

DESA Working Paper No. 73

ST/ESA/2009/DWP/73

March 2009

Climate Policy Integration: Towards Operationalization

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Abstract

The climate change debate raises the issue of often identified, but as yet little explored, requirement to incorporate climate policy into other policy sectors, often termed climate “mainstreaming” or climate policy integration (CPI). This paper explores the imperative for CPI, the state of current understanding, and proposals for implementation at the crucial national policy scale. The paper draws on the longer-standing field of environmental policy integration, noting that literature’s scant coverage of climate issues but its greater focus on policy and administrative structures and processes, and concludes that more attention needs to be given to these implementation mechanisms for CPI.

JEL Classification: F59, H11, Q54, Q56, Q58

Keywords: Climate change, public policy, environment, sustainable development, international cooperation

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Climate Policy Integration: Towards Operationalization

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Introduction

Political questions are often posed as technical questions that can be referred to experts without confronting the value differences that are the real origin of conflict. (Rayner and Malone 1998.)

Climate policy in both its mitigation and adaptation dimensions is firmly a cross-sectoral and whole-of-government activity; however, such “mainstreaming” or climate policy integration (CPI) has yet to be developed sufficiently either in the scholarly literature or in policy practice.

The perceived need to integrate a climate change dimension across all areas of policy making—climate policy integration (CPI)—has undoubtedly become more acute, but the evidence base is still weak and there are no accepted methods for achieving it. (Urwin and Jordan 2007.)

This points to a significant implementation deficit. In particular, the relationship—whether positive, neutral or negative—between climate policy and sustainable development policy, and especially human and economic development policy in developing nations, remains unclear. The connection between international policy and science debates has dominated climate change to date; however, national and local-level implementation is emerging as a key issue. It is on the national and local scales that integrated policy implementation will occur—through suitable policy and administrative arrangements—and global climate policy will need to support, encourage and help finance these efforts. And, at the same time, national/local scale initiatives are needed to implement international-level goals.

A mainstreamed or integrated approach is recognized by scholars and practitioners as necessary for dealing with climate change. The application of a complex concept like “sustainability” (Dovers and Handmer, 1993) to discussions of climate change policy generates a series of issues surrounding the achievement of global equity and the financing of climate-oriented development through diverse national policy processes as a whole-of-government activity. This demands integrated analysis, drawing on the climate policy literature as well as on longer-standing discussions of sustainable development and public policy.

Currently, proposals for CPI focus mostly on the developing world through the connection to sustainable development (Najam, et al. 2003; Sathaye et al., 2007). Notwithstanding some work in the context of developed countries, the prevailing position advances the notion of sustainable development for developing countries as a lower emission development path. Halsnaes et al. (2008) advances sustainable development as a framework for integrated development and climate change in developing countries for the achievement

* I acknowledge Professors Stephen Dovers and Will Steffen for comments on the draft paper; Dr. Tariq Banuri, Dr. Bert Metz and Professor William Moomaw, and Thomas Heller, for many discussions on climate change and development; AusAid, and ANU Fenner School of Environment and Society for supporting the research; and Dr. Rob Vos and Dr. Richard Kozul-Wright from UN/DESA for asking me to assist as a team member for the *World Economic and Social Survey 2009*. Any errors or omissions in this paper are the responsibility of the author.

of a lower greenhouse gas (GHG) emission pathway and other ancillary co-benefits that will contribute to development needs and aspirations. This implies that we avoid future aggregate high emissions from developing countries through a new development pathway while relying on efficiency measures to drive down developed country emissions. The remark “If the South disappeared tomorrow, the environmental crisis would still be with us” (Banuri, 1993) is still valid in some form today - although the context and description of the South in 2008 has changed along with economic development and the ensuing environmental impacts of some high-income developing countries. Sachs (2008) and Zakaria (2008) discuss the current, prospective and future international contexts in which addressing developmental, environmental and international issues will require the reshaping of traditional approaches—in other words, not from the old North-South perspective. A new South is emerging which includes a high variance of developing and least developed countries that still need to grow in order to eradicate poverty and achieve a decent standard of living. Sachs (2008) believes that such development is achievable in a reformed international environment.

Integrated climate change and sustainable development is a field gaining attention as a lead mechanism for dealing with developing country emission problems. The chapter on *Sustainable Development and Mitigation* in the Fourth Assessment Report (4AR) of the Intergovernmental Panel on Climate Change (IPCC) represents a synthesis of recent work and concludes that coverage of such an approach for developed countries is weak. Analysis of both developed and developing countries is needed to differentiate how such an approach can be applied across contexts.

Dovers (2005) defines climate change as a major issue in sustainability, but not a policy problem in itself. Climate change can be translated into an array of policy problems that will be differently defined and dealt with through variable national policy systems and the structures and processes within those systems. It is a classic cross-sectoral issue, requiring consideration of the policy and administrative mechanisms to formulate and implement whole-of-government responses. This invites focus on how different policy systems can or do handle policy integration. Climate is not the first policy implementation challenge requiring integration across sectors, and while it has particular characteristics and needs to be considered in different national contexts, other policy integration experiences may yield insights.

