

RISKY BUSINESS: THE UPS AND DOWNS OF MIXING ECONOMICS, SECURITY AND CLIMATE CHANGE

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Economic and security motivations increasingly influence the formulation of climate change law and policy worldwide. The way in which notions of economic wellbeing and security are defined and incorporated into climate change law and policy raises fundamental concerns over both the internal and external equity of existing and evolving climate strategies. In particular, a key question that emerges is whether climate policies, based on economic and security considerations, promote more effective mitigation and adaptation strategies or whether they in fact encourage inward-looking, protectionist policies that impair long-term emissions abatement and disadvantage already vulnerable sectors of society. Economic and security concerns can be wielded for great good or great harm in the climate change debate. Drawing upon economic flexibility mechanisms and security-based measures to address climate change can facilitate global cooperation or it can perpetuate existing social, economic and environmental imbalances. The record of implementation thus far suggests that there is an urgent need to reassess the ability of economic flexibility mechanisms to promote long-term, equitable emissions reductions and to pre-emptively introduce equity considerations into the climate security debate. Melding climate change to economics and security makes domestic and international climate change initiatives more politically palatable and more responsive to the realities of global governance. The challenge is to find ways to wield economic and security concerns for the collective good.

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I INTRODUCTION

[A]nd this is the nature of the Equitable, 'a correction of law, where law is defective by reason of its universality'.¹

The politics of global climate change are as complex as the science underpinning the debate. State, regional and multilateral efforts to address climate change differ in scope, focus and style. Varying notions of uncertainty, risk, ethics and equity challenge efforts to develop global consensus on the appropriate response to climate change. Within this multifarious framework, two dominant themes emerge: economic wellbeing and security. These two notions increasingly provide the foundations for the development of climate policy worldwide. The way in which these notions are defined and incorporated into

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¹ Aristotle, *Nicomachean Ethics*, Book V (D P Chase trans, first published 1911, 2007 ed) 95.

law and policy raises fundamental concerns over both the internal and external equity of existing and evolving climate change laws and policies. In particular, a key question that emerges is whether climate policies, based on economic and security considerations, promote more effective mitigation and adaptation strategies or whether they in fact encourage inward-looking, protectionist policies that impair long-term emissions abatement and disadvantage already vulnerable sectors of society.

In sum, economics and security are the twin pillars of foreign policy worldwide. One need only look to United States President Barack Obama's handling of climate policy, which he intimately intertwines with energy policy. While campaigning for the US presidency in 2008, then Senator Obama introduced a technique of framing climate policy first as a question of energy security and second, as essential to ensuring both economic wellbeing and national security. For example, during his presidential campaign, Senator Obama's official policy statement on climate change did not actually use the words 'climate change', but instead framed the issue in terms of the economic, security and environmental threats posed by US 'addiction to foreign oil':

The energy challenges our country faces are severe and have gone unaddressed for far too long. Our addiction to foreign oil doesn't just undermine our national security and wreak havoc on our environment — it cripples our economy and strains the budgets of working families all across America.²

Similarly, in a speech given in March 2009, President Obama continued his practice of always presenting climate change as a subset of the larger question of energy security, thereby linking climate change directly with economic prosperity and indirectly with national security:

So we have a choice to make. We can remain one of the world's leading importers of foreign oil, or we can make the investments that will allow us to become the world's leading exporter of renewable energy. We can let climate change continue to go unchecked, or we can help stem it. We can let the jobs of tomorrow be created abroad, or we can create those jobs right here in America and lay the foundation for lasting prosperity.³

President Obama's strategy encapsulates the convergence between the politics of climate change, economics and security. Intersections between climate change, economic development and security shape policymaking in developed and developing countries. President Obama's statements reveal the political importance of linking climate change with more traditional domestic concerns. The linkages, however, have impacts far beyond the mere framing of the US debate. The manner in which developed countries and the international community elect to frame mitigation and adaptation commitments is of particular concern to those global communities who are the most vulnerable to climate

² The Office of the President-Elect, *The Obama-Biden Plan* (2008) <http://change.gov/agenda/energy_and_environment_agenda>.

³ President Barack Obama, 'Remarks of President Barack Obama at Southern California Edison Electric Vehicle Technical Center' (Address delivered at Southern California Edison Electric Vehicle Technical Center, Pomona, US, 19 March 2009) <<http://www.energy.gov/news2009/print2009/7067.htm>>.

change and, in particular, to the group of Least Developed Countries ('LDCs').⁴ Questions of economic development and security motivate efforts to combat climate change as efficiently as possible. For LDCs and vulnerable communities worldwide however, efficiency concerns are outweighed by more fundamental considerations of economic and physical survival. The compatibility between economic efficiency, national security and equitable climate policies remains unclear.

Exploring how economic and security concerns both stimulate and complicate domestic and global climate policymaking is essential to developing effective and equitable climate strategies. Yet the combined effect of these considerations remains underexplored. In order to more fully understand the role of economics and security in shaping climate law and policy, this commentary explores the following questions: first, do economic flexibility mechanisms encourage progressive climate policymaking, or do they externalise the costs of reducing greenhouse gas emissions and give rise to domestic and global climate justice concerns; and second, do efforts to reclassify climate change as a threat to domestic and global security facilitate more inclusive climate policies or, in fact, encourage protective security measures?

In Part II, this commentary examines how economics and economic flexibility mechanisms are incorporated into the international climate change regime as well as the domestic climate policies of the European Union and the US. It then explores how over-reliant and uneven use of economic flexibility mechanisms gives rise to environmental justice concerns at the global and local levels. In Part III, this commentary reviews the recent trend towards characterising climate change as a matter of national and global security. It then considers specific responses to questions of climate security before exploring the implications of this classification for efforts to improve the efficacy and inclusiveness of climate change law and policymaking. Finally, Part IV concludes by suggesting how economic and security considerations combine to impel climate change law and policymaking efforts in otherwise reluctant contexts, but also encourage the development of laws and policies that decentralise considerations of equity and long-term sustainability.

II ECONOMICS AND CLIMATE CHANGE

Economic flexibility is a motto born and raised under the US flag.⁵ Since the early days of international negotiations, the US has advocated a decentralised, market-based approach to reducing greenhouse gas emissions.⁶ This approach,

⁴ See generally Leonard Nurse and Rawleston Moore, 'Critical Considerations for Future Action during the Second Commitment Period: A Small Islands' Perspective' (2007) 31 *Natural Resources Forum* 102.

⁵ See, eg, Thomas D Crocker, 'The Structuring of Atmospheric Pollution Control Systems' in Harold Wolozin (ed), *The Economics of Air Pollution* (1966) 61, 80–4; J H Dales, *Pollution, Property and Prices* (1968) 104–5.

⁶ See, eg, W David Montgomery, 'Markets in Licenses and Efficient Pollution Control Programs' (1972) 5 *Journal of Economic Theory* 395.

commonly termed ‘ecological modernisation’,⁷ emphasises flexibility and cost-effectiveness and shies away from traditional regulatory approaches to limiting greenhouse gas emissions. Throughout international climate negotiations, the US has waved the flags of flexibility and efficiency.

The US is globally renowned as one of the most vocal opponents to the *Kyoto Protocol to the United Nations Framework Convention on Climate Change*,⁸ however, it played a prominent role in early climate change discussions, including the negotiation of the *United Nations Framework Convention on Climate Change*⁹ and the *Kyoto Protocol*. During negotiations for the *Kyoto Protocol*, economic considerations dominated the US negotiating strategy while simultaneously stymieing any chance that the US might ratify the Protocol. For example, while then US Vice-President Al Gore and the US negotiating team were in Japan lobbying for the inclusion of emissions trading in the *Kyoto Protocol*,¹⁰ back home in the US, the Senate unanimously passed a resolution opposing participation in any international agreement that would impose legal emissions reduction obligations and, thus, economic burdens on the US, especially in the absence of mandatory emissions reduction obligations for the rapidly developing economies of China, India and Brazil.¹¹ With the election of President George W Bush to office in 2000, the US economics-based resistance towards international climate negotiations intensified.

Despite political inconsistencies, the US played a critical part in the decision to include the flexibility mechanisms in the *Kyoto Protocol*.¹² The flexibility mechanisms — including Joint Implementation (‘JI’), the Clean Development Mechanism (‘CDM’) and International Emissions Trading — frame global efforts to reduce greenhouse gas emissions in economic terms, placing flexibility and cost-effectiveness at the centre of greenhouse gas mitigation strategies. During *Kyoto Protocol* negotiations, the US fought for the inclusion of

⁷ One common definition of ecological modernisation is: ‘Decentralized liberal market order that aims to provide flexible and cost-optimal solutions to climate problems’: Karin Bäckstrand and Eva Lövbrand, ‘Climate Governance beyond 2012: Competing Discourses of Green Governmentality, Ecological Modernization and Civic Environmentalism’ in Mary E Pettenger (ed), *The Social Construction of Climate Change* (2007) 123, 124.

⁸ Opened for signature 16 March 1998, 2303 UNTS 148 (entered into force 16 February 2005) (*‘Kyoto Protocol’*). See, eg, Robert B McKinstry Jr, ‘Local Solutions for Global Problems: The Debate over the Causes and Effects of Climate Change and Emerging Mitigation Strategies for States, Localities and Private Parties’ (2004) 12 *Penn State Environmental Law Review* 1; Glen Sussman, ‘The USA and Global Environmental Policy: Domestic Constraints on Effective Leadership’ (2004) 25 *International Political Science Review* 349, 358.

⁹ Opened for signature 4 June 1992, 1771 UNTS 107 (entered into force 21 March 1994) (*‘UNFCCC’*).

¹⁰ See, eg, Patrick Parenteau, ‘Anything Industry Wants: Environmental Policy under Bush II’ (2004) 14 *Duke Environmental Law and Policy Forum* 363.

¹¹ Byrd-Hagel Resolution, S Res 98, 105th Congress (1997): ‘Expressing the sense of the Senate regarding the conditions for the United States becoming a signatory to any international agreement on greenhouse gas emissions under the United Nations Framework Convention on Climate Change’. Unanimously passed in the Senate 95–0.

¹² See, eg, Sebastian Oberthür and Hermann E Ott, *The Kyoto Protocol: International Climate Policy for the 21st Century* (1999) 49, 78, 95; Henry D Jacoby and David M Reiner, ‘Getting Climate Policy on Track after the Hague: An Update’ in Rorden Wilkenson (ed), *The Global Governance Reader* (2005) 274, 278; Jonathan B Wiener, ‘Something Borrowed for Something Blue: Legal Transplants and the Evolution of Global Environmental Law’ (2001) 27 *Ecology Law Quarterly* 1295, 1309–11.

provisions allowing international trading in carbon emissions allocations as a way to improve the cost-effectiveness of the climate regime.¹³ Initial proposals to introduce economic flexibility into greenhouse gas mitigation measures received a mixed response,¹⁴ with critics questioning both the morality of conferring a transferable right to pollute and the practicality of devising such a complex mechanism during *Kyoto Protocol* negotiations.¹⁵ Concerns about the morality and practicality of the proposal were settled relatively early in negotiations but enduring concerns emerged.

