in Babylon. The river dissipated into the desert and then Cyrus the Great marched his army up the river bed into Babylon and captured the city.

Leonardo da Vinci said, 'Nature never breaks her own laws'. I am not quite sure of the context of that statement, but humans try to break nature's laws all the time. Ironically in 1503 occurred what has to be one of the oddest collaborations in human history - Leonardo da Vinci and Machiavelli together planned to divert the River Arno away from the city of Pisa during one of the many city-state wars at the time between Florence and Pisa. While the plan was never actually implemented, it offers an interesting example of the potential use of water as a weapon.

But there are some recent examples too. In North Korea there is a river that flows from North Korea to South Korea, the Han River. The city of Seoul is very close to the border with the north. The North Koreans announced in 1990 their intention to build an enormous dam on the Han River, which caused consternation in South Korea. South Korean hydrologists concluded that if that dam were breached for any

reason, intentional or not, it could send a wall of water 15 metres high through downtown Seoul and hence could be used as a weapon of war. There were international protests about this and South Korea built a series of check dams on the Han River south of the border to try to divert the Han away in the event of a catastrophic flood.

In another example, during the Persian Gulf war there were behind-the-scenes discussions at the Security Council of the United Nations about having Turkey - as part of the Allied coalition at the time - use the Ataturk dam to stop the flow of water of the Euphrates to Iraq. Turkey refused and Egypt, which was also part of the allied coalition, was not thrilled at the idea of setting a precedent of using water as a weapon against a downstream state. But it was discussed and continues to be a source of animosity between Turkey, Syria, Iraq, and the Kurds.

Water-Resource Systems as Targets of War

The third link is water systems as targets of war. Again there are many examples throughout history. In 689 BC Sennacherib of Assyria destroyed Babylon and intentionally destroyed the vital (strategically vital) water supply canal to the city. More recently hydroelectric dams and water-supply dams have been targets during war. During the Second World War hydroelectric dams were regularly bombed. During the Vietnam War the United States bombed irrigation facilities in Vietnam. Syria tried to destroy the national water carrier of Israel in the mid-1950s. Israel destroyed diversion facilities on the headwaters of the Jordan River in 1960. In the Persian Gulf war the Iraqis destroyed the desalination facilities of Kuwait, a very important part of the economic structure of Kuwait. And the allied forces totally destroyed the water-supply system of Iraq during that war.

Water Resource Allocation as a Source of Conflict between Nations

The fourth connection I'd like to make is between resource use and equity. In my opinion this one is the most interesting and unfortunately the most difficult and it is the aspect most unlike traditional international security concerns. The argument is that inequitable distribution of resources, inequitable use of resources, and

the inequitable consequences of resource use have the potential to lead to regional and international disputes and conflicts.

As already mentioned, water resources are very widely shared and there is enormous disparity among regions. There is also considerable regional variation in actual use of these water resources. In North America we use on the order of 1700 cubic metres per person per year for everything, including agricultural, industrial, and residential water use. In Africa the average per capita use is about 250 cubic metres per person per year. Again if you look subregionally you get even greater disparities. In Africa there are many countries that use much less than 250 cubic metres per person per year and this causes a series of political, social and economic problems. These inequities in availability and use lead to a whole series of additional problems, such as the lack of access to basic water services worldwide.

There are more than 2.7 billion people who do not have access to adequate sanitation services worldwide; another billion who do not have access to clean drinking water. That in turn leads to enormous human suffering in terms of water-related diseases. There are disparities in hydroelectric use, irrigation development, and more. But what is the link between these issues and conflict? Mostly these kinds of problems are not going to lead directly to conflict - they are going to lead to misery, illness and shortened lives. But I would argue that in some cases they are going to lead to an increase in local, regional, or international disputes. They are going to create economic refugees who are going to cross borders or try to cross borders and they have the potential to decrease the ability of a nation to resist economic aggression and military aggression. They reduce what some call 'state capacity' to deal with political problems and to participate fully in economic development.

I would like to make an important point here: sub-national disputes may be as important as or more important than international disputes. There is a lot of debate about international security and international disputes, but in fact some sub-national disputes may be as important. And sub-national disputes have the potential to 'spill over' into the international arena. A couple of examples - there has already been violent conflict between Karnataka and Tamil Nadu in India over the Cauvery River. The apartheid government in South

Africa in 1990 cut off water as a weapon in their disputes with the townships over sanitary living conditions there.

California and Arizona share the Colorado River. President Harry Truman said in 1945:

> When Kansas and Colorado have a quarrel over the water of the Arkansas River they don't call out the National Guard and go to war over it, they go to the Supreme Court and abide by the decision. There isn't a reason in the world we can't do that internationally.

Ironically, in 1933 California and Arizona had called out the National Guard because of a dispute over the Colorado River, over diversions from the Colorado on the Arizona and California border. There are films of it from the 1930s of the Arizona National Guard setting up their machine guns and commandeering some ferry boats to cruise up and down the river. The two states ultimately did go to the Supreme Court and they ultimately did abide by the decision of the court, although admittedly they still argue about things back and forth.

Ways to Manage Conflicts over Water

My final point is how to reduce the risks of conflict in these areas. That has got to be the ultimate goal of anyone interested in the issue of environmental security. We can argue about the causes and connections, but I think it is quite clear that there are strong links between the resources and the conflicts and I think those risks are increasing as populations increase, as economic development increases, as climate changes, as pressures on food increase. The ultimate goal has got to be understanding those risks and thinking about how to reduce them. Let me go back and summarise the four major points I made.

First is the issue of conflict over access to resources. This is the most familiar and traditional problem in international security studies. There are two main aspects. The first is the role of international principles and laws. In 1997 the United Nations passed the Convention on Non-Navigational Uses of International Watercourses, after 30 years of negotiations. This Convention lays out basic principles

to guide conflict resolution over shared water resources. Among the principles are the obligation to share data, the obligation to resolve disputes peacefully, and the obligation to equitably allocate water to prevent conflict. Unfortunately these are not binding in any way. Probably more effective than these principles are specific treaties over shared international river basins. There are many such treaties and efforts are needed to make them work effectively.

The second and third concerns - water as an instrument and tool and as a target of warfare - also are strongly influenced by international law. There is the Environmental Modification Convention of 1977 that forbids the use of the environment as a weapon of war. There is the World Charter for Nature of 1982, which does the same thing. And the 1977 Bern (Geneva) Convention, which is very explicit about preventing the use of the environment as a weapon of war or as a target of war. In this case the problem is not lack of international law, it is a lack of enforcement.

The last issue - the issue of resource and equity - requires the most attention in my opinion and the most work. Basically I think we need to meet fundamental human needs for resources; we have to meet basic needs for water and we have to reduce the environmental and social impacts of water use that lead to conflicts that spill over sub-national or national borders. There is something called the 'McDonald's effect', probably invented by some corporate executive at McDonald's. Some claim that there has never been a war between two countries in which there are McDonald's restaurants. I do not know if this is true and I am not suggesting McDonald's for everyone. But the lesson here is that countries where basic human and economic needs are met (and presumably this includes countries where McDonald's feels sufficiently comfortable about going in and building restaurants) are much less likely to fight over resources and are more likely to negotiate to solve political disputes and conflicts.

In sum, I believe that there are clear connections between environmental problems, resources, and security. Not all environmental problems are security problems, but I believe the connections are especially strong for water, and that the risks are growing, not shrinking.

Environment and security disputes can, in fact, also be an opportunity for cooperation. I think the interesting challenges are to understand where these risks are strongest and to develop the right approaches and the right institutions for reducing those risks.

CHAPTER 4

ENVIRONMENTAL INSECURITY, FOREST MANAGEMENT AND STATE RESPONSES IN SOUTHEAST ASIA

Peter Dauvergne

This chapter explores the links between commercial forest management and community insecurity in Southeast Asia, focusing in particular on the roles and responses of the states of the Philippines, Indonesia, and Sarawak (Malaysia).[1] I argue that state-business domination of lucrative timber operations in Indonesia and Sarawak leaves little scope for innovative and far-reaching responses to alleviate community anger at forest management practices or tackle forest degradation and concomitant environmental insecurity. Tight controls on the press, political opposition, non-governmental organisations (NGOs), and communities further impede environmental reforms in the authoritarian state of Indonesia[2] and the semi-authoritarian state of Sarawak. This suggests that as long as state-business alliances in Indonesia and Sarawak maintain a strong financial interest in timber production, as long as timber continues to hold significant commercial value, and as long as the state dominates civil society, even if forest management practices contribute to sporadic violence (such as the Dayak-Madurese ethnic clashes in East Kalimantan), resistance (such as from the Penan of Sarawak), or

2 Since President Suharto's downfall in May 1998, civil society in Indonesia has been strengthened considerably, and the Indonesian state appears to be in the process of transition from authoritarianism towards greater democracy.

regional tensions (such as over the 1997 forest fires in Kalimantan and Sumatra), state leaders are unlikely to implement major environmental reforms. Moreover, NGOs, environment agencies within the state, and international organisations are likely to continue to have peripheral influence. Even more unsettling, instead of reacting to community anger and conflicts with genuine reforms, state leaders in Indonesia and Sarawak have made a self-serving conceptual link between security and forest management, using the language and policies of conservation to justify greater controls over dissident and outlying groups - what Nancy Peluso labels 'coercing conservation'.[3]

The situation in the Philippines was similar to Sarawak and Indonesia during the regime of Ferdinand Marcos (1965-86). Now, however, it is fundamentally different. There is little commercial timber left, eroding corporate influence and state resistance to reforms. Moreover, since 1986, under Presidents Corazon Aquino and Fidel Ramos, the Philippines has evolved into a lively democracy, with a critical press, strong political opposition, a large number of vocal NGOs, a vibrant civil society, and greater community participation. In this context, environment-oriented agencies of the state, international organisations, and NGOs have more input and influence. At an aggregate level, this has contributed to important improvements in forest management. It has also allowed more scope for alternative views and approaches to increase community participation, and decrease community insecurity. One example of this more inclusive and responsive approach is the Community Forestry Program. Yet not all is well in the Philippines. Many reforms have come too late. Many have failed. Rather than reducing local insecurity, some reforms have angered residents, even at times contributing to violent protests. And in pockets of the country that still contain valuable commercial forests, local loggers, sometimes in conjunction with political and military allies, continue to degrade forests, and as in the past leave behind widespread environmental problems.

