CLIMATE CHANGE, MIGRATION AND HUMAN SECURITY IN SOUTHEAST ASIA

RSIS Monograph No. 24

Editor
Lorraine Elliott

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PREFACE

The proposition that climate change will or could generate international security concerns has become prominent in public discourse over the last few years. Various think tanks, government agencies and non-governmental organisations have produced reports on climate change, conflict and national security in which they argue not only that a substantial proportion of humanity could be "on the move" as a result of climate change but that migration could be a major factor in the chain of events that link climate change to violent conflict. Yet much of that literature remains poorly informed by research on the demographics of migration and the kinds of choices that people and communities make about mobility. Nor does it pay sufficient attention to the human insecurities that can result from climate change and, when it does occur, migration both within states and across borders as a result of the impacts of climate change.

The chapters in this edited volume seek to overcome some of those limitations. They were first presented at a study group meeting on climate change, migration and human security in Southeast Asia, held in Singapore in May 2011. The meeting was hosted by the Centre for Non-Traditional Security (NTS) Studies in the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University (NTU) as part of the Cluster 3 project on climate security and human security funded by the MacArthur Foundation under its Asia Security Initiative (MASI). That event, as with others convened under this cluster, brought together scholars and policy practitioners from a range of backgrounds and experiences within the field of climate change. Copies of the original presentations can be found at http://www.rsis.edu.sg/nts/article.asp?id=191&prev=Event&pyear=2011. The chapters included in this volume reflect insights from international relations, international law, demography, public policy, geography, environmental studies and climate science. They investigate the broader regional context as well as provide insights into and reflections on specific case studies.

This work on climate change and migration was the final theme in the three-year MASI programme. Earlier themes focused on climate change, human security and social resilience (year 1) and climate change, human security and food security (year 2). A full list of publications from this three-year research programme can be found at the end of this volume.

A number of colleagues have supported the production of this volume and the project as a whole. Associate Professor Mely Caballero-Anthony, who has been indefatigable in building the RSIS Centre for NTS Studies, has led this project from the beginning and I am delighted to have had the opportunity to work with her as Visiting Senior Fellow, co-lead researcher and more recently advisor to this project. Thanks are also due to Julie Balen, Belinda Chng, Alistair Cook, Ralf Emmers, J. Jackson Ewing, P. K. Hangzo, Mary-Louise Hickey, Sofiah Jamil, Irene Kuntjoro, Cheryl Lim, Devin Maeztri, Josephine Ng and Ong Suet Yen.

Professor Lorraine Elliott
Canberra, April 2012

CHAPTER 1

HUMAN SECURITY, CLIMATE CHANGE AND MIGRATION IN SOUTHEAST ASIA

Lorraine Elliott

Introduction

The proposition that climate change will or could generate international security concerns has become prominent in public discourse over the last few years. Various think tanks, government agencies and non-governmental organisations (NGOs) have produced reports on climate change, conflict and national security in which they argue that migration could be a major factor in the chain of events that link climate change to violent conflict. Popular discourse has accepted the concept of "climate refugees", although the term remains controversial in academic and policy circles. The usual objection is that it risks undermining the legal meaning of "refugee" in the United Nations Convention Relating to the Status of Refugees. The International Organization for Migration (IOM) prefers the term "environmentally induced migrants", defined as "persons or groups of persons who, for compelling reasons of sudden or progressive changes in the environment that adversely affect their lives or living conditions, are obliged to leave their habitual homes, or choose to do so, either temporarily or permanently, and who move either within their country or abroad".[1]

Given Southeast Asia's vulnerability to climate change, climate change-induced migration is an important environmental, social and political challenge for the region's peoples and governments. The ques-

1 International Organization for Migration (IOM), "Discussion Note: Migration and the Environment", 94th session, MC/INF/288, 1 November 2007, pp. 1–2.

tion is whether this is also a security issue and, if so, for whom? This chapter starts with an overview of the securitisation of climate change and migration—the speech acts by which actors make authoritative claims about the connection between climate change, migration and insecurity. It then explores how climate change and migration have been securitised in Southeast Asia, both from without and from within. It goes on to suggest that a human security approach will, by shifting the discourse from migration to migrants, enhance efforts to ensure the security of those who are most vulnerable to the impacts of climate change.

Climate Change and Migration: Security from What?

As part of a move to examine security in what are usually referred to as "non-traditional" terms, "environmental security" and, more recently, "climate security", seemed to offer new answers to the questions of security "for whom" and "from what". The background to this broadening and deepening of what it means to be secure, and what might constitute a threat, is well known and need only detain us briefly here. The context was the political changes that accompanied the winding-down and then the end of the Cold War, and the growing impact of globalisation in its economic, political, social and environmental manifestations. In the face of asymmetric and networked non-state threats, intra-state conflict and state failure, and extremes of wealth, poverty and disadvantage, academics and policymakers alike were impelled to re-examine what it meant to be secure. Security came to be defined variously as protection against existential threats, freedom from fear and harm, and human survival.

Against this backdrop, governments, international organisations and NGOs directed their attention to climate change as a security issue and a likely source of conflict, presenting climate change as a threat multiplier that would overstretch societies' adaptive capacities and create or exacerbate political instability and violence. This reasoning is an updated version of predictions made by scholars in the late 1980s and early 1990s that environmental degradation could contribute to instability, the "disruption of legitimised and authoritative social relations"[2] and "civil turmoil and

2 T. F. Homer-Dixon, "On the Threshold: Environmental Changes as Causes of Acute Conflict", *International Security*, Vol. 16, No. 2 (1991), p. 78.

outright violence".[3] In the more extreme versions of this argument, the stresses associated with climate change, including migration, have come to be implicated in political radicalisation, extremism and "conditions that will extend the war on terror".[4]

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) suggests that, in some parts of the world, climate-related disruptions of human populations are likely both within states and across national borders, with sudden sharp spikes in rural to urban migration in some countries, and the exacerbation of shortfalls in food production, rural poverty and urban unrest in others.[5] The category of "environmental migrant"—those who "choose, or are forced, to migrate as a result of damaging environmental and climatic factors"[6]—has considerable conceptual and demographic reach. It includes sudden-onset migration of the kind that occurs in the face of environmental disasters; and slow-onset migration, where uneven patterns of people movements arise over time as a result of land degradation, deterioration of coastal ecosystems or loss of river vitality. This latter category encompasses those whose move is permanent and those—more likely—who engage in seasonal and adaptation migration that are cyclical and temporary.

In the face of United Nations projections of millions of environmental migrants by 2010,[7] the consequences of climate change-induced migration pressures have featured prominently as a key security risk and as a trigger for instability, conflict and violence.[8] While "the causal

3 N. Myers, "Environment and Security", *Foreign Policy*, No. 74, Spring (1989), p. 24.

4 CNA Corporation, *National Security and the Threat of Climate Change* (Alexandria, VA: CNA Corporation, 2007), p. 17.

5 R. V. Cruz et al., "Asia", in M. L. Parry et al. (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007), p. 488.

6 A. Morton, P. Boncour & F. Laczko, "Human Security Policy Challenges", *Forced Migration Review*, No. 31 (2008), p. 5.

7 United Nations General Assembly, "Statement by the President of the 62nd Session of the United Nations General Assembly at the Thematic Debate on Climate Change and the Most Vulnerable Countries", New York, 8 July 2008, http://www.un.org/ga/president/62/statements/ccvulc080708.shtml (accessed 31 December 2011).

8 High Representative and the European Commission (HREC), "Climate Change and International Security, Paper to the European Council", S113/08, 14 March 2008, p. 4.

chains … have so far rarely been substantiated with reliable evidence",[9] the analysis is reasonably uniform: climate change-induced migration is highly probable, the numbers involved will be in the millions, and this will almost certainly result in, or at the very least be implicated in, some form of social conflict and instability.

The argument in much of this literature is that climate change-induced migration will result in tensions between those displaced within their own country and the communities into which they move, as well as between so-called climate "refugees" (those who cross an international border) and receiving states. The pathways for social unrest and violence are usually presented in terms of competition for scarce resources or economic support (or jobs); increased demands on social infrastructure; cultural differences based on ethnicity or nationality; and "the fearful reactions it [migration] often receives and the inflammatory politics that often greet it".[10] In a conspicuously Malthusian approach, Rafael Reuveny[11] identifies competition, ethnic tension, distrust and existing socioeconomic fault lines as key channels through which climate change-induced migration can be linked to conflict. Internal and cross-border climate migration is assumed to be more likely to result in social unrest, conflict and instability when it occurs in countries or regions that are already facing (or have recently faced) other forms of social instability, that possess limited social and economic capacity to adapt, and, from a human security perspective, where migrants have inadequate "social support mechanisms or [in]sufficient resources to assimilate or establish stable communities".[12]

Two particular dimensions of the ways in which climate migration has been made a security issue are notable. The first relates to the rhetorical or discursive devices that are used by some actors in articulating their

9 R. Nordås & N. P. Gleditsch, "Climate Change and Conflict", *Political Geography*, Vol. 26, No. 6 (2007), p. 627.

10 D. Smith & J. Vivekananda, "A Climate of Conflict: The Links between Climate Change, Peace and War" (London: International Alert, 2007), p. 3.

11 R. Reuveny, "Climate Change-Induced Migration and Violent Conflict", *Political Geography*, Vol. 26, No. 6 (2007), p. 659.

12 B. L. Preston et al., *Climate Change in the Asia/Pacific Region: A Consultancy Report Prepared for the Climate Change and Development Roundtable* (Aspendale: Commonwealth Scientific and Industrial Research Organisation (CSIRO), 2006), p. 49.

security claims. While slow-induced migration is the more likely outcome in the context of climate change,[13] the language—the speech acts of security—in the climate security and climate migration literature conjures up the image of processes that are likely to be out of control and therefore highly threatening. Kurt Campbell et al., for instance, worry about "massive migrations … potentially involving hundreds of millions of people … perhaps billions of people" and "a significant portion of humanity on the move".[14] They suggest that "uncontrolled migration" would be "more likely to overwhelm the traditional instruments of national security (the military in particular) and other elements of state power and authority".[15] In their report on climate change and international security, the High Representative and European Commission refer to a "vicious circle of degradation, migration and conflicts".[16]

Second, the dangers and threats associated with climate change-induced migration are often articulated in terms of the possible detrimental impacts on the security interests of the United States, Europe and others. One of the key findings of a report by CNA, a US-based research and analysis organisation, was that the predicted effects of climate change "have the potential to disrupt *our* way of life and to force changes in the way *we* keep ourselves safe and secure by adding a new hostile and stressing factor into the national and international security environment" (emphases added).[17] The Europeans have worried that "migratory pressure at the European Union's borders and political instability and conflicts could increase in the future".[18] The UK Ministry of Defence anticipated that "resulting risks to near neighbours" of climate-related mass migration, humanitarian crises, international crime and, poten-

13 F. Gemenne, "Climate Change and Forced Displacement: Towards a Global Environmental Responsibility?", Paper presented at the annual meeting of the International Studies Association, San Diego, California, USA, 22 March 2006), p. 3.

14 K. M. Campbell et al. (Eds.), *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change* (Washington, D.C.: Center for Strategic and International Studies (CSIS) and Center for a New American Security, 2007), p. 8.

15 Ibid., p. 10.

16 HREC, "Climate Change and International Security", p. 4.

17 CNA Corporation, *National Security and the Threat of Climate Change*, p. 44.

18 HREC, "Climate Change and International Security", p. 6.

tially, international terrorism, "will demand wide-ranging defence and security responses"[19]—the "from us" is silent but pronounced. Indeed, many reports draw attention to likely increased demands on the military capacity of the richer countries. The Oxford Research Group, for instance, worried about knee-jerk reactions that would be unsuccessful in the long run but also raised the likelihood that "the protection of national and maritime borders and the detention of illegal immigrants is likely to become an increasing priority" for agencies such as police, customs and (where relevant) the coastguards.[20]

Securitising Climate Change Migration in Southeast Asia: Security for Whom?

Other chapters in this volume provide further information about the ways in which climate change could affect existing patterns of migration or create new ones in Southeast Asia. This region is often perceived in the climate security literature as a hot spot for climate change-induced migration, in part because it is already "migration active", with increasing internal mobility and cross-border migration, much of it absorbed within the region.[21] A report prepared for the US National Intelligence Council, for example (which comes with the disclaimer that it does not represent US government views) anticipates both internal and cross-border migrations. It foreshadows "large-scale migration from rural and coastal areas into cities" (identifying Viet Nam as the country most in need of resettlement planning on this count) and suggests that this form of internal displacement will "increase friction between diverse social groups already under stress from climate change".[22] The report also anticipates that "climate change may drive cross-border movements of

19 UK Ministry of Defence, *Global Strategic Trends 2007–2036, 3rd Edition* (Swindon: Ministry of Defence, Development Concepts and Doctrine Centre, 2007), p. 54.

20 C. Abbott, *An Uncertain Future: Law Enforcement, National Security and Climate Change*, Briefing paper (London: Oxford Research Group, 2008), p. 9.

21 J. Ducanes & M. Abella, *The Future of International Migration to OECD Countries: Regional Note – China and South East Asia* (Paris: Organisation for Economic Co-operation and Development (OECD), 2009), p. 1.

22 CENTRA Technology, Inc., & Scitor Corporation, *Southeast Asia: The Impact of Climate Change to 2030: Geopolitical Implications*, CR 2010-02, conference report (Washington, D.C.: National Intelligence Council, 2010), p. 4.

Vietnamese and Indonesians to Malaysia, Cambodians and Laotians to Thailand, Burmese to Thailand and Malaysia, and Filipinos throughout the region."[23] While this analysis recognises the humanitarian consequences that could arise from the impacts of climate change on the rural poor, on women, and on groups that are already marginalised, its focus remains the "destabilising impacts" of climate change-induced migration.[24] The Asian Development Bank (ADB) has also contributed to this analysis, with studies that identify so-called climate change migration hot spots in coastal and delta regions, and in large urban conurbations, in Indonesia, Thailand, Cambodia and Viet Nam.[25]

The security challenges associated with climate change have only recently become prominent in regional discussions, predominantly under the auspices of the ASEAN Regional Forum (ARF). The 2008 ARF Defence Officials' Dialogue identified climate change as a threat multiplier that was part of an increasingly broad threat spectrum. Defence officials expressed anxiety about the financial implications of the requirement for "new capabilities to address these non-traditional threats".[26] The 2009 Dialogue included climate change in its discussions on a new security paradigm for the Asia-Pacific, a theme picked up at the Sixth ARF Security Policy Conference that same year. ARF defence officials were clear that the military would play a significant role in meeting non-traditional threats and would need to "continuously prepare itself for the extended missions".[27] Climate change has also featured in the exchange of views on non-traditional security issues at meetings of the ARF's Inter-Sessional Support Group on Confidence Building Measures and Preventive Diplomacy.

ARF member states came to view the nexus between climate change

23 Ibid., p. 4

24 Ibid., p. 27.

25 In each case, the impacts of climate change on migration are likely to be intimately linked to existing patterns of migration and mobility.

26 ASEAN Regional Forum (ARF), "Co-chairs' Summary Report of the ARF Defence Officials' Dialogue, Ottawa, Canada, 2 April 2008", Reproduced in *ASEAN Regional Forum Documents Series 2006–2009* (Jakarta: ASEAN Secretariat, 2010), p. 197.

27 ASEAN Regional Forum (ARF), "Report of the ARF Defence Officials' Dialogue, Phuket, Thailand, 18 May 2009", Reproduced in *ASEAN Regional Forum Documents Series 2006–2009*, p. 335.

and security as important enough to warrant convening two special seminars, one in Phnom Penh in March 2009 and another in Brussels in November 2010. In a statement made on behalf of the ARF to the IOM's 2011 workshop on Climate Change, Environmental Degradation and Migration, Philippine Ambassador Enrique Manalo reported general agreement among ARF member states that forced migration was among the trans-boundary threats presented by climate change.[28] The Ambassador's statement was explicit in identifying climate change-induced migration as an issue of human security, going so far as to suggest that "the military's perspective must be shifted from traditional security to non-traditional security when dealing with these challenges".[29]

A human security model, which takes people (or peoples) as the referent object, questions the taken-for-granted assumptions and analyses within the policy community about climate change, migration, threat and (in)security. This approach views forced migration from unsustainable or uninhabitable lands as a potential source of insecurity for the migrants themselves, thus challenging the representation of "climate refugees" or "climate migrants" as a potential source of pressure on, or threat to, states. Migration can also generate other human insecurities, including loss of income and social capital, disruption to traditional coping mechanisms, and increased vulnerability for already marginalised groups, including the poor, women and children.

Migration is not the only strategy for responding to climate change. People may choose to stay in their communities and try to adapt to the impacts of climate change. They may also choose to stay, accept the costs of climate change and do nothing.[30] Those who do move are more likely to go where there are already family or other community groups—and thus some degree of social capital. Migration also often involves temporary movements, with people eventually returning to their point of departure. These patterns challenge the image of millions of people on

28 E. A. Manalo, "Results of the 'ASEAN Regional Forum: Security Implications of Climate Change'", Statement to the International Organization for Migration workshop on Climate Change, Environmental Degradation and Migration, Geneva, 30 March 2011, p. 3.

29 Ibid., pp. 3–4.

30 For an examination of the conditions under which people may or may not migrate in response to climate change, see, for example, Reuveny, "Climate Change-Induced Migration and Violent Conflict".

the move, driven to desperate and undirected choices by the impacts of climate change. From a security perspective, these patterns of migration need not be a destabilising factor. As the NGO International Alert points out, it is not "the process, but the context and the political response to immigration that shape the risks of violent conflict".[31] That context, as William Clark notes, is "immensely broad and complex and includes patterns of land distribution, family and community structure, and economic and legal incentives, including systems of property rights".[32] Therefore, we need to explore and understand the complexities of migration as a response or adaptation strategy in the face of the social, economic and environmental consequences of climate change, the factors that impel it, as well as the factors that enable individuals and communities to adapt in ways other than moving or migrating.

Security by What Means?

The more extreme of the responses to predictions about climate change-induced migration have advocated the use of military force and the application of "fortress" models to protect borders—usually for Western countries against those from the more environmentally disadvantaged countries. However, this is likely to increase instability and uncertainty, at the same time as such strategies continue to penalise those who are already most vulnerable. In any case, it is a strategy that responds to outcomes and consequences rather than addressing and seeking to prevent the causes of environmental disadvantage and vulnerability.

Non-traditional security challenges such as climate change require non-traditional security responses, as well as sensitivity to multiple and interlocking types of insecurity. Rather than simply mainstreaming climate change into security discourses, a more conscious effort is required to link the challenges of climate change and human insecurity with adaptation, social resilience and disaster risk management as well as with sustainable development strategies and plans. Efforts to address climate change, migration and security are increasingly contextualised by the inclusion of migration concerns in the negotiation and policy

31 Smith & Vivekananda, "A Climate of Conflict", p. 16.

32 W. A. V. Clark, "Social and Political Contexts of Conflict", *Forced Migration Review*, No. 31 (2008), p. 22.

processes under the United Nations Framework Convention on Climate Change (UNFCCC). Until recently, migration concerns were conspicuously absent from formal UNFCCC agreements and decisions. However, the Cancun Adaptation Framework, adopted at the 16th Conference of the Parties in December 2010, reversed that inattention, in a decision that invited Parties to:

> … enhance action on adaptation under the Cancun Adaptation Framework, taking into account their common but differentiated responsibilities and respective capabilities, and specific national and regional development priorities, objectives and circumstances, by undertaking, inter alia, the following:
> (f) Measures to enhance understanding, coordination and cooperation with regard to climate change induced displacement, migration and planned relocation, where appropriate, at the national, regional and international levels.[33]

From a policy perspective, understanding how to achieve human security (rather than just how to define it) is a complex challenge. We know that in the Asia-Pacific, as elsewhere, it is too late to rely solely on strategies to reduce or mitigate greenhouse gas emissions. Therefore, policies on climate change and migration need to be grounded in a clear understanding of the complexities of migration as a strategy for adapting to the social, economic and environmental pressures of climate change. Those responses will recognise both the factors that impel migration (including how climate change interacts with existing migration pressures) and the factors that enable individuals and communities to adapt in ways other than moving or migrating. As the ADB has argued, "solid analysis and greater knowledge development and sharing on climate-induced migration are essential to inform policymakers of the issues at stake".[34]

It is imperative that steps are taken to reduce vulnerability and build

33 United Nations Framework Convention on Climate Change (UNFCCC), "Decision 1/CP.16 The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-Term Cooperative Action under the Convention", FCCC/CP/2010/7/Add.1 (15 March 2010), paragraph 14.

34 See Asian Development Bank (ADB), "Climate-Induced Migration: Mitigating Risks, Creating Opportunities" (2011), http://beta.adb.org/themes/climate-change/climate-induced-migration (accessed 31 December 2011).

social resilience by strengthening the ability of communities to cope with and adapt to significant social disruption or external stresses and disturbances such as those associated with climate change. Policy responses should be sensitive to equity concerns and the social dimensions of vulnerability in identifying those who are most likely to be subject to mobility and migration pressures, both within states and across borders. Those equity issues will range across a number of possible areas of disproportionate impact but will likely focus on a few in particular: gender difference, the complex migration geography of urban and rural communities, and the impact of poverty in the nature and timing of migration choices. Among other things, this version of a livelihoods model should consider existing migration strategies, including those that are often temporary and seasonal, or rely on short-distance rather than cross-border movements. It calls for a "realistic analysis of [people's] livelihood strategies [to] provide an adequate understanding of how they live" at the local, household and individual level,[35] and how they are therefore likely to respond to climate change-induced migration pressures.

In situations where internal mobility or cross-border migration is the most likely outcome, resettlement planning needs to be based on governance arrangements that are transparent and accountable. Governance—understood here as processes of problem-solving, political coordination and rule-making that involves multiple sites of authority at multiple scales—is central to the way in which climate change impacts can be managed and through which resilience choices and human security outcomes can be enhanced. This is not just a question of institutional design, or the policies and strategies adopted or implemented under the auspices of regional organisations. It requires that "resettlement strategies … protect people's lives and livelihoods"[36] and support community-based responses.

This version of human security is invested with an explicitly normative focus on those who are most marginalised from institutional decision-making—the poor, women, children, the elderly, migrants, indigenous peoples and others who are socially marginalised through

35 Food and Agriculture Organization of the United Nations (FAO), *Food Security and Livelihoods*, Thematic brief (Rome: FAO, n.d.), p. 1.

36 S. F. Martin, *Climate Change, Migration and Adaptation* (Washington, D.C.: The German Marshall Fund of the United States, 2010), p. 1.

discrimination and prejudice. Poorly conceived resettlement strategies can undermine rather than enhance social resilience; and, without recognition of issues of equity and rights, such strategies can end up making the poor poorer and the already vulnerable more vulnerable.

The human security approach to migration as an adaptation strategy suggests that governance should encompass more than top-down technocratic responses. Rather it should rely on bottom-up policymaking that engages with and listens to the voices of those who are most at risk and most disadvantaged by climate change. It stresses the importance of consultation with local communities and their involvement in the design and implementation of locally based adaptation and mitigation projects.

Within the security literature, this move from a politics of security to a politics of adaptation and resilience-building would be read as a *de-securitisation* of climate migration in the Asia-Pacific. Reading this move instead as "*human* securitisation" (or perhaps even "counter-securitisation") has the potential to sustain the tactical attractions of the language of security and the urgent attention that this brings to a problem while also redirecting security policy to securing the lives, livelihoods and, wherever possible, the lands and homes of those in the region who are most vulnerable and most insecure as a result of the threats of climate change.

CONTEXTUALISING CLIMATE AS A CAUSE OF MIGRATION IN SOUTHEAST ASIA

J. Jackson Ewing

Introduction

Contemporary literature leaves little doubt that population movements are among the most pronounced social challenges projected to accompany the shifting global climate. As the introduction to this monograph reveals, a growing and increasingly confident body of work targets migration and potential refugee scenarios as being logical and at times seemingly inevitable ramifications of the climate change effects. Such projections come from traditional security communities,[1] intergovernmental bodies[2] and academia and think tanks.[3] The attention that migration has

1 CNA Corporation, *National Security and the Threat of Climate Change* (Alexandria, VA: CNA Corporation, 2007); Jane's Information Group, "Hostile Environment: Climate Change and Resource Stress Threaten Global Stability", *Jane's Defence Weekly*, Vol. 46, No. 16 (2009), pp. 24–29.

2 United Nations Security Council (UNSC), "Debate on the Impact of Climate Change", SC/9000 (New York: Department of Public Information, 2007), http://www.un.-org/News/Press/docs/2007/sc9000.doc.htm (accessed 22 December 2011); United Nations Development Programme (UNDP), *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World* (New York: Palgrave Macmillan, 2008); Intergovernmental Panel on Climate Change (IPCC), *Fourth Assessment Report, Climate Change 2007: A Synthesis Report* (Valencia: IPCC Plenary XXVII, 2007).

3 D. Smith & J. Vivekananda, "A Climate of Conflict: The Links between Climate Change, Peace and War" (London: International Alert, 2007); K. M. Campbell et al. (Eds.), *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change* (Washington, D.C.: Center for Strategic and International Studies (CSIS) and Center for a New American Security, 2007); A. Dupont, "The Strategic Implications of Climate Change", *Survival: Global Politics and Strategy*, Vol. 50, No. 3 (2008), pp. 29–54.

received in climate change discourse thus gives testament to the notional power of environmental factors to help spur population movements. This is not a contemporary phenomenon, as humankind has throughout history responded to environmental and specifically climatic challenges by moving, and the relevance that climate change holds for migration is well founded.[4] However, projections on climate-induced migration often risk oversimplifying the causal pathways by which climate change and decisions to migrate are connected.[5]

The greatest point of certainty pertaining to climate change and migration is that migration will continue to result from complex combinations of push and pull factors, underlying causal dynamics and triggering events. Rather than fundamentally altering existing contexts and characteristics of migration, climate change will operate with them. There is thus a need for further analyses combining the observed and projected physical effects of climate change with the social contexts within which these effects play out. Such approaches are particularly salient for developing regions such as Southeast Asia, much of which faces potentially acute climate change effects and is characterised by social systems that will often struggle to adapt to climate shifts. This chapter attempts to place climate change and migration in the Southeast Asia context, and questions the ways in which climate might affect contemporary migration patterns. The chapter begins by briefly reviewing some primary tenets of the climate-migration connection before engaging with and challenging parts of the underlying causal assumptions upon which these tenets rest. The chapter then reviews significant characteristics of climate change and migration in Southeast Asia and argues that urbanisation trends will likely accelerate as a result of climatic shifts. Such accelerated urbanisation unsurprisingly brings with it a host of challenges, including many relating to climate change, and will likely be a defining feature of the regional climate-migration connection.

4 G. Hugo, "Environmental Concerns and International Migration", *International Migration Review*, Vol. 30, No. 1 (1996), pp. 105–131; J. Diamond, *Collapse: How Societies Choose to Fail or Succeed* (New York: Viking Press, 2005).

5 A. Swain, "Environmental Migration and Conflict Dynamics: Focus on Developing Regions", *Third World Quarterly*, Vol. 17, No. 5 (1996), pp. 959–973; J. J. Ewing, "A Way in the Wilderness: Using Critical Realism to Navigate Environmental Security's Theoretical Terrain", *International Journal of Interdisciplinary Social Sciences*, Vol. 5, No. 7 (2010), pp. 304–316.

Climate Change, Triggering Events and Population Movements

The planet's warming will affect natural systems that are essential for sustaining the viability and progress of many communities; particularly those which lack the means to adapt effectively to the changes. The Intergovernmental Panel on Climate Change (IPCC) predicts that during the coming half century, drought-affected areas will expand while other locations will experience greater heavy precipitation events and flood risks, river runoff will decrease between 10 to 30 per cent across many dry regions and mid-latitudes, and glacially-stored water supplies will decline, reducing water availability for over one-sixth of the global population. The changes in rainfall patterns and ice volumes at the source of these problems will affect both freshwater availability and agricultural production.[6] For populations dependent upon local agriculture for food and income, smaller crop yields can lower individual caloric intake, which negatively affects human health, while reducing vitally important household incomes.[7] For areas of water abundance, major precipitation events, flooding and greater runoff and erosion will have negative consequences for agricultural production and render many previously productive lands at least temporarily unviable for habitation and human utility.

Such scenarios understandably lead to notions that climate change will compel large-scale population movements, particularly in parts of developing countries that will struggle to adapt to climate-induced challenges. Adaptation to climate change is not a simple or straightforward issue, but rather encompasses a range of activities from basic coping to advantageous pursuits in response to the changing climate. The ability of a system to "adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with consequences" is defined by the IPCC as the system's "adaptive capacity".[8] It is primarily in developing countries where vulnerability is often high, adaptive capacity regularly low, and livelihoods frequently tied closely to natural resources where climate

6 IPCC, *Fourth Assessment Report*.
7 UNDP, *Human Development Report 2007/2008*.
8 IPCC, *Fourth Assessment Report,* 21.

change has the most acute impacts.[9] These potential impacts have led to high-level attention concerning the future role of climate change in the movement of people.