Principally, participants worried that emissions trading offered a way for developed nations to avoid investing in domestic emissions reduction measures — characterised by critics as ‘cheating on the basic commitment’.¹⁶ US emissions trading proposals faced early opposition from developed and developing countries on these grounds. The EU was one of the most vocal critics of US proposals, expressing concern that emissions trading would allow the US to shirk domestic emissions reduction responsibilities.¹⁷ Conflict between the US and the EU over economic flexibility mechanisms prompted the Council of Europe to formulate a position statement determining that

mechanisms such as emissions trading are supplementary to domestic action and common coordinated policies and measures, and that the inclusion of any trading system in the Protocol and the level of the targets to be achieved are interdependent.¹⁸

The Council of Europe’s proposal created room for incorporating economic flexibility mechanisms into the *Kyoto Protocol* while stipulating that such mechanisms should *supplement* — rather than supplant — domestic emissions reduction measures.¹⁹

¹³ See, eg, Ian H Rowlands, ‘The Kyoto Protocol’s “Clean Development Mechanism”: A Sustainability Assessment’ (2001) 22 *Third World Quarterly* 795, 803. See also Wiener, above n 12, 1316–17; Michael Grubb, Christiaan Vrolijk and Duncan Brack, *The Kyoto Protocol: A Guide and Assessment* (1999) 87.

¹⁴ Grubb, Vrolijk and Brack, above n 13, 91–2.

¹⁵ See, eg, David W Childs, ‘The Unresolved Debates That Scorched Kyoto: An Analytical Framework’ (2005) 13 *University of Miami International and Comparative Law Review* 233; Susan J Kurkowski, ‘Distributing the Right to Pollute in the European Union: Efficiency, Equity and the Environment’ (2006) 14 *New York University Environmental Law Journal* 698; Kirk W Junker, ‘Ethical Emissions Trading and the Law’ (2006) 13 *University of Baltimore Journal of Environmental Law* 149; Peter G G Davies, ‘Global Warming and the Kyoto Protocol’ (1998) 47 *International and Comparative Law Quarterly* 446, 459.

¹⁶ See Grubb, Vrolijk and Brack, above n 13, 93. See also Andrew E Dessler and Edward A Parson, *The Science and Politics of Global Climate Change: A Guide to the Debate* (2006) 132.

¹⁷ Dessler and Parson, above n 16, 15.

¹⁸ Grubb, Vrolijk and Brack, above n 13, 94.

¹⁹ See, eg, Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (‘COP/MOP’), UNFCCC, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on Its First Session, Held at Montreal from 28 November to 10 December 2005, Addendum — Part Two: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol at Its First Session*, UN Doc FCCC/KP/CMP/2005/8/Add.1 (30 March 2006) 4 (*Decision 2/CMP.1* —

Ultimately, the US succeeded in embedding economic flexibility mechanisms at the heart of the *Kyoto Protocol* without any concrete or binding limits on the extent of their usage. The subsequent repudiation of the *Kyoto Protocol* by the US did not entail the demise of the mechanisms. The EU, paradoxically once one of the most vocal sceptics of economic flexibility mechanisms,²⁰ went on to launch the world's largest emissions trading regime in 2005 — the European Union Greenhouse Gas Emission Trading System ('EU ETS'). Moreover, as of October 2009, EU member states were responsible for the vast majority of ongoing CDM projects (59 per cent), with only Switzerland (21 per cent) and Japan (11 per cent) nearing the EU's high level of investment in CDM projects.²¹ While parties have been slow to invest in JI projects due to delays in rule-making, EU member states have been among the first countries to host JI projects and EU member states dominate the list of countries hosting projects investors.²² Further, EU climate policy fully embeds the flexibility mechanisms in regional efforts to reduce greenhouse gas emissions.²³ The EU ETS is the centrepiece of Europe's climate change strategy and the most looked-to example for other nations developing emissions trading schemes.²⁴

Developed and developing countries worldwide have joined the EU in its uptake of the flexibility mechanisms. The EU's conversion from critic to advocate has ensured that the flexibility mechanisms will remain a continuing part of long-term international climate change negotiations. The EU has thus

Principles, Nature and Scope of the Mechanisms Pursuant to Articles 6, 12 and 17 of the Kyoto Protocol:

Decides that the use of the mechanisms shall be supplemental to domestic action and that domestic action shall thus constitute a significant element of the effort made by each Party included in Annex 1 to meet its quantified emission limitation and reduction commitments under Article 3, paragraph 1.

Articles 6 and 17 of the *Kyoto Protocol*, relating to emissions trading and JI, provide that any emissions trading shall be supplemental to domestic actions for the purpose of meeting a party's commitments. Article 12 allows an Annex I party to use the CDM to meet part of its commitments but it does not provide detailed rules or guidance.

- ²⁰ Peter Zapfel, 'Greenhouse Gas Emissions Trading in the EU: Building the World's Largest Cap-and-Trade Scheme' in Bernd Hansjürgens (ed), *Emissions Trading for Climate Policy: US and European Perspectives* (2005) 162, 163; Bäckstrand and Löfbrand, above n 7, 130.
- ²¹ UNFCCC, *Registered Projects by AI and NAI Investor Parties* <<http://cdm.unfccc.int/Statistics/Registration/RegisteredProjAnnex1PartiesPieChart.html>>.
- ²² The list of host countries from the EU includes: Bulgaria, Czech Republic, Estonia, France, Germany, Hungary, Lithuania, Poland, and Romania. The only host countries from outside the EU are New Zealand and the Ukraine: UNFCCC, *Project Overview* <http://ji.unfccc.int/JI_Projects/ProjectInfo.html>.
- ²³ *Directive 2004/101/EC of the European Parliament and of the Council of 27 October 2004 Amending Directive 2003/87/EC Establishing a Scheme for Greenhouse Gas Emission Allowance Trading within the Community, in respect of the Kyoto Protocol's Project Mechanisms* [2004] OJ L 338/18, establishing a scheme for emission allowance trading within the EC, in respect of the *Kyoto Protocol's* project mechanism.
- ²⁴ The EU ETS is referred to for lessons in both success and failure. It has been heavily criticised as inefficient and as of yet dysfunctional. There also remain considerable concerns about its long-term economic viability. The continuing instability of the price for a tonne of carbon creates underlying market instability, especially in times of economic recession. As the EU moves into Phase II and solidifies auctioning and sector expansion plans for Phase III of the EU ETS, it is seeking to cure underlying instabilities. The EU ETS offers the grand experiment of marrying market solutions to greenhouse gas mitigation and it is still too early to determine the outcome of the experiment.

assumed the mantle of economic flexibility first proposed by the US and proceeded to embed it in the heart of global climate politics.

In particular, the global community has turned to the CDM as a route for reaping the economic benefits associated with being a 'first mover' in efforts to limit global greenhouse gas emissions.²⁵ The CDM is the only flexibility mechanism that allows developing countries to participate in emissions reduction projects. It was devised as a tool to reduce global greenhouse gas emissions while concurrently promoting sustainable development.²⁶ As will be discussed below, the CDM has encountered numerous procedural and substantive obstacles. Nevertheless, studies continue to herald the CDM's economic viability, with one study suggesting that the CDM could generate a 20–50 per cent saving in global abatement costs,²⁷ while achieving anywhere between 31–57 per cent of the emissions reductions mandated under the *Kyoto Protocol*.²⁸ There are currently in excess of 1600 registered CDM projects and this number continues to grow. The UNFCCC estimates that existing projects will generate more than three hundred million Certified Emission Reduction ('CER') credits,²⁹ or 30 per cent of the one billion tonnes of carbon reductions needed by developed countries to meet their *Kyoto Protocol* obligations.³⁰ Thus, the climate change framework is dominated by the CDM, emissions trading and, increasingly, JI projects.

Heavy reliance on market-based mechanisms, and growing concerns about the economic implications of stringent emissions limits, unite policymakers from developed countries and the developing countries likely to face emissions reduction obligations in the foreseeable future, for instance, China, India and Brazil. Convergence around the question of economic wellbeing is to be expected. However, the current dialogue over economic flexibility does not necessarily overlap with efforts to improve global economic wellbeing. Efficient abatement has not been proven to equate with either the promotion of sustainable development or the equitable distribution of the costs and benefits of emissions reduction.

A *Economic Flexibility Mechanisms in the Domestic Context*

Principles of distributive justice underpin concerns over the relative fairness of various courses of action to address climate change. In framing his theory of distributive justice, John Rawls suggested that there are two components to

²⁵ Robyn Eckersley, 'Soft Law, Hard Politics, and the Climate Change Treaty' in Christian Reus-Smit (ed), *The Politics of International Law* (2004) 88–9.

²⁶ Sustainable development criteria are not defined by the *Kyoto Protocol*, but combine elements of economic development, social development and environmental protection. These three components are often referred to as the three pillars of sustainable development. See, eg, *2005 World Summit Outcome*, GA Res 60/1, UN GAOR, 60th sess, 8th plen mtg, UN Doc A/RES/60/1 (24 October 2005) [48].

²⁷ Rowlands, above n 13, 803.

²⁸ *Ibid* 801.

²⁹ Each CER credit is equivalent to one tonne of carbon dioxide emissions.

³⁰ UNFCCC, *Expected Average Annual CERs from Registered Products by Host Party*, available from <<http://cdm.unfccc.int/Statistics/index.html>>.

ensure a just system of governance:

first, each person participating in an institution or affected by it has an equal right to the most extensive liberty compatible with a like liberty for all; and, second, inequalities as defined by the institutional structure or fostered by it are arbitrary unless it is reasonable to expect that they will work out to everyone's advantage and provided that the positions and offices to which they attach or from which they may be gained are open to all. These principles express the concept of justice as relating three ideas: liberty, equality, and reward for services contributing to the common advantage.³¹

In applying Rawls' definition of distributive justice to climate policy, one must first ask whether the policy is even-handed in distributing privileges and obligations and, second, whether inequalities resulting from the policy are reasonable and conducive to ensuring the greatest good for the greatest number of people. Rawls' theory of distributive justice influences environmental policy and climate policy worldwide. Notions of distributive justice, for example, inform the principles of common but differentiated responsibilities and sustainable development.

In particular, theories of distributive justice have influenced the environmental justice movement and, more recently, the climate justice movement. Richard O Brooks outlined the role of distributive justice in environmental law and policy, stating that

the proper goal of environmental law is not only effectiveness nor efficiency but also environmental justice — the proper distribution of environmental amenities, the fair correction and retribution of environmental abuses, the fair restoration of nature, and the environmentally fair exchange of resources.³²

Brooks' comment reveals one of the fundamental challenges in modern environmental law-making — balancing economic development, environmental protection and equity considerations. This problem is particularly acute in the context of climate change law and policymaking, where policies must balance the social and economic costs of mitigation with the unevenly distributed costs of responding to climate change. Within the framework of the international climate regime, decision-makers must assess whether climate policies evenly distribute privileges and obligations based on underlying notions of common but differentiated responsibilities, and whether any resulting inequalities are reasonable and justifiable based on the common good. Given the nature of climate change, these calculations must assess distributive justice across both space and time.

The integration of economic flexibility into climate policies skews assessments of distributive justice by placing economic rationality at the centre of decision-making without fully assessing the implications for the distribution of privileges and obligations. That is, while economic flexibility may reduce the near-term economic costs imposed on the holders of emissions reduction obligations, it creates a series of new social and environmental costs and benefits

³¹ John Rawls, 'Constitutional Liberty and the Concept of Justice' in Carl J Friedrich and John W Chapman (eds), *Nomos VI: Justice* (1963) 98, 100.