This paper is divided into two empirical sections: the Philippines; and Sarawak and Indonesia, where the patterns of forest management are remarkably similar. The Philippine section begins

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3   Nancy Lee Peluso, 'Coercing Conservation? The Politics of State Resource Control', *Global Environmental Change: Human and Policy Dimensions*, Vol.3, No.2, June 1993, pp.199-217.

with some essential background, and then outlines the ties between state élites and loggers, state responses to forest degradation and community insecurity, and ongoing problems with forest management. The section on Sarawak and Indonesia also begins by sketching some necessary background. It then provides evidence of environmental insecurity, before outlining the ties between state officials and loggers, state responses to environmental problems, and state conceptions of and reactions to the links between forest management and community insecurity. Before proceeding to these studies, the next section defines state, society, community insecurity, and environmental insecurity, all of which are central to the analysis.

State, Society, and Community and Environmental Insecurity: Definitions

In the tradition of Weber, a state is an organisation that includes an executive, legislature, bureaucracy, courts, police, military, and in some cases schools and public corporations. A state is not monolithic, although some are more cohesive than others. A society is the arena in which state and non-state organisations compete over the official and unofficial rules of the game. States aim to control societies; non-state organisations aim to restructure states; and both states and non-state organisations aim to control the economy (market). Inevitably, to varying degrees, state agencies and non-state organisations shape the interaction and structure of each other. By definition, a state has a legitimate monopoly over the use of violence, and therefore has coercive tools to get individuals and groups within society to obey and conform. To preserve legitimacy and stability, a state also seeks to raise revenue, minimise domestic and foreign threats, maintain internal cohesion and coordination, and mediate and deflect societal pressures and demands. State output is a result of contests and compromises across agencies and levels of the state, and with relevant non-state organisations in society.[4]

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[4] These definitions are from Peter Dauvergne, *Weak States and the Environment in Indonesia and the Solomon Islands,* Working Paper No. 1997/10 (Project on Resource Management in the Asia-Pacific, Research School of Pacific and Asian Studies, Australian National University, 1997). For similar definitions of state and society, see Joel S. Migdal, *Strong Societies and Weak States: State-Society Relations and State Capabilities in the Third World* (Princeton University Press, Princeton, 1988); Joel S. Migdal, Atul Kohli and Vivienne Shue (eds), *State Power and Social Forces:*

Community insecurity arises when there is an absolute or relative deterioration in social relations and human security, which includes sustainable livelihoods, personal safety, shelter, human rights, health, education, and gender equity. It can also arise when a community perceives the actions of an 'outsider' - such as the central government, a corporation, or an ethnic group - as unreasonable or unjust. These relative and absolute changes and negative perceptions sometimes trigger or fuel conflicts. But they can also just create a bubbling discontentment, a particularly difficult form of community insecurity to identify. Environmental insecurity is defined broadly, focusing on how environmental change contributes to community insecurity rather than on how war, conflict, or threats contribute to degradation. It includes conventional disputes and conflicts between states over environmental problems, such as water flows across borders, air pollution, and waves of environmental refugees. It also incorporates how environmental degradation contributes to internal security problems, including violence (such as insurgencies and ethnic conflicts), organised resistance (such as protests and blockades), and everyday resistance. Everyday resistance is unorganised, diffuse, individualistic, and covert resistance, such as trespassing, arson, illegal farming, and theft.[5]

Philippines

Background

The Philippines has about seven thousand islands with a total land area of thirty million hectares. Illegal and legal loggers have contributed to widespread deforestation. Less than 19 per cent of the Philippines now has significant forest cover, down from 70-80 per cent at the start of the twentieth century. Only around 14.4 per cent is old-

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Domination and Transformation in the Third World (Cambridge University Press, New York, 1994); and Merilee S. Grindle, *Challenging the State: Crisis and Innovation in Latin America and Africa* (Cambridge University Press, Cambridge, 1996).

5 The term 'everyday resistance' is from James C. Scott, *Weapons of the Weak: Everyday Forms of Peasant Resistance* (Yale University Press, New Haven, 1985). For a recent study of the importance of everyday resistance in diluting state control of forests in Asia (especially Burma), see Raymond L. Bryant, *The Political Ecology of Forestry in Burma 1824-1994* (Hurst & Co., London, 1997).

growth forest (805,000 hectares).[6] With little accessible old-growth forest left, the commercial timber industry has collapsed and Philippine tropical log imports are now larger than domestic log harvests.[7] Most of this degradation occurred during the Marcos regime.

Filipino Elites and Timber under President Marcos (1965-86)

Philippine logging peaked during the rule of President Marcos, reaching 11.6 million cubic metres in 1968, and averaging over 10 million cubic metres per year from 1965 to 1973.[8] Marcos cronies such as Alfonso Lim and Herminio Disini had substantial timber empires. Some senior state leaders, such as defence secretary Juan Ponce Enrile and armed forces chief of staff General Fabian Ver, were also directly involved in illegal logging.[9] With little supervision from the top, state officials ignored violations in exchange for bribes, gifts, and personal security. In this context, loggers made windfall profits, in part by disregarding environmental and harvesting guidelines. In the 1960s and 1970s, the Philippines lost much of its remaining old-growth forests, which in turn triggered widespread deforestation. Over this time, deforestation in the Philippines was well over the average global tropical rate.[10]

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6   Based on data and interviews at the Department of Environment and Natural Resources, Quezon City, 28 July 1997. Also, see Mark Poffenberger and Roger D. Stone, 'Hidden Faces in the Forest: A 21st Century Challenge for Tropical Asia', *SAIS Review*, Vol.16, No.1, Winter-Spring 1996, p.204. For recent Philippine government forest statistics, see Department of Environment and Natural Resources, Forest Management Bureau, *1995 Philippine Forestry Statistics* (Department of Environment and Natural Resources, Quezon City, 1996).

7   Based on data from the Department of Environment and Natural Resources, obtained by the author in July 1997.

8   Calculated from Food and Agriculture Organisation data, various yearbooks.

9   Marites Danguilan Vitug, *Power from the Forest: The Politics of Logging* (Philippine Center For Investigative Journalism, Manila, 1993), pp.16-24, 29-32, 44.

10   For background on logging and deforestation in the Philippines, see David M. Kummer, *Deforestation in the Postwar Philippines* (University of Chicago Press, Chicago, 1991).

Filipino Elites and Timber under Aquino (1986-92) and Ramos (1992-98)

When Aquino took over from Marcos in 1986, the Philippine timber industry was already in sharp decline. In the first half of the 1980s, as accessible stocks grew scarce, log production dropped steadily. By 1985 it was only 3.1 million cubic metres. By 1990 it had fallen to 2.2 million cubic metres. And by 1995 it was only 758,000 cubic metres.[11] Annual deforestation also dropped from about 300,000 hectares in the 1960s and 1970s, to around 150,000 hectares in the early 1980s, and to less than 100,000 hectares in the early 1990s. To some extent, at least since the early 1990s, lower logging and deforestation rates reflect stronger laws and better management. But in many ways these changes are simply a result of fewer forests to deforest.

The fall of Marcos, along with the depletion of commercial forests, severed many of the ties between loggers and top political leaders. President Aquino did not have direct links to loggers during her term. At one time Fidel Ramos had logging interests, but he broke these before becoming president in 1992. As is documented later, however, some loggers did manage to survive the transition after Marcos, especially in pockets of the country that still contain valuable timber. In these places, loggers still have considerable political influence, sometimes through a member of congress, provincial leader, or local mayor.[12] They are also still able to avoid and manipulate rules by bribing or coercing local officials.

Philippine State Responses to Environmental Degradation

During the Marcos years the state did little to manage commercial forests, conserve biodiversity, or impede deforestation.

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11   The 1985 and 1990 figures are from Food and Agriculture Organisation, various yearbooks. The 1995 figure is from Forest Management Bureau, Department of the Environment and Natural Resources, Quezon City, Philippines (obtained by the author in July 1997).

12   Marites Danguilan Vitug, 'Is There a Logger in the House?' in Eric Gamalinda and Sheila Coronel (eds), *Saving the Earth: The Philippine Experience* (Philippine Center for Investigative Journalism, Manila, 3rd edn 1993), pp.62-8. Of 200 congressmen elected in 1992, 17 were connected to logging operations. Sheila S. Coronel, 'Unnatural Disasters' in Sheila S. Coronel (ed.), *Patrimony: 6 Case Studies on Local Politics and the Environment in the Philippines* (Philippine Center for Investigative Journalism, Manila, 1996), p.13.

