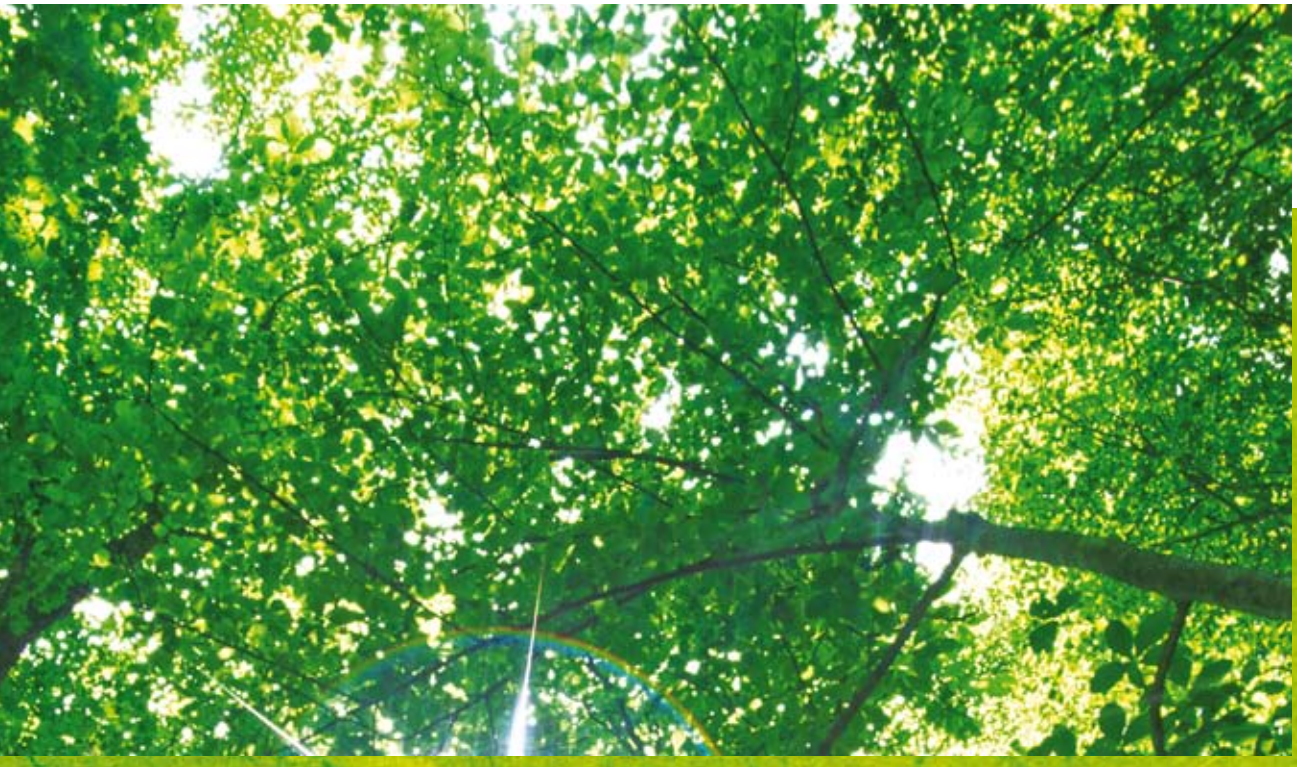
UNEP

WORLD RESOURCES INSTITUTE

BUILDING THE CLIMATE CHANGE REGIME

SURVEY AND ANALYSIS OF APPROACHES



WORKING PAPER

Authors: Remi Moncel, Paul Joffe, Kevin McCall and Kelly Levin, *World Resources Institute*

Contributors: Lavanya Rajamani, *Center for Policy Research*, Jacob Werksman, *World Resources Institute*, Kaveh Zahedi and Arkadiy Levintanus, *United Nations Environment Programme*

Disclaimer

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever on the part of the *United Nations Environment Programme* concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. Moreover, the views expressed do not necessarily represent the decision or the stated policy of the *United Nations Environment Programme* or the *World Resources Institute*, nor does citing of trade names or commercial processes constitute endorsement.

World Resources Institute Working Papers contain preliminary research, analysis, findings, and recommendations. They are circulated to stimulate timely discussion and critical feedback and to influence ongoing debate on emerging issues. Most working papers are eventually published in another form and their content may be revised.

ISBN: 978-92-807-3224-5
Job No: DTI/1465/NA

Acknowledgements

This working paper has benefited from the input of a number of colleagues, external reviewers, and stakeholder commentators, whose feedback has contributed thoroughly to the content, structure, and scope of the paper. The authors and contributors would like to express their gratitude to colleagues at the *World Resources Institute*, including Ruth Greenspan-Bell, Taryn Fransen, Stephanie Hanson, Charles Kent, and Micah Ziegler for their extensive review. Our thanks also to Kemen Austin, Tom Nagle, and Kaleigh Robinson for their input at various stages of the drafting process. We are particularly grateful for the extensive input received from Edward Cameron and Jennifer Morgan, as well as support from Raquel Gonzalez, Kirsten Stasio, and Ryan Weber, Mary Maguire, and Julie Hussey throughout the process. Sophie Bonnard and Pierre de Jouvancourt at the *United Nations Environment Programme* and Noel Casserly, Frank McGovern and Margaret Desmond of the Government of Ireland also provided helpful comments. We further express our gratitude to Hyacinth Billings, Polly Ghazi, Nathan Kommers and Amina Darani for their thorough editorial assistance. Valuable feedback was received from external reviewers Jane Ellis, Dan Bodansky, Willy Mayer, Steve Porter and Tara Shine. We also acknowledge the broad feedback received during our stakeholder commentary process and are grateful to the Department of Climate Change and Energy Efficiency of Australia, Feargal Duff, Morag Friel, the Foundation for the Economics of Sustainability (FEASTA), Irish Doctors' Environmental Association (IDEA), Mukul Sanwal, Ross Jackson, Abu Mostafa Kamal Uddin, Erik Haites, T. S. Amjath Babu, John Nissen, Paolo Lauriola, and Neeraja Havaligi. We further acknowledge the contribution of panelists and participants at our Side Event and dinner at COP-16 in Cancún, December 2010. Please note that all views expressed in the working paper, and any errors, remain the authors' sole responsibility. Finally, we acknowledge with gratitude the Government of Ireland for instigating the project and for its essential financial support.

The *United Nations Environment Programme* (UNEP) serves as an authoritative advocate for the global environment, helping governments set the global environmental agenda, and promoting the coherent implementation of the environmental dimension of sustainable development within the United Nations system.

The *World Resources Institute* (WRI) is an environmental think tank that goes beyond research to create practical ways to protect the Earth and improve people's lives.

CONTEXT:

We are falling short. The world recognizes the urgency of the climate challenge. The risks of unabated climate change are well documented and its impacts are already affecting people and ecosystems. Yet despite a global commitment by most of the world's governments in 1992 to stabilize anthropogenic greenhouse gases (GHG) at safe levels, emissions are still on the rise and pledges of future action, in aggregate, fall short of what science suggests is necessary. This bleak outlook calls for bold thinking and determined action, building on the foundations laid in the international climate negotiations over the past two years and the determined national efforts of some countries.

Governments and observers generally agree that the United Nations Framework Convention on Climate Change (UNFCCC) took a step in the right direction in Cancun at the sixteenth Conference of the Parties (COP-16) and the sixth Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol (COP/MOP-6) in December 2010 in setting the foundation of a comprehensive framework to govern the world's efforts to reduce emissions and adapt to a changing climate. Under the Cancun Agreements, Annex I Parties, or developed countries, committed to implement quantified economy-wide emission reduction targets by 2020 and deliver support to developing countries for mitigation and adaptation in the form of finance, technology, and capacity building. Non-Annex I Parties, or developing countries, including major economies such as China and India, agreed to take nationally appropriate mitigation actions. Rules will be developed to ensure transparency and accountability around these commitments.

However, the pledges made in aggregate by Parties in Cancun are insufficient to realize the goal of the Convention to achieve "stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system."[1] UNEP estimates that emission levels of approximately 44 gigatonnes of carbon dioxide equivalent ($GtCO_2e$) in 2020 would be consistent with a "likely" chance of limiting global warming to 2°C. Under business-as-usual projections, global emissions could reach 56 $GtCO_2e$ in 2020, leaving a gap of 12 $GtCO_2e$ (UNEP, 2010). Depending on how the Cancun pledges are implemented, a gap would remain of 5-9 GtCO2e in 2020 to have a "likely" chance of saying below the 2°C temperature limit (UNEP, 2010). In addition, uncertainty persists over countries' capability to live up to these commitments, let alone strengthen them over time to the level required to limit a global average temperature increase of 1.5˚ C or 2˚ C. With the UNFCCC struggling to convince skeptics that it can catalyze global action on climate change, the institution and its 194 Parties need to build an institutional architecture capable of fulfilling key functions in the climate regime.

But the UNFCCC is not the only focus for confronting the climate challenge. A constellation of actors with vested interests in a stable climate including multilateral institutions, national governments, businesses, states, cities, and citizens together form the broader stage for action. These actors have begun to make investment decisions, national development strategies, and consumer preferences that are gradually shifting towards low-carbon, climate resilient alternatives. This transition must accelerate in tandem with the multilateral commitments that the UNFCCC will govern.

1 United Nations Framework Convention on Climate Change, Article 2.

ABOUT THIS PAPER

The purpose of this paper is to help climate change negotiators, other government officials, international institutions, and civil society experts as they jointly work to build the post-2012 international climate regime. We define the climate regime as the set of international, national and sub-national institutions and actors involved in addressing climate change. We seek to identify concrete pathways for building a regime capable of delivering a level of action consistent with the objective of the Convention. We do so by surveying and analyzing the academic literature as well as proposals by non-governmental organizations (NGOs) and governments. We group proposals according to the key issue they tackle in the design of the regime and the "approach" they take. It is important to note that all approaches are meant to be complementary rather than mutually exclusive. While we do not make recommendations about which approach to adopt, we do assess each approach against three criteria: adequacy, equity, and implementation.

SUMMARY OF APPROACHES

We recognize that a comprehensive understanding of the climate change regime includes many functions and issues. However, the scope of this paper is limited to five key issues which have been major points of debate among negotiators and other experts and will need to be addressed in the near future. These are outlined below, along with our main findings.

Key Issue 1:

Options Under the UNFCCC to Increase Ambition Beyond Existing Commitments and Actions

Main findings

Within the UNFCCC, we identify three approaches:

Approach 1:

Additional greenhouse gases, forcings, and sectors could be covered under the targets and actions that countries take under the auspices of the UNFCCC.

Approach 2:

Accounting rules for emissions and emission reductions could be strengthened with direct implications for the emission reductions generated under Parties' commitments and actions.

Approach 3:

A variety of provisions under the UNFCCC and its Kyoto Protocol could be used to increase Parties' commitments and actions. This includes the periodic scientific review mechanism agreed to at Cancun, although its effectiveness will depend in part on its design. More research is needed to inform the scope, modalities, and inputs of this review. Such an approach also includes the option for Parties to increase their level of ambition at any time. The effectiveness of this option will depend in part on the ability to address domestic political circumstances that influence ambition. A final possibility is to leverage the reference to human rights in decision 1/CP.16 to generate greater ambition.

Resorting to tools within the UNFCCC can be beneficial from the point of view of implementation. Relying on existing institutions and flexibility mechanisms can minimize duplication, transaction or implementation costs. The equity of process and outcome enshrined in the UNFCCC can also facilitate trust-building among Parties in a way that could encourage greater mitigation ambition in the longer term. However, depending upon the proposal, there can be indirect consequences for equity, as some countries or sectors will be more affected by the implementation of certain measures.

However, since the Parties to the UNFCCC have so far failed to undertake actions that will put the world on a safe climate trajectory, complementary approaches outside the UNFCCC should also be considered in order to drive ambition and build a regime that meets the adequacy standard set out in this paper.

Key Issue 2:

Options Outside the UNFCCC to Increase Ambition Beyond Existing Commitments and Actions

Main findings

The insufficient level of collective ambition shown by countries to date highlights that both bottom-up and top-down auxiliary strategies outside the UNFCCC will most likely need to be pursued to encourage greater ambition.

Although not exhaustive, proposals for auxiliary strategies can be categorized in three approaches:

Approach 1:

Multilateral strategies. This includes maximizing coordination among U.N. agencies and international agreements. It also entails mainstreaming climate considerations in other international arenas, including development, trade, and human rights. Coordinated international policies and measures, such as a global tax on fossil fuels, have also been proposed.

Approach 2:

Plurilateral and bilateral strategies. This approach involves a limited number of countries in venues such as the Major Economies Forum, the G20, or issue-specific “clubs” working together to strike key agreements among major emitters or to foster innovation. Countries, states, and industries may also convene bilateral or regional alliances, or strike sectoral agreements around shared interests.

Approach 3:

Domestic-level strategies. This broad approach centers around mobilizing key ministries (e.g., defense, finance, and agriculture) as well as civil society groups around new narratives that heighten the links between their traditional issue area or remit and climate change. These narratives include energy and food security. It also involves leveraging the constellation of sub-national actors, particularly states and cities, which have the authority to regulate and influence many carbon-intensive activities. Lastly, citizens can become more active players and drivers of change through enhanced access to participation in environmental decisions through litigation, and through changes in consumption and lifestyle patterns.

Several of these strategies are innovative and should be considered in a complementary manner to build an adequate regime. They offer real prospects to mobilize a large constellation of actors and address core drivers of inaction. Potential disadvantages of these approaches include the risk of undermining existing processes, institutional redundancy, inefficiency, and inequity.

Key Issue 3:

Means for Sharing the Mitigation Effort Under the UNFCCC

Main findings

Many academics, NGOs, and governments have proposed ways to allocate responsibility globally among countries for taking mitigation action today. These proposals can also be relevant to allocating responsibility for future action to bridge the gap between the current level of effort and what science suggests is necessary to limit a rise in global average temperature to 1.5° C or 2° C. Most proposals for sharing this effort assume a global carbon budget, divided up among countries. No formula for such a division has been agreed upon internationally.

Approach 1:

Dividing the mitigation effort based on capabilities (e.g., GDP per capita). Under this approach, those nations with a higher ability to pay or mitigate have a greater responsibility to take on additional commitments.

Approach 2:

Dividing the mitigation effort based on a given country's contribution to the problem. Contribution to the problem could be evaluated based on historical responsibility, where those that have contributed or will contribute to the problem are charged with addressing it. However, there are various ways to interpret the concept of historical responsibility, including by rewarding nations that took ameliorative action in the past. In assigning future rights to emit based on countries' contribution to the problem, entitlements can be allocated in various ways, including on a sovereign or per capita basis.

The focus of these proposals on setting a global carbon budget would help ensure that the climate regime meets the adequacy standard. Their focus on equity is a second benefit, with responsibility among countries based on a formula and principles considered equitable. However, the proposals would be difficult to implement. One key barrier is that these proposals depart from historical and recent mitigation effort sharing arrangements. Since the Cancun Agreements reflect an initial allocation of responsibility for future action among countries, it is relatively unlikely that countries would renegotiate an allocation of emission obligations.[2] However, such proposals could alternatively be used when countries negotiate steps to increase their individual and aggregate level of ambition (e.g., through the periodic review in the Cancun Agreements discussed in Key Issue 1). A second barrier to implementation is cost, which is a key criterion for many Parties. It might be possible to amend existing proposals to enhance their cost-effectiveness, including through emissions trading schemes.

2 In paragraphs 36 and 49 of the Cancun Agreements, countries agreed to mitigation actions and commitments and referenced them in two INF documents.

Key Issue 4:

The Role of Various Actors in Tracking Country Performance on Mitigation

Main findings

To effectively assess the level of effort of countries, and the world's progress related to greenhouse gas emissions globally, as well as to build trust among Parties that are all living up to their respective obligations, systematic and comparable global reporting and verification standards are fundamental. This paper does not discuss proposals for designing performance tracking systems but asks the question: Who in the regime might have a role in tracking performance? Although the focus of this section is on mitigation, it is equally important to track the contribution and receipt of climate finance.

Approach 1:

Use tools within the UNFCCC. Countries at COP-16 and COP/MOP-6 in Cancun positioned the UNFCCC to be a central platform to track the performance of Parties by calling for the enhancement of existing procedures and the creation of new ones. Rules, actors, and reports within the UNFCCC will likely benefit from greater buy-in and procedural equity. Harmonized rules would also provide greater consistency across countries in terms of the data reported, and a clearer sense of the world's progress in designing an adequate regime. Flexibility and capacity building for developing countries as well as participation of a wide range of stakeholders can ease implementation.

Approach 2:

Use tools outside the UNFCCC. A number of tools and institutions outside the UNFCCC can play a complementary role by informing the UNFCCC process or acting as an independent source of information. These include NGOs, international institutions and national governments. Unharmonized rules outside the UNFCCC for tracking performance could result in a lack of consistency, comparability, transparency, and accuracy in the rules used by countries. Some proposals, such as certification schemes, could help address this challenge.

Key Issue 5:

The Legal Form of a Future Climate Agreement

Main findings

Progress in the climate negotiations towards a legally-binding agreement (LBA) with legally-binding, specific, and mandatory commitments to reduce greenhouse gas emissions has reached an apparent impasse. The discussion of this issue is often about whether negotiations will result in a legally-binding agreement. Here we suggest that the crux of the impasse is over whether to add a new set of legally-binding commitments to the Kyoto Protocol, the UNFCCC, or both. Also, the discussion of alternatives is often focused on the merits of an approach based either on voluntary pledges, or a new legally-binding agreement. We suggest there is value in going further and considering all the components of the legal character of an agreement.

The four components of legal character are: the legal form of the agreement (whether legally-binding or not): the mandatory or discretionary nature of the commitments (whether the commitments are expressed in obligatory language); the specific and prescriptive nature of the commitments; and

the institutions, procedures, and mechanisms designed to hold Parties accountable for meeting these commitments.

We identify three proposed approaches:

> Approach 1:
> Action should proceed without new, legally-binding commitments.
>
> Approach 2:
> New, legally-binding commitments are necessary and must be achieved immediately.
>
> Approach 3:
> New, legally-binding commitments are a goal but if agreement on this is not immediately attainable, an agreement is still worth pursuing as quickly as possible. This would be done by addressing all the components of the legal character of an agreement, building a foundation for reaching the ultimate goal.

Analysis of the components of legal character also helps to highlight how various aspects of the Kyoto Protocol function to support effective implementation. This, in turn, helps deliberation on the next steps for the Protocol, showing why certain aspects of the Protocol are valuable and raising the question of how its valuable functions will be addressed in the next phase.

The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report summarizes emission scenarios in the literature and finds that stabilizing greenhouse gases at 450 ppm (parts per million) CO_2e requires a reduction of developed country emissions by 25-40 percent below 1990 levels by 2020. If this goal is not met, steeper reductions would be required over subsequent decades (Gupta et al., 2007).[1] The IPCC Report also notes that emissions from developing countries need to deviate as soon as possible from what the IPCC estimates as baseline emissions, even if developed countries make substantial reductions.

Many developing countries and non-governmental organizations (NGOs) have insisted that Parties to the United Nations Framework Convention on Climate Change (UNFCCC) negotiate a means to divide an aggregate target[2] among Parties consistent with temperature limits. This could be done, for example, via a calculation based on equity, historical responsibility, or other variables. However, Parties have instead submitted individual emission reduction commitments and actions in Copenhagen and Cancun in a more "bottom up" fashion. Taken together, these are insufficient to achieve the 2° C goal set out in Cancun at COP-16.[3]

PURPOSE OF THE REPORT

In this context, this research paper reviews the academic literature as well as proposals by NGOs and governments on the design of the new international climate change regime. We define the climate regime as the set of international, national and sub-national institutions and actors involved in addressing climate change. Despite the possible extreme effects of climate change caused by unabated greenhouse gas emissions,[4] the world's efforts to date fall short in aggregate of the 44 $GtCO_2e$ global emissions that science suggests is necessary.[5] Through the primary forum for negotiating global efforts to address climate change, the UNFCCC, countries are delivering modest progress at a pace that many commentators consider too slow.[6] The need for solutions that can catalyze efforts to address climate change is combined today with a need to answer in the near future fundamental questions about the architecture of the international climate change regime.

At this juncture, this project highlights and analyzes proposals focused on some of the questions associated with designing the regime to address climate change. The authors hope these proposals will provide ideas to climate change negotiators, other government officials, and civil society experts for crafting an effective and equitable global response to the threat of climate change.

1 It is important to note that stabilization at 450 ppm CO_2e is associated with a 26-78 percent risk of overshooting a goal of limiting warming above pre-industrial levels to 2°C (Meinshausen 2005).

2 It should be noted that the Kyoto Protocol's aggregate target for the first commitment period was also not developed on a scientific basis regarding needed emission reductions consistent with a temperature goal.

3 See UNEP 2010; Rogelj 2010. See also: http://www.wri.org/publication/comparability-of-annexi-emission-reduction-pledges and http://www.climateactiontracker.org both accessed October 3, 2011.

4 IPCC. 2007. Fourth Assessment Report: Climate Change

5 UNEP. 2010. The Emissions Gap Report.

6 This sentiment is commonly iterated by the media, NGOs and negotiating Parties alike. See, for example: "Bonn talks end with no agreement on key areas," available at: http://www.guardian.co.uk/environment/2011/jun/17/climate-talks-end-no-agreement, Gupta (2011) "We're moving too slowly," available at: http://www.chinadialogue.net/article/show/single/en/4132, and "AOSIS Declaration on Climate Change", 2009, available at: http://www.sidsnet.org/aosis/documents/AOSIS%20Summit%20Declaration%20Sept%2021%20FINAL.pdf, all accessed on October 3, 2011.

SCOPE OF THE REPORT

We recognize that a comprehensive understanding of the climate change regime requires consideration of many functions and institutions.

This includes mechanisms to set and meet individual and global mitigation goals; review individual and aggregate efforts to address climate change; enable and support developing countries' adaptation efforts; generate, manage and allocate support to developing countries in the form of finance, technology, and capacity building for mitigation and adaptation activities; enhance the coordination of various UN agencies in relation to other international institutions; coordinate the activities of international and national actors; and generate sufficient political will domestically and internationally to take sufficiently ambitious action.

This report does not seek to address all issues relevant to the design of the climate regime and we recognize that it may need to be complemented by similar reviews on associated topics.

Our focus is on five key issues which have been major points of debate among negotiators and other experts and remain relevant to the world's efforts to adequately respond to climate change.

The COP-17 and COP/MOP-7 in December 2011 in Durban, as well as the Earth Summit in Rio de Janeiro in 2012, offer two initial opportunities to adopt some of the ideas we review. All the issues selected have been the subject of detailed analyses by government and non-governmental actors.

Key Issue 1 deals with options within the UNFCCC to increase ambition beyond existing commitments and actions.

Key Issue 2 explores options outside the UNFCCC to increase ambition beyond existing commitments and actions.

Key Issue 3 discusses ways to equitably determine which countries should undertake the additional level of effort required in the future.

Key Issue 4 examines the roles that various actors can play in tracking country performance on mitigation actions and commitments, and in assessing the effectiveness of the future regime.

Key Issue 5 analyzes the legal forms a future climate agreement could take.

METHODOLOGY

For each key issue, we identified relevant proposals by governments and civil society from developed and developing countries through an extensive literature review and consultations with authors of numerous submissions to the UNFCCC, as well as academic articles.[7] Participants in two events we organized in

7 The reference of certain proposals in this report does not imply endorsement on the part of WRI, UNEP or the Government of Ireland. In addition, despite the valuable input of our reviewers and our best attempt to accurately reflect the content of the proposals, the responsibility for any omission rests with the authors of this report.

Cancun in December 2010 and reviewers of earlier drafts and summaries of this paper also made useful suggestions. The proposals considered for this paper are listed in Appendix II. We selected them because they offered suggestions for addressing, in part or in full, at least one of the key issues under consideration. An effort was made to represent a range of views from developed and developing countries. We also selected only proposals articulated in writing (e.g., journal articles, books, reports, government or NGO submissions to the UNFCCC). Where relevant, proposals have been grouped together on the basis that they have common elements, take a common approach, or have common conclusions on a given issue.