Sustainable development requires the integration of the broad policy domains in three areas: economic, environmental and social (Munasinghe, 2003; Munasinghe and Swart, 2005). There is insufficient explication of how to integrate climate change issues with the similarly integrative imperative of sustainable development and other policy sectors within national policy processes. Current thought on the nature and scope of CPI has been synthesized by scholars like Kok et al. (2008) who stress the need for the involvement of all relevant players but, like the rest of the literature, offer little instruction on how this might be done.

Against this background, the present paper will cover three areas.

- From the literature on CPI and sustainable development, how climate mainstreaming or integration is defined in broad principle and in terms of suggested mainstreaming strategies (i.e., specific policy and administrative structures and processes).
- The environmental policy integration (EPI) literature, which represents a relevant, longer-standing and more substantial body of analysis and practice in policy integration. Tracing the origins of EPI, it will show how mainstreaming/integration is defined, the coverage of climate change and the kinds of policy and administrative measures proposed.

- Based on the discussion of the first two areas, ways forward for research and policy so as to better define and scope in more detail the implementation of climate policy integration.

Climate policy -integration (CPI) and sustainable development

Linkage between environment and development was formalized in the 1990s via the idea of sustainable development, and since then climate change has risen to dominate environment and sustainability agendas in research and policy. The 1992 United Nations Conference on Environment and Development (UNCED) and the 2002 World Summit on Sustainable Development (WSSD) provided a sharper political dimension to the climate policy and sustainable development discourse (Klein et al., 2005). However, climate policy and sustainable development have to some extent been separated in research and policy discussions, and thus a less integrated approach has been taken, in part due to the way in which the climate “problem” has been defined.

Climate policy involves two main areas of operation—mitigation and adaptation—which are addressed in a largely separate fashion within dominant scientific, policy and international regimes (those associated with the 1992 United Nations Framework Convention on Climate Change (UNFCCC)) (Cohen et al., 1998; Klein et al., 2005; Tompkins and Adger, 2005; Swart and Raes, 2007). This division has largely shaped the research and policy agenda on climate change since 1992. According to IPCC (2007a), the respective definitions of mitigation and adaptation areas follows:

An anthropogenic intervention to reduce the anthropogenic forcing of the climate system; it includes strategies to reduce greenhouse gas sources and emissions and enhancing greenhouse gas sinks; and

Adaptation in natural or human systems in response to actual or expected climate stimuli or their effects, which moderates harm or exploits beneficial opportunities.

In some climate change options, the difference between the two may not be marked: for example, some mitigative energy conservation measures could be classified as adaptation options. Adaptation, though considered from the outset in the UNFCCC, has been addressed actively only following the finalization of Marrakech Accords (Schipper, 2004). The separation of mitigation and adaptation, along with the lag in attention to adaptation, has resulted in climate policy itself being dealt with in a less than integrated fashion and having a lack of comprehensive connection to other, relevant policy sectors.

The science of climate change and the evidence of human-induced cause now attracts strong consensus, but major policy challenges confront societies in formulating a response. These challenges relate to uncertainty about impacts, future social and economic conditions and the complex global nature of the problem (Tompkins and Adger, 2005). Defining a national climate policy thus remains a challenge, and the construction of comprehensive national policies remains a scarcely examined area. A focus is needed on operational policy and administrative measures at subnational and, especially, national levels.

The move to link CPI with sustainable development is relatively recent and resonates with scholars who recognize development as a key driver of climate change (Kok, et al., 2002; Winkler et al., 2002; Heller and Shukla, 2003; Munasinghe and Swart, 2005). Climate change is not entirely an environmental issue, as the key drivers are social, economic and development patterns (Cohen et al., 1998; Moomaw et al., 1999), yet coverage has been dominated until recently by biophysical and environmental considerations. However, economic issues relating to climate change have gained increasing prominence (e.g., Stern, 2007), and while

social and policy issues have been emphasized by some (e.g., Rayner et al., 1998), overall they have only recently gained much attention.

Climate policy in general terms has largely been considered as mitigation through energy policy, as the energy sector is the prime contributor to GHG emissions. This has changed, and recent work on climate change considers various sectors and linkages with sustainable development. Klein et al. (2005) identifies three research questions in CPI:

- What constitutes a socially, economically and environmentally attractive portfolio of mitigation, adaptation and development policy and how can it be achieved?
- How can capacity be developed to seize opportunities and overcome constraints to implementing mitigation and adaptation options as part of sectoral policies?
- How can existing financial instruments for climate policy best be used in the broader context of sectoral investments, official development assistance and other policies aimed at risk reduction and sustainable development?

These three questions convey the dimensions of an integrated approach, but they focus on sectoral policy. Policy design issues *within a sector* are addressed reasonably well in the literature. For example, Halsnaes et al. (2008), in their work on country case studies, show how different options contribute to a sustainable and climate-resilient trajectory in the energy and transport sectors in Brazil, China, India and South Africa. Najam et al. (2003) concludes that the case for integration is well established and no longer in need of reaffirmation. The case may be clear, but the issue of how to achieve integration *across multiple sectors* remains. This requires a shift in focus towards implementation and the systems of public policy and the structures and processes of public administration required to implement the concept. The causes and impacts of climate change implicate almost every conceivable human activity, and thus a wide range of policy sectors and portfolios; policy responses must therefore be a whole-of-government activity. The next section begins by reviewing the discourse to date to discern the roots of this focus, tracing the idea of CPI within the climate policy literature and especially the syntheses offered via the IPCC.