There was also little sense that commercial forest practices or environmental degradation was in any way a security problem, in part because officials and state agencies (including the military) were often key actors in logging forests quickly and recklessly. Since Marcos, forest management has improved. Many factors have contributed to these changes. Since the mid-1980s, global concern for environmental problems has grown considerably. Environmental concern within the Philippines has also increased.[13] International donors - such as the Asian Development Bank, the Japan Overseas Economic Cooperation Fund, and the World Bank - have provided substantial funds for environmental protection.[14] The institutionalisation of democratic practices has also had a significant impact. Environmental NGOs have proliferated, gaining increasing influence through a critical media and strong opposition political parties.[15]

Relatively little valuable timber, fewer high-level political and military patrons protecting loggers, stronger internal and external pressure for environmental protection, greater concern with environmental problems, a more dynamic civil society, and the strengthening of democratic practices have contributed to major reforms to commercial timber management. The government has cut the number of logging licences, stopped issuing new licences, banned logging in the few remaining old-growth forests and in provinces with less than 40 per cent tree cover, collected more accurate forest statistics,

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[13] For overviews of the emergence of global environmental concern over the last thirty years, see Marian A.L. Miller, *The Third World in Global Environmental Politics* (Lynne Rienner Publishers, Boulder, 1995); and Gareth Porter and Janet Welsh Brown, *Global Environmental Politics* (Westview Press, Boulder, 2nd edn 1996). For the Philippines, see Francisco A. Magno, 'The Growth of Philippine Environmentalism', *Kasarinlan: A Philippine Quarterly of Third World Studies*, Vol.9, No.1, 3rd Quarter 1993, pp.7-18. For an analysis of the impact of the globalisation of environmentalism on forest management in the Asia-Pacific, see Peter Dauvergne, *Globalisation and Deforestation in the Asia-Pacific*, Working Paper No. 1997/7 (Department of International Relations, Research School of Pacific and Asian Studies, Australian National University, 1997).

[14] For a discussion of the importance of international donors for promoting reforms, see Michael Ross, 'Conditionality and Logging Reform in the Tropics' in Robert O. Keohane and Marc A. Levy (eds), *Institutions for Environmental Aid: Pitfalls and Promise* (MIT Press, Cambridge MA, 1996), pp.167-97.

[15] Julio C. Teehankee, 'The State, Illegal Logging, and Environmental NGOs in the Philippines', *Kasarinlan: A Philippine Quarterly of Third World Studies*, Vol.9, No.1, 3rd Quarter 1993, pp.19-34; and Conchita M. Ragragio, 'Sustainable Development, Environmental Planning and People's Initiatives', *Kasarinlan: A Philippine Quarterly of Third World Studies*, Vol.9, No.1, 3rd Quarter 1993, pp.35-53.

increased commercial forest taxes, and implemented major reforestation programmes.[16] To reduce illegal logging the government has also strengthened laws, seized illegal logs, rewarded informers, and prosecuted offenders.[17] Although it is difficult to discern absolutely, compared to the Marcos years, state officials also appear to accept a broader understanding of the effects of commercial forest management and environmental degradation, including the impact on community security. Both the Aquino and Ramos governments developed policies and programmes to improve environmental quality, tighten environmental controls, and increase local participation in environmental management. Although the governments did not make most of these changes primarily for security reasons, many had the implicit objective of reducing community and environmental insecurity. Two Aquino government policies that have been especially important for reshaping the environmental management of forests are the 1991 Local Government Code and the Community Forestry Program. These also indicate fundamental changes in the attitudes of state élites toward communities and environmental management.

1991 Local Government Code and the Community Forestry Program

The 1991 Local Government Code devolved powers to provinces, cities, and towns. It gives communities the power to protect forests, control reforestation and natural regeneration programmes, operate parks and nature reserves, and enforce environmental and forest management laws. It also allows local governments to manage community-based forestry projects. This Code has had significant effects on local environmental politics. In 1995, a government-NGO study found that local officials were now more active in environmental

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16 For example, in 1987 there were 143 timber licences; by 30 July 1997, only 20 were still active, although these still covered 1.2 million hectares. The 1997 figures are from the Forest Management Bureau, Department of the Environment and Natural Resources, Quezon City, Philippines (obtained by the author in August 1997).

17 For details, see Philippine Department of Environment and Natural Resources, *1992 Philippine Forestry Statistics*, p.xi; Vitug, *Power from the Forest*, pp.59-60; and Martha Belcher and Angela Gennino (eds), *Southeast Asia Rainforests: A Resource Guide & Directory* (Rainforest Action Network, San Francisco, 1993), p.37.

management, diverting more funds and staff to support environmental projects, including reforestation.[18]

Besides this Code, the Aquino government also developed specific programmes to increase the participation of communities and NGOs in environmental decisions, research, monitoring, and technology transfers. One of the more important initiatives for the environmental management of forests is the Community Forestry Program.[19] The Philippine Department of Environment and Natural Resources (DENR) started this programme in 1989 to rehabilitate and conserve secondary and primary forests, shift from large- to small-scale forest operations, increase local participation and training in forest management, make access to forests more equal and democratic, generate work in rural communities, and enhance the institutional capacity of DENR, local government units, and NGOs. This project provides upland communities with twenty-five-year community forestry management agreements, which can be renewed once. These agreements provide communities with timber management rights conditional on approval from DENR. Communities must obey DENR guidelines and follow a plan to maintain sustainable yields (defined as the annual amount loggers can extract that will regenerate over the cutting cycle and provide equal commercial volumes in subsequent harvests).

The programme is divided into three phases. In the first phase, DENR - in conjunction with local government units and communities - provides information, identifies sites, conducts forest inventories, and selects participants. In the second phase, DENR awards community forestry management agreements, develops alternative livelihood options, and helps train and organise communities. In the third phase, with DENR assistance and supervision, communities reforest, harvest, and regenerate forest areas. NGOs play a key role in this programme. They assist in training, organising, planning, managing, and

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18   Coronel, 'Unnatural Disasters', p.11.

19   The Community Forestry Program is one of many programmes that comprise the Community-Based Forest Management Strategy and the People-Oriented Forestry Programs and Projects. See the Philippine Department of Environment and Natural Resources, 'Integration of the CBFMs and POFP into the DENR Regular Structure', Administrative Order No.96-30, 1995. Also, see Philippine Department of Environment and Natural Resources, 'Rules and Regulations for the

marketing. With funds from the World Bank and the Asian Development Bank, 48 projects were started in 1989; with funds from the US Agency for International Development another 17 began in 1992.[20]

Environmental Failures, Environmental Insecurity, and Pockets of Resistance

Although the Philippines has taken important steps to make environmental management more inclusive and effective, considerable problems still exist. Decentralising environmental management and embracing communities and non-governmental organisations have not always improved management or alleviated community insecurity. Many community reforestation sites, for example, have failed. Several studies show that after three years only 40 per cent of trees survived. Many trees have died; some are never planted. And occasionally, angry locals have ripped out or burned down plantation trees.[21] In some areas decentralisation has, at least temporarily, made the situation even worse. In Agusan, for example, until his death in 1995, Governor D.O. Plaza, who funded his political empire with logs, used the new powers under the 1991 Local Government Code to increase his personal control. He took over logging checkpoints from DENR to conceal illegal logging by his allies and family.[22] Sheila Coronel argues:

[20] Implementation of Executive Order 263, otherwise known as the Community-Based Forest Management Strategy', Administrative Order No.96-29, July 1995.
Pia C. Bennagen, 'NGO and Community Participation in Environmental Programs: A Case Study of the Community Forestry Program', *Philippine Social Sciences Review*, Vol.53, Nos 1-4, January-December 1996, pp.53-7; and Department of Environment and Natural Resources, *Policies, Memoranda and Other Issuances on the National Forestation Program*, Vol.VI (National Forestation Development Office, Department of Environment and Natural Resources, Quezon City, 1993), pp. 88-107.

[21] For a critique of reforestation programmes in the Philippines, see Frances F. Korten, 'Questioning the Call for Environmental Loans: A Critical Examination of Forestry Lending in the Philippines', *World Development*, Vol.22, No.7, 1994, pp.971-81. For a study of some of the typical problems of community forestry, see Marites Danguilan Vitug, 'A Tortuous Trek to Community Forestry' in Coronel (ed.), *Patrimony*, pp.121-41.

[22] Howie G. Severino, 'The Rise and Fall of a Logger's Political Empire' in Coronel (ed.), *Patrimony*, pp.21-44.