In a United Nations Security Council (UNSC) meeting on climate change in 2007, British Foreign Secretary Margaret Beckett warned of migration on an "unprecedented scale" as a result of climatic changes worldwide.[10] Such population movements would clearly have wide-ranging effects and are projected by some to erode the social and economic foundations of affected communities and create strains upon communities receiving displaced peoples (for a critique, see Lorraine Elliott's chapter in this monograph).[11] For example, the Center for a New American Security and the Center for Strategic and International Studies published a substantive report in 2007 predicting large-scale migration patterns that increased with different scenarios of global mean temperature rise. According to the report, such population movements will, in addition to creating security threats:

> widen the wealth gap between and within many of these countries … [and] deprive developing countries of sorely needed economic and intellectual capital as the business and educated elite who have the means to emigrate abroad do so in greater numbers than ever before.[12]

Writing from a strategic studies perspective, Alan Dupont calls upon an apocalyptic scene from the successful film *The Day After Tomorrow* to claim that:

> the possibility that climate change might cause mass migrations of environmental refugees and displaced persons, with serious consequences for international security, is certainly plausible and should not be dismissed as a figment of Hollywood's imagination.[13]

9 Smith & Vivekananda, "A Climate of Conflict"; Global Humanitarian Forum, *Human Impact Report – The Anatomy of a Silent Crisis* (Geneva: Global Humanitarian Forum, 2009).
10 UNSC, "Debate on the Impact of Climate Change".
11 M. Couldrey & M. Herson (Eds.), "Climate Change and Displacement", *Forced Migration Review*, No. 31 (2007), pp. 4–80.
12 Campbell et al., *The Age of Consequences*, p. 56.
13 Dupont, "The Strategic Implications of Climate Change", p. 40.

Climate Change and Migration: Problems of Causality

Drawing direct causal connections between climate change and migration, along with positing quasi-apocalyptic scenarios such as that put forth by Dupont, risks underrepresenting the importance of multifaceted pathways linking climate change and migration. Migration research has advanced mightily over the past several decades precisely as a result of engaging with and extrapolating the multiplicity of factors that help form population movement trends. Categorisations put forth by William Petersen during the late-1950s differentiate between "forced", "impelled" and "free" migration.[14] M. E. Olson's 1979 work rigorously differentiates between migrants and refugees, basing his analysis upon the level of choice (or lack thereof) involved in decisions to move.[15] Meanwhile Anthony Richmond's 1993 offerings argue that understanding migration patterns, including those relating to environmental factors, requires exploring the interactions of multifaceted causal factors that can generate such movement.[16] Ashok Swain and Graeme Hugo extended this work during the mid-1990s, both arguing convincingly that the environment must be placed within an appropriately broad social context when analysed as a cause of migration (see also Graeme Hugo's chapter in this monograph).[17] The importance of these categorisations and contextualisations, along with the connections and relationships which they entail, is neither semantic nor insignificant. Rather, these issues present central challenges to analyses that seek greater understandings of the climate change-migration relationship. Contemporary work connecting climate and migration should strive, more explicitly than does the current securitised research trend, towards assessing climate change as one cause

14 W. A. Petersen, "A General Typology of Migration", *American Sociological Review*, Vol. 23, No. 3 (1958), pp. 256–266.

15 M. E. Olson, "Refugees as a Special Case of Population Redistribution", in L. A. P. Gosling & L. Y. C. Lim (Eds.), *Population Redistribution: Patterns, Policies and Prospects* (New York: United Nations Fund for Population Activities, 1979), pp. 130–152.

16 A. Richmond, "The Environment and Refugees: Theoretical and Policy Issues", Revised version of a paper presented at the meetings of the International Union for the Scientific Study of Population (Montreal, August 1993), cited in Hugo, "Environmental Concerns and International Migration".

17 Hugo, "Environmental Concerns and International Migration"; Swain, "Environmental Migration and Conflict Dynamics".

among many interrelated dynamics leading to migration.

This goal is made difficult by the inherent challenge of directly attributing specific weather patterns and extreme events to climate change. Progress in the climate sciences continues to improve understandings about the ways that the warming climate is affecting different weather patterns. IPCC assessments of Southeast Asia suggest that it is one of the world's most vulnerable regions, to sea-level rise, radically altered precipitation patterns and extreme weather events; and that "consequent migrations" are to be expected.[18] However, knowledge about how the warming climate will affect specific weather patterns and events is still an area with considerable uncertainties, and these uncertainties are compounded as the geographical scales under investigation become smaller. In other words, contemporary predictive capacities about the ways climate change will affect particular provinces, cities and villages in Southeast Asia are in a relatively fledgling phase. Research addressing the ways in which climate change will alter precipitation and storm patterns in different areas of Southeast Asia, for instance, is still very much a work in progress; as is the work addressing the relationships connecting climate change to El Niño and La Niña effects and regional monsoon cycles.[19] As a result, statements that anthropogenic climate change is behind specific changes in weather patterns or that it "caused" particular weather events to occur must be tempered to account for scientific uncertainty. Such uncertainty only intensifies the importance of continuing progress in global and regional climate science, however, and does not preclude efforts to explore the potential for climate change to affect weather phenomena and, by extension, social issues such as migration. As our understandings of climatic effects improve, clearer lines can be drawn connecting climate change to its natural and social impacts. Nonetheless, such connecting lines should be cautious about suggesting climatic factors as *the* cause of specific social effects.[20]

18 IPCC, *Fourth Assessment Report,* p. 488; C. Jasparro & J. Taylor, "Climate Change and Regional Vulnerability to Transnational Security Threats in Southeast Asia", *Geopolitics*, Vol. 13 (2008), pp. 232–256, at p. 242.

19 Earth Observatory (EO) of Singapore, Panel discussion at the Conference on Catastrophe and Disaster Management (Singapore, February 2011).

20 R. Black, C. Natali & J. Skinner, "Migration and Inequality", Background paper prepared for *World Development Report 2006: Equity and Development* (New York: UNDP, 2005).

The social contexts within which climatic effects are felt are critically important for assessing climate change impacts (including those relating to migration). In Southeast Asia, nuanced approaches to climate change and migration connections require spatially and temporally assessing social and natural factors that can contribute to climate vulnerability and decisions about potential migration. Natural disasters, which the IPCC claims could become more prevalent in Southeast Asia as a result of climate change, provide a strong example.[21] Natural disasters are not exclusively the result of "acts of nature". Conversely, the characteristics of natural disasters, which are defined and measured by their impacts on human lives and activities, reflect a range of root causes in the political, economic and otherwise social realms.[22] More specifically, the location of affected populations, the ways that populations, governments and economic actors have manipulated natural environments, and the capacities of people and social systems to respond to the disasters all inform the effects and attendant challenges posed by the "natural" phenomenon.

Natural disasters usefully illuminate the causality challenges faced by analyses seeking climate change and migration connections more generally. The social contexts that frame the effects of a natural disaster are fundamental to the decisions of people about whether or not they will leave their places of residence and whether such movement will be temporary, semi-permanent or permanent. Thus, attempts to connect climate change, natural disasters and population movements must engage with the role that existing social contexts play in impelling or forcing people to relocate. Such engagement begins with the origins of the vulnerability of affected populations. Populations are often situated in flood and storm-prone areas, near rivers and coastlines for example, because of the strategic value and potential benefits that such locations have shown to provide. This leads to vulnerability that is in part the result of social agency and choice, even if the choice to inhabit a given area occurred during past generations, was undertaken under the behest or force of external actors, or came about as the result of unliveable conditions in another location. Simply put, societies influence their relative vulnerabil-

21 IPCC, *Fourth Assessment Report.*

22 J. M. Albala-Bertrand, "Complex Emergencies Versus Natural Disasters: An Analytical Comparison of Causes and Effects", *Oxford Development Studies*, Vol. 28, No. 2 (2000), pp. 187–204.

ity to natural phenomena by function of their location. This is an intuitive and non-avertable function of human societies and its acknowledgement here should not be interpreted as criticism. In exploring the connections between climate change and migration, however, these innate spatially-founded vulnerabilities should be the foundation for subsequent analyses, and decisions to move will continue to be influenced by experiences and perceptions about the tenability of living in a given locale as conditions change.

In addition to inherent vulnerabilities based upon location, populations will necessarily change the natural environments where they reside in order to maintain habitability and development. Such environmental change is the earmark of all societies and a function of humankind's capacity to use natural resources and systems for its own advancement. A key corollary of these activities, however, is that they can magnify the vulnerability of communities to natural disasters (or "disasters of nature"). For example, felling forests for agricultural land and urban development can alter root and soil systems, shift hydrological patterns, exacerbate erosion, increase the turbidity of rivers and as a result increase the chances of flooding events. Urban development is also causally relevant for flooding, as urban structures alter natural drainage systems, waste management shortcomings impede urban water flows, and water management tools such as dykes, dams and levees change natural freshwater patterns. The effects of tropical storms and typhoons can likewise be affected by socially driven changes to natural buffers such as mangrove forests and reefs that can lessen storm impacts. Each of these examples demonstrates the importance of placing social context, on as small a scale as possible, at the centre of efforts to assess climatic effects (for useful examples, see chapters by Triarko Nurlambang and Olivia Dun in this monograph).

It should be noted that the people most affected by "natural" events are often not directly responsible for the environmental changes that have placed them in peril. There are a range of protagonists and benefactors when it comes to environmental changes, many of whom will not directly deal with their ensuing repercussions. This relates to questions of climate change and migration in Southeast Asia, the importance of locating those most vulnerable to climate within various socio-environmental contexts, asking if their vulnerabilities may lead to migration and, if so, how such

migration is likely to proceed. In Southeast Asia, where climate vulnerabilities are often high and adaptive capacities often limited, climate change may significantly affect migration patterns; but it will not do so in a vacuum.

Contextualising Climate Change and Migration in Southeast Asia

Notwithstanding the previously discussed uncertainties, it is clear that Southeast Asia faces pronounced challenges as a result of the changing climate. A striking level of uniformity exists in contemporary literature regarding the character of states and communities that face the greatest risks to climatic changes, and as a region Southeast Asia clearly possesses many of the most important of these characteristics.[23] Two key themes in the literature are that: 1) developing regions often have economic systems in which significant portions of the population rely directly on natural resources for their livelihood and sustenance, and 2) these same developing regions have relatively low capacities for responding and adapting to climate shifts (particularly if they occur abruptly). Elaborating upon susceptibility to resource alterations, the IPCC notes that the most vulnerable industries, settlements and societies are those "whose economies are closely linked with climate-sensitive resources" and explicitly denotes "[p]oor communities that depend on local food and water supplies" as being uniquely exposed.[24] Territories throughout much of Southeast Asia exhibit these characteristics.

The maritime character of much of the region is accompanied by acute vulnerabilities for coastal communities. Escalating global temperatures are predicted to be accompanied by increases in extreme ocean weather events, coastal erosion, rising sea surface temperatures and an accelerated rise in global sea levels.[25] Increasing ocean temperatures can

23 IPCC, *Fourth Assessment Report*; M. L. Parry et al., "Technical Summary", in M.L. Parry et al. (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007); Campbell et al., *The Age of Consequences*; Smith and Vivekananda, "A Climate of Conflict".

24 Parry et al., "Technical Summary", p. 46.

25 IPCC, *Fourth Assessment Report*.

lead to increased coral bleaching and mortality, more frequent flooding in low-lying areas, and greater coastal wetland and mangrove degradation; all of which would pose particularly acute challenges to many of Southeast Asia's coastal zones.[26] Higher ocean temperatures also affect fish breeding patterns, and aquatic plant cycles, and may cause an increase in the frequency and power of coastal storms.[27] Rises in sea levels accompanying increased global temperatures are also particularly dangerous for low-lying coastal areas which can be rendered uninhabitable through inundation, saltwater intrusion into freshwater systems and untenable flood risks.

In addition to coastal concerns, Southeast Asia faces risks to freshwater availability and agriculture deriving from warming temperatures and changing precipitation patterns. Warmer temperatures for longer durations can alter germination periods and growing cycles in agricultural zones such as those in the Greater Mekong Subregion and the large islands of the archipelagic states.[28] Changing precipitation patterns may lead to "dry days that are drier and wet days that are wetter" and bring rains that facilitate erosion and runoff.[29] Existing weather fluctuations, such as the El Niño phenomenon, already contribute to droughts during the dry season and floods during the wet, and these effects are likely to become more acute in a changing climate.[30]

The physical manifestations of atmospheric change that are threatening Southeast Asia can act in conjunction to create multiple stresses that are greater than the sum of their parts.[31] For example, precipitation changes coinciding with sea-level rise and greater storm intensity could

26 Ibid.; A. A. Yusof & H. Francisco, *Hotspots! Mapping Climate Change Vulnerability in Southeast Asia* (Singapore: Economic and Environment Program for Southeast Asia, 2010).

27 J. R. T. Villarin, A. Y. Loyzaga & A. G. M. La Viña, "In the Eye of the Perfect Storm: What the Philippines Should Do about Climate Change", Working Paper (Manila: Manila Observatory, 2008).

28 B. Rerkasem, "Climate Change and GMS Agriculture", in K. Rayanakorn (Ed.), *Climate Change Challenges in the Mekong Region* (Chiang Mai: Chiang Mai Press, 2011); N. T. H. Thuan, "Adaptation to Climate Change in Rice Production in Vietnam Mekong River Delta", in K. Rayanakorn (Ed.), *Climate Change Challenges in the Mekong Region* (Chiang Mai: Chiang Mai Press, 2011).

29 Villarin, Loyzaga and La Viña, "In the Eye of the Perfect Storm", p. 18.

30 IPCC, *Fourth Assessment Report*.

31 Parry et al., "Technical Summary".

result in hydrological changes that prove catastrophic for coastal ecosystems and the strategic resources present within them. The contemporary state of land and coastal degradation in parts of Southeast Asia further increases the potential for climate change to exacerbate already present environmental security challenges, as these degraded conditions reduce the ecological resilience of vital natural systems. Whether by affecting water quality or availability, degrading agricultural lands through drought, flooding or erosion, or rendering of entire lands unviable by an encroaching sea, atmospheric changes create risks for regions, and there is reason to expect that migration will be a key adaptive strategy for some of the region's most vulnerable people.

This is not to suggest, however, that people, families and communities will necessarily respond to climatic challenges by abruptly leaving areas *en masse,* or that such movements will be a direct result of climate change. Decisions to migrate are difficult, accompanied by a host of cost-benefit trade-offs and often viewed as worst-case scenarios (see Hugo's chapter in this monograph). Migration that does occur in part as a result of climate change will stem from progressive changes and abrupt events; along with the pull of supposedly better opportunities elsewhere (see Dun's chapter in this monograph). It is difficult to measure statistically how many migrants will result from climate change and environmental causes more generally, in large part because, as has been discussed, it is difficult to disaggregate the role of climate from other social factors relevant to migration.[32] In lieu of strict statistical or otherwise quantitative explorations, however, experiences and trends from Southeast Asia provide guideposts for how climate change will likely influence migration in the future.

First, relatively gradual changes in climate are likely to have more relevance for migration in Southeast Asia than extreme events.[33] While extreme climate-related events such as cyclones and floods regularly displace large numbers of people in the region, there is evidence to suggest that many of these displaced return to their original homes or

32 F. Laczko, *Migration, Environment and Climate Change: Assessing the Evidence* (Washington, D.C.: German Marshall Fund, 2010).

33 Ibid.; International Disaster Database, www.emdat.be/ (accessed 23 December 2011).

their immediate surrounds.[34] The 2004 tsunami, which was the largest single displacement event in modern regional history, provides a case in point, displacing nearly half a million people without leading to large-scale relocation beyond nearby areas.[35] While the tsunami was not climatic in nature, it shares similar characteristics to extreme weather events in that the affected leave abruptly and often without the planning or resources needed for more permanent migratory ambitions. These instances will more often lead to humanitarian crises and the need for redoubling aid and recovery efforts than create conditions that make longer-term migration attractive; at least during the direct aftermath of the extreme event. Slow-onset climatic effects that gradually erode the economic and quality of life possibilities of a given location are more likely to compel migration towards areas with a perceived comparative advantage. The ensuing migration will occur deliberately and may involve the initial movement of parts of family and/or community units with further migration taking place over time (see chapters by Bernadette Resurreccion and Edsel Sajor, and Dun in this monograph). Such deliberate population movements that occur in response to the second and third-order effects of climate change are inherently difficult to measure,[36] but are nonetheless vitally important for understanding climate-migration connections in Southeast Asia.

Second, migration that occurs as the partial result of climate change is likely to accelerate regional urbanisation trends. The significance of urbanisation as both an intra- and inter-state migration trend in Southeast Asia is difficult to overstate. Throughout the region's history, the lure of social connectivity and economic opportunity has brought people to cities and peri-urban areas,[37] and these trends have hastened in real and relative terms during the twentieth and twenty-first centuries. Future climatic changes are likely to further amplify this trend for numerous reasons. Where abrupt climate-related push factors, such as storms or

34 A. Naik, E. Stigter & F. Laczko, *Migration, Development and Natural Disasters: Insights from the Indian Ocean Tsunami* (Geneva: International Organization for Migration, 2007); International Disaster Database, www.emdat.be/.

35 Naik, Stigter & Laczko, *Migration, Development and Natural Disasters*.

36 O. Brown, "Climate Change and Forced Migration: Observations, Projections and Implications", Occasional Paper (Geneva: UNDP, 2007).

37 A. Reid, *Charting the Shape of Early Modern Southeast Asia* (Chiang Mai: Silkworm Books, 1999).

large precipitation events, compel migration, cities and urban areas with proximity to the migrant populations represent logical destination points. Cities are centres of culture, trade, commerce, and family relations, and as such they are places where the immediate and longer term needs of displaced populations can be most readily met. These characteristics gain still greater importance for those seeking new opportunities in the face of protracted climate-related challenges. The pull factors of urban locations will draw people away from their homes in response to the changing agricultural trends, reductions in water access, declining sanitation conditions, food insecurity and so forth with which they may be battling at home.

Evidence of the powerful urban draw in Southeast Asia is already quite apparent. The region's urban population has swelled from roughly 15 per cent of the total in 1950 to almost 42 per cent by 2010, and the trend continues.[38] Much contemporary urbanisation is occurring in the least urbanised states such as Laos and Cambodia even as the cities of these countries struggle to manage the rapid influx of people. Large mega-acities such as Jakarta, Manila and Bangkok will continue to swell, while many small and medium-sized cities and towns, which house roughly 67 per cent of the region's urban populace, will grow even faster.[39] The overall rapidity and scale of urbanisation in Southeast Asia and China is without precedent historically,[40] and the manifold drivers behind it certainly go far beyond those relating to climate change. Nevertheless, as has been discussed, challenges facing the rural agrarian areas of the region can serve to speed urbanisation and in doing so hasten the regional reshaping that is already well underway.

While cities and peri-urban areas in Southeast Asia may provide some measure of respite for rural people seeking to escape hardships caused in part by the changing climate, continuing urbanisation trends also create a number of challenges; both in their own right and in the

38 Institute of Southeast Asian Studies, *Urbanisation in Southeast Asian Countries* (Singapore: ISEAS, 2009).

39 Ibid.

40 J. R. Rimmer & H. W. Dick, *The City in Southeast Asia: Patterns, Processes, and Policy* (Singapore: National University of Singapore Press, 2009).

context of climate change.[41] Multiple studies, including that by Triarko Nurlambang in this monograph, have illustrated particular climate vulnerabilities faced by Southeast Asian cities.[42] These urban centres face a raft of climate-related challenges from flooding and sanitation problems to heatwaves, disease and food insecurities.[43] The rapid population movement into cities is also straining existing infrastructure, services and urban ecosystems and exacerbating the climate vulnerability of marginalised segments of the urban society. In cities such as Jakarta and Manila, for example, many of the poor already live in areas that are flood-prone and lack basic adaptive services. Thus, there is the very real potential that populations compelled to migrate to cities in the face of a changing climate will meet with renewed vulnerabilities upon their arrival.

Conclusion

Urbanisation has been the primary feature of population movements in Southeast Asia since at least the turn of the twentieth century, and this is likely to accelerate in response to climate change. Understanding the role played by climate change within this and other observable migratory features represents the primary analytical challenge at hand. While climate will always interact with numerous other push and pull factors to compel migration, assessing the specific nature of climate change-migration relationships is an objective with significant importance. Formulating effective adaptive strategies and bringing attention and resources to mitigation efforts require stronger understandings about the implications that climate change may have; including for population movements. What experiences and trends from Southeast Asia show, however, is that these implications will be highly differentiated, spatially and temporally unique, and defy broad categorisations and ominous proclamations. The same is true for all regions, and there is a need to further explore the

41 World Wildlife Fund, *Mega-Stress for Mega-Cities: A Climate Vulnerability Ranking of Major Coastal Cities in Asia* (Gland, Switzerland: WWF International, 2008).

42 United Nations Department of Economic and Social Affairs, *United Nations Expert Group Meeting on Population Distribution, Urbanization, Internal Migration and Development* (New York: UNDESA Population Division, 2008); World Bank, *Climate Risks and Adaptation in Asian Coastal Megacities: A Synthesis Report* (Washington, D.C.: World Bank, 2010).

43 World Bank, *Climate Risks and Adaptation in Asian Coastal Megacities*.

specific modalities of climate-migration connections in locations around the world. Such contextualised enquiries, while not focusing upon global trends, can progress the construction of effective theoretical frameworks and policy responses to address climate-migration challenges.

GOVERNING INTERNATIONAL CLIMATE CHANGE-INDUCED MIGRATION

Benoît Mayer

Introduction

While the environment has always been a strong, although often indirect inducement to migration,[1] climate change is likely to result in movements of populations in numbers never seen in written history. The most common but nevertheless highly contested estimate is that by 2050, 250 million persons will have been displaced because of climate change. Circumstances in which climate change may lead to migration are very diverse. Populations may move as a result of permanent flooding of coastal regions and islands, or desertification, but they are also likely to be compelled to move by the socioeconomic phenomena that climate change exacerbates, such as famines, decreased agricultural productivity resulting from land degradation or extreme natural events (for example, droughts, storm surges and cyclones). Walter Kälin distinguishes between five scenarios of environmental migration: (i) "sudden-onset disasters, such as flooding, windstorms … or mudslides caused by heavy rainfalls"; (ii) "slow-onset environmental degradation caused, inter alia, by rising sea levels, increased salinisation of groundwater and soil, long-term effects of recurrent flooding, thawing of permafrost, as well as droughts and desertification"; (iii) "so-called 'sinking' small island states"; (iv) areas designated by governments as "high-risk zones too dangerous for human

1 International Organization for Migration (IOM), "Disaster Risk Reduction and Climate Change Adaptation in IOM's Response to Environmental Migration" (Geneva: IOM, 2011), p. 1, http://publications.iom.int/bookstore/free/DDR_CCA_Infosheet.pdf (accessed 16 April 2012).

habitation on account of environmental dangers"; and (v) displacement following "unrest seriously disturbing public order, violence or even armed conflict" that "may be triggered, at least partially, by a decrease in essential resources due to climate change".[2]

Early works on climate change-induced migration have argued that no existing legal or political framework addresses the needs of environmental migrants in a satisfactory way.[3] Facing this new and still quite uncertain phenomenon, the international community needs to find an appropriate governance model. Debates about how to govern international climate change-induced migration focus on three key issues: reconciling human rights with states' sovereignty; conceptualizing the complexities of the phenomenon without oversimplifying them; and encouraging diplomatic powers to accept an equitable deal that does not necessarily reflect their own interests.

Challenges

Human Rights Versus Sovereign Rights

A first challenge is the need to reconcile the rights of individuals with those of states. The human rights-related implications of climate change have been increasingly recognised during the last years.[4] For example, in Resolution 10/4 of 25 March 2009, the United Nations Human Rights Council noted that "climate change-related impacts have a range of implications, both direct and indirect, for the effective enjoyment of human rights including, inter alia, the right to life, the right to adequate food, the

2 W. Kälin, "Conceptualising Climate-Induced Displacement", in J. McAdam (Ed.), *Climate Change and Displacement: Multidisciplinary Perspectives* (Oxford: Hart, 2010), pp. 85–86.

3 See F. Biermann & I. Boas, "Protecting Climate Refugees: The Case for a Global Protocol", *Environment: Science and Policy for Sustainable Development*, Vol. 50, No. 6 (2008), pp. 8–17, at p. 11; and O. Brown, "Migration and Climate Change", IOM Migration Research Series No. 31 (Geneva: IOM, 2008), p. 36.

4 United Nations Framework Convention on Climate Change (UNFCCC), "Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action Under the Convention" (UNFCCC, 2010), 7th recital and paragraph 8; Human Rights Council, "Human Rights and Climate Change", Human Rights Council Resolution 7/23 (2008); Human Rights Council, "Human Rights and Climate Change", Human Rights Council Resolution 10/4 (2009); Human Rights Council, "Human Rights and the Environment", Human Rights Council Resolution 16/11 (2011).

right to the highest attainable standard of health, the right to adequate housing, the right to self-determination and human rights obligations related to access to safe drinking water and sanitation". It also noted that "in no case may a people be deprived of its own means of subsistence".[5]

In the face of demands for entry by migrants, however, states generally consider control of borders, issuance of residence permits and grant of citizenship as their preserve. Thus, according to the Office of the High Commissioner for Human Rights, "[p]ersons moving voluntarily or forcibly across an international border due to environmental factors would be entitled to general human rights guarantees in a receiving State, but would often not have a right of entry to that State".[6] At least some developed states may agree to grant international development aid, but probably not to open their borders to an undetermined number of individuals who could then stay on their territory or even ask for naturalisation. Already, some potential countries of destination have created policies to counter unauthorised environmental migration. India, for instance, has been building a 4,000 kilometre-long fence to protect its border with Bangladesh, where it fears that sea-level rise, combined with socioeconomic factors, may trigger outmigration.

Under certain circumstances, some states have agreed to curtail their sovereign rights in order to protect international migrants, but they have done so only with great caution. One hundred and forty-four states have ratified the 1951 Geneva Convention Relating to the Status of Refugees (hereafter the Refugee Convention), but at least some of them do not fully implement their obligations.[7] In Southeast Asia, Cambodia, the Philippines and Timor Leste are the only parties to the Refugee Conven-

5 Human Rights Council, "Human Rights and Climate Change", Human Rights Council Resolution 10/4, 7th recital.

6 Office of the High Commissioner for Human Rights (OHCHR), "Report of the Office of the United Nations High Commissioner for Human Rights on the Relationship between Climate Change and Human Rights", UN Doc. A/HRC/10/61 (OHCHR, 2009), paragraph 58.

7 For instance, regarding Australia, see United Nations High Commissioner for Refugees (UNHCR), "UNHCR Disappointed at Australian Decision to Reopen Detention Centre for Asylum-Seekers" (2010), http://www.unhcr.org/4bcd99956.html (accessed 13 December 2011); and UNHCR, "Statement on the Australia-Malaysia Arrangement" (2011), http://www.unhcr.org/4e2d21c09.html (accessed 13 December 2011).

tion. Furthermore, this convention does not apply to those displaced by environmental circumstances, but only to refugees fleeing political persecution.

Several works suggest that a new treaty could be negotiated on the model of the Refugee Convention.[8] Yet, few states seem ready to negotiate such a treaty, and it would be unrealistic to expect participation from Southeast Asian states that are not already parties to the Refugee Convention. The so-called "ASEAN way" attempts to justify, as a regional particularism, the regional emphasis on sovereignty and non-interference in general and the wariness of Southeast Asian states vis-à-vis binding agreements.[9]

Legal Category Versus Complex Phenomenon

A second challenge stems from the difficulty of conceptualising climate migration in terms of categories of people to protect. After renouncing the notion of "climate refugee" as a legal misnomer, several Western scholars have argued for the protection of climate "migrants"[10] or "environmentally displaced persons",[11] who might be displaced either internally or internationally. Yet, this would require that an operable

8 See, for example, F. Biermann & I. Boas, "Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees", *Global Environmental Politics*, Vol. 10, No. 1 (2010), p. 75; R. Black, "Environmental Refugees: Myth or Reality?", UNHCR Working Paper No. 34 (Geneva: UNHCR, March 2001); E. Brindal, "Asia Pacific: Justice for Climate Refugees", *Alternative Law Journal*, Vol. 32, No. 4 (2007), pp. 240–241; B. Docherty & T. Giannini, "Confronting a Rising Tide: A Proposal for a Convention on Climate Change Refugees", *Harvard Environmental Law Review*, Vol. 33 (2009), pp. 349–403.

9 See, for instance, Koh K.-L. & N. A. Robinson, "Strengthening Sustainable Development in Regional Inter-Governmental Governance: Lessons from the ASEAN Way", *Singapore Journal of International & Comparative Law*, Vol. 6, No. 2 (2002), pp. 642–643.

10 F. G. Renaud et al., "A Decision Framework for Environmentally Induced Migration", *International Migration*, Vol. 49, No. S1 (2011), pp. e12–e14.

11 Centre de Recherches Interdisciplinaires en Droit de l'Environnement, de l'Aménagement et de l'Urbanisme (CRIDEAU), "Draft Convention on the International Status of Environmentally-Displaced Persons", *Revue de Droit de l'Université de Sherbrooke*, Vol. 39 (2008), pp. 461–462; Centre International de Droit Comparé de l'Environnement (CIDCE), "Draft Convention on the International Status of Environmentally Displaced Persons" (May 2010), http://www.cidce.org/ReseauDeplaces/index.htm (accessed 13 December 2011).

definition of "climate migrants" (or "environmentally displaced persons") first be adopted. The long-standing debate on the definition of "climate migrants"[12] reflects more than a difference of perspectives between more or less ambitious proposals: rather, it is symptomatic of the impossibility of determining the often indirect influence that environmental factors may have in actual displacement.[13]

Defining a "climate change-induced migrant" is likely to be complicated due to the multiple causes that influence such an individual. First, one would have to assess the causal link between global climate change and a specific environmental change. Climate change is a global phenomenon with diverse local consequences, and all environmental changes are not necessarily related to global climate change. In other words, scientific evidence that climate change results in among others more frequent droughts is not sufficient to assess that a given drought is due to climate change—that it would not have happened but for climate change.

In addition, one would also have to assess the causal link between an environmental change and an individual's migration in order to determine the status of one person as a "climate migrant". Yet the notion of "climate migrants" as persons who can be singled out from the mass of economic migrants fits only a few circumstances. Dramatic forecasts according to which certain small island developing states—the Maldives, Tuvalu and Kiribati—would have to be evacuated because of sea-level rise draw a wrong picture of environmental changes as direct and easily

12 F. Gemenne & O. Dun, "Defining 'Environmental Migration'", *Forced Migration Review*, No. 31 (2008), pp. 10–11; K. Newland, "Climate Change and Migration Dynamics" (Washington, D.C.: Migration Policy Institute, 2011); S. Perch-Nielsen, M. Bättig & D. Imboden, "Exploring the Link between Climate Change and Migration", *Climatic Change*, Vol. 91 (2008), pp. 375–393; M. Stavropoulou, "Drowned in Definitions?" *Forced Migration Review*, No. 31 (2008), pp. 11–12.