³² Richard O Brooks, 'A New Agenda for Modern Environmental Law' (1991) 6 *Journal of Environmental Law and Litigation* 1, 26–7.

whose distribution is unrelated to the initial set of privileges and obligations and, arguably, often inequitable.³³

Framing climate policies according to economic principles thus raises equity (and environmental) concerns at both domestic and global levels. Questions of interstate equity receive the majority of attention and will be considered in the following section, but questions of intrastate justice are also pertinent. Even within developed countries, issues of climate justice plague the use of the CDM and emissions trading.³⁴

Relying on CDM projects in developing countries as a primary source of emissions reduction allows developed countries to delay domestic abatement actions with real consequences for intrastate communities. While investing in CDM projects minimises short-term direct abatement costs for the public and private sectors, it also creates short-term risks and long-term social and economic exposure. By delaying investment in new energy infrastructure and emissions reduction technologies,³⁵ CDM projects facilitate the continuing operation of environmentally harmful energy facilities and enable the growth of energy-intensive industries and lifestyles. Over-investment in CDM projects encourages decision-makers to neglect opportunities to improve environmental quality and to invest in new, clean industries and technologies. Consequently, the short-term economic benefits of CDM projects mask long-term economic, social, and environmental costs. The decision to continue operating on a modified 'business as usual' schedule derails opportunities for green investment and environmental improvement, as well as aggravating existing environmental justice concerns.³⁶

Recognising the risks associated with over-reliance on CDM, the COP/MOP to the *Kyoto Protocol* issued a decision determining that

the use of the (flexibility) mechanisms shall be supplemental to domestic action and that domestic action shall thus constitute a significant element of the effort made by each Party included in Annex I to meet its quantified emission limitation and reduction commitments under Article 3, paragraph 1.³⁷

Despite this decision, questions of supplementarity continue to plague international negotiations. Current rules are vague and unenforceable, resulting in continuing disagreements between parties over the appropriate balance between emissions reduction achieved through domestic policies and measures, and external emissions reduction achieved through emissions trading, JI and CDM projects. The US Federal Government, for example, has historically opposed restrictions on the extent to which the economic flexibility mechanisms

³³ See, eg, Richard Toshiyuki Drury et al, 'Pollution Trading and Environmental Injustice: Los Angeles' Failed Experiment in Air Quality Policy' (1999) 9 *Duke Environmental Law and Policy Forum* 231, 258–63.

³⁴ JI projects raise similar concerns but are not considered here due to the small scale of JI as compared to the CDM and emissions trading.

³⁵ See, eg, Davies, above n 15, 458.

³⁶ See Vicki Been and Francis Gupta, 'Coming to the Nuisance or Going to the Barrios? A Longitudinal Analysis of Environmental Justice Claims' (1997) 24 *Ecology Law Quarterly* 1; see generally Kyle W La Londe, 'Who Wants to Be an Environmental Justice Advocate?: Options for Bringing an Environmental Justice Complaint in the Wake of *Alexander v Sandoval*' (2004) 31 *Boston College Environmental Affairs Law Review* 27.

³⁷ COP/MOP, above n 19.

can be used to meet legal emissions reduction obligations,³⁸ while the EU has sought defined limits on the extent to which the flexibility mechanisms can be used to meet domestic obligations.³⁹ Even the EU, however, has determined that the vast majority of member states will need to draw heavily on credits earned through flexible mechanism projects in order to meet domestic and community-wide emissions reduction obligations.⁴⁰

Drawing upon CDM credits at the expense of implementing domestic abatement strategies impedes strategies to reduce domestic greenhouse gas emissions and results in lost opportunities to update infrastructure and operations in the energy sector, and to capture economic opportunities in the global green energy market. Over-reliance on CDM projects produces 'business as usual' scenarios that, at best, perpetuate carbon-intensive lifestyles and, at worst, aggravate existing environmental justice considerations.

Domestic and regional emissions trading schemes create additional equity considerations. Emissions trading continues to dominate climate policy agendas in developed countries despite still tenuous economics and unaddressed environmental justice considerations.⁴¹ As discussed, the EU ETS is the centrepiece of Europe's efforts to reduce greenhouse gas emissions and the laboratory for global emissions trading spin-offs. Although operating outside the international framework, the US continues to advocate emissions trading as the foundation for domestic climate change mitigation. The most recent climate change proposals to emerge from the US House of Representatives include emissions trading mechanisms as the focal point of energy and climate change policies.⁴² Further, various US states already operate regional emissions trading schemes.⁴³ Similarly, the Australian Government released its proposed Carbon Pollution Reduction Scheme Bills in May 2009, calling for domestic carbon emissions to be reduced by between 5–15 per cent by 2020, primarily through an emissions trading system.⁴⁴

These are just a few examples of the various emissions trading systems proposed or operating worldwide. Emissions trading offers a business-friendly, politically attractive mechanism for reducing greenhouse gas emissions.

³⁸ Chris Wold, David Hunter and Melissa Powers, *Climate Change and the Law* (2009) 240.

³⁹ European Commission, *Proposal for a Directive of the European Parliament and of the Council Amending Directive 2003/87/EC so as to Improve and Extend the GHG Emission Allowance Trading System of the Community* [2008] Doc No COD/2008/0013, 26.

⁴⁰ See generally European Commission, *Second ECCP Progress Report: Can We Meet Our Kyoto Targets?* (European Climate Change Programme Report, April 2003) i–iv <http://ec.europa.eu/environment/climat/pdf/second_eccp_report.pdf>.

⁴¹ The price of carbon, for example, was very volatile in the EU ETS during Phase I. While the price of carbon has been more stable in Phase II, the price signals continue to vary in both the European and other global carbon markets. See, eg, Robert N Stavins, 'A Meaningful US Cap-and-Trade System to Address Climate Change' (2008) 32 *Harvard Environmental Law Review* 293, for a discussion on the importance of price signals for market functioning.

⁴² American Clean Energy and Security Act of 2009, HR Res 2454, 111th Congress (2009).

⁴³ See Regional Greenhouse Gas Initiative, *Regional Greenhouse Gas Initiative (RGGI) CO₂ Budget Trading Program*, available from <<http://www.rggi.org>>.

⁴⁴ This has been increased to a target of 25 per cent reduction of 2000 levels by 2020. The Bills were defeated in the Senate on 13 August 2009, however, the Government has indicated that it intends to reintroduce the Bills before the end of 2009. See Department of Climate Change, Commonwealth of Australia, *Carbon Pollution Reduction Scheme Legislative Package* (2009), available from <<http://whitepaper.climatechange.gov.au/emissionstrading/legislation/index.html>>.

Proponents argue that trading schemes are efficient, flexible, and predictable; that they avoid problems of regulatory capture; offer mechanisms for dealing with distributional issues; stimulate innovation in emissions reduction technologies; facilitate regional and global competition; and offer politically acceptable solutions.⁴⁵ However, emissions trading is not a panacea.⁴⁶ Commentators have increasingly questioned the efficacy of emissions trading programs as well as the fairness of these systems.⁴⁷ The realpolitik of climate change, however, dictates that market-based regimes offer the path of least resistance; emissions trading is depicted to fit this bill.

Current popular and political depictions of emissions trading ignore regulatory flaws, economic weaknesses and equity problems. From a fairness perspective, emissions trading systems tend to concentrate wealth and power,⁴⁸ with the effect that 'trades of rights in the marketplace may lead to a concentration of property and market power, denying small businesses and poor people access rights to necessary resources (eg water)'.⁴⁹ Fundamental distributional challenges stem from decisions over the allocation of permits. With virtually all greenhouse gas emissions trading schemes allocating permits (at least initially) on the basis of past and present pollution, big polluters benefit. Beyond the question of who receives a permit is the question of 'at what cost'? Again, most greenhouse gas trading regimes initially allocate a majority of permits on a no-cost basis, creating windfall profits for big polluters while discouraging innovation and disadvantaging smaller, newer and cleaner industries.⁵⁰ Regardless of the method and cost of allocation, 'incumbent polluters' benefit,⁵¹ with the effect that those parties responsible for past

⁴⁵ Robert Baldwin, 'Regulation Lite: The Rise of Emissions Trading' (London School of Economics Legal Studies Working Paper No 3/2008, 2008) 5–7. See also Stavins, above n 41, providing a detailed analysis of the benefits and challenges associated with using emissions trading to address climate change.

⁴⁶ Baldwin, above n 45, 2.

⁴⁷ See, eg, Daniel Bodansky, 'Targets and Timetables: Good Policy but Bad Politics?' in Joseph E Aldy and Robert N Stavins (eds), *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World* (2007); Scott Barrett, *Environment and Statecraft: The Strategy of Environmental Treaty-Making* (2003) ch 15; David G Victor, *The Collapse of the Kyoto Protocol and the Struggle to Slow Global Warming* (2001); Kenneth P Green, Steven F Hayward and Kevin A Hassett, 'Climate Change: Caps vs Taxes' (American Enterprise Institute for Public Policy Research, Environment Policy Outlook No 2, June 2007) <http://www.aei.org/docLib/20070601_EPOg.pdf>; Robert Shapiro, 'Fixing Kyoto: Problems Found with Cap-and-Trade Schemes' (2007) <<http://www.theamericanconsumer.org/2000/08/18/fixing-kyoto-problems-found-with-cap-and-trade-schemes>>.

⁴⁸ See, eg, David M Driesen, 'Is Emissions Trading an Economic Incentive Program?: Replacing the Command and Control/Economic Incentive Dichotomy' (1998) 55 *Washington and Lee Law Review* 289, 310. See generally Stephen M Johnson, 'Economics v Equity: Do Market-Based Environmental Reforms Exacerbate Environmental Injustice?' (1999) 56 *Washington and Lee Law Review* 111, 129; Drury et al, above n 33.

⁴⁹ Organisation for Economic Co-operation and Development, *Implementing Domestic Tradeable Permits: Recent Developments and Future Challenges* (2002) 20.

⁵⁰ Baldwin, above n 45, 18–22.

⁵¹ *Ibid* 18–19: Baldwin notes that the auctioning of permits still

favours those incumbents who have the existing resources to make successful bids. The principled objection here is that it is unfair that incumbent polluters — who are the parties who have accumulated wealth at the cost of the environment — should be better positioned than non-polluters or new entrants to the field.

environmental degradation often profit most from emissions trading schemes. Emissions trading thus confers benefits on incumbent polluters with the effect of distorting competition in favour of these parties. Moreover, the costs of emissions trading schemes are regressive.⁵² Larger, more established entities are better able to absorb the administrative costs associated with emissions trading and gain control of significant market shares.

At the international level, for example, emissions trading has been dubbed ‘colonialism with a modern face’ due to the assertion that it ‘perpetuates and deepens unequal access to and control of resources’.⁵³ Critics argue that trading restricts economic growth and social advancement among disadvantaged communities while allowing wealthy players to benefit from and control new markets in emissions permits.⁵⁴ In this way, whether at the domestic or international level, emissions trading enables rich polluters to continue their current business practices and to benefit financially from trading, often at the expense of vulnerable communities.⁵⁵ At the international level, this creates a cycle whereby developed countries benefit from trading, avoid costly regulation at home, exert control over markets and gather all of the low-hanging fruit, with the effect of ‘gain[ing] preferential use of lowest cost abatement methods and reap[ing] a competitive advantage while suppressing development’ elsewhere.⁵⁶ These arguments apply equally to domestic markets, albeit on a less extreme scale. Even within developed countries, poorly-regulated emissions trading schemes perpetuate social inequalities.

In all of these ways, emissions trading inherently favours those with pre-existing wealth and power.⁵⁷ Furthermore, emissions trading exacerbates problems of domestic and global pollution hot spots. While it might not matter where carbon emissions or reductions occur, the ‘co-pollutants’ that are released with carbon dioxide pose serious threats to surrounding communities.⁵⁸ Those most at risk are poor and minority communities. Emissions trading exacerbates problems with hot spots by allowing regulated entities to purchase credits that enable them to continue carbon-intensive operations, rather than requiring

⁵² Ibid 18.