Agusan demonstrates the mixed blessings of democracy and devolution. It dramatises how, in many parts of the country, the right to make use of increasingly scarce natural resources remains in the hands of a rich and powerful few who also have privileged access to political office.[23]

Illegal and destructive legal loggers also remain a serious problem. State capacity to monitor and control them is still limited by links between DENR officials and timber operators. Few staff, limited funds, and inadequate equipment, especially in remote areas that still contain valuable commercial timber, also hamper enforcement. In total, the Philippines only has around 4000 forest guards. Palawan, which contains about one-third of the remaining old-growth forests, only has about 135 guards. In this setting, illegal loggers, sometimes protected by political, military, and bureaucratic élites, continue to destroy primary forests and national parks. In Palanan, Isabela, for example, illegal logging has apparently accelerated since the 1994 ban on logging in protected areas.[24] As a result of practices like those in Isabela, illegal logs may well account for around half of Philippine total timber consumption. Besides illegal logging, other ongoing problems include tax evasion, inefficient processors, and bogus environmental NGOs. Government officials and corporate operators also continue to intimidate and threaten people who oppose forest management and reforestation projects, especially indigenous forest dwellers.[25] Some environmental measures, such as plantations, have even triggered violence and upheaval, rather than alleviated community insecurity. For example, Alcantara and Sons Company (Alsons) ended up fighting the Matigsalug tribe over the development of a 19,000 hectare timber plantation in Tala-ingod, Davao, Mindanao. According to Federico Magdalena:

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23 Coronel, 'Unnatural Disasters', p.12.
24 Alan Robles and Howie G. Severino, 'Way to a Crisis' in Cecile C.A. Balgos (ed.), *Saving the Earth: The Philippine Experience* (Philippine Center for Investigative Journalism, Pasig City, 4th edn 1997), p.21. Other chapters in this book document similar problems in other parts of the Philippines: see Alan Robles, 'Logging and Political Power', pp.22-6; Red Batario, 'The Pillage of Isabela', pp.27-30; and Howie G. Severino, 'Fraud in the Forests', pp.36-42, in ibid.
25 Mark Girouard, *The Philippines: Human Rights and Forest Management in the 1990s* (Human Rights Watch/Asia, New York, 1996).

the consequent conflict resulted in the death of many tribesmen and twelve Alsons workers in 1994. The conflict is still raging and no solution is in sight.[26]

The Philippines, then, clearly still has problems with forest management. Yet compared with Sarawak and Indonesia substantial changes have occurred, including changes to attitudes, decision making, policies and, to a lesser extent, practices.

Sarawak and Indonesia

Background

Like the Philippines, the states of Sarawak and Indonesia have legal control over official forest areas. Unlike the Philippines, however, expansive tracts of commercial forests still remain, although both are heading down the Philippine path. In Sarawak, loggers harvested around 30 per cent of Sarawak's forests from 1963 to 1985.[27] By the end of the 1980s, old-growth forests only covered 4 to 5 million hectares.[28] Sarawak now has about 8.7 million hectares of forests (out of a total land area of 12.3 million hectares). Around 6 million hectares are set aside for sustainable timber production. Commercial log production in 1995 was around 16 million cubic metres, approximately two and a half times higher than sustainable levels. At this rate, and under current harvesting practices, Sarawak will deplete its valuable commercial timber stocks in less than a decade, leaving behind widespread environmental problems.[29]

26　Federico V. Magdalena, 'Population Growth and the Changing Ecosystem in Mindanao', *Sojourn*, Vol.11, No.1, 1996, p.120.

27　Evelyne Hong, *Natives of Sarawak: Survival in Borneo's Vanishing Forest* (Institut Masyarakat, Pulau Pinang, Malaysia, 1987), pp.128-9, cited in Harold Brookfield, Lesley Potter, and Yvonne Byron, *In Place of the Forest: Environmental and Socio-Economic Transformation in Borneo and the Eastern Malay Peninsula* (United Nations University Press, Tokyo, 1995), p.101.

28　Interviews, World Wildlife Fund (WWF) Malaysia, Petaling Jaya, 10 March 1994.

29　International Tropical Timber Organisation, 'The Promotion of Sustainable Forest Management: A Case Study in Sarawak, Malaysia', report submitted to the International Tropical Timber Council (ITTC), *ITTC*, (Vol.8), No.7, May 1990. Although some improvements have occurred since the International Tropical Timber Organisation conducted this study, it is still a reasonable estimate of the amount of accessible commercial timber left in Sarawak.

Indonesia, with a land area of 190 million hectares, is much larger than Sarawak. Officially, forest lands cover 143 million hectares, but there is more likely between 90-110 million hectares of 'natural forests'. About 64 million hectares are classified as production forests, accounting for around 60 per cent of legal commercial timber in Southeast Asia. According to the International Tropical Timber Organisation, in 1995 commercial log production was around 35 million cubic metres. A recent World Bank study estimated that it was more likely over 40 million cubic metres, almost two times higher than sustainable levels.[30]   At this rate, Indonesia, which has one of the largest commercial tropical log stocks left in the world, could deplete this stock in about three decades.[31]   Even more troubling, commercial logging is the most important factor driving deforestation, which is now around a million hectares a year.[32]

Environmental Insecurity in Sarawak and Indonesia

Forest management practices and widespread forest degradation in Sarawak and Indonesia have contributed to significant levels of community and environmental insecurity, triggering everyday resistance, protests, and even violence. The most visible conflicts in Sarawak have been between loggers (backed by the state) and the Penan tribe.[33] Indonesia has similar security problems. As Charles Victor Barber notes, Indonesia's 'forests have become the arena for increasing levels of sometimes violent social conflicts'.[34] Conflicts

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[30]   Summarised in Jim Della-Giacoma, 'Indonesia Says Improving Logging Practices', Reuters News Service, Reuters Business Briefing, 20 May 1996.

[31]   The Indonesian economist Rizal Ramli made this estimate in 'Timber: An Economic Dilemma', *Economic & Business Review Indonesia*, No.98, 26 February 1994.

[32]   For government figures and information on forest management in Indonesia, see Departemen Kehutanan (Ministry of Forestry), *The Timber Industry in Indonesia* (Ministry of Forestry, Republic of Indonesia, Jakarta, 1992); Ministry of Forestry, Directorate General of Reforestation and Land Rehabilitation, *Overview: The Strategy of Reforestation and Land Rehabilitation* (Ministry of Forestry, Republic of Indonesia, Jakarta, February 1993); Departemen Kehutanan (Ministry of Forestry), *Forestry in Indonesia and Forestry Research and Development* (Ministry of Forestry, Republic of Indonesia, Jakarta, 1992); and Ministry of Forestry, *Indonesian Forestry* (Ministry of Forestry, Republic of Indonesia, Jakarta, December 1995).

[33]   Doug Tsuruoka, 'Secret War Rages in World's Last Jungles', *Nation*, 23 June 1995, p.A10.

[34]   Charles Victor Barber, The Case Study of Indonesia. Project on Environmental Scarcities, State Capacity, and Civil Violence, a joint project of the University of

are sometimes triggered by state and corporate actions (such as when loggers or plantation companies displace communities) and sometimes by environmental degradation itself. These conflicts often occur between state or corporate groups and local residents. For example, Yamdena (Maluku) islanders were furious when in 1991, with no consultation or notice, the government granted the company P.T. Alam Nusa Segar a 172,000 hectare logging concession, even though the 535,000 hectare island had been a protected area for 20 years. In late 1992, Yamdena islanders attacked the logging company, killing one person, injuring several others and forcing a suspension of logging operations. This is not an isolated case. Conflicts and disagreements between locals and loggers (often with the support of state officials) have occurred in Bentian (East Kalimantan), Sugapa (North Sumatra), and Benekat (South Sumatra).[35]   Forest management practices and environmental degradation also sometimes trigger, or at least aggravate, conflict between ethnic groups. For example, according to Amri Marzali of the University of Indonesia, the 1997 ethnic clash in Kalimantan, between the Dayaks and the Madurese, was in part a result of the social and psychological effects on the Dayaks of years of commercial forest exploitation. He explains:

> Land has special meaning for them, not just in an economic sense but is inseparable from the social and religious life within Dayak communities. A vital part of their life has been taken by other people.[36]

Inappropriate state policies, corporate actions, and environmental degradation do not just contribute to domestic insecurity. Although not as common, these can also trigger regional and even international insecurity, as demonstrated by the regional crisis created by raging fires in Kalimantan and Sumatra in the second half of 1997.

Toronto and the American Academy of Arts and Sciences (Valerie Percival, Manuscript Editor, The Academy of Arts and Sciences, Cambridge MA, 1997).

35   ibid., pp.62-6.

36   Quoted in Patrick Walters, 'Borneo's Tribal Backlash', *Australian*, 22-23 February 1997, p.28.

Elites and Timber in Sarawak and Indonesia

In both Sarawak and Indonesia, timber operators have maintained close ties to high-level politicians, including chief minister Datuk Patinggi Tan Sri Abdul Taib Mahmud and former President Suharto. Timber is the backbone of Sarawak's economy and timber money pervades the entire state structure. Chief minister Taib is the minister of forestry, which gives him the exclusive power to grant timber concessions. He has used this power to distribute timber concessions to his allies, friends, and family.[37] The minister of the environment and tourism, Datuk Amar James Wong Kim Min, runs Limbang Trading, which controls around 300,000 hectares of timber concessions in Sarawak. Datuk Tiong Hiew King, the head of the Rimbunan Hijau Group, is the largest logger in Sarawak, controlling about 800,000 hectares. His net worth is about M$2 billion. Like the other six major Malaysian Chinese loggers in Sarawak, he has close ties to state leaders (including chief minister Taib and environment minister James Wong), providing money in exchange for licences, political protection, and bureaucratic favours.[38]

The situation is similar in Indonesia. There are approximately 500 concessionaires, although most are tied to corporate groups, and according to a World Bank study, as a result, five or six conglomerates dominate timber production.[39]   Bob Hasan is the most powerful timber operator.   Until recently, he was the head of four timber organisations, including Apkindo (the Wood Panel Association), which until early 1998 controlled the plywood industry.[40]   He also has

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[37]   See Yu Loon Ching, *Sarawak: The Plot That Failed, 10 March 87 - 17 April 87* [A collection of newspaper articles] (Summer Times, Singapore, 1987); and Institut Analisa Sosial (INSAN), *Logging against the Natives of Sarawak* (INSAN, Selangor, Malaysia, 1989), pp.73-4.