CRITERIA

We analyze these approaches based on a set of criteria that we argue are desirable for the purposes of building an effective regime for tackling climate change. Where possible, we point to the various policy processes that could be used to adopt and implement the proposals in this paper. It is important to note that we do not ultimately make recommendations as to which approaches should be adopted. We focus instead on highlighting a range of relevant proposals, many of which may not have been given full consideration until now. In addition, we identify where possible some of the merits and drawbacks of these proposals and the tradeoffs they may entail. Because of the largely qualitative nature of this analysis, proposals are not assigned grades or ranks.

We view proposals in relation to the criteria of *adequacy, equity, and implementation*. We believe that these criteria capture many of the considerations inherent in the design of a climate regime that is politically, economically, socially, legally, and environmentally sustainable. However, we acknowledge that other criteria could be selected to conduct a similar review. We define the terms we applied below.

Adequacy

For the purposes of this paper, we define an adequate regime as one that meets the objective of the UNFCCC as defined in article 2:

> *"stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system [to] be achieved within a time-frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner."*

Context on adequacy:
At Cancun, Parties to the UNFCCC agreed to limit global average temperature rise to no more than 2˚ C above pre-industrial levels, leaving open the option to adjust the goal to 1.5˚C.[8] There is still a possibility that countries will frame a global goal within the UNFCCC in terms of a peak year for emissions to meet the temperature goal. While proposals from the policy-making community often frame adequacy in terms of parts

8 See outcome of AWG LCA at COP 16, Paragraphs 4 and 139

per million GHG concentrations, the UNFCCC debate is not framed with this metric; instead a temperature goal has been adopted.[9] In assessing a proposal's adequacy, we also consider the extent to which it will elicit wide enough participation by the global community to encompass the main emitters of greenhouse gases. We also consider the extent to which proposals seek comprehensive coverage of emissions and sources. NGO and scientific literature, as well as Party submissions to the UNFCCC call for a wider inclusion of warming gases beyond the Kyoto basket, as well as adoption of specific measures to deal with all GHG-emitting sectors (e.g., Grieshop et al., 2009; Shine et al., 2007; Faber et al., 2007; Bodansky, 2007; den Elzen et al., 2007).

Equity

Based on article 3.1 of the Convention, an equitable regime can be defined as one in which countries act "in accordance with their common but differentiated responsibilities and respective capabilities." We consider two aspects of equity: equity of process (procedural equity) and equity of substance (substantial or consequential equity, also known as 'equity of outcome'). Procedural equity is the extent to which a proposal or approach provides all States with equal representation and equal voice, irrespective of their relative international clout or stage of economic development. Substantive equity is the extent to which a proposal or approach adequately balances the interests of countries, communities or individuals in the allocation of benefits and costs associated with climate action. In practice, both dimensions tend to coexist in a given proposal and it should be noted that these dimensions are not necessarily interdependent. A given proposal may fare well in terms of procedural equity but less well in terms of substantive equity, and vice versa. The literature on the question of equity is vast and there are varying interpretations of the concept (see Box 1).

Context on equity:
Equity is a fundamental criterion to ensure successful future climate governance (Page, 2006; Shue, 1999[10]). A climate change treaty must be equitable for both practical and moral reasons (Raymond in Vanderheiden, 2008). Equity differs from our other criteria in that whereas the adequacy and implementation of a policy intervention can be observed and assessed in objective terms, an equity criterion is often more subjective. The term carries a different meaning for different parties. Ultimately, equitable concerns associated with climate change policy boil down to a "value judgment" (IPCC, 2001). Thus, we do not seek to propose a final definition that could reconcile all views. Box 1 provides additional insights into views on equity expressed by political philosophers and theorists as well as governments.

9 For example, 350ppm CO2-e as put forward by Kyoto 2 (available at: http://www.kyoto2.org/page5.html.; Hansen et al. Available at: http://www.columbia.edu/~jeh1/2008/TargetCO2_20080407.pdf ;450ppm CO2-e as suggested by Earth Atmospheric Trust, 2008, available at: http://www.uvm.edu/~msayre/EAT.pdf) and Global Commons Institute 'Contraction and Convergence', 2007 (available at: http://www.gci.org.uk/Documents/Benn_DEFRA_15_11_07_.pdf. All links last accessed October 3, 2011.

10 For an additional view on this points, see also Vanderheiden , S. 2008. Atmospheric Justice: A Political Theory of Climate Change Oxford University Press

Box 1:

Variety of interpretations of equity

Discussions of equity in the literature typically revolve around six dimensions. These have been classified by Cameron (2010) as:

- Power and participation
- Determining entitlements and access
- Allocating and meeting responsibilities
- Mobilizing and building capacities
- Prioritizing needs
- Striking a balance across space and time

In practical terms, any proposed climate agreement that is perceived by the various negotiating parties to be inequitable will not be ratified. In moral terms, there are high economic, social, and ecological costs at stake, and decisions on how equity is addressed can positively or negatively affect these costs. In international environmental law, equity is sometimes viewed in terms of inter- and intra-generational components. These questions center on what value individuals and communities place on environmental services, what actions they undertake today and what actions they postpone for future generations to take. Also of concern is the question of how to share responsibility and costs for actions undertaken today among and between the parties to an agreement. (Weiss et al., 2006).

Seminal academic literature on equity in relation to climate change sets out two key components of equity: equity of process (procedural) and equity of outcome (substantive) (Page, 2006; Vanderheiden, 2008; Shue, 1999; Beaumont and Winkler, 2010), echoing the IPCC's Second Assessment Report. These concepts have been enshrined within the UNFCCC with the principle of 'common but differentiated responsibility', mirroring similar treatment of equity issues in previous international legal and political negotiations (Bretton Woods, Stockholm, Rio 1992).

The literature on equity and its integration into the climate change regime generally suggests four separate approaches, including approaches based on responsibility, capacity, benefit, or a hybrid of these (Subramanian, 2010; Page, 2008). Each approach, if operationalized, would result in different allocations of responsibility to act across different states. Many of the proposals examined in this paper consider the notion of equity as central to developing a global climate solution. They rarely set out an explicit definition of equity, although the action proposed usually reflects an implied definition.

Implementation

For the purposes of this paper, we define implementation as the combination of international and national institutions and mechanisms that lead national governments to put in place and enforce the rules agreed internationally to address climate change. We consider the drivers of implementation to be both domestic and international in nature. These include: the domestic capacity to put rules and regulations into force, the presence of positive and negative incentives at the international level, the capacity to monitor and track adherence to the rules, and the capacity to enforce compliance or remedy non-compliance if it arises.

Context on implementation:

There is much debate within the UNFCCC negotiations and more broadly in the world of climate policy as to what mechanisms will best facilitate, encourage, and lead to effective implementation of collective action on climate change. This ability to enforce depends on a number of factors including political willingness, cost,

and institutional capacity. Political will can be difficult to assess and it is therefore difficult for us to say with certainty which proposals are politically realistic. In addition, the urgency of the climate challenge may require policymakers to take drastic steps by adopting proposals that fare well in terms of adequacy and equity but are more costly in political or economic terms. In terms of costs, we assess, in the few cases this is possible, the cost-implications of implementing a given proposal. We also note, with regard to costs, that one essential factor for successful implementation will be the delivery to developing countries of support – in the form of technology, finance, and capacity building – to implement the policies that an ambitious 1.5˚ C or 2˚ C goal requires. In this context, the delivery of fast-start finance and long-term finance, and the establishment of effective financial institutions are necessary components. Lastly, social, cultural, historical and institutional factors can also influence a state's approach to implementation.

STRUCTURE OF THE REPORT

This paper first presents an overview and deeper analysis of each of the key issues we focus on, followed by an analysis of the literature based on the criteria of adequacy, equity and implementation. Appendices include a glossary of terms and a bibliography citing the literature we surveyed. This paper closes with a comprehensive list of, and key highlights from, the proposals and background reading reviewed in this paper as well as background documents. These highlights are published as a stand-alone document and are available on the websites of WRI and UNEP.[11] They are not intended to capture all of the issues discussed in each proposal. They represent some of the main points we found useful for the purposes of this paper.

11 See www.wri.org and www.unep.org

KEY ISSUE 1

OPTIONS UNDER THE UNFCCC TO INCREASE AMBITION BEYOND EXISTING COMMITMENTS AND ACTIONS

As a result of perceived inadequacies of current intergovernmental approaches to address climate change, a number of proposals have been put forward to assess how further emission reductions can be realized post-2012. Many focus on ways to generate emission reductions that would bring the global level of ambition in line with emission trajectories consistent with various recommended temperature limits. In this section, we focus on approaches available under the UNFCCC. These approaches are meant to be complementary to those presented in section two, regarding options outside the UNFCCC, rather than mutually exclusive.

Proposals for increasing ambition through tools available in the UNFCCC generally follow one of three approaches:

1. Enhanced coverage of sectors and sub-sectors, and coverage of greenhouse gases and forcings;

2. Stronger accounting rules for emission reductions; and

3. Using the UNFCCC provisions and Kyoto Protocol to increase Parties' commitments and actions.

However, options assessed in this section are by no means comprehensive. For example, ease of implementation of flexibility mechanisms, such as the Clean Development Mechanism (CDM) and Joint Implementation (JI), might facilitate more emission reductions. The options presented below should be considered together to increase the chances of averting the most dangerous climate change.

Approach 1:

Enhanced Coverage of Greenhouse Gases, Forcings[1] and Sectors

Annex A of the Kyoto Protocol defines the greenhouse gases and sectors that are covered under a Party's target. It lists six greenhouse gases, known as the "Kyoto basket",[2] and the following sectors: energy, industrial processes, solvents and other product use, agriculture, and waste. Only developed countries—Annex I Parties—have emission reduction obligations, and thus, Annex A only pertains to their activities. Any coverage of sectors and greenhouse gases additional to this list is beyond the required scope of a Party's action. This translates to countries not being penalized if, for example, emissions were increased in the aviation sector or a greenhouse gas such as nitrogen trifluoride (NF_3) increased over the commitment period. Not only would developments such as these be harmful to the climate but, because there is no mandate to include other greenhouse gases and sectors, there may be little incentive for countries to develop related mitigation initiatives.

1 A climate forcing is an adjustment in the amount of radiation from the sun that reaches the Earth's atmosphere. It can be a negative or positive change. Climate forcing agents include greenhouse gases, aerosols, and particulate matter.

2 These are carbon dioxide (CO_2); methane (CH_4); nitrous oxide (N_2O); hydrofluorocarbons (HFCs); perfluorocarbons (PFCs); and nitrogen trifluoride (NF_3).

Coverage of greenhouse gases and forcings

The rules for the second commitment period of the Kyoto Protocol are still under negotiation. If the Kyoto Protocol extends to a second commitment period, sectoral coverage under Annex A will likely remain similar (although conceivably emissions from shipping and aviation could be covered here). But Annex A's coverage of greenhouse gases could expand beyond the current list, for example, to cover some hydrofluorocarbons, perfluorocarbons, and nitrogen trifluoride, among others. However, under the Convention track of the negotiations—the Ad Hoc Working Group on Long-term Cooperative Action (AWG-LCA) —rules governing covered sectors and greenhouse gases of developed country targets have not yet been established. Nor is it clear whether a common set will be adopted, given the recent bottom-up nature of the target-setting activities under the Convention. It is conceivable that a Party could limit coverage to fewer gases (e.g., a commitment to reduce only carbon dioxide), and therefore only a subset of GHG emissions would be included in the target. The Cancun Agreements do not stipulate that the commitments adhere to the Kyoto basket of greenhouse gases in Annex A, or to additional gases.[3]

Thus, one pathway for enhanced mitigation could be achieved by a more comprehensive coverage of greenhouse gases and forcings. A mandate and/or incentives to do this can lead to increased ambition (e.g., see: Andersen et al., 2010; Molina et al., 2009; Grieshop et al., 2009; Shine et al., 2007). The IPCC 2006 *Guidelines for National Greenhouse Gas Inventories* include many additional gases beyond the six included in the Kyoto Protocol that could be covered under these proposals, increasing aggregate ambition of climate regulation. There are, however, implementation challenges to covering additional sectors and climate forcings. These will still need to be overcome and explain in part the lack of take up to date. For example, inclusion of additional sectors and sources will require increased efforts to measure, report and verify such reductions (IPCC, 2007).

(a) Additional greenhouse gases

For example, Andersen et al. (2010) and Molina et al. (2009) have proposed to align efforts under both the international climate and ozone regimes to control HFC-23, including reforms to the Clean Development Mechanism. The former paper argues that the CDM overcompensates for destroying HFC-23 in some countries, while not addressing such greenhouse gases in other countries lacking CDM investments. The authors offer policy options such as curbing high compensation for HFC-23 destruction under the CDM (which creates perverse incentives to increase such emissions and thus increasing stocks to gain CDM credit) and control of HFC-23 emissions globally. There is currently a very active debate among policy analysts and UNFCCC negotiators about how the CDM could be reformed post-2012. Beyond HFC-23, incentives could be created to control other non-Kyoto greenhouse gases such as NF_3. This has a very high global warming potential (or potential to trap heat in the atmosphere),[4] and is incorporated in many products, including solar photovoltaics.[5]

3 It would not be consistent for Parties that are party to both the UNFCCC and the Kyoto Protocol to deviate much from this unless the basket of gases is altered under Kyoto Protocol negotiations.

4 See: http://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2.html Last accessed: October 3, 2011

5 Conniff, R. 2008. "The Greenhouse Gas that Nobody Knew," environment360. November 13, 2008. http://e360.yale.edu/feature/the_greenhouse_gas_that_nobody_knew/2085/. Last accessed: October 3, 2011

(b) Additional forcings

Molina et al. (2009) also discuss taking actions to address additional, often short-lived forcings, such as black carbon (soot) which can be controlled via enhanced local air pollution policies. Another proposed avenue is to regulate tropospheric ozone through addressing precursors such as those emitted from shipping and aviation. Other experts, such as Grieshop et al. (2009) suggest that initiatives to curb short lived forcings could be embraced as part of efforts by the UNFCCC. Shine et al. (2007) propose applying a time-dependent "global temperature change potential," instead of a global warming potential, to climate policies, which would address short-lived forcings more than current policies. This may pose implementation challenges, however, for example because of the need for regular revisions.

A recent United Nations Environment Programme (UNEP) / World Meteorological Organization (WMO) publication convening dozens of leading scientists, reported that, while efforts to address black carbon should not detract from other mitigation measures, full implementation of abatement measures for black carbon and tropospheric ozone can reduce warming by 0.5˚ C before 2050 (UNEP/WMO, 2011). There are intergenerational equity implications of increased strategies to address short-lived forcings, such as black carbon, if taken at the expense of longer-lived forcings. While addressing the former can reduce peak warming, the climate problem cannot be addressed without focusing on mitigating carbon dioxide emissions and other long-term warming agents (National Academy of Sciences, 2010). In addition, issues of interstate equity arise. For example, developing countries account for the majority of black carbon emissions, with Asia alone emitting 45 percent of the carbonaceous aerosol globally (North America and the European Union collectively emit 18 percent) (Bice et al., 2009). This is due to differences in technology endowment for "contained" combustion and more wide-spread use of "open" combustion in densely populated urban areas, leading to negative health impacts locally and regionally, and increased global warming potential regionally (Bice et al., 2009; Bond et al, 2005). While a mandate for developing country Parties to increase the coverage of their greenhouse gases appears unlikely, given the principle of common-but-differentiated responsibilities, these sectors offer clear opportunities for enhanced mitigation. Increased finance and technology could facilitate additional activities that are targeted to these greenhouse gases and warming forcings.

Coverage of sectors

The Cancun Agreements reached under the AWG-LCA track provide a mandate for "economy-wide targets" for developed country Parties, but this crucial phrase has yet to be defined. The Kyoto Protocol's Annex A omits some sectors and sub-sectors, such as international maritime and aviation emissions, whose inclusion in a post-2012 agreement could enhance mitigation. For example, analysts project that emissions from aviation and maritime emissions (currently not referenced under the Cancun Agreements either) will increase by 275 percent from 2000-2050 (den Elzen et al., 2007). Thus, mechanisms and incentives for emission reductions in these sectors can increase ambition.[6] Avenues for achieving this could be: a sectoral commitment under the UNFCCC, or action by individual countries to take responsibility for related emissions

6 See, for example, UNFCCC negotiating text (FCCC/AWGLCA/2009/8), para. 135: "All sectors of the economy should contribute to limiting emissions, including international maritime shipping and aviation. Sectoral approaches could address emissions that cannot be attributed to any particular economy, and multilateral collaborative action would be the most appropriate means to address emissions from international aviation and the maritime transport sector". Furthermore, the IMO recognizes that "the global character of shipping requires global regulation that applies universally to all ships" and that "a market-based mechanism (MBM) is needed as part of a comprehensive package of measures for the regulation of GHG emissions from international shipping". See "Note by IMO to SBSTA 34", April 2011, available at: http://unfccc.int/resource/docs/2011/smsn/igo/126.pdf, last accessed: October 3, 2011.

within their targets (Faber et al., 2007; Bodansky, 2007; den Elzen et al., 2007). For example, to enhance coverage of aviation and maritime emissions, allocation of emissions allowances (e.g., under a second commitment period of the Kyoto Protocol) for that sector could be divided among countries. This could be done either by state of registration or nationality of the source, or by destination. Alternatively, the sector as a whole could take on a commitment (Faber et al., 2007; Bodansky, 2007; den Elzen et al., 2007).

International shipping accounts for 90 percent of all internationally traded goods[7], while global aircraft fuel consumption is expected to increase at a rate between 3 and 3.5 percent per year until 2050[8]. Addressing emissions from these sectors has benefits in terms not only of ambition, but also of equity and implementation when the respective emissions cannot be apportioned to any single economy. Developing countries have raised equity concerns relating to the competitiveness of their manufacturing industries from sectoral regulation, and that equitable principles should be accorded in differentiating emissions in these sectors. Policymakers have suggested various design options to overcome these hurdles. For shipping, this would involve adjustments to regulations for the least developed countries (LDCs) and small island developing states (SIDS).[9] For aviation, measures might include a de minimis set of countries or routes that are exempt from regulation, thus minimizing harm to susceptible tourist industries[10]. However, this would not address cost implications for the mobility of goods, services and people.

In addition, while it is highly unlikely that developing countries will be asked to increase the coverage of their submitted actions, finance and technology assistance could target such additional activities. The majority of non-Annex I submitted actions are not economy-wide, and many are contingent on developed country support to increase the ambition of climate mitigation activities.[11]

Approach 2:

Stronger Accounting Rules for Emission Reductions

Seemingly ambitious targets can result in fewer than expected emission reductions if accounting rules are weak.[12] Conversely, greater reductions can be achieved if more rigorous accounting rules are applied. While many studies[13] have shown how existing commitments and actions fall short of necessary reductions, without strong accounting rules the assumed reductions from these post-2012 pledges may be even less than taken at face value.

7 IPCC AR4, Working Group 3: Transport and its Infrastructure. Available at: http://www.ipcc.ch/pdf/assessment-report/ar4/wg3/ar4-wg3-chapter5.pdf. Last accessed October 3, 2011.

8 ICAO Environmental Report 2010, p. 18. Available at: http://www.icao.int/icao/en/env2010/environmentreport_2010.pdf. Last accessed October 3 2011.

9 Preliminary report on the 61st session of IMO's Maritime Environment Protection Committee, September 2010.

10 For more, see http://www.icao.int/icao/en/assembl/a37/wp/wp316_en.pdf. Last accessed: October 3, 2011

11 For an overview of the GHG-framed mitigation actions submitted by developing countries in line with the 2010 Cancun Agreements, see: http://www.wri.org/publications/ghg-framed-mitigation-actions-by-developing-countries. Last accessed: October 3, 2011

12 UNEP 2010.

13 UNEP 2010.

Many experts have drawn lessons about how to improve accounting rules based on experience under the Kyoto Protocol. For example, World Bank (2010), Cosbey et al. (2005), and Wara (2006), among others, describe ways to improve offsets methodologies. Daviet et al. (2009) and Schlamadinger et al. (2007), among others, have proposed reforms to land use, land-use change, and forestry accounting rules. Section 4 in this paper identifies actors that could play a role in designing guidance for tracking performance. This section examines how the accounting rules themselves could be strengthened and, in turn, increase ambition of commitments and actions.

A post-2012 international agreement under discussion in the AWG-LCA may or may not endorse the uniform set of reporting and accounting systems for emission reduction commitments established under the Kyoto Protocol. In AWG-LCA discussions, Annex I Parties have generally indicated a willingness to adhere to the IPCC guidelines for reporting national GHG emissions inventories under the UNFCCC. However, country positions have diverged, and some have remained silent, on the question of whether they would be willing to abide by some or all of the accounting provisions of the Kyoto Protocol for emission reductions, or develop similar harmonized accounting provisions.[14] This is particularly true for the rules relating to land use, land-use change and forestry (LULUCF) emission reductions and enhanced removals, and international offsets, negotiated primarily under the AWG-KP until now.[15] The UNFCCC Secretariat technical paper has highlighted the divergence of such assumptions among Parties (see FCCC/TP/2011/1).[16]

While the Cancun Agreements do reference the need to learn from past international experience (paragraph 46d) the details of accounting rules have yet to be determined. The ways in which these accounting rules are developed, especially for LULUCF and offsets, can have significant implications on emission reductions generated between 2012 and 2020. For example, if both developed and developing countries count the emission reductions generated from offsets towards their own commitments and actions respectively, this could lead to "double counting." UNEP 2010 estimates that such "double-counting" of offsets could increase emissions by up to 1.3 $GtCO_2e$ in 2020. Regarding equity, some of the lenient accounting rules under the Kyoto Protocol for LULUCF were designed in part to accommodate individual Parties' special circumstances (e.g., based on their historical forestry practices, growth rates of forests, etc.).[17] These countries might argue this increases equity by taking into account national circumstances and, thus, could result in policymakers facing a choice between ambition and equity.

14 For example, see Summary of the Co-Chair of issues raised by participants in AWG-LCA, Session 14, Part 2, Bonn, June 2011, available at: http://unfccc.int/files/essential_background/library/application/pdf/workshop_summary_ai_mitigation_edit.pdf. Last accessed: October 3, 2011

15 See "Emissions gap unchanged since Cancun. Emissions and CO_2 concentrations at record highs," at http://www.climateactiontracker.org/. Last accessed: October 3, 2011

16 UNFCCC. 2011. "Quantified economy-wide emission reduction targets by developed country Parties to the Convention: assumptions, conditions and comparison of the level of emission reduction efforts." June 3. http://unfccc.int/resource/docs/2011/tp/01.pdf. Last accessed: October 3, 2011

17 Fry, I. 2007. "More Twists, Turns and Stumbles in the Jungle," RECIEL. 16 (3). http://www.fern.org/sites/fern.org/files/media/documents/document_4265_4266.pdf. Last accessed: October 3, 2011.

In addition, the ways in which carbon markets and related institutions are designed can have a significant impact on the integrity of emission reductions, notably with respect to double-counting (Levin et al., 2010). To address this issue, the existing International Transaction Log (ITL) could be expanded to take into account any new market mechanisms. Several countries have expressed concerns about double counting, including Chile[18] and Mexico.[19]

With the exception of the issue of double counting, we focus on options to create stronger accounting rules for Annex I countries. However the ambition of actions from non-Annex I countries will also depend on the strength of methodologies to assess emission reductions from actions.

Approach 3:

Using the UNFCCC Provisions and the Kyoto Protocol to Increase Parties' Commitments and Actions

The UNFCCC has a number of tools at its disposal to encourage Parties to increase their mitigation effort to avoid the worst consequences of climate change.

New and revised commitments:

In decision 1/CP.16, the Conference of the Parties "urges developed country Parties to increase the ambition of their economy-wide emission reduction targets….to a level consistent with that recommended by the Fourth Assessment Report of the Intergovernmental Panel on Climate Change" (paragraph 37). Paragraph 50 of the same decision provides a window for developing country Parties to take additional action on a voluntary basis. Similarly, the Government of Australia has proposed that the targets and actions of developed and developing countries be enshrined in schedules. These could be revised periodically to reflect an increase in ambition but not a decrease.[20] Paragraphs 45 and 65 mandate and invite developed and developing countries to develop low-carbon development strategies or plans in the context of sustainable development. These plans can serve to identify additional mitigation opportunities supportable by the UNFCCC process through climate finance. Parties might also enhance the scope of the regime by including additional gases and sectors within these voluntary commitments and actions.