⁵³ Ibid 19, citing Rising Tide UK, *The Rising Tide Coalition for Climate Justice Political Statement* (2002) <<http://risingtide.org.uk/about/political>>.

⁵⁴ See, eg, Drury et al, above n 33; Gary W Yohe, David Montgomery and Ed Balistreri, ‘Equity and the Kyoto Protocol: Measuring the Distributional Effects of Alternative Emissions Trading Regimes’ (2000) 10 *Global Environmental Change* 121; Barbara Buchner and Marzio Galeotti, ‘Climate Policy and Economic Growth in Developing Countries’ (2004) 4 *International Journal of Global Environmental Issues* 109.

⁵⁵ Emily Richman, ‘Emissions Trading and the Development Critique: Exposing the Threat to Developing Countries’ (2003) 36 *International Law and Politics* 133, 170.

⁵⁶ Baldwin, above n 45, 20.

⁵⁷ Due to the economic and social problems plaguing emissions trading, carbon taxes are increasingly favoured by economic and political commentators. See, eg, Reuven S Avi-Yonah and David M Uhlmann, ‘Combating Global Climate Change: Why a Carbon Tax Is a Better Response to Global Warming than Cap and Trade’ (2009) 28 *Stanford Environmental Law Journal* 3. It is worth noting, however, that carbon taxes raise fundamental fairness issues as well, particularly in regards to the disproportionate burdens they place on low-income groups.

⁵⁸ See, eg, David Roland-Holst, ‘Carbon Emission Offsets and Criteria Air Pollutants: A California Assessment’ (Center for Energy, Resources and Economic Sustainability Research Paper No 0903091, University of California, Berkeley, March 2009), which discusses issues related to the positive and negative effects of greenhouse gas co-pollutants.

across-the-board emissions reductions irrespective of size and circumstance. Existing and proposed emissions trading schemes do not adequately remedy problems of pollution hot spots.⁵⁹

Emissions trading schemes also pose accountability, transparency and legitimacy challenges that create opportunities for abuse, particularly among entities with the experience and resources to identify systemic loopholes and weaknesses.⁶⁰ Problems of accountability, transparency and legitimacy further embed power and wealth inequalities.

Emissions trading has been heralded as a win-win solution for achieving greenhouse gas emissions reductions. Politically, emissions trading continues to be a viable choice. Economically and ethically, its viability as the cornerstone of emissions reduction regimes is less clear. At a minimum, there is a pressing need to refine systemic controls.

As the end of the first *Kyoto Protocol* compliance period nears, Annex B countries increasingly look to the flexibility mechanisms to supplement domestic policies and measures that have fallen short of achieving desired levels of emissions reduction.⁶¹ This trend raises genuine concerns over the absence of clear and binding rules on supplementarity. If Annex B countries know that they can fall back on the flexibility mechanisms to buy externally generated emissions reduction credits, this will create disincentives for adopting comprehensive domestic policies and measures for reducing greenhouse gas emissions. Further, relying on the flexibility mechanisms creates the parameters for climate change regimes that concentrate wealth and pollution, locking in existing levels of affluence and development at local and global levels. Absent real obligations to implement effective strategies for reducing domestic greenhouse gas emissions, global efforts to reduce climate change will fail, derailing sustainable development objectives along the way. In this way, misuse of economic instruments undermines the objectives of the *UNFCCC*.

B *CDM and Global Equity*

The previous Section explored how exploiting the *Kyoto Protocol* flexibility mechanisms can give rise to fairness concerns at the domestic level within developed countries. The significance of this finding is that domestic-level fairness concerns (while real) pale in comparison to questions of global equity.

⁵⁹ See, eg, Noga Morag Levine, 'The Problem of Pollution Hotspots: Pollution Markets, Coase, and Common Law' (2008) 17 *Cornell Journal of Law and Public Policy* 101, 103–6.

⁶⁰ For example, institutional misuse, both intentional and unintentional, almost undermined Phase I of the EU ETS. Baldwin, above n 45, 9–11; see Larry Parker, *Climate Change: The European Union's Emissions Trading System (EU-ETS)* (Congressional Research Service Report, 31 July 2006), discussing the problem of over-allocation of emission allowances during the first phase of the EU ETS. See also Richard N Cooper, *Alternatives to Kyoto: The Case for a Carbon Tax* (Unpublished Manuscript, 2006) <http://www.economics.harvard.edu/faculty/cooper/files/Kyoto_ct.pdf>.

⁶¹ European Environmental Agency ('EEA'), *Greenhouse Gas Emission Trends and Projections in Europe 2005* (EEA Report No 8, 2005) 14 <http://www.eea.europa.eu/publications/eea_report_2005_8/GHG2005.pdf>, providing a review of whether and how the EU member states will meet their emission reduction obligations.

Ongoing utilisation of the CDM reveals flaws in the architecture of the *Kyoto Protocol* flexibility mechanisms.⁶²

The CDM allows developed countries to earn CER credits by sponsoring certified emissions reduction projects in developing countries.⁶³ Developed countries can use CERs to help meet their emissions reductions obligations. The CDM is a distinctive legal mechanism that has been dubbed

the standard of a new era in international environmental policy marked by a greater reliance on market mechanisms to achieve cost-effective solutions and to bring about international transfers of financial and technological resources.⁶⁴

It has been heralded as ‘one of the most innovative elements of the Kyoto Protocol’ but also ‘one of its most controversial’.⁶⁵

The CDM evolved from US emissions trading proposals as a mechanism for melding economic efficiency goals with the objective of enabling sustainable development⁶⁶ in developing countries.⁶⁷ One of the principle architects of the CDM, José Goldemberg, characterised the CDM as a

new channel for financial assistance and investments to promote sustainable development — not only emissions reductions — and consequently it is a means of technology transfer and promotion of equity; these are the general and more holistic objectives of the United Nations Framework Convention on Climate Change.⁶⁸

The success of the CDM in promoting sustainable development, however, has come into question since its inception in 2000. Early review of existing CDM projects reveals that they are heavily concentrated in only a handful of the faster growing developed nations,⁶⁹ and that the projects are skewed towards high-profit projects that tend to stunt social and technological involvement rather

⁶² See, eg, Emma Paulsson, ‘A Review of the CDM Literature: From Fine-Tuning to Critical Scrutiny?’ (2009) 9 *International Environmental Agreements: Politics, Law and Economics* 63, 66–74; Michael Wara, ‘Is the Global Carbon Market Working?’ (2007) 445 *Nature* 595; Albert Mumma and David Hodas, ‘Designing a Global Post-Kyoto Climate Change Protocol That Advances Human Development’ (2008) 20 *Georgetown International Environmental Law Review* 619; Adil Najam, Saleemul Huq and Youba Sokona, ‘Climate Negotiations beyond Kyoto: Developing Countries Concerns and Interests’ (2003) 3 *Climate Policy* 221. See especially Franck Lecocq and Philippe Ambrosi, ‘The Clean Development Mechanism: History, Status, and Prospects’ (2007) 1 *Review of Environmental Economics and Policy* 134, 147–9.

⁶³ To receive certification, a project must result in ‘real, measurable, and long-term benefits to the mitigation of climate change’. As an additional prerequisite, a project must result in emission reductions that are additional to what would otherwise not have occurred without the CDM. See *Kyoto Protocol*, above n 8, art 12(5)(a)–(b).

⁶⁴ Robert Repetto, ‘The Clean Development Mechanism: Institutional Breakthrough or Institutional Nightmare’ (2001) 34 *Policy Sciences* 303, 304.

⁶⁵ Rowlands, above n 13, 795.

⁶⁶ UNFCCC, above n 9, art 3(4). See also *Kyoto Protocol*, above n 8, arts 2(1), 10.

⁶⁷ *Kyoto Protocol*, above n 8, art 12(5)(b).

⁶⁸ Repetto, above n 64, 306, citing José Goldemberg, ‘The CDM in Brazil: Options and Opportunities’ (Paper prepared for the Brazil/US Aspen Global Forum on Post-Kyoto Strategies for International Cooperation and Private Sector Participation, Aspen, US, June 1998).

⁶⁹ For example, by region, at the end of October 2009, Asia and the Pacific had 1401 registered CDM projects (74.01 per cent), Latin America and the Caribbean had 445 (23.51 per cent), and Africa had 36 (1.9 per cent). See UNFCCC, *Registered Project by Region*, <<http://cdm.unfccc.int/Statistics/Registration/RegisteredProjByRegionPieChart.html>>.

than promoting technology transfer and green development.⁷⁰ The CDM has also come under fire for its ability to generate projects that achieve emissions reductions additional to those that would have been achieved in the absence of the project. Critics of the existing CDM framework argue that a vast majority of pending and approved CDM projects are non-additional, meaning that the project will not achieve net emissions reductions as a primary result of the carbon credit income associated with the classification as a CDM project.⁷¹ Thus, the ability of the CDM to actually reduce net emissions, and to do so in an equitable way, has come into question.⁷²

One particularly acute equity problem is the marginalisation of LDCs.⁷³ Approximately one-third of non-Annex I Parties to the *UNFCCC* are LDCs.⁷⁴ Yet, of the 44 LDCs that are party to the *Kyoto Protocol* and eligible to host CDM projects, only seven (16 per cent) have done so.⁷⁵ In comparison, half of the remaining non-Annex I countries have CDM projects.⁷⁶ Of the 1893 CDM projects registered by the end of October 2009, only 13 (0.69 per cent) are being hosted in LDCs.⁷⁷ In contrast, in March of 2009 alone, China registered 55 projects, India registered 14 projects and both Uzbekistan and Malaysia registered 4 projects.⁷⁸

Uneven project concentration has been identified as one of the primary challenges facing the CDM.⁷⁹ In 2006, then UN Secretary-General Kofi Annan introduced the *Nairobi Framework*,⁸⁰ an initiative by six UN agencies to help developing countries — especially in Africa — participate in the CDM. Nearly three years after the *Nairobi Framework* was adopted, however, little progress

⁷⁰ Michael Wara, 'Measuring the Clean Development Mechanism's Performance and Potential' (2008) 55 *UCLA Law Review* 1759, 1764, 1800–2.

⁷¹ Michael Wara and David G Victor, 'A Realistic Policy on International Carbon Offsets' (Program on Energy and Sustainable Development, Stanford University, Working Paper No 74, April 2008) 20.

⁷² See, eg, *ibid*, providing helpful case studies of failures in the CDM market; Axel Michaelowa and Pallav Purohit, *Additionality Determination of Indian CDM Projects: Can Indian CDM Project Developers Outwit the CDM Executive Board* (2007) 7–9 <<http://www.no21.org/docs/Michaelowa-teripress-2007>>.

⁷³ See generally Servaas Storm, 'Building Productive Capacities and Technological Capabilities in LDCs' (2008) 39 *Development and Change* 1203.

⁷⁴ See UN Office of the High Representative for the Least Developed Countries, Landlocked Developing Countries and Small Island Developing Countries ('UN-ORHLLS'), *List of the Least Developed Countries*, <<http://www.un.org/special-rep/ohrlls/ldc/list.htm>>; UNFCCC, *List of Non-Annex I Parties to the Convention*, <http://unfccc.int/parties_and_observers/parties/non_annex_i/items/2833.php>.

⁷⁵ See UN-ORHLLS, *List of the Least Developed Countries*, above n 74; UNFCCC, *Registered Project Activities by Host Party*, <<http://cdm.unfccc.int/Statistics/Registration/NumOfRegisteredProjByHostPartiesPieChart.html>>.

⁷⁶ See UNFCCC, *Registered Project Activities by Host Party*, above n 75; UNFCCC, *List of Non-Annex I Parties to the Convention*, above n 74.