13 B. Mayer, "*Pour en finir avec la notion de 'réfugiés environnementaux': Critique d'une approche individualiste et universaliste des déplacements causés par des changements environnementaux*", *McGill International Journal for Sustainable Development Law and Policy*, Vol. 7, No. 1 (2011), pp. 33–60.

isolated factors of migration.[14] Thus, in most circumstances, environmental changes, in particular slow-onset degradation, primarily affect economic conditions: people are pushed to migrate—usually within countries—because they lose their livelihoods at home.

Environmental changes may constitute a push to migration, but very rarely are a direct cause of one individual's decision to seek a new life elsewhere. Therefore, while (political) refugees are often contrasted with "voluntary" economic migrants, environmental change exacerbates economic migration rather than creating a distinctive form of migration. Most "climate migrants" *are*, indeed, economic migrants: environmental factors exacerbate (economic) migration rather than directly cause it. This should not, however, mean that environmental change does not "force" people to move, but rather that the rigid distinction between "voluntary" economic migrants and "forced" refugees is somewhat misleading: economic conditions leading to migration, be they triggered by an environmental change or not, can be and often are tragic.

Equity Versus Power

A third challenge for the governance of climate change-induced migration is to reconcile the aspirations of those affected by climate change with what the international community is likely to agree on. The case for a "fair" or "equitable" climate migration regime is too strong to be simply put aside. On the one hand, a few industrialised countries bear most of the historic responsibility for climate change. The United States, Europe and Japan were responsible for more than one-third of total greenhouse gas emissions in 2005[15] while they are inhabited by only one-seventh of the world's population. The claim for developed countries' responsibility in climate change is even stronger when one considers the stock of

14 Kälin, "Conceptualising Climate-Induced Displacement", pp. 85–86. Other studies show the complex relationship between flooding and migration in the Mekong Delta; see O. Dun, "Migration and Displacement Triggered by Floods in the Mekong Delta", *International Migration*, Vol. 49, No. 1 (2011), pp. 200–223; and Dun's chapter in this volume.

15 World Resources Institute, "Climate Analysis Indicators Tool (CAIT): Data Per Country", 2011, http://cait.wri.org/ (accessed 23 April 2012).

historical emissions attributable to each state instead of current flows.[16] Although developing states, especially in Southeast Asia, are responsible for a growing share of global emissions, the present greenhouse effect is due to the *stock* of greenhouse gas in the atmosphere rather than to current emissions.

In addition to the prominent role that industrialised countries have played in greenhouse gas emissions, their higher financial capabilities may justify calls for international solidarity. The fact that countries such as the United States and Canada and some within Europe are much less densely inhabited than affected developing states, including those in Asia and the Pacific, may give rise to an argument for resettlement of "climate refugees". It is also notable that some developed states may even gain certain benefits from climate change—for example, increases in the agricultural productivity of Canada[17] and of the north of the United States—thus offering new economic opportunities for possible immigrants.[18]

On the other hand, countries of the so-called Global South are most vulnerable to climate change. Many developing countries lie in tropical regions that are particularly likely to be significantly affected by climate change. As a rule, they rely more heavily on natural resources. In Asia, such areas are often very densely populated, which also adds to the social

16 Between 1990 and 2005, per capita emission in "Annex I countries" (developed states bound by compulsory mitigating measures in the UNFCCC regime) was on average 15 times higher than per capita emission in "non-Annex I countries" (developing states). See World Resources Institute, "Climate Analysis Indicators Tool (CAIT)". On a longer term, studies estimate that "industrialized countries together account for 84% of the total" historical contribution to climate change. See T. Banuri et al., "Equity and Social Considerations", in J. Bruce, H. Lee & E. Haites (Eds.), *Climate Change 1995: Economic and Social Dimensions of Climate Change. Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 1995), p. 94.

17 Agriculture and Agri-Food Canada, "Assessment of Climate Change Impacts on Agricultural Land-Use Suitability: Spring Seeded Small Grains on the Prairies", Report (2008), http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1210289174331&lang=eng (accessed 16 April 2012).

18 T. Fingar, "Statement for the Record", National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030 (25 June 2008), p. 4, http://www.dni.gov/testimonies/20080625_testimony.pdf (accessed 16 April 2012).

vulnerability of affected populations. Lastly, developing countries generally have fewer financial capacities available to adapt to climate change. Therefore, from an ethical point of view, the case for an international regime on climate change-induced migration is very strong: developed states should pay because they are responsible and because they are richer. Whether these ethical claims will translate into political practice is another question. As a number of authors have argued, economic development in Asia has not necessarily resulted in an increased impact on international climate change or refugee diplomacy.[19]

Options

The challenges of governing international climate change-induced migration can be addressed in many different ways. The present section highlights three topics of the current debate, regarding the alternative narratives, actions and actors that could play a role in the governance of international climate change-induced migration. These alternatives are not necessarily explicitly addressed in today's debates: rather, different implicit positions appear most of the time to be taken for granted by authors from different cultural and disciplinary backgrounds.

Alternative Narratives

A first option is to follow either a rights-based narrative, a responsibility-based narrative, or a security-based narrative—or a combination of all three.[20] Each of these narratives is rooted in a different disciplinary

19 A. F. Cooper & T. Fues, "Do the Asian Drivers Pull their Diplomatic Weight? China, India, and the United Nations", *World Development*, Vol. 36, No. 2 (2008), pp. 293–307; D. Fidler, "The Asian Century: Implications for International Law", *Singapore Yearbook of International Law*, Vol. 9 (2005), pp. 19–35; T. Ginsburg, "Eastphalia as the Perfection of Westphalia", *Indiana Journal of Global Legal Studies*, Vol. 17, No. 1 (2010), pp. 27–45; J. A. Thomas, "International Law in Asia: An Initial Review", *Dalhousie Law Journal*, Vol. 13 (1990), pp. 683–724.

20 B. Mayer, "Fraternity, Responsibility and Sustainability: The International Legal Protection of Climate (or Environmental) Migrants at the Crossroads" (2011), http://ssrn.com/abstract=1806760 (accessed 13 December 2011); J. McAdam & B. Saul, "An Insecure Climate for Human Security? Climate-Induced Displacement and International Law", in A. Edwards & C. Ferstman (Eds.), *Human Security and Non-Citizens: Law, Policy and International Affairs* (Cambridge: Cambridge University Press, 2009), p. 3.

background and leads to a different justification for an engagement of the international community. The first, the rights-based narrative, stems from human rights or humanitarian discourses. It puts forward the human harms resulting from environmental change, in particular in the case of climate migration. It highlights the incongruity between "political" refugees, currently protected by a specific international legal regime, and those whose displacement is induced by environmental change, who do not benefit from any legally binding protection. Many works focused on a rights-based approach call for an ambitious engagement of the international community to protect environmental migrants,[21] but they fail to explain why receiving states would agree to renounce a part of their sovereign rights. Ethics or philanthropy alone is unlikely to persuade states to open their borders.

The second narrative, the responsibility discourse, highlights the unfairness of the international distribution of potential harms due to climate change when it is compared with the distribution of advantages drawn from significant greenhouse gas emissions. If based solely on ethics,[22] the capacity of this narrative to convince reluctant states is uncertain. From a purely legal perspective, the argument also faces multiple hurdles. Recently, the inhabitants of an Alaskan village that had to resettle arguably because of climate change sought the accountability of a group of multinational oil companies before an American tribunal. The claim was dismissed in the first instance,[23] and is currently under appeal before the Ninth Circuit Court of Appeal. In another case, Tuvalu, a tiny island state in the Pacific heavily affected by climate change, threatened to sue the United States and Australia before the International Court of Justice.[24]

From a political perspective, however, the responsibility argument may be relatively strong. The prevailing financial role of Western states in bearing the cost of the international climate change regime offers one

21 See, for instance, Brindal, "Asia Pacific: Justice for Climate Refugees", pp. 240–241.

22 See, for instance, J. Ikeme, "Equity, Environmental Justice and Sustainability: Incomplete Approaches in Climate Change Politics", *Global Environmental Change*, Vol. 13, No. 3 (2003), pp. 195–206.

23 *Native Village of Kivalina v. ExxonMobil Corp. et al.*, 663 F.Supp.2d 863, 2009 WL 3326113 (2009).

24 A. Ielemia, "A Threat to Our Human Rights: Tuvalu's Perspective on Climate Change", *UN Chronicle*, Vol. 44, No. 18 (2007).

example of the possible outcomes of the principle of "common but differentiated responsibilities"—even though states do not agree on whether this "responsibility" refers to states' historic emissions rather than their financial capacities,[25] nor on its exact legal consequences. At the moment, climate adaptation finance is based on voluntary contributions by states or other moneys mobilised by them,[26] not on any type of compulsory damages. It is uncertain whether states would agree to go further than giving money and agree to climate change adaptation encroaching on their sovereign right to control their borders.

Finally, the security-based narrative results from military or intelligence research on the potential threats of climate change. It argues that states should act now to prevent future political instability in partner or neighbouring countries as well as to prevent massive illegal migration, which (in this view) could arguably exacerbate international drug, arms and human trafficking or even terrorism. In contrast with the two other narratives, a security-based narrative of environmental migration provides a credible answer to the question "why would states agree to act?" Protecting one's own interests through mitigating external threats has proved to be a great incentive for many states. Significantly, James Hathaway demonstrates that, in the period immediately following the Second World War, states' agreement to protect political refugees through a binding international convention resulted from a similar security-based narrative—more precisely, a shared willingness to "govern disruptions of regulated international migration in accordance with the interests of states".[27] The same might be true of a future engagement of the international community with the "management" of environmental migration. Yet the challenge of this narrative is to integrate human rights and fairness considerations within a mostly "realist", state-focused regime. To this extent, the experience of the international protection of political refugees may reveal something about how to reconcile security incentives with humanitarian concerns but also, through the reluctance of a growing number of states to comply with their obligations, the limits of such a "reconciliation".

25 Mayer, "Fraternity, Responsibility and Sustainability".
26 UNFCCC, "Cancun Agreements", paragraphs 95, 98.
27 J. C. Hathaway, "A Reconsideration of the Underlying Premise of Refugee Law", *Harvard International Law Journal*, Vol. 31, No. 1 (1990), p. 133.

Alternative Actions

A second debate concerns the actions that could be taken. The options range from an international treaty to bilateral or regional, informal cooperation. Significant middle ground can also be found between those two solutions. As mentioned earlier, several studies propose that an international convention be ratified that would essentially resemble the Refugee Convention. These proposals clearly follow a rights-based narrative, as they recommend "systems of global governance for the recognition, protection and resettlement of climate refugees".[28] For Frank Biermann and Ingrid Boas, such a convention should be based on the five guiding principles of "Planned Re-location and Resettlement", "Resettlement Instead of Temporary Asylum", "Collective Rights for Local Populations", "International Assistance for Domestic Measures" and "International Burden-Sharing".[29] In order to ensure the funding of resettlement, these proposals also anticipate the establishment of some form of international fund.[30]

However, several authors have also noted that such proposals include no realistic governance options, at least in the short to middle-term. For instance, according to Angela Williams,

> taking into consideration the unwillingness of states to compromise their sovereignty, and acknowledging the reluctance of the United States to agree to the most basic of commitments via the Kyoto Protocol, it would seem unlikely that a new global agreement could be reached specifically in relation to climate change displacement.[31]

Jane McAdam has also questioned:

> the utility—and, importantly, the policy consequences—of pinning "solutions" to climate change-related displacement on a multilateral instrument, in light of the likely nature of movement, the desires

28 Biermann & Boas, "Preparing for a Warmer World", p. 61. See also D. Hodgkinson et al., "'The Hour When the Ship Comes In': A Convention for Persons Displaced by Climate Change" (2009), p. 13, http://www.ccdpconvention.com/documents/Hour_When_Ship_Comes_In.pdf (accessed 13 December 2011).

29 Biermann & Boas, "Preparing for a Warmer World", pp. 75–76.

30 Ibid., 79ff; Docherty & Giannini, "Confronting a Rising Tide"; Hodgkinson et al., "The Hour When the Ship Comes In".

31 A. Williams, "Turning the Tide: Recognizing Climate Change Refugees in International Law", *Law & Policy*, Vol. 30, No. 4 (2008), p. 517.

> of communities affected by it, and the fact that a treaty will not, without wide ratification and implementation, "solve" the humanitarian issue.[32]

Trying to overcome this criticism, Williams argues that "an alternative system for addressing the plight of those displaced by climate change may be better coordinated by way of regional agreement, operating under an international umbrella framework".[33] A resolution of the United Nations General Assembly could set the tone of such a framework for protecting climate change-induced migrants and encourage the negotiation and implementation of ad hoc agreements.[34] The underlying assumption of this "regionalisation" of climate migration governance is that states would have a greater incentive to agree on curtailing their sovereign rights when dealing with specific resettlement programmes concerning a predetermined number of individuals, some of whom might otherwise illegally cross international borders and contribute to the development of certain security threats, rather than giving *carte blanche* to any ill-defined migrant that could be considered to be induced by environmental change. Negotiated *quid pro quo* commitments with the country of origin could include cooperation in preventing illegal migration by those not covered by the negotiated agreement. Scientific assessments provided by a neutral international institution may foster such negotiations. Among other advantages, Williams suggests that a regional approach would "establish … a structure whereby good practice can be demonstrated and exchanged between regional groups",[35] thus allowing progress in regional governance. This could prove to be of paramount importance, considering the difficulties involved in successful resettlement of populations.

The trend towards regionalism is particularly promising in Southeast

32 J. McAdam, "Swimming against the Tide: Why a Climate Change Displacement Treaty is Not *the* Answer", *International Journal of Refugee Law*, Vol. 23, No. 1 (2011), p. 2.

33 Williams, "Turning the Tide", p. 518.

34 B. Mayer, "The International Legal Challenges of Climate-Induced Migration: Proposal for an International Legal Framework", *Colorado Journal of International Environmental Law and Policy*, Vol. 22, No. 3 (2011), pp. 357–416.

35 Williams, "Turning the Tide", p. 521.

Asia.[36] ASEAN has already fostered regional cooperation on topics such as economic migration and protection of the environment.[37] However, ASEAN has yet to be socially constructed as an "imagined community" of solidarity between nations.[38] For instance, Indonesia has not felt compelled to ratify the 2002 Agreement on Trans-Boundary Haze Pollution, even though nine other ASEAN members ratified it in reaction to the consequences of land clearing fires in Sumatra.[39] Rather than a normative forum able to compel states to act in conformity with overriding regional interests, ASEAN has developed as a "regional system for collaboration"[40] where states can work together on consensual programmes: states are rarely ready to make significant concessions on important national interests.

Even so, funding of regional attempts at climate migration-related governance may still be an issue. On the one hand, some funds could come from countries interested in encouraging particular negotiations but not willing to allow migrants on their own territory. On the other hand, pushing the "responsibility" argument, affected developing states could claim substantive contributions from Western countries. The threat of or even actual litigation may push these developed states to

36 Center for Strategic and International Studies, "Asia's Response to Climate Change and Natural Disasters: Implications for an Evolving Regional Architecture", A Report of the CSIS Asian Regionalism Initiative (Washington, D.C.: CSIS, 2010), pp. 57–58, http://csis.org/publication/asia%E2%80%99s-response-climate-change-and-natural-disasters (accessed 13 December 2011); S. Tay, "The Environment and Southeast Asia: Regionalism, States and Community", in V. R. Savage and M. Tan-Mullins (Eds.), *The Naga Challenged: Southeast Asia in the Winds of Change* (Singapore: Marshall Cavendish Academic, 2005).

37 ASEAN, "ASEAN Declaration on the Protection and Promotion of the Rights of Migrant Workers (Cebu Declaration)", 12th ASEAN Summit, Cebu, Philippines (2007); ASEAN, "ASEAN Agreement on Transboundary Haze Pollution" (2002), http://www.aseansec.org/pdf/agr_haze.pdf (accessed 13 December 2011).

38 S. Tay, R. G. Patman & B. Mason-Parker, "Interdependence, States and Community: Ethical Concerns and Foreign Policy in ASEAN", in D. B. MacDonald (Ed.), *The Ethics of Foreign Policy*, (Farnham: Ashgate, 2007).

39 L. Tacconi, F. Jotzo & R. Q. Grafton, "Local Causes, Regional Co-operation and Global Financing for Environmental Problems: The Case of Southeast Asian Haze Pollution", *International Environmental Agreements: Politics, Law and Economics*, Vol. 8, No. 1 (2008), pp. 1–16, at pp. 3–4, passim.

40 Koh & Robinson, "Strengthening Sustainable Development in Regional Inter-Governmental Governance", p. 643.

agree to a certain form of redistribution. An international umbrella institution could be in charge of monitoring voluntary donations and could channel them so as to encourage fruitful negotiations and effective implementation of resettlement programmes.[41] Developed states have shown some readiness to contribute *financially* on a voluntary basis to common efforts aimed at supporting political refugees or at mitigating and adapting to climate change: the US$3 billion United Nations High Commissioner for Refugees (UNHCR) budget is provided entirely by voluntary donations and, during the Conference of the Parties to the United Nations Framework Convention on Climate Change in 2010 (COP16), developed states committed themselves to "mobilize USD 100 billion per year by 2020 to address the needs of developing countries".[42]

Alternative Actors

In creating governance structures to deal with climate change-related migration, different actors can implement different narratives and actions at the universal, regional, national or sub-national level. As has been shown, proposals have become progressively distanced from a universal regime, as it appeared that this would require a large, probably unavailable amount of diplomatic resources. Rather than using established regional groups, ad hoc agreements could be more flexible, seeking larger participation. In the current era of globalisation, many states have strong socioeconomic, cultural, linguistic or ethnic connections with other far-flung states, while close neighbours may reject any compromise.

International institutions could also play a role in fostering regional or bilateral negotiations. This could be done through the adoption and promotion of international standards and through the establishment of a universal voluntary fund, but also with the help of a dedicated institution and an expert panel. Existing international organisations have played a role in developing knowledge on climate change-induced migration, but they have generally led to few ground operations and to no universal framework. The mandate of the UNHCR, for instance, has not generally extended to assisting internally displaced persons beyond those who would have been refugees if they had crossed international borders,

41 Mayer, "The International Legal Challenges of Climate-Induced Migration".
42 UNFCCC, "Cancun Agreements", paragraph 98.

thus excluding internal climate migrants. However, in accordance with the Refugee Convention, the UNHCR has reiterated that persecution does not need to be the exclusive factor of migration for someone to be protected as a political refugee. For instance, the agency has insisted that Kenya "accept Somalis as prima facie refugees", even though political persecution coincided with drought to induce migration.[43]

In contrast, the International Organization for Migration has a much broader mandate. According to its constitution, its primary purpose is "to make arrangements for the organized transfer of migrants, for whom existing facilities are inadequate or who would not otherwise be able to move without special assistance, to countries offering opportunities for orderly migration".[44] The expertise of other institutions such as the United Nations Environment Programme and the Office for the Coordination of Humanitarian Affairs could also be required in matters related to climate change-induced migration. However, the specificity of climate change-induced migration is certainly a sufficient reason for a dedicated international organisation to be established, as climate migration governance would require specialised expertise in migration, climate change, facilitation of international negotiations and management of international funds. Nonetheless, international organisations with specific capacities could be associated in order to help states carry out ground operations.

Regional development banks may also play an important role. In Asia and the Pacific, Robert Dobias does not exclude the possibility that the Asian Development Bank (ADB) may consider entering into partnerships with other organisations.[45] With substantial experience in channelling international finance and a sufficiently large geographic scope to circulate best practices, the ADB could indeed offer promising financial and scientific support to flexible regional cooperation on climate change-induced migration.

43 V. Kolmannskog, "Climate Change, Disaster, Displacement and Migration: Initial Evidence from Africa", UNHCR Working Paper No. 180 (Geneva: UNHCR, December 2009), p. 9.

44 IOM, "Constitution of the International Organization for Migration" (1953), Article 1.1(a).

45 R. J. Dobias, "ADB's Role in Addressing Climate Change and Migration", Presentation to Climate Change, Migration and Human Security in Southeast Asia Seminar, Singapore (27 May 2011), http://www.rsis.edu.sg/nts/events/docs/Bob_Dobias.pdf (accessed 16 April 2012).

Conclusion: The Way Forward

Fundamental uncertainties remain about how many people will be displaced by climate change, as well as when and how that displacement will take place. Dramatic forecasts have suggested that "the world would have to cope with 50 million climate refugees by 2010", but this has "failed to materialize".[46] Nonetheless, there is little doubt that climate change exacerbates factors of migration, especially for some of the world's most vulnerable people. International decision-makers will therefore eventually be forced to address the issues of when, how and why to coordinate action regarding climate change-induced migration. Doing nothing would be the easiest option, but it may also be the worst solution, given its likely cost in terms of human rights, security and pacification of a geopolitical order. Yet it also seems highly unlikely that the international community will be able to agree in time on a comprehensive global regime providing for both the resettlement of and compensation to all those affected by climate change-related events. Instead, a "middle ground" approach to protection is more likely to be implemented. This chapter is based on the consideration that a governance proposal cannot forget the difference between what is desirable and what is realistic: the greatest challenge of inventing an international regime of climate migration is to reconcile the ambitions of protecting human rights beyond the protection provided by the states of origin with the driving forces of an international community that remains focused on states and dominated by the interests of developed countries.

Climate change-related migration is of sufficient concern for the international community to warrant a new model of governance specially tailored to the issue. To this extent, the analogy with the international protection of refugees should be made. The Refugee Convention succeeded in reconciling the protection of rights with states' "enlightened

46 A. Bojanowski, "UN Embarrassed by Forecast on Climate Refugees", *Spiegel Online* (18 April 2011), http://www.spiegel.de/international/world/0,1518,757713,00.html (accessed 13 December 2011); see also F. Gemenne, "Why the Numbers Don't Add Up: A Review of Estimates and Predictions of People Displaced by Environmental Changes", *Global Environmental Change*, Vol. 21, No. S1 (2011).

self-interest"—their conception of their own security.[47] In order to mitigate international tensions arising from post-Second World War refugee populations in Europe, this convention invented a model of human rights protection; today, it has the distinction of being the "oldest treaty aimed at protecting a specific category of persons", followed by conventions for the protection of women, children, migrant workers and persons with disabilities.[48]

Yet, the analogy between climate migration and political asylum should not go as far as automatically applying to an ill-defined but very broad category of "climate migrants" (or "climate migration seekers"), the model developed for the protection of political refugees and then extended to other vulnerable categories of persons. Constructive ambiguities should be found to direct the well-understood interests of states to a humanely acceptable regime that would provide legal protection for those affected by environmental changes, allowing an expansive and ambitious programme to be agreed upon and successfully implemented by relevant states. As argued in this chapter, such a model might well consist of a global umbrella—a soft-law instrument, an institution and a budget—intended to facilitate regional or bilateral negotiations.

This chapter is adapted from a paper presented at the 8th Network of Asia-Pacific Schools and Institutes of Public Administration and Governance International Conference on "Reinventing Governance for Managing Climate Change and Its Adaptation", Kathmandu, 15–16 December 2011. I wish to thank the participants to the conference for insightful comments and Professor Lorraine Elliott for her advice on this paper.

47 J. C. Hathaway, *The Rights of Refugees under International Law* (Cambridge: Cambridge University Press, 2005), p. 93.

48 W. Kälin & J. Künzli, *The Law of International Human Rights Protection* (Oxford: Oxford University Press, 2009), p. 44.

CHAPTER 4

CLIMATE CHANGE AND MIGRATION

SOME LESSONS FROM EXISTING KNOWLEDGE OF MIGRATION IN SOUTHEAST ASIA

Graeme Hugo

Introduction

The discourse around the impact of global climate change on population movement has been characterised by alarmist predictions of massive population displacement. However the effects of current and impending climate change on population settlement patterns and mobility will be more complex. This chapter argues that they will be mediated not only by the vulnerability, resilience and resources of communities influenced by climate change but also the existing patterns of population mobility in those communities. Moreover, understanding of the latter could not only provide insights into how climate change will affect mobility, but also lessons which could inform policies to facilitate communities adjusting to the effects of climate change.

This chapter summarises some of the major lessons from existing knowledge of migration in the Southeast Asian region which may be of relevance to understanding the potential impact of climate change in the region. It is divided into two sections which align to the two major roles that migration can play in response to climate change—adaptation and (involuntary) resettlement. The first section considers some dimensions of existing migration patterns in Southeast Asia which are relevant to considering migration as an adaptive response to climate change.[1] The second focuses on the considerable experience within the Southeast Asian region regarding forced population displacement.

1 For a more detailed summary, see G. J. Hugo et al., *Climate Change and Migration in the Asia-Pacific Region* (Edward Elgar, forthcoming).

Migration and Adaptation

Migration Versus *In Situ* Adjustment

While personal mobility has increased massively in Southeast Asia in recent decades,[2] most people adjust to economic, social, demographic, political and environmental change *without* moving. Most adjustment to change is *in situ*. However, the assumption is often made that migration will be the only, or at least predominant, response. Permanent migration may eventually be the ultimate result, but it is likely that a number of *in situ* adjustments will have been attempted prior to movement and only a minority of the populations affected by climate change are likely to move.

To assume that all or most of the populations living in areas that seem likely to experience significant climate impact will move is not only unrealistic and not justified by empirical knowledge of contemporary migration, but it can also be detrimental to developing effective adaptation policy in those areas. Local communities often have a preference for *in situ* adjustment than for migration, and premature judgements can close off policies and programmes that can support these preferences.

The Role of Migration Networks

Most population movement in the Asia-Pacific region is influenced by social networks. These networks are created when a pioneer migrant moves to a destination and in so doing gives his or her friends and relatives in the place of origin a piece of social capital in that destination which can be "cashed in" to provide trusted information about opportunities in that destination, assistance in the moving process and assurance of support upon arrival. Social network theory is one of the most powerful theories explaining the initiation and maintenance of migration streams in Southeast Asia. It explains why migrants are not drawn randomly from the origin and do not settle in the destination in such a way as to replicate the distribution of the total destination population. Networks proliferate with increased mobility, which modern forms of transport have strengthened by facilitating more frequent and intimate contact between origin and destination.

2 G. J. Hugo & S. Young (Eds.), *Labour Mobility in the Asia-Pacific Region: Dynamics, Issues and a New APEC Agenda* (Singapore: Institute of Southeast Asian Studies, 2008).

Migrant networks are fundamental to understanding much migration—internal and international—in Southeast Asia. Unlike the conventional stereotype of migrants arriving wide-eyed in alien new destinations not knowing anyone, most "new" migrants move along trajectories well trodden by earlier generations of family and friends with whom they have kept contact, received information and help from, and who assist them to adjust to life in the new destination.[3] Networks will be one of the major mechanisms which will ensure that mobility is one of the responses to the impact of climate change—both as a form of adaptation to the slow onset of change, and in cases of temporary and permanent displacement in response to sudden extreme events. The latter has been apparent, for example, in recent disasters such as the Southeast Asian tsunami of 2004 when many of those displaced moved to houses of friends and relatives in areas not affected by the tsunami disaster.[4]

Migration as a Mechanism for Households Coping with Change

There is a long history in Southeast Asia of migration being employed by families and households as a way of coping with reductions of income or production in the home area (see Olivia Dun's chapter in this monograph). In the past this was associated with the dominance of extended family structures and patriarchal power structures. The New Household Economics theory of migration has focused particular attention on the way in which households and families deploy family members to work elsewhere. This serves as a mechanism to reduce households' vulnerability to reductions in their ability to earn a local livelihood.

During the Southeast Asian financial crisis of the late 1990s, many families in Indonesia sent female members to work in the Middle East in order to diversify the family's income sources. This helped them cope

3 G. J. Hugo, "Community and Village Ties, Village Norms and Village Networks in Migration Decision Making", in G. F. DeJong & R. W. Gardner (Eds.), *Migration Decision Making: Multidisciplinary Approaches to Microlevel Studies in Developed and Developing Countries* (New York: Pergamon, 1981), pp. 186–224.

4 C. L. Gray, "Tsunami-Induced Displacement in Sumatra, Indonesia", Paper presented at XXVI IUSSP International Population Conference (Marrakech, 27 September – 2 October 2009).

with the reduction of income because of losses within Indonesia.[5] This phenomenon has clear relevance to climate change impacts that may affect the abilities of families and households to earn a livelihood in their home areas. It is of particular significance to households that are dependent on agricultural production.

Migration and Poverty

It is apparent that migration has played a role in reducing poverty in Southeast Asia both among movers and their families as well as in communities of origin. However, a strong finding is that, in general, it is not the poorest of the poor who move.[6] The poor often cannot afford to move, and their information about, and networks to, potential destinations are often limited because they are less likely to have relatives and friends living elsewhere. Thus they may not be able to adapt to anticipated environmental deterioration. Hence migration is less available to the poor as an adjustment mechanism to cope with climate change's impacts and if it is to be made available to them, support and assistance must be provided to facilitate their migration.

The challenges for migration as a form of adaptation or response to the impacts of climate change for the poor are especially exacerbated in the case of international migration as there are significant barriers to their movement within the Southeast Asian region.[7] While the barriers to entry of foreign, highly-skilled workers have been substantially reduced in recent years, those for low-skilled groups have, if anything, strengthened so that many streams have become more selective, despite increasing evidence that international migration is a structurally important component of economies in Southeast Asia.