[38]   For background on some of the companies operating in Sarawak, see Raphael Pura, 'Timber Companies Blossom on Malaysian Stock Market', *Asian Wall Street Journal*, 30 November 1993, p.12; and Raphael Pura, 'Timber Baron Emerges from the Woods', *Asian Wall Street Journal*, 15 February 1994, pp.1,4.

[39]   World Bank, *Indonesia Forest Sector Review* (Jakarta, April 1993), p. 27, cited in Mark Poffenberger, 'Rethinking Indonesian Forest Policy: Beyond the Timber Barons', *Asian Survey*, Vol.37, No.5, May 1997, p.456.

[40]   For background on Apkindo, see Peter Dauvergne, 'Japanese Trade and Deforestation in Southeast Asia' in Rodolphe De Koninck and Christine Veilleux (eds), *Southeast Asia and Globalization: New Domains of Analysis/ L'Asie du Sud-Est face à la mondialisation: les nouveaux champs d'anlayse* (Groupe d'études et de recherche sur l'Asie contemporaine (GERAC), University Laval, Quebec, 1997), pp.133-56. As part of a loan agreement with the International Monetary Fund,

logging rights to about 2 million hectares. The largest timber operator is Prajogo Pangestu. His concessions cover about 5.5 million hectares. He employs around 50,000 people and is one of the wealthiest businessmen in Indonesia. Both Hasan and Prajogo have close ties to the Suharto family. They also have extensive networks of allies within the bureaucracy, including forest enforcement officers and customs officials.[41]

Besides ties to politicians and bureaucrats, loggers have also had close ties to Indonesian military officers since the late 1960s. In 1967, Suharto distributed timber concessions to reward generals, appease potential opponents within the military, and supplement the military budget. By 1978, the armed forces controlled at least 14 timber companies.[42] Since then, military involvement in timber operations has declined somewhat. There are still, however, substantial timber operations run by the military. For example, the International Timber Corporation of Indonesia operates the largest concession in Indonesia (600,000 hectares in East Kalimantan). The armed forces controls 51 per cent of this company; a conglomerate chaired by Suharto's son, Bambang Trihatmodjo, controls 34 per cent; and Hasan controls 15 per cent.[43] With such powerful interests behind logging, it is hardly surprising that the states of Indonesia and Sarawak have angered marginalised indigenous groups and responded to widespread environmental degradation with half-hearted measures.

Indonesia agreed to dismantle the monopolistic controls on plywood by 1 February 1998. As of the end of February 1998, however, informal controls still seemed strong, although since then even the informal controls appear to be weakening.

41 For additional background on Hasan and Prajogo, see Raphael Pura, 'Bob Hasan Builds an Empire in the Forest', *Asian Wall Street Journal*, 25 January 1995, p.4; Adam Schwarz, *A Nation in Waiting: Indonesia in the 1990s* (Allen & Unwin, Sydney, 1994); and Peter Dauvergne, *Shadows in the Forest: Japan and the Politics of Timber in Southeast Asia* (MIT Press, Cambridge MA, 1997).

42 Richard Robison, 'Toward a Class Analysis of the Indonesian Military Bureaucratic State', *Indonesia*, No.25, April 1978, p.28.

43 See International Timber Corporation Indonesia (ITCI), *PT International Timber Corporation Indonesia* (ITCI, Jakarta, 1992).

State Responses to Environmental Degradation in Sarawak and Indonesia

Under pressure from international critics, Sarawak and Indonesia have developed new environmental and forest policies since the early 1990s. Sarawak has strengthened enforcement agencies, passed stronger penalties for illegal loggers and smugglers, and hired more forest guards. In Indonesia, the government has rescinded some licences and punished a few illegal loggers. Despite these changes, however, in both places many loggers still ignore environmental and harvesting guidelines and the overall impact on log production and harvesting practices has been minor. The Sarawak and Indonesian governments have mostly pursued small-time loggers or swidden farmers rather than large well-connected companies. Not surprisingly, tight restrictions on civil society - combined with the interests of powerful élites - have left little scope for alternative or more inclusive approaches to forest management. As a result, although Sarawak and Indonesia have social and community forestry programmes, these are not nearly as comprehensive or inclusive as ones in the Philippines.[44] Unlike the Philippines, there is little concern that forest practices are contributing to community insecurity. In the case of Indonesia, Barber argues that even though local conflicts over forest resources 'are pervasive, they do not particularly disturb the government. Local conflicts are largely treated as local matters'. He maintains that 'a cohesive alliance of timber firms, local governments, and the local police and military apparatus controls the communities in question through a combination of repression and cooptation offers of land compensation, jobs, or outright bribes'.[45] Also, unlike the Philippines, there is little sense that improving environmental management could enhance security.

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[44] For background on social and community forestry in Indonesia, see Mursidin Achmad Sarido, 'Social/Community Forestry Development in Indonesia' in *Community Forestry: As a Strategy for Sustainable Forest Management*, Proceedings of the International Conference, Manila, 24-26 May 1996 (Department of Environment and Natural Resources and the International Tropical Timber Organisation, Manila, 1996), pp.111-21. For background on Malaysia, see Kamis Awang and Mohd. Basri Hamzah, 'Community Forestry in Malaysia: Overview, Constraints, and Prospects' in *Community Forestry*, pp.175-90. An increasing number of state officials in Indonesia do appear to recognise the need for more community participation, although so far this has not led to far-reaching reforms (Barber, The Case Study of Indonesia, p.47).

[45] Barber, The Case of Indonesia, p. 67.

State Conceptions of Environment-Security Links in Sarawak and Indonesia

Both Sarawak and Indonesia strongly resist the idea that environmental degradation leads to insecurity - or that it in any way contributes to community tension, resistance, and violence. Instead, the governments in both places have linked security and environmental degradation not to improve environmental management and enhance community security, but to use environmental language and policies to control dissident and outlying groups. For example, the Sarawak and Indonesian governments partly justify measures to confine and control indigenous groups by claiming that slash-and-burn farmers are the primary cause of deforestation and widespread fires. Of course, Indonesia and Sarawak are too sophisticated and intricate to employ environmental measures to just increase control. Some environmental reforms are genuine attempts to protect the environment. There are also of course diverse views within Sarawak and Indonesia, although the voices that support better environmental management, for any reason, are relatively peripheral.[46]

Conclusion: Environmental Insecurity and Southeast Asian States

As environmental problems become more acute, as global environmental concern mounts, and as international and local funds increasingly support environmental measures, the rhetoric of Southeast Asian states is shifting in support of sustainable management. Most states now employ the language of sustainable development, environmental protection, and biodiversity conservation. But the effect of this new rhetoric differs across political and economic systems. In the Philippines since the late 1980s, a free press, an independent judiciary, democratic practices, and strong NGOs have contributed to substantial, although inconsistent, changes to the process of environmental management. The Aquino and Ramos governments were more open and accountable. Public opinion has also shifted, and now strongly opposes environmentally destructive

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[46] The Philippines is also too complex and multifaceted to implement environmental policies just to improve environmental management and enhance community security; some measures are also simultaneously, or even surreptitiously, designed to increase control.

industries like logging. The central government has decentralised environmental management, and integrated local governments, communities, and NGOs. Involving a broad base of local people has to some extent diffused tensions and contributed to improving the basic needs of residents. More and more local politicians have come to power who support environmental protection, or at least no longer have direct ties to environmentally destructive enterprises. The Philippine Department of Environment and Natural Resources has also undergone major reforms and to some extent at the national level it 'has shown that it can act as an impartial administrator and arbiter of environmental disputes'.[47] Although it is difficult, if not impossible, to isolate the main reasons for these changes, they appear partly motivated by new environmental attitudes, and partly by a need to appease vocal international and domestic NGOs and angry local communities. Whatever the underlying reasons, however, as the Community Forestry Program demonstrates, it is clear that forest management in the Philippines is now far more transparent, inclusive, and responsive to community needs than in Sarawak and Indonesia.

To some extent, then, the Philippines has moved to alleviate some of the community and environmental insecurity prevalent during the Marcos era. Yet it is equally important to emphasise that many of these changes have come too late. Moreover, considerable problems remain. Widespread corruption, incompetence, and straightforward mismanagement continue, especially in local DENR offices. Decentralisation has also produced some mixed results. In some cases it has even increased insecurity as local élites fought over control and rewards, as local environmental programmes (such as plantations) triggered resistance or violence, and as local NGOs and communities struggled at cross-purposes.

Some changes have also occurred in Sarawak and Indonesia, especially to the content of environmental and forest policies. Both states have increased forest fees, tightened regulations, and launched campaigns to crack down on illegal and destructive loggers. But these changes have had little impact on large, well-connected companies and, overall, there have been few changes to logging rates or harvesting practices. This suggests that as long as valuable timber

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47   Coronel, 'Unnatural Disasters', p.13.

remains, as long as tight state-business alliances exist, and as long as the state overwhelms civil society, state and business leaders are likely to oppose and undermine far-reaching environmental reforms. They are also likely to continue to ignore or resist the evidence that environmental degradation is contributing to community insecurity, even when it leads to violence and protests.