IPCC Assessment of Climate Change and Sustainable Development literature

The IPCC, established in 1988 as a scientific advisory organ to the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO), is an amalgamated body of scientists that produces peer-reviewed literature relevant to climate change and provides the policy community with syntheses of prevailing knowledge. IPCC has been criticized for not effectively addressing the human and social dimensions of climate change (Newby 1993; Cohen, Demeritt et al., 1998). IPCC to date has produced four assessment reports, and coverage of the climate change-sustainable development links began only with its Third Assessment Report (3AR). The IPCC assessment report coverage is summarized in table 1 and identifies coverage of development and sustainable development, based on Banuri et al., (2001) and Najam et al., (Najam et al., 2003).

Essentially, 1AR and 2AR did not address the linkage between climate change and sustainable development, nor, therefore, CPI. While in 2AR, Working Group III had been asked to include sustainable development issues, substantial discussion of sustainable development was absent (Cohen et al., 1998). More analyses of coverage of IPCC reports are available elsewhere (e.g., Agrawala, 1998a; Agrawala, 1998b; Agrawala, 1999; Siebenhuner, 2002; Siebenhuner, 2003).

Table 1: Evolution of climate change and sustainable development in the IPCC

IPCC First Assessment Report (1AR; 1990)	IPCC Second Assessment Report (2AR; 1995)	IPCC Third Assessment Report (3AR; 2001)	IPCC Fourth Assessment Report (4AR; 2007)
Climate + impacts	Climate + impacts	Climate + impacts	Climate + impacts
Cost-effectiveness	Cost-effectiveness	Cost-effectiveness	Cost-effectiveness
	Equity	Equity	Equity
		Alternate development pathways	Alternate development pathways
			Sustainable development

Najam et al. (2003) offers three key conditions under which an integrated climate change and sustainable development approach can be realized:

- First, at the conceptual level, the trend exhibited in previous IPCC assessments need to be maintained, and equity concerns—which had appeared as an emerging issue in 2AR and gained slightly more prominence in 3AR—need to be accorded a more pervasive, even central, focus in 4AR.
- Second, at the analytical level, the examination of alternative development pathways that had begun during the 3AR process needs to be continued and expanded into 4AR.
- Third, at the operational level, country delegates as well as IPCC experts have to match their rhetoric with a demonstrated will to make sustainable development a central component of the overarching assessment framework of the IPCC.

The 3AR launched the assessment of the formal linkage of climate change and sustainable development and analyzed mitigation policy and the other contents of the report in the context of development, equity and sustainability (Banuri et al., 2001). The relevant chapter assesses the literature on the three issues affecting climate change mitigation—cost-effectiveness, equity and sustainability—and relays the strong message that these are complementary in nature and can be a tool for policymakers if used in combination. The main message of 3AR was the concept that development choices matter (Banuri et al., 2001; Sathaye et al., 2007). Banuri et al. (2001) summarized the scope and coverage of the 3AR chapter on sustainable development:

The attention accorded in the UNFCCC to sustainable development—including the recognition that “Parties have a right to, and should promote sustainable development” –Article 3.4)—has not, however, been matched by its treatment in the previous IPCC assessment reports. As a result, the present assessment seeks to address this mismatch by placing policy evaluation in the broader context of development, equity and sustainable development as outlined in the Convention.

For effective integration across the areas of cost-effectiveness, equity and sustainability, the report uses the term “mitigative capacity”, developed by Yohe (2001), as a way to assess the range of issues that have emerged since the publication of 2AR (Banuri et al., 2001). This and the congruent term “adaptive capacity” are central to an integrated climate policy response.

Adaptive capacity is defined as the:

ability of a system to adjust to climate change (including climate variability and extremes), to moderate potential damages, to take advantage of opportunities, or to cope with the consequences. (IPCC, 2007a, p. 869)

and mitigative capacity as:

a country's ability to reduce anthropogenic GHG emissions or to enhance natural sinks, where the ability refers to the skills, competencies, fitness and proficiencies that a country has attained, and depends on technology, institutions, wealth, equity, infrastructure and information. (IPCC, 2007b, p. 818)

The two concepts are closely relevant to CPI and the linkage between climate policy and sustainable development. Mitigative capacity is rooted in a country's sustainable development path (IPCC, 2007b). In order to understand the conceptual basis for the use of these concepts in 3AR, table 2, based on Yohe (2001) and Yohe and Moss (2000), summarizes the determinants of mitigative and adaptive capacity. The term mitigative capacity follows the idea of adaptive capacity developed in an IPCC workshop on adaptation in Costa Rica in 1998 (Yohe, 2001). The concepts are similar, the difference being that the former addresses emissions while the latter addresses drivers of vulnerability.