Migration as a Gendered Process

One of the major developments in migration research in Southeast

5 G. J. Hugo, "The Impact of the Crisis on Internal Population Movement in Indonesia", *Bulletin of Indonesian Economic Studies* , Vol. 36, No. 2 (2000), pp. 115–138; G. J. Hugo, "The Crisis and International Population Movements in Indonesia", *Asian and Pacific Migration Journal*, Vol. 9, No. 1 (2000), pp. 93–129.

6 R. Skeldon, "Rural-to-Urban Migration and its Implications for Poverty Alleviation", *Asia-Pacific Population Journal*, Vol. 12, No. 1 (1997), pp. 3–16.

7 Hugo & Young (Eds.), *Labour Mobility in the Asia-Pacific Region*.

Asia over the last decade has been recognition that migration is a profoundly gendered process (see chapter by Bernadette Resurreccion and Edsel Sajor in this monograph).[8] There has been a faster increase in the mobility of women than of men so that overall there are similar proportions who move. Women dominate in several types of major movement, however, such as rural-urban migration and in some key international labour migrations such as that of domestic workers. The key point is that *patterns* of migration are not only often different between men and women but so too are the *drivers* and *impacts* of migration. There is a complex relationship between the changing role and status of women in the region, on the one hand, and migration on the other.[9] The implications of this for climate change-related migration are not clear, but it is apparent that it is necessary to be gender sensitive not only in the investigation of mobility, but in any policy interventions relating to it.

Migration and Development

While much of the environment and migration literature tends to see migration as problematic, there is an increasing body of work that suggests that migration can have beneficial impacts, both in origin and destination countries, within the right policy context. There has been a paradigm shift in thinking on the migration-development relationship. In the past, "brain drain" arguments focusing on migration reducing the stock of human capital in the country of origin were dominant, and the consensus was that migration had a net negative impact on development in origin areas. However, there has been increased emphasis on the positive effects that migration can have on development in low-income countries and regions. This outcome results from the impact of

8 N. Piper, "Gender and Migration", Paper prepared for the Policy Analysis and Research Programme of the Global Commission on International Migration (2005), http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/policy_and_research/gcim/tp/TP10.pdf (accessed 26 March 2012).

9 G. J. Hugo, "Migration and Women's Empowerment", in H. B. Presser & G. Sen (Eds.), *Women's Empowerment and Demographic Processes: Moving Beyond Cairo* (Oxford: Oxford University Press, 2000), pp. 287–317.

remittances,[10] increased foreign direct investment,[11] knowledge transfer, and involvement of the diaspora in development activity at home and through temporary and permanent return migration.[12] In this way, it is argued that migration can deliver a triple win dividend with positive outcomes not only for the migrant and their family, but also for the origin and destination countries. This does not mean, however, that all migration produces such a positive income, as migrants can experience both positive and negative effects.

What does this mean for climate change-induced migration? In this context, migration should not simply be viewed as an adjustment or coping mechanism. Migration can play an active role in building resilience and adaptive capacity in areas influenced by climate change through remittances and other diaspora influences. It can also materially improve the situation of the people moving and their families. Getting the migration policy right in areas that might be influenced by climate change, therefore, not only facilitates the survival of people living in those areas, but can positively encourage development and improve the situation of people living there. Hence in climate change-affected areas, migration needs to be considered not only as a "defensive" response, but also as an "offensive" active intervention to encourage development.

Lessons from Population Resettlement

Whilst there has been some exaggeration of potential forced displacement because of climate change, such displacement will occur, albeit as a last resort after adaptation options have been exhausted. A crucial question relates to the extent to which displacement caused by climate change impacts can be anticipated and operationalised, so that those families and communities forced to move are protected and their livelihoods maintained. In this context, there is considerable experience of resettlement

10 D. Ratha, "Leveraging Remittances for Development", Paper for the Second Plenary Meeting of the Leading Group on Solidarity Levies to Fund Development (Oslo, 6–7 February 2007).

11 D. F. Terry, "Remittances as a Development Tool", in D. F. Terry & S. R. Wilson (Eds.), *Beyond Small Change: Making Migrant Remittances Count* (Washington, D.C.: Inter-American Development Bank, 2005), pp. 3–19.

12 United Nations, "International Migration and Development: Report of the Secretary-General", Report at the 60th Session of the General Assembly (New York: United Nations, 18 May 2006).

within countries in Southeast Asia, and it is crucial that it be drawn upon extensively in efforts to plan climate change-related resettlement and to maximise the chances of climate change-related displacements having positive outcomes for those displaced. The overwhelming impression one gains from the literature, however, is that resettlement programmes have had a poor record, often resulting in loss of income and wellbeing among those who move, as well as conflict with different ethnic groups at the destination.[13] Overwhelmingly, the experience of resettlement, with the exception of refugees, has involved migration *within* countries.

In distilling the lessons from the experience of displacement and resettlement it is important to note that there is no single magic recipe for initiating successful resettlement schemes since circumstances vary considerably from place to place. Nevertheless, there are a number of issues (explored below) which recur in the literature. While it is possible to identify "best practice" in displacement and resettlement,[14] many of the lessons come from failure rather than success and few areas of public policy have a more sustained record of failure.[15] Ultimately, the key indicator of success in displacement and resettlement must be that those displaced are established at their destination with, at minimum, the same level of living they enjoyed at the origin, but desirably an improved standard of living.

Provision of Sufficient and Properly Allocated Funding

One of the chronic problems of resettlement programmes has been a failure to provide the necessary level of funding for the displacement and resettlement processes. Equally significant is the misallocation of those funds through corruption and poor planning. Too often the funding allocation is based purely on the resources made available by the government, rather than on a careful analysis of the actual costs incurred in relocating from the origin and re-establishing livelihoods at the destination. For example, an analysis of resettlement associated with China's Three

13 M. Cernea & C. McDowell, *Risks and Reconstruction: Experiences of Resettlers and Refugees* (Oxford: Berghahn Books, 2000).

14 World Bank, *Resettlement and Development* (Washington, D.C.: World Bank Environment Department, 1994).

15 M. Cernea, "The Risks and Reconstruction Model for Resettling Displaced Populations", *World Development*, Vol. 25, No. 10 (1997), pp. 1569–1587.

Gorges Dam found that compensation paid for assets lost by families was in most cases insufficient for them to re-establish themselves at an equivalent level at the destination.[16] Michael Cernea argues that one problem in past resettlement programmes has been that compensation payment for assets lost does not equate to comprehensive funding of the process of dislocation and resettlement at the destination. The latter is a *sine qua non* of successful resettlement programmes.[17]

Resettlement of families and communities displaced by climate change is expensive. Few low-income countries can afford to fully fund displacement and sustainable resettlement on the scale required. International funding and support is critical to resettle successfully those people displaced by climate change. Individual nation states have the primary role and responsibility for identifying communities that will be affected by climate change and for which resettlement will eventually be necessary. However, the international community has a very important and increasing role for a number of reasons:

- many communities and their home countries who are likely to experience the most severe impacts of climate change are poor and will not have the resources (financial, institutional, technological and human) to effectively respond to those impacts;
- more developed countries have been responsible for a disproportionately large share of the total greenhouse gas emissions which are the root cause of the change in the earth's climatic conditions; and
- the lack of an effective international regime to cope with climate change-induced migration could lead to significant negative humanitarian outcomes, development failure and possibly conflict.

Moreover, according to the principle of "common but differentiated responsibilities" embedded in the United Nations Framework Convention on Climate Change, the international community and especially

16 Y. Tan, *Resettlement in the Three Gorges Project* (Hong Kong: Hong Kong University Press, 2008).

17 M. Cernea, "Understanding and Preventing Impoverishment from Displacement: Reflections on the State of Knowledge", *Journal of Refugee Studies*, Vol. 8, No. 3 (1995), pp. 245–262.

higher income nations will need to cooperate in order to ensure that appropriate technical, management, financial and political assistance is provided to nations and communities that are likely to experience climate change-induced forced displacement and resettlement.

There has been considerable discussion about the establishment of a global fund, or a number of regional funds, which would be financed by contributions from high-income nations and which would provide resources for low-income countries for adaptation, mitigation and responses to the impacts of climate change. Funding to support equitable and sustainable displacement and resettlement would be appropriate. However, the support would also need to include a substantial element of capacity-building and assistance in establishing appropriate structures and institutions to ensure that funding is sufficient and allocated in a way that maximises the benefits to displaced populations.

Planning of the Displacement-Resettlement Process

One of the advantages held by low-income countries faced with the inevitability of eventually needing to resettle in some communities due to the impact of climate change is *time*. While it is important to stress the urgent need for action and the displacement impacts of climate change are more imminent in some countries than others, in most cases the slow onset effects mean that communities, nation states and the international community have a significant period of time to plan for displacement and resettlement where it is considered to eventually be necessary. This is not to say that there is no urgency. Although the desired end point may be decades away, there is an urgency to begin planning the process. One finding from the resettlement literature is that time is required to put in place all of the institutions, structures and mechanisms to facilitate equitable and sustainable resettlement. A key barrier to the success of past resettlement projects has been weak governance, with the institutions charged with the responsibility of resettlement lacking a political mandate and having poor institutional capacity.[18] Too often poor planning means that the displacement process is unnecessarily costly and distressing for those forced to move and there is inadequate preparation at the destination to give them a reasonable opportunity to re-establish

18 Ibid.

their livelihoods. Accordingly a significant level of effort needs to be put into the establishment of the institutions, structures and mechanisms to develop policy relating to displacement-resettlement and to operationalise that policy in a fair, efficient and effective way. This will involve considerable capacity-building based on appropriate training and development of a cadre of professionals who are well equipped to plan and put into effect each phase of the complex displacement-resettlement process.

In particular, insufficient planning for displaced persons to re-establish their livelihoods at the destination has been a consistent problem. Some of the issues which have arisen are:

- expecting agriculturalists to adjust to different soil, climatic, slope and other conditions without training;
- not preparing sufficient infrastructure at the destination;
- not giving settlers sufficient time to re-establish themselves at their destination with government supplementation of income and support;
- selection of destination areas that are not suitable for close settlement; and
- failing to replace off-farm work opportunities which were available at the origin in the destination areas.

One difference between climate change-related displacement schemes and some land settlement schemes is that the latter are able to select settlers whose attributes are deemed to be most likely to facilitate successful adjustment at the destination. In much climate change-related displacement, as with resettlement associated with infrastructure projects, entire communities need to be re-established at a destination. This can be an advantage since it provides the potential at least for the social capital of a community to be transplanted. However, making special provision for disadvantaged groups—for example, the poor and the elderly—is an important element in planning resettlement.

Empowerment of the Displaced People and Communities

A finding of the literature on resettlement is that too often the process has been "top down" in that the involvement of those being displaced has been limited. Displaced communities often perceive themselves as

powerless and this erodes the resilience and social capital of resettled communities. Engagement of the communities from the earliest stages of planning and in each stage of the process in a way that gives them ownership of both the displacement and resettlement processes is paramount. Too often fully centrally conceived and operationalised programmes fail to do this and as a result:

- miss out on the insights of local informants about what strategies are most likely to be effective and those that are likely to fail; and
- miss the opportunity to gain the full cooperation of the displacees, especially their leaders.

The social and cultural dimensions of displacement and resettlement are often overlooked in the focus on re-establishing the economic livelihood of the displaced persons. However, maintaining social capital of displaced communities is essential for them to effectively re-establish themselves at the destination. Powerlessness, dependence, vulnerability and lack of resilience can be major barriers to successful displacement-resettlement schemes, and the involvement of the displaced at each stage can reduce negative developments.

While it is not always possible, there should be an element of choice in the relocation process. It may be possible for some people to remain in their original location. While in some cases displacement is perceived by policymakers to be the only option available to communities at risk, sometimes it is possible for a smaller number of people to have a sustainable livelihood without moving.

Part of the engagement with the community to be displaced must involve the development of a functional and effective relationship between the planners and relevant officials on the one hand, and the communities on the other. Drawing on several decades' experience of resettling displaced populations, Cernea maintains that "[d]ysfunctional relationships between planners and groups affected by displacement are one of the roots of resettlement failure".[19] Indeed, failure to develop such a relationship can lead to active opposition to resettlement within the

19 Cernea, "The Risks and Reconstruction Model", p. 1577.

affected community.[20] Cernea argues that relevant agencies frequently try to withhold key information from the communities, which results in distrust and a failure to harness the potential of the energy of the displacees which, if effectively mobilised, could contribute to reconstructing their livelihoods.[21]

Full Engagement with Destination Communities

A common problem with land settlement and infrastructure resettlement programmes has been the neglect of pre-existing local communities in resettlement areas. In most cases of resettlement, there are well-established communities at the destination, and it is usual that these local communities are affected by the arrival of displaced persons. Involving destination communities is important in terms of taking into account their interests, as well as drawing on their experience and local knowledge to assist in resettlement. At the outset it is necessary for these communities to be engaged fully, including through consultation, in every relevant stage of planning, relocation and resettlement in the same way as it is done for those being displaced. Not to do so risks disaffection and resentment in that group which may then mobilise effective opposition to resettlement. A basic principle is that the destination community, like the displacees, should not experience a decline in their livelihood as a result of resettlement. Their rights need to be fully recognised and they should be properly compensated for any loss of property. It is important that resettlement not be attempted where the displacees and the pre-existing local populations have existing enmities or practices that may offend the other group.

Another aspect relates to the resources and infrastructure which are made available to the displaced settlers. It is important that local populations do not feel that they are excluded or discriminated against by not having access to equivalent resources. An important distinction needs to be made between those infrastructure and services provided on a temporary basis to facilitate adjustment, and those which are provided on a longer term basis. The latter should be made available to both locals

20 A. Oliver-Smith, "Resistance to Resettlement: The Formation and Evolution of Movements", in *Research in Social Movements, Conflicts and Change* (Greenwich, CN: JAI Press, 1994).

21 Cernea, "The Risks and Reconstruction Model", p. 1577.

and newcomers. It could be, too, that involving the existing community in the work required to prepare for settlement, rather than relying on workers and planners from outside the area, can assist in the successful melding of local communities and newcomers.

Making Use of Existing Social Networks

One of the consistent findings in migration research is the importance of the migrants' social networks with their home communities in encouraging and facilitating further migration.[22] However, social networks also play an important role in facilitating adjustment at the destination. Accordingly where it is possible, resettlement of communities to locations where they have substantial social capital in the form of earlier generations of migrants should be encouraged. This is especially so where resettlement involves rural-to-urban displacement, which will loom large in climate change-induced migration. Migrant communities are often instrumental in cushioning newcomers' adjustment to their destination by offering help in entering the labour and housing markets and in providing crucial social and cultural support and assistance.

While there is a substantial literature that testifies to the importance of social networks in facilitating the adjustment of spontaneous internal and international migrants at the destination, there is little evidence of their use in planned migrations. One danger is that too much reliance can be placed upon that support which, as a result, weakens it. Clearly, there is a need for development of policies and programmes that bolster and support the social capital embodied in social networks rather than seeing them as a substitute for government investment.

Ensuring the Reconstruction of the Livelihoods of Displaced Persons

The bottom line of any resettlement programme must be that the level of livelihood of those displaced is, at least, re-established at the destination, but preferably improved. However, the circumstances at the destination may be quite different to those at the origin so that the livelihood at the destination may necessarily be significantly different to that at the origin. There often will be a need for training of the resettlers to equip them

22 D. Massey et al., "Theories of International Migration: A Review and Appraisal", *Population and Development Review*, Vol. 19, No. 3 (1993), pp. 431–466.

with the knowledge and skills required to earn a living at the destination. In the initial stages of establishment it is necessary to provide support through funding or access to work, including the kind of work that is required to build the settlement—housing, infrastructure, land clearing, preparation and so on. This support must be available for a sufficient time period to allow resettlers to establish themselves at the destination. There is some experience of support being withdrawn prematurely with the consequence that settlers lapse into poverty.

Re-establishment at the destination must involve the provision of appropriate infrastructure and services. Where resettlement is based upon agriculture, there are dangers that the newcomers will not be allocated enough land of sufficient quality to earn a livelihood. There is a tendency to make available land not wanted by existing communities because of its more marginal quality. In addition, for many of those displaced, off-farm supplementary forms of income have been critical to their pre-move livelihood, but these are often overlooked by planners who focus totally on the establishment of a viable agricultural holding. In a review of land settlement schemes, A. S. Oberai found that most of these schemes were not able to generate sufficient non-farm employment opportunities.[23]

Recognising Differences in the Displaced Population

In resettlement there is no "one size fits all" solution. Cernea argues that some population subgroups are hurt more by displacement than others, and the level and type of support and assistance they require also varies.[24] In several programmes, women are compensated less than men, and older people and children are neglected. An important issue in climate change-related displacement is that the poor are likely to be disproportionately affected since they have fewer resources available to make adaptations before resettlement becomes necessary. Vulnerable groups at the origin risk becoming even more vulnerable at the destina-

23 A. S. Oberai, "Land Settlement Policies and Population Redistribution in Developing Countries: Performance, Problems and Prospects", *International Labour Review*, Vol. 125, No. 2 (1986), pp. 141–161; A. S. Oberai, *Land Settlement Policies and Population Redistribution in Developing Countries: Achievements, Problems and Prospects* (New York: Praeger Publishers, 1988), pp. 8–19.

24 Cernea, "The Risks and Reconstruction Model", p. 1576.

tion. Special attention to vulnerable groups is especially necessary where entire communities are being resettled and there is no selectivity in who moves. Such groups will have the most limited resources, information and contacts at the destination to assist in the process of readjustment.

Re-establishing Social and Cultural Capital at the Destination

In the concentration on establishing the physical capital, natural capital and human capital components of human security that can be lost by communities due to displacement, there is often a neglect of their loss of social capital. Strategies are required to assist displaced people to restore their capital in all its forms.[25] There is then a need to assist the new settlers to build their social and cultural capital at the destination as part of the adjustment process. This can be facilitated where communities re-establish themselves at the destination as a cohesive group, but sensitivity and innovative policy will be required if social capital is to be transplanted. In international migration, some experience has been gained with multiculturalism policies which have focused upon new arrivals maintaining their language, culture and social networks, while still embracing the main tenets of the host society. There would seem to be some transferability of these lessons to the internal migration resettlement context.

Conclusion

As the world seeks to develop a response to climate change through mitigation of the drivers of that change and adaptation to its impacts, migration is likely to become important in the latter. However, there is a real danger that migration responses will be formulated by nation states and the international community with little recognition of existing migration patterns, processes and policies. It is critical that the discussion on the impact of climate change on settlement in Southeast Asia takes full cognisance of the existing literature on migration in the region.

25 Ibid.

CHAPTER 5

THE SMOKESCREEN EFFECT

RETHINKING THE GENDER DIMENSIONS OF CLIMATE, MIGRATION AND SECURITY

Bernadette P. Resurreccion & Edsel E. Sajor

Introduction

The starting point for this chapter, as with others in the volume, is that people may adapt to the negative effects of climate change by migrating. Their choice may be constrained, and at the same time influenced, by gender-related vulnerabilities embedded in norms and relations of power. Yet, one of the big silences in the discourse on the securitisation of climate change-induced migration is the gender dimensions of such migration. At the same time, the rapidly growing literature on gender and climate change has largely ignored migration issues. It appears that scholars who work on issues related to gender and the environment do not also work on gender and migration issues. In general terms, gender-blind research neglects the fundamental ways in which climate change-induced migration and its impacts will differ for women and men.[1]

The focus of this chapter then is to shed light on the complex workings of gender in climate change-induced migration. It takes the view that there is much to learn from the literature on gender and disaster, where displacement and resettlement figure as responses to hazards and extreme events. First, the chapter argues that there should be more sustained focus on the gender-related vulnerabilities that may influence and constrain migration as an adaptation option. These vulnerabilities

1 L. M. Hunter & E. David, "Climate Change and Migration: Considering the Gender Dimensions" (submitted to UNESCO for a volume on Migration & Climate, 2009), http://www.colorado.edu/ibs/pubs/pop/pop2009-0013.pdf (accessed 29 June 2010).

may lead to adverse ways and outcomes of migration, with attendant implications for the human security of women migrants. Second, it is emphasised that vulnerability is not intrinsic to, nor does it derive from, any one factor such as "being a woman" or "being a migrant". Instead, some groups and persons are more vulnerable than others because of the specific configuration of practices, processes and power relations embedded in particular societies. Finally, the chapter signposts possible pathways for enhancing people's human security by addressing gender-related vulnerabilities when migration is employed as an option for climate change adaptation.

Climate Change and Migration: Securitisation of the Debate

In recent times, migration, as both adaptation to and outcome of the deleterious effects of climate change, has pervaded global policy discussions and research. As the introductory chapters to this volume indicate, many of the pronouncements anticipate massive population movements and shifts in human demographic configurations. The possible extent of the movements and shifts were explored at an International Organization for Migration (IOM) conference in Geneva in 2008.[2] Speakers at the conference highlighted that climate change is expected to bring about major global environmental changes, and that these may in turn have extensive humanitarian and human-mobility consequences. These were among the statements and projections made at the conference:

- Environmental degradation and climate change may cause between 25 million to one billion people to migrate or be displaced by 2050.
- Flooding could potentially affect 1.3 million square kilometres.
- Nine out of 10 extreme environmental events are argued to be related to climate change.
- Ninety-eight per cent of the casualties resulting from natural disasters might be from developing countries.

2 International Organization for Migration (IOM), *Climate Change, Environmental Degradation and Migration: Addressing Vulnerabilities and Harnessing Opportunities* (Geneva: IOM and Permanent Mission of Greece, 2009).

- Within developing countries, the most vulnerable population groups, and women in particular, are likely to be the most affected.
- South and East Asia, Africa and small island-states will be the most severely affected.
- Climate change in combination with current demographic trends will intensify already existing migration pressures.
- Large-scale migration due to climate change and environmental degradation will have adverse effects on the environment in areas or countries of destination. Migration could lead to scarcity of resources such as water, and the disruption of production cycles. These could in turn increase the potential for conflict in the areas or countries of destination.

The pronouncements about climate change and migration expressed at that IOM conference and similar reports[3] are today heavily contested. The Intergovernmental Panel on Climate Change (IPCC) has altered its earlier 1990 position on the number of likely climate change-induced migrants and "climate refugees".[4] The IPCC's Fourth Assessment Report in 2007 describes the estimates of migrants as "at best, guesswork".[5] Furthermore, since 1990, there have been significant changes in the IPCC position on the broader processes involved; it increasingly recognises that multiple and complex interactions mediate the decision to migrate. Its subsequent reports adopt more nuanced depictions of migration,

3 N. Myers, *Environmental Refugees: An Emergent Security Issue* (Geneva: International Organization for Migration, 2005); N. Stern, *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2007); R. McLeman & B. Smit, "Commentary No. 86: Climate Change, Migration and Security" (Ottawa: Canadian Security Intelligence Service, 2004), http://www.csis-scrs.gc.ca/pblctns/cmmntr/cm86-eng.asp (accessed 29 June 2010); Christian Aid, *Human Tide: The Real Migration Crisis* (London: Christian Aid, 2007), http://www.christian-aid.org.uk (accessed 27 June 2010).

4 C. Raleigh, L. Jordan & I. Salehyan, *Assessing the Impact of Climate Change on Migration and Conflict* (Washington, D.C.: Social Development Department, World Bank, 2008).

5 T. J. Wilbanks et al., "Industry, Settlement and Society", in M. L. Parry et al. (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007), Box 7.2.

primarily by redirecting the focus to "human vulnerability".[6] It could be seen, therefore, that the notion of climate change-driven migration as a trigger of (national) security risks has come under severe challenge.

Studies and alternative views hint at a complex configuration of drivers behind the responses to climate change. Migration is only one among a range of options considered by those affected by climate change. As previously noted, and as discussed in more detail below, the role of gender in influencing, and determining, migration decisions is often underplayed. Also, establishing a clear linear and causative relationship between climate change and migratory movements is fraught with difficulties since, as other chapters in this volume also indicate, the evidence from past studies is inconclusive, and migration results from a confluence of factors and conditions.[7] There are inherent difficulties in predicting with any precision the impact of climate change on population movements. This is partly because of the relatively high level of uncertainty and unpredictability about the specific effects of climate change; and partly because of the lack of comprehensive data on migration flows, especially on movements within national boundaries, and in particular, for low-income countries that are likely to be most affected by climate change.[8]

Some in the global North have been critical of the way that migration has been securitised. According to Betsy Hartmann, "[t]he images and narratives in the articles and reports [in popular media and by national security institutions] have an all too familiar ring, drawing on neo-Malthusian environmental security discourses of the 1980s and 1990s that blamed intra-state conflict in the Global South on environmental degradation, resource scarcity and (increasing female) migration."[9]

6 Raleigh, Jordan and Salehyan, *Assessing the Impact of Climate Change.*

7 R. Black et al., *Demographics and Climate Change: Future Trends and Their Policy Implications for Migration*, Working Paper T-27 (Brighton: Development Research Centre on Migration, Globalisation and Poverty, 2008).

8 C. Tacoli, "Crisis or Adaptation? Migration and Climate Change in a Context of High Mobility", in J. M. Guzmán et al. (Eds.), *Population Dynamics and Climate Change* (London: United Nations Population Fund and International Institute for Environment and Development, 2009), pp. 104–118.

9 B. Hartmann, "Don't Beat the Climate War Drums", *Climate Chronicle*, No. 2 (9 December 2009), p. 8, http://popdev.hampshire.edu/sites/popdev/files/uploads/u4/Don_tBeattheClimateWarDrum.pdf (accessed 17 January 2010).

She goes on to suggest that "[t]hen, as now, this line of reasoning not only naturalizes profoundly political conflicts, but casts poor people as victims-turned-villains, a dark, uncontrollable force whose movement ultimately threatens our borders and way of life."[10] The United Nations High Commissioner for Refugees (UNHCR) further warns that "the very concept of climate or environmental refugees is to be handled with care as it evokes fantasies of uncontrollable waves of migration that run the risk of stoking xenophobic reactions or serving as justification for generalized policies of restriction for migrants."[11]

This turn in the climate change debate is evocative of the critical deconstructionist framework established by Ferguson and others who posit the notion of the techno-managerial discourse as an instrument of cognitive control and social regulation.[12] Such a discourse, it is suggested, actually conceals real and complex political factors, and possibly the workings of gender-power relations and dynamics.[13] According to the discourse, one outcome of the securitisation of climate change-induced migration is a "power-knowledge" regime that produces "instrument effects" and its own set of discursive coalitions. The coalitions conjure simplifications, deflecting attention from the more complex configurations of causes and effects of migration choices made by vulnerable people living in vulnerable places. These people are affected by different forms and degrees of climate change in ways that are both gender- and class-specific. Recognising the effect of the discursive coalitions, social scientists have therefore become concerned with promoting the primacy of contingent practice in emerging discourse arenas such as climate change and migration. They have also become aware of the need to set

10 Ibid.

11 E. Piguet, "Climate Change and Forced Migration", New Issues in Refugee Research, Research Paper No. 153 (Geneva: United Nations High Commissioner for Refugees, 2008).

12 For more on the critical deconstructionist framework by Ferguson and others, see D. Lewis & D. Mosse, "Encountering Order and Disjuncture: Contemporary Anthropological Perspectives on the Organization of Development", *Oxford Development Studies*, Vol. 34, No. 1 (2006), pp. 1–13; J. C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998); M. Hajer, *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (Oxford: Oxford University Press, 1997).

13 Ibid.

aside the assumption that power regimes are rational structures, if they are to uncover the inner workings of the regimes and how much they are really negotiated rather than given. They recognise that it is more instructive to view the arenas of climate change and migration as being "claims to order [that] are always fragile, contested, built on compromise; hegemony is not imposed but has to be worked out".[14]

The discourses linked to the securitisation of climate change-induced migration thus serve as a smokescreen veiling more complex issues that could illuminate our understanding of how people respond to the consequences of climate change, and the implications of their responses for their human security. The notion that climate change can single-handedly cause migration is particularly problematic. It prevents other livelihood factors from being considered; and also leads to a failure to address the gendered dimensions of migration and their effect on human security.

In the face of increasing environmental stress and wider market-oriented socioeconomic changes, people—both women and men—will adapt in various ways, one of which may be internal migration. A recent case study on the linkages between flooding and population movement in the Mekong Delta, Viet Nam, shows, first, that people generally choose to live with floods, and second, that where migration does occur, it is usually women who undertake seasonal labour migration, including moving towards urban areas, while the men stay behind.[15] This study also reveals that, in recent years, successive flooding events had led to the destruction of crops and, on more than one occasion, had driven poor people solely dependent on agriculture to migrate elsewhere in search of alternative livelihoods in Ho Chi Minh City or across the border in Phnom Penh, Cambodia. In other cases, rather than migrate, families generate income by "selling" their young daughters into commercial sex work in Cambodia. The study thus highlights that climate change-related factors—together with other economic and gender-related factors—can lead to migration. It also finds that climate change is rarely a direct and sole cause of migration, thus undermining a key argument often brought

14 T. M. Li, "Compromising Power: Development, Culture, and Rule in Indonesia", *Cultural Anthropology*, Vol. 14, No. 3 (1999), pp. 295–322.

15 O. Dun, *Viet Nam Case Study Report: Linkages between Flooding, Migration and Resettlement* (Environmental Change and Forced Migration Scenarios Project, 2009); O. Dun, this volume.

up in debates on the securitisation of climate change-induced migration. Instead, the migration triggered by flooding is shown to be caused by a variety of factors related to livelihoods, supporting a view that migration is essentially multifaceted and complex, and ultimately may have unintended and possibly adverse gendered outcomes. The workings of gender and climate change on migration will be discussed in the following section.

Women: The Hardest-Hit and the Key Climate Stakeholders?