Perhaps the most disturbing finding is that when Indonesia and Malaysia do link security and environmental degradation it is generally done to justify and legitimise campaigns to increase control in outlying regions, not to improve environmental management. In this way, these governments simultaneously employ environmental ideas to increase international legitimacy and suppress internal dissent.[48] This suggests that, although in practical terms it is useful to encourage governments to accept the links between environmental degradation and security and therefore channel funds allocated for security to environmental protection, this task must be pursued with great care to avoid inadvertently bolstering the tools of suppression in the authoritarian and semi-authoritarian states of Southeast Asia.

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[48] A similar pattern is found in Burma. See Raymond Bryant, 'The Greening of Burma: Political Rhetoric or Sustainable Development?', *Pacific Affairs*, Vol.69, Fall 1996, pp.341-59.

CHAPTER 5

ENVIRONMENTAL SECURITY AND THE AUSTRALIAN DEFENCE FORCE

I.R. Finlayson

This chapter will focus on one issue of the new security agenda, that of environmental security. It is within the context of the environmental security debate that the generic issue of Australian Defence Force (ADF) involvement in the enforcement of government policy and law will be examined. To facilitate this examination the following issues will be addressed: defining environmental security; why the ADF should be concerned with environmental security; how the ADF can complement foreign policy in the area of environmental security; and the intellectual challenge posed to the ADF by environmental security.

Defining Environmental Security

Environmental security studies have three main components: the impact of military operations on the environment, environmental degradation and resource depletion as a cause of conflict, and environmental warfare.[1] This paper is concerned with environmental degradation and resource depletion as a cause of conflict. The groupings of political thought within this area of environmental security have been categorised as deep ecology, human security, national security, and rejectionism.[2] Without describing the philosophical basis of each group, it is a reasonable generalisation to argue that the deep ecology and human security groups see a limited role for the defence community in environmental issues. The rejectionists actively argue against making such a linkage, on the grounds that environmental and security issues are incompatible.

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[1] See the categorisation of the field of environmental security put forward by Alan Dupont in chapter 2, above.

[2] See Richard A. Matthew, Environment, Security and Foreign Policy, a paper presented at the Conference on Environmental Change and Regional Security, sponsored by the Asia-Pacific Center for Security Studies, Honolulu, 9-11 June 1997, pp.3-5.

This chapter fits squarely into the remaining group, that concerned with the national security implications of environmental issues. This group is typified by the writings of academics such as Homer-Dixon, Kaplan, Prins, Romm, Renner and military figures such as Zinni, Winnefeld and Harbottle.[3] Simply put, the national security group argues that environmental problems - exacerbated by demographic change - should be considered as a security concern.[4] Matthew is correct when he asserts:

> any society that does not investigate environmental change as part of a network of threats and vulnerabilities relevant to its security is ignoring an increasingly important variable.[5]

The argument for how environmental stress contributes to conflict is expounded by Homer-Dixon in a number of articles.[6] The potential instability and conflict resulting from environmental and population pressures is vividly described in Kaplan's 1994 article, 'The Coming Anarchy'. Kaplan's observations about the future of the state and the nature of war are supported by the eminent military historian and strategic thinker, Martin van Creveld.[7]

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3   For a selection of writings by these authors, see: Thomas Homer-Dixon, 'On the Threshold', *International Security*, Vol.16, No.2, Fall 1991; Robert D. Kaplan, 'The Coming Anarchy', *The Atlantic Monthly*, Vol.273, No.2, February 1994; Gwyn Prins, 'A New Focus for Security Studies' in Desmond Ball and David Horner (eds), *Strategic Studies in a Changing World: Global, Regional and Australian Perspectives* (Strategic and Defence Studies Centre, Research School of Pacific Studies, Australian National University, Canberra, 1992); Joseph J. Romm, *Defining National Security: The Nonmilitary Aspects* (Council on Foreign Relations Press, New York, 1993); Michael Renner, *National Security: The Economic and Environmental Dimensions*, Worldwatch Paper No.89 (Worldwatch Institute, Washington DC, 1989); Anthony Zinni, Luncheon Address, Workshop on International Environment and Security Issues in Professional Military Education and Research (National Defense University, Washington DC, 8 August 1996; James A Winnefeld and Mary E. Morris, *Where Environmental Concerns and Security Strategies Meet* (RAND Corporation, Santa Monica, 1994); Michael Harbottle, *New Roles for the Military: Humanitarian and Environmental Security*, Conflict Studies No.285 (Research Institute for the Study of Conflict and Terrorism, London, 1995).

4   P.J. Simmons, 'Introduction', *Report of the Environmental Change and Security Project*, Issue 1, Spring 1995, p.2.

5   Matthew, Environment, Security and Foreign Policy, p.4.

6   Thomas Homer-Dixon, 'Environmental Change and Violent Conflict', *Scientific America*, Vol.267, February 1993, and 'Environmental Scarcities and Violent Conflict', *International Security*, Vol.19, No.1, Summer 1994.

7   Kaplan relies heavily on van Creveld and his conception of the future nature of conflict as outlined in *The Transformation of War* (Free Press, New York, 1991),

Why Should the ADF be Concerned with Environmental Security?

The emergence of issues associated with the so-called new security agenda, like environmental security, poses a challenge for the ADF. Given limited resources, the ADF is required to carefully assess potential security threats, both old and new. However, the ADF should be concerned with environmental security issues for the following four reasons:

- A range of scientific opinion points to substantial environmental problems in Australia's region within the next few decades.[8] These problems have the potential to promote either regional cooperation or regional conflict.

- Future Australian governments will remain committed to promoting regional stability. Australia will attempt to contain regional environmental security problems through a range of diplomatic, economic and defence initiatives.

- The ADF must be prepared to meet changing community expectations of what constitutes national security. The growing domestic consensus on the importance of environmental issues will create demands for the employment of the ADF in nontraditional roles. Failure to meet these expectations will result in declining support for the ADF.

- As an organisation which attempts to be proactive to its strategic environment, the ADF should consider the intellectual, doctrinal, and organisational implications of environmental security issues, while it has the time to do so.

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especially van Creveld's chapter entitled 'Future War'. On 22 July 1997, in a discussion at the Australian Defence Studies Centre, the author questioned van Creveld on his opinion of the Kaplan scenario. Van Creveld indicated that he felt Kaplan's scenario to be plausible, and consistent with his own vision of the future of warfare and the state.

[8] For a sample of this opinion, see H.C. Brookfield and Yvonne Byron (eds), *Southeast Asia's Environmental Future: The Search for Sustainability* (United Nations University Press, Tokyo and New York, 1993).

How the ADF can Complement Foreign Policy in the Area of Environmental Security

Any ADF response to environmental security issues must be set within the context of government foreign policy. The recently released Department of Foreign Affairs and Trade (DFAT) White Paper has given the new security agenda, and environmental security, a higher profile - especially in the section dealing with global security.[9] DFAT and the ADF will be attempting to shape the strategic environment in which Australia will be moving in the next 15 years. This will be done through a series of bilateral and multilateral diplomatic, economic and defence agreements.

The ADF currently engages in this activity under the existing Defence Cooperation Program, which has a military security orientation. To deal with environmental security threats, the ADF should construct a cooperation programme designed specifically for this issue. The model for this programme could be similar to that undertaken by the US Office of the Deputy Under Secretary of Defence (Environmental Security).[10] Through military-to-military contacts with other forces of the region, the ADF would complement the assistance and advice being provided by other Australian government agencies on how to deal with environmental degradation and depletion. The aim of the programme would be to defuse the conflict potential of environmental issues.

The ADF is already party to a trilateral Environmental Security Cooperation Agreement with the United States and Canada. The ADF could use the existing trilateral forum to advance regional military-to-military contacts on environmental security issues, or develop its own programme. However there are a number of diplomatic and economic benefits for Australia in the ADF promoting its own programme.

At the operational level the ADF could engage in a range of environmental security missions, such as: ADF participation in multinational operations for the protection of the international environment; ADF participation in peace-support operations for

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9   Department of Foreign Affairs and Trade (DFAT), *In the National Interest: Australia's Foreign and Trade Policy*, White Paper (DFAT, Canberra, 1997), especially paras 34, 54, 65 and 89.

10   For an explanation of the US programme, see Gary Vest, 'DOD International Environmental Activities', *Federal Facilities Environmental Journal*, Spring 1997.

environmentally 'failed' states; ADF enforcement of Australian environmental protection laws; ADF participation in environmental disaster relief; and ADF proactive environmental defence.

Space prohibits any detailed explanation of these missions, although the titles give some indication as to their intent. Some aspects of the environmental security missions may involve the ADF being employed in what could be regarded as non-traditional roles. In many areas the ADF is already performing these tasks. The Pacific Patrol Boat Program is a good example of protective environmental defence.[11] The programme has given the island nations of the South Pacific the ability to protect their fish stocks from unregulated trawling. This helps secure the economic base of these countries, and significantly reduces the possibility that at some future date the ADF would have to react to the security consequences of a South Pacific devoid of marine resources.

The Intellectual Challenge Posed to the ADF by Environmental Security

The ADF possess a range of generic capabilities which can be employed in a multitude of tasks. Indeed, the majority of tasks required from the ADF under the new security agenda can be carried out within existing capabilities. However, the acceptance of issues like environmental security as legitimate missions does require a degree of intellectual flexibility from the ADF, a change in philosophy as to what constitutes 'real soldiering'.[12]

The post-Cold War period has instigated a vigorous debate centring on 'traditional' versus 'non-traditional' military roles and missions. There is evolving agreement that the term 'non-combat' is better than 'non-traditional', because many military forces have engaged in 'non-traditional' roles in the past. The discussion does not

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11 For an examination of the Pacific Patrol Boat project see Anthony Bergin, *The Pacific Patrol Boat Project: A Case Study of Australian Defence Cooperation* (Department of International Relations, Research School of Pacific and Asian Studies, Australian National University, Canberra, rev. edn 1994).