Table 2: Determinants of adaptive and mitigative capacities

Yohe and Moss, 2000; Yohe, 2001		
	<i>Adaptive capacity</i>	<i>Mitigative capacity</i>
1	The range of available technological options for adaptation	The range of viable technological options for reducing emissions
2	The availability of resources and their distribution across the population	The range of viable policy instruments which might affect the adoption of these options
3	The structure of critical institutions and the derivative allocation of decision-making authority	The structure of critical institutions and the derivative allocation of decision-making authority
4	The stock of human capital, including education and personal security	The availability and distribution of resources required to underwrite their adoption and the associated broadly defined opportunity cost of devoting those resources to mitigation
5	The stock of social capital, including the definition of property rights	The stock of human capital, including education and personal security
6	The system's access to risk-spreading processes	The stock of social capital, including the definition of property rights
7	The ability of decision-makers to manage information, the process by which these decision-makers determine their information is credible, and the credibility of decision-makers themselves	The country's access to risk-spreading processes
8	Public perception of attribution	The ability of decision-makers to manage information, the processes by which these decision-makers determine which information is credible, and the credibility of decision-makers themselves

Both mitigation and adaptation are response measures—one to the causes of climate change and the other to its effects. A clear need for a response capacity is required, and can be defined as the ability to manage the causes and consequences of environmental change (Tompkins and Adger, 2005). IPCC uses the concept of “capacity” as a major catalyst in implementing the transactional relationship between climate change and sustainable development.

If capacity is the focus, does this imply that nations with the requisite capacities—both adaptive and mitigative - will necessarily undertake an integrated approach? The key issue when looking at the definition and determinants of response capacity is what degree and combination of these two capacities are sufficient for a country to pursue CPI and to integrate a climate change and sustainable development approach? Even

if a nation meets the definitions and has all the determinants of adaptive and mitigative capacities, will it pursue a sustainable development path, or does it have the requisite capacity to pursue sustainable development at this stage? Or even if a nation has both adaptive and mitigative capacities, will it deal with climate change effectively? Can we define a *sustainable development capacity*, inclusive of social, economic and environmental aspects? If so, can a nation having all elements of adaptive, mitigative and sustainable development capacities pursue an integrated climate change and sustainable development approach? The literature does not provide the answers, particularly in relation to operational policy and the administrative elements of an integrated approach at the national level.

Adaptive and mitigative capacities may also be competing principles. What sort of capacity should a country build—mitigation specific, adaptation centered, or both? Yohe et al. (2007), in its assessment of complementarity roles of mitigation and enhanced adaptive capacity, underscores that climate risk cannot be addressed by mitigation alone. The implications for an individual country's competing policy choices are significant. Do individual countries have the right information basis for making such a judgement? Anecdotal evidence suggests not. How does a finance minister, particularly in a poor country, decide how much of the required mitigation and adaptation capacity they should fund? The decision becomes important because the aggregate number of developing countries' future emissions will be high—it is not a matter for high-emitting and high-income developing countries alone; it is about the global future involving all countries. Work on mitigative and adaptive capacities, and on sustainable development capacity, that pays close attention to the required policy and administrative structures and processes for national implementation is limited.

The IPCC 4AR assessed the climate change-sustainable development nexus with expanded coverage of the drivers, pillars and connections of sustainable development and climate policy. It identifies a “climate first” approach in which mitigation is the essential objective, and a “development first” approach in which sustainability is the key. The report finds integration an essential element of pursuing a climate-resilient development approach that can address both issues of sustainable development and climate change. For effective implementation, mainstreaming of climate change issues in planning and involvement of relevant stakeholders—various government units, the private sector, non-governmental actors and civil society—are considered necessary. In governance, “national characteristics”, or national context, are an essential component of effective decision-making for both sustainable development and climate change mitigation.

Building on the argument of 3AR that “development choices matter”, 4AR identified three major lessons for development pathways:

- Development paths as well as climate policy determine GHG emissions.
- New global scenario analyses confirm the importance of development pathways for climate change mitigation.
- Development pathways can vary by regions and countries because of different priorities and conditions.

4AR highlights the extensive literature on development choices but mentions the limited scope of literature on the actual mainstreaming of climate change mitigation considerations in development policies. It identifies the weakness in local level and national level research and the need for it to be strengthened to help understand the relationship between climate change and sustainable development within nations, regions and zones in developed, developing and transition countries. For effective mainstreaming, 4AR concludes: (Sathaye, Najam et al., 2007, p. 694)

Mainstreaming requires that non-climate policies, programmes, and/or individual actions take climate change mitigation into consideration, in both developing and developed countries. However, piggybacking climate change onto an existing political agenda is unlikely to succeed. The ease with which mainstreaming is accomplished will depend on both mitigation technologies or practices and the underlying development path. Weighing other developmental benefits against climate benefits will be a key basis for choosing development sectors for mainstreaming.