A running logic permeates discussions on gender and vulnerability to climate change: climate change is most adversely felt by vulnerable people in the climate hot spots of the South; and chief among the vulnerable are women because, as a group, they constitute the largest percentage of the world's poorest. The following is representative of this perspective:

> The brunt of these [environmental and socioeconomic consequences] will be borne by poor people since they are more dependent on the environment for their livelihoods, food, fuel, and medicine, and are less equipped to adapt to natural disasters and weather variations. Women will be particularly affected due to their socially ascribed roles and to continuing gender-based discrimination.[16]

According to this argument, women are powerful agents of change and their full participation is critical to the success of adaptation and mitigation policies and programmes. Hence, it is important that women and gender experts are involved in all decisions related to climate change.[17]

While "women" as the sole subject persists in the literature on gender and climate change, others however point to the complex

16 A. Peralta, "Financing for Climate Change Mitigation and Adaptation in the Philippines: A Pro-Poor and Gender-Sensitive Perspective", in *Gender and Climate Change Finance: A Case Study from the Philippines* (New York: Women's Environment and Development Organization, 2008), p. 5.

17 Network of Women Ministers and Leaders for Environment, "Recommendations: Network of Women Ministers and Leaders for Environment" (outcome of the meeting of the Network of Women Ministers and Leaders for Environment at the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change in Bali, Indonesia, 11 December 2008), http://www.gendercc.net/fileadmin/inhalte/Dokumente/UNFCCC_conferences/Women_ministers_Bali-Declaration_COP13.pdf (accessed 6 June 2010).

influences of social and cultural norms; which dynamically shape the gender divisions seen in labour, labour mobility and the decision-making patterns in households and communities; and which may create situations where men also suffer from gender-specific vulnerability due to their relatively limited access to resources and their resulting poverty.[18] This stream calls for a more critical and nuanced understanding of the inequalities between women and men, and the ways that climate change could exacerbate the effects of these inequalities.[19] Justina Demetriades and Emily Esplen also encourage more research that draw on local realities and adaptation strategies. They emphasise the need to understand context specificities and the complex relational nature of gendered power.[20] These dynamics are relevant also to understanding the social construction of resilience and resilience strategies in the face of the impacts of climate change.

Resilience is widely defined as "the capacity of a system to absorb disturbance; to undergo change and still retain essentially the same function, structure, and feedbacks".[21] This definition shares similarities with social resilience, which is broadly defined as the capacity of a social entity to "bounce back" or respond positively to adversity. More specifically, social resilience is understood as having three properties: resistance, recovery and creativity.[22] Resistance refers to a community's efforts to withstand stresses and their consequences, whereas recovery is linked to a community's ability to "pull through" after a disaster or shock, and its ability to bounce back to pre-stress levels of functioning or its "initial

18 G. Terry, "No Climate Justice without Gender Justice: An Overview of the Issues", *Gender and Development*, Vol. 17, No. 1 (2009), pp. 5–18; A. Brody, J. Demetriades & E. Esplen, *Gender and Climate Change: Mapping the Linkages. A Scoping Study on Knowledge and Gaps* (Sussex: BRIDGE, Institute of Development Studies, University of Sussex, 2008): Y. Lambrou & G. Piana, *Gender: The Missing Component of the Response to Climate Change* (Rome: Food and Agriculture Organization of the United Nations, 2006).

19 Brody, Demetriades & Esplen, *Gender and Climate Change*.

20 J. Demetriades & E. Esplen, "The Gender Dimensions of Poverty and Climate Change Adaptation", *IDS Bulletin*, Vol. 39, No. 4 (2008), pp. 24–31.

21 B. Walker & D. Salt, *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Washington, D.C.: Island Press, 2006), p. 32.

22 B. Maguire & P. Hagan, "Disasters and Communities: Understanding Social Resilience", *Australian Journal of Emergency Management*, Vol. 22, No. 2 (2007), pp. 16–17.

point of equilibrium". When people learn from the experience and adapt to new circumstances with higher levels of functioning, this is known as attaining a level of "creativity", which also means a gain in resilience to future stresses.[23]

The problem with applying this particular view of resilience to gender and power is that there seems to be an implicit desire for communities or social entities to, in Brigit Maguire and Patrick Hagan's terms, return to "normal" and resume "stable functioning" after the experience of turbulence and stress.[24] This may deflect attention from the institutions in society that largely (and as part of their "normal functioning") maintain uneven and unequal allocation of resources and entitlements to women or to certain types of men. Normal functioning may mean reproducing earlier and existing forms of gender-based vulnerabilities and inequalities. Some may therefore be more resilient than others in a given social and historical context. Thus, there is a need for a differential analysis of resilience, along the same lines as the research on the ways in which adaptive capacities and vulnerabilities are differentiated and deeply embedded in social power contexts. The challenge, therefore, is to enable equality in adaptive capacities and resilience.

Migration as a (Gendered) Adaptation Option

Adaptation is closely linked to vulnerability, where vulnerabilities stem from social and gender inequalities that materialise when people actually attempt to adapt to a changing climate through various immediate and long-term strategies. The disaster risk reduction and management literature sets apart particular groups as being vulnerable to the adverse effects of various hazards, including climate-related ones. Recent studies have identified migrants, especially women migrants,

23 Ibid., pp. 16–17.
24 Ibid., p. 16.

as a group facing significant vulnerabilities.[25] Elaine Enarson cautions, however, against viewing vulnerability as a characteristic intrinsic to, or derived from, a single factor such as "being a woman", or "being a migrant". Instead, she argues that vulnerability stems from historically constructed social-specific patterns of practices, processes and power relations that render some groups or persons more disadvantaged than others.[26] This chapter draws from that stream of scholarship, and is likewise chiefly concerned with the intersecting social aspects of gender, migration and vulnerability. In particular, it argues that instead of relying on *a priori* markers of vulnerability, there should be an investigation of the social, historical, spatial and cultural processes by which the lives of migrants come to be gendered, disciplined and regulated as women and men.[27]

In short, vulnerability is intrinsically a socially differentiating *process and dynamic*.[28] Thus, in this chapter, vulnerability is considered a dynamic condition contingent on existing and emerging inequities that may determine and shape people's hazard-related adaptive responses. In the case of migrant men and women, these would include inequities in their access to vital resources as they straddle rural and urban contexts; in their cross-border livelihoods and spaces; in the control they are able to exert over choices and opportunities; in the types of climate change-

25 G. O'Hare, "Hurricane 07B in the Godavari Delta, Andhra Pradesh, India: Vulnerability, Mitigation and the Spatial Impact", *The Geographical Journal*, Vol. 167, No. 1 (2001), pp. 23–38; V. Nelson et al., "Uncertain Predictions, Invisible Impacts, and the Need to Mainstream Gender in Climate Change Adaptation", *Gender and Development*, Vol. 10, No. 2 (2002), pp. 51–59: S. Bradshaw, *Socio-economic Impacts of Natural Disasters: A Gender Analysis* (Santiago: United Nations Publications, 2004); E. Neumayer & T. Plumper, "The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002", *Annals of the Association of American Geographers*, Vol. 97, No. 3 (2007), pp. 551–566.

26 E. Enarson, "Through Women's Eyes: A Gendered Research Agenda for Social Science", *Disasters*, Vol. 22, No. 2 (1998), pp. 157–173.

27 A. Cornwall, "Revisiting the 'Gender Agenda'", *IDS Bulletin*, Vol. 38, No. 2 (2007), pp. 69–78.

28 D. Hilhorst and G. Bankoff, "Introduction: Mapping Vulnerability", in G. Bankoff, G. Frerks and D. Hilhorst (Eds.), *Mapping Vulnerability: Disasters, Development and People* (London: Earthscan, 2004), pp. 1–9.

related risks they may be exposed to; and in the historical patterns of gendered domination and marginalisation.[29]

Adaptation is therefore specifically defined here as the gender- and socially differentiated capacity of people to anticipate, cope with, resist and recover from the impact of a disaster,[30] particularly in terms of their networks, resources and spatial mobility. People exercise multiple responses to environmental and climate-related stressors; they may intensify their production activities, or diversify their livelihoods and increase their off-farm activities, and in doing so, migration may be only one of a range of options that would be considered by them.

Migration as an adaptation option involves processes and patterns that are neither simple nor straightforward. Women and men may choose to migrate based on differentiated resources, on gender and cultural norms, and on realistic gender-specific opportunities. The types and patterns of migration are also diverse: short term, circular, permanent, cyclical, irregular, forced; rural-rural; rural-urban; cross-border or transnational.

Migration is also driven by a range of factors: (1) factors related to country/place of origin (e.g. political instability and its gendered risks and costs; lack of economic opportunities for women and certain types of men; gender-unequal access to resources); (2) factors associated with destination countries/places (e.g. gender-specific labour market demand and opportunities; higher wages; employment terms and conditions and their gendered aspects); and (3) intervening factors that facilitate or restrict migration, such as ease and affordability of transportation for women and men and particular ethnic groups and classes, the extent of supportive social networks available to women and men, and state immigration/emigration policies on social protection of migrants. However, only

29 H. Eakin & A. L. Leurs, "Assessing the Vulnerability of Social-Environmental Systems", *Annual Review of Environmental Resources*, Vol. 31 (2006), pp. 365–394; A. J. Nightingale, "Warming Up the Climate Change Debate: A Challenge to Policy Based on Adaptation", *Journal of Forest and Livelihood*, Vol. 8, No. 1 (2009), pp. 84–89; B. P. Resurreccion, "The Gender and Climate Change Debate: More of the Same or New Pathways of Thinking and Doing?", Asia Security Initiative Policy Series Working Paper No. 10 (Singapore: RSIS Centre for Non-Traditional Security (NTS) Studies, 2011).

30 Adapted from B. Wisner et al., *At Risk: Natural Hazards, People's Vulnerability and Disasters, Second Edition* (London: Routledge, 2005).

some of these drivers will be sensitive to climate change.[31] For instance, the lack of economic opportunities when natural-resource-based livelihoods (such as subsistence agriculture and capture fisheries) are directly affected by climate-related changes may induce certain types of women and men to explore alternative livelihoods according to their resources and capacities, which are often uneven and unstable. Or, in order to adapt to climate-related changes such as rising occurrences of drought and flooding, internal migrants may take on multiple occupations to generate improved incomes, possibly not totally abandoning rural areas and farming, but instead combining farm and non-farm livelihoods.[32] In short, the migration process is fraught with ambiguities in processes and outcomes, which diminish the likelihood of population movements *en masse*. The process is also fundamentally gendered, and may yield differentiated risks and outcomes for various types of migrants.

Responding to Human Security Needs

How then can institutions address the risks and adverse outcomes that vulnerable migrants face in the context of increasing climate changes? In this chapter, it has been argued that migrants—women and certain types of migrants—are not essentially vulnerable nor can they be attributed distinct or fixed properties of vulnerability. Some migrants become vulnerable as they adapt to changing conditions because in doing so, they summon social biases and discriminatory institutional practices that render them less able to adequately or fully adapt in concrete ways.

Poor, irregular and less protected migrants may have insecure and uncertain claims on the place-based resources and services of host societies, where they experience only limited degrees of social support and human security. Moreover, states and local municipalities with fixed and rigid politico-administrative territorial jurisdictions generally give

31 Black et al., *Demographics and Climate Change*.

32 J. Rigg, "Rural-Urban Interactions, Agriculture and Wealth: A Southeast Asian Perspective", *Progress in Human Geography*, Vol. 24, No. 4 (1998), pp. 497–522; R. Elmhirst, "Multi-Local Livelihoods, Natural Resource Management and Gender in Upland Indonesia", in B. P. Resurreccion & R. Elmhirst (Eds.), *Gender and Natural Resource Management. Livelihoods, Mobility and Interventions* (London: Earthscan, 2008), pp. 67–86; B. P. Resurreccion & E. E. Sajor, *The Gender Dimensions of the Adoption of the Systems of Rice Intensification (SRI) in Cambodia* (Oxfam America, 2008).

priority to their respective legal constituencies and are thus generally unresponsive to migrants' social protection needs. Female migrants or certain types of migrant men may, under certain conditions, be disadvantaged in terms of access to locally available social protection measures such as resettlement, evacuation, insurance and relief services. Migrants and refugees from particular ethnic groups may be discriminated against especially if they do not have proper identification documents, or are rendered "stateless" under the gaze of state apparatuses in destination places. Irregular migrants, compelled to move through illegal channels, may be trapped in situations that render them even more vulnerable, such as in the cases of women and children trafficked for commercial sex work and begging, and men trafficked into situations of bonded labour and slavery. As they move into places that are possibly vulnerable to increasing storm surges and flood hazards, water scarcity or drought, how much protection would be available to them in terms of housing, insurance, resources and alternative options? Would the levels of protection be enough to enable them to achieve some measure of resilience to the climate effects?

More workable and proactive responses apparently do not lie in curbing and controlling migration options and patterns. Creating programmes and advocacies for specific groups (e.g. for women only, tapping an imagined special agency) would also not be effective; doing so would only pass on to those groups the additional burden of adapting to the changed conditions resulting from climate change. Programmes should be designed to enable women and men to respond adequately to the gradual and short-term effects of climate change, but in ways that do not increase inequalities in their workloads, stoke discriminatory attitudes and/or unevenly distribute risks and costs. Social practices must themselves be transformed if human security is to be enhanced for those whose option is to migrate.

Conclusion

The securitisation of climate change-driven migration, with its focus on projected mass migrations in response to climate change and the potentially destabilising effects of such movements, has proven to be a distraction. It has deflected attention from work on understanding social vulnerability, and the workings of power and governance at various

scales and arenas among genders, races and ethnicities. Without such understanding, it would not be possible to design holistic adaptation and social protection measures, as well as mitigation initiatives, that are empowering and equitable. Narrowly construing migration as "climate change-induced" reduces it to a displacement of people when it should be treated as a fundamental part of a number of adaptation options and strategies available to people which necessitate enabling measures of various forms and at various levels.

Current discourses that raise the alarm by projecting huge numbers migrating as a result of climate change sidestep contemporary migration studies demonstrating that migration is a set of differentiated processes, fraught with multiple drivers and contradictory outcomes. A gendered perspective is useful in teasing out migrants' differentiated dynamics and their complex interactions in the context of climate change.

Social practices that discriminate against certain migrants—male, female, or from particular ethnic groups—remain unaddressed in initiatives aimed at increasing human security and making populations more resilient in the face of the adverse effects of climate change. It is in this domain that fundamental transformation and policy action need to take place; the focus should not continue to be on securitising climate change-induced migration and positioning it as a threat to host societies.

PUBLIC POLICY *MATTERS* ON CLIMATE CHANGE AND MIGRATION IN INDONESIA

THE CASE OF JAKARTA CITY

Triarko Nurlambang

Introduction

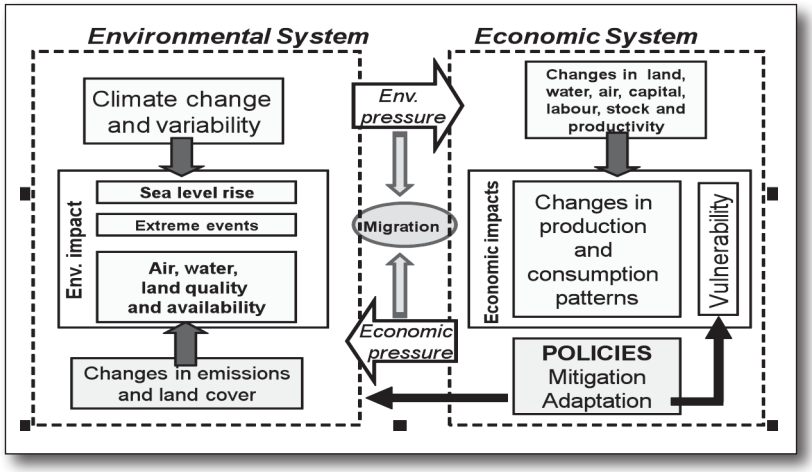
The climate change debate in Indonesia has been intensifying over the last decade. The debate arises mainly as a consequence of the geographic characteristics of Indonesia which is archipelagic (islands surrounded by sea) and lies in a tropical zone. Those who remain unsure of the impact of climate change on Indonesia have suggested that although there exists some evidence of climatic effects such as rainfall variation and an average increase in temperature, this will not create an extreme climate change of the kind that is likely to occur in high latitude regions. Those changes, they argue, are normal in terms of long, historical climate events. On the other hand, population increase and a greater concentration of people in urban and built-up areas mean that climate change events could result in more significant impacts on greater numbers of people in urban as well as non-urban areas. Prolonged flooding related to the rise of sea level is one of the more apparent impacts in urban areas. Another is the increasing accumulation of gas emissions produced by transportation and manufactures. In non-urban areas, especially agricultural areas, shifting and unpredictable rainfall variation has caused damage to crops and crop yields.

Therefore, climate change creates larger areas of vulnerability and human insecurity. Those vulnerable areas are categorised as "displacement areas" in which high environmental risk or disruption may force people to move elsewhere (temporarily or permanently). El Hinnawi refers to these people as environmental refugees although, as noted

elsewhere in this volume, the term is contested.[1]

As more people are affected by climate change events, the debate about displacement and its impact on human security has become an important climate change research area in Indonesia. Research has been undertaken to assess climate change events and their impacts across the country, including in big cities such as Jakarta. Unfortunately, the level of understanding and consideration remains limited in terms of policies, regulations and action programmes, and in terms of improving adaptive capabilities among those who live in vulnerable areas. Although the number and size of areas vulnerable to climate change tends to increase, other factors are also relevant to understanding migration responses, in particular economic and socio-cultural reasons. As shown in Figure 6.1, in theory, there are two main reasons for migration—environmental and economic.

FIGURE 6.1
Interrelations between the environmental system and the economic system may create migration



By using this framework we may have a better understanding of the North Jakarta case that is the focus of this chapter. The case study of Muara

1 Cited in V. Kolmannskog, *Future Floods of Refugees: A Comment on Climate Change, Conflict, and Forced Migration* (Oslo: Norwegian Refugee Council, 2008).

Baru, a settlement in the coastal area of north Jakarta, demonstrates the limitation of the government's role in terms of policymaking and real action on environment and climate change-related migration. An assessment of Jakarta's spatial plans and current development dynamics—which may create community movement patterns—reveals that climate change issues or events are not yet a primary concern among policymakers, planners and communities. A "business as usual" approach remains.

Climate Change and Migration

Many scientists, policymakers and people in local communities remain unsure about the relationship between climate change and migration. While limited empirical evidence has been found to prove the direct impact of climate change on migration,[2] a typology of potential migration patterns has been developed by Kothary,[3] as shown in Table 6.1.

It is presumed that climate change may create more vulnerable areas, either in terms of the size of areas or the level of vulnerability, which could be significant push factors for people to move from their areas of residence. In fact, various pull and push factors have been identified as relevant to the decisions to move. Such factors might be economic, social, cultural, political, or environmental (including climate change), or a combination of any of those. It is a highly complex issue and the migration consequences of climate change therefore remain uncertain. In relation to environmental factors, probably many people who live in vulnerable areas in Indonesia, such as along the coastline, have not yet realised or really understood clearly what climate change is and how it is related to other environmental factors.

2 See, for example, Asian Development Bank (ADB), "Policy Options to Support Climate-Induced Migration", Technical Assistance Report (December 2009), http://www2.adb.org/Documents/TARs/REG/43181-REG-TAR.pdf (accessed 1 May 2012); A. Oliver-Smith & X. Shen (Eds.), "Linking Environmental Change, Migration and Social Vulnerability", SOURCE No. 12/2009 (Bonn: United Nations University Institute for Environment and Human Security and Munich ReFoundation, 2009); O. Brown, "Migration and Climate Change", IOM Migration Research Series No. 31 (Geneva: International Organization for Migration, 2008).

3 See T. Nurlambang, *Climate Change and Migration Dynamic: A Comparison between Archipelago Developing Country and Continent Developed Country* (Melbourne: Nautilus Institute at Royal Melbourne Institute of Technology, 2008).

TABLE 6.1
Typology of climate change and migration

Direct climate changes	Indirect climate changes	Type of movement	Time span
Gradual climate change	Chronic disasters, such as drought, degradation	Seasonal labour migration, temporary circulation	Seasonal
Gradual climate change	Chronic disasters, drought/degradation	Contract labour migration	Yearly
Sudden or gradual climate change	Natural disasters, severe drought, famine, floods	Forced/distress migration	Temporary
Sudden or gradual climate change	Extreme rises in temperature or sea level	Permanent migration	Lifetime

A Community Unprepared for Climate Change Impact and Disaster

Approximately 60 per cent of the total Indonesian population, 75 cities including Jakarta, and 80 per cent of the country's industries are located in coastal areas. Economic concentration in these areas has attracted more people to move and settle there. Those coastal areas are also the most vulnerable to climate change, in particular, to sea-level rises and an increased potential for floods. According to a 2009 study by the Economy and Environment Program for Southeast Asia, more than one million people, mostly low and middle income, live in those "displacement areas".[4] People who live in coastal areas where sea-level rise may induce flooding may be identified as potential environmental refugees or flood refugees. With respect to climate change issues, rather than focusing on greenhouse gas emissions as a consequence of uncontrolled transportation management in Jakarta, a human security approach draws attention to flooding, storm surges, and rises in sea levels which together have

4 Economy and Environment Program for Southeast Asia (EEPSEA), *Jakarta at the Edge: Will Sea Level Rise Overcome Southeast Asia's Most Vulnerable City?* (Jakarta: EEPSEA, 2010).

created serious and potentially harmful hazards for the most marginal people living in the city's coastal areas (see Table 6.2).[5]

TABLE 6.2
Number of villages in Jakarta where natural disasters occurred during the last three years, by municipality and type of disaster

Municipality	Flood	Rising sea water	Twister	Landslide
Thousand Islands	—	4	3	—
South Jakarta	42	—	—	—
East Jakarta	43	—	1	1
Central Jakarta	27	—	—	—
West Jakarta	37	—	—	—
North Jakarta	29	3	1	—
Total	178	7	5	1

The Jakarta provincial government has continued to concentrate its development along the coastal areas, for example through reclamation for a waterfront city and a number of new property developments. It seems likely that the condition will worsen over time in terms of environmental risk. A study by the State Ministry for the Environment revealed that flooding, combined with a sea-level rise, could permanently inundate parts of Greater Jakarta, including Soekarno-Hatta International Airport. Yet despite this increased risk, people continue to move to those vulnerable areas. The growing economic attractiveness that arises from development may cause higher environmental risks. Amri Susandi has created an Index of Climate Change Vulnerability that shows the environmental risk prediction up to 2035. The index indicates the potential for changing temperature and increasingly variable rainfall patterns, which can lead to increased risks for people who are already vulnerable—those with illnesses (malaria or breathing-related, for instance) or uncertain job opportunities. With more than half of the city's 10 million inhabitants concentrated in the centre and along coastal areas in the northern part of Jakarta, greater risk impacts are likely, especially in situations of

5 I. M. Surbakti et al., "Jakarta City Report: Information Related to Climate Change in Jakarta City", Paper for the Workshop of Climate Change Vulnerability Assessment and Urban Development Planning for Asian Coastal Cities (Nakorn Pathom, Thailand, 20–22 August 2010).

flooding. Susandi has predicted that within the next 25 years, every part of Jakarta will become a displacement area, with the northern part of Jakarta containing the most at-risk areas environmentally.[6]

The kelurahan[7] of Muara Baru has been selected as a case study to reveal the situation with respect to climate change and migration within vulnerable areas along the coast in the northern part of Jakarta. The case demonstrates the weakness of government action programmes in preparing adaptive capacity and assisting people directly for disaster relief in the face of climate change-related insecurities. Muara Baru was severely affected by flood hazards in 2007. Susandi's study revealed that more than 4,000 houses were inundated by at least two metres of water.[8] As well as extensive household property damage, livelihoods were also affected: fisheries and businesses lost up to 50 per cent of their incomes and about 90 per cent of the affected population could not go to work. It is quite clear that this flood disaster, which occurred as a result of sea-level rise, increased the social and economic vulnerability of coastal areas in Jakarta and the vulnerability of the people who live in those areas.

Most of the households did not prepare for the flood. Only about 30 per cent of those surveyed claimed to have received warning of flood from neighbours, relatives or friends—not from the government—a few days in advance. Only seven per cent said that they had received help from the local government while 12 per cent were assisted by non-governmental organisations (NGOs) and seven per cent by neighbours. In terms of actual assistance after the event, 30 per cent received support from the NGOs while 24 per cent received assistance from the government. Sixty-four per cent of respondents never participated in any training seminars on climate change or natural hazards. Moreover, almost all respondents said that they had no traditional knowledge of disaster management. One resident who has lived in Muara Baru for 40 years said that he and his neighbours were used to tidal seas and flooding which, he suggested, had nothing to do with global warming or climate change. Furthermore, he mentioned that no government officials had visited his

6 For more, see A. Susandi, "Integration of Adaptation Planning across Economic Sectors: Indonesia Experiences", Paper for NWP Technical Workshop on Integration of Approaches to Adaptation Planning (Bangkok, 13 October 2009).

7 Kelurahan is the lowest local authority in Jakarta Municipality.

8 Susandi, "Integration of Adaptation Planning Across Economic Sector".

area to provide explanations about climate change or global warming. Therefore, the question of mitigation programmes and enhanced adaptive capacity among those areas and people is becoming a strategic issue.

Did They Move or Migrate?

More than 90 per cent of the residents of Muara Baru have lived there for more than 10 years. Despite the area fitting the description of a displacement area, no environmental migration occurred or was identified after the 2007 flood. Most people remained and tried to adapt through their own efforts. In the last five years, flooding in other coastal areas in Jakarta has become a regular event, but again no movement or migration is reported to have occurred locally or internally.

Traditional migration theory suggests that rational economic reasons, such as the costs and benefits of migrating to other places, are important factors in decisions about whether or not to move. Surveys in late 2010 and early 2011 about the extension of Tanjung Priok International Port seem to have confirmed this situation.[9] Residents received information on the plan to expand the port from television and newspapers. Most preferred to stay, despite the environmental risks, and expected to have better living conditions as a result of job opportunities. They also expected betterment through the execution of a huge reclamation project in north Jakarta (namely, the Pantura Reclamation Project) which is located near their settlement areas.

Government Responses and Policy Matters

Using Susandi's predictions about increased vulnerability levels due to potential climate change hazards in Jakarta over the next 20 years or so, it is clear that North Jakarta will be a risky place to live in. Lengthy discussions and debates about mitigation and adaptation programmes have been occurring among government, the private sector, academics, community representatives (such as fishing communities) and NGOs. The outcome has been agreement on using a space and time approach

9 The studies were conducted by a Japan International Cooperation Agency study team and the Research Center for Applied Geography at the University of Indonesia.

through spatial planning instruments to overcome this problem associated with potential displacement areas. It has been expected that the government should give priority to effective action programmes for mitigation and to improve public adaptation capacity in the face of flood hazards in specific vulnerable areas with a focus on the near future. A zoning system based on carrying capacity level has been launched under Government Regulation No. 54/2008, covering all the Greater Jakarta region including North Jakarta, Muara Baru and Tanjung Priok International Port. However, the zoning system is not well understood by the various parties. On the one hand, the Ministry of Environment, academics and NGOs have shared concerns about climate change impact in relation to the economic development plans identified earlier in this chapter. They argue that climate change may cause higher environmental risk especially to settlement areas surrounding the project sites and that the idea of reclamation should be reconsidered. On the other hand, the provincial government of Jakarta, with the support of real estate developers and several ministries (such as the Ministry of Public Works and the Ministry of Transportation), continues to emphasise those projects on their main development agenda.

A new law on environmental protection and management was issued in 2009. The law mandated that all development and spatial plans, either at national, provincial and district, or municipality levels, should undertake a strategic environmental assessment (SEA). Under this law, climate change is one of the primary issues to be taken into account in the implementation of an SEA. Moreover, the requirement for an SEA application has also been adopted in the Spatial Plan Law. Ideally, the development plan and spatial plan must be integrated, consistent, harmonised and synergised. Climate change issues should be equally well defined in development and spatial plans. Consequently, all local governments, including the Jakarta province, who revise or update their development or spatial plans must apply SEA principles including those related to climate change. At the policy level, climate change issues have been adopted quite effectively. But studies done by the Ministry of Home Affairs on several spatial plans at provincial and district, or municipal levels, reveal inconsistencies between the development plan vision, mission and objective and the way in which this has cascaded at

the programme level.[10] Although climate change issues have become well-known, the Jakarta provincial government has given them only minor attention in its Spatial Plan 2030. In particular, its mitigation and adaptation programme has given scant consideration to issues such as how to deal with possible climate change migration. The inconsistency usually occurs while programmes are being defined. A shopping list of infrastructure development and economic activities is always given top priority. In other words, equity and equilibrium of development and spatial plans have not fully met majority or public needs.

Strong institutional capacities and arrangements are required if public policy objectives are to be achieved. Progress on development and spatial plans shows that while the law is able to influence development policies, plans and programmes, the institutional capacity still needs to be improved in terms of its persistence and consistency in fulfilling public needs. For instance, since SEA become mandatory, the focus of debates on the reclamation project has changed. The arguments for reclamation programmes/projects and port extensions used to be presented in terms of economics. Recently, however, the provincial government has argued that reclamation and port development may lessen the risk of the sea-level rise, in line with sea-wall development plans.

Summary: Gaps Between Ideas and Reality

In reality, the level of vulnerability along the coastal areas will increase quite significantly in the next 20 years. Flood events that happen gradually due to sea-level rise may not force people to migrate or move to other places. People simply respond to these flood events as routine events, even though they are becoming more frequent. As a result, little attention is given to enhancing their capacity for adaptation. People stay for rational economic reasons. Government plans to develop big projects in the vicinity of their settlements have strengthened their willingness to stay and live in displacement areas. At the policy level, climate change has become an important issue and has influenced other policies both nationally and locally. However, almost none of the development and spatial plans have mentioned mitigation or adaptation with respect to

10 Ministry of Home Affairs, "SEA for Spatial Planning Serang Municipality Report" (Jakarta, 2009).

issues of environmental migration. There exists a somewhat coercive public policy which makes consideration of climate change mandatory in development and spatial plans. In the case of Jakarta, it seems that the government is using climate change issues to strengthen their argument for reclamation and port development projects. They are promoting the idea that reclamation and port and sea-wall development may protect people from flooding. Again it shows the domination of economic issues over climate change issues.