12 For a discussion of this issue, see Harbottle, *New Roles for the Military*.

centre on what is, or is not, a traditional military role, but on whether military forces should perform non-combat missions.[13]

There are a range of arguments for and against this proposition. The central argument against using armed forces for non-combat missions is that they are 'organised, staffed, equipped and trained for fighting in combat operations, and any diversion of purpose to non-combat missions is undesirable'.[14] Undesirable, because it will lead to a reduction in combat efficiency. The argument for using armed forces in non-combat roles is centred on the fact that they are paid for and already in existence. Non-combat roles 'are in effect an unprogrammed workload'.[15] The evidence that such roles will lead to a long-term degradation of combat efficiency is, at best, inconclusive.[16]

For the ADF, the relevance of this debate is fundamental. Australia now requires an ADF which can cater for both combat and non-combat roles. The notion that non-combat roles do not constitute 'real soldiering' is no longer acceptable - because it is not relevant to the new security interests of the Australian community. The ADF is clearly a national resource, and should be employed as such. Regarding the ADF as a national resource as well as a warfighting organisation has a number of implications. This chapter will just touch on a few of these implications relating to doctrine, force structure, and command and control.

Doctrinal Implications

One of the fundamental beliefs surrounding non-combat operations, or military operations other than war (MOOTW), is the

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13   S. Cropsey and J.R. Brinkerhoff, 'Supporting the Civil Authorities at Home and Abroad' in James R. Graham (ed.), *Non-Combat Roles for the U.S. Military in the Post-Cold War Era* (National Defense University Press, Washington DC, 1993), p.90.
14   ibid.
15   ibid., p.91.
16   See L.L. Miller, 'Do Soldiers Hate Peacekeeping? The Case of Preventive Diplomacy Operations in Macedonia', *Armed Forces and Society*, Vol.23, No.3, Spring 1997, p.447: '... as for the impact of peacekeeping operations on readiness, the benefits and detriments to troops may vary by MOS, rank, and the level of training. Many soldiers believe that any deployment is better than none for training combat troops. They do not believe that training to restore combat skills takes a prohibitive amount of time'.

notion that they are less demanding than war. Given the complexities of such operations in the information age, it can be argued with some conviction that 'warfare is not necessarily a worst case anomaly that necessitates radically different doctrine than that required for peace operations, disaster relief, or humanitarian assistance operations'.[17] While the fundamental principles for conducting one are applicable to the other, there are differences.[18] New security agenda issues can be politically driven to a greater degree than warfighting objectives. They do not necessarily follow a logical sequence of tasks and objectives.[19] For an intellectual culture like the ADF, where the deductive logic of the appreciation process is enshrined, this represents particular dangers, usually leading to 'mission creep'.

The environmental security mission, like many others, will require the ADF to apply great discrimination in the use of force. The ADF will have to be capable of successful operations across a spectrum of conflicts and threats ranging from disaster relief to high-intensity conflict. In order to operate effectively on this spectrum, the ADF will have to have the ability to deploy the appropriate level of force.[20] The concept of a graduated response and an appropriate use of force is not new to the ADF, but under the wider range of scenarios of the new security agenda it has become far more relevant.

Force Structure Implications

If missions such as environmental security become accepted as 'core' ADF activities, there will be some longer term force structure implications. The new security agenda necessitates that the ADF adapt its organisation 'away from the relative certainty about the military's missions and the soldiers' tasks, to uncertainty about both'.[21] Two examples may suffice. First, in a range of environmental security

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17   R.J. Rinaldo, 'Warfighting and Peace Ops: Do Real Soldiers Do MOOTW?', *Joint Force Quarterly*, Winter 1996-97, p.112.

18   ibid., p.114.

19   See Jennifer Morrison Taw and John E. Peters, *Operations Other Than War: Implications for the U.S. Army* (RAND Corporation, Santa Monica, 1995), p.xi.

20   The concept is well explained by Zinni and Ohls as 'conflict intensity continuum' and 'force continuum'. See Anthony Zinni and Gary Ohls, 'No Premium on Killing', US Naval Institute *Proceedings*, Vol.122/12/1,126, December 1996.

21   F. Battistelli, 'Peacekeeping and the Postmodern Soldier', *Armed Forces and Society*, Vol.23, No.3, Spring 1997, p.468.

missions traditional 'tooth-to-tail' ratios may be inadequate. More combat support units may be required, especially in 'failed state' scenarios where local infrastructure has collapsed, and combat support units are required to support the ADF as well as the local population. Second, the ADF may have to contract in a range of skills that it may require for a particular mission. This is especially true if these skills are expensive to maintain and only required on an intermittent basis. Over the longer term some non-governmental or semi-governmental organisations may well become 'de facto' elements of the ADF.

Implications for Command and Control

Multifaceted problems posed by environmental security threats will require multifaceted solutions. Inter-agency task forces will become the norm rather than the exception. As noted above, the ADF will have to work in close cooperation with an increasing number of governmental, semi-governmental, and non-governmental organisations (NGOs). The command and control implications of joint military/civilian task forces are already emerging under the Commercial Support Program (CSP).[22]

CSP considerations also highlight the important question of whether it is more cost-effective to use non-governmental or semi-governmental organisations to undertake non-combat tasks. The answer to this question has two components, one economic and one political. In the majority of circumstances, the ADF will not be able to perform non-combat functions in a more cost-effective manner than its civilian counterparts, especially over the longer term. However, the inherent cost advantages of NGOs should be tempered by ADF advantages in response capabilities. Determination of cost-effectiveness is a value-laden process. Any cost comparison used in selecting NGOs over ADF units for non-combat missions must involve decision makers in a number of value judgements. These judgements will involve risk analysis, of both a commercial and a political nature, and will provide ample opportunity for decision makers to display their preferences.

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22 For the intellectual foundations of the Commercial Support Program, see Alan K. Wrigley, *The Defence Force and the Community: A Partnership in Australia's Defence* (Australian Government Publishing Service, Canberra, 1990), chapter 8.

The political argument in favour of using military forces in non-combat missions ignores cost-effectiveness. This argument rests on the simple proposition that it make little political sense for military forces to sit on the sidelines, preparing for a war which may not happen, while civilian agencies are unable to cope with the emergencies at hand.[23] As the problems of the new security agenda emerge, the political attractiveness of this position will increase.

Conclusions

What can be deduced from the environmental security threat which is relevant to future ADF involvement? There are three basic conclusions:

- That the post-Cold War security agenda is different from that of the Cold War. It follows that the ADF needs to cater for this new agenda, especially in the face of changing community expectations as to what constitutes security.

- The new security agenda offers the ADF the opportunity to complement Australian foreign policy by a combination of strategic and operational-level initiatives.

- The primary challenge the new security agenda poses to the ADF is an intellectual one. The ADF should re-examine what it considers to be its core roles and capabilities, and conceptualise how it will adapt to a future where non-combat roles will be increasingly required.

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23   Cropsey and Brinkerhoff, 'Supporting the Civil Authorities at Home and Abroad', p.93.

CHAPTER 6

THE FOREIGN POLICY IMPLICATIONS OF ENVIRONMENTAL SECURITY

Stuart Harris

The preceding chapters have made it clear, if that were needed, that environmental change has security implications. I accept that it is an aspect of the broad context of security. By that I mean the protection of society and its core values, or the ability to maintain independent identity and functional integrity. To maintain those features of modern societies involves not just the achievement of military security, but also political, economic and environmental security. So I accept the general proposition that has been argued about the security implications of environmental change.

Coming to grips with what environmental security means, however, recalls for me the difficulties we had, some years ago, in defining 'ecologically sustainable development', something that is similarly true of other policy areas such as occupational health and safety, justice, equity or indeed military security itself. Analogously with these other examples, it is easier to define a lack of environmental security than to define it when it is present.

Environmental security encompasses the maintenance of the local and the global biosphere as the essential support system on which all human enterprises depend. In considering environmental security, it is useful to distinguish between natural resource issues and environmental wastes. They obviously overlap, particularly in the case of forests and oceans. But the biosphere as a receptacle for human wastes - greenhouse gases, ozone depletion or the ocean dumping of hazardous wastes - has become the more complex part of the environmental problem and, if the more pessimistic prognostications are right, a greater threat to our security as broadly defined. I shall come back to that later.

Natural resource issues can in practice be highly complex, as has been observed in this forum, and can give rise to major disputes.

Yet natural resource conflicts have been with us for much of history, whether over salt, water, in more recent centuries - fish, and even more recently - oil. In principle, such disputes and the conflicts that at times emerge from them are a subset of the material or economic bases for war in the past. Wars have often been fought over territory, whether for the land itself or for the resources, including people, that have gone with territory. While oil can still be cause for war between nations, as the Gulf War reminded us, it is not usually included in the discussion of environmental security. Other natural resource disputes tend to become important in contexts in which relations between the countries concerned are already strained.

My reason for raising these issues is to question whether the wide-ranging nature of the definition of security helps in looking at the instrumental question of what we do about resolving environmental issues, and how we address them in foreign policy terms. What do we do when we see the local environment or the global biosphere under threat? Since I am concerned here with the foreign policy implications of environmental security, I shall talk about national as distinct from regional or personal security, although both are clearly linked to national security. Moreover, I shall not discuss specifically each of the issues that were raised in earlier chapters.