This concept centres on “mitigation” and is focused on technologies or practices and underlying development paths; it does not deal with the required policy structures and processes. An adaptation mainstreaming literature is emerging, where mainstreaming is based on the argument that human vulnerability to climate change is minimized not just when climate change is mitigated or adaptation takes place, but also when the living conditions of those experiencing the impacts of climate change are improved (Huq et al., 2003). Development thus gains importance not just in mitigation but also in adaptation. Does the definition and scope of mainstreaming cover all possible elements of successful mainstreaming? Mainstreaming must be operationalized, but coverage in the literature is more theoretical and does not address the elements of the policymaking process for enabling such an approach. Is the “development first” approach a completely mainstreamed one? It is a more integrated approach, but implementation of mainstreaming requires consideration across all policy sectors, as a whole-of-government activity. In terms of an operational approach, the information basis of such a judgement in a normative “development first” or “climate first” context becomes essential. Sen (1999), p. 57, articulated the importance of the “informational basis”:

The informational basis of normative theories in general, and of theories of justice in particular, is of decisive significance, and can be the crucial point of focus in many debates on practice policies.

From a public policy implementation perspective, what are the relative merits of a “climate first” or “development first” approach? How can decision-making be operationalized within such constructs, as policymakers in different national circumstantial contexts face differing parameters for decision-making? Analysis and evidence of models of national policy systems undertaking such an approach seem limited.

The literature on mainstreaming is limited, fragmented, context dependent and largely based on addressing principles and sectors rather than systems of policymaking; that is, mainstreaming is not analysed as a whole-of-government activity. This is a major barrier to understanding implementation issues and to addressing mainstreaming in national contexts. The operational problems for an integrated climate-development approach in both developed and developing countries are shaped by national contexts of politics, finances, behaviour, institutional and policy capacities and immediate economic and development preferences. These factors are not adequately addressed in the climate change and sustainable development literature. In work on science and decision-making, Jasanoff et al. (1998) concludes that active communication and collaboration among multiple cultures or forms of life—bureaucratic, scientific, economic and social - are key requirements in moving from scientific knowledge to policy contexts. In climate policy, the science is now firmly established and economic discussion has commenced, but the social and especially bureaucratic (policy) cultures have been far less explored.

The dilemma of the linkage debate

Underdal (1980) outlined three key requirements for *integrated policy*: comprehensiveness, aggregation and consistency. Theoretically, the climate change- sustainable development nexus can meet all three components—comprehensive and aggregated in approach, and based on a consistent model built on a co-benefits

approach. But in practice the evidence base of national models depicting progress on all three components identified by Underdal (1980) are weak. Meijers et al. (2004) described “integrated policy making” as lacking clarity in theoretical literature and identified similar concepts from the literature: coherent policymaking; cross-cutting policymaking; policy coordination; concerted decision-making and holistic government. While policy integration per se is not the subject of this paper, in addressing CPI and climate change-sustainable development links, it becomes a central issue (Swart et al. 2003).

In order to deal effectively with such linkages, the definition of climate mainstreaming or integration is revisited. As quoted in Klein et al. (2007), p. 749, mainstreaming is defined as:

The integration of policies and measures to address climate change in ongoing sectoral and development planning and decision-making, aimed at ensuring the sustainability of investments and at reducing the sensitivity of development activities to future climatic conditions.

This definition points to the need for mainstreaming and is a general instruction, but again there is little instruction as to how to undertake CPI, either here or elsewhere in the literature. The IPCC 4AR (Klein et al., 2007) proposed mainstreaming as a promissory link to more efficient and effective use of financial and human resources. Climate change mitigation is now included under mainstreaming, with development policies, programmes and individual actions, while adaptation is still evolving under the mainstreaming or integration debate (Sathaye et al., 2007).

Rayner et al. (1998) proposed that human choice lies at the core of climate change, and offered ten suggestions for policymakers to move from a purely emissions-reduction approach to a more informed decision-making model, based on a social sciences perspective. Yet in their suggestions, the national policy system, where the actual implementation task is located, is not directly addressed as a major issue. The argument in this paper is that integration does not take place in a vacuum—it happens within functioning policy systems at global, national, local and state levels. Understanding and implementation can only be analysed when enough models of national policy systems have been researched, debated and extrapolated. The literature is weak in this area. Climate change now has a firm science, and in terms of moving from that science to policy and policy implementation, policy systems are crucial; yet, they have been overlooked.

Michaelowa et al. (2007) focused on climate policy and development and found the linkage between them to be very limited; it highlighted the weak role of the Clean Development Mechanism (CDM) in terms of poverty alleviation and sustainable development. Work on climate change and sustainable development has mostly been analysed by examining sustainable development through a climate change lens, rather than the other way round (Robinson et al., 2006). Robinson et al. examined climate change through a sustainable development lens and concluded that sustainable development is a better way of achieving climate policy objectives than climate policy itself. Most work of this kind has been confined to single sectors or limited to a particular mitigation option, in the context of mitigation and sustainable development (Halsnaes et al., 2008; Ribeiro and Andrade De Abreu, 2008; Winkler et al., 2008). Furthermore, most mitigation thinking is primarily national and/or sectoral, while adaptation work is local, an observation also made by Swart and Raes, (2007). Again, whole-of-government scale, integrated national policy aspects are often overlooked.

The OECD (2005) undertook a case study review of six countries—Bangladesh, Egypt, Fiji, Nepal, the United Republic of Tanzania and Uruguay—to understand the linkage between climate change and development, using a three-tier framework for analysis:

- Tier 1—investigation of baseline climate risk and climate change projections (framework for prioritizing).
- Tier 2—investigation of exposure of development activities to climate risk.
- Tier 3—extensive investigation at the thematic or sectoral level of mainstreaming climate change concerns, in particular development policies and projects.