In order to narrow down this gap and to increase the focus on the human insecurities associated with living in displacement areas, several breakthrough actions need to be undertaken:

- Continuing focus on climate change education and research, especially to target influential stakeholders by focusing on human security and emphasising a mitigation approach or perspective;
- Preparing adaptation capacity in line with this education and research (and related publication programmes), including possible and affordable migration target areas;
- Strengthening the capacity of fair and objective institutions;
- Increasing the accountability of policymakers;
- Developing and maintaining a vulnerability index as part of a public accountability system for climate change impact;
- Educating pioneers for climate change impact relief programmes; and
- Promoting and developing sustainable development to balance the emphasis on economic interests.

AGRICULTURAL CHANGE, INCREASING SALINISATION AND MIGRATION IN THE MEKONG DELTA

INSIGHTS FOR POTENTIAL FUTURE CLIMATE CHANGE IMPACTS?

Olivia Dun

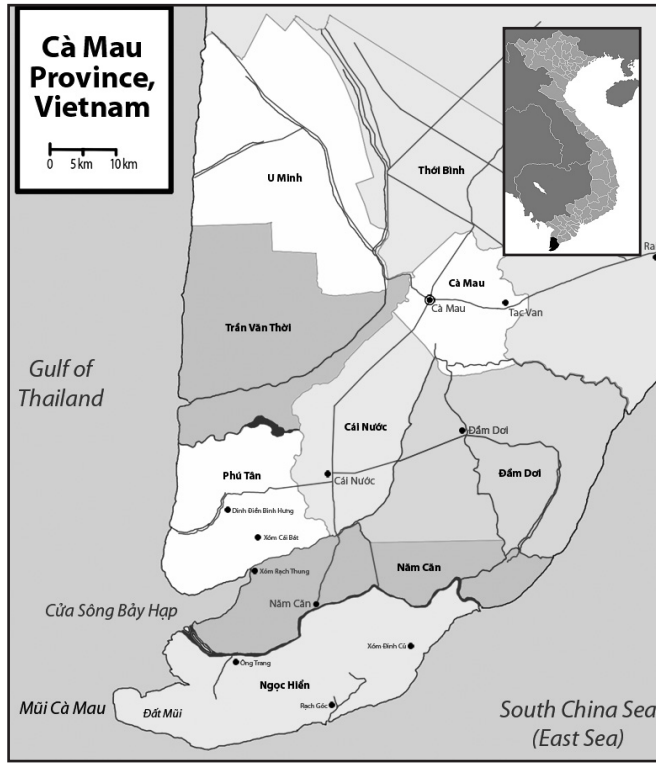
Introduction

The propensity for human insecurity is greater in developing countries, where people are often highly dependent directly on their surrounding natural environment for their immediate livelihood activities, and governments are less able to afford prevention of potential harm caused by environmental changes than in developed countries. Recent studies comparing potential impacts of future sea-level rise on the world's developing countries identified Viet Nam as one of the countries that would be most severely affected, noting in particular, the risks to the Mekong Delta in the south of the country.[1]

Cai Nuoc District, in Ca Mau Province of the Mekong Delta, is naturally prone to salinity intrusion (see Figure 7.1). Since 2000, increasing salinisation of surface water and soils in the district has occurred, largely

1 S. Dasgupta et al., "The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis", *Climatic Change*, Vol. 93, No. 3 (2009), pp. 379–388; Ministry of Natural Resources and Environment (MONRE), *Climate Change, Sea Level Rise Scenarios for Viet Nam* (Hanoi: Ministry of Natural Resources and Environment, 2009).

FIGURE 7.1
Map of Ca Mau Province. Cai Nuoc District is located in the centre of the province.



Source: C. Baer, "Map of Ca Mau Province", Wikipedia (2008), http://en.wikipedia.org/wiki/File:Ca_mau_province_map_-_sm.png (accessed 13 January 2012).

caused by the transformation of coastal area rice fields into salt-water based monoculture shrimp farms. At the household level, these changes have had mixed outcomes on human security, generating some benefits and creating new vulnerabilities.

This chapter focuses on the situation of some households from Nha Phan hamlet in Cai Nuoc District that have become more financially vulnerable as a result of the agricultural and environmental shift and thus have turned to migration as a means of coping. It reveals the complex pathways that link migration choices with changing environmental

conditions. It explores how those impacts and choices are linked to human security and how the lessons learned from this study can shed light on climate change-induced migration. The chapter begins with a brief overview of sea-level rise projection for the Vietnamese portion of the Mekong Delta before discussing the switch to shrimp aquaculture in Cai Nuoc District and factors that affected whole-household migration decisions that were discovered during a study of households from that district.[2]

Sea-level Rise and the Mekong Delta

The Vietnamese Ministry of Natural Resources and Environment (MONRE), with support from the United Nations Country Team (which includes all the United Nations agencies, funds and programmes in Viet Nam), have applied the Intergovernmental Panel on Climate Change's (IPCC's) global climate change scenarios to the national context and identified the potential climate change impacts for Viet Nam.[3] Most relevant for the Mekong Delta is the possibility of a 75-centimetre (cm) rise in sea level by 2100.

A 2007 study[4] found that Viet Nam would be one of the five developing countries most affected by a one-metre rise in sea level,[5] with the deltas of the Mekong and Red rivers facing the most severe threat. As such, in its National Target Programme to Respond to Climate Change,[6] the Vietnamese government's planning is focusing on the possibility for

2 Information about outcomes for households presented in this chapter is based on interviews conducted between May and December 2010 with just over 90 households from Cai Nuoc District (mostly from Nha Phan hamlet).

3 Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)* (Cambridge: Cambridge University Press, 2007); United Nations Viet Nam, "Climate Change Fact Sheet: The Effects of Climate Change in Viet Nam and the UN's Responses", http://www.un.org.vn/en/publications/publications-by-agency/doc_details/217-climate-change-fact-sheet-the-effects-of-climate-change-in-viet-nam-and-the-uns-responses.html (accessed 25 November 2011).

4 Dasgupta et al.,"The Impact of Sea Level Rise on Developing Countries".

5 Based on a comparison of population, gross domestic product, urban extent, agricultural extent, wetlands impacted and land area inundated.

6 The programme was approved by the Vietnamese prime minister in December 2008.

such a rise by 2100.[7] Experts suggest that roughly five per cent of the land area (17,423 square kilometres) in Viet Nam would be inundated by a one-metre rise in sea level if significant measures are not taken in terms of dyke construction and reinforcement or improved drainage.[8] Of this, 82 per cent would be in the Mekong Delta alone,[9] where 37.8 per cent of the land would be inundated.[10] The provinces of Ca Mau, Kien Giang, Hau Giang and Soc Trang would be the most affected areas of both the Mekong Delta and the country as a whole (see Figure 7.1).[11] In Ca Mau, which is the basis of study in this chapter, around 52 per cent of the province would flood, including the districts of Tran Van Thoi, Cai Nuoc, U Minh and Ca Mau City.[12]

Recent Agricultural and Environmental Change in Ca Mau Province

Increasing salinisation in Ca Mau Province has thus far been a function of increased shrimp aquaculture production. Such aquaculture-driven salinisation has facilitated the movement of seawater inland, rather than climate change leading to rising sea levels. Yet in the face of likely future increases in salt-water intrusion in the Mekong Delta provinces as a result of climate change, an exploration of recent increases in salinisation activities in Ca Mau Province provides a useful case study of potential human insecurities and the ways in which communities might respond to these changing environmental conditions.

The Change Towards a Year-Round Saline Water Environment

There was a large-scale change in the land use of Cai Nuoc District, Ca Mau Province in 2000, with an unprecedented shift in the amount of land dedicated to saline-water shrimp monoculture. This reflected a broader trend in Ca Mau Province. From 2000 to 2001, the area dedicated to

7 MONRE, *Climate Change, Sea Level Rise Scenarios for Viet Nam*.
8 United Nations Viet Nam, "Climate Change Fact Sheet".
9 Ibid.
10 MONRE, *Climate Change, Sea Level Rise Scenarios for Viet Nam*.
11 United Nations Viet Nam, "Climate Change Fact Sheet".
12 Ibid.; MONRE, "Global Warming Threatens Ca Mau Province", *Natural Resources and Environment Newspaper*, 2010, http://www.monre.gov.vn/v35/default.aspx?tabid=675&CateID=59&ID=83468&Code=N3LXY83468 (accessed 3 May 2010).

shrimp monoculture in the province doubled, amounting to 42 per cent of all land in Viet Nam dedicated to shrimp aquaculture production.[13] For Cai Nuoc District, this represented a 10-fold increase over the same period. This sudden switch in land use is largely attributed to Vietnamese government Resolution 09/NQ-CP of 2000 which permitted farmers to transform coastal saline rice fields into shrimp farms in order to maintain national target levels for shrimp production.[14] This switch to shrimp monoculture has limited fresh surface-water availability in fields and ponds, which in turn has created more saline soils, mobilised acid-sulphate soils and altered soil and water organisms in shrimp farming areas.[15]

There were mixed feelings among locals about this change towards shrimp monoculture, with some households wanting to raise shrimp while others wished to continue growing rice. The switch to shrimp aquaculture meant that farmers had to convert their rice fields into ponds and allow saline water from common village canals to fill those converted ponds. Farmers keen to raise shrimp broke down sluice gates and dykes that had prevented saline water in rivers from entering common canals, paving the way for increased saline intrusion. They did so despite opposition from other farmers who had not yet harvested their rice and who anticipated crop destruction if saline water came to their fields. Some rice farmers rebuilt gates and dykes but, in the end, were unsuccessful

13 T. N. K. D. Binh et al., "Land Cover Changes Between 1968 and 2003 in Cai Nuoc, Ca Mau Peninsula, Vietnam", *Environment, Development and Sustainability,* Vol. 7, No. 4 (2005), pp. 519–536.

14 Ngo Thi Phuong Lan, "From Rice to Shrimp: Ecological Change and Human Adaptation in the Mekong Delta of Vietnam", in M .A. Stewart & P. A. Coclanis (Eds.), *Environmental Change and Agricultural Sustainability in the Mekong Delta* (New York: Springer, 2011); T. V. Nhuong et al., "Vietnam Shrimp Farming Review", Individual Partner Report for the Project, Policy Research for Sustainable Shrimp Farming in Asia, European Commission INCO-DEV Project PORESSFA No. IC4-200110042, Bac Ninh, Vietnam, CEMARE University of Portsmouth (October 2002).

15 For more details on the changes experienced by Cai Nuoc District in terms of switching to increased shrimp aquaculture, see Binh et al., "Land Cover Changes"; Nguyen T., N. Vromant & L. Hens, "Organic Pollution and Salt Intrusion in Cai Nuoc District, Ca Mau Province, Vietnam", *Water Environment Research,* Vol. 78, No. 7 (2006), pp. 716–723; Nguyen T. et al., "Soil Salinity and Sodicity in a Shrimp Farming Coastal Area of the Mekong Delta, Vietnam", *Environmental Geology,* Vol. 54, No. 8 (2008), pp. 1739–1746.

in preventing saline waters from affecting their land and destroying unharvested crops.

Household Outcomes from Changes: Impact on Livelihoods and Income

The switch to shrimp monoculture in Cai Nuoc District produced mixed human security outcomes. On the one hand, several households benefited from the switch to shrimp because one hectare of shrimp generates an income up to 160 times higher than one hectare of rice.[16] In Nha Phan hamlet, many households were able to upgrade their homes and build new concrete houses whereas primarily subsistence (rice-based) living enabled only basic housing made with plant fibres, leaves and wood. As more money flowed into the hamlet, electricity was introduced and a concrete road was built. Households were able to invest money in modern technologies such as television sets and video compact disc players. Raising shrimp is far less labour-intensive than growing rice. Household members often spoke of this benefit because their work became physically easier and this freed up their ability to seek extra work elsewhere. In this sense, conditions of human security[17] were enhanced, with households able to improve their economic circumstances with flow-on benefits such as securing more robust shelter.

On the other hand, some households became more vulnerable as a result of both the change to shrimp farming and the consequent increasing salinisation of their land. They became more vulnerable overall as their financial debt level increased, which contributed to growing human insecurity. The initial switch to shrimp aquaculture required financial investment to implement the conversion of rice fields to shrimp ponds (machinery, fuel and labour were required to dig up the fields). Government loans became available through state-run banks specifically for this purpose and uptake was widespread. First yields of shrimp commonly

16 Binh et al., "Land Cover Changes".

17 A broad view of human security is taken here, interpreting human security as including dimensions such as security from poverty, food security, and adequate shelter. See Human Security Report Project, "What is Human Security?" (Burnaby, Canada: School for International Studies, Simon Fraser University, 2010), http://www.hsrgroup.org/docs/Publications/miniAtlas/miniAtlas_en_human_security.pdf (accessed 25 November 2011).

resulted in a good harvest and financial success because the pond environment, having recently been converted from a rice field, contained good levels of nutrients and plankton for shrimp to feed on. This initial flush of money and income prompted further conversion of land into shrimp ponds.

However, many households began to experience failure following this initial success. Shrimp disease and attempts to maintain correct pond conditions resulted in households borrowing increasing amounts of money through informal and formal channels.[18] Continued failure to harvest shrimp and consequent inability to repay debt resulted in further financial insecurity for households and informal money-lending groups that relied on loan repayments.[19] Indeed, case studies from Thailand and Indonesia demonstrate that shrimp aquaculture is unsustainable and leads to local poverty and food insecurity.[20]

Human insecurities of the kind described here were then exacerbated through limitations on further changes. This anticipates the kinds of constraints that might also apply in conditions of salt-water intrusion associated with climate change. Few other agriculture or aquaculture options were possible once the change to brackish-water aquaculture and saline conditions had occurred. Higher salinity levels meant that rice could not be grown even for household consumption, unless the entire community agreed to grow rice simultaneously. Previously abundant fruit trees (mangoes, coconuts or bananas) had been reduced in number and were no longer able to yield fruit of suitable quality or substantial quantity because of saline-affected soils. It was possible to raise salt-water crabs or fish, but often these also required high levels of financial investment.

Moreover, shrimp farming itself is vulnerable to climate change effects. A recent study among small-scale shrimp farmers in Ca Mau and Bac Lieu Provinces in the Mekong Delta showed that farmers perceived

18 Shrimp is very sensitive to the pond environment and without the correct conditions (salinity levels, light, oxygen, nutrients and stocking density) can easily die. The risk of disease outbreaks among shrimp populations commonly increases after five to 10 years of operation. See Binh et al., "Land Cover Changes".

19 In some cases, household members fled from the shame or fear of not being able to repay their debts.

20 Environmental Justice Foundation, *Smash and Grab: Conflict, Corruption and Human Rights Abuses in the Shrimp Farming Industry* (London: Environmental Justice Foundation, 2003).

too much rain, high temperatures, canal/river/sea-level rise, as well as irregular weather and storms, as the most serious climate change threats to their shrimp farming activities.[21] These threats, combined with fluctuating international food market prices, indicate further global concerns for already vulnerable local shrimp farmers in Cai Nuoc District. As this discussion shows, environmental change including climate change is not isolated from systems of agriculture and aquaculture nor from the livelihoods dependent upon them.

New Vulnerabilities/Threats to Human Security for Whole Migrating Households

In Nha Phan hamlet, household members with more diverse income sources, such as from a small business (e.g. a grocery shop or motorbike repair workshop), government employment (e.g. work as a teacher or local official) or the service sector (e.g. waitressing), were slightly more resilient than those households dependent solely upon aquaculture and/or agriculture. For others, high household debt levels and a need to find alternative income sources (linked to both changing environmental and economic conditions) were key to household decisions to migrate. Generally, poorer households with small plots of land or landless households struggled to gain or maintain enough financial capital to invest in their shrimp ponds. Mounting debt, an inability to repay that debt from either agricultural or aquaculture activities on their land, and the lack of alternative work in the surrounding rural area prompted some of these households to decide to move to other locations where work was available. The trends of the poor becoming poorer on the one hand and income diversification on the other are not unique to Cai Nuoc District. They reflect a broader trend in Southeast Asia as economic development and investment in agricultural (or aquaculture) intensification are identified as possible pathways out of poverty.[22]

21 N. W. Abery et al., "Vulnerability and Adaptation to Climate Change and Extreme Climatic Events: The Case of Improved Extensive Shrimp Farming in Ca Mau and Bac Lieu Provinces, Vietnam: Analysis of Stakeholder Perceptions", *Aquaclimate Technical Brief*, No. 3 (2011), http://library.enaca.org/emerging_issues/climate_change/vietnam_shrimp_tech_brief_1.pdf (accessed 10 April 2012).

22 J. Rigg, "Land, Farming, Livelihoods, and Poverty: Rethinking the Links in the Rural South", *World Development,* Vol. 34, No. 1 (2006), pp. 180–202.

Two categories of migration were observed in this study: households that only had some members elsewhere, and households where all members moved as a group. This latter group of whole household migrants were among the most vulnerable, facing significant human security challenges. Those challenges are framed here using the five "capitals" that underpin a livelihoods approach analysis.[23] This discussion also outlines a framework that has potential utility for anticipating the human security impacts of environmental change (understood in terms of "capital" losses) and the links between climate change and migration, particularly in situations of likely saline intrusion or progressive (as opposed to sudden) environmental change in rural areas. It also shows how human insecurities become cumulative, and demonstrates the challenges that face communities as well as policymakers in identifying and implementing adaptive and supportive (safety net) human security strategies.

Loss of Natural Capital

The loss of natural assets affected all members of the research hamlet in Cai Nuoc District. For whole migrating households, however, the important consequences of this reduction in natural capital arose primarily through changes in the availability of fresh water and in the composition of soils. Before the switch to shrimp aquaculture, households were able to access fresh (non-saline) water from the canals as well as ponds located in land right next to their houses. They could dig an isolated pond in their land and it would fill with rainwater in the wet season. This water, and that from canals, was used for domestic activities including washing clothes and dishes, and bathing. As canals were filled with saline water and as ponds in household plots (even if filled with rainwater) became saline because of salt seepage from adjacent soils, freshwater resources became rarer and households became highly dependent on groundwater resources, particularly in the dry season. Accessing freshwater therefore came to involve higher costs.

Financial investment in hand-operated groundwater pumps required a loan or support from local religious charities. Ten years after the initial

23 For further discussion about the sustainable livelihoods approach, see I. Scoones, *Sustainable Rural Livelihoods: A Framework for Analysis* (Sussex: Institute of Development Studies, 1998); I. Scoones, "Livelihoods Perspectives and Rural Development", *Journal of Peasant Studies,* Vol. 36, No. 1 (2009), pp. 171–196.

move to shrimp aquaculture, many households were increasingly unable to obtain water using their hand-operated pumps because of the large number of people extracting from shared aquifers. Motorised pumps enabling easier extraction of groundwater were then required. This not only generated additional costs (purchase of fuel and motorised pumps) but also resulted in larger volumes of groundwater use as extraction rates were quicker and more convenient. Those who could not afford to upgrade to a motor pump either spent lengthy amounts of time in the evenings pumping water by hand when neighbours had generally ceased pumping groundwater, or purchased groundwater from wealthier neighbours who had motorised pumps (often at prices higher than the costs incurred by the pump owners in extraction). Households with the ability to purchase several rainwater pots fared better because they were able to store rainwater well into the dry season, but many households could not afford the cost of such large numbers of rainwater pots.

As noted above, soil degradation caused by increasing salinity affected household ability to grow those crops, fruit and vegetables that were intolerant of high salt levels. Some short-cycle vegetables could be grown as their roots only extended into the shallow layers of soil which were not as greatly affected by salt. Soils were further degraded as extracted waste and effluents from shrimp ponds were pumped onto soils bordering the ponds.

Loss of Physical Capital

Prior to a whole household making a decision to migrate, households would often lease out or contract out their land to others in return for a regular income or lump sum respectively. In Viet Nam, contracting out is a common arrangement known as "co".[24] Households often prefer this arrangement as the initial lump sum provides a large amount of money that can be used to pay off some or all of their debt, and then allows them

24 Under a "co" arrangement, one party allows another party to use their land for a fixed period of time, e.g. three years, in exchange for a large lump sum (more than could generally be earned from renting out the land). Once the fixed period of time has lapsed, the original landowner is able to "buy" their land so long as they return the initial lump sum paid. If the fixed time period passes and the original landowner cannot afford to re-purchase their land, the other party can continue using the land until the original owner is able to return the amount owed.

to move elsewhere, work, and re-purchase their land. However, a major problem arises when units of gold instead of cash are exchanged for "co". As the value of gold sometimes more than triples in the period following the initial "co", households have to earn far more money to purchase sufficient gold to buy their land.

Whole-household migrants also faced physical capital losses because of potential damage to their houses and belongings which were locked up and abandoned in their home town. Members of those households worried about damage to property from heavy rain or theft, but they could not return home frequently to check on their property (in many cases houses were made of leaf material) because it was too expensive. Some asked their neighbours to check their houses but knew that generally people did not take as good care of other people's property as their own. Thus, damage increased the amount of money required for any return to their home town.

Loss of Financial Capital

As previously discussed, environmental and agricultural change meant that some households faced such high debt levels that they eventually moved with their whole household to find work. These moves were often perceived as temporary, with households intending to move just for the period of time[25] necessary to earn enough money to pay off their debt with some additional money to return and re-invest in their land (usually to continue raising shrimp). The strategy of moving with all household members was the result of a combination of practical reasons (such as not having other family members available to take care of children) and economic logic (having more members of the household working in the migration destination meant a chance to earn more income).

The movement of whole households has emerged as a new phenomenon in Nha Phan hamlet since around 2005 and is the closest to what might be considered a form of distress migration. Many households had not wanted to move but were grateful for the opportunities to find work and earn an income in the booming manufacturing sector of Viet Nam. Such temporary labour movements were neither forced,

25 Two to four years was common among households interviewed.

nor entirely voluntary, with households often working long hours under risky and unhealthy conditions, compelled to do so by their economic circumstances, lack of alternative livelihood options, inequalities, and environmental limitations in their home location. Such movements of entire households (in addition to the more common partial household migration) under conditions of increasing human insecurity may be an indicator of the type of migration which might emerge as a growing trend in the future as climate change impacts become more pronounced.

Loss of Human Capital

One of the more alarming trends in relation to whole-household migration was the removal of children from a school environment, which contributed to a decline in human capital of the household unit and thereby affected longer term prospects of reaching a state of human security. Households had either removed their children from school because they could not afford the education costs, or needed to take their children out of school because they were migrating. Once at their destination, and depending on the age of the children, the children would either work or stay in the family's rented boarding house room alone or with siblings during the day while their parents worked. Although the children could attend school in their destination area, there was no safe way for them to travel to and from school as parents often worked very long hours and could not collect their children after school. Parents feared for the safety of their children in such unfamiliar destinations as the busy, industrial zones where the majority of migrants from Cai Nuoc District were able to find work, but where they did not know those living around them. Lack of affordable post-school child care arrangements meant that parents were choosing to keep their children out of school.

Whole-household migrants based their decision about where to move primarily on whether they knew someone who had worked, or who was able to help them find work, in a particular destination. In Viet Nam's current stage of development, most unskilled work is in the manufacturing, processing and construction sectors which are clumped in various industrial zones around the country. These are where the majority of whole-household migrants interviewed ended up. Social networks were extremely important in this regard (an issue also addressed in Graeme Hugo's chapter in this monograph); most households did not pick indus-

trial zones randomly. They always went to an industrial zone where they knew at least one other person.

Working in the manufacturing, processing and construction sectors raised new human capital and human security challenges for households. Working household members often worked 12-hour days (with some breaks) for at least six days a week. Income was often based on amount of output, e.g. kilogrammes of cashew nuts shelled or numbers of soft toy parts sewn (which is why household members worked long hours or sought overtime). While households gained new skills, they also faced new health risks, either from exhaustion and dangerous work environments, or living in cramped, poorly ventilated boarding houses with poor hygiene and sanitation conditions. When household members became ill or seriously injured, this affected the ability of the household to earn an income.[26]

Loss of Social Capital

In some cases, a household would move elsewhere for work but would leave the youngest child(ren) with grandparents (if available). Consequently, parents were only able to see their offspring once a year when they had saved enough money to return to their home town for annual celebrations. This has an important effect of changing the composition of rural households, with the more vulnerable elderly and very young living together in the absence of adults of working age, while also taking an emotional toll on parents and children, with parents living away from home for at least three years or, in some cases, even longer. This means that many children grow up not really knowing their parents or forming close bonds with them. This can weaken one of the most significant forms of social capital that exists in a society—the relationship between a parent and a child. In the future, the lack of close bonds between the two could have unforeseen impacts, perhaps in terms of a child's willingness to care and provide financial support for ageing parents. The government may have to play a greater role in the future care of its elderly population than has traditionally been the case.

26 One household reported that all family members often had diarrhoea and this limited their ability to work. In another case, a woman working in the construction sector fell from the first floor of a building and damaged her spine. All the money the household had earned during the previous two years was spent on her treatment in hospital and returning her by taxi to her home town.

Looking at the social structure on a broader scale, growing rice required labour in the rice fields. This generated a significant amount of work between households and particularly for the landless. Less labour required to raise shrimp meant that less work was available in the local area. Additionally, as households faced mounting debt, they were more inclined to rely on their own household members rather than seek external labour. The initial shrimp boom created labour opportunities for pond and house construction. However, increasing debt meant that employment opportunities for labourers declined once the boom was over.

Furthermore, the problem of theft arose during the shrimp harvest period. Household members slept in makeshift shelters next to their ponds to keep watch for thieves. Households that were more successful in raising shrimp were often reluctant to share their secrets with neighbouring households. The overall effect of the switch to shrimp farming has perhaps been increased individualisation, competition and even conflict between neighbours in local areas and less social cohesion.

Conclusion

Agricultural and environmental change in Cai Nuoc District, Ca Mau Province, Viet Nam, has led to greater saline-water intrusion in the area, an issue that anticipates problems associated with climate change. As a result, some households have become more vulnerable in terms of their ability to obtain food and earn a living from their land and surrounding natural environment, as well as in terms of their financial situation, household education level, exposure to health risks, loss of physical assets and general overall ability to escape the traps of poverty. For some of the most vulnerable households, the migration of whole households was perceived as a solution to mounting debt problems arising from their failure to raise shrimp successfully. However, this migration was not a direct consequence of environmental change; rather, environmental change is best understood as a systemic rather than proximate cause.

Migrating to areas of employment potential in the manufacturing, processing and construction sectors, often using connections available through social networks, enabled some of these households to earn a more stable income and pay off some of their debt and entertain the idea of returning home. Other households continued to live under unstable

financial conditions in their migration destination while some others move back and forth between their home and migration destination, preferring to try to survive in their home town, but having to return to their migration destinations when they fail to earn sufficient income. The migration of whole households has also exposed families to new types of vulnerability, particularly in relation to health and education issues. The long-term success of such household migration measures is unclear, as even after returning home, migrants will have to deal with the increased salinity of local water and soils. This will limit opportunities for agricultural and aquaculture production without significant financial investment.

This analysis of migration of entire households using a human security lens has highlighted some of the challenges households face in responding to agricultural and ecological change. It serves to show the cascade of changes that can lead to financial distress and trigger an eventual migration decision following a slower process of environmental change, namely increasing salinisation in the particular agrarian context of the Mekong Delta. Ongoing internal migration, and possibly distress migration, may increasingly emerge in the Mekong Delta as threats and impacts of climate change continue to evolve alongside a plethora of other locally, nationally and regionally induced changes to the Mekong River Delta's water flow regime, salinity levels and agricultural/aquaculture production context.

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Abbott, C., *An Uncertain Future: Law Enforcement, National Security and Climate Change*, Briefing paper (London: Oxford Research Group, 2008).

Abery, N. W., Minh, T. H., Nguyen, T. P., Jumnongsong, S., Nagothu, U. S., Pham Ba Vu Tung, Nguyen, V. H., & De Silva, S. S., "Vulnerability and Adaptation to Climate Change and Extreme Climatic Events: The Case of Improved Extensive Shrimp Farming in Ca Mau and Bac Lieu Provinces, Vietnam: Analysis of Stakeholder Perceptions", *Aquaclimate Technical Brief*, No. 3 (2011), http://library.enaca.org/emerging_issues/climate_change/vietnam_shrimp_tech_brief_1.pdf (accessed 10 April 2012).

Agriculture and Agri-Food Canada, "Assessment of Climate Change Impacts on Agricultural Land-Use Suitability: Spring Seeded Small Grains on the Prairies", Report (2008), http://www4.agr.gc.ca/AAFC-AAC/display-afficher.do?id=1210289174331&lang=eng (accessed 16 April 2012).

Albala-Bertrand, J. M., "Complex Emergencies Versus Natural Disasters: An Analytical Comparison of Causes and Effects", *Oxford Development Studies*, Vol. 28, No. 2 (2000), pp. 187–204.

ASEAN, "ASEAN Agreement on Transboundary Haze Pollution" (2002), http://www.aseansec.org/pdf/agr_haze.pdf (accessed 13 December 2011).

———, "ASEAN Declaration on the Protection and Promotion of the Rights of Migrant Workers (Cebu Declaration)", 12th ASEAN Summit, Cebu, Philippines (2007).

ASEAN Regional Forum (ARF), "Co-chairs' Summary Report of the ARF Defence Officials' Dialogue, Ottawa, Canada, 2 April 2008", Reproduced in *ASEAN Regional Forum Documents Series 2006–2009* (Jakarta: ASEAN Secretariat, 2010).

———, "Report of the ARF Defence Officials' Dialogue, Phuket, Thailand, 18 May 2009", Reproduced in *ASEAN Regional Forum Documents Series 2006–2009* (Jakarta: ASEAN Secretariat, 2010).