⁷⁷ UNFCCC, *Registered Project Activities by Host Party*, above n 75.

⁷⁸ UNFCCC, *CDM Project Search*, <<http://cdm.unfccc.int/Projects/projsearch.html>>.

⁷⁹ See Wytze van der Gaast, Katherine Beggs and Alexandros Flamos, 'Promoting Sustainable Energy Technology Transfers to Developing Countries through the CDM' (2009) 86 *Applied Energy* 230, 231. See also Paulsson, above n 62, 72.

⁸⁰ UN Secretariat, 'UN Secretary-General Announces "Nairobi Framework" to Help Developing Countries Participate in the Kyoto Protocol' (Press Release, 15 November 2006) <http://unfccc.int/files/press/news_room/press_releases_and_advisories/application/pdf/061115_cop12_pressrel_1.pdf>.

has been made and the end of the first *Kyoto Protocol* compliance period draws near. Patterns of over-concentration and marginalisation persist, with the effect of disenfranchising LDCs and undermining sustainable development goals worldwide.⁸¹ State-based distributional inequalities typify current CDM operations.

Uneven geographic distribution is compounded by distorted patterns of project distribution by sector of investment. CDM projects were expected to generate numerous small-scale renewable energy projects. In actual fact, however, projects have clustered around co-generation, biomass, methane capture, fuel switching (for example, coal to gas), heat recovery and phasing out hydrofluorocarbons.⁸² Each of these categories offers opportunities for reducing greenhouse gas emissions. However, many of the projects are difficult to verify; offer modest opportunities for technology transfer and infrastructure revitalisation; fast-track changes otherwise required by law;⁸³ and create problems of pollution leakage.⁸⁴ That is, the categories of projects favoured by investors due to high margins of profitability do not align with the categories of projects most conducive to facilitating technology transfer, sustainable development and long-term emissions reductions.

Geographic and sectoral distribution of projects combine to undercut the equity objectives of the CDM. For all of its much-heralded potential, economic efficiency goals have trumped competing sustainable development objectives, with the effect of undermining the CDM's ability to advance fair and lasting greenhouse gas emissions abatement. Further, while CDM projects continue to generate wealth for project sponsors, they do so at the expense of sustainable development and long-term emissions abatement in developed and developing countries. There are efforts underway to reform CDM to increase transparency,⁸⁵

⁸¹ The *Nairobi Framework* identified various substantive and procedural impediments to the growth of CDM projects in LDCs and has initiated steps to try to overcome these impediments. The effect of these efforts is not yet identifiable. See generally UNFCCC, *The Nairobi Framework — Catalysing the CDM in Africa*, <http://cdm.unfccc.int/Nairobi_Framework/index.html>.

⁸² See Wara, above n 70, 1773, 1779.

⁸³ For example, phasing out the use of hydrochlorofluorocarbons ('HCFC's) in China that would otherwise be required by domestic and international law within a few years time. See UNFCCC, *Report of the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol on Its First Session, Held at Montreal from 28 November to 10 December 2005, Addendum — Part Two: Action Taken by the Conference of the Parties Serving as the Meeting of the Parties to the Kyoto Protocol at Its First Session*, UN Doc FCCC/KP/CMP/2005/8/Add.1 (30 March 2006) 100 (*Decision 8/CMP.1 — Implications of the Establishment of New Hydrochlorofluorocarbon-22 (HCFC-22) Facilities Seeking to Obtain Certified Emission Reductions for the Destruction of Hydrofluorocarbon-23 (HFC-23)*) <<http://unfccc.int/resource/docs/2005/cmp1/eng/08a01.pdf>>, discussing the relationship between the *Montreal Protocol on Substances That Deplete the Ozone Layer* (opened for signature 16 September 1987, 1522 UNTS 3 (entered into force 1 January 1989)), and the control of HCFCs under the CDM.

⁸⁴ See, eg, Frank Vöhringer et al, 'A Proposal for the Attribution of Market Leakage to CDM Projects' (Hamburg Institute of International Economics ('IWWA') Discussion Paper, 2004) 13, providing a helpful overview of the research on leakage. See also K M Chomitz, 'Baseline, Leakage and Measurement Issues: How Do Forestry and Energy Projects Compare?' (2002) 2 *Climate Policy* 35, providing an interesting analysis of the leakage issue.

⁸⁵ For example, through improving third party verification of CDM projects. See eg, Wara and Victor, above n 71, 18–19.

streamline administrative processes and improve communication between the CDM board and the project participants.⁸⁶ CDM reform figured importantly in the *Bali Action Plan*,⁸⁷ but progress has been uneven. At an interim UNFCCC meeting in Bonn in June 2009, the CDM Executive Board established a panel including representatives from industry, government, international agencies and multilateral development banks to discuss disparities in the regional distribution of CDM project activities and to find ways to increase participation in the mechanism by currently under-represented countries, with particular emphasis on Africa.⁸⁸ Yet, numerous other CDM panels were set aside as countries wrangled over the larger issue of how to agree upon a post-*Kyoto* framework. As a result, questions of CDM reform as well as the larger question of how the CDM will function after 2012 remain unanswered. Thus, despite increased dialogue and diverse efforts by the Executive Board to further CDM reform, significant differences continue to exist over whether and how to address geographic and sectoral distribution of projects, and progress continues to lag in efforts to improve the overall functioning of the system. The future pace and effectiveness of CDM reform efforts is closely tied to the outcome of the negotiations in Copenhagen in December 2009.

C Moving Forward

There are flaws in and limitations to using market mechanisms to reduce greenhouse gas emissions. There are also benefits to using market mechanisms, primary among which is their political attractiveness. Global climate change law is doomed to failure if it is not truly global. Absent participation by the biggest greenhouse gas emitters — China and the US — efforts to create effective systems of global climate governance will fail. This is the context within which market mechanisms must be assessed. Absent sustained or catastrophic climate events, global climate change will continue to be accorded lower priority on domestic and global political agendas than more traditional nation-state concerns such as economic development and national security. Market mechanisms afford opportunities to intertwine greenhouse gas abatement with economic development. At this juncture in global efforts to create a lasting international climate regime, the question is not whether market mechanisms are viable components of the regime but how they can be reframed to minimise social costs⁸⁹ and maximise long-term emissions abatement in both developed and developing countries. Beginning with rethinking and formalising rules on complementarity and continuing by modifying the scope of acceptable CDM

⁸⁶ See, eg, UNFCCC, *Executive Board of the Clean Development Mechanism Forty-Sixth Meeting: Report*, UN Doc CDM-EB-46 (25 March 2009) annex 64 (*Terms of Reference Strategic CDM Improvements Referred to in Decision 2/CMP.4*).

⁸⁷ Conference of the Parties, UNFCCC, *Report of the Conference of the Parties on Its Thirteenth Session, Held in Bali from 3 to 15 December 2007, Addendum — Part Two: Action Taken by the Conference of the Parties at Its Thirteenth Session*, UN Doc FCCC/CP/2007/6/Add.1 (14 March 2008) 3–7 (*Decision 1/CP.13 — Bali Action Plan*) ('*Bali Action Plan*').

⁸⁸ UNFCCC, 'Regional Distribution of CDM Project Activities' (Panel Discussion at Bonn Climate Change Talks, Bonn, Germany, 9 June 2009) <http://unfccc2.meta-fusion.com/kongresse/090601_SB30_Bonn/templ/ply_page.php?id_kongresssession=1815&player_mode=isdn_real>.

⁸⁹ See, eg, Paulsson, above n 62, 76.

projects to encourage projects in LDCs, there are many ways to develop the existing economic flexibility mechanisms in line with considerations of economics and equity. There are, for example, suggestions to:

- create uniform sustainable development criteria for CDM projects;
- re-tighten and focus the CDM on activities where it is likely to be most effective;⁹⁰
- adopt preference schemes for CDM projects in LDCs, particularly in Sub-Saharan Africa, to encourage geographical distribution — for example, by reserving a certain percentage of CDM credits for LDCs;⁹¹
- prioritise approval for programmatic CDM projects that facilitate structural change in developing countries;⁹²
- provide ways to bundle small-scale projects in LDCs and less rapidly developing countries to encourage investors who would otherwise focus on large-scale projects in more rapidly developing economies;
- revamp CDM procedural mechanisms to minimise complexity and cost;⁹³
- allow the use of official development assistance to subsidise CDM projects in LDCs in order to promote projects that would otherwise be unappealing to investors, especially small community-based projects and advanced technology;⁹⁴ and
- restructure adaptation funding mechanisms to provide secure sources of funding and to allow this funding to help promote sustainable development.⁹⁵

These are just a few of the ways that the *Kyoto Protocol's* flexibility mechanisms could be updated to better promote the dual goals of sustainable development and emissions reduction. Substantive and procedural revision is essential to preventing continuing patterns of inequitable distribution, in terms of wealth, geography, pollution and project type.

Linkages between climate change and economics are inevitable. Linkages between economic flexibility and social injustice, however, are avoidable.

⁹⁰ Wara and Victor, above n 71, 19–20.

⁹¹ Daniel Hall et al, 'Policies for Developing Country Engagement' (Harvard Project on International Climate Agreements Discussion Paper No 08-15, October 2008) 13 <http://belfercenter.ksg.harvard.edu/publication/18649/policies_for_developing_country_engagement.html>.

⁹² See, eg, Paulsson, above n 62, 70–5.

⁹³ See, eg, Jolene Lin and Charlotte Streck, 'Mobilising Finance for Climate Change Mitigation: Private Sector Involvement in International Carbon Finance Mechanisms' (2009) 10 *Melbourne Journal of International Law* 70.

⁹⁴ Michael Dutschke and Axel Michaelowa, 'Development Aid and the CDM — How to Interpret "Financial Additionality"' (2006) 11 *Environment and Developmental Economics* 235, 238–9.

⁹⁵ Benito Müller, *Montreal 2005: What Happened, and What It Means* (Oxford Institute for Energy Studies Report No EV 35, February 2006) 16, 23–5 <<http://www.oxfordenergy.org/pdfs/EV35.pdf>>.

Economics can be politically advantageous in promoting emissions regulation. The Obama Administration, for example, spins the relationship between economics, energy and climate change to reveal the mutual dependency of energy security and environmental protection, stating that new domestic legislation is needed ‘to protect [the US] from the serious economic and strategic risks associated with [its] reliance on foreign oil and the destabilising effects of a changing climate’.⁹⁶ President Obama further uses economics to his advantage by suggesting that the US is losing ground to its European counterparts in cornering the market in new clean energy technologies and by linking US economic woes to its continuing dependence on foreign oil.⁹⁷

Economics can be climate campaigners’ ally or their worst foe. The relative role depends on the nuances of how economic flexibility is incorporated into climate change law and policy. During this first era of global efforts to reduce greenhouse gas emissions, economic flexibility has widened the base of *Kyoto Protocol* supporters but it has also translated to short-term profit-making at the expense of long-term abatement and sustainable development, in the fullest sense. The economic pillar of sustainable development has proven much more dominant than the environmental and social pillars, with the effect of undermining sustainable development in favour of prolonging existing patterns of economic growth and wealth concentration. However, the system needs finetuning, not abandoning. The environmental and social pillars of sustainable development must be elevated to equal, if not higher, levels than their economic counterpart.