The study concluded that climate change is already affecting development; climate change impacts may need consideration in development planning; development assistance is diverted to climate-sensitive sectors; and development activities normally overlook climate change and even climate variability. This indicates that, with respect to climate change, integration across government policy systems is currently insufficient. Mainstreaming or integration, despite being often advanced, is weak in implementation.

While sustainability per se is not the subject of this paper, it is instructive to consider the underlying attributes of policy problems in sustainability identified by Dovers (1997) that apply particularly to climate change as a policy problem:

- Broadened deepened and variable spatial and temporal scales.
- Often cumulative rather than discrete environmental impact of human activities.
- Complexity within and connectivity between problems, both within and across the three areas of environment, society and the economy.
- Pervasive risk and uncertainty, and a lack of quality information.
- Systemic rather than simple problem causes, embedded in patterns of production, consumption, settlement and governance.
- Lack of available, uncontested research methods, policy instruments and management approaches.
- Assets not traded in formal markets and thus not assigned economic value.
- Poorly defined policy, management and property rights, roles and responsibilities.

These attributes apply to sustainable development issues and complex environmental problems generally. Climate change is a classic sustainable development problem and the above attributes invite policy integration, as do other complex problems in the sustainability domain. Indeed, policy integration has been discussed and pursued in sustainability for some time, and we will now explore the environmental policy integration (EPI) literature to see how integration is defined and analysed, and whether this longer-standing subset of sustainable development theory and practice can contribute to the climate policy integration debate.

Environmental Policy Integration

EPI is a core sustainable development principle (Lafferty and Hovden, 2003; Lafferty, 2004) and represents a significant area of thought on integrating environmental, social and economic policies. EPI as an idea emerged in the 1970s in industrialized countries, especially those in Europe, and was incorporated into the World Commission on Environment and Development (WCED) and Agenda 21 (Lafferty and Hovden, 2003; Nilsson and Persson, 2003; Persson, 2004; Lehtonen, 2007; Nilsson et al., 2007). Integration of environmental, social and economic considerations in policy are core principles of the Rio Declaration and Agenda 21 (United Nations, 1992). However, progress in implementation remains varied, with Europe emerging as a key promoter and implementer of EPI.

While both developed and developing countries have numerous environmental and sustainable development policies, plans or programmes, real evidence of environment as a key element in national policy is still weak, the case of the European Union (EU) notwithstanding. The EU, for instance, provides constitutional commitment to EPI via the Sixth Environmental Action Plan, the Cardiff process, a full-scale EU programme to integrate environment and sustainable development into respective policy areas, and an EU sustainable development strategy (Lafferty and Hovden, 2003; Lafferty et al., 2004; European Environment Agency, 2005). There is a substantial body of literature on EPI and national processes, but the interest for the purposes of the present paper is the essence of the notion and whether it can contribute to advancing our understanding of CPI.

EPI comprises two essential aspects—policy and integration—both of which are key requirements for major public policy issues such as gender and health as well as for the environment. Underdal (1980) identified integrated policy as being where constituent elements are brought together under a single unifying conception. Lafferty identifies EPI as a “fuzzy” concept with a wide variety of interpretations, and the EPI literature is not unanimous in its definition. Lafferty et al. (2003), p. 9, define EPI as :

- The incorporation of environmental objectives into all stages of policymaking in non-environmental policy sectors, with a specific recognition of this goal as a guiding principle for the planning and execution of policy.
- Being accompanied by an attempt to aggregate presumed environmental consequences into an overall evaluation of policy, and a commitment to minimize contradictions between environment and sectoral policies by giving priority to the former over the latter.

This definition is based on the concept of the integration of sectoral and environmental objectives. Beneath this broad construction lies a definitional issue over the exact meaning of “environmental objectives” and whether the focus is on pollution, nature conservation, environmental health, etc. And the actual meaning and implementation depends on how the concept is defined within the national operating context and the problem it is trying to address. But we can consider the transfer of the idea to climate policy while recognizing the need for further clarification. At a general level, replacing the word “environment” with “climate” in the EPI definition above serves to construct a workable definition of CPI. EPI has been exploring for longer what CPI has more recently proposed, and thus it could be expected to furnish more specific insights.

The CPI literature has not considered actual public policy and administrative mechanisms as the EPI literature has done. For example, the description of vertical and horizontal integration (Lafferty et al., 2003) invites a focus on the structures and processes of national decision-making cycles. What are the mechanisms that can drive integration *vertically* (across local-provincial-national governments) and *horizontally* (between policy sectors within one layer of government)? Both are relevant to CPI. If we are to deal with climate change in an integrated manner, we need to move from science, from theoretical models, from a co-benefits approach, to structures and processes for national policy development, an area where EPI has advanced more. Table 3 provides examples of the sort of structures and processes covered in the EPI literature.

Table 3 is not comprehensive in detail or coverage, and many more examples of actual structures and processes aimed at integrating environment across other policy sectors exist. These examples serve to indicate the direction which discussion on CPI might take—that is, beyond stating that integration *should* happen to how it *can be implemented* in a public policy and administrative sense.