Without domestic political support for increased action, these pathways for increased ambition are not likely to occur. However, if such support exists, then at the very least there are vehicles in place under the UNFCCC to formally recognize increased ambition over time.

18 See UNFCCC webcast available at: http://unfccc2.meta-fusion.com/kongresse/110606_SB34/templ/play.php?id_kongresssession=3593&theme=unfccc. Last accessed: October 3, 2011.

19 See UNFCCC webcast available at: http://unfccc2.meta-fusion.com/kongresse/110403_AWG_Bangkok/templ/play.php?id_kongresssession=3466&theme=unfccc. Last accessed: October 3, 2011

20 Submission by Government of Australia to the UNFCCC, 2009, available at http://unfccc.int/resource/docs/2009/cop15/eng/05.pdf . Last accessed: October 3, 2011.

Periodic Review:

Second, the UNFCCC has at its disposal a periodic review set out in Paragraph 138 of the Cancun Agreements to review the adequacy of the long-term goal and overall progress towards achieving it. The first of these reviews is scheduled to take place between 2013 and 2015. What remains to be determined is how exactly such a procedure would go about securing an increase in ambition. This will depend in part on the design elements of the review process. Despite today's best available scientific knowledge, and a wide discussion of the probable adverse climate impacts in the future, Parties have collectively failed to commit to actions that scientists have determined as necessary responses to mitigate the worst effects of climate change (UNEP, 2010). The question thus arises as to how a periodic review mechanism within the UNFCCC can succeed in changing this dynamic. At Cancun, the Conference of the Parties requested the AWG-LCA to define the scope of the review mechanism, and develop its modalities to be presented at COP-17 in Durban for agreement (Paragraph 140). More research is needed to inform the following critical questions:

- How will the review compare global emission levels resulting from targets and actions with the emission levels consistent with various temperature goals?

- How will it facilitate an increase in the level of effort of individual countries to address any country-level or global shortfall in ambition?

- How will the review take into account procedural and substantive equity? Which Parties and non-Party actors will have an opportunity to contribute to the review? For example, the Human Development Goals with Low Emissions proposal foresees a review process that would validate emission reductions (voluntary, committed or obligatory) that are differentiated, based on Parties development status (Pan, 2003).

- How have review processes within other international regimes encouraged increased ambition? What lessons may we draw from these experiences? The Montreal Protocol, for example, has successfully linked reviews to the adoption of faster phase-out schedules. There may be other lessons to be learned from efforts to tackle global issues such as arms control and international economic arrangements (Bell and Ziegler, *forthcoming*).

- Will the review lead to any conclusion about the adequacy of commitments and launch a new round of negotiations? The Berlin mandate that eventually led to the adoption of the Kyoto Protocol emerged from a similar assessment.

2nd Commitment Period of the Kyoto Protocol:

Third, if Parties agree to a second commitment period of the Kyoto Protocol, they could make new commitments in the form of targets and timetables for abating greenhouse gas emissions. For example, the European Union is considering a new commitment in this context and ways to align it with a longer-term mitigation pathway (EU, 2011). While a second commitment period may result in an increase in ambition among Parties to the Protocol, it may fall short of the ambition required, unless Parties that are not bound to act under the Kyoto Protocol take action under the Convention. Although, even then the emission

reductions generated may be inadequate. Overall, a second commitment period of the Kyoto Protocol, along with other instruments to inscribe country commitments and actions internationally, might in practice only record countries' ambition rather than drive it. Other tools and institutions will likely need to be leveraged, internationally and domestically.

Linkages to Human Rights under the UNFCCC:

Fourth, COP 16 "emphasize[d] that Parties should, in all climate change-related actions, fully respect human rights" (1 CP/16 paragraph 8). If made operational, this obligation could mobilize domestic constituents to request more ambitious actions of their national governments. One example is a proposal for Parties to establish a process within the UNFCCC to support states in the development and implementation of policies. The ultimate goal is that all mitigation and adaptation policies incorporate international human rights standards and best practices (McKiernan and Loftus-Farren, 2011). This echoes calls made in UNFCCC submissions by observer organizations that any climate change is an issue of human rights for many of the world's poor, as much as it is an environmental issue (e.g., CIEL.).[21] However, local objections to climate-related projects on human rights grounds could conceivably also hamper ambition and implementation. For example, local communities, empowered by new rights and standards of participation, might object to investment in large-scale mitigation or adaptation projects that can have negative externalities for the local area, even if they benefit the country as a whole.

Overall, as an institution with global membership and with nearly two decades of institutional learning and political investment, the UNFCCC could ease implementation of future programs and minimize transaction costs, with the potential to increase ambition. Although the UNFCCC process has encountered hurdles throughout its evolution, investment in the regime to date has created a measure of institutional capacity, and there are concerns about the counterproductive effects of attempting to start anew by addressing climate governance in newer forums that deviate from the UNFCCC's core principles (Hare et al., 2010). The Kyoto Protocol's flexible mechanisms, and any other carbon trading platforms that may be agreed under the UNFCCC, can also lower mitigation costs. At the same time, the UNFCCC faces some hurdles in terms of implementation. The Convention operates by consensus. Therefore, the ability of the COP to adopt decisions, such as new commitments and actions or a robust periodic review of countries' efforts, is dependent on the willingness of all member countries to undergo such processes.

The UNFCCC regime holds principles of equity of process at its core, with an agenda to achieve an equitable outcome (WBGU, 2011). This is apparent in the principle of 'common but differentiated responsibility and respective capabilities' (UNFCCC, Art. 3), an agreed position that can help drive ambition, once Parties' perceptions of equitable process and outcome are satisfied.

Developing country Parties — whose cooperation is crucial to ensure a global climate deal — will likely refuse to buy in to any international regime that deviates from this principle. Indeed, Hare et al. (2010) argue that a reference to a possible 1.5˚ C ceiling, based on the findings of future reviews, would not have been incorporated into the negotiating text were it not for the insistence of AOSIS and other vulnerable states in the multilateral negotiations in the UNFCCC. The voice of the world's most vulnerable countries elicited

21 Various submissions to UNFCCC. For most recent see: http://unfccc.int/resource/docs/2011/smsn/ngo/287.pdf. Last accessed: October 3, 2011.

global consensus on a reference in the Cancun Agreements to the 1.5° C target, a step further than what has been achieved in smaller forums dedicated to the subject. To be sure, whether the goals are met will depend upon not only the fulfillment of existing pledges but also the identification and successful implementation of further ambition.

KEY ISSUE 2

OPTIONS OUTSIDE THE UNFCCC TO INCREASE AMBITION BEYOND EXISTING MITIGATION COMMITMENTS AND ACTIONS

The Copenhagen Accord of December 2009 and the Cancun Agreements adopted at COP-16 and CMP-6 in December 2010 can be interpreted as a move towards a 'bottom-up' international system, where all countries define their actions unilaterally (Ghosh, 2010; Bodansky, 2011). Under this approach, developed countries commit to economy-wide targets, and developing countries agree to undertake mitigation actions that are appropriate to their national political and economic priorities based on support provided by developed country Parties (see Houser, 2010; Cao, 2010). This is a deviation from the 'top-down' approach that some Parties and commentators had sought, with an international agreement based on a global level of effort split among Parties who meet their share based on targets and timetables. Given that the commitments and actions submitted by country Parties are, in aggregate, insufficient to achieve the 2° C goal set out at Cancun (Dutt, 2010; UNEP, 2010), we attempt to identify strategies that can secure the level of ambition necessary over the longer term to bridge this gap.

Whereas Key Issue 1 aims to identify ways to increase ambition to ensure adequacy of action through tools within the UNFCCC, this section focuses on approaches outside the Convention that can lead countries to increase existing commitments and actions. We identify three such approaches: multilateral strategies, plurilateral strategies, and national-level strategies.

These approaches and the UNFCCC's role are not mutually exclusive. Rather, each approach and engagement strategy complements a centralized UNFCCC approach by focusing on different drivers of action to achieve adequacy through positive incentives or sanctions. Several of these ideas are relatively new and the subject of debate as to their future applicability and effect. The scope of this paper limits our ability to analyze each proposal in detail in this section. Instead, we identify a few examples and assess their relevance in future climate governance, acknowledging that each strategy warrants further study and analysis as to how it might be developed in practice.

The overarching arguments for adopting approaches to governance outside the UNFCCC can be framed in terms of pragmatism versus effectiveness. Ghosh (2010) sums up this framing as based on grounds of political expediency, flexibility and credibility.

Experts come down on both sides of the argument. Authors such as Barrett and Stavins (2003), Rayner (2010), Bodansky and Diringer (2010), and Levi and Michonski (2010) argue that, on pragmatic grounds, non-universal negotiating forums might be better suited to implementing governance strategies to tackle global climate change, on the premise that not every climate-related issue requires the cooperation of nearly 200 countries. This approach is countered by authors such as Biermann et al. (2009), Hare et al. (2010), Mace (2009), and Winkler and Beaumont (2010), who premise their argument on the fact that global challenges require global coordination and that the scale and urgency of action needed to control climate change requires a strong, centralized governance structure to ensure effectiveness. Individual proponents of either approach pay varying attention to the criteria of adequacy, equity, and implementation, and there appears to be no 'steady-state' equilibrium that balances each of these criteria in a way that is both pragmatic and effective. Each proposal's advantages in terms of one criterion might be offset by its disadvantages in terms of another — thus making the adoption of these approaches a political decision about how to weigh trade-offs.

We define the three levels as follows: multilateral (universal or near-universal membership); plurilateral (membership representing many countries or regions, but short of universal); and national (at the sovereign country level). In each case there are drivers that can catalyze national decisionmakers and policy planners to reexamine and redefine their approach to tackling global climate change.

Approach 1:

Multilateral Strategies to Increase Ambition

There are a number of international organizations within and outside the United Nations system with regulatory powers that can be leveraged to enhance global cooperation to combat climate change. Keohane and Victor (2010) point to an international 'regime complex' for climate change governance comprised of institutions that are currently more or less directly charged with addressing climate change. Similarly, Abbott (2011) identifies a governance triangle for transnational climate regulation, highlighting the various levels of engagement of actors across government, business, and civil society. These authors all outline the multilateral institutions that can complement each other to advance governance on specific functions of a climate regime such as finance, technology, and capacity-building.

Within the current or reformed UN system

Within the UN system alone, beyond the UNFCCC, some 20 agencies work on climate change, often through the specific lens of their individual issue-area (Council on Foreign Relations (CFR), 2010).

Institutional coordination:

A 2008 report by the UN System Chief Executive Board for Coordination (UNCEB) highlights those agencies that can play a role in issues central to the negotiations, such as adaptation, technology transfer, reducing emissions from deforestation and forest degradation (REDD), financing climate action, and capacity building. Additionally, there is capacity within UN agencies and specialized bodies to contribute to cross-cutting issue-areas central to climate governance, including: climate knowledge (science, assessment, monitoring, and early warning); support to global, regional, or national action; and public awareness. (UN Chief Executives Board for Coordination, 2008). See Box 2 for a discussion of possible coordination.

UN Security Council:

The UN Security Council (UNSC), the UN body with responsibility for maintaining international peace and security, debated climate change as a global threat in July 2011. Its permanent membership and current rotating membership represent some of the largest CO_2 emitters globally, and a Council Resolution on climate change and security could reflect intent to implement policies internationally that are necessary to meet the global goal. While the UNSC could not agree on a binding Resolution on all UN Members, they released a Presidential Statement reflecting the consensus of the majority of Council members and no veto. While many rotating members of the UNSC (including Brazil and India[1]) welcomed the debate, a number expressed concern that it did not reflect traditional UN equitable procedures and might undermine the legitimacy of the UNFCCC. Opposition by permanent members of the UNSC resulted in agreement falling short of that required to issue a Resolution.[2]

1 IBNLive. 2011. "Climate change debate in UNSC welcome step: India." July 21. http://ibnlive.in.com/news/climate-change-debate-in-unsc-welcome-step-india/169050-2.html. Last accessed: October 3, 2011

2 CCGA. 2011. Background on UN Security Council's Open Debate on Climate Change.

The advantages of coordination among the specialized UN bodies and organizations vary in terms of adequacy, equity, and implementation. With respect to adequacy, there is much potential for increased coverage of scope and sectors among the UN's specialized bodies. In terms of equity, continuing to address climate change within the UN system has advantages in terms of both equity of process and equity of outcome, given its equitable representation and decision-making procedures. Regarding implementation, institutional capacities and learning, as well as existing performance tracking systems within the various specialized bodies, can help smooth the implementation process. Nonetheless, a 'patchwork' approach pursued within the UN system may well be subject to the same dynamics that have characterized the UNFCCC approach to date.

Box 2:

Forums with potential to address short-lived GHGs

There are many proposals for addressing shorter lived climate forcings – aerosols and particulate matter, including methane, tropospheric ozone and black carbon – in a non-UNFCCC forum. The rationale argued by proponents is that climate forcings behave differently than the warming gases within the jurisdiction of the UNFCCC and the Kyoto Protocol (UNEP/WMO, 2011).

Such an approach is promising for short term benefits as black carbon is the second or third largest individual warming agent, after carbon dioxide and perhaps methane (Bond et al., 2005). But it cannot be seen as a replacement for action on long-term global warming and reductions of CO_2. A study by the Arctic Council, for example, found that 40 percent of the warming in the region is due to black carbon, ground-level ozone, and methane (Arctic Council Working Group, 2011). [3]

One suggestion is to include climate forcings under the UN Economic Commission for Europe's (UNECE) Convention on Long Range Transboundary Air Pollution (LRTAP). LRTAP and its component Gothenburg Protocol (GP) can be used as a regulatory tool to enhance the regulation of forcings in the absence of suitable dedicated international agreements. An expert body is examining the inclusion of black carbon as a particulate matter within the regulatory scope of the GP in order to redress Arctic and Himalayan glacial melt. LRTAP offers a good example of a plurilateral agreement, including Parties from Europe, the United States, and Canada, under which regulatory action could be taken to address black carbon emissions.

Developing countries' emission levels of short-lived forcings (such as black carbon) are much greater than that of developed countries today (Bond et al., 2005). Thus there is also logic in expanding regulation to developing countries and regions, particularly East Asia, to increase global ambition for these gases. Equity must be considered in any such policy along with financing mechanisms and capacity-building support from developed countries.

Developing country mitigation of particulate matter emissions, especially, would have regional and global benefits for reducing global warming potential in the short term as well as improving human health (Bond et al, 2005).

Measures to address short-term forcers, if fully implemented, would reduce future global warming by 0.5° C (range 0.2°-0.7° C) (UNEP / WMO, 2011) in the short term. These gains would be lost in the long term if action were not taken to reduce CO_2 emissions at the same time.

3 The Arctic Council. 2011. "Arctic Council Members Sign Agreement in Nuuk." May 12. http://www.arctic-council.org/article/2011/5/arctic_council_ministers_sign_agreement. Last accessed: October 3, 2011

Montreal Protocol:

Additionally, there are a number of proposals to promote adequacy by broadening the Montreal Protocol[4] to regulate other warming gases such as HFCs. Canada, Mexico, and the US made a tri-lateral submission to the Montreal Protocol proposing such action, and a number of Parties proposed the same course in recent submissions to the UNFCCC (Submissions by EU[5], Switzerland[6] to the UNFCCC on non-market-based mechanisms, February 2011).

Sectoral organizations: International Civil Aviation Organization (ICAO) and International Maritime Organization (IMO)

Analysts project that emissions from aviation and maritime transport (currently not referenced under the Cancun Agreements) will increase by 275 percent from 2000-2050 (den Elzen et al., 2007). The ICAO and IMO, both UN organizations, have authority over emissions induced by international aviation and shipping respectively.

At the 62nd Session of its Marine Environment Protection Committee (MEPC) in July 2011, the IMO agreed to establish mandatory energy efficiency standards for international shipping. The goal was to reduce emissions from the projected 200-300 percent increase by 2050 under a 'business as usual' scenario.[7] Additionally, the MEPC agreed to develop a further "emissions control area" (ECAs) for nitrogen - and sulphur-oxides and particulate matter off the coasts of Puerto Rico and the U.S. Virgin Islands, adding to the two existing ECAs in the Baltic and North seas.[8] Current emissions from international shipping account for 3.3 percent of global CO_2 emissions, and 12 percent of total emissions from the transport sector. Plans to implement a market-based mechanism to regulate CO_2 are less advanced, due to disagreements over whether and how UNFCCC's equity principles – common but differentiated responsibilities and respective capabilities – should apply to such an approach.[9] The impacts of a market-based mechanism for international shipping would differ across countries, especially across SIDS and LDCs, leading the IMO to call for these countries to be treated differently.[10]

At the ICAO Assembly in October 2010, ICAO established aspirational goals of improving fuel efficiency by 2 percent annually and stabilizing CO_2 emissions at 2020 levels[11] and agreed to explore a long-term global aspirational goal for international aviation. A global CO_2 certification Standard for aircraft will be developed

4 UNEP. 2009. "Draft decisions and proposed amendments to the Montreal Protocol." September 17, 2009. http://ozone.unep.org/Meeting_Documents/mop/21mop/MOP-21-3-Add-1E.pdf. Last accessed October 3, 2011.

5 Hungary and the EU. 2011. "Submission by Hungary and the EU on Behalf of the EU and its Member States," February 15, 2011. https://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/hungary_submission_non-market_based_mechanisms.pdf. Last accessed October 3, 2011.

6 "Non-market-based mechanisms." http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/switzerland-submission-non_market_based_mechanisms_20110221.pdf.Last accessed October 3, 2011.

7 E. Vagslid. 2011. IMO, Joint SBI/SBSTA forum on the impact of the implementation of response measures, SB 34: Bonn. June 7.

8 "IMO Meeting Completes Packed Agenda," http://www.imo.org/MediaCentre/PressBriefings/Pages/43%20MEPC62ENDS.aspx. Last accessed October 3, 2011.

9 Preliminary report on the 61st session of IMO's Maritime Environment Protection Committee, September 2010.

10 Ibid.

11 ICAO Submission to the UNFCCC SBSTA34 in Bonn, Germany in June 2011 - http://www.icao.int/icao/en/env2010/Statements.htm

by 2013. The decrease in emissions from aviation resulting from these measures may still be offset by rising passenger volume, which is currently estimated to grow at about 5 percent per year (IPCC, 1999). Sustainable alternative fuels for aviation offer one of the most promising opportunities to reduce aviation CO_2 emissions, and it was agreed that the Organization would continue to facilitate the development and deployment of such fuels on a global basis. The Assembly also agreed on the guiding principles for market-based measures and decided to explore a global scheme for international aviation. Efforts by ICAO would also address emissions of forcers with short-term warming potential that lead to ozone depletion.

In order to promote more rapid and ambitious action on emissions reductions from aviation, the European Union has extended its Emissions Trading Scheme (EU ETS) to cover emissions generated by all aircraft departing or landing within its borders if they are not subject to similar regulation in their country of origin. These regulations will come into effect on January 1, 2012, but have been criticized on equity grounds and are subject to legal challenge.[12] China, for example, has argued that the move deviates from the UNFCCC principle of 'common but differentiated responsibility'.[13]

Human Rights vehicles

International human rights legal norms and principles can serve as a powerful vehicle to embed ambition and promote adequacy of international effort to tackle climate change globally. Human rights, originally designed to safeguard human dignity, are now enshrined at every level of the international system, protecting rights related to civil, political, economic, social, cultural, and environmental activities. They are anchored in the UN Charter, embedded within UN institutions, articulated in various regional institutions, and protected in national legal instruments throughout the world. At each of these levels, human rights norms and principles delegate duties, define obligations, attribute responsibility, and protect rights to ensure citizen protection from states as well as state protection from inter-state harm. Guaranteeing protections provided by human rights principles is achieved primarily in two ways. Firstly, the principles frame an ethics – and moral-based agenda that articulate a minimum acceptable standard of behavior to which states and private citizens should adhere. Secondly, they may provide a course of action to pursue legal remedies where rights have been infringed upon, or inadequate protection has been provided, based on the ethics-based standard advocated.

Although climate change is not mentioned explicitly within the body of human rights protections, there are clear areas of convergence where existing protections will be undermined by climate change. Examples of these include, but are not limited to, the right to life, the right to food, the right to water, to an adequate standard of living, and the right to adequate and secure housing (Cameron, 2011). Indeed, global warming "will potentially have implications for the full range of human rights" (OHCHR, 2009). The impacts of climate change, as predicted by climate scientists, will prevent the realization of rights in line with the minimum standards of protection enshrined in the international system. They will profoundly affect the full realization of human rights for huge portions of the world's population, disproportionately affecting the world's most

12 At the time of publication of this paper, the European Court of Justice (ECJ) was considering a legal challenge by several American airlines to the EU's plan. Advocate General to the ECJ Juliane Kokott delivered an opinion on October 6, 2011 concluding that the European plan is compatible with international law. The opinions of Advocates General of the ECJ are non-binding on the Court but are usually followed by it. Judgment by the ECJ will be given at a later date. More information about the Advocate General's opinion is available at: http://curia.europa.eu/jcms/upload/docs/application/pdf/2011-10/cp110104en.pdf

13 Ryan, D. 2011. "Analysis, US Airline Challenge to EU Aviation Measures Short-Sighted," The Climate Group. July 8. http://www.theclimategroup.org/our-news/news/2011/7/8/analysis-us-airline-challenge-to-eu-aviation-measures-shortsighted/. Last accessed October 3, 2011

vulnerable and marginalized citizens (IPCC, 2007; Oxfam, 2008; ICHRP, 2008). Recognizing climate change as an issue of human development, and viewing it through a human rights lens, provides policymakers with the opportunity to make a comprehensive diagnosis of the origins and potential policy solutions to climate change (Cameron, 2011). Any such policy-responses must be designed with the same level of human protection and social justice in mind because climate change adaptation policy responses also have explicit rights implications and the potential to undermine the realization of human rights, for example, by requiring the relocation of indigenous communities owing to rising sea levels (Cameron, 2010). Thus, due consideration of human rights provisions is central for two reasons: as a rationale for undertaking ambitious climate change redress; and to ensure that climate change policy responses improve the potential for full realization of human rights and do not endanger them further.

Applying a human rights lens to the evolution of a climate regime that meets the criteria of adequacy, equity and implementation has a track record of success to date, and can continue to do so moving forward. This lens features prominently in today's international climate debate, serving to reframe the focus to a rights-driven, human-centric diagnosis and solution of the problem. Leveraging the moral and ethical components of the human impacts of climate change redirects attention from a political debate, centered on economic arguments of the costs and benefits of climate action, to a discussion that highlights the political, social, and human costs of climate inaction. This advocacy component opens up the possibility of enhancing adequacy in the regime by promoting the inclusion of those whose guaranteed minimum standards of protection have been denied. Moral aspects of human rights norms provide a platform to vulnerable populations to highlight where they are inhibited in realizing their fundamental rights, alerting the international community of its failure to abide by minimum standards of behavior, and highlighting the injustice of continued inaction. This stance also allows for the inclusion of stakeholders who are committed to ensuring these standards are guaranteed, and have the capacity to bring this message to the international political debate. Finally, where approaches based on moral and ethical features of climate change have been exhausted, legal avenues may be open to vulnerable populations to seek enforcement of their human rights. While issues of causation, redress, and jurisdiction make this latter approach very difficult to implement in practice, there are wider benefits in terms of public awareness that human rights-based litigation can have on climate change policy formation.

Outside the UN system

International Trade Regime

The World Trade Organization (WTO) is a treaty based institution with 153 members[14] established in 1995. Most major economies (with the exception of the Russian Federation) are members. WTO members have made legally binding commitments to liberalize trade in goods and services, to treat these without discrimination on the basis of country of origin, and to maintain minimum standards to protect intellectual property rights. However, the WTO allows members to use trade measures to advance environmental objectives that would otherwise violate these rules if the measures are not applied in an arbitrary or unjustifiably discriminatory manner, or as a disguised restriction on trade. WTO commitments are backed by a compulsory dispute settlement process empowered to authorize trade sanctions.