Asian Development Bank (ADB), "Policy Options to Support Climate-Induced Migration", Technical Assistance Report (December 2009), http://www2.adb.org/Documents/TARs/REG/43181-REG-TAR.pdf (accessed 1 May 2012).

———, "Climate-Induced Migration: Mitigating Risks, Creating Opportunities" (2011), http://beta.adb.org/themes/climate-change/climate-induced-migration (accessed 31 December 2011).

Baer, C., "Map of Ca Mau Province", *Wikipedia* (2008), http://en.wikipedia.org/wiki/File:Ca_mau_province_map_-_sm.png (accessed 13 January 2012).

Banuri, T., Göran-Mäler, K., Grubb, M., Jacobson, H. K., & Yamin, F., "Equity and Social Considerations", in J. Bruce, H. Lee & E. Haites (Eds.), *Climate Change 1995: Economic and Social Dimensions of Climate Change. Contribution of Working Group III to the Second Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 1995).

Biermann, F., & Boas, I., "Protecting Climate Refugees: The Case for a Global Protocol", *Environment: Science and Policy for Sustainable Development*, Vol. 50, No. 6 (2008), pp. 8–17.

———, "Preparing for a Warmer World: Towards a Global Governance System to Protect Climate Refugees", *Global Environmental Politics*, Vol. 10, No. 1 (2010), pp. 60–88.

Binh, T. N. K. D., Vromant, N., Nguyen T. H., Hens, L., & Boon, E. K., "Land Cover Changes Between 1968 and 2003 in Cai Nuoc, Ca Mau Peninsula, Vietnam", *Environment, Development and Sustainability*, Vol. 7, No. 4 (2005), pp. 519–536.

Black, R., "Environmental Refugees: Myth or Reality?", UNHCR Working Paper No. 34 (Geneva: UNHCR, March 2001).

———, Natali, C., & Skinner, J., "Migration and Inequality", Background paper prepared for *World Development Report 2006: Equity and Development* (New York: UNDP, 2005).

———, Kniveton, D., Skeldon, R., Coppard, D., Murata, A., & Schmidt-Verkerk, K., *Demographics and Climate Change: Future Trends and Their Policy Implications for Migration*, Working Paper T-27 (Brighton: Development Research Centre on Migration, Globalisation and Poverty, 2008).

Bojanowski, A., "UN Embarrassed by Forecast on Climate Refugees", *Spiegel Online* (18 April 2011), http://www.spiegel.de/international/world/0,1518,757713,00.html (accessed 13 December 2011).

Bradshaw, S., *Socio-economic Impacts of Natural Disasters: A Gender Analysis* (Santiago: United Nations Publications, 2004).

Brindal, E., "Asia Pacific: Justice for Climate Refugees", *Alternative Law Journal*, Vol. 32, No. 4 (2007), pp. 240–241.

Brody, A., Demetriades, J., & Esplen, E., *Gender and Climate Change: Mapping the Linkages. A Scoping Study on Knowledge and Gaps* (Sussex: BRIDGE, Institute of Development Studies, University of Sussex, 2008).

Brown, O., "Climate Change and Forced Migration: Observations, Projections and Implications", Occasional Paper (Geneva: UNDP, 2007).

———, "Migration and Climate Change", IOM Migration Research Series No. 31 (Geneva: IOM, 2008).

Campbell, K. M., Guiledge, J., McNeill, J. R., Podesta, J., Ogden, P., Fuerth, I., Woolsey, R. J., Lennon, T. J., Smith, J., Weitz, R., & Mix, D. (Eds.), *The Age of Consequences: The Foreign Policy and National Security Implications of Global Climate Change* (Washington, D.C.: Center for Strategic and International Studies (CSIS) and Center for a New American Security, 2007).

Center for Strategic and International Studies, "Asia's Response to Climate Change and Natural Disasters: Implications for an Evolving Regional Architecture", A Report of the CSIS Asian Regionalism Initiative (Washington, D.C.: CSIS, 2010), http://csis.org/publication/asia%E2%80%99s-response-climate-change-and-natural-disasters (accessed 13 December 2011).

CENTRA Technology, Inc., & Scitor Corporation, *Southeast Asia: The Impact of Climate Change to 2030: Geopolitical Implications*, CR 2010-02, Conference report (Washington, D.C.: National Intelligence Council, 2010).

Centre de Recherches Interdisciplinaires en Droit de l'Environnement, de l'Aménagement et de l'Urbanisme (CRIDEAU), "Draft Convention on the International Status of Environmentally-Displaced Persons", *Revue de Droit de l'Université de Sherbrooke*, Vol. 39 (2008).

Centre International de Droit Comparé de l'Environnement (CIDCE), "Draft Convention on the International Status of Environmentally Displaced Persons" (May 2010), http://www.cidce.org/ReseauDeplaces/index.htm (accessed 13 December 2011).

Cernea, M., "Understanding and Preventing Impoverishment from Displacement: Reflections on the State of Knowledge", *Journal of Refugee Studies*, Vol. 8, No. 3 (1995), pp. 245–262.

———, "The Risks and Reconstruction Model for Resettling Displaced Populations", *World Development*, Vol. 25, No. 10 (1997), pp. 1569–1587.

———, & McDowell, C., *Risks and Reconstruction: Experiences of Resettlers and Refugees* (Oxford: Berghahn Books, 2000).

Christian Aid, *Human Tide: The Real Migration Crisis* (London: Christian Aid, 2007), http://www.christian-aid.org.uk (accessed 27 June 2010).

Clark, W. A. V., "Social and Political Contexts of Conflict", *Forced Migration Review*, No. 31 (2008), p. 22.

CNA Corporation, *National Security and the Threat of Climate Change* (Alexandria, VA: CNA Corporation, 2007).

Cooper, A. F., & Fues, T., "Do the Asian Drivers Pull their Diplomatic Weight? China, India, and the United Nations", *World Development*, Vol. 36, No. 2 (2008), pp. 293–307.

Cornwall, A., "Revisiting the 'Gender Agenda'", *IDS Bulletin*, Vol. 38, No. 2 (2007), pp. 69–78.

Couldrey, M., & Herson, M. (Eds.), "Climate Change and Displacement", *Forced Migration Review*, No. 31 (2007), pp. 4–80.

Cruz, R. V., Harasawa, H., Lal, M., & Wu, S., "Asia", in M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden & C. E. Hanson (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007).

Dasgupta, S., Laplante, B., Meisner, C., Wheeler, D., & Yan, J., "The Impact of Sea Level Rise on Developing Countries: A Comparative Analysis", *Climatic Change*, Vol. 93, No. 3 (2009), pp. 379–388.

Demetriades, J., & Esplen, E., "The Gender Dimensions of Poverty and Climate Change Adaptation", *IDS Bulletin*, Vol. 39, No. 4 (2008), pp. 24–31.

Diamond, J., *Collapse: How Societies Choose to Fail or Succeed* (New York: Viking Press, 2005).

Dobias, R. J., "ADB's Role in Addressing Climate Change and Migration", Presentation to Climate Change, Migration and Human Security in Southeast Asia Seminar, Singapore (27 May 2011), http://www.rsis.edu.sg/nts/events/docs/Bob_Dobias.pdf (accessed 16 April 2012).

Docherty, B., & Giannini, T., "Confronting a Rising Tide: A Proposal for a Convention on Climate Change Refugees", *Harvard Environmental Law Review*, Vol. 33 (2009), pp. 349–403.

Ducanes, J., & Abella, M., *The Future of International Migration to OECD Countries: Regional Note – China and South East Asia* (Paris: Organisation for Economic Co-operation and Development (OECD), 2009).

Dun, O., *Viet Nam Case Study Report: Linkages between Flooding, Migration and Resettlement* (Environmental Change and Forced Migration Scenarios Project, 2009).

———, "Migration and Displacement Triggered by Floods in the Mekong Delta", *International Migration*, Vol. 49, No. 1 (2011), pp. 200–223.

Dupont, A., "The Strategic Implications of Climate Change", *Survival: Global Politics and Strategy*, Vol. 50, No. 3 (2008), pp. 29–54.

Eakin, H., & Leurs, A. L., "Assessing the Vulnerability of Social-Environmental Systems", *Annual Review of Environmental Resources*, No. 31 (2006), pp. 365–394.

Earth Observatory (EO) of Singapore, Panel discussion at the Conference on Catastrophe and Disaster Management (Singapore, February 2011).

Economy and Environment Program for Southeast Asia (EEPSEA), *Jakarta at the Edge: Will Sea Level Rise Overcome Southeast Asia's Most Vulnerable City?* (Jakarta: EEPSEA, 2010).

Elmhirst, R., "Multi-Local Livelihoods, Natural Resource Management and Gender in Upland Indonesia", in B. P. Resurreccion & R. Elmhirst (Eds.), *Gender and Natural Resource Management. Livelihoods, Mobility and Interventions* (London: Earthscan, 2008), pp. 67–86.

Enarson, E., "Through Women's Eyes: A Gendered Research Agenda for Social Science", *Disasters*, Vol. 22, No. 2 (1998), pp. 157–173.

Environmental Justice Foundation, *Smash and Grab: Conflict, Corruption and Human Rights Abuses in the Shrimp Farming Industry* (London: Environmental Justice Foundation, 2003).

Ewing, J. J., "A Way in the Wilderness: Using Critical Realism to Navigate Environmental Security's Theoretical Terrain", *International Journal of Interdisciplinary Social Sciences*, Vol. 5, No. 7 (2010), pp. 304–316.

Fidler, D., "The Asian Century: Implications for International Law", *Singapore Yearbook of International Law*, Vol. 9 (2005), pp. 19–35.

Fingar, T., "Statement for the Record", National Intelligence Assessment on the National Security Implications of Global Climate Change to 2030 (25 June 2008), http://www.dni.gov/testimonies/20080625_testimony.pdf (accessed 16 April 2012).

Food and Agriculture Organization of the United Nations (FAO), *Food Security and Livelihoods*, Thematic brief (Rome: FAO, n.d.).

Gemenne, F., "Climate Change and Forced Displacement: Towards a Global Environmental Responsibility?" Paper presented at the annual meeting of the International Studies Association, San Diego, California, USA (22 March 2006).

———, "Why the Numbers Don't Add Up: A Review of Estimates and Predictions of People Displaced by Environmental Changes", *Global Environmental Change*, Vol. 21, No. S1 (2011), pp. S41–S49.

———, & Dun, O., "Defining 'Environmental Migration'", *Forced Migration Review*, No. 31 (2008), pp. 10–11.

Ginsburg, T., "Eastphalia as the Perfection of Westphalia", *Indiana Journal of Global Legal Studies*, Vol. 17, No. 1 (2010), pp. 27–45.

Global Humanitarian Forum, *Human Impact Report – The Anatomy of a Silent Crisis* (Geneva: Global Humanitarian Forum, 2009).

Gray, C. L., "Tsunami-Induced Displacement in Sumatra, Indonesia", Paper presented at XXVI IUSSP International Population Conference, Marrakech (27 September – 2 October 2009).

Hajer, M., *The Politics of Environmental Discourse: Ecological Modernization and the Policy Process* (Oxford: Oxford University Press, 1997).

Hartmann, B., "Don't Beat the Climate War Drums", *Climate Chronicle*, No. 2 (9 December 2009), http://popdev.hampshire.edu/sites/popdev/files/uploads/u4/Don_tBeattheClimateWarDrum.pdf (accessed 17 January 2010).

Hathaway, J. C., "A Reconsideration of the Underlying Premise of Refugee Law", *Harvard International Law Journal*, Vol. 31, No. 1 (1990), pp. 129–183.

———, *The Rights of Refugees under International Law* (Cambridge: Cambridge University Press, 2005).

High Representative and the European Commission (HREC), "Climate Change and International Security, Paper to the European Council", S113/08, 14 March 2008.

Hilhorst, D., & Bankoff, G., "Introduction: Mapping Vulnerability", in G. Bankoff, G. Frerks & D. Hilhorst (Eds.), *Mapping Vulnerability: Disasters, Development and People* (pp. 1–9) (London: Earthscan, 2004).

Hodgkinson, D., Burton, T., Anderson, H., & Young, L., "'The Hour When the Ship Comes In': A Convention for Persons Displaced by Climate Change" (2009), http://www.ccdpconvention.com/documents/Hour_When_Ship_Comes_In.pdf (accessed 13 December 2011).

Homer-Dixon, T. F., "On the Threshold: Environmental Changes as Causes of Acute Conflict", *International Security*, Vol. 16, No. 2 (1991), pp. 76–116.

Hugo, G., "Environmental Concerns and International Migration", *International Migration Review*, Vol. 30, No. 1 (1996), pp. 105–131.

Hugo, G. J., "Community and Village Ties, Village Norms and Village Networks in Migration Decision Making", in G. F. DeJong & R. W. Gardner (Eds.), *Migration Decision Making: Multidisciplinary Approaches to Microlevel Studies in Developed and Developing Countries* (pp. 186–224) (New York: Pergamon, 1981).

———, "Migration and Women's Empowerment", in H. B. Presser & G. Sen (Eds.), *Women's Empowerment and Demographic Processes: Moving Beyond Cairo* (pp. 287–317) (Oxford: Oxford University Press, 2000).

———, "The Crisis and International Population Movements in Indonesia", *Asian and Pacific Migration Journal*, Vol. 9, No. 1 (2000), pp. 93–129.

———, "The Impact of the Crisis on Internal Population Movement in Indonesia", *Bulletin of Indonesian Economic Studies*, Vol. 36, No. 2 (2000), pp. 115–138.

———, & Young, S. (Eds.), *Labour Mobility in the Asia-Pacific Region: Dynamics, Issues and a New APEC Agenda* (Singapore: Institute of Southeast Asian Studies, 2008).

———, Bardsley, D. K., Tan, Y., Sharma, V., Williams, M., & Bedford, R., *Climate Change and Migration in the Asia-Pacific Region* (Edward Elgar, forthcoming).

Human Rights Council, "Human Rights and Climate Change", Human Rights Council Resolution 7/23 (2008).

———, "Human Rights and Climate Change", Human Rights Council Resolution 10/4 (2009).

———, "Human Rights and the Environment", Human Rights Council Resolution 16/11 (2011).

Human Security Report Project, "What is Human Security?" (Burnaby, Canada: School for International Studies, Simon Fraser University, 2010), http://www.hsrgroup.org/docs/Publications/miniAtlas/miniAtlas_en_human_security.pdf (accessed 25 November 2011).

Hunter, L. M., & David, E., "Climate Change and Migration: Considering the Gender Dimensions" (submitted to UNESCO for a volume on Migration & Climate, 2009), http://www.colorado.edu/ibs/pubs/pop/pop2009-0013.pdf (accessed 29 June 2010).

Ielemia, A., "A Threat to Our Human Rights: Tuvalu's Perspective on Climate Change", *UN Chronicle*, Vol. 44, No. 18 (2007).

Ikeme, J., "Equity, Environmental Justice and Sustainability: Incomplete Approaches in Climate Change Politics", *Global Environmental Change*, Vol. 13, No. 3 (2003), pp. 195–206.

Institute of Southeast Asian Studies, *Urbanisation in Southeast Asian Countries* (Singapore: ISEAS, 2009).

Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC)* (Cambridge: Cambridge University Press, 2007).

———, *Fourth Assessment Report, Climate Change 2007: A Synthesis Report* (Valencia: IPCC Plenary XXVII, 2007).

International Disaster Database, www.emdat.be/ (accessed 23 December 2011).

International Organization for Migration (IOM), "Constitution of the International Organization for Migration" (1953).

———, "Discussion Note: Migration and the Environment", 94th session, MC/INF/288 (1 November 2007).

———, *Climate Change, Environmental Degradation and Migration: Addressing Vulnerabilities and Harnessing Opportunities* (Geneva: IOM and Permanent Mission of Greece, 2009).

———, "Disaster Risk Reduction and Climate Change Adaptation in IOM's Response to Environmental Migration" (Geneva: IOM, 2011), http://publications.iom.int/bookstore/free/DDR_CCA_Infosheet.pdf (accessed 16 April 2012).

Jane's Information Group, "Hostile Environment: Climate Change and Resource Stress Threaten Global Stability", *Jane's Defence Weekly*, Vol. 46, No. 16 (2009), pp. 24–29.

Jasparro, C., & Taylor, J., "Climate Change and Regional Vulnerability to Transnational Security Threats in Southeast Asia", *Geopolitics*, Vol. 13 (2008), pp. 232–256.

Kälin, W., "Conceptualising Climate-Induced Displacement", in J. McAdam (Ed.), *Climate Change and Displacement: Multidisciplinary Perspectives* (Oxford: Hart, 2010).

———, & Künzli, J., *The Law of International Human Rights Protection* (Oxford: Oxford University Press, 2009).

Koh, K.-L., & Robinson, N. A., "Strengthening Sustainable Development in Regional Inter-Governmental Governance: Lessons from the ASEAN Way", *Singapore Journal of International & Comparative Law*, Vol. 6, No. 2 (2002), pp. 640–682.

Kolmannskog, V., "Climate Change, Disaster, Displacement and Migration: Initial Evidence from Africa", UNHCR Working Paper No. 180 (Geneva: UNHCR, December 2009).

———, *Future Floods of Refugees: A Comment on Climate Change, Conflict, and Forced Migration* (Oslo: Norwegian Refugee Council, 2008).

Laczko, F., *Migration, Environment and Climate Change: Assessing the Evidence* (Washington, D.C.: German Marshall Fund, 2010).

Lambrou, Y., & Piana, G., *Gender: The Missing Component of the Response to Climate Change* (Rome: Food and Agriculture Organization of the United Nations, 2006).

Lewis, D., & Mosse, D., "Encountering Order and Disjuncture: Contemporary Anthropological Perspectives on the Organization of Development", *Oxford Development Studies*, Vol. 34, No. 1 (2006), pp. 1–13.

Li, T. M., "Compromising Power: Development, Culture, and Rule in Indonesia", *Cultural Anthropology*, Vol. 14, No. 3 (1999), pp. 295–322.

Maguire, B., & Hagan, P., "Disasters and Communities: Understanding Social Resilience", *Australian Journal of Emergency Management*, Vol. 22, No. 2 (2007), pp. 16–20.

Manalo, E. A., "Results of the 'ASEAN Regional Forum: Security Implications of Climate Change'", Statement to the International Organization for Migration workshop on Climate Change, Environmental Degradation and Migration, Geneva (30 March 2011).

Martin, S. F., *Climate Change, Migration and Adaptation* (Washington, D.C.: The German Marshall Fund of the United States, 2010).

Massey, D., Arrango, J., Hugo, G., Kouasouci, A., Pellegrino, A., & Taylor, J. E., "Theories of International Migration: A Review and Appraisal", *Population and Development Review*, Vol. 19, No. 3 (1993), pp. 431–466.

Mayer, B., "Fraternity, Responsibility and Sustainability: The International Legal Protection of Climate (or Environmental) Migrants at the Crossroads" (2011), http://ssrn.com/abstract=1806760 (accessed 13 December 2011).

———, "Pour en finir avec la notion de 'réfugiés environnementaux': Critique d'une approche individualiste et universaliste des déplacements causés par des changements environnementaux", *McGill International Journal for Sustainable Development Law and Policy*, Vol. 7, No. 1 (2011), pp. 33–60.

———, "The International Legal Challenges of Climate-Induced Migration: Proposal for an International Legal Framework", *Colorado Journal of International Environmental Law and Policy*, Vol. 22, No. 3 (2011), pp. 357–416.

McAdam, J., "Swimming against the Tide: Why a Climate Change Displacement Treaty is Not *the* Answer", *International Journal of Refugee Law*, Vol. 23, No. 1 (2011), pp. 2–27.

———, & Saul, B., "An Insecure Climate for Human Security? Climate-Induced Displacement and International Law", in A. Edwards & C. Ferstman (Eds.), *Human Security and Non-Citizens: Law, Policy and International Affairs* (Cambridge: Cambridge University Press, 2009).

McLeman, R., & Smit, B., "Commentary No. 86: Climate Change, Migration and Security" (Ottawa: Canadian Security Intelligence Service, 2004), http://www.csis-scrs.gc.ca/pblctns/cmmntr/cm86-eng.asp (accessed 29 June 2010).

Ministry of Home Affairs, "SEA for Spatial Planning Serang Municipality Report" (Jakarta, 2009).

Ministry of Natural Resources and Environment (MONRE), *Climate Change, Sea Level Rise Scenarios for Viet Nam* (Hanoi: Ministry of Natural Resources and Environment, 2009).

———, "Global Warming Threatens Ca Mau Province", *Natural Resources and Environment Newspaper*, 2010, http://www.monre.gov.vn/v35/default.aspx?tabid=675&CateID=59&ID=83468&Code=N3LXY83468 (accessed 3 May 2010).

Morton, A., Boncour, P., & Laczko, F., "Human Security Policy Challenges", *Forced Migration Review*, No. 31 (2008), pp. 5–7.

Myers, N., "Environment and Security", *Foreign Policy*, No. 74, Spring (1989), pp. 23–41.

———, *Environmental Refugees: An Emergent Security Issue* (Geneva: International Organization for Migration, 2005).

Naik, A., Stigter, E., & Laczko, F., *Migration, Development and Natural Disasters: Insights from the Indian Ocean Tsunami* (Geneva: International Organization for Migration, 2007).

Native Village of Kivalina v. ExxonMobil Corp. et al., 663 F.Supp.2d 863, 2009 WL 3326113 (2009).

Nelson, V., Meadows, K., Cannon, T., Morton, J., & Martin, A., "Uncertain Predictions, Invisible Impacts, and the Need to Mainstream Gender in Climate Change Adaptation", *Gender and Development*, Vol. 10, No. 2 (2002), pp. 51–59.

Network of Women Ministers and Leaders for Environment, "Recommendations: Network of Women Ministers and Leaders for Environment" (outcome of the meeting of the Network of Women Ministers and Leaders for Environment at the 13th Conference of the Parties to the United Nations Framework Convention on Climate Change in Bali, Indonesia, 11 December 2008), http://www.gendercc.net/fileadmin/inhalte/Dokumente/UNFCCC_conferences/Women_ministers_Bali-Declaration_COP13.pdf (accessed 6 June 2010).

Neumayer, E., & Plumper, T., "The Gendered Nature of Natural Disasters: The Impact of Catastrophic Events on the Gender Gap in Life Expectancy, 1981–2002", *Annals of the Association of American Geographers*, Vol. 97, No. 3 (2007), pp. 551–566.

Newland, K., "Climate Change and Migration Dynamics" (Washington, D.C.: Migration Policy Institute, 2011).

Ngo Thi Phuong Lan, "From Rice to Shrimp: Ecological Change and Human Adaptation in the Mekong Delta of Vietnam", in M. A. Stewart & P. A. Coclanis (Eds.), *Environmental Change and Agricultural Sustainability in the Mekong Delta* (New York: Springer, 2011).

Nguyen, T., Vromant, N., & Hens, L., "Organic Pollution and Salt Intrusion in Cai Nuoc District, Ca Mau Province, Vietnam", *Water Environment Research*, Vol. 78, No. 7 (2006), pp. 716–723.

Nguyen, T., Vromant, N., Nguyen, T. H., & Hens, L., "Soil Salinity and Sodicity in a Shrimp Farming Coastal Area of the Mekong Delta, Vietnam", *Environmental Geology*, Vol. 54, No. 8 (2008), pp. 1739–1746.

Nhuong, T. V., Luu, L. T., Tu, T. Q., Tam, P. M., & Nguyet, T. T. A., "Vietnam Shrimp Farming Review", Individual Partner Report for the Project, Policy Research for Sustainable Shrimp Farming in Asia, European Commission INCO-DEV Project PORESSFA No. IC4-200110042, Bac Ninh, Vietnam, CEMARE University of Portsmouth (October 2002).

Nightingale, A. J., "Warming Up the Climate Change Debate: A Challenge to Policy Based on Adaptation", *Journal of Forest and Livelihood*, Vol. 8, No. 1 (2009), pp. 84–89.

Nordås, R., & Gleditsch, N. P., "Climate Change and Conflict", *Political Geography*, Vol. 26, No. 6 (2007), pp. 627–638.

Nurlambang, T., *Climate Change and Migration Dynamic: A Comparison between Archipelago Developing Country and Continent Developed Country* (Melbourne: Nautilus Institute at Royal Melbourne Institute of Technology, 2008)

O'Hare, G., "Hurricane 07B in the Godavari Delta, Andhra Pradesh, India: Vulnerability, Mitigation and the Spatial Impact", *The Geographical Journal*, Vol. 167, No. 1 (2001), pp. 23–38.

Oberai, A. S., "Land Settlement Policies and Population Redistribution in Developing Countries: Performance, Problems and Prospects", *International Labour Review*, Vol. 125, No. 2 (1986), pp. 141–161.

———, *Land Settlement Policies and Population Redistribution in Developing Countries: Achievements, Problems and Prospects* (New York: Praeger Publishers, 1988), pp. 8–19.

Office of the High Commissioner for Human Rights (OHCHR), "Report of the Office of the United Nations High Commissioner for Human Rights on the Relationship between Climate Change and Human Rights", UN Doc. A/HRC/10/61 (OHCHR, 2009).

Oliver-Smith, A., "Resistance to Resettlement: The Formation and Evolution of Movements", in *Research in Social Movements, Conflicts and Change* (Greenwich, CN: JAI Press, 1994).

———, & Shen, X. (Eds.), "Linking Environmental Change, Migration and Social Vulnerability", SOURCE No. 12/2009 (Bonn: United Nations University Institute for Environment and Human Security and Munich ReFoundation, 2009).

Olson, M. E., "Refugees as a Special Case of Population Redistribution", in L. A. P. Gosling & L. Y. C. Lim (Eds.), *Population Redistribution: Patterns, Policies and Prospects* (pp. 130–152) (New York: United Nations Fund for Population Activities, 1979).

Parry, M. L., Canziani, O. F., & Palutikof, J., "Technical Summary", in M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden & C. E. Hanson (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007).

Peralta, A., "Financing for Climate Change Mitigation and Adaptation in the Philippines: A Pro-Poor and Gender-Sensitive Perspective", in *Gender and Climate Change Finance: A Case Study from the Philippines* (New York: Women's Environment and Development Organization, 2008).

Perch-Nielsen, S., Bättig, M., & Imboden, D., "Exploring the Link between Climate Change and Migration", *Climatic Change*, Vol. 91 (2008), pp. 375–393.

Petersen, W. A., "A General Typology of Migration", *American Sociological Review*, Vol. 23, No. 3 (1958), pp. 256–266.

Piguet, E., "Climate Change and Forced Migration", New Issues in Refugee Research, Research Paper No. 153 (Geneva: United Nations High Commissioner for Refugees, 2008).

Piper, N., "Gender and Migration", Paper prepared for the Policy Analysis and Research Programme of the Global Commission on International Migration (2005), http://www.iom.int/jahia/webdav/site/myjahiasite/shared/shared/mainsite/policy_and_research/gcim/tp/TP10.pdf (accessed 26 March 2012).

Preston, B. L., Suppiah, R., Macadam, I., & Bathols, J., *Climate Change in the Asia/Pacific Region: A Consultancy Report Prepared for the Climate Change and Development Roundtable* (Aspendale: Commonwealth Scientific and Industrial Research Organisation (CSIRO), 2006).

Raleigh, C., Jordan, L., & Salehyan, I., *Assessing the Impact of Climate Change on Migration and Conflict* (Washington, D.C.: Social Development Department, World Bank, 2008).

Ratha, D., "Leveraging Remittances for Development", Paper for the Second Plenary Meeting of the Leading Group on Solidarity Levies to Fund Development (Oslo, 6–7 February 2007).

Reid, A., *Charting the Shape of Early Modern Southeast Asia* (Chiang Mai: Silkworm Books, 1999).

Renaud, F. G., Dun, O., Warner, K., & Bogardi, J., "A Decision Framework for Environmentally Induced Migration", *International Migration*, Vol. 49, No. S1 (2011), pp. e5–e29.

Rerkasem, B., "Climate Change and GMS Agriculture", in K. Rayanakorn (Ed.), *Climate Change Challenges in the Mekong Region* (Chiang Mai: Chiang Mai Press, 2011).

Resurreccion, B. P., "The Gender and Climate Change Debate: More of the Same or New Pathways of Thinking and Doing?", Asia Security Initiative Policy Series Working Paper No. 10 (Singapore: RSIS Centre for Non-Traditional Security (NTS) Studies, 2011).

———, & Sajor, E. E., *The Gender Dimensions of the Adoption of the Systems of Rice Intensification (SRI) in Cambodia* (Oxfam America, 2008).

Reuveny, R., "Climate Change-Induced Migration and Violent Conflict", *Political Geography*, Vol. 26, No. 6 (2007), pp. 656–673.

Richmond, A., "The Environment and Refugees: Theoretical and Policy Issues", Revised version of a paper presented at the meetings of the International Union for the Scientific Study of Population (Montreal, August 1993).

Rigg, J., "Rural-Urban Interactions, Agriculture and Wealth: A Southeast Asian Perspective", *Progress in Human Geography*, Vol. 24, No. 4 (1998), pp. 497–522.

———, "Land, Farming, Livelihoods, and Poverty: Rethinking the Links in the Rural South", *World Development*, Vol. 34, No. 1 (2006), pp. 180–202.

Rimmer, J. R., & Dick, H. W., *The City in Southeast Asia: Patterns, Processes, and Policy* (Singapore: National University of Singapore Press, 2009).

Scoones, I., *Sustainable Rural Livelihoods: A Framework for Analysis* (Sussex: Institute of Development Studies, 1998).

———, "Livelihoods Perspectives and Rural Development", *Journal of Peasant Studies*, Vol. 36, No. 1 (2009), pp. 171–196.

Scott, J. C., *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998).

Skeldon, R., "Rural-to-Urban Migration and its Implications for Poverty Alleviation", *Asia-Pacific Population Journal*, Vol. 12, No. 1 (1997), pp. 3–16.

Smith, D., & Vivekananda, J., "A Climate of Conflict: The Links between Climate Change, Peace and War" (London: International Alert, 2007).