Table 3: Examples of structures and processes identified in the EPI literature

Nilsson and Persson, 2003; Connor and Dovers, 2004; Persson, 2004; European Environment Agency, 2005; Ross and Dovers, 2007		
<i>STRUCTURES</i>	<i>PROCESSES</i>	<i>COUNTRY</i>
Sustainability policy units in first ministers' department; sustainability committees of the Cabinet	Integrated appraisal of policies & programmes; periodic evaluation of policies & programmes; greening of government activities	Several States/Territories in Australia
Parliamentary Commissioner for the Environment	Independent commentary, research and review	New Zealand
Various mechanisms	Strategic environmental assessment (of higher-level policy proposals in non-environmental sectors)	Various countries, especially in the EU under the Strategic Environmental Assessment Directive
Committee of State Secretaries for Sustainable Development (Green Cabinet); Council for sustainable development	Interdepartmental management; coordination	Germany
Codification of sustainable development in statute law	Requirement to consider in non-environmental agencies' decision-making	Various countries (e.g., +120 statutes in Australia)
Sustainable Development Unit; environmental advisory council	Guidance and integrated policy appraisal	United Kingdom
Committee for ecologically sustainable development	Sustainable development reports; national strategy for sustainable development; environmental accounting	Sweden
National Councils for Sustainable Development (and equivalent bodies)	Highly variable: Input into national development plans, cross-sectoral policy coordination, input into budget formulation	+70 countries (e.g., Belgium, United Kingdom, Ireland)

However, two issues emerge from a review of the EPI literature. The first is that, as opposed to the CPI literature's focus on developing countries, the concentration of research on and policy implementation of EPI relates to developed countries. Second, there is surprisingly little attention paid to climate change in EPI. Given that climate change is a core problem in sustainable development, the domain from which EPI emerged, it would be expected that the EPI literature would deal with climate issues. Yet analysis of the EPI literature reveals that this is not the case. For instance, assessment of energy systems and EPI could be partially counted as relevant to climate change, however holistic models of climate change are absent from the literature on EPI. The EPI literature has largely been focused on agriculture, air pollution, energy, fisheries, environment impact assessment, environmental monitoring and green budgeting. Climate change does not feature strongly. Janicke et al. (1997), in their work across thirteen developed and developing countries, identify climate protection as a missing element in the environmental capacity of the case study countries. But even this analysis comes as a conclusion, and climate change does not figure in the case studies as such.

The present paper is not meant as a criticism of the EPI literature; rather, it invites consideration of why it has not dealt with climate change. Was it assumed that climate change would develop as a separate discipline in its own right, or was it that uncertainties in climate change science deterred attention? Or were climate policy discussions unaware of the evolving EPI field? Whatever the reason, it would appear an appropriate time, in addressing climate policy, to consider the insights and examples of integrative structures and processes offered by EPI, as a body of theory and practice with a longer history and more substantial body of evidence.

Conclusions and the way forward

Climate policy integration, along with the closely associated issue of linking climate change and sustainable development, has been widely proposed as a necessary step in addressing climate change. Climate change is a complex issue driven by economic growth and development, and requires innovative approaches that incorporate multiple policy sectors. The fundamental argument for an integrated approach has been made in the literature, yet it has not progressed sufficiently in terms of implementation.

The literature on climate change and sustainable development is still evolving and has accelerated since the publication of IPCC 3AR. Most work is confined to single sectors or to a particular mitigation option, rather than to considering systems of policymaking as a whole-of-government activity. This is a major barrier not only in understanding implementation issues but also in addressing climate policy integration in national contexts.

Broadly, the meaning of environmental policy integration and climate policy integration are similar. However, the bodies of literature on both topics are deficient: CPI in the detail of implementation on a national scale; and EPI in terms of climate change as a focus as well as its concentration until now on developed countries. Nevertheless, the EPI literature and practice are more advanced in proposing, describing and analysing actual policy and administrative structures and processes, and these provide a means of hastening consideration by researchers and policymakers of interpreting CPI.

The paper argues that policy integration should be seen as a core topic in climate change debates, and that EPI can point to more practical and focused ways forward. Central to this is maintaining a focus on the congruence, or otherwise, of climate change and sustainable development, consistent with the proposition that any climate policy which does not take a comprehensive approach to development, whether in rich or poor countries, will struggle to take hold in national policy systems. There are three closely connected tasks for future research and policy work:

1. A more purposeful survey and identification of current or proposed policy and administrative structures and processes that may advance CPI across national contexts.
2. Empirical investigations of policy and administrative structures and processes, whether existing or proposed, in national contexts, to provide worked examples of possible strategies. This investigation should encompass a variety of stages of development and span varying political, social, biophysical and economic contexts, and should look for a connection with EPI and other existing mechanisms.
3. Once 1 and 2 above have been sufficiently advanced, examination of the ways in which international policy regimes—both climate change-related and broader environment and development ones—do, do not, or could better support CPI initiatives on a national scale.

The first task outlined above could begin in the context of National Communication Reports, where countries under an obligation to the UNFCCC report on their national systems for addressing climate change. National Communications is a reporting instrument of the UNFCCC process that generates work done on climate change by Parties over a certain period, which when finalized are submitted to the UNFCCC Secretariat (see http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/3625.php).