14 As of July 2008 there are 153 member and 31 observer governments.

The potential synergies and conflicts between climate policies and free trade rules have been widely discussed (WTO/UNEP, 2009; IISD, 2006).

Trade measures have the potential to increase ambition in mitigation actions globally by encouraging reciprocity in implementing pro-climate policies in two important ways. First, the widespread dissemination of low-carbon technologies will be pivotal in moving the world to a low-carbon future (WTO/UNEP, 2009). Trade regulations can negatively or positively affect technology transfers, depending on WTO members' willingness to amend rules in favor of climate-friendly technologies. Second, instituting a price on carbon nationally, through cap-and-trade or carbon taxes, will make domestic carbon-intensive industries less competitive against non-domestic firms not subject to the same constraints, and this disincentivizes national policymakers from implementing ambitious regulations (Bradley et al, 2008). Trade measures offer an avenue to offset competitiveness concerns by 'leveling the playing field' so that a surcharge, the equivalent of a carbon price, is reflected in imports from countries with no such scheme in place.

Generally, the WTO has been pursuing a work program to better understand and promote the "mutual supportiveness" of multilateral environmental agreements (MEAs) and free trade rules. More specifically, under the current "Doha Round" of multilateral trade negotiations, Members have been exploring ways of shielding trade measures designed to promote the implementation of MEAs from WTO challenges, and of prioritizing the removal of tariff and non-tariff barriers to trade in "environmental goods and services," but little progress has been made (IISD, 2008).

With regard to climate change related trade measures, there have been numerous calls for the WTO to promote the reduction of tariffs and technical barriers to trade in climate-friendly technologies, and to target subsidies that promote the production of fossil fuels and other GHG intensive activities. (Newell in Aldy and Stavins, 2010; WTO/UNEP, 2009). Some have proposed that the WTO broaden exceptions to its rules in order expressly to shield climate related trade measures from WTO disputes (IISD, 2008).

Trade complaints often revolve around considerations of equity. China and the United States, for example, have raised objections to the inclusion of international aviation within the EU-ETS.[15] Other proposed measures that many believe would trigger a WTO dispute include Border Carbon Adjustments (BCAs) — imposing a de facto tax on imported goods to reflect a price for carbon where the jurisdiction of origin has none in place. BCAs are seen by some authors as a necessary safeguard to discourage free-riding in a regime where some jurisdictions fail to take mutually applicable, environmentally ambitious actions (Jackson, 2009). Others caution, however, that the use of such trade-related mechanisms to enforce climate standards may be counterproductive to both the climate and trade regimes (Zhang, 2009; Frankel in Aldy and Stavins, 2010; Barrett and Stavins, 2003). Authors from developing countries have objected to BCAs based on the negative effects they might have on their export industries. For example, Dasgupta and Taneja (2010) note that 30 percent of India's annual energy-intensive metal and chemical industry exports are destined for the United States. Any BCAs, such as those in proposed U.S. legislation in 2009 (e.g., The American Clean Energy and Security Act, 2009), can have considerable impacts on demand for developing country exports (Dasgupta and Taneja, 2010).

15 Ryan, D. 2011. "Analysis, US Airline Challenge to EU Aviation Measures Short-Sighted," The Climate Group. July 8. http://www.theclimategroup.org/our-news/news/2011/7/8/analysis-us-airline-challenge-to-eu-aviation-measures-shortsighted/. Last accessed October 3, 2011

Thus, a range of possible regulations could be adopted at the WTO or on a national or plurilateral basis to move the climate regime towards greater adequacy. The ambition and effectiveness of these regulations will be dependent firstly on the willingness of WTO members to alter their own rules and secondly on the alignment of unilateral climate policies with international trade rules. In summary, ambitious mitigation actions can be designed and implemented in a manner that ensures trade and climate policies are mutually supportive (WTO/UNEP, 2009).

International carbon tax, emissions cap, and revenue-raising schemes

Some authors propose internationally coordinated efforts to cap global emissions and to generate new and additional sources of finance to contribute to global adaptation and technology development costs.

Such approaches include support for a global carbon tax or levy. Legislative proposals for carbon taxes are already on the table in New Zealand, Australia and the European Union. Other authors propose a global levy of 5-10 percent on all fossil fuels at the point of extraction, with the funds used for development of renewable energy sources, reforestation, and other emission mitigation efforts (Mayer, 2008). FEASTA (2008) proposes an upstream cap on the introduction of fossil fuels into the economy. The associated emissions rights would be distributed to all adults personally on a per capita basis; those who supply fossil fuels would have to buy the rights from the public. With a shrinking cap on permissions to emit, market scarcity would encourage investment in alternatives to fossil fuels and slow man-made GHG emissions. At the same time, FEASTA argue that the distribution of the emissions rights to individuals would automatically compensate them for the increased prices, in what the proposal considers a globally just manner (FEASTA, 2008).

To implement an international agreement that places a cap on greenhouse gas emissions, the German Advisory Council on Global Change (WBGU) (WBGU, 2008) proposes the creation of a 'climate bank' with the power to monitor emissions from countries or groups of countries, readjust carbon roadmaps, and impose sanctions. WBGU argues that this approach would provide adequate ambition to halt global warming at 2˚ C over preindustrial temperatures by 2050, if agreed upon and implemented by a sufficiently large number of countries (WBGU, 2008). Jackson (2008) proposes another centralized, international body — The Carbon Board — that would be responsible for oversight of funds generated from a global cap-and-trade program. This would be similar in structure to the UN General Assembly or the less representative UN Security Council. Funds generated would be disbursed on an equal per capita basis globally. Kyoto 2 is a similar proposed global cap-and-trade system, covering emissions from fossil fuel and industrial production. Funds raised through this market would be reinvested in climate change adaptation, research and development of low-carbon technologies, and research into geoengineering options (Tickell, 2007). The proposal also envisages non-market based provisions such as ending fossil fuel subsidies — something currently under consideration in a variety of fora, including the G20. Earth Atmospheric Trust proposes somewhat of a hybrid between the two latter approaches, whereby revenues raised from a global cap and trade scheme would be disbursed partially for global mitigation and partially shared on a per capita basis globally (Barnes et al., 2008).

Implementing any of these proposals globally would require close attention to equity, given the potential for inequitable impact of taxes on fossil fuels across different income groups domestically and internationally. In addition, the resource transfers called for by certain proposals are significant. Such large transfers would help generate the scale of funding needed to support a global transition to a low-carbon climate

resilient economy and would help put in place an adequate regime. However, the scale of financial transfers involved combined with some countries' concerns about equity might render these proposals politically difficult to implement. A final point to consider is that implementing these proposals outside the UNFCCC could incur transaction costs and institutional redundancy if they undermine or duplicate existing institutions.

Approach 2:

Plurilateral and Bilateral Strategies to Increase Ambition

A second approach involves resorting to smaller negotiating venues to address climate change. Proponents argue that smaller groupings that include major emitters and countries with a comparative advantage in specialized aspects of the climate regime (where the participation of all Parties may not be strictly necessary) have an advantage over larger negotiating venues. Some of these ideas appear in the literature but few have been implemented in practice.

Given the slow rate of progress within the UNFCCC, plurilateral approaches highlight potential advantages from addressing climate change governance outside a universal framework to establish momentum for increasing ambition. Proponents cite the relative ease of negotiation and efficiency of implementation as advantages that could later be captured within a universal venue. On the other hand, even with an open plurilateral agreement, non-members might not find it in their interests to join if they believe that the biggest historical polluters have not done their part (Ghosh, 2010), raising questions about the longer term effectiveness and global ambition of a less-than-universal agreement. Furthermore, in terms of equity, any climate negotiations that exclude the majority of the world's countries would be difficult to implement and inherently flawed (CFR, 2010; Biermann et al., 2009).

Plurilateral venues for major emitters

Smaller negotiating venues including countries in various stages of development already influence what occurs within the UNFCCC. The 2° C goal was first introduced in the IPCC AR4, and officially recognized by the G8/MEF in 2009. It was later inscribed in the Copenhagen Accord in 2009 and Cancun Agreements in 2010. The rationale for developing compromises within smaller coalitions and subsequently integrating these into an international agreement is that a small group of 'big players' must be on board to comprehensively address the relevant problem. (For example, the MEF comprises 17 countries that account for over 80 percent of global greenhouse gas emissions.)[16] Proponents of this approach note the relative ease of negotiation and implementation of agreed measures, and the associated potential to further adequacy in the regime (Victor, 2011; Barrett, 2008).

16 The 17 major economies participating in the MEF are: Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Korea, Mexico, Russia, South Africa, the United Kingdom, and the United States (source: http://www.majoreconomiesforum.org/about.html. Last accessed October 3, 2011).

Detractors, however, point out that governance by a smaller number of actors could decrease the overall adequacy of the regime, depending on the initial ambition of the countries involved (Biermann et al., 2009; Mace in Schneider et al., 2009). Critics also highlight the inequities involved with 'a la carte multilateralism.' Agreeing to address a global problem without the participation of those likely to be most affected can result in an inequitable and under-ambitious outcome (Hare et al., 2010). Similar arguments exist in relation to the role of the G20[17] in climate governance. It has been cited by some authors and policymakers as a plurilateral venue whose mandate and decisions can have a positive, if limited, impact on climate change (Calderon, 2010;[18] Houser, 2010).

Although some argue that in the shorter term the G20 is likely to maintain its focus on financial issues (CFR, 2010), the world's richest countries have used this venue to indirectly confront issues linked to climate. For example, the Group has communicated its support for low-carbon development as well as committing to phase out inefficient fossil fuel subsidies (G20 Communique 2009).[19] During its G20 Presidency in 2011, France also placed issues of global food security, closely linked to climate change, at the top of its agenda.[20]

Countries with a comparative advantage in specialized aspects of the regime

Technology research, development, and transfer is another domain ripe for collaborative action among a subset of countries. Such an approach is widely referenced in the literature — although yet to be implemented in practice — with proponents arguing benefits in terms of ease of implementation and reduced cost based on the efficiency of coordination (Barrett, 1993; Victor, 2011, Clarke in Aldy and Stavins, 2010). Technology is widely regarded as central to decoupling emissions growth from economic growth, leading many authors to regard technology as nearest to a 'magic bullet' solution to climate change (Barrett, 2008). Small coalitions of actors offer advantages for facilitating positive spillovers, including knowledge-sharing that leads to innovation and technology development. Targeted investment in research, development, and deployment of new technologies may also be easier in smaller groups (Barrett, 2008). The technological advances resulting from the work of clubs can then be transferred to a broader audience to accomplish global carbon reduction and low-carbon growth and enhance the adequacy of the regime (Buchner and Carraro, 2004). Issues of equity are a central consideration, especially when deploying technologies developed in smaller clubs. Such concerns may especially arise with respect to intellectual property rights (IPRs).

Regional / bilateral alliances

Certain incentives for action on other issues may have positive spillover effects for climate change mitigation. For example, energy security concerns within the EU, triggered by a relative lack of domestic supply and

17 The G-20 is made up of the finance ministers and central bank governors of 20 economies: Argentina, Australia, Brazil, Canada, China, the European Union, France, Germany, India, Indonesia, Italy, Japan, Mexico, Russia, Saudi Arabia, South Africa, the Republic of Korea, Turkey, the United Kingdom, and the United States of America.

18 Speech by Felipe Calderon "The G20 as a forum for global development", October 2010, available at: http://www.g8.utoronto.ca/newsdesk/seoul/seoul-calderon-en.html. Last accessed October 3, 2011.

19 Available at: http://www.g20.org/Documents/g20_declaration_en.pdf. Last accessed October 3, 2011.

20 See "priorities of the French presidency", available at: http://www.g20-g8.com/g8-g20/g20/english/priorities-for-france/the-priorities-of-the-french-presidency/the-priorities-of-the-french-presidency.75.html. Last accessed October 3, 2011

exposure to price fluctuations, were influential in member nations instituting a strong energy and climate policy in the form of EU2020 goals (E3G, 2007).

An agreement between a small number of pioneer countries can also lay the groundwork to promote adequacy in the future by a larger group. This could occur either at the bilateral level (Au et al., 2010; Chatham House, 2007) or through agreements setting out a cooperative approach between two regional groupings (EU-Africa Group, 2008). Within these forums, Parties could come to an initial mutually acceptable agreement that could later be built upon within the UNFCCC to bolster global ambition (Au et al., 2010). However, as in the case of plurilateral arrangements, there is a risk that the major players could agree an outcome that falls short of adequate action and locks the world into a high-carbon pathway (Hare et al., 2010). A separate concern, related to implementation, is that a small group of 'big' players will proceed to create a separate regime with norms that conflict with those of existing institutions, reducing the efficacy and environmental integrity of climate governance (Biermann et al., 2009).

Regional market-based initiatives and regulatory schemes

There are various examples of climate governance through regional, national, or transnational market-based mechanisms. In the United States, regional cap-and-trade programs now cover states responsible for 51 percent of all U.S. greenhouse gas emissions (WRI, 2011).[21] These programs, some of which include Canadian and Mexican states, account for the most significant regulation efforts to date in the region (WRI, 2009).[22] California's prospective cap-and-trade program, due to come into force in 2012, foresees participation from the states of Chiapas in Mexico and Acre in Brazil who will supply offset credits to Californian participants (accounting for up to 8 percent of entity emissions).[23] Once operational, this initiative will exhibit how inter-regional cooperation can enhance adequacy of emissions regulation. Rigorous accounting and verification standards have been established to address concerns about effective implementation.[24] Commentators have mixed views with respect to the program's implications for equity. Financial transfers from California to Chiapas could be substantial (up to US$40 million, if the price of carbon reaches US$20/ton).[25] However, concerns have been raised over possible negative effects of forestry offsets on local and indigenous communities. For example, offset program rules may overstretch capacity of local communities to manage forest resources, incentivize evictions and even exacerbate poverty.[26]

The European Union's Emissions Trading Scheme (ETS), covering over 10,000 energy intensive firms throughout the EU is the largest market for carbon dioxide emissions in the world (World Bank, 2008). Some experts support strengthening adequacy of mitigation actions by including other greenhouse gases or forcings within regional air pollution control policies (Grieshop et al., 2009). However, while the EU ETS has set a powerful example of how price signals can effect emission mitigation, the scheme encountered

21 See: http://www.wri.org/map/regional-cap-and-trade-programs. Last accessed October 3, 2011

22 See "Bottom Line on Regional Cap and Trade Programs", available at: http://www.wri.org/publication/bottom-line-regional-cap-and-trade-programs. Last accessed October 3, 2011

23 See "California Air Resources Board – Cap and Trade Program", December 2010, available at: http://www.arb.ca.gov/board/books/2010/121610/10-11-1and10-11-2pres.pdf. Last accessed October 3, 2011.

24 Roosevelt, M. 2010. "Mexican state seeks to join California in carbon emissions effort," Los Angeles Times. December 10. http://articles.latimes.com/2010/dec/10/business/la-fi-chiapas-california-20101210. Last accessed October 3, 2011.

25 Ibid.

26 See "California Air Resources Board", July 28, 2011.Available at: http://www.cbecal.org/pdf/CBE%20Comment%20re%20SUPP%20ALTS%20to%20FED-1.pdf. Last accessed October 3, 2011.

many problems in implementation that should be noted for future market design, relating, for example, to the stringency of caps, the absence of a price floor, and even outright fraud (Cole, 2011). Despite these shortcomings, it demonstrates how ambition can be achieved through regional instruments.

Looking ahead, the aggregate level of adequacy achieved by emissions trading schemes can be boosted by creating linkages between regional programs. Baron and Bygrave (2002) discuss the benefits of such linkages, and outline the design elements needed to ensure that the environmental integrity of the individual market mechanisms is not diluted. Various institutions such as the International Carbon Action Partnership (ICAP) — an existing forum of authorities with experience in market-based emissions management schemes — will be important in facilitating linkages.

Sectoral agreements

One major stumbling block to non-universal efforts to address climate change is that the absence of reciprocal, binding, economy-wide targets in other jurisdictions gives rise to competitiveness concerns among industries in jurisdictions that are subject to regulation. Sectoral approaches may provide a mechanism to enhance adequacy and ambition under such circumstances. A sectoral approach subjects industries within specific sectors across countries to similar standards or harmonized policies. This can be a useful tool to increase participation in international efforts at greenhouse gas mitigation across sectors with similar productivity levels and cost constraints (Bodansky, 2007; Bradley, 2007). Such approaches can help increase the adequacy of climate governance arrangements in a number of ways. Firstly, they apply costs more evenly across countries in carbon-intensive and trade-exposed sectors, thereby leveling the playing field. Secondly, they target key areas where innovation and technology breakthroughs are required, where capital investment is rapid, or where there are inadequate incentives to reduce emissions (Bradley et al., 2007). Sectoral measures reflect notions of substantive equity in that industries facing similar costs and market risks are subject to climate policies uniformly.

However, pursuing a sector-only approach to international climate cooperation is not likely to be desirable or feasible, since it would leave climate policy without a strong 'center of gravity' upon which other initiatives could be built (Bradley et al., 2007). Detractors also warn that, in general, there is another strong reason to prefer more comprehensive approaches. For a given level of ambition, dividing climate effort into sectoral approaches will tend to increase costs, reduce transparency, and increase the negotiating burden for governments, resulting in informational asymmetries and ultimately raising the cost of emission abatement, compared to a comprehensive approach (Bradley et al., 2007). Moreover, sectoral agreements, although politically manageable to negotiate, are likely to be technically very demanding to implement (Aasrud et al., 2009).

Approach 3:

Domestic-Level Strategies to Increase Ambition

National political conditions are a key factor in determining how ambitious a country is willing to be both nationally and internationally, as demonstrated by the varying degrees of ambition that countries have shown to date. This section explores strategies targeted at national drivers.

Engagement of national ministries

Because countries largely approach the issue of climate change in terms of national interest, sovereign concerns could prove a powerful driver in incentivizing ambitious action at the domestic and regional level. Empowering domestic ministries to draw out the link between their focal area and climate change may prove a useful strategy to increase domestic ambition, translating into greater political willingness and effort in the international context.

National ministries that might have an interest in being involved in this process include ministries of finance, defense, and agriculture, among others.

Focusing attention on the national cost implications of dealing with climate events can catalyze public opinion and policymakers' incentives to act. For example, in the case of the United States, a report by the U.S. National Oceanic and Atmospheric Administration (NOAA) highlighted ten extreme weather events in the first eight months of 2011 causing damage in excess of US$1 billion each, breaking all records since precise weather-related damage records began in 1980.[27] National finance ministries, insurance companies, and other private actors are unlikely to underwrite costs of this scale over the long term, but will instead seek to mitigate risk associated with these outlays, for example, by applying pressure to implement ambitious climate policies domestically.

Defense policymakers are beginning to pay attention to climate change. Classified by a group of former U.S. military commanders as a "threat multiplier" in 2007 (CNA Corporation, 2007), climate change has become an area of interest in U.S. security policy. In 2010 the US National Security Strategy acknowledged that "danger from climate change is real, urgent and severe" and that climate change "will lead to new conflicts over refugees and resources" and "catastrophic natural disasters" (US National Security Strategy (NSS), 2010). Climate change is also expected to exacerbate global food insecurity, with consequent negative spillover effects for national and regional political stability (US NSS, 2010). Recognition is growing that addressing climate change and achieving sustainability in the global food system are dual global policy imperatives (Foresight, 2011). Involving national agriculture ministries in climate policymaking can ensure a focus on adaptation measures to mitigate future food security risks, while also targeting mitigation policies at a sector that contributes up to 14 percent of global greenhouse gas emissions (30 percent when costs such as land conversion are considered) (Foresight, 2011). According to Foresight, addressing future food security requires nothing less than a redesign of the whole food system. Empowering national ministries with an interest in long-term planning can drive ambitious measures to mitigate and adapt to climate change nationally and internationally.

National climate legislation

Even in the absence of a binding international climate agreement, advancing ambitious laws domestically can help reduce harmful emissions and prepare for the impacts of climate change. National legislation also demonstrates countries' ambition to achieve adequacy in an international context, giving leaders the confidence to go further in UNFCCC negotiations (GLOBE, 2011). The authors of GLOBE (2011) note three main motivating factors for national policymakers to advance climate legislation: economic imperatives,

27 See "Billion Dollar US Weather Climate Disasters", available at: http://www.ncdc.noaa.gov/oa/reports/billionz.html. Last accessed October 3, 2011

the pursuit of international leadership, and a sense of vulnerability to the impacts of climate change (GLOBE, 2011). Current national legislation worldwide does not yet cumulatively add up to the levels of adequacy required to halt climate change globally (GLOBE, 2011), but is an important step to show willingness to implement measures that can be built upon in the future. Conversely, one might argue that the unwillingness of governments to introduce such legislation can undermine progress towards future adequacy. The scope, purview, and ambition of legislation can be ratcheted up as governments experience the benefits of acting on carbon (for example, through reducing energy use, increasing efficiency and competitiveness, reducing air pollution and strengthening energy security) to implement more comprehensive and ambitious regulations that in the aggregate move towards the level of adequacy required internationally (GLOBE, 2011). The implementation of national legislation will depend in part on the mobilization of domestic and international financial resources and on the enactment of regulations by government agencies. In terms of equity, the adoption of national legislation without international coordination can make it difficult to ensure that countries are taking action in line with the principle of 'common but differentiated responsibilities.'

National climate litigation

To date, climate change litigation has tended to fill a gap in jurisdictions without substantive climate mitigation frameworks (Butti, 2011). Where comprehensive legislation is in place, litigation tends to be based upon the application of rules and the implementation of the regulatory system, as has been the case in the European Union since the introduction of the EU ETS (Butti, 2011).

In addition, citizen and civil society organizations (CSOs) can pursue domestic litigation to increase Parties' ambition at the national level, contributing to adequacy of effort globally (Schwarte and Byrne, 2010). For example, in Massachusetts et al. v EPA et al. (2007), the U.S. Supreme Court decided a case petitioned by various U.S. states and civil society actors seeking to compel the U.S. Environmental Protection Agency to regulate carbon dioxide emissions according to its mandate under the U.S. Clean Air Act. The Supreme Court ruled in the petitioners' favor. Thus, sub-national and civil society actors enabled the United States to enhance adequacy of effort in greenhouse gas regulation by relying on existing rather than new legislation.

Climate change litigation is proceeding through U.S. state courts based on assertions of combinations of common law rights, constitutional rights, and international environmental law principles in an attempt to compel states to regulate greenhouse gases. For example, Our Children's Trust, a coalition seeking to increase adequacy of effort in climate change mitigation, is filing suits against various states based on the doctrine of public trust and principle of intergenerational equity (see Blades et al. v State of California, filed in San Francisco County Superior Court, May 4, 2011). While state-level claims based on these theories may be brought in the future, a recent decision of the U.S. Supreme Court held that federal common law nuisance claims based on GHG emissions are displaced by the Clean Air Act (American Electric Power Co Inc et al. v Connecticut et al., US Supreme Court, June 20, 2011). In the wake of this decision, some commentators doubt the feasibility of state-level nuisance cases.[28] However, short of the normative power of a successful lawsuit, litigation can still be a useful tool to raise awareness among, and gradually mobilize, decisionmakers

28 Carroll, C. 2011. "SCOTUS Holds That Plaintiffs Cannot Maintain Federal Common Law Nuisance Claims Against GHG-Emitting Utilities but Leaves Window Open for State Common Law Claims," Climate Change Insights. June 21. http://www.climatechangeinsights.com/2011/06/articles/climate-risk/scotus-holds-that-plaintiffs-cannot-maintain-federal-common-law-nuisance-claims-against-ghgemitting-utilities-but-leaves-window-open-for-state-common-law-claims/. Last accessed October 3, 2011.

and the public around the issue of climate change. One-off negligence claims based on theories of strict liability might also be used on a claim for past wrongs against historical emitters (Weisbach, 2010). In general, however, tort-based claims have yet to result in fully successful outcomes (Butti, 2011).

Sub-national actors

A constellation of domestic actors is also tackling climate action all over the world. Networks of municipal-led initiatives, for example C-40, The World Mayors Council on Climate Change and the International Council for Local Environmental Initiatives (ICLEI) all coordinate action at the municipal and local government level. While these strategies might not be comparable in terms of adequacy to centrally-driven 'top down' regulations, they have an important role in setting best-practices that in turn can help drive more ambitious national and international action.