Stavropoulou, M., "Drowned in Definitions?" *Forced Migration Review*, No. 31 (2008), pp. 11–12.

Stern, N., *The Economics of Climate Change: The Stern Review* (Cambridge: Cambridge University Press, 2007).

Surbakti, I. M., Idroes, I. C., Simarmata, H. A., & Firman, T., "Jakarta City Report: Information Related to Climate Change in Jakarta City", Paper for the Workshop of Climate Change Vulnerability Assessment and Urban Development Planning for Asian Coastal Cities (Nakorn Pathom, Thailand, 20–22 August 2010).

Susandi, A., "Integration of Adaptation Planning across Economic Sectors: Indonesia Experiences", Paper for NWP Technical Workshop on Integration of Approaches to Adaptation Planning (Bangkok, 13 October 2009).

Swain, A., "Environmental Migration and Conflict Dynamics: Focus on Developing Regions", *Third World Quarterly*, Vol. 17, No. 5 (1996), pp. 959–973.

Tacconi, L., Jotzo, F., & Grafton R. Q., "Local Causes, Regional Co-operation and Global Financing for Environmental Problems: The Case of Southeast Asian Haze Pollution", *International Environmental Agreements: Politics, Law and Economics*, Vol. 8, No. 1 (2008), pp. 1–16.

Tacoli, C., "Crisis or Adaptation? Migration and Climate Change in a Context of High Mobility", in J. M. Guzmán, G. Martine, G. McGranahan, D. Schensul & C. Tacoli (Eds.), *Population Dynamics and Climate Change* (pp. 104–118) (London: United Nations Population Fund and International Institute for Environment and Development, 2009), .

Tan, Y., *Resettlement in the Three Gorges Project* (Hong Kong: Hong Kong University Press, 2008).

Tay, S., "The Environment and Southeast Asia: Regionalism, States and Community", in V. R. Savage & M. Tan-Mullins (Eds.), *The Naga Challenged: Southeast Asia in the Winds of Change* (Singapore: Marshall Cavendish Academic, 2005).

———, Patman, R. G., & Mason-Parker, B., "Interdependence, States and Community: Ethical Concerns and Foreign Policy in ASEAN", in D. B. MacDonald (Ed.), *The Ethics of Foreign Policy* (Farnham: Ashgate, 2007).

Terry, D. F., "Remittances as a Development Tool", in D. F. Terry & S. R. Wilson (Eds.), *Beyond Small Change: Making Migrant Remittances Count (*pp. 3–19) (Washington, D.C.: Inter-American Development Bank, 2005).

Terry, G., "No Climate Justice without Gender Justice: An Overview of the Issues", *Gender and Development*, Vol. 17, No. 1 (2009), pp. 5–18.

Thomas, J. A., "International Law in Asia: An Initial Review", *Dalhousie Law Journal*, Vol. 13 (1990), pp. 683–724.

Thuan, N. T. H., "Adaptation to Climate Change in Rice Production in Vietnam Mekong River Delta", in K. Rayanakorn (Ed.), *Climate Change Challenges in the Mekong Region* (Chiang Mai: Chiang Mai Press, 2011).

UK Ministry of Defence, *Global Strategic Trends 2007–2036, 3rd Edition* (Swindon: Ministry of Defence, Development Concepts and Doctrine Centre, 2007).

United Nations, "International Migration and Development: Report of the Secretary-General", Report at the 60th Session of the General Assembly (New York: United Nations, 18 May 2006).

United Nations Department of Economic and Social Affairs, *United Nations Expert Group Meeting on Population Distribution, Urbanization, Internal Migration and Development* (New York: UNDESA Population Division, 2008).

United Nations Development Programme (UNDP), *Human Development Report 2007/2008: Fighting Climate Change: Human Solidarity in a Divided World* (New York: Palgrave Macmillan, 2008).

United Nations Framework Convention on Climate Change (UNFCCC), "Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action Under the Convention" (UNFCCC, 2010).

———, "Decision 1/CP.16 The Cancun Agreements: Outcome of the Work of the Ad Hoc Working Group on Long-term Cooperative Action under the Convention", FCCC/CP/2010/7/Add.1 (15 March 2010).

United Nations General Assembly, "Statement by the President of the 62nd Session of the United Nations General Assembly at the Thematic Debate on Climate Change and the Most Vulnerable Countries" (New York, 8 July 2008), http://www.un.org/ga/president/62/statements/ccvulc080708.shtml (accessed 31 December 2011).

United Nations High Commissioner for Refugees (UNHCR), "UNHCR Disappointed at Australian Decision to Reopen Detention Centre for Asylum-Seekers" (2010), http://www.unhcr.org/4bcd99956.html (accessed 13 December 2011).

———, "Statement on the Australia-Malaysia Arrangement" (2011), http://www.unhcr.org/4e2d21c09.html (accessed 13 December 2011).

United Nations Security Council (UNSC), "Debate on the Impact of Climate Change", SC/9000 (New York: Department of Public Information, 2007), http://www.un.-org/News/Press/docs/2007/sc9000.doc.htm (accessed 22 December 2011).

United Nations Viet Nam, "Climate Change Fact Sheet: The Effects of Climate Change in Viet Nam and the UN's Responses", http://www.un.org.vn/en/publications/publications-by-agency/doc_details/217-climate-change-fact-sheet-the-effects-of-climate-change-in-viet-nam-and-the-uns-responses.html (accessed 25 November 2011).

Villarin, J. R. T., Loyzaga, A. Y., & La Viña, A. G. M., "In the Eye of the Perfect Storm: What the Philippines Should Do about Climate Change", Working Paper (Manila: Manila Observatory, 2008).

Walker, B., & Salt, D., *Resilience Thinking: Sustaining Ecosystems and People in a Changing World* (Washington, D.C.: Island Press, 2006).

Wilbanks, T. J., Romero Lankao, P., Bao, M., Berkhout, F., Cairncross, S., Ceron, J.-P., Kapshe, M., Muir-Wood, R., & Zapata-Marti, R., "Industry, Settlement and Society", in M. L. Parry, O. F. Canziani, J. P. Palutikof, P. J. van der Linden & C. E. Hanson (Eds.), *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change* (Cambridge: Cambridge University Press, 2007).

Williams, A., "Turning the Tide: Recognizing Climate Change Refugees in International Law", *Law & Policy*, Vol. 30, No. 4 (2008), pp. 502–529.

Wisner, B., Blaikie, P., Cannon, T., & Davis, I. *At Risk: Natural Hazards, People's Vulnerability and Disasters, Second Edition* (London: Routledge, 2005).

World Bank, *Resettlement and Development* (Washington, D.C.: World Bank Environment Department, 1994).

———, *Climate Risks and Adaptation in Asian Coastal Megacities: A Synthesis Report* (Washington, D.C.: World Bank, 2010).

World Resources Institute, "Climate Analysis Indicators Tool (CAIT): Data Per Country", 2011, http://cait.wri.org/ (accessed 23 April 2012).

World Wildlife Fund, *Mega-Stress for Mega-Cities: A Climate Vulnerability Ranking of Major Coastal Cities in Asia* (Gland, Switzerland: WWF International, 2008).

Yusof, A. A., & Francisco, H., *Hotspots! Mapping Climate Change Vulnerability in Southeast Asia* (Singapore: Economic and Environment Program for Southeast Asia, 2010).

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PUBLICATIONS UNDER THE CLIMATE CHANGE, ENVIRONMENTAL SECURITY AND NATURAL DISASTERS PROGRAMME WITHIN THE MACARTHUR ASIA SECURITY INITIATIVE CLUSTER 3 (2009–2012)

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Conference Reports

International Workshop on Benefits of Cooperation in the Himalayan River Basin Countries. Workshop Report, RSIS Centre for NTS Studies and RSIS South Asia Programme, with the Strategic Foresight Group (Mumbai), Singapore, 2–3 December 2010. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/Singapore%20Suggestions.pdf

Conference on Climate Insecurities, Human Security and Social Resilience. Conference Report, RSIS Centre for NTS Studies, Singapore, 27–28 August 2009. http://www.rsis.edu.sg/nts/Events/Climate_Change_Conf.html

Public Forum and Workshop on Securing Food Futures in the Asia Pacific. Workshop Report, RSIS Centre for NTS Studies, Canberra, 6–9 October 2010. http://www.rsis.edu.sg/nts/events/docs/RSIS_NTS_Canberra_Conference_Report_280311.pdf.

Study Group on Climate Change, Migration and Human Security in Southeast Asia. Study Group Report, RSIS Centre for NTS Studies, Singapore, 26 May 2011. http://www.rsis.edu.sg/nts/HTML-Newsletter/Report/pdf/Climate_Migrate_Report.pdf

Books and Monographs

Lorraine Elliott (Ed.), 2012, *Climate Change, Migration and Human Security in Southeast Asia*. Singapore: RSIS.

J. Jackson Ewing, forthcoming, *Comprehensive Security for the Southern Philippines*.

Lorraine Elliott & Mely Caballero-Anthony (Eds.), 2012, *Human Security and Climate Change in Southeast Asia: Managing Risk and Resilience*. London: Routledge.

Research Papers

Lorraine Elliott, 2010, "'Human Securitising' the Climate Security Debate", Asia Security Initiative Policy Series No. 2, Singapore: RSIS Centre for NTS Studies, April. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur_working_paper_Lorraine%20Elliott.pdf

Irene A. Kuntjoro & Sofiah Jamil, 2010, "Changing Cityscapes: Signs of Development or Disaster?", *NTS Perspectives*, No. 1, Singapore: RSIS Centre for NTS Studies, May. http://www.rsis.edu.sg/nts/HTML-Newsletter/Perspective/Perspective_1.html

Enrique Ibarra Gene & Arif Aliadi, 2010, "REDD (Reducing Emissions from Deforestation and Forest Degradation): Mitigation, Adaptation and the Resilience of Local Livelihoods", Asia Security Initiative Policy Series No. 8, November. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur%20Working%20Paper_Enrique_and_Arif.pdf

Juzhong Zhuang, Suphachol Suphachalasai & Jindra Nuella Samson, 2010, "The Economics of Climate Change in Southeast Asia", Asia Security Initiative Policy Series No. 9, Singapore: RSIS Centre for NTS Studies, December. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur%20Working%20Paper_ADB.pdf

Bernadette P. Resurreccion, 2011, "The Gender and Climate Debate: More of the Same or New Pathways of Thinking and Doing?", Asia Security Initiative Policy Series No. 10, Singapore: RSIS Centre for NTS Studies, January. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur%20Working%20Paper_Bernadette.pdf

Fitrian Ardiansyah & Desak Putu Adhityani Putri, 2011, "Risk and Resilience in Three Southeast Asian Cross-Border Areas: The Greater Mekong Subregion, the Heart of Borneo and the Coral Triangle", Asia Security Initiative Policy Series No. 11, Singapore: RSIS Centre for NTS Studies, February. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur%20Working%20Paper_Fitrian_and_Desak.pdf

Evan A. Laksmana, 2011, "Climate Insecurities: Exploring the Strategic Implications for Asia-Pacific Armed Force", Asia Security Initiative Policy Series No. 13, Singapore: RSIS Centre for NTS Studies, April. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur_Working_Paper_Evan.pdf

Lorraine Elliott, 2011, "Securitising Food Futures in the Asia-Pacific: Human Securitising Regional Frameworks", Asia Security Initiative Policy Series No. 15, Singapore: RSIS Centre for NTS Studies, May. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur_Working_Paper_Lorraine%20Elliott2.pdf

Policy Briefs

J. Jackson Ewing & Irene A. Kuntjoro, 2011, "Southeast Asia and the Outcomes of the COP16", 2011, NTS Policy Brief, No. 3, Singapore: RSIS Centre for NTS Studies, January. http://www.rsis.edu.sg/nts/HTML-Newsletter/Policy-Brief/pdf/Policy_Brief_140111.pdf

J. Jackson Ewing, 2011, "Climate Change and Security: Policy Recommendations from the 4th NTS-Asia Annual Convention 2010", NTS Policy Brief, No. 6, Singapore: RSIS Centre for NTS Studies, February. http://www.rsis.edu.sg/nts/HTML-Newsletter/Policy-Brief/pdf/Policy_Brief_080211.pdf

Evan A. Laksmana, 2011, "Climate Insecurities in Indonesia: Implications and Challenges for Defence Transformation", NTS Policy Brief, No. 16, Singapore: RSIS Centre for NTS Studies, July. http://www.rsis.edu.sg/NTS/resources/research_papers/MacArthur_Working_Paper_Evan2.pdf

Lorraine Elliott, 2011, "Climate Change, Migration and Human Security in Southeast Asia", NTS Policy Brief, No. 13, Singapore: RSIS Centre for NTS Studies, October. http://www.rsis.edu.sg/nts/HTML-Newsletter/Policy-Brief/pdf/Policy_Brief_111011.pdf

NTS Alerts and NTS Insights

Sadhavi Sharma, 2010, "Positioning Adaptation in the Climate Change Debate", *NTS Alert*, Issue 1, Singapore: RSIS Centre for NTS Studies, April. http://www.rsis.edu.sg/nts/HTML-Newsletter/alert/NTS-alert-apr-1001.html

Sadhavi Sharma, "Integrating Adaptation into Development Policy in Southeast Asia", 2010, *NTS Alert*, Issue 2, Singapore: RSIS Centre for NTS Studies, April. http://www.rsis.edu.sg/nts/HTML-Newsletter/alert/NTS-alert-Apr-1002.html

Irene A. Kuntjoro & Mely Caballero-Anthony, 2010, "Disaster Risk Reduction (DRR): Reducing Human Vulnerabilities to Natural Disasters", *NTS Alert*, Issue 1, Singapore: RSIS Centre for NTS Studies, September. http://www.rsis.edu.sg/nts/html-newsletter/alert/NTS-alert-sep-1001.html

Irene A. Kuntjoro & Mely Caballero-Anthony, 2010, "The Implementation of a Disaster Management Agreement in Asean: Towards Regional Preparedness?" , *NTS Alert*, Issue 2, Singapore: RSIS Centre for NTS Studies, September. http://www.rsis.edu.sg/nts/HTML-Newsletter/alert/NTS-alert-sep-1002.html

J. Jackson Ewing, 2011, "Cancun and Climate Security: New Approaches, Mixed Results", *NTS Alert*, Issue 1, Singapore: RSIS Centre for NTS Studies, January. http://www.rsis.edu.sg/nts/HTML-Newsletter/alert/NTS-alert-jan-1101.html

Irene A. Kuntjoro & Mely Caballero-Anthony, 2011, "Cancun Agreement: Implications for Southeast Asia", *NTS Alert*, Issue 2, Singapore: RSIS Centre for NTS Studies, January. http://www.rsis.edu.sg/nts/HTML-Newsletter/alert/NTS-alert-jan-1102.html

Sofiah Jamil & Devin Maeztri, 2011, "Visible Value? ENGOs and the UNFCCC Process", *NTS Insight*, Singapore: RSIS Centre for NTS Studies, January. http://www.rsis.edu.sg/nts/HTML-Newsletter/Insight/NTS-Insight-jan-1101.html

Steve Rayner, 2011, "Climate Change and Geoengineering Governance", *NTS Insight*, Singapore: RSIS Centre for NTS Studies, June. http://www.rsis.edu.sg/nts/HTML-Newsletter/Insight/NTS-Insight-jun-1102.html

Sofiah Jamil, 2011, "Hidden Vulnerabilities in Asian Megacities: The Case of the Bang Khun Tian Community in Bangkok, Thailand", *NTS Alert*, Issue 1, Singapore: RSIS Centre for NTS Studies, July. http://www.rsis.edu.sg/nts/HTML-Newsletter/alert/NTS-alert-jul-1101.html

Commentaries

Bill Durodie, 2010, "Pulp Friction: Southern Environment or Western Agendas?", *RSIS Commentary* No. 54, Singapore: RSIS, 27 May. http://www.rsis.edu.sg/publications/Perspective/RSIS0542010.pdf

Bill Durodie, 2010, "Friction and Vested Interests in Pulp and Palm Oil Production", *The Jakarta Post*, 27 May. http://www.rsis.edu.sg/nts/resources/media-reports/BILL-2705-JP.pdf

Yang Razali Kassim, 2010, "Australia and Climate Change: The Changing Weather in Climate Politics", *RSIS Commentary* No. 81, Singapore: RSIS, 20 July. http://www.rsis.edu.sg/publications/Perspective/RSIS0812010.pdf

Sofiah Jamil, 2010, "Up in Smoke: Peatland Fires in Russia and Indonesia", *RSIS Commentary* No. 95, Singapore: RSIS, 19 August. http://www.rsis.edu.sg/publications/Perspective/RSIS0952010.pdf

Irene A. Kuntjoro, 2010, "Pakistan's Floods: How Not to Be Caught Off Guard", *RSIS Commentary* No. 98, Singapore: RSIS, 23 August. http://www.rsis.edu.sg/publications/Perspective/RSIS0982010.pdf

Irene A. Kuntjoro, 2010, "Pakistan's Floods: How Not to Be Caught Off Guard", *World Affairs Journal*, August. http://www.rsis.edu.sg/nts/resources/media-reports/IRE-WA.pdf

Sania Nishtar, 2010, "Pakistan's Flood Disaster: An Unprecedented Humanitarian Crisis", *RSIS Commentary* No. 108, 6 September. http://www.rsis.edu.sg/publications/Perspective/RSIS1082010.pdf

Irene A. Kuntjoro & Sofiah Jamil, 2010, "Triple Trouble in Indonesia: Strengthening Jakarta's Disaster Preparedness", *RSIS Commentary* No. 138, Singapore: RSIS, 1 November. http://www.rsis.edu.sg/publications/Perspective/RSIS1382010.pdf

Yang Razali Kassim, 2010, "Indonesia's Twin Disasters: Will the Next Big One Reach Singapore?", *RSIS Commentary* No. 140, Singapore: RSIS, 2 November. http://www.rsis.edu.sg/publications/Perspective/RSIS1402010.pdf

Irene A. Kuntjoro & Sofiah Jamil, 2010, "Triple Trouble in Indonesia: Strengthening Jakarta's Disaster Preparedness", *PreventionWeb*, 4 November. http://www.rsis.edu.sg/nts/resources/media-reports/IRE_SOF-0411-PW.pdf

Irene A. Kuntjoro & Sofiah Jamil, 2010, "Triple Trouble in Indonesia: Strengthening Jakarta's Disaster Preparedness", *Eurasia Review*, 4 November. http://www.rsis.edu.sg/nts/resources/media-reports/IRE_SOF-1211-ER.pdf

Irene A. Kuntjoro & Sofiah Jamil, 2010, "Strengthening RI's Disaster Preparedness", *The Jakarta Post*, 12 November. http://www.rsis.edu.sg/nts/resources/media-reports/IRE_SOF-0411-JP.pdf

Sofiah Jamil & Devin Maeztri, 2010, "COP16: Can Cancun Salvage Copenhagen?", *RSIS Commentary* No. 156, Singapore: RSIS, 24 November. http://www.rsis.edu.sg/publications/Perspective/RSIS1562010.pdf

Sofiah Jamil & Devin Maeztri, 2010, "May Cancun Salvage Copenhagen", *The Jakarta Post*, 27 November. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/JP_27%20Nov%202010_May%20Cancun%20Salvage%20Copenhagen.pdf

Sofiah Jamil & Devin Maeztri, 2010, "COP16: Can Cancun Salvage Copenhagen?", *Eurasia Review*, 29 November. http://www.rsis.edu.sg/

nts/resources/db/uploadedfiles/Eurasia%20Review_29%20Nov%202010_COP16%20Can%20Cancun%20Salvage%20Copenhagen.pdf

Sofiah Jamil & Devin Maeztri, 2010, "Optimism and Different Approach Needed", *The Straits Times*, 30 November. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/ST_30%20Nov%202010_Optimism%20and%20Different%20Approach%20Needed_Sof%20+%20Dev.pdf

Evan A. Laksmana, 2010, "The Indonesian Defence Forces and Disaster Relief: Potential Pitfalls and Challenges", *RSIS Commentary* No. 160, Singapore: RSIS, 29 November. http://www.rsis.edu.sg/publications/Perspective/RSIS1602010.pdf

Sofiah Jamil & Devin Maeztri, 2010, "Mudflow Management: Lessons for Southeast Asia", *RSIS Commentary* No. 170, Singapore: RSIS, 13 December. http://www.rsis.edu.sg/publications/Perspective/RSIS1702010.pdf

Sofiah Jamil & Devin Maeztri, 2010, "Mudflow Management: Lessons for S-E Asia", *The Straits Times*, 16 December. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/ST_16%20Dec%202010_Mudflow%20management_Sof%20+%20Devin.pd"

Sofiah Jamil & Devin Maeztri, 2010, "Mudflow Management: Lessons for Southeast Asia", *Eurasia Review*, 20 December. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/Eurasia%20Review_20%20Dec%202010_Sofiah%20+%20Devin_Mudflow%20Management.pdf

Evan A. Laksmana, 2010, "Climate Change and Regional Defence Forces: Is There a Connection?", *RSIS Commentary* No. 169, Singapore: RSIS, 14 December. http://www.rsis.edu.sg/publications/Perspective/RSIS1692010.pdf

Evan A. Laksmana, 2010, "Climate Change and Regional Defence Forces: Is There a Connection?", *Eurasia Review*, 20 December. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/Eurasia%20Review_201210_Evan%20Laksmana_Climate%20change%20and%20regional%20defence%20forces_Is%20there%20a%20connection.pdf

J. Jackson Ewing & Irene A. Kuntjoro, 2010, "COP16 Cancun: Shifting Goals of Climate Negotiations", *RSIS Commentary* No. 175, Singapore: RSIS, 20 December. http://www.rsis.edu.sg/publications/Perspective/RSIS1752010.pdf

J. Jackson Ewing & Irene A. Kuntjoro, 2010, "Cancun: Shifting Goals of Climate Talks", *The Jakarta Post*, 27 December. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/Cancun%20Shifting%20Goals%20of%20Climate%20Talks.pdf

J. Jackson Ewing & Irene A. Kuntjoro, 2010, "COP16 Cancun: Shifting Goals of Climate Negotiations", *Eurasia Review*, 24 December. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/Eurasia%20Review_Jackson%20Ewing%20+%20Irene%20Kuntjoro_241210_COP16%20Cancun.pdf

Yang Razali Kassim, 2011, "Tunisia and Climate Change: What It Means for Southeast Asia", *RSIS Commentary* No. 8, Singapore: RSIS, 28 January. http://www.rsis.edu.sg/publications/Perspective/RSIS0082011.pdf

Lorraine Elliott, 2011, "Climate Migration: Why It Is a Human Security Issue", *RSIS Commentary* No. 28, Singapore: RSIS, 25 February. http://www.rsis.edu.sg/publications/Perspective/RSIS0282011.pdf

Sofiah Jamil & Mely Caballero-Anthony, 2011, "Japan in Disaster: Managing Energy Vulnerabilities", *RSIS Commentary* No. 41, Singapore: RSIS, 15 March. http://www.rsis.edu.sg/publications/Perspective/RSIS0412011.pdf

Bill Durodie, 2011, "Disaster Hacks Should Stick to the Facts", *Today,* 18 March. http://www.rsis.edu.sg/nts/resources/db/uploadedfiles/Disaster%20Hacks%20-%20Durodie.pdf

Nah Liang Tuang, 2011, "Urban Search and Rescue: Boosting Intra-ASEAN Self Help", *RSIS Commentary* No. 52, Singapore: RSIS, 4 April. http://www.rsis.edu.sg/publications/Perspective/RSIS0522011.pdf

Yang Razali Kassim, 2011, "After Japan: Waiting for Asia's Next Big One", *RSIS Commentary* No. 57, Singapore: RSIS, 12 April. http://www.rsis.edu.sg/publications/Perspective/RSIS0572011.pdf

Mely Caballero-Anthony & Sofiah Jamil, 2011, "Floods and Regional Disaster Preparedness: Too Little, Too Late?", *RSIS Commentary* No. 150, 17 October. http://www.rsis.edu.sg/publications/Perspective/RSIS1502011.pdf

Mely Caballero-Anthony & Sofiah Jamil, 2011, "Floods and Regional Disaster Preparedness: Too Little, Too Late?", *Eurasia Review*, 20 October. http://www.rsis.edu.sg/nts/resources/Media-reports/MC-SJ-2010-ER.pdf

Mely Caballero-Anthony & Sofiah Jamil, 2011, "Floods and Regional Disaster Preparedness: Too Little, Too Late?", *reliefweb*, 20 October. http://www.rsis.edu.sg/nts/resources/Media-reports/MC-SJ-1710-RW.pdf

Mely Caballero-Anthony & Sofiah Jamil, 2011, "Too Little, Too Late?", *The Phnom Penh Post*, 7 November. http://www.rsis.edu.sg/nts/resources/Media-reports/MC-SJ-1111-NGO.pdf

Blog Posts

Sofiah Jamil, 2010, "Re-creating Oil: Technological Advances in Recycling Plastic", *MacArthur Asia Security Initiative*, blog, 1 September. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=126

Pau Khan Khup Hangzo, 2010, "Disaster Relief Aid: Cash or Food?", *MacArthur Asia Security Initiative*, blog, 9 September. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=137

Irene A. Kuntjoro, 2010, "Indonesia Going Carbon Positive?", *MacArthur Asia Security Initiative*, blog, 17 September. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=145

Devin Maeztri, 2010, "Seeking Opportunity 1: Singapore Farmer's Market", *MacArthur Asia Security Initiative*, blog, 4 October. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=157

Sofiah Jamil, 2010, "Costs and Communication: Stumbling Blocks in Addressing Climate Change", *MacArthur Asia Security Initiative*, blog, 7 October. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=155

Pau Khan Khup Hangzo, 2010, "The Real Weapons of Mass Destruction – Part 1", *MacArthur Asia Security Initiative*, blog, 27 October. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=176

Devin Maeztri, 2010, "Ways towards Achieving Real Benefit of Clean Development Mechanism", *MacArthur Asia Security Initiative*, blog, 1 November. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=162

Ong Suan Ee, 2010, "Health Dimensions of Natural Disasters: Indonesia's Mount Merapi Eruptions", *MacArthur Asia Security Initiative*, blog, 10 November. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=185

Devin Maeztri, 2010, "A Climate for Change", *MacArthur Asia Security Initiative*, blog, 29 November. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=187

Devin Maeztri, 2010, "REDD: Beyond Carbon", *MacArthur Asia Security Initiative*, blog, 6 December. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=190

Pau Khan Khup Hangzo, 2010, "Malaysia: A Test Case for Water Reform", *MacArthur Asia Security Initiative*, blog, 9 December. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=192

Pau Khan Khup Hangzo, 2011, "Managing Transboundary Rivers", *MacArthur Asia Security Initiative*, blog, 11 January. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=203

Sofiah Jamil, 2011, "Disasters' Damage on Development", *MacArthur Asia Security Initiative*, blog, 19 January. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=205

Sofiah Jamil, 2011, "Friedman: The World Needs a Green Revolution", *MacArthur Asia Security Initiative*, blog, 2 February. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=206

Sofiah Jamil, 2011, "A Practitioner's Thoughts on Cancun", *MacArthur Asia Security Initiative*, blog, 10 February. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=212

Sofiah Jamil, 2011, "Gaps in Greening the Economy", *MacArthur Asia Security Initiative*, blog, 3 March. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=218

Sofiah Jamil, 2011, "Japan in Jeopardy? Managing Energy Vulnerabilities amidst Disaster Response", *MacArthur Asia Security Initiative*, blog, 15 March. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=223

Devin Maeztri, 2011, "Resilient Cities in a Hazard Sensitive World", *MacArthur Asia Security Initiative*, blog, 21 March. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=224

Ong Suan Ee, 2011, "Health Security Post-Japanese Quake and Tsunami", *MacArthur Asia Security Initiative*, blog, 24 March. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=221

Zbigniew Dumienski, 2011, "Shaking the Myth of Post-Disaster Looters", *MacArthur Asia Security Initiative*, blog, 30 March. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=228

Devin Maeztri, 2011, "Many Questions, Difficult Answers on Forest Governance", *MacArthur Asia Security Initiative*, blog, 10 May. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=238

Lina Gong, 2011, "The Real Price of Hydro-Power Dams", *MacArthur Asia Security Initiative*, blog, 5 July. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=253

Sofiah Jamil, 2011, "Faith-Based Organisations' Role in Disaster Preparedness", *MacArthur Asia Security Initiative*, blog, 8 August. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=255

Sofiah Jamil, 2011, "Enhancing Early Warning Systems for Disaster Management in Indonesia", *MacArthur Asia Security Initiative*, blog, 2 September. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=261

Pau Khan Khup Hangzo, 2011, "From Singapore: A Lesson in Water Management", *MacArthur Asia Security Initiative*, blog, 19 September. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=265

Sofiah Jamil, 2012, "Changing Gears for Effective (Climate) Change", *MacArthur Asia Security Initiative*, blog, 31 January. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=270

Pau Khan Khup Hangzo, 2012, "Transboundary Waters: Triggers of Conflict or Cooperation", *MacArthur Asia Security Initiative*, blog, 6 May. http://www.asicluster3.com/blog_self/index.php?page=viewentry&id=279

The proposition that migration as a result of climate change has consequences for regional and global security has become prominent in public discourse over the last few years. Yet much of that debate in the Southeast Asian context is not sufficiently well-informed by current knowledge on the demographics of migration and the kinds of choices that people and communities make about mobility; nor does it pay adequate attention to the human insecurities that result from climate change in general and climate change-induced migration in particular. This volume seeks to overcome some of those limitations, drawing on insights from international relations, international law, demography, public policy, geography, environmental studies and climate science. It shows how a human security approach can sustain the tactical attractions of a security discourse in bringing urgent attention to a problem such as climate change and migration, while also redirecting security policy to protecting and empowering those who are most vulnerable to the threats of climate change.

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