III SECURITY AND CLIMATE CHANGE

Economics and security battle for the top position on political agendas worldwide. While the climate debate has been intertwined with economic development since its inception, the relationship between climate change and security has evolved more slowly. Research exploring how environment-based problems lead to conflict suggests that environment–security risks are significant and increasing.⁹⁸ This research, led by Thomas Homer-Dixon⁹⁹ and Peter Gleick,¹⁰⁰ indicates that environmental stresses compound underlying political instabilities in vulnerable areas leading to conflict and insecurity, which has a ripple effect worldwide. Climate change is a stress multiplier — it adds to and

⁹⁶ The White House, US, *Energy and Environment: Progress* (2009) <<http://www.whitehouse.gov/issues/energy-and-environment>>.

⁹⁷ Ibid.

⁹⁸ Richard A Matthew, ‘The Environment as a National Security Issue’ (2000) 12 *Journal of Policy History* 101, 109.

⁹⁹ See, eg, Thomas F Homer-Dixon, Jeffrey H Boutwell, and George W Rathjens, ‘Environmental Change and Violent Conflict: Growing Scarcities of Renewable Resources Can Contribute to Social Instability and Civil Strife’ (1993) 268(2) *Scientific American* 16. See generally Thomas F Homer-Dixon, ‘On the Threshold: Environmental Changes as Causes of Acute Conflict’ (1991) 16(2) *International Security* 76; Thomas F Homer-Dixon ‘Environmental Scarcities and Violent Conflict: Evidence from Cases’ (1994) 19(1) *International Security* 5; Thomas F Homer-Dixon, *Environment, Scarcity, and Violence* (1999) ch 7.

¹⁰⁰ See, eg, Peter Gleick, ‘Water and Conflict: Fresh Water Resources and International Security’ (1993) 18(1) *International Security* 79; Peter Gleick, ‘Global Freshwater Resources: Soft-Path Solutions for the 21st Century’ (2003) 302 *Science* 1524; Peter Gleick *The World’s Water 2006–2007: The Biennial Report on Freshwater Resources* (2006) ch 1.

compounds existing threats to peace and security.¹⁰¹ An Institute for Public Policy Research paper, published in 2008, confirmed that climate change poses threats to peace and security and noted that climate security ‘is likely to have a major shaping influence on international affairs in the decades ahead’.¹⁰² The Intergovernmental Panel on Climate Change (‘IPCC’) has similarly identified the threats climate change poses to global security. In 2008, Rajendra Pachauri, chair of the IPCC, addressed the European Parliament, warning of the dire consequences climate change poses to global security and advised the international community that there is ‘no part of the globe that can be immune to the security threat’.¹⁰³ In particular, climate change threatens resource availability, energy security and border security, and increases the risks associated with severe weather events, air pollution, disease patterns and land availability. This, in turn, creates conditions conducive to humanitarian crises, military conflict and economic decline.¹⁰⁴

A Linking Climate and Security

Early concerns over climate–security linkages focused on the threats climate change posed to vulnerable states,¹⁰⁵ with attention primarily on the LDCs and a handful of developing countries that were perceived to be particularly geographically vulnerable and lacking in adaptive capacity.¹⁰⁶ These concerns remain. However, concerns over climate security have broadened to include far-reaching questions of national and global security. Primary among these is the question: what is a secure climate? While scientists continue to wrangle over the amount of warming that the planet can ‘safely’ accommodate, politicians are beginning to debate the amount of warming the global community can absorb and respond to without causing significant disruption to primary social and economic infrastructure. To this end, politicians increasingly look beyond how climate change will directly affect their own constituencies to examine how climate change will destabilise populations worldwide with consequential effects

¹⁰¹ Military Advisory Board, CNA Corporation, *National Security and the Threat of Climate Change* (CNA Corporation Report, 16 April 2007) 3.

¹⁰² Ian Kearns and Ken Gude, *The New Front Line: Security in a Changing World* (Institute for Public Policy Research Commission on National Security Working Paper No 1, 13 February 2008) 20.

¹⁰³ European Parliament, ‘UN Climate Change Panel Chair Pachauri: “We Swim or Sink Together”’ (Press Release, 27 March 2008) 1.

¹⁰⁴ Nigel Purvis, *US Global Leadership to Safeguard our Climate, Security, and Economy* (Better World Campaign Report, June 2008) 5.

¹⁰⁵ The level of human vulnerability to climate change is an aggregate of those people’s dependency on natural capital, the sensitivity of that capital to climate change and the strength of state-based political and physical infrastructure in place to support people during periods of environmental stress: Jon Barnett and Neil Adger, ‘Security and Climate Change: Towards an Improved Understanding’ (Paper presented at ‘Human Security and Climate Change: An International Workshop’, Oslo, 20–21 June 2005) 3 <<http://www.auswaertiges-amt.de/diplo/de/Aussenpolitik/ForumGF/17-GF/17-GF-Barnett.pdf>>.

¹⁰⁶ See, eg, *ibid* 12; Jon Barnett, ‘Security and Climate Change’ (2003) 13 *Global Environmental Change* 7; Timothy J McKeown, ‘Climate Change, Population Movements, and Conflict’ in Carolyn Pumphrey (ed), *Global Climate Change: National Security Implications* (2008) 99.

on domestic wellbeing.¹⁰⁷ No less of an important question is how national and international actors can identify, categorise and pre-emptively respond to climate-related threats to security. The ability of policymakers to: first, identify where and how the most serious climate-related threats to security will arise; second, devise programs for minimising the risk of the threat before it arises; and third, to do so with the support and resources of the global community remains, at best, a speculative task. Similarly, the novel nature of the task of defining and responding to climate-related threats to security poses, as of yet, unanswered questions about who should be in charge of this new domain — for example, the UN Security Council and national departments of defence or, alternatively, human rights and environmental agencies. Finally, notions of climate security provoke differing questions and concerns from actors in the public and private sector. While governmental entities focus on the threats climate change poses to national security at the macro level, businesses and individuals focus more on individualised threats to property, health and livelihood. Fundamental differences in notions of what climate security means, and how to achieve it, thus generate a series of substantive and procedural questions that are only now beginning to receive due attention.

With the scope of the questions presented continually expanding and with the links between global climate change and social stability becoming clearer, questions of climate security now figure on the political agendas of even the most politically and economically stable regions worldwide.¹⁰⁸ As one commentator noted in 2008, '[a]lmost all heads of government now have a basic understanding that without climate security they will be unable to meet their economic or development goals'.¹⁰⁹ What continues to be less well understood is what 'climate security' entails and how to achieve it.

Upon the release of the *Nairobi Framework* in 2006, then UN Secretary-General Kofi Annan described climate change as a threat to global security, saying that '[g]lobal climate change must take its place alongside [the] threats [of] conflict, poverty and the proliferation of deadly weapons that have traditionally monopolized first-order political attention'.¹¹⁰ His words echo growing sentiment worldwide that climate change, alongside traditional military threats, poses one of the greatest destabilising forces to security. The complex

¹⁰⁷ See, eg, Environmental Change and Security Program, 'Climate Change Solidly on Germany's Security Agenda, Says ECSP Director' (Press Release, 13 January 2009); Cabinet Office, United Kingdom, *The National Security Strategy of the United Kingdom: Security in an Interdependent World* (Parliamentary Report No CM 7291, March 2008) 3–4.

¹⁰⁸ See, eg, Alexander Carius, Dennis Tänzler and Achim Maas, *Climate Change and Security: Challenges for German Development Cooperation* (Federal Ministry for Economic Cooperation and Development Report, April 2008); Military Advisory Board, above n 101; William J Brennan et al, *Our Changing Planet: The US Climate Change Science Program for Fiscal Year 2009* (Climate Change Science Program and the Subcommittee on Global Change Research Report, July 2008); Council of the European Union, *Report on the Implementation of the European Security Strategy — Providing Security in a Changing World*, Doc No 17104/08 (10 December 2008) <<http://register.consilium.europa.eu/pdf/en/08/st17/st17104.en08.pdf>>.

¹⁰⁹ Jennifer L Morgan, 'Creating a Secure Climate: The G8 Leadership Challenge', *E3G* (UK) 29 April 2008, <<http://www.e3g.org/index.php/programmes/climate-articles/creating-a-secure-climate-the-g8-leadership-challenge>>.

¹¹⁰ UN Secretariat, above n 80.

relationship between climate change and security has been aptly described by Jon Barnett and Neil Adger:

Both security and climate change problems are determined by complex interactions across global, regional, national and local institutions. Understanding the processes whereby climate change may lead to security problems requires having a sound understanding of the ways in which it may affect environmental changes in localities, and the extent to which people are vulnerable to these changes. It requires understanding not just these social–ecological interactions in places, but also the many economic, political, cultural and social interactions between different places and the ways these might be altered by climate change. It requires understanding different groups’ capacities to adapt to change, and the limits of those capacities. It requires understanding the potential for violent outcomes when these capacities fail.¹¹¹

Recognition of these intimate linkages is prompting increasing convergence in climate change politics around questions of national security. In 2007, for example, a US climate change legislative proposal, the America’s Climate Security Act of 2007,¹¹² was introduced to Congress as fundamental to avoiding catastrophic climate change and ensuring domestic energy security. In presenting the Bill, US Senator John Warner stated that ‘[i]n my 28 years in the Senate, I have focused above all on issues of national security, and I see the problem of global climate change as fitting squarely within that focus’.¹¹³ Similarly, the American Clean Energy and Security Act of 2009 — the first Bill to clear the House Committee on Energy and Commerce in the 111th Congressional Session following President Obama’s occupation of the White House — characterises climate change as a national security threat.¹¹⁴ This characterisation is in line with President Obama’s approach to climate change, whereby he consistently draws upon the combined power of economic and security-based justifications for climate actions.¹¹⁵

The EU has similarly elevated climate change to the status of a security issue. As early as 2003, the European Security Strategy identified the security implications of climate change¹¹⁶ and the 2006 Commission Communication *Europe in the World* recognised links between climate change and global security.¹¹⁷ Following on from this, in 2008, the High Commissioner for the Common Foreign and Security Policy — the main coordinator of the EU’s

¹¹¹ Barnett and Adger, above n 105, 15.

¹¹² S Res 2191, 110th Congress (2007). See also Lieberman–Warner Climate Security Act of 2008, S Res 3036, 110th Congress (2008).

¹¹³ Joe Lieberman, US Senator, ‘Lieberman and Warner Introduce Bipartisan Climate Legislation’ (Press Release, 18 October 2007).

¹¹⁴ ‘Global warming poses a significant threat to the national security, economy, public health and welfare, and environment of the United States, as well as of other nations’: American Clean Energy and Security Act of 2009, HR Res 2454, 111th Congress (2009) § 701(a)(1).

¹¹⁵ See, eg, President Obama’s previously-mentioned campaign statement: ‘Our addiction to foreign oil doesn’t just undermine our national security and wreak havoc on our environment — it cripples our economy and strains the budgets of working families all across America’: The Office of the President-Elect, above n 2.

¹¹⁶ Council of the European Union, above n 108, 3.

¹¹⁷ See generally European Commission, *Europe in the World — Some Practical Proposals for Greater Coherence, Effectiveness and Visibility*, Doc No COM(2006) 278 final (8 June 2006).