This is especially true of cities, already responsible for 80 percent of global GHGs (World Bank, 2010). Moreover, an expected 80 percent of the climate adaptation funds required (US$70 billion to US$100 billion per year until 2050) to address water supply, coastal management, infrastructure investment, and other critical areas will be invested in cities (World Bank, 2010). Cities also serve as hubs for innovation across the globe. Regulations and policy signals at municipal levels can spur innovative technology and policy design, contributing to local mitigation and adaptation, spreading to the national and international level across shared-practice platforms (such as C40). Further examples of sub-national strategies to promote climate change action, such as those in Chiapas, Mexico and Acre, Brazil have been noted above with respect to trans-boundary market-based initiatives. Importantly, state, local, and municipal governments can pursue ambitious and innovative actions that national policymakers are reluctant to undertake, and may serve as examples for future, more widespread implementation. Although the aggregate responses at sub-national and municipal levels are unlikely to bridge the mitigation gap required to address climate change globally (Hare et al., 2010), these strategies can serve as useful starting points for building greater ambition at higher levels (Au et al., 2010). Implementing measures at the lowest possible level of regulation also has advantages in terms of ease of implementation (Rayner, 2010). Issues of intra-state equity arise when adopting strategies at sub-national level, as policy options are likely to have varying impacts across income groups within a country, in both urban and rural contexts.

Citizen participation

Promoting the participation of citizens in decisions relating to their environment can be another driver of action. For example, empowering citizens at the national and community level to participate in decision-making has become part of the environmental policy-making process in Europe, via the UNECE's Aahrus Convention, with significant effect on policy implementation (Hartley, 2004). Globally, a promising approach to citizen engagement is to foster the implementation of Principle 10 of the 1992 Rio Declaration on Environment and Development, which states that environmental issues are best handled by participation of all concerned citizens, at relevant levels. One policy opportunity to promote Principle 10 is the Earth Summit in Rio in 2012. It could be used to link climate change and human rights, granting individuals and communities broader ability to participate publicly in regulation and planning, and rights of assembly, with the potential to precipitate more ambitious action by national decisionmakers (The Access Initiative, 2011). 'Bottom-up' demand from citizens, could lead to the evolution of a strong, global climate regime.

Behavioral change

Behavioral economics theory proposes strategies to encourage societies to live in sustainable, climate-resilient ways. Noting the lack of political will in both developed and developing countries to persuade electorates that current lifestyle patterns are unsustainable, Saran, for example, argues that a demonstration of effort by industrialized countries to address consumption patterns would smooth the path to similar actions in the developing world (Saran, 2010). To encourage such a change in consumption patterns and lifestyle, Rayner (2010) argues for an equity-based narrative promoting the benefits of moving towards clean, affordable energy — and especially targeted to those who are currently denied it. Economists and sociologists note the transformative role that various stimuli can have in effecting behavioral change. Examples include civil society and governmental public awareness campaigns, education, and peer pressure to adjust lifestyles and reform consumer behavior in order to encourage conservation- and efficiency-enhancing norms that will decrease aggregate carbon emissions.[29] These can all act as drivers to help instill a culture of low-carbon, climate-compatible lifestyles and contribute to enhancing the adequacy of greenhouse gas mitigation efforts globally. Indeed such stimuli have been noted by some authors to induce behavioral modification more effectively than pure market-based pricing signals (Allcott and Mullainathan, 2010).

Despite the apparent advantages to leveraging strategies outside of the UNFCCC, there are potential drawbacks. Biermann et al. (2009) outline the spectrum along which a regime may be fragmented, moving from synergistic through cooperative fragmentation where individual governance structures function well together, to conflictive fragmentation where regime effectiveness is undercut by diverse and disconcerted action among the institutions with a mandate to govern. Having various regimes play a role to boost the overall ambition of the climate regime may well fall within cooperative fragmentation, but there is a danger that conflictive fragmentation will result. For example, there might be reduced incentives for countries to comply with, or sign up to, international legally-binding commitments. Or a 'race to the bottom' in climate governance may take place with the result that efforts taken by countries continue to fall short of the actions needed to adhere to a 2° C or 1.5° C guardrail. Additionally, a patchwork governance structures may not deliver the clear market signals that industries and households require to take action or invest. Failure of Parties to regulate greenhouse gas emission at the international or domestic level may result in a continuance of business-as-usual, with potentially extreme and adverse impacts for the global climate.

Nevertheless, institutions and actors outside of the UNFCCC undoubtedly have a role to play in advancing climate governance globally. Many of the strategies discussed above highlight where progress can be made on issues that continue to evade agreement within the multilateral UNFCCC process. Several of these strategies address the core drivers of resistance or ambition that will ultimately determine how far countries are willing to go. These strategies may be leveraged to raise ambition at all levels of the policy-making process to encourage the implementation of a strong 'bottom-up' architecture.

29 For examples of suggested strategies on targeting lifestyle and behavioral choice, see Vandenberg et al. (2007) "The carbon-neutral individual," and Vandenbergh et al. (2008) "Individual carbon emissions: the low-hanging fruit."

KEY ISSUE 3

MEANS FOR SHARING THE MITIGATION EFFORT UNDER THE UNFCCC

While the previous sections discussed potential mechanisms for strengthening future commitments, this section focuses upon the process for sharing the additional effort deemed required among the UNFCCC Parties. In other words, if a scientific review process under the UNFCCC, as agreed upon at COP-16 in Cancun, or some other mechanism, is successful in triggering further action, how is the remaining mitigation effort to be split among Parties? Proposals for effort sharing differ from those related to means to increase ambition. The former focus on which Parties should take on various amounts of responsibility, while the latter focus on additional incentives and policies to generate reductions beyond those employed today (e.g., coverage of additional sectors and climate forcings, and leveraging capacities of existing multilateral, plurilateral, and national institutions).

Under the Kyoto Protocol, developing countries do not have quantified emission limitation and reduction objectives (QELROs), or targets. In addition, the means for sharing the mitigation effort of Annex I countries was not scientifically driven, resulting instead from Parties' proposals and political bargaining (O'Neill and Oppenheimer, 2002). Under the Cancun Agreements, Parties are bringing forward their own pledged commitments and actions, and, therefore, there is no "equation" for how the overall mitigation effort is divided among Parties. Rather, a bottom-up approach has been adopted — characterized by low aggregate ambition (WBGU, 2011) — which has resulted in a mismatch between the global goal needed to limit warming and countries' pledged commitments and actions. That being said, the presence of a global goal does not guarantee adequacy. The Kyoto Protocol, whose current commitment period expires in 2012, aimed at achieving the UNFCCC's objective of halting dangerous anthropogenic interference with the climate system, but was not science-driven in terms of setting emission reductions consistent with temperature limits. Future international commitments, however, could be based on a science-driven global goal. Such an approach would involve multiple options for calculating how effort would be shared among nations and people, which this section explores. To date, no one equation has gained agreement among Parties, as there are many countervailing arguments and support for various proposals (Caney, 2010).

The need for all countries to participate in some way in sharing the effort of countering climate change is widely acknowledged. While some argue that long-term atmospheric GHG concentration levels depend significantly on the behavior of emerging economies (Kanitkar et al., 2009), equitable considerations will also be central to future effort-sharing among Parties. The IPCC has noted the substantial variations among countries that will complicate effort-sharing, including variation in historical and cumulative emissions, current total and per capita emissions, emission intensities and economic output, and broader factors such as wealth, energy structures and resource endowments (Banuri et al., 1995). Experts have put forward numerous proposals as to how differentiation might be achieved, indicators that can be used, and the appropriateness of different stringencies of action divided among countries for a post-2012 agreement (for more, see Karousakis et al., 2008). Below we examine two approaches drawn from recent literature on the topic and present various ways in which authors deal with issues of equity and effort sharing.

Approach 1:

Capabilities

The UNFCCC Article 3 states that

> *"Parties should protect the climate system on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities."*

The approach explored in this section focuses on capabilities. Many proposals focused on sharing the global mitigation effort are based on a country's ability to pay or ability to mitigate. Under this approach, those nations with a higher ability to pay/mitigate have a greater responsibility to take on additional commitments. Ability to pay is generally defined in terms of level of economic development (e.g., GDP, or GDP per capita), or some other capacity metric, such as the UN's Human Development Index (HDI) (Dutt, 2009). The wealthier the country, the argument runs, the more it will be able to pay for emission reduction activities. Ability to mitigate can also be equated with cost efficiency in reducing emissions (e.g., older power plants can be replaced with large efficiency gains).

For example, the Greenhouse Development Rights Framework (GDR) (Baer et al., 2009) sets a development threshold below which those with little capacity to pay, or responsibility for the problem, do not take on emission reduction obligations. Poor individuals, for example, would be exempt. Thus the framework considers equity both between countries (inter-state) and within countries (intra-state) as central to the ways in which mitigation effort sharing is conceived. The framework also proposes a "Responsibility Capacity Index," a composite of factors related to both respective capabilities and contribution to the problem, to identify relative effort (Baer et al., 2009).

Similar 'hybrid' proposals have been developed that combine factors of capability and responsibility (Page, 2008). For example, Caney (2006) looks at two variables similar to the GDR approach: collective responsibility to pay reparations (financial responsibility) and contribution to the problem (physical responsibility), noting the various advantages and difficulties in implementing a regime based on these principles (Caney, 2006; Page, 2008). Oxfam International's Adaptation Finance Index gives equal weight to physical contribution to climate change and ability to pay for adaptation efforts, resulting in a scenario where the United States, European Union, Japan, Canada and Australia are responsible for 95 percent of climate adaptation costs (Page, 2008).

Aaditya Mattoo and Arvind Subramanian (2010) propose an approach whereby only developed countries would pursue activities to reduce emissions while developing countries would maintain business-as-usual emissions trajectories to ensure development pathways are not compromised. This is akin to the current Kyoto Protocol, but would make meeting a 2˚ C pathway challenging, if not unachievable, given the limits it would impose on decarbonization rates.

Various "multi-stage" approaches have also been put forward, where countries graduate to different levels of responsibilities based on various metrics of capabilities. For example, Michaelowa et al. (2005) propose that countries take on additional commitments over time, based on both respective capabilities (GDP) and contribution to the problem (per capita emissions). These could be calculated either for a past period of

GDP and per capita emissions or over a reference period. Non-Annex I countries would reduce emissions from business-as-usual trajectories proposed by review teams, rather than a base year of 1990, which was deemed inequitable. Other authors argue that GDP is not a good proxy given the varying baseline assumptions that are used to calculate it, as well as the risk that models might imperfectly predict future GDP growth (Clapp et al., 2009).

Some proposals could be less economically efficient, with implications for the ease of financing reductions. Rather than basing effort sharing on the cost of abatement, many proposals are centered on per capita equality, and may be costly to implement. Furthermore, some proposals call for a significant redistribution of wealth (Page, 2008) which would be politically challenging to agree upon and implement. As noted in our definition, equity is a value judgment. What some Parties perceive as equitable in the proposals outlined above, others view as both inequitable and economically unrealistic.

Approach 2:

Contribution to the Problem

Historical Responsibility:

The global mitigation effort could also be divided solely based on the extent to which countries have contributed to the problem. These proposals have gained much recognition but have also been criticized on the grounds that past generations were not aware of the problem they were creating and that current generations should not be responsible for ancestors' actions (Gosseries, 2003). Proponents suggest two ways to determine how future 'rights to emit' should be allocated: a sovereign entitlement or a per capita based entitlement. In general, developing countries with large populations and low levels of historic emissions advocate for a per capita approach. This would grant them considerably more future emission allowances than a global carbon budget divided along sovereign lines. China and India, for example, have called for this approach to be adopted in their submissions for a shared vision under the UNFCCC's AWG-LCA. [1]

Evaluations of 'contribution to the problem' are often based on historical responsibility, where countries that have contributed or will continue to contribute to rising anthropogenic emissions are charged with addressing it. For example, a proposal by the Brazilian government uses long-term historical emissions as the basis for allocating mitigation responsibilities (Submission by Brazil to UNFCCC (Brazil), 1997). Den Elzen et al. (2005) have shown that start dates for determining what constitutes "historical" can have significant implications on the amount of mitigation effort for which various countries and regions are allocated responsibility. This could lead to negotiating challenges. In addition, addressing effort sharing by focusing on countries' contribution to the problem is complicated by historical idiosyncrasies, such as changed boundaries and newly existing sovereign states that create problems for assigning responsibility (Rive, 2005).

1 See UNFCCC submissions of India and China in December 2008 and April 2009, summarized at: http://pdf.wri.org/working_papers/unfccc_wri_submissions.pdf. Last accessed October 3, 2011.

Shue (1999) examines notions of equity commonly put forward to support mitigation sharing based on contribution to the problem and the justification of unequal burdens among countries (presented as necessary either to reduce or eliminate existing unfair advantage, or to prevent any unfair advantage getting worse). He concludes that, despite the different content of these notions of equity, they all reach the same practical conclusion: the costs of mitigation and adaptation to climate change in both the developed and developing world should initially be borne by the wealthy industrialized states.

An approach recommended by The Energy and Resources Institute (TERI), called "Right to Sustainable Development," calculates the climate debt that Annex I countries owe non-Annex I countries based upon historical emissions over various time periods subtracted from the 2050 global carbon budget. It also proposes a new "World Climate Debt Fund" through which countries most responsible for the debt would provide financial resources for those least responsible, based on entitlements to emit. After finance is allocated, all Parties would have equal entitlements to emissions in the future giving a "clean slate to the historical responsibility of Annex I Parties."

Alternatives to addressing contribution:

While historical responsibility is a popular starting point, some experts have come up with other ways to addressing contribution to the climate problem as a basis for allocating mitigation action. Neumayer (2000), for example, points out that neither the UNFCCC nor the Kyoto Protocol include commitments by developed countries to accept an allocation rule based on equal per capita emissions, let alone accept accountability for historically unequal emissions. Such an outcome will never materialize, he argues, because it is not in developed countries' interests, and developing countries lack the bargaining power to enforce such an agreement (Neumayer, 2000). In addition, the relevance of historical responsibility may decline as the climate regime moves forward: Raghunandan finds that while industrialized countries are responsible for 75 percent of total historical emissions, developing countries now emit over 50 percent of current global greenhouse gases (Dutt, 2009).

An alternative would be for all nations to accept equal responsibility, and for the mitigation effort to be calculated as equal emissions per capita, or equal economic burden. For example, proposals by Kanitkar et al., the Government of India and the German Advisory Council on Global Change (WBGU) divide the mitigation effort among the global population based on an equation of cumulative emissions per capita (Kanitkar, 2010; Ramesh 2010; WBGU, 2008). Supporters point out that by focusing on contributions to the carbon stock (instead of just current flows) such approaches ensure that emerging industrial countries like China and India are allocated more carbon than they would under budgets that look solely at current emissions (Adve and Engineer, 2010). Similarly, under the contraction and convergence approach, all people have equal entitlements to emissions, with the global target contracting over time (Global Commons Institute (GCI), 2007). The Alliance of Small Island States calls for an approach whereby all major emitting countries take action, including developing country major emitters, with developing countries differentiated based on their contribution to the problem (Mace, 2008). Michaelowa et al. (2005) have proposed a graduation scheme whereby countries take on additional commitments in part as a result of their per capita emissions.

Another set of proposals aims to foster equity via compensation. For example, the WBGU scheme would transfer financial compensation from the North to the South, based on national differences between per capita emissions over 1990 and 2010. FEASTA's cap and share proposal establishes a cap on greenhouse

gas emissions and shares revenues from the sale of emissions permits, which would be divided equitably among all individuals worldwide (FEASTA, 2008). In the United States, a similar proposal known as cap and dividend has emerged whereby auction revenues are distributed among consumers (Boyce and Riddle, 2007).

As is the case for proposals described under approach 1 above, those reviewed here could be less economically efficient, with implications for the ease of financing reductions. Rather than basing effort sharing on cost of abatement, many of the proposals are centered on other objectives and may therefore be costly to implement.

Furthermore, many proposals call for a significant redistribution of wealth which may be challenging to implement. One possible way to reduce costs would be through the use of emissions trading systems. Page (2011) analyzes the benefit that trading systems can offer in terms of cost effectiveness, and proposes amendments to existing trading mechanisms to optimize their potential to provide such a benefit to enhance their effectiveness and improve equity.

KEY ISSUE

4

THE ROLE OF VARIOUS ACTORS IN TRACKING COUNTRY PERFORMANCE ON MITIGATION

We define performance tracking as the process of accounting for, measuring, reporting, and verifying the mitigation actions and commitments of both developed and developing countries. While there are merits to a compliance mechanism in the climate regime, either in addition or in lieu of the Kyoto Protocol's, the focus of this section is kept on the function of accounting, measurement, reporting and verification of information only. While Key Issue 1 discussed the strengthening of accounting rules as an option among others to increase the global level of ambition, this section focuses on the actors that could implement a strengthening of rules for performance tracking. In addition, while similar performance tracking is needed on the support side to monitor the provision by developed countries of finance, technology, and capacity building, we focus here only on mitigation.[1]

This section seeks to answer the question of *who* can play a role in the tracking of performance of country actions in the climate regime. We examine the institutions and organizations that have the capacity to develop or apply tools to conduct such tracking. We do not investigate in this paper the question of *how* such performance tracking should be done, or review proposals for how rules for accounting, reporting and reviewing country performance should be designed.

Background on performance tracking:

Scholars and practitioners refer to the function of performance tracking more broadly as 'monitoring,' 'verification' or 'reporting and review.' Such systems play two principal roles in international environmental agreements (Fransen, 2009; McFaul, 2006). First, they help build trust within a regime by enabling Parties to be held accountable for their obligations. Second, they facilitate efforts to tackle a global challenge by evaluating the effectiveness of countries' actions at the individual level and of the regime at the aggregate level. Importantly, a performance tracking system alone does not necessarily guarantee that the goals of an international agreement will be met. An ideal system will include not only monitoring and reporting processes, but a review process and compliance procedures (McFaul, 2006). These features ensure transparency in a country's implementation of treaty goals while improving the process for generating feedback, learning, and capacity-building. Information gathered through performance tracking also allows for accurate assessments of the environmental integrity of the regime.

In this section, we review two approaches for tracking performance. These are meant to be complementary, not mutually exclusive. The first approach relies on tools and actors within the UNFCCC. Performance tracking standards already exist within the Kyoto Protocol and the UNFCCC (Fransen, 2009). In addition, the Cancun Agreements laid an important foundation for comprehensive and transparent sets of rules for Annex I and non-Annex I Parties to account for, measure, report, and verify their targets, actions, and support. These international agreements call for the UNFCCC to play a central role in fulfilling the performance tracking function in a future regime. A second approach is to rely on tools and actors outside the UNFCCC to track performance in a complementary manner. We assess the implications of relying on external actors and tools in terms of adequacy, equity, and implementation. When applicable, we draw lessons from other regimes.

1 For more information on the reporting of climate finance, see, for example, Tirpak et al. (2010) and Buchner et al. (2011).

Approach 1:

Performance Tracking Within the UNFCCC

This section explores the role that the UNFCCC may play in tracking countries' performance under a future international climate regime and the possible advantages and drawbacks of doing so under these auspices. The UNFCCC and its Kyoto Protocol contain numerous provisions relating to the accounting, measurement, reporting, and verification of country actions and commitments (Fransen, 2009). These require countries to keep inventories of GHG emissions and sinks, and to report internationally on their efforts to implement their obligations through national communications. Recent decisions by the Conference of the Parties, particularly at COP13 in Bali and COP16 in Cancun, call for the UNFCCC to continue to play a central role on these matters.[2] Under the Bali Action Plan, developed and developing countries are to implement mitigation commitments and actions, and developed countries are to provide support to developing countries in a "measurable, reportable and verifiable" manner. In Cancun, Parties decided to increase the frequency and rigor of such reporting and verification. Under this agreement, developed country parties are to submit national greenhouse gas inventories annually, national communications every four years, and updates on their emission reductions biennially. This information is then subject to a process of international assessment and review. Meanwhile, developing countries are to submit national communications and greenhouse gas inventories every four years, with biennial updates that are subject to a process of "international consultations and analysis." The COP decision in Cancun can be interpreted as a desire among Parties for the UNFCCC to be a central platform to conduct the tracking of countries' performance in implementing policies and meeting their international goals.

From the point of view of adequacy, performance tracking rules under the UNFCCC carry important benefits. Chayes and Chayes (1998) and Blechman and Finlay (*forthcoming*), drawing from experience in other international regimes, note that systematic and comparable global reporting and verification standards are an important part of efforts to tackle transboundary challenges. By creating consistent transparency and accountability rules around country actions and commitments, they argue, these standards can give Parties the certainty that their counterparts are living up to their obligations. These standards may also incentivize them to increase their level of ambition within the regime.

Levin et al. (2010) point to another benefit of standardized accounting and reporting for the adequacy of the regime. They argue that consistent, complete, comparable, transparent, and accurate rules to account for country emissions of greenhouse gases are essential to get an accurate picture of emissions of individual countries, regional groups and all Parties in aggregate. Such standardized accounting rules, they note, can be agreed under the UNFCCC, building on the Kyoto Protocol, in order to assess emissions in key sectors, including forestry, and accurately track the use of offsets. By contrast, unharmonized accounting rules can result in reporting and review standards that do not capture the full scope of gases or sectors in major economies, or double count emission reductions when offsets are issued or used.

In terms of implementation, one important challenge stems from the fact that the UNFCCC operates by consensus. This point was noted earlier in this paper and applies in general to the ideas and proposals which involve COP or COP/MOP decisions. In this case, the ability of the UNFCCC to adopt adequate rules

2 For more information, see 1/CP.16 section III, "Enhanced Action on Mitigation."

to track performance is dependent on the willingness of member countries to undergo such processes. The limited financial resources of the UNFCCC Secretariat may also complicate implementation if the full costs of enhanced review procedures (e.g., expert review teams) cannot be met.

Another concern about implementation is that few environmental agreements have overcome the chronic problem of poor data reporting (Victor et al., 1998) — yet data are the backbone of systems for implementation review. This observation suggests that even if robust international rules under the UNFCCC were put in place to track country performance, it could be hard for countries to implement them, and the data provided could still be of poor quality. Deeper analyses of the causes of poor data reporting would be useful so they could be addressed and an effective performance tracking system put in place.

One factor at play is the technical and financial constraints that developing countries face in conducting such reporting. Until 2010, developing countries were not required to report on their mitigation actions on a regular basis and few chose to do so voluntarily. Chayes and Chayes (1998) note that technical and financial assistance to build the capacity of developing countries can help them meet international obligations, such as those requiring them to report their actions. Under the UNFCCC, developing countries can access financial resources from developed countries to generate national communications. To ease the implementation challenge, some analysts have suggested proposals (Ellis et al., 2011) to allow developing countries, in the short term, to report their actions and GHG emissions using simpler estimation methods and in less detail in order to alleviate some of their technical and financial challenges as they build domestic capacity. In addition, UNFCCC Parties may wish to consider ways to streamline access to, and increase support for, developing countries for the production of their national communications and biennial reports. Enhanced capacity building programs and financial support could be agreed to at COP17, for example.

Another way to ease implementation, as was done for certain aspects of arms control as a way to increase compliance with verification procedures, involves developing performance tracking rules that also serve other domestic benefits. For example, "the technical assistance and communications infrastructure required to detect and interdict weapons of mass destruction is equally critical for emergency management authorities and first responders in the event of natural disasters," (Blechman and Finlay, *forthcoming*). Since private sector actors can raise confidentiality concerns that can slow down or block verification procedures, the authors suggest allowing private sector actors to participate more directly in the negotiations of performance tracking rules. In the end, the authors note, "[private sector]support will be essential for effective implementation of agreements." While Blechman and Finlay's observations only relate to the experience of arms control, similar approaches could be tested in the climate context.

Another benefit in terms of the implementation of reporting systems (inside and outside the UNFCCC) is that they can facilitate the sharing of best practices in the implementation of low-carbon policies. Within the UNFCCC, the periodic review described in Key Issue 1 that is part of the Cancun Agreements could also be used to share practices in terms of what policies and programs have worked.