When we look at national environmental security, it is hard to generalise across these issues for various reasons. On the issues we have been discussing in this forum, the environmental impacts arise primarily from human actions of an economic kind; in most cases the threat we are talking about comes as an unintended consequence of human actions. Very few countries can influence, let alone control, the source of those internationally significant threats individually. On these issues, the need is for collective action - collective security if you like - but in achieving that the issue of costs and benefits at the national level becomes critical, as the greenhouse debate indicates very clearly.

More generally, as well as the impacts of unintended outcomes, there is scope for intended human actions in the sense of environmental warfare, whether the United States' use of herbicides in Vietnam, chemical and biological warfare more broadly, North Korea's dam on its border with the South, or land mines. They each need different solutions and mostly in a context related to other military

security measures. These, however, are not the issues usually meant when discussing environmental security.

So how do we handle, in foreign policy terms, environmental security as we have discussed it in this forum? It partly depends on the issue, and I need to briefly outline how foreign policy deals with the different forms of environmental problem in a context in which concerns about security could arise. The term environment covers a wide range of different ideas and in the international context the particular nature of the issue largely determines the approach needed. We need therefore to start by looking at the differences in environmental problems.

There are relatively few truly global environmental issues. By global, I mean requiring a global regime for their management. This is distinct from issues such as desertification or land degradation that are global in their incidence but for which solutions are related to what happens in individual countries. At most, their international consequences affect one or a few bordering countries. I mentioned earlier climate change, the ozone layer, and the dumping of hazardous wastes in the ocean as fitting into the truly global category. Some aspects of wildlife protection - whales, perhaps elephants - can also fit into this category.

We did not talk much about biodiversity. The aim of preserving biodiversity has given rise to international agreements about the need for action largely in individual countries. Among other things, this raises questions of benefits from the externalities to which preservation gives rise being largely gained by the rich countries but the costs being mainly met by poor countries — with in consequence the likelihood of success being small. For the most part, however, these issues are unlikely to affect the security of nations as I defined it earlier, nor are those environmental problems that are dealt with under the rubric of trade and environment issues.

With respect to natural resources, problems almost invariably arise in regional or commodity-specific contexts. I accept that water issues are perhaps more problematic than some of the others, but even so we have had experience of dealing with them in the past. So too are fishery issues, and they can be a concern because of the implications of the disputes they cause. We have had some experience in developing

the collective management regimes and the assignment of property rights that we need to handle these issues, provided the will to achieve international cooperation exists. It is of course true that they require a degree of international cooperation which, since that will is often absent, we have difficulty in achieving.

My point is that it is important, when talking about the foreign policy implications of environmental issues, to keep those separate issues distinct in our minds, because the end solutions are in fact separate and distinct. So let me return to the question I asked earlier and ask whether it helps on any of these issues to refer to them as environmental security issues. On balance I would say not. This is not to deny that if, for example, there is a conflict over water then it could create a security concern for the countries concerned. The question is whether in dealing with such environmental questions there is a difference between that and other strategic, political or economic issues leading to bilateral conflicts.

First, of course, to come back to the question that has been the basis of the discussion: what is the security concern? These differ from country to country. Let me consider the Australian situation for a moment. In Australia, there are still uncertainties about the magnitude of environmental problems that will impact on Australia. These fall largely in the global class, since Australia has the advantage of being an island, or at least a large island (Tuvalu or the Maldives might think differently about the value of island status). Australia is largely protected from bilateral or regional environmental spillovers from its neighbours. The Pacific islands, however, see the potential rise in sea levels as an environmental security threat. Australia's limited support for action on global climate change has foreign policy implications, particularly in its relations with these states, but in ways little different from differences in policies in other contexts.

In the bilateral sense of environmental spillovers from neighbours, Australia is reasonably secure for the reasons I have given, both in terms of environmental impacts and external sources - although the possibility of nuclear accidents in Indonesia might be a risk in the future. There may be bigger problems, such as major flows of environmental refugees. For example, a response to environmental impacts in a country such as Bangladesh, potentially threatened by a significant increase in sea levels, could be a cause of major political and

social problems in a recipient country such as Australia. If large enough movements of environmental refugees occurred, they would create major social divisions in a way that could be completely disruptive. It is hard to define that in environmental security terms in the recipient country's case, although it could be defined in those terms in Bangladesh.

Regionally, there are environmental uncertainties and security concerns that affect others in the region. These are often associated with ocean pollution, of particular interest to Pacific countries; with water supplies, as in Indochina; or airborne industrial pollution, in Northeast Asia. In each case, the issues can be addressed in various forms of normal diplomatic processes. For example, Japan feels threatened by acid rain from China, so it works with China diplomatically and in the provision of aid to reduce the environmental risk. In this case, the aid is as much to benefit Japan as to benefit China.

At the global level, there are concerns for Australia in security and in environmental terms: an example is the proliferation of weapons of mass destruction. In the cases of the ozone layer, global climate change and the dumping of hazardous wastes, there are major actual or potential impacts on Australia and on most other countries. We have a number of multilateral institutions coming out of the Rio Earth Summit. These include Agenda 21, the Committee on Sustainable Development, and the Framework Convention on Climate Change, as well as a number of other multilateral agreements on a range of issues, from ocean dumping of wastes and disposal of hazardous wastes, to the use of nuclear power in space.

We have a relatively successful agreement on the ozone layer and we are seeking one on the problem of global climate change. Both are involved not only in the reduction of wastes, greenhouse gases (GHGs) or chlorofluorocarbons (CFCs), but also in sharing the global capacity to absorb the related wastes. The ozone agreement was relatively simple, since the distributive issues were relatively limited - this is not the case with GHGs. How to create a diplomatic process that will achieve a distributive process that is efficient and equitable, when others have greatly different ideas on that subject, is what the climate change negotiations are all about and part of what we have in mind when considering the foreign policy implications.

There are also a large number of regional or bilateral agreements. Regionally, the protection of the oceans, in particular, has a high regional priority and has gone up the agenda in organisations such as the Pacific Economic Cooperation Conference (PECC)/the Asia Pacific Economic Cooperation (APEC) forum as well as, in the Pacific, with the South Pacific Regional Environment Programme, and governments are responding at least in rhetorical terms. Bilaterally, some of Australia's aid to Pacific island countries and some Southeast Asian countries supports environmental improvements with the same underlying logic as with other aid programmes.

Much has been achieved in the international environment field. A lot of the traditional 'end-of-pipe' issues have been met at least partially and, at times, quite successfully. Even Australia has put an environmental deviant in jail, although the United States had done it much earlier. There are very rigourous environmental regulations in place in most countries and some of them actually implement them. Despite this, if the situation is getting worse (as Lorraine Elliott suggested, probably correctly), the question is why this is happening. Certainly, much of Australia's international policy until relatively recently, and perhaps still in some notable examples, is a declaratory policy rather than a substantive policy, something that remains true of most countries.

The degree of double standards and hypocrisy in the environmental field, notably from our European colleagues, probably exceeds even that in the economic and political fields. In many cases, and particularly in the case of climate change, the questions of costs and benefits become important determinants of political actions.

Some years ago, I looked at various environmental problems, and the attempts to get governments to address them. I concluded from that study that a range of criteria seems to be important. It includes the following: the threats need to be clear and certain; the causes need to be apparent; the costs being imposed need to be significant for the country concerned; and there need to be technological alternatives available at reasonable cost. Ideology about the role of market forces may also be important in some cases. These conclusions seemed to explain why government movement on big environmental issues is a long and slow process. These political difficulties, and particularly the distributive implications both of

environmental impacts and of measures to deal with them, tend to be underestimated.

In the case of climate change, even if we accept the larger estimates of potential costs, this would still not in itself be a massive burden were it to be shared evenly across the whole of the community. Without compensatory offsetting, the major costs would, in practice, be borne by a few particular regions, and by particular groups within those regions. Hence the strong domestic opposition from those potentially affected. Moreover, as we come to know more about the distribution of the costs and benefits not only within a country but across countries — some countries may expect to benefit - it will become harder to reach an international consensus.

In summary let me make four points. A senior British environmentalist gave a talk to the mining industry in Canberra some 20 or so years ago. He started by saying there is no environment problem. Before the relief around the hall became too evident, he continued that there was, however, a major political problem. This is undoubtedly a better perspective from which to address the issues rather than the common assumption that these are scientific or technical issues needing scientific or technical solutions. Humans create the problem and human action is needed to solve the political problems in resolving them.

Second, while acknowledging that there will be disputes arising from time to time in respect of the environment, these will normally only become conflictual if relations between the countries involved are not good. Diplomacy tends to seek cooperation in resolving such disputes and in working towards international agreements and international law, rather than seeing the issues in terms of potentiality for conflict.

Third, we try to look for such cooperation directly in global and regional organisations, and in bilateral diplomacy, and very often we move very slowly for reasons discussed at length in this book. This can be helped by the discriminatory use of aid but with the cautions urged on us by Peter Dauvergne in his chapter.

Finally, while environmental change has security implications, my reason for not seeing the environment as a security issue in the foreign policy context is that doing so tends to carry unneeded

intellectual baggage about what to do about it. In foreign policy terms, most such problems will continue to be addressed through traditional diplomatic rather than traditional security processes.

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