Common Foreign and Security Policy — and the European Commission issued a joint report on *Climate Change and International Security* to the European Council, concluding that ‘it is in Europe’s self interest to address the security implications of climate change with a series of measures: at the level of the EU, in bilateral relations and at the multilateral level, in mutually supportive ways’.¹¹⁸

Individual member states such as the UK and Germany have played equally pivotal roles in the global debate over climate security. It was the UK, for example, who first raised climate change as an issue for debate in the Security Council in April 2007. The Security Council’s first ever debate on the impact of climate change on peace and security was prompted by a letter from the Permanent Representative of the UK to the President of the Council,¹¹⁹ and the debate was opened by the President of the Security Council, UK Foreign Secretary Margaret Beckett.¹²⁰ The ensuing debate revealed deep divides among member state representatives over the appropriateness of the Security Council as the proper forum for considering questions of climate change. While China and Pakistan, speaking on behalf of the Group of 77, insisted that the climate change debate belonged in the Economic and Social Council and the General Assembly, Papua New Guinea argued that the impact of climate change on small islands was ‘no less threatening than the dangers guns and bombs posed to large nations’.¹²¹ UN Secretary-General Ban Ki-moon reminded participants that ‘[w]ar had too often been the means to secure possession of scarce resources’ and said that the Security Council has a role to play in addressing an issue that has ‘implications for peace and security’.¹²² In her capacity as a representative of the UK, Foreign Secretary Margaret Beckett confirmed that the UK considers climate change to be a security issue and argued that the Security Council has a role to play in ‘building a shared understanding of what the effects of climate change would mean to international peace and security’.¹²³ A record number of delegations and non-members participated in the debate, indicating that despite mixed opinions over forum choice, questions regarding climate security engender widespread interest. The Security Council debate did not produce any measureable or enforceable outcomes but it raised the profile of the climate security question and embedded it within global security debates.

At the national level, the UK has incorporated questions of climate security within its National Security Strategy, which defines climate change as ‘potentially the greatest challenge to global stability and security, and therefore

¹¹⁸ High Representative and the European Commission, *Climate Change and International Security: Paper from the High Representative and the European Commission to the European Council*, Doc No S113/08 (14 March 2008) 3.

¹¹⁹ *Letter Dated 5 April 2007 from the Permanent Representative of the United Kingdom of Great Britain and Northern Ireland to the United Nations Addressed to the President of the Security Council*, UN Doc S/2007/186 (5 April 2007).

¹²⁰ UN Department of Public Information, ‘Security Council Holds First Ever Debate on the Impact of Climate Change on Peace, Security, Hearing over 50 Speakers’, 5663rd mtg, UN Doc SC/9000 (Press Release, 17 April 2007) <<http://www.un.org/News/Press/docs/2007/sc9000.doc.htm>>.

¹²¹ *Ibid.*

¹²² *Ibid.*

¹²³ *Ibid.*

to national security'.¹²⁴ Equally, German Chancellor Angela Merkel played a key role in raising the profile of climate–security linkages during her term as European Council President in 2007.¹²⁵ In the same year, the well respected German Advisory Council on Global Change ('WBGU') issued a report entitled 'Climate Change as a Security Risk',¹²⁶ offering a detailed analysis of how, where and why climate change poses security risks. The WBGU report expands upon a governmental report, *Climate Change and Security Challenges for German Development Cooperation* that examines the potential for climate change to increase incidences of conflict and political insecurity and concludes that national, regional and international efforts are needed to offset and prepare for climate security threats.¹²⁷

The juxtaposition of climate change and national security modifies the tenor of the debate in both developed and developing countries and creates common ground for concern. In Europe, for example, it adds urgency to existing calls for aggressive climate initiatives, while in the US it offers a powerful bipartisan justification for re-engagement. By contrast, in many developing countries worldwide security threats strengthen calls for mitigation and, even more so, they intensify demands for adaptation assistance.

Adaptation in developing countries is fundamental to offsetting security threats worldwide, and has thus taken on increasing importance. Yet, adaptation continues to be under-addressed and underfunded. The continuing neglect of adaptation strategies and adaptation funding creates conditions ripe for short and long-term social and economic destabilisation.

B *The Human Dimension of Climate Security*

Further, the restrictive nature of existing international law bodes poorly for joint efforts to use international law to address questions of climate security. As discussed, the international community has attempted, with limited success, to employ the tools of the Security Council. Efforts to use existing international refugee and human rights laws to address climate security risks are meeting similar resistance.

Within the context of refugee law, for example, efforts to broaden the definition of 'refugees' to include climate migrants are ongoing.¹²⁸ The term 'climate migrants' is used to refer to those people forced to move from their homes due to climate-related risks, for example, rising sea levels, resource scarcity, or rising incidences of disease. The term 'climate migrant' is related to

¹²⁴ See Cabinet Office, above n 107, 18.

¹²⁵ Environmental Change and Security Program, above n 107.

¹²⁶ Renate Schubert et al, *Climate Change as a Security Risk* (German Advisory Council on Global Change Report, 2008).

¹²⁷ Carius, Tänzler and Maas, above n 108, 49–50.

¹²⁸ See, eg, Oliver Bakewell, 'Research beyond the Categories: The Importance of Policy Irrelevant Research into Forced Migration' (2008) 21 *Journal of Refugee Studies* 432; Richard Black, 'Environmental Refugees: Myth or Reality' (New Issues in Refugee Research, UN High Commissioner for Refugees ('UNHCR') Working Paper No 34, 2001); Stephen Castles, 'The International Politics of Forced Migration' (2003) 46(3) *Development* 11. See generally Norman Myers, 'Environmental Refugees: An Emergent Security Issue', Doc No EF.NGO/4/05 (Paper delivered at the 13th Economic Forum, Organization for Security and Co-operation in Europe, Prague, Czech Republic, 22 May 2005) <http://www.osce.org/documents/eea/2005/05/14488_en.pdf>.

the controversial concept of ‘environmental refugees’, which was first used in the mid-1980s by the International Institute for the Environment and Development,¹²⁹ and was then brought to the attention of the international community by Professor Essam El-Hinnawi. El-Hinnawi, in his UN publication ‘Environmental Refugees’, defined environmental refugees as ‘those people who have been forced to leave their traditional habitat, temporarily or permanently, because of a marked environmental disruption (natural and/or triggered by people) that jeopardised their existence and/or seriously affected the quality of their life’.¹³⁰

The term earned increased usage during the early 1990s as the consequences of environmental change, compounded by global warming, became increasingly evident in already marginalised parts of the world.¹³¹ Professor Norman Myers, one of the key voices in the debate, expanded on the notion, defining environmental refugees as

people who can no longer gain a secure livelihood in their erstwhile homelands because of drought, soil erosion, desertification, and other environmental problems. In their desperation, they feel they have no alternative but to seek sanctuary elsewhere, however hazardous the attempt. Not all of them have fled their countries, many are internally displaced. But all have abandoned their homelands on a semipermanent if not permanent basis, having little hope of a foreseeable return.¹³²

Commentators estimate that environmental refugees, thus defined, number between 10 million and 20 million worldwide, with this figure predicted to increase exponentially in the coming years.¹³³ Most existing environmental refugees have fled outlying rural areas and moved en masse to the world’s growing ‘mega-cities’, increasing pressures on already finite resources. As global climate change compounds conventional environmental pressures, Myers argues that environmental refugees could total ‘as many as 200 million people’ as they are ‘overtaken by disruptions of monsoon systems and other rainfall regimes, by droughts of unprecedented severity and duration, and by sea level rise and coastal flooding’.¹³⁴

The problem with categorising these displaced peoples as ‘environmental refugees’, however, is that no such category exists in international law.

¹²⁹ Gaim Kibreab, ‘Environmental Causes and Impact of Refugee Movements: A Critique of the Current Debate’ (1997) 21 *Disasters* 20, 21.

¹³⁰ Essam El-Hinnawi, *Environmental Refugees* (1985) 4.

¹³¹ Norman Myers, ‘Environmental Refugees in a Globally Warmed World’ (1993) 43 *BioScience* 752.

¹³² *Ibid* 752; see also Myers, ‘An Emergent Security Issue’, above n 128, 1.

¹³³ Myers, ‘An Emergent Security Issue’, above n 128, 1; David Keane, ‘The Environmental Causes and Consequences of Migration: A Search for the Meaning of “Environmental Refugees”’ (2004) 16 *Georgetown International Environmental Law Review* 209.

¹³⁴ Myers, ‘An Emergent Security Issue’, above n 128, 1; see also Megan Rowling, ‘UN Says Climate Change May Uproot 6 Million Annually’, *Reuters Newsfeed*, 8 December 2008; Andrew Dobbie, ‘Climate Change Could Force Millions from Homes’, *Reuters Newsfeed*, 8 October 2008.

'Refugee' is a specific legal term defined in the 1951 *Convention Relating to the Status of Refugees*.¹³⁵ The Convention defines a refugee as any person who,

owing to well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, is outside the country of his nationality and is unable or, owing to such fear, is unwilling to avail himself of the protection of that country; or who, not having a nationality and being outside the country of his former habitual residence as a result of such events, is unable or, owing to such fear, is unwilling to return to it.¹³⁶

To be classified as a refugee under the *Refugee Convention*, displaced persons must show that: (1) they are outside their country of origin; (2) they are unwilling or unable to avail themselves of the protection of their country or return there; (3) such inability or unwillingness is attributable to a well-founded fear of being persecuted; and (4) the persecution feared is based on reasons of race, religion, nationality, membership of a particular social group, or political opinion. The definition excludes environmental refugees as defined by El-Hinnawi or Myers.¹³⁷ Thus, within the corpus of international law, environmental refugees do not exist — they are neither recognised nor protected by existing refugee law. For this reason, many people refer to this class of persons as 'climate migrants' or 'environmentally displaced persons',¹³⁸ and seek protection for them through other legal avenues, primarily through domestic law and proposed expansions to the international climate regime. These efforts, however, have proven controversial and largely unsuccessful, leaving these people with minimal legal protections and reliant on inadequate sources of climate change adaptation assistance for relief.

Efforts to broaden existing human rights law to include protections from harms associated with climate change have likewise proved divisive. There is no recognised human right to a healthy environment,¹³⁹ and efforts to create such a right in the mid-1990s¹⁴⁰ failed to generate support within the UN system.¹⁴¹ By

¹³⁵ *Convention relating to the Status of Refugees*, opened for signature 28 July 1951, 189 UNTS 137 (entered into force 22 April 1954).

¹³⁶ *Ibid* art 1(A)(2).

¹³⁷ *Ibid*. See generally Keane, above n 133, 214.

¹³⁸ See International Organization for Migration and Refugee Policy Group, UNHCR, *Environmentally-Induced Population Displacements and Environmental Impacts Resulting from Mass Migrations* (1996).

¹³⁹ Despite the absence of a recognised international right, over 50 national constitutions create some form of right to environmental protection. See, eg, James R May, 'Constituting Fundamental Environmental Rights Worldwide' (2005–06) 23 *Pace Environmental Law Review* 113; Janelle P Eurick, 'The Constitutional Right to a Healthy Environment: Enforcing Environmental Protection through State and Federal Constitutions' (2001) 11 *International Legal Perspectives* 185; Ernst Brandl and Hartwen Bungert, 'Constitutional Entrenchment of Environmental Protection: A Comparative Analysis of Experiences Abroad' (1992) 16 *Harvard Environmental Law Review* 1. See also Adriana Fabra, 'The Intersection of Human Rights and Environmental Issues: A Review of Institutional Developments at the International Level' (Background Paper presented at the Joint United Nations Environment Programme – Office of the High Commissioner for Human Rights Expert Seminar on Human Rights and the Environment, Geneva, 14–16 January 2002).