In terms of equity, there are several benefits to conducting performance tracking within a multilateral framework such as the UNFCCC. Nash et al. (2009) note that a multilaterally agreed set of rules for reporting and reviewing information on countries' actions and commitments can help ensure that promises are kept, and can build trust among developed and developing countries that all are acting in line with their common but differentiated responsibilities and respective capabilities.

In addition, all Parties agreed in Cancun that certain rules relating to reporting and verification should not be more stringent on developing countries than on developed countries (1/CP.16). This could be interpreted as an effort to align the performance tracking process with the principle of common but differentiated responsibilities. Internationally agreed rules for reporting and verification can ensure that such a standard is met. As noted above, however, the fact that the UNFCCC draws mandates for its work unanimously from its Parties may limit its ability to conduct a rigorous review if the countries that have most to lose from this review restrict its scope.

Lastly, while the tracking of finance is beyond the scope of this paper, it is worth noting that it is an important function of the climate regime and that experts have called for the strengthening of reporting rules (Tirpak et al., 2010; Buchner et al., 2011), and for a multilateral peer review process mirroring those in existence or being designed for mitigation actions (Ghosh and Woods, 2010).

Approach 2:

Performance Tracking Outside of the UNFCCC

Under this approach, we examine the tools and institutions involved in the accounting, measurement, reporting, and verification of country commitments and actions outside of the UNFCCC. Such tools and actors can complement the Convention in various ways. They can inform the design or revision of UNFCCC rules. They can complement UNFCCC rules where they are absent or fall short in terms of rigor. They can be a source of information independent from that provided by governments through their national communications.

Civil society organizations can be a source of such information (Haas, 2008), as can independent certification schemes (Levin et al., 2009). Independent assessments by research institutes of countries' implementation of their national climate commitments and actions can corroborate or disprove the findings of an official reporting and review process within the UNFCCC. Such civil society reports can provide an additional layer of accountability and encourage Parties to meet their international and domestic goals.[3] Such reports have been issued by civil society groups and proved useful in other regimes (Chayes and Chayes, 1998). In addition, independent assessments by civil society and international organizations that highlight gaps between the level of global action (for an example, see UNEP, 2010), and the level of ambition required to avoid the most dangerous consequences of climate change can be fed into an official review of adequacy under the UNFCCC. Overall, these types of independent assessments by international organizations and research institutions outside the UNFCCC arguably support the adequacy criterion.

In addition, protocols and standards developed outside the UNFCCC for measuring the GHG emissions and emission reductions from projects, while they do not provide information on country-wide emissions, can generate knowledge useful to the design of national accounting standards. The Gold Standard Label, for example, can inform Parties' efforts to track the sustainable development benefits of their mitigation actions or offset programs. The World Resources Institute/World Business Council for Sustainable Development Greenhouse Gas Protocol (WRI/WBCSD GHG Protocol) and the International Organization

3 See for example, the WRI-led Open Climate Network and the Climate Analytics led Climate Action Tracker.

for Standardization (ISO) can inform the development of UNFCCC processes to report and review information. These initiatives arguably support the implementation criterion by offering a wider range of actors (e.g., businesses) access to performance tracking tools and by informing the design of UNFCCC rules, thereby reducing development and transaction costs.

National and local governments are another source of information. The information countries collect at the national level is the basis for the reports they submit periodically to the UNFCCC. Therefore, a large part of the information published by national governments conforms with and corresponds to the performance tracking rules reviewed under Approach 1. However, there are some instances in which national governments go beyond international mandates and publish additional information on a voluntary basis. A good example of this is the report published by India in 2010, which details the country's GHG emissions for the year 2007 (INCAA, 2010). Similarly, the EU (2010) and other regions and countries have published reports on their provision of fast-start finance. Although finance falls outside the scope of this report, this is another good example of the value of capitalizing on various sources of information communicated outside the mandate of the UNFCCC. Because these types of voluntary assessments by governments generally support the function of performance tracking in the regime, it can be argued they support the criteria of adequacy by providing additional measures of countries' progress. However, disparate reports using varying methodologies can limit the comparability of such reports across countries.

The use of satellites, or 'Earth observing systems,' to monitor emission patterns across the globe could also in the future serve as an information gathering tool for countries to track emissions, domestically and internationally. For example, the National Research Council has called on the U.S. government to work with the private sector and its international partners to renew its investment in Earth-observing systems for the purposes of enhancing economic competitiveness, protecting life and property, and assisting in the stewardship of the planet for current and future generations (National Research Council, 2007). Satellite technology has also been used to measure forest cover and will be used in the future to monitor efforts to curb deforestation, for example in Brazil (Defries et al., 2007).

In the absence of standardized reporting rules adopted by the UNFCCC and applied across countries, however, Parties may report on performance using their own standards in a way that fails to convince international counterparts. In this context, it may be more difficult to assess whether countries are acting in line with what the science suggests, or with the principles of common but differentiated responsibility and respective capabilities.

In terms of implementation, we already noted above that following international reporting rules may be difficult for developing countries that face financial or technical challenges. In a proposal that could ease support for the implementation criterion, Niederberger and Kimble. (2011) put forward one option to give countries flexibility in developing nationally relevant information systems. A certification scheme for National Climate Management Systems could require countries to establish a climate policy, set national goals and timetables, secure resources to implement related national actions, and track their progress over time. In this instance, countries develop their performance tracking systems independently outside the UNFCCC but in a way that ensures some level of international harmonization.

KEY ISSUE 5

THE LEGAL FORM OF A FUTURE CLIMATE AGREEMENT

Perspectives on the legal form debate

Since progress in the climate negotiations towards a legally-binding agreement (LBA) with specific and mandatory commitments to reduce greenhouse gas emissions has been difficult, there is increasing discussion about how to deal with the apparent impasse. In this section, we explore three approaches to this situation, summarized as follows:

- Approach 1
  Proceeding Without New, Legally-Binding Commitments:
  Legally-binding commitments are unworkable or politically impractical for the foreseeable future. Reliance should be placed on voluntary commitments. Proponents tend to favor more effort outside the UNFCCC and Kyoto Protocol (KP) regimes, in smaller settings that include larger emitters.

- Approach 2
  Immediate Adoption of New, Legally-Binding Commitments:
  The climate challenge demands prompt agreement on legally-binding, specific and mandatory commitments.

- Approach 3
  Achieving New, Legally-Binding Commitments as Soon as Possible
  – Strengthening the Components of Legal Character:
  A comprehensive legally-binding agreement as in approach 1 is the goal, but in the near term incremental steps may be required that accommodate targets and timetables that are not legally binding, until the political will can be generated behind specific and mandatory legally-binding commitments. To move as rapidly as possible towards the goal, effort should be invested in those components of legal character that can be strengthened through means that are not legally-binding. This approach also sheds light on the future of the Kyoto Protocol, as explained below. While entities outside the UNFCCC may play a role, the main effort would be focused on the UNFCCC.

The issue of whether the next stage in the development of the climate change regime, and in particular, a new round of commitments, requires a new legally-binding agreement has become a polarizing issue in climate negotiations, in essence leading to an impasse between proponents of Approach 1 and Approach 2. In this discussion, we suggest it is important to consider Approach 3, by examining more closely what specifically proponents value when they call for a legally binding agreement.

We note that it is possible to identify four components of legal character: the legal form of the agreement (whether legally-binding or not); the mandatory or discretionary nature of the commitments (whether the commitments are expressed in obligatory language); the specific and prescriptive nature of the commitments; and the institutions, procedures, and mechanisms designed to hold parties accountable for these commitments (Werksman, 2010).

Collectively, these components give each party confidence that other parties will act in accordance with the bargain struck. Given that the regime has already generated two legally binding agreements, the UNFCCC and the KP, we suggest that the crux of the impasse in the negotiations is over whether to add a new set of specific and mandatory, legally-binding commitments to one or both treaties. As a legally-binding

treaty, the UNFCCC contains commitments. However, the commitments that address emission reductions are not specific and are highly qualified rather than mandatory. In the case of the KP, the emission reduction commitments of the first commitment period only cover emissions between 2008 and 2012. A new legally-binding instrument such as a new Protocol to the UNFCCC, or an amendment to the UNFCCC or the KP, is required to generate new, specific, and mandatory commitments. These commitments cannot be made legally binding by a decision of the COP or COP/MOP alone (Werksman, 2010). This point is important to understanding where there is room for progress. From this perspective, Approach 3 suggests that specific and mandatory, legally-binding commitments must remain a goal of a comprehensive climate regime, but until they are agreed, progress is still possible on the components of legal character, and will build a foundation for reaching that goal. The timing of adoption of a legally binding agreement could be agreed upon in advance by saying, for example, that by a specified date a protocol or other legally binding instrument will be adopted. The Governments of Norway and Australia took an approach similar to this one in their joint submission to the UNFCCC in the fall of 2011 (Australia/Norway, 2011).

In this section of this paper we explore how an analysis of legal character can illuminate the search for a way out of the current impasse, which is often seen as a binary choice between voluntary and legally binding commitments. We do this by describing what proponents say about the merits of an approach based on voluntary pledges and an approach based on an LBA, with legally-binding commitments. Discussion of alternatives often stops there. However, this misses important aspects of the legal character issue. Even those who support the nonbinding option often say that ultimately an LBA is required. Therefore, we also consider the steps needed to achieve an LBA by addressing all the components of legal character. For those not steeped in the negotiations, we first provide necessary background.

Background on the Negotiations with Regard to Legal Form

The UN Framework Convention on Climate Change (UNFCCC) was adopted in 1992 to address the problem of global warming by stabilizing greenhouse gas (GHG) concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system. It contains no specific, legally-binding targets and timetables to reduce emissions. Under the 1997 Kyoto Protocol, many industrialized countries (with the notable exception of the United States) and the European Community committed to specific reductions in their GHG emissions. The first commitment period of the Kyoto Protocol ends in 2012. Both the UNFCCC and the Kyoto Protocol are legally-binding treaties for those countries that have ratified them.

The UN climate negotiations in 2007 adopted the Bali Road Map, setting out steps to strengthen action on climate change. Under the Road Map, negotiations have proceeded on two tracks, the Kyoto Protocol track, which is under discussion in the Ad-hoc Working Group on further commitments for Annex I Parties under the Kyoto Protocol (AWG-KP), and the Convention track, under discussion in the Ad-hoc Working Group on Long-term Cooperative Action under the Convention (AWG-LCA). Here we refer to these two tracks in short hand as the Kyoto Protocol or KP track and the Convention or LCA track. The phrase, "an agreed outcome," employed at Bali in establishing the objective of negotiations on the Convention track, as well as the language of the Kyoto Protocol, leave unresolved whether one or both tracks are to conclude with legally-binding commitments. See discussion in Rajamani (2009) and Bodansky, "W[h]ither the Kyoto Protocol?" (2011). The issue was not resolved at the Copenhagen conference in 2009 or the Cancun conference in 2010.

The impasse in the negotiations on the issue of legal form is not entirely a case of one bloc favoring an LBA and another opposing. Rather, on the LCA track, many parties say they would support an LBA, but they differ on how the agreement should apply to them. This is the problem of so-called "symmetry." The U.S., for example, says that while the emission reduction obligations may differ (for example, targets versus actions), the legal character of the obligation must be the same. Thus, the U.S. says that if it is legally bound, others should be legally bound. However, most developing countries that have expressed a view maintain that industrialized countries should take on legally-binding mitigation commitments, but under the principle of common but differentiated responsibilities (CBDR), obligations for developing countries should be voluntary. (Earth Negotiations Bulletin, June 20, 2011)

While no agreement on new, legally-binding commitments was reached at Cancun either under the Convention or the Kyoto Protocol, tentative steps were taken to articulate country commitments and actions on both tracks. Mitigation commitments and actions were acknowledged in the Cancun Agreements, but ambiguities remain. For example, these commitments and actions are only contained in information ("INF") documents, the legal status of which is not entirely clear.

Outlook for Durban and Beyond

The discussion of options on legal form has focused on whether there will be an LBA with new, legally-binding commitments on the LCA track and whether there will be a second commitment period for the Kyoto Protocol. This issue is often put in the form of the question: What, if any, process or decision should there be at COP17 for future action on the form of the agreement, and for creation of a second commitment period for the KP? Due to the difficulties in reaching agreement on a new LBA, the question has also been raised regarding possible alternatives.

While this paper focuses on whether and how new binding commitments will be established, the question of which instrument might contain binding commitments is complicated by the fact that the politics of reaching agreement may cause changes in the current two-track approach to the international negotiations. Here, we briefly note a few potential variations.

One scenario is two outcomes, each with legally-binding commitments, with one outcome on each of the two existing tracks.

A second scenario might be a clustering of most countries under a second commitment period of the Kyoto Protocol, leaving the Convention to cover one or more countries under new, legally-binding commitments.

A third scenario would be for all countries to join a new agreement under the Convention, resulting perhaps in the dormancy of the KP.

A fourth scenario might arise if, in the near term, Parties decide to maintain two tracks, with agreement that an overarching LBA could be developed in the future that would subsume the outcomes on the two existing tracks. (For additional discussion of such scenarios, see Bodansky, 2009).

For simplicity's sake, in the discussion below we generally talk in terms of the two existing tracks. The reader should keep in mind, however, that the same analysis would be relevant if the Parties on the two tracks differ from the current lists, or if the tracks merge.

Approach 1:

Proceeding Without New, Legally-Binding Commitments

The climate negotiations have encountered difficulty so far in achieving an LBA with new, legally-binding commitments on the LCA track. Those who support the alternative of an agreement without new, legally-binding commitments suggest that such an agreement can be better and more ambitious than a vague, binding agreement or no agreement at all. One premise is that Parties are not ready to adopt new, legally-binding commitments because of uncertainties or lack of confidence. Under these circumstances, proponents argue, wider participation, more ambitious goals, and more behavioral changes are likely with commitments that are not legally-binding. (Victor, Raustiala and Skolnikoff, 1998. See also Bodansky and Diringer, 2010), Nations may not join binding agreements with which they do not believe they can comply, or, they may undertake more ambitious goals if they know they are not legally bound. Another analysis suggests many reasons for caution in assuming that legally-binding agreements will necessarily be implemented and notes that, on the other hand, nations sometimes follow international norms without entering binding agreements (Bell and Ziegler, *forthcoming*)

From the standpoint of equity, Victor et al. (1998) suggest that differences may be smaller with an approach that is not legally-binding. For example, in a voluntary, pledge and review system, equity issues are implicitly addressed by the fact that each Party undertakes only what it determines to be appropriate for itself. On the other hand, developing countries might argue that this does not resolve the equity issue because industrialized countries are left to their own discretion, rather than obligated to significant commitments, which can only be assured by an LBA with mandatory commitments.

With respect to non legally-binding commitments, Victor (2011) suggests an approach with small groups of countries ("clubs"), with nonbinding agreements focusing on policies countries would adopt, rather than on targets and timetables. The author suggests it is easier for governments to make these kinds of commitments because a government can control whether it will adopt a particular policy. By contrast, he suggests the likelihood of achieving reduction targets is not as readily controlled, presumably because the result is affected by economic and other factors. Governments would say what they will do and also communicate extra steps contingent on what others do. (Victor, 2011) Proponents of this approach say nonbinding agreements are especially advantageous when the ability to achieve goals is uncertain. They suggest that small groups may be able to make greater progress with ambitious non-binding goals. However, they acknowledge that a combination of non-binding and binding instruments may be valuable (Victor, Raustiala, and Skolnikoff, 1998).

Victor (2011) further argues that the long standing approach to development of a climate regime has been misguided. The central flaw, he suggests, is the emphasis on the negotiation of universal, legally-binding agreements, which many believe are more effective because they are taken more seriously by governments. The LBA, he says, does not work well where there is uncertainty, and universality encourages outcomes that reflect the lowest common denominator. A realistic assessment of possible progress on climate, he argues, depends first on understanding which countries want to make progress and which are reluctant. The next step is to understand how to provide incentives to move the reluctant. The way to do this, he says, is to use smaller groups and nonbinding agreements, as described above, with flexibility to accommodate diverse strategies. The small number of parties would facilitate negotiation of contingent deals and the concentration

of benefits provided by the enthusiastic to the reluctant parties, while international emissions trading would reinforce commitments made within clubs. In due course, however, he says that the clubs must expand under the umbrella of the UNFCCC. He suggests that experience with progress in removing trade barriers provides a promising precedent (Victor, 2011).

Another analysis that asserts that a strong, comprehensive climate regime is infeasible, at least for now, offers an explanation of why this is so (Keohane and Victor, 2011). In this view, what has emerged is a regime complex that lies between the extremes of integration and fragmentation (Keohane and Victor, 2011). The authors attribute this to several factors: the interests of Parties are varied, uncertainty makes governments wary of costly commitments and uncertain about benefits, and linkages among the numerous cooperation problems are difficult. Additionally, the climate challenge presents an array of problems with different patterns of interests and severe political difficulties due to numerous players, weak public administration, and a mismatch between immediate costs and future benefits.

Keohane and Victor (2011) also say that their argument does not imply that such a regime complex will solve the climate problem or even that the advantages necessarily outweigh the liabilities, including multiple veto points, stalemate that deters commitment of resources to the problem, and high transaction costs. Rather, proposals leading to fragmentation must be evaluated by such criteria as coherence, accountability, and fairness. They say that the Convention can be used as an umbrella for some functions and might evolve into the core of an integrated system. But they caution against moving too quickly to that end. One reason is that the exclusivity of incentives for investment in institution-building among members of small groups is important when dealing with the climate problem. Thus, they argue for making the best of a difficult situation and working for a well designed regime complex.

Bodansky and Diringer (2010) suggest starting with a pledge and review system. They view this as the beginning of an evolutionary process that, ideally, would eventually achieve an LBA, which we discuss under Approach 3. Their description of the first stage of that process helps portray what a system that is not legally binding would look like. Their system would begin with pledges affirmed by a COP decision and other decisions creating a multilateral fund, mechanisms to address forests, technology and adaptation, and a strengthened system of measurement, reporting and verification (MRV) (Bodansky and Diringer, 2010).

Released at the time of COP-16, this proposal foreshadowed many aspects of the Cancun Agreements. However, the authors went further. Suggesting there was little prospect in the near term of a successor to the Kyoto Protocol, they note the possibility of extending the KP under a political agreement and preserving elements such as the Clean Development Mechanism which could later be incorporated into a structure under a new LBA. The authors also suggest that various issues could be addressed in forums other than the UNFCCC but eventually integrated under a single comprehensive agreement. Examples suggested include the treatment of fossil fuel subsidies by the WTO, the already-launched Agreement on Financing and Quick-Start Measures to Protect Rainforests, and the linking of domestic emissions trading systems (Bodansky and Diringer, 2010).

Analysts who believe a legally-binding second commitment period for the KP is not a near term prospect recognize that this presents special challenges for those seeking to proceed for now without an LBA. The Kyoto Protocol is a legally-binding treaty with mandatory commitments. The question of its future legal form has focused on whether, after the first commitment period ends in 2012, there will be a second commitment period with the same legal form.

Due to time requirements for consideration and approval of amendments, it is increasingly likely that there will be a gap after expiration of the Kyoto Protocol's first commitment period. The UNFCCC Secretariat prepared a Note on the options to address this situation. If agreement were reached on an amendment, but not in time for ratification, the amendment might be provisionally applied pending ratification, to the extent the domestic laws of each state so permit. Also, the parties to the Kyoto Protocol could extend the first commitment period by political agreement, but the operation of aspects of the protocol such as emission reductions could be uncertain (UNFCCC, 2010; FIELD, 2011).[1] Of course, such a scenario involving an agreement that is not legally-binding would be controversial, as many countries, especially developing countries, are strong advocates of continued operation of the Kyoto Protocol in its current legal form under a second commitment period.

Approach 2:

Immediate Adoption of New, Legally-Binding Commitments

Proponents of prompt agreement to new, legally-binding commitments continue to assert this is the most effective approach.

States entering a legally-binding agreement have an obligation to perform in good faith. (Vienna Convention on the Law of Treaties, Article 26). Under the climate regime, new, legally-binding commitments could be established by a ratifiable instrument in the form of an amendment to the UNFCCC or the Kyoto Protocol, or a new protocol under the UNFCCC. In each case, the legally-binding commitments would reflect a government's express intent to comply and the highest level of political will, often requiring ratification by domestic institutions and thus creating the highest expectations of compliance (Werksman, 2010). Agreements that do not meet these criteria may be ethically or politically binding rather than legally-binding. Additionally, the expectations created by an agreement on emissions targets may be strengthened by transparency and accountability procedures and mechanisms under the agreement. (Rajamani, 2009; Werksman, 2010; Raustiala, 2005).

The case for a new, legally-binding outcome in the climate negotiations is concisely stated by FIELD (2011) as needed to create a robust framework, a degree of legal certainty, and support for the rule of law. This organization suggests that a legally-binding agreement generates more thorough preparation, better implementation and compliance, and potentially more leverage for civil society and others to hold governments accountable. It suggests that to avoid legal uncertainties and maintain credibility, it is particularly important that the system for emissions limitations and reduction targets be legally-binding. In areas such as actions by developing countries and adaptation, the authors suggest, arrangements that are not legally binding might be acceptable on a temporary basis. However, the analysis notes that in light of time requirements for notice and adoption of amendments to the Kyoto Protocol, it may be difficult to achieve a legally-binding amendment to the Protocol in time to avoid a gap after the end of the first commitment period at the end of

1 FCCC/KP/AWG/2010/10 20 July 2010; FIELD, Feb. 2011. For further discussion of scenarios for continued functioning of provisions of the Kyoto Protocol after expiration of the first commitment period, see Bodansky, W[h]ither the Kyoto Protocol? Durban and Beyond (forthcoming).

2012.[2] Bodansky and Diringer (2010) assert that even if an LBA is not feasible in the short term, ultimately the needed emission reductions require binding commitments under a comprehensive agreement to ensure coordination and reciprocity.

Proponents of a legally-binding approach have also responded to claims that such a regime is unworkable and that a voluntary and bottom-up approach is better. Rather than relying on unjustified high hopes as critics assert, proponents argue that the comprehensive and legally-binding approach of the KP is founded on the hard logic of collective action. With respect to efficiency, for example, reducing emissions is more expensive in a fragmented regime or one lacking an LBA with specific and mandatory legally-binding commitments because fewer Parties are involved, or reductions cannot be achieved where they are least expensive. Also, proponents argue broader inclusion is fairer and the participation of small and vulnerable countries is a force for higher ambition. Common MRV and accounting rules are more likely to result in compliance and, with an LBA, more likely in many countries to facilitate implementation under domestic law (Hare et al., 2010[3]).

A recent analysis by Rajamani (2011) suggests that many countries favor new, legally-binding commitments under the Convention. Most developed countries favor a single integrated instrument replacing the Kyoto Protocol, while the small island states favor an LBA with legally-binding commitments that complements the KP. By including countries from both current tracks, many proponents of these scenarios seek to ensure inclusion of the United States, which has made clear that it will not become a Party to the Kyoto Protocol. However, China, India and some other developing countries oppose a new, binding instrument on the Convention track because they fear such a move will undermine the Kyoto Protocol. Specifically, they fear a UNFCCC instrument will take a bottom-up approach, attenuate the distinction between developed and developing countries, and selectively adopt provisions from the KP, leaving behind the less politically palatable ones such as reduction targets and compliance. The denouement could be the withering away of the Kyoto Protocol (Rajamani, 2011). For a forceful statement of this view by APRODEV, an association of development and humanitarian aid organizations in Europe, see "Communique to Heads of delegations" (Bernstein, 2010). For discussion of the possibilities for compromise in light of the strong considerations of equity underlying developing country support for the balance of responsibilities among the Parties to the Kyoto Protocol, see Rajamani, 2009.

Parties and negotiating groups stated their positions at the June 2011 intercessional in Bonn, Germany. The Group of 77 and China sought to extend the "climate regime for the next five years, including a second commitment period for the Kyoto Protocol with binding obligations of high levels of ambition" demanding a decision in Durban in December 2011.[4] The Group added that the protocol is "the only legally-binding instrument" using effective means; and there is a need to preserve the protocol and its "stringent rules" for MRV, its flexibility mechanisms and its compliance system.[5]

2 FIELD, Feb. 2011. See FIELD, page 5 for a summary of proposals submitted to the UNFCCC for new legal instruments. See also AWG-KP, Revised proposal by the Chair to facilitate negotiations. FCCC/KP/AWG/2011/CRP.1, 17 June 2011. For a framework for Parties to capture the full spectrum of mitigation efforts and enable enhancements over time, see "Legal Form of a Post-2012 Climate Change Outcome, National Schedules" (Australian Government).

3 See also: Winkler, H. and Beaumont, J. 2010."Fair and Effective Multilateralism in the post-Copenhagen climate negotiations," Climate Policy. Vol. 10 (6).

4 Press Release, Office of the Chair of the G77, June 9, 2011.

5 Press Release, Group of 77, June 17, 2011. See also report of the AWG-KP closing plenary, Earth Negotiations Bulletin, June 20, 2011.

The representative of the African Group also stated during the closing plenary in Bonn on the Kyoto Protocol that agreement on the KP's second commitment period in Durban is essential, noting that without that Annex I Parties are not subject to a legally binding instrument for emission reductions. The representative stressed the importance of separation between the two negotiating tracks and the need to avoid any use of the LCA to delay negotiations on the KP's second commitment period. He called for a detailed work program to adopt the second commitment period in Durban.[6]

Many developing countries view progress on the Kyoto Protocol track as necessary for progress on the Convention track, with a legally-binding agreement on the latter complementary to a Kyoto Protocol second commitment period. At the same time, many developed countries consider that a predicate for continuation of the Kyoto Protocol is progress on the Convention track in making the Cancun Agreements operational and in taking steps towards a new, legally-binding agreement including all major emitters (ENB, 2011).[7]

Also in Bonn, the Climate Action Network-International, a worldwide network of hundreds of civil society organizations, urged that a Kyoto Protocol second commitment period be established at Durban. The group emphasized the need for binding targets and to preserve the architectural elements of the protocol "to ensure that mitigation commitments are legally-binding and have environmental integrity." Among other things, these elements include the aggregate goal for developed countries, consideration of science and equity, MRV, compliance, and common accounting. CAN-I also said that Durban should result in a mandate to conclude a complementary, legally-binding agreement on the LCA track that would include mitigation commitments by the United States, financial commitments by developed countries, and developing country action. [8]

Approach 3:

Achieving New, Legally-Binding Commitments as Soon as Possible–Strengthening the Components of Legal Character

In light of the potential difficulties for a prompt resolution of the impasse over establishing new, legally-binding commitments at Durban, some commentators suggest an alternative way forward that maintains the goal of new, legally-binding commitments. They suggest an analytical approach to help achieve that goal as quickly as possible by addressing all the components of the legal character of an agreement. Here, we discuss the components of the legal character of an LBA and how that analysis assists in charting a path for the strengthening of agreements that are not legally-binding or do not have legally-binding commitments, with a view to achieving an LBA with specific and mandatory, legally-binding commitments. We also explore how that analysis illuminates the decision regarding the future of the Kyoto Protocol.

6 "Third World Resurgence," Third World Network, No. 250, June 2011, pp 15-17, available at: http://www.twnside.org.sg/title2/resurgence/2011/twr250.htm. Last accessed October 3, 2011.

7 Earth Negotiations Bulletin, June 20, 2011. See also Note by the Facilitator: summary of view of Parties at informal consultations, Continued discussion of legal options, AWG-KP, 16 June 2011; and "Strong disagreements over way forward on legal options group," TWN Bonn News Update 15 June 2011, available at:http://www.twnside.org.sg/title2/climate/news/Bonn08/TWN_bonn8.up22.pdf. Last accessed October 3, 2011.

8 CAN-I "Durban Expectations," June 2011.

Bodansky and Diringer (2010) note that the emergence of binding legal regimes as the result of a process of evolution is a familiar occurrence. They point out that it is fairly common for international regimes to begin as nonbinding agreements that may evolve into an LBA. This is often due to initial uncertainties regarding the problem and solutions, and a need for experience and confidence building (See also Leal-Arcas, 2011). Another discussion of regime development, focusing on the evolution of the GATT into the WTO, argues that the WTO experience provides lessons for a climate regime in gradual consensus building in expanding circles and multilevel governance within an overall framework (Cottier, *forthcoming*). As noted above, in the case of climate change, Bodansky and Diringer say the emission reductions will ultimately likely require legally-binding commitments under a comprehensive agreement (Bodansky and Diringer, 2010; see also Cao, 2010). In light of the difficulties in achieving a new LBA with specific and mandatory, legally-binding commitments, Approach 3 goes beyond describing the merits of agreements that are not legally-binding and those that are and asks the question: What are the aspects of an LBA that people value? We analyze this by considering the four components of legal character of an international agreement as described earlier.

By going beyond the binary approach to legal form (binding versus nonbinding) and calling attention to the components of legal character, Approach 3 shows how the benefits of law can be maximized. Thus, even when the commitments under an agreement are not immediately legally-binding, the various components of legal character under the agreement can be strengthened with the ultimate goal of a legally-binding agreement with specific and mandatory, legally-binding commitments. The UNFCCC is an LBA with weak commitments. Steps have been taken to strengthen those commitments at Cancun, so far through measures that are at most politically binding. (Some undertakings are so qualified they can only be considered binding politically in a limited sense or not at all.) An amendment to the treaty would likely be required to make the commitments legally-binding. However, the COP can strengthen the components of the legal character of the agreement through decisions, such as the specificity and prescriptiveness of the commitments and the procedures and institutions for transparency and accountability (Werksman, 2010). With certain narrow exceptions, such as decisions on certain data under the KP, COP decisions under the UNFCCC are not legally binding, but if followed by the parties may have de facto significance (Rajamani, 2009).

In a scenario for phasing in new, legally-binding commitments, the specificity and ambition of commitments as well as the accountability procedures and institutions would be strengthened to improve implementation and render nonbinding commitments fairly effective, and then prepare the ground for evolution into binding commitments (Werksman, 2010; Werksman and Herbertson, 2010; Rajamani, 2009). By taking this approach, it is possible to strike a balance that will maximize ambition without sacrificing participation and adequate scope, while continuing to move over time towards a legally-binding agreement with new, legally-binding commitments. Likewise, when it comes to equity, this approach helps to balance the interests of developed and developing countries without resorting to a completely voluntary arrangement. For example, under the Cancun Agreements, steps were taken to strengthen measuring, reporting, and verification (MRV) in a manner that distinguished between the obligations of developed and developing countries.

The first component of legal character is *legal form* and whether the agreement is legally-binding or not. As stated above, the UNFCCC is an LBA with weak commitments. Thus, the mere existence of an LBA does not necessarily tell us much. To fully understand the agreement and how it might be possible to establish new, legally-binding commitments, it is still important to consider all the elements of legal character.

The second component of legal character is *the mandatory or discretionary character of the commitments*, whether they are expressed in obligatory language. This is a site of impasse in achieving a new LBA as Parties disagree on whether and how to reflect differentiation between developed and developing countries with respect to commitments. As mentioned earlier, under the principle of common but differentiated responsibility (CBDR), most developing countries have maintained that developed countries should be subject to binding mitigation commitments but developing countries should not.

This stalemate was not resolved at Cancun, but the Cancun Agreements say that developed country Parties must take the lead in combating climate change, and they take note of quantified economy-wide targets to be implemented by those Parties (Cancun Agreements, AWG-LCA Outcome, paragraphs 35 and 36). By contrast, with respect to developing country Parties, the Cancun Agreements take note of nationally appropriate mitigation actions aimed at deviation from business as usual, supported by technology, financing, and capacity-building (Cancun Agreements, AWG-LCA Outcome, paragraphs 48 and 49).

Thus, the Cancun Agreements establish some differentiation in what remains a context that is not legally-binding. The commitments of developed countries might be characterized as commitments of result while those of developing countries might be characterized as commitments of conduct (Werksman and Herbertson, 2010). This may provide the basis for a formulation that could be incorporated into an LBA with legally-binding commitments that would not be possible if the discussion remains focused on the binary formula of mandatory versus voluntary.

The third component of legal character is *the specific and prescriptive nature of commitments*, that is, whether they are stated with enough detail and clarity to accurately assess ambition and compliance. Here it is necessary to formalize targets and actions and to strengthen assurances that performance will be assessed against their achievement. What is needed is a set of time-bound targets expressed in common format, limiting GHG emissions in a manner consistent with achieving the objectives of the Convention. Given the conditions and ambiguities up to this point in the pledges under the UNFCCC, a process is needed to clarify, vet, and strengthen them, along with a science review as discussed earlier in this working paper. In fact, proponents of an LBA should be careful to improve the prescriptive content of commitments to avoid locking into a new LBA with specific and mandatory, legally-binding commitments unsatisfactory targets and actions.

The fourth component of legal character is that of *institutions, procedures and mechanisms* to hold Parties accountable for commitments through reporting, verification, and compliance procedures. Although countries have so far not achieved new, legally-binding commitments, many assert they are proceeding with binding domestic action. The continued strengthening under the UNFCCC of measuring, reporting, and verifying of targets and actions would enhance accountability and assessment of progress against targets and actions. More broadly, strengthening can focus on institutions and procedures to ensure quality of data, harmonize standards and policies, coordinate carbon markets, and review Parties' performance.

Taking stock of the prospects for Durban, Approach 3 suggests that while near term progress on specific and mandatory, legally-binding targets and actions may be difficult, through the COP the Parties can strengthen the components of legal character already within the Convention. This involves focusing on the specificity and ambition of targets and actions and strengthening institutions and procedures for transparency, accountability, and harmonization. As the components of the legal character of the UNFCCC are strengthened, the technology cooperation and related elements of the Convention and allied multilateral

institutions and bilateral relations can progress. Together, these can build confidence and increase the prospects for concluding a new LBA with legally-binding commitments. As part of this evolution, a formal process for discussion could help focus attention on issues that need to be addressed to achieve the LBA and to establish a work plan.

As steps are taken to strengthen the climate regime, we have seen that a number of proponents of an approach that is not legally-binding argue for a decentralized system, perhaps because aspects of the current approach take on the character of a voluntary, decentralized regime. Under Approach 1 above, we discussed the argument that work on the climate challenge should presume a regime complex rather than putting most eggs in the basket of the UNFCCC. That analysis suggested various advantages of a decentralized system, including flexibility and the advantage of addressing some aspects of the climate problem in small groups. The authors also noted, however, various difficulties with the more decentralized approach, including multiple veto points, potential paralysis, and high transaction costs. Approach 3 suggests that steps can be taken under the UNFCCC towards a new LBA that would avoid a stalemate over the legal form issue by building on and improving the institutions and procedures of the Convention. In this manner, it may be possible to gain the advantages of flexibility without incurring the risks of a highly fragmented system.

Proponents of an agreement that is not legally-binding typically suggest it should eventually evolve into a legally-binding agreement. They might point out that while the commitments made at Cancun are not legally-binding, they have been undertaken in a process under the legally-binding UNFCCC and are buttressed by procedures and institutions of the UNFCCC which were strengthened incrementally at Cancun. The commitments made at Cancun can be strengthened further and made more effective, even if new, legally-binding commitments are not yet practical. The progress at Cancun was very modest, given that commitments are merely noted and that many of the pledges carried over from Copenhagen are conditional. Whether Cancun launched a process to phase in an enhanced agreement and perhaps eventually an agreement with new, legally-binding commitments depends on strong follow-up.

Analysis of the components of legal character also helps to highlight how various aspects of the Kyoto Protocol function to support effective implementation. This in turn helps deliberation on the next steps for the KP, showing why certain aspects are valuable and raising the question of how those functions will be addressed in the next phase.

The Kyoto Protocol has quantified emissions limitations and reduction objectives (QELROs) for Annex I parties that are specific, time-bound "obligations of result." Annex I parties have "assigned amounts" of allowed GHG emissions and can trade among themselves under the "flexibility" mechanism of the Kyoto Protocol, which reduces the cost of staying within the assigned amounts. Parties believed that the specific commitments and flexibility mechanisms required a robust compliance system to ensure accountability and predictability, which led to strong procedures for expert review of developed country inventories and national communications. Expert Review Teams are authorized to conduct in-country visits, use third-party information, and pose questions about implementation (Werksman and Herbertson, 2010).

Considering the components of legal character, we can see that with the Kyoto Protocol, legally-binding form, specific content, and strong institutions and procedures were linked to environmental integrity, accountability and the stability and predictability needed for the carbon market (Werksman and Herbertson, 2010). This picture coincides with the functions of the Kyoto Protocol that commentators have identified: high ambition, transaction costs reduced through economies of scale, better efficiency compared with an approach based on voluntary

pledges, improved transparency through MRV and accounting rules, and improved environmental integrity due to more likely disclosure of bad accounting choices (Hare et al., 2010).

Highlighting the components of the Kyoto Protocol challenges decisionmakers to preserve these functions in the current legal form, or show how they will be achieved with equal effectiveness in some alternative instrument or form.

CONCLUSION

The starting point for this paper is a stark reality: multiple studies have demonstrated that the level of climate mitigation pledged by countries to date within the UNFCCC is, in aggregate, insufficient to limit temperature increases to 2˚ C above preindustrial levels, let alone 1.5˚ C. But there are a range of ideas that could help us correct course and achieve the objective of the Convention to stabilize greenhouse gas concentrations in the atmosphere at a safe level for people and ecosystems. These ideas, contained in multiple proposals that have been reviewed in this paper, address five of the key issues for the design of an international regime capable of delivering outcomes consistent with the objective of the Convention:

Key issue 1:
Options under the UNFCCC to increase ambition beyond existing commitments and actions

Key issue 2:
Options outside the UNFCCC to increase ambition beyond existing mitigation commitments and actions

Key issue 3:
Means for sharing the mitigation effort under the UNFCCC

Key issue 4:
The role of various actors in tracking country performance on mitigation

Key issue 5:
The legal form of a future climate agreement

While the paper does not rank or endorse the proposals examined in this report, it assesses them against the criteria of adequacy, equity and implementation.
The following cross-cutting points stand out from our review:

> There are a number of pathways for moving towards the desired level of ambition. A variety of approaches exist for doing so incrementally.

This paper shows that a menu of options is available based on proposals by governments, NGOs and academics for designing a climate regime capable of delivering adequate mitigation action. Scaled up action on the part of national governments will be needed, as well as the mobilization of a constellation of public and private sector actors at the international, national and sub-national level. COP17 in Durban and the Rio+20 Summit present two near-term opportunities to implement some of the ideas in this paper. The options reviewed range from increasing the scope of national commitments to drawing on institutions and actors available in other regimes to generate greater ambition. Most of the approaches presented in this paper can be pursued in a complementary manner. Although the challenges are often complex, it is sometimes possible to break them down by component and address such components separately over time. This is true for example of proposals for gradually scaling up mitigation actions or for making progress on the various elements of a legally-binding instrument with specific and mandatory, legally-binding commitments.

We should build on the progress already made and on existing institutions

In the agreements reached at Cancun in December 2010, Parties exhibited their intention to tackle global climate change by setting a long-term goal and committing to implement mitigation targets and actions. If implemented and scaled up over time, these actions can form a foundation to an adequate regime in the future. In addition, it is possible to build upon existing UNFCCC processes to fulfill important functions in the future climate regime. For example, the paper notes how a review under the UNFCCC of aggregate progress towards the two degree goal can facilitate an increase in the ambition of countries' commitments. The UNFCCC can also provide a strengthened institutional framework, possibly binding in nature, to anchor, coordinate and review the commitments of countries.

Coordinated action should also take place across the broader climate regime

In addition to the important role that the UNFCCC will likely play in a future climate regime, the proposals reviewed in this paper reveal that initiatives with a positive impact on the climate can occur outside the UNFCCC as well. There is a constellation of actors with vested interests in ensuring a stable and sustainable climate whose capacities and specialized focus can contribute to climate governance, emission reductions, and adaptation investment. These include multilateral institutions, bilateral and plurilateral initiatives, national governments, businesses, states, cities and citizens, who together can form the broader stage for action. These actors have begun to make investment decisions, national development strategies, and changed consumer preferences to gradually build low-carbon, climate resilient economies and societies. Galvanizing and coordinating the actions of this broader constellation of actors, as a complement to the UNFCCC and in support of its objectives, can help build an effective climate change regime.

APPENDIX I

GLOSSARY OF TERMS

Accounting:
The calculation of an entity's (e.g. country, business) greenhouse gas emission reductions and enhanced removals.

Ambition:
The positive contribution of mitigation actions in meeting the adequacy standard set out in this paper.

Climate regime:
The set of international, national and sub-national institutions and actors involved in addressing climate change.

Common but differentiated responsibilities (CBDR) and respective capabilities (RC):
Refers to the principle of common but differentiated responsibilities and respective capabilities found in article 3 of the UNFCCC.

Compliance:
UNEP Guidelines on Compliance with and Enforcement of Multilateral Environment Agreements defines compliance in two ways (Nairobi, 2002). Part I defines compliance from an international perspective as "the fulfillment by the contracting Parties of their obligations under a multilateral environmental agreement and any amendments to the multilateral environmental agreement." Part II defines compliance from a domestic perspective as "the state of conformity with obligations, imposed by a state, its competent authorities and agencies on the regulated community, whether directly or indirectly through conditions and requirements, licenses and authorizations, in implementing multilateral environmental agreements."

Components of legal character:
The four components of legal character are the legal form of the agreement (whether legally-binding or not); the mandatory or discretionary nature of the commitments (whether the commitments are expressed in obligatory language); the specific and prescriptive nature of the commitments; and the institutions, procedures, and mechanisms designed to hold Parties accountable for these commitments. (Werksman, 2010)

COP:
Conference of the Parties to the United Framework Convention on Climate Change.

COP/MOP:
Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol.

Effort sharing:
Effort sharing refers to the apportionment of global mitigation effort among countries or groups of countries in an attempt to achieve adequacy.

Flexibility mechanisms:
Mechanisms that allow countries to meet their mitigation targets by reducing emissions or removing carbon from the atmosphere in other countries. Two examples are the Clean Development Mechanism and Joint Implementation under the Kyoto Protocol.

Forcings:
A climate forcing is an adjustment in the amount of radiation from the sun that reaches the Earth's atmosphere. It can be a negative or positive change. Climate forcing agents include greenhouse gases, aerosols, and particulate matter.

Global warming potential (GWP):
the cumulative radiative forcing effects of a gas over a specified time horizon resulting from the emission of a unit mass of gas relative to a reference gas.

Historical responsibilities:
Refers to the fact that developed countries have been the source of the majority of past emissions of greenhouse gases and therefore should take the lead in addressing climate change.

International Transaction Log (ITL):
The ITL verifies transactions proposed by registries to ensure they are consistent with rules agreed under the Kyoto Protocol. Each registry sends transaction proposals to the ITL, which checks each proposal and returns to the registry its approval or rejection. Once approved, registries complete the transaction. In the event that a transaction is rejected, the ITL sends a code indicating which ITL check has been failed and the registry terminates the transaction. (UNFCCC)

Kyoto basket of greenhouse gases:
The six main greenhouse gases under the scope of the Kyoto Protocol include Carbon dioxide (CO_2), Methane (CH_4), Nitrous oxide (N_2O), Hydrofluorocarbons (HFCs), Perfluorocarbons (PFCs), and Sulphur hexafluoride (SF6). (UNFCCC)

LDCs:
Least Developed Countries.

Legally binding agreement (LBA):
A legally binding agreement is one that governments have entered with express intent to comply and the highest level of will, often requiring ratification by domestic institutions and thus creating the highest expectations of compliance. (Werksman, 2010) Agreements that do not meet these criteria may be ethically or politically binding rather than legally binding. (Rajamani, 2009)

Measurement, reporting and verification (MRV):
MRV refers to the processes and institutions to measure, report, and verify country commitments and actions on mitigation as well as the financial, technology, and capacity building support provided to developing countries.

Performance tracking:
The process of assessing the extent to which countries individually and collectively are meeting agreed-upon goals.

SIDS:
Small Island Developing States.

UNFCCC:
United Nations Framework Convention on Climate Change.

APPENDIX II

BIBLIOGRAPHY AND REFERENCES

Key Issue 1:

Options Under the UNFCCC to Increase Ambition Beyond Existing Commitments and Actions

Andersen, S. and Sarma, K. 2010.
"Making Climate Change and Ozone Treaties Work Together to Curb HFC-23 and Other "Super Greenhouse Gases."
Natural Resources Defense Council

Australia. 2009
"Submission by Government of Australia to the UNFCCC", 2009,
Available at http://unfccc.int/resource/docs/2009/cop15/eng/05.pdf.
Last accessed October 3, 2011.

Bell, R. and Ziegler, M. *forthcoming*.
Reimagining a climate agreement: lessons from managing other challenges that transcend national boundaries,
World Resources Institute, Washington DC. Forthcoming.

Bice, K. et al. 2009.
Black Carbon: A Review and Policy Recommendations
Woodrow Wilson School of Public Affairs, Princeton University

Bodansky, D. 2007.
International Sectoral Agreements in a Post-2012 Climate Framework.
Working Paper, Pew Center on Global Climate Change, 2007.

Bond, T. et al. 2005.
"Can Reducing Black Carbon Emissions Counteract Global Warming?"
Environmental Science and Technology, July 2005.

Cosbey, A. et al. 2005.
Realizing the Development Dividend.
International Institute for Sustainable Development.

Daviet, F, et al. 2009.
Forests in the Balance Sheet: Lessons from Developed Country Land Use Change and Forestry Greenhouse Gas Accounting and Reporting Practices.
Working Paper, World Resources Institute. Washington DC.

den Elzen, M., Olivier, J., and Berk, M. 2007.
An analysis of options for including international aviation and maritime emissions in a post-2012 climate mitigation regime.
Netherlands Environmental Assessment Agency.

European Union. 2011.
A Roadmap for moving to a competitive low carbon economy in 2050.
Brussels, March.

Faber, J. et al. 2007.
Climate Change Scientific Assessment And Policy Analysis: Aviation and Maritime Transport in a Post 2012 Climate Policy Regime.
Netherlands Research Programme on Scientific Assessment and Policy Analysis, April 2007.

Grieshop, A. et al. 2009.
"A black carbon mitigation wedge,"
Nature Geoscience. Volume 2, August.

Hare, W. et al. 2010.
"The architecture of the global climate regime: a top-down perspective,"
Climate Policy. Vol. 10 (6).

IPCC. 2007.
Fourth Assessment Report: climate change 2007. – synthesis report.
Available at: http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.
Last accessed October 3, 2011.

IPCC. 2006.
Guidelines for national greenhouse gas inventories.
Available at: http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html.
Last accessed October 3, 2011.

Levin, K. 2010.
Remedying Discord in the Accord: Accounting Rules for Annex I Pledges in a Post-2012 Climate Agreement.
Working Paper, World Resources Institute. Washington, D.C.

McKiernan, C. and Loftus-Farren, Z.. 201.
Submission to UNFCCC pursuant to FCCC/AWGLCA/2010/L.7,
paragraphs 93-94.

Molina, M. et al. 2009.
Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions to complement cuts in CO_2 emissions National Academy of Sciences, 2009.
December, volume 106, No. 49.

National Academy of Sciences. 2010.
Advancing the science of climate change.
The National Academies Press. Washington DC.
Available at: http://www.nap.edu/catalog.php?record_id=12782.
Last accessed October 3, 2011.

Pan, J. 2003.
Human development goals with low emissions.
The Beijing Academy of Social Sciences.

Schlamadinger, B. et al. 2007.
"Options for Including Land Use in a Climate Agreement Post-2012: Improving the Kyoto Protocol Approach,"
Environment Science & Policy. June, volume 10, issue 4, pages 295-305.

Shine, K. et al. 2007.
"Comparing the effect of emissions of short- and long-lived climate agents,"
Philosophical Transactions of the Royal Society, July, vol. 365 no. 1856.

UNEP. 2010.
The Emissions Gap Report: Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2 or 1.5°C?

UNEP / WMO. 2011.
Integrated Assessment of Black Carbon and Tropospheric Ozone: summary for Decision Makers.

Wara, M. et al. 2006.
Measuring the Clean Development Mechanism's Performance and Potential,
Program on Energy and Sustainable Development,
Stanford University.

WBGU. 2011.
World in transition: a social contract for sustainability.
German Advisory Council on Global Change (WBGU)

World Bank. 2010.
State and trends of the carbon market 2010.
May, Washington DC.