¹⁴⁰ See generally the *Draft Principles on Human Rights and the Environment*: Fatma Zohra Ksentini, Special Rapporteur, *Review of Further Developments in Fields with which the Sub-Commission Has Been Concerned: Human Rights and the Environment — Final Report*, UN ESCOR, 46th sess, Agenda Item 4, UN Doc E/CN.4/Sub.2/1994/9 (6 July 1994) annex I (*Draft Principles on Human Rights and the Environment*).

the late-1990s, momentum to create a human right to a healthy environment had effectively stalled. Similarly, efforts to utilise existing human rights to address environmental degradation have been met with limited success.¹⁴² The emergence of climate change as a threat to multiple dimensions of human security has reinvigorated the debate over the relationship between human rights and the environment, and the need to recognise interconnections between our ability to uphold existing human rights in an environment experiencing rapid change.¹⁴³ In 2005, for example, the Center for International Environmental Law ('CIEL') filed a petition with the Inter-American Commission on Human Rights ('IACHR') on behalf of 63 Inuit petitioners.¹⁴⁴ The petition centred on the 'impact of global warming on the Inuit and other vulnerable communities in the Americas and the implication of these impacts for human rights'.¹⁴⁵ The petitioners alleged that the US contribution to and its failure to mitigate climate change resulted in violations of Inuit human rights, including the right to enjoy the benefit of their culture, as well as the 'right to enjoy their personal property, ... rights to health and life, ... residence and movement, ... [and] own means of subsistence'.¹⁴⁶ The IACHR rejected the CIEL petition for failure to offer sufficient information to determine if there were violations of rights protected under the *American Declaration of the Rights and Duties of Man*.¹⁴⁷ The IACHR's subsequent decision to hear testimony from the petitioners on the links between climate change and human rights reflected growing concerns over these linkages yet an inability to offer legal recourse. The debate over linkages between human rights and climate change is dynamic and pervasive but there is

¹⁴¹ Efforts to use human rights as a vehicle to protect the environment have been critiqued by human rights and environmental advocates alike. See, eg, Michael R Anderson, 'Human Rights Approaches to Environmental Protection: An Overview' in Alan E Boyle and Michael R Anderson (eds), *Human Rights Approaches to Environmental Protection* (1998) 1; J G Merrills, 'Environmental Protection and Human Rights: Conceptual Aspects' in Alan E Boyle and Michael R Anderson (eds), *Human Rights Approaches to Environmental Protection* (1998) 25; Alan E Boyle, 'The Role of International Human Rights Law in the Protection of the Human Environment' in Alan E Boyle and Michael R Anderson (eds), *Human Rights Approaches to Environmental Protection* (1998) 43.

¹⁴² Notable exceptions exist. See, eg, *López Ostra v Spain* [1994] 303 Eur Court HR (ser A) 38.

¹⁴³ See, eg, Michael Depledge and Cinnamon Carlarne, 'Environmental Rights and Wrongs' (2008) 42 *Environmental Science and Technology* 990; Michael Depledge and Cinnamon Carlarne, 'Opinion — Sick of the Weather: Climate Change, Human Health and International Law' (2007) 9 *Environmental Law Review* 231.

¹⁴⁴ See CIEL, *Inuit File Petition with Inter-American Commission on Human Rights, Claiming Global Warming Caused by United States Is Destroying Their Culture and Livelihoods* (2005) <http://www.ciel.org/Climate/ICC_Petition_7Dec05.html>.

¹⁴⁵ Sheila Watt-Cloutier, Inuit Circumpolar Conference, *Petition to the Inter-American Commission on Human Rights Seeking Relief from Violations resulting from Global Warming Caused by Acts and Omissions of the United States* (7 December 2005). The petition stressed that climate change would impair the rights of indigenous peoples to enjoy property without undue interference and the rights to life, physical integrity and security. See also, CIEL, *Global Warming and Human Rights Gets Hearing on the World Stage* (2007) <http://www.ciel.org/Climate/IACHR_Inuit_5Mar07.html>.

¹⁴⁶ Watt-Cloutier, above n 145.

¹⁴⁷ OAS Res XXX (1948); Randall S Abate, 'Climate Change, the United States, and the Impacts of Arctic Melting: A Case Study in the Need for Enforceable International Environmental Human Rights' (2007) 26A *Stanford Environmental Law Journal* 3, 46.

little consensus on the proper method for reconciling tensions. Consequently, climate-related threats to human security, with concomitant effects on national and international security, remain outside the ambit of existing forums of international law.

Thus, while there is increasing convergence around the identification of climate change as a security threat, there remain striking divergences concerning the nature of the threat and the proper avenue of response. The notion of climate security is broadly used to include potential threats to human security, homeland security, and international security, with different actors according varying weight to each dimension of the problem. The absence of an agreed-upon definition for climate security or a common framework for identifying and responding to climate risks creates ample opportunities for imprecision and confusion in how the term is used in different contexts. The novelty of the concept thus not only affords flexibility in conceptualising the problem, but also room for political manipulation of the term to cover a wide variety of policy choices. The novelty and ambiguity of the concept were key issues of concern in the Security Council where, for example, numerous developing countries expressed reservations over classifying climate change as a security threat over which the Security Council would have jurisdiction. While acknowledging the security implications of climate change, numerous countries expressed concern about conflating threats to security, as traditionally understood, with threats to economic and social stability and sustainability.¹⁴⁸ Thus, while there is widespread agreement in the international community that climate change poses risks to human security, there is no agreed avenue of response. The absence of consensus means that the issue is unlikely to be taken up by the Security Council or addressed through the negotiation of a new international accord in the near term. Rather, questions of climate security are more likely to arise in the context of *UNFCCC* negotiations as well as in domestic law.

The use of domestic law as the primary vehicle for addressing climate security threats engenders a fragmented approach to climate security tied to domestic interests and agendas. It also means that wealthier industrialised countries will be the states most likely to develop comprehensive climate security regimes. As a result, climate security agendas are likely to develop inward looking mentalities, with even the more altruistic of countries framing climate security agendas around domestic interests. While external adaptation aid will constitute a component of domestic climate security programs, the aid is likely to be carefully tailored to ensure the greatest amount of good for the home country. Questions of climate security, thus, are likely to encourage piecemeal, interest-based responses — at least for the short-term.

As climate security questions take on increased importance, outstanding questions remain over what is being secured; what is being secured against; who is responsible for providing security; whose security is of most concern; when are security-based measures justified; and at what cost.¹⁴⁹ These questions could

¹⁴⁸ See, eg, UN Department of Public Information, above n 120 (particularly, the comments of the Chinese, Russian, Indonesian and Pakistani representatives).

¹⁴⁹ See, eg, Geoffrey D Dabelko and P J Simmons, 'Environment and Security: Core Ideas and US Government Initiatives' (1997) 17(1) *SIS Review* 127, 128.

ultimately divide the global climate security debate. Developed countries are driven by self-interest in ensuring global stability. As with economic flexibility mechanisms, developed countries are motivated to invest in security measures that protect national interests. The fundamental question is whether this can ultimately translate to investment in mitigation and adaptation efforts that benefit the global community, focusing on those countries most vulnerable to climate change, or whether it inevitably leads to policies that support unilateral efforts to protect national borders and domestic interests, that is, protective security. Foreign policy strategies are likely to differ over the relative weight given to supporting early mitigation efforts, external adaptation measures and humanitarian aid, as opposed to measures increasing military capabilities and reinforcing domestic security. In this way, linkages between climate change and security — like linkages between climate change and economics — create opportunities for advancing the climate change agenda but also create risks of entrenching power and vested interests. Short-term trends suggest that entrenchment is inevitable but the possibility for more inclusive strategies remains a long-term possibility.

In jointly awarding the 2007 Nobel Peace Prize to Al Gore and the IPCC, the Norwegian Nobel Committee stated:

Extensive climate changes may alter and threaten the living conditions of much of mankind. They may induce large-scale migration and lead to greater competition for the earth's resources. Such changes will place particularly heavy burdens on the world's most vulnerable countries. There may be increased danger of violent conflicts and wars, within and between states.¹⁵⁰

The Committee's warning resonates in global climate change dialogue.¹⁵¹ Climate change and security agendas are now intertwined to varying degrees worldwide. It remains to be seen, however, whether security issues will encourage improved cooperation and adaptation strategies or provide a new point of policy departure among developed and developing nations. Security powers are inequitably distributed. How the global community responds to climate-based security threats will either help level or further concentrate existing security imbalances.

IV CONCLUSION

Climate change is only one component of environmental governance; and environmental governance is only one component of global governance. Yet, climate change increasingly dominates environmental governance discussions and pervades larger global governance debates. The prevalence of climate change concerns in legal and political forums worldwide reflects intimate linkages between climate change and more traditional nation-state concerns, such as economics and security.

¹⁵⁰ The Norwegian Nobel Committee, 'Nobel Peace Prize for 2007' (Press Release, 12 October 2007) <http://nobelprize.org/nobel_prizes/peace/laureates/2007/press.html>.

¹⁵¹ See, eg, Geoffrey D Dabelko, 'An Uncommon Peace: Environment, Development, and the Global Security Agenda' (2008) 50(3) *Environment* 32.

For the last three decades, global environmental governance debates have sought to reconcile environmental, economic and social agendas. Encapsulated by the term ‘sustainable development’, these efforts have largely come to naught. Climate change has created a window of opportunity for reassessing the relationship between environmental protection and social and economic development. Current reliance on economic flexibility mechanisms reveals the extent to which economic factors overwhelm social and environmental considerations, not only in the existing climate regime but also in wider environmental governance systems. This reflects ongoing problems with the utilisation of a sustainable development framework for environmental protection: absent careful articulation of the various weights to be given to environmental, social and economic considerations, economic factors trump. Climate change offers an opportunity to rethink continuing reliance on unpacked notions of sustainable development that perpetuate distributional imbalances in wealth, power and environmental degradation, and demonstrate the importance of elevating environmental and social considerations in decision-making processes.

Beyond economics, the emerging dialogue on climate change and security reprioritises mitigation and adaptation measures for developed and developing countries. Security threats resonate with a wider audience of politicians and decision-makers in key countries, such as the US, than do environmentally framed climate concerns. Climate-related threats to human and domestic security motivate renewed calls for global facilitation of climate change adaption measures. However, tying climate change to security remains controversial due to the uncomfortable fit between environmental concerns and traditional security matters, and the continuing controversy over the classification of climate change as a security threat. From an equity perspective, it is not yet possible to determine whether fears over climate-based security threats will promote global cooperation or protectionist policymaking — the latter could be devastating to global adaptation efforts.

Melding climate change to economics and security makes domestic and international climate change initiatives more politically palatable and more responsive to the realities of global governance. In both cases, however, it is an uneasy marriage from an equity standpoint. Existing patterns of wealth and power distribution are difficult to overcome. Drawing upon economic flexibility mechanisms and security-based measures to address climate change can facilitate global cooperation, or it can perpetuate existing social, economic and environmental imbalances. The record of implementation, thus far, suggests that there is an urgent need to reassess the ability of economic flexibility mechanisms to promote long-term, equitable emissions reductions and to pre-emptively introduce equity considerations into the climate security debate.¹⁵²

Economic and security motivations are powerful political tools. They can be wielded for great good or great harm in the climate change debate. In renegotiating the global climate framework, economics and security will inevitably figure large. The challenge is to find ways to wield these concepts for

¹⁵² Jekwu Ikeme, ‘Equity, Environmental Justice and Sustainability: Incomplete Approaches in Climate Change Politics’ (2003) 13 *Global Environmental Change* 195.

the collective good. It is a daunting task, but it is not an impossible one. The seeds of hope lie in the CDM, in the *UNFCCC* Adaptation Fund, in calls for tighter rules on complementarity, in the *Nairobi Framework* and even in US legislative proposals calling for the creation of international adaptation funds.

Global politics continue to be dominated by traditional state interests. Climate change threatens these interests, including economic wellbeing and national security. The stakes have changed, and the moment is ripe for realigning economic and security interests with efforts to promote equitable and enduring responses to climate change.