Key Issue 2:

Options outside the UNFCCC to Increase Ambition Beyond Existing Mitigation Commitments and Actions

Aasrud, A. et al. 2009.
Sectoral Market Mechanisms: Issues for negotiation and domestic implementation.
International Energy Agency. 2009.

Abbott, K. 2011.
The transnational regime complex for climate change.
Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1813198.
Last accessed October 3, 2011.

Aldy, J. and Stavins, R. (eds). 2010.
Post-Kyoto International Climate Policy Research from the Harvard Project on International Climate Agreements.
Cambridge University Press.

Allcott, H. and Mullainathan, S. 2010.
"Behavior and Energy Policy". Science.
March 5. 327:5970

Au, B. et al. 2011.
Beyond a Global Deal: a UN+ approach to climate governance.
Global Governance 2020.
Available at: http://www.gg2020.net/fileadmin/media/gg2020/GG2020_2011_Climate_Beyond_Global_Deal.pdf.pdf.
Last accessed October 3, 2011.

Barnes, P. et al. 2008.
Creating an Earth Atmospheric Trust: a system to control climate change and reduce poverty.
Available at: http://www.synapse9.com/ref/EATv4-ScienceArticle.pdf.
Last accessed October 3, 2011.

Baron, R. and Bygrave, S. 2002.
Towards international emissions trading" design implication s for linkages.
IEA/OECD.

Barrett. 2008.
Climate change negotiations reconsidered Progressive Governance, London.
Available at: http://tria.fcampalans.cat/images//Scott_Barrett.pdf.
Last accessed October 3, 2011.

Barrett, S. 1993.
Self-enforcing international environmental agreements.
CSERGE Working Paper, 92-34.

Barrett, S. and Stavins, R. 2003.
Increasing participation and compliance in international environmental agreements.
Belfer Center, Harvard University.

Biermann F. et al. 2009.
"The fragmentation of global governance architectures: a framework for analysis" in Global Environmental Politics, 9:4.

den Elzen, M., Olivier, J., and Berk, M. 2007.
An analysis of options for including international aviation and maritime emissions in a post-2012 climate mitigation regime.
Netherlands Environmental Assessment Agency.

Bodansky, D. and Diringer, E. 2010. E.
The Evolution of Multilateral Regimes: Implications for Climate Change.
Pew Center Global Climate Change Policy Paper, December.

Bodansky, D. 2011.
A tale of two architectures.
Available at: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1773865.
Last accessed October 3, 2011.

Bodansky, D. 2007.
International sectoral agreements in a post-2012 climate framework.
Pew Center Global Climate Change Policy Paper.

Bodansky, D. et al. 2004.
International climate efforts beyond 2012: a survey of approaches.
Pew Center on Global Climate Change, December.

Bond, T. et al. 2005.
"Can Reducing Black Carbon Emissions Counteract Global Warming?"
Environmental Science and Technology, July 2005.

Bradley, R. et al. 2007.
Slicing the pie: sector-based approaches to international climate agreement: issues and options.
World Resources Institute, Washington DC.

Bradley, R. et al. 2008.
Leveling the carbon playing field.
World Resources Institute, Washington DC.

Buchner, B. and Carraro, C.. 2004.
Economic and Environmental Effectiveness of a Technology-based Climate Protocol.
Working Papers Fondazione Eni Enrico Mattei, 61.

Butti, L. 2011.
"The tortuous road to liability: a critical survey on climate change litigation in Europe and North America,"
Sustainable Development Law and Policy, WCL, 2011:2.

Cameron, E. 2011.
Development, climate change, and human rights: from the margins to the mainstream?
Social Development Working Papers, World Bank.
Paper No. 123, March.

Cameron, E. 2010.
"Human rights and climate change: moving from an intrinsic to an instrumental approach,"
Georgia Journal of International and Comparative Law, 38:673.

Cao, J. 2010.
Beyond Copenhagen: Reconciling international fairness, economic development and climate protection.
Tsinghua University/Belfer Center, Harvard University.

Chatham House, E3G. 2007.
Changing Climates: Interdependencies on energy and climate security for China and Europe.
Chatham House, London.

The CNA Corporation. 2007.
National security and the threat of climate change.

Cole, D. 2011.
From global to polycentric climate governance
EUI Working Papers, 30.

Council on Foreign Relations (CFR). 2010.
The global climate change regime.
Available at: http://www.cfr.org/climate-change/global-climate-change-regime/p21831.
Last accessed October 3, 2011.

Dasgupta, P. and Taneja, N. 2010.
"Trade, technology transfer and climate change".
Economic & Political Weekly, Jan. 2010.

Dutt, G. 2009.
"A climate agreement beyond 2012"

Economic & Political Weekly, Nov. 2009.
EU-Africa Joint Declaration on Climate Change. 2008.
11th Ministerial Meeting of EU Troika and African Ministers, Addis Ababa.

E3G. 2007.
EU Energy Strategy Review: Driving investment in clean and secure energy.
Available at: http://www.e3g.org/images/uploads/E3G_EU_Strategic_Energy_Review.pdf.
Last accessed October 3, 2011.

Foresight. 2011.
The future of food and farming.
Available at: http://www.bis.gov.uk/assets/bispartners/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf.
Last accessed October 3, 2011.

Foundation for the Economics of Sustainability (FEASTA). 2008.
Cap and Share: A Fair Way to Cut Greenhouse Emissions.
Available at: http://www.feasta.org/documents/energy/Cap-and-Share-May08.pdf.
Last accessed October 3, 2011.

Ghosh, A. 2010.
Making climate change look like trade: questions on incentives, flexibility and credibility
Centre for Policy Research, New Delhi.

GLOBE. 2011.
Climate change legislation: laws, patterns and trends
Global Legislators Organisation GLOBE International.
Available at: http://www.lwec.org.uk/sites/default/files/GLOBE-CLIMATE-LEGISLATION-STUDY[1].pdf.
Last accessed October 3, 2011.

Grieshop, A. et al.
"A black carbon mitigation wedge,"
Nature Geoscience. August 2009. Volume 2.

Hare, W. et al.
"The architecture of the global climate regime: a top-down perspective,"
Climate Policy, 2010 Vol. 10 (6).

Hartley, N. and Wood, C. 2004.
"Public participation in environmental impact assessment—implementing the Aarhus Convention".
Environmental Impact Assessment Review 25: 4. 2005

Houser, T. 2010.
A role for the G20 in addressing climate change?
Peterson Institute of International Economics, Washington DC. October 2010.

Houser, T. 2010.
Less can be more: protecting Cancun's fragile victory.
Peterson Institute for International Economics, Washington DC. December 2010.

International Institute for Sustainable Development (IISD). 2008.
The World Trade Organization and multilateral environmental agreements.
Available at: http://www.iisd.org/pdf/2010/matrix_wto_meas.pdf.
Last accessed October 3, 2011.

IPCC. 2007.
Fourth Assessment Report: climate change 2007. – synthesis report.
Available at: http://www.ipcc.ch/publications_and_data/publications_ipcc_fourth_assessment_report_synthesis_report.htm.
Last accessed October 3, 2011..

IPCC. 1999.
Aviation and the global atmosphere.
Available at: http://www.ipcc.ch/pdf/special-reports/spm/av-en.pdf.
Last accessed October 3, 2011.

International Council on Human Rights Policy. 2008.
Climate change and human rights: a rough guide.
Available at: http://www.ichrp.org/files/summaries/35/136_summary.pdf.
Last accessed October 3, 2011.

Jackson, R. 2008.
The Carbon Board Scheme.
Available at: http://www.ross-jackson.com/rj/21987/46928/.
Last accessed October 3, 2011.

Keohane, R. and Victor, D.. 2011.
The regime complex for climate change
The Harvard Project on International Climate Agreements, Discussion Paper 10-33.

Levi, M. and Michonski, K.. 2010.
Harnessing international institutions to address climate change.
Council on Foreign Relations.
Available at: http://www.cfr.org/climate-change/harnessing-international-institutions-address-climate-change/p21609.
Last accessed October 3, 2011.

Mace, M.
"International Treaties" in Schneider et al. (eds) 2009.
Climate change science and policy Island Press.

Mayer, W. 2008.
Reduce and Invest: reduce the CO_2 burden in the atmosphere and invest in a sustainable economy.
Available at: http://www.usitawi.org/fileadmin/redaktor/projekte/reduce_invest/en_konzeptskizze.pdf.
Last accessed October 3, 2011..

Molina, M. et al. 2009.
"Reducing abrupt climate change risk using the Montreal Protocol and other regulatory actions to complement cuts in CO_2 emissions,"
Proceedings of the National Academy of Sciences. December, Volume 106, No. 49.

Oxfam. 2008.
Climate wrongs and human rights: putting people at the heart of climate change policy.
Available at: http://www.oxfam.org/policy/bp117-climate-wrongs-and-human-rights.
Last accessed October 3, 2011.

Rayner, S. 2010.
"How to eat an elephant: a bottom-up approach to climate policy".
Climate Policy. 2010:10

Saran, S. 2010.
"Irresistible forces and immovable objects: a debate on contemporary climate politics"
Climate Policy. 10.

Schwarte, C. and Byrne, R.. 2010.
International climate change litigation and the negotiation process.
Working paper at the Foundation for International Environmental Law and Development (FIELD).

The Access Initiative. 2011.
What we want from Rio+20: civil society organizations worldwide voice their demands for environmental democracy.
World Resources Institute, Washington, DC.

Tickell. 2007.
Kyoto 2: How to manage the global greenhouse
Zed Books, London.
Available at: http://www.kyoto2.org/page0.html.
Last accessed October 3, 2011.

UNCEB Secretariat. 2008.
Acting on climate change: the UN system delivering as one.
Available at: http://www.un.org/climatechange/pdfs/Acting%20on%20Climate%20Change.pdf.
Last accessed October 3, 2011.

UNEP / WMO. 2011.
Integrated Assessment of black carbon and tropospheric ozone.
Available at: http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_SDM.pdf.
Last accessed October 3, 2011.

UN. 2007
Human Development Report. 2007-2008.
Available at: http://hdr.undp.org/en/reports/global/hdr2007-2008/.
Last accessed October 3, 2011.

UN Office of the High Commissioner for Human Rights (OHCHR). 2009.
Study on the relationship between climate change and human rights.
Available at: http://www2.ohchr.org/english/issues/climatechange/study.htm.
Last accessed October 3, 2011.

United States National Security Strategy (US NSS). 2010.
The White House, Washington, DC.
Available at: http://www.whitehouse.gov/sites/default/files/rss_viewer/national_security_strategy.pdf.
Last accessed October 3, 2011.

Victor D. 2011.
Global Warming Gridlock, Creating More Effective Strategies for Protecting the Planet.
Cambridge University Press.

WBGU. 2008.
Solving the climate dilemma: The budget approach.
German Advisory Council on Global Change (WBGU).
Available at: http://www.wbgu.de/fileadmin/templates/dateien/veroeffentlichungen/sondergutachten/sn2009/wbgu_sn2009_en.pdf.
Last accessed October 3, 2011

Weisbach, D. 2010
Negligence, Strict Liability, and Responsibility for Climate Change
Belfer Center, Harvard University.

Winkler, H. and Beaumont, J. 2010.
"Fair and Effective Multilateralism in the post-Copenhagen climate negotiations,"
Climate Policy, Vol. 10 (6).

World Bank. 2011.
Cities and Climate Change: an urgent agenda.
Available at: http://siteresources.worldbank.org/INTUWM/Resources/340232-1205330656272/CitiesandClimateChange.pdf.
Last accessed October 3, 2011.

World Bank. 2008.
Development and climate change: a strategic framework for the World Bank Group – Report to the Development Committee.
Available at: http://siteresources.worldbank.org/DEVCOMMINT/Documentation/21928837/DC2008-0009(E)ClimateChange.pdf.
Last accessed October 3, 2011.

WTO / UNEP. 2009.
Trade and climate change: WTO-UNEP Report.
Available at: http://www.wto.org/english/res_e/booksp_e/trade_climate_change_e.pdf.
Last accessed October 3, 2011.

Zhang. 2009.
Multilateral Trade Measures in a Post-2012 Climate Change Regime?: What Can Be Taken from the Montreal Protocol and the WTO?
Fondazione Eni Enrico Mattei Working Paper 342.

Key Issue 3:

Means for Sharing the Mitigation Effort Under the UNFCCC

Adve, N. and Engineer, M.. 2010.
"Equity and social justice in a finite carbon world,"
Economics and Political Weekly. October. 45:40

Banuri, T. et al. 1995.
Equity and Social Considerations in Climate Change,
IPCC Second Assessment Report.
Available at: http://www.ipcc.ch/pdf/climate-changes-1995/ipcc-2nd-assessment/2nd-assessment-en.pdf.
Last accessed October 3, 2011.

Baer, P. et al. 2009.
"The Greenhouse Development Rights Framework: Drawing Attention to Inequality within Nations in the Global Climate Policy Debate,"
Development and Climate. Volume 40, Issue 6.

Boyce, J. and Riddle, M. 2007.
Cap and dividend: how to curb global warming while protecting the incomes of American families,
Political Economy Research Institute, University of Massachusetts.

Brazil 1997.
Submission by Government of Brazil to the UNFCCC. 28 May.
Available at: http://unfccc.int/cop4/resource/docs/1997/agbm/misc01a3.htm.
Last accessed October 3, 2011.

Caney, S. et al. (eds) 2010.
Climate Ethics: Essential Readings.
New York: Oxford University Press

Caney, S. (2006)
"Environmental Degradation, Reparations, and the Moral Significance of History"
Journal of Social Philosophy. 37:3

Caney, S. 2001.
"International distributive justice".
Political Studies. 49:5

Clapp, C. et al. 2009.
National and sectoral GHG mitigation potential: a comparison across models.
OECD/IEA.

Dutt, G. 2010.
Equity in climate change.
Centre for Policy Research, New Delhi.

Dutt, G. 2009.
A climate agreement beyond 2012.
Centre for Policy Research, New Delhi.

The Energy Resources Institute (TERI). 2009.
Right to Sustainable Development: An Ethical Approach to Climate Change. Delhi.

Foundation for the Economics of Sustainability (FEASTA). 2008.
Cap and Share: A Fair Way to Cut Greenhouse Emissions.

Global Commons Institute (GCI). 2007.
Contraction and Convergence: climate justice without the vengeance.
Available at: http://www.gci.org.uk/.
Last accessed October 3, 2011.

Gosseries, A. 2009.
Historical emissions and free-riding.
Available at: http://mora.rente.nhh.no/projects/EqualityExchange/Portals/0/articles/gosseries1.pdf.
Last accessed October 3, 2011.

Kanitkar, T. et al. 2010.
Conference on Global Carbon Budgets and Equity in Climate Change.
Discussion paper, supplementary notes and summary report of the Tata Institute for Social Science/Ministry of Environment and Forests, India. 28-29 June.

Karousakis, K. et al. 2008.
Differentiating countries in terms of mitigation commitments, actions, and support.
OECD/IEA. 2008.

Mace, M. 2008.
"The Bali Road Map: Can it Deliver an Equitable Post-2012 Climate Agreement for Small Island States."
RECEIL. Vol 17, No. 2.

Mattoo, A. and Subramanian, A. 2010.
Equity in climate change: an analytical review,
World Bank Policy Research Working Paper. July.

Michaelowa, A. et al.
"Graduation and Deepening: An Ambitious Post-2012 Climate Policy Scenario,"
International Environmental Agreements: Politics, Law and Economics. Volume 5, Number 1.

Neumayer, E. 2000.
"In Defense of Historic Accountability for Greenhouse Gas Emissions,"
Ecological Economics. 33, 185-19.

O'Neill, B.C. and Oppenheimer, M. 2002.
"Dangerous climate impacts and the Kyoto Protocol,"
Science. Vol. 296, June.

Page, E. 2011.
"Cosmopolitanism, climate change and greenhouse emissions trading",
International Theory. 3:1

Page, E. 2008.
"Distributing the burdens of climate change,"
Environmental Politics. 17:4

Page, E. 2006.
Climate change, justice and future generations.
Edward Elgar, Cheltenham, England.

Ramesh. 2010.
Statement of Mr. Jairam Ramesh, Minister of Environment and Forests.
7th MEF Meeting, Rome, Italy.

Rive, N. et al. 2005.
"Climate agreements based on responsibility for global warming: Periodic updating, policy choices, and regional costs,"
Global Environmental Change. 16:2, 2006

Shue, H. 1999.
"Global environment and international inequality,"
International Affairs. 75(3), 531-45.

WBGU. 2011.
World in transition: a social contract for sustainability.
German Advisory Council on Global Change (WBGU).
Available at: http://www.wbgu.de/en/publications/flagship-reports/flagship-report-2011/.
Last accessed October 3, 2011.

WBGU. 2008.
Solving the climate dilemma: The budget approach.
German Advisory Council on Global Change (WBGU).
Available at: http://www.wbgu.de/fileadmin/templates/dateien/veroeffentlichungen/sondergutachten/sn2009/wbgu_sn2009_en.pdf.
Last accessed October 3, 2011.

Key Issue 4:

The Role of Various Actors in Tracking Country Performance on Mitigation

Blechman, B. and Finlay, B.. Forthcoming.
What climate control can learn from past efforts to limit nuclear dangers.
The Stimson Center, Washington DC. Forthcoming.

Buchner, B. et al. 2011.
Monitoring and Tracking Long-Term Finance to Support Climate Action.
OECD.

Chayes, A. and Chayes, A. 1995.
The New Sovereignty: Compliance with International Regulatory Agreements.
Harvard University Press, Cambridge, MA.

DeFries, R. et al. 2007.
"Earth observation systems for estimating greenhouse gas emissions from deforestation in developing countries,"
Environmental Science Policy. 10:4.

Ellis, J. et al. 2011.
Frequent and Flexible Reporting Formats in Biennial Update Reports.
OECD.

European Union. 2010.
Fast start funding for developing countries:
2010 progress report.
Brussels, Belgium. November.

Fransen, T. 2009.
Enhancing Today's MRV framework to meet tomorrow's need: the role of national communications and inventories.
World Resources Institute, Washington, DC.

Ghosh, A. and Woods, N. 2010.
"Developing Country Concerns about Climate Finance Proposals: Priorities, Trust, and the Credible Donor Problem"
in Richard B. Stewart, Benedict Kingsbury,and Bryce Rudyk,
Climate Finance: Regulatory and Funding Strategies for Climate Change and Global Development;
New York University Abu Dhabi Institute.

Haas, P. 2008.
"Climate change governance after Bali",
Global Environmental Politics 8:3, 2008.

India Network for Climate Change Assessment (INCAA). 2010.
India Greenhouse Gas Emissions 2007.
Minister of Environment and Forests, Government of India. May.

Levin, K. et al. 2010.
Remedying Discord in the Accord: Accounting Rules for Annex I Pledges in a Post-2012 Climate Agreement.
Working paper at the World Resources Institute, Washington, D.C.

Levin, K. et al. 2009.
"Can non-state certification systems bolster state-centered efforts to promote sustainable development through the clean development mechanism?"
44 Wake Forest L. Rev. 777.
Available at: http://www.wri.org/publication/remedying-discord-in-the-accord .

McFaul, L. 2006.
Developing the climate regime: the role of verification.
UK Verification, Research and Training Information Centre (VERTIC).

Nash, D. et al. 2009.
Building trust and cooperation in a North-South climate change compact: what role for regulators?
Global Climate Network Briefing Paper.
Available at: http://www.globalclimatenetwork.info/ecomm/files/buildingtrust.pdf.
Last accessed October 3, 2011.

National Research Council. 2007.
Earth science and applications from space: national imperatives for the next decade and beyond.
The National Academies Press, Washington DC.
Available at: http://www.nap.edu/catalog.php?record_id=11820.
Last accessed October 3, 2011.

Niederberger, A. and Kimble, M.. 2011.
MRV under the UN Climate Regime – Paper Tiger or Catalyst for Continual Improvement?
Available at: http://www.policy-solutions.com/Publications%20pdf/Arquit%20&%20Kimble%20GHG2010-009.pdf. Last accessed October 3, 2011.

Tirpak, D. et al. 2010.
Guidelines for Reporting Information on Public Climate Finance.
Working Paper. World Resources Institute. Washington DC.

UNEP. 2010.
The Emissions Gap Report: Are the Copenhagen Accord Pledges Sufficient to Limit Global Warming to 2 or 1.5°C?
Available at: http://www.unep.org/publications/ebooks/emissionsgapreport/.
Last accessed October 3, 2011.

Victor, D. et al. (eds). 1998.
Implementation and Effectiveness of International Environmental Agreements.
MIT Press, Cambridge MA. 1998.

Key Issue 5:

The Legal Form of a Future Climate Agreement

Australia / Norway (2011)
Submission under the Cancun Agreements: Enhanced action on mitigation
Submission to the UNFCCC, September 2011.
Available at: http://unfccc.int/files/meetings/ad_hoc_working_groups/lca/application/pdf/australia_norway_mitigation_submission_.pdf

Bodansky, D. and Diringer, E. 2010.
The Evolution of Multilateral Regimes: Implications for Climate Change.
Pew Center Global Climate Change. December.

Cao, J. 2010.
Beyond Copenhagen: Reconciling international fairness, economic development and climate protection.
Belfer Center, Harvard University

Cottier, T. (forthcoming).
Confidence-building for Global Challenges: The Experience of International Economic Law and Relations.
World Trade Institute, University of Bern, Switzerland. Forthcoming.

Foundation for International Environmental Law and Development (FIELD). 2011.
Briefing note on the legal form of a new climate change agreement.

Hare, W. et al.
"The architecture of the global climate regime: a top-down perspective,"
Climate Policy, 2010 Vol. 10 (6).

Keohane, R. and Victor, D. 2011.
"The regime complex for climate change,"
Perspectives on Politics. 9:1, March.

Leal-Arcas, R. 2011.
"Alternative architecture for climate change: major economies,"
European Journal of Legal Studies. 4:1.

Rajamani, L. 2011.
The Cancun Agreements: reading the text, subtext and tea leaves.

Rajamani, L. 2009.
"Addressing the 'Post-Kyoto' stress disorder: reflections on the emerging legal architecture of the climate regime,"
International Comparative Law Quarterly, Vol. 58, October.

Victor, D. et al (eds). 1998.
The implementation and effectiveness of international environmental commitments: theory and practice.
MIT Press, MA.

Victor, D. 2011.
Global Warming Gridlock, Creating More Effective Strategies for Protecting the Planet.

WBGU. 2008.
Solving the climate dilemma: The budget approach.
German Advisory Council on Global Change (WBGU).

Werksman, J. 2010.
"Legal Symmetry and Legal Differentiation under a Future Deal on Climate Change,"
Climate Policy, Vol. 10 (6).

Werksman, J. 2010.
Law and Disorder: Will the Issue of Legal Character Make or Break a Global Deal on Climate?
German Marshall Fund of the United States.

Werksman, J. and Herbertson, K. 2010.
"The aftermath of Copenhagen: does international law have a role to play in a global response to climate change?"
Maryland Journal of International Law.

Winkler, H. and Beaumont, J. 2010.
"Fair and Effective Multilateralism in the post-Copenhagen climate negotiations,"
Climate Policy. Vol. 10 (6).

APPENDIX III

KEY HIGHLIGHTS FROM PROPOSALS AND BACKGROUND READING

A comprehensive list of, and key highlights from, the proposals and background reading reviewed in this paper as well as background documents is available as a stand-alone document on the websites of WRI and UNEP.[1] These highlights are not intended to capture all of the issues discussed in each proposal. They represent some of the main points the authors found useful for the purposes of this paper.

1 See www.wri.org and www.unep.org and search "Building the Climate Change Regime"

WORLD
RESOURCES
INSTITUTE

Comhshaol, Pobal agus Rialtas Áitiúil
Environment, Community and Local Government

This report was made possible thanks to the financial support of the Government of Ireland

www.unep.org

United Nations Environment Programme
P.O. Box 30552, Nairobi 00100, Kenya
Tel: +254-(0)20-762 1234
Fax: +254-(0)20-762 3927
Email: uneppub@unep.org
web: www.unep.org

ISBN: 978-92-807-3224-5
Job No: DTI/1465/NA