National Communications could form an initial source of information on proposed or actual strategies that may address CPI in different countries. It is suggested that a future task would be to review National Communications to ascertain whether practice (or at least proposed national actions) are in fact ahead of the CPI literature in identifying implementation strategies. This would provide a basis for selecting a range of specific mechanisms for closer examination under 2 above.

Climate policy integration will not occur in a vacuum, but within functioning policy systems at the national level. Effective policy will require greater attention to the public policy and administration mechanisms than has been seen to date. That is to be expected, as most attention over the past two decades has been on the *science* of climate change. In future, climate change *policy is* where the most attention will be needed.

References

- Agrawala, Shardul (1998a). "Context and early origins of the Intergovernmental Panel on Climate Change". *Climate Change* 39: 605-20.
- Agrawala, Shardul (1998b). "Structural and process history of the Intergovernmental Panel on Climate Change". *Climate Change* 39: 621-42.
- Agrawala, Shardul (1999). "Early science-policy interactions in climate change: lessons from the Advisory Group on Greenhouse gases". *Global Environmental Change* 9 (1999): 157-169.
- Banuri, Tariq (1993). "The landscape of diplomatic conflicts". In Wolfgang Sachs (ed.). *Global ecology: A new arena of political conflict*. Zed Books, London.
- Banuri, Tariq, et al. (2001). Setting the stage: Climate change and sustainable development. In *Climate Change 2001: Mitigation*, Contribution of Working Group III to the Third Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom.
- Cohen, S. J., et al. (1998). "Climate change and sustainable development: Towards dialogue". *Global Environmental Change* 8 (4): 341-371.
- Connor, R. and S. Dovers (2004). *Institutional Change for Sustainable Development*. Edward Elgar Publishing Ltd, United Kingdom.
- Dovers, S. (1997). "Sustainability: Demands on policy". *Journal of Public Policy* 16: 303-318.
- Dovers, S. (2005). *Environment and Sustainability Policy: Creation, implementation and evaluation*. The Federation Press, Australia.
- Dovers, S. and J. W. Handmer (1993). "Contradictions in Sustainability". *Environmental Conservation* 20 (3): 217-21.
- European Environment Agency (2005). *Environmental policy integration in Europe: State of play and an evaluation framework*, Technical Report No. 2/2005. European Environment Agency, Copenhagen.
- Halsnaes, K., et al. (2008). "Sustainable development and climate change: Lessons from country studies." *Climate Policy* 8: 202-219.
- Heller, T. C. and P. R. Shukla (2003). "Development and climate: Engaging developing countries". In *Beyond Kyoto: Advancing the international effort against climate change*, Pew Center on Global Climate Change, Arlington, VA, USA.
- Huq, S., et al. (2003). *Mainstreaming Adaptation to Climate Change in Least Developed Countries*. International Institute for Environment and Development, London.
- Intergovernmental Panel on Climate Change (2007a). *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom.
- Intergovernmental Panel on Climate Change (2007b). *Climate Change 2007: Mitigation of Climate Change*. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom.
- Janicke, M. and H. Weidner, eds. (1997). *National Environmental Policies: A Comparative Study of Capacity-Building*. Springer-Verlag, Berlin.

- Jasanoff, S. and B. Wynne (1998). Science and Decisionmaking. In *Human Choice and Climate Change Volume 1: The Societal Framework*. S. Rayner and E. Malone, eds. Battelle Press, Columbus, OH, USA.
- Klein, R. J. T., et al., eds. (2007). Interrelationships between adaptation and mitigation. In *Climate Change 2007: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom.
- Klein, R. J. T., et al. (2005). "Integrating mitigation and adaptation into climate and development policy: three research questions". *Environmental Science & Policy* 8: 579-88.
- Kok, M., et al. (2002). *Development and climate—exploring an integrated approach*. Special report for the World Summit on Sustainable Development in Johannesburg, South Africa. The National Institute for Public Health and the Environment (RIVM), Bilthoven, The Netherlands.
- Kok, M., et al. (2008). "Integrated development and climate policies: National and international benefit". *Climate Policy* 8(2):103-118.
- Lafferty, W. M. (2004). From environmental protection to sustainable development: the challenge of decoupling through sectoral integration. In *Governance for sustainable development: The challenge of Adapting form to function*. W. M. Lafferty, ed. Edward Elgar Publishing Ltd, United Kingdom.
- Lafferty, W. M. and E. Hovden (2003). "Environmental policy integration: Towards an analytical framework". *Environmental Politics* 12 (3): 1-22.
- Lafferty, W. M., et al. (2004). "Institutional provisions for environmental policy integration: An analysis of the Environmental Profile of the State Budget and the National Environmental Monitoring System in Norway". Paper presented at the 2004 Berlin Conference on the Human Dimensions of Global Environmental Change: Greening of Policies—Interlinkages and Policy Integration, Berlin.
- Lehtonen, M. (2007). "Environmental policy integration through OECD peer reviews: Integrating the economy with environment or the environment with the economy?" *Environmental Politics* 16 (1): 15-35.
- Meijers, E. and D. Stead (2004). "Policy integration: What does it mean and how can it be achieved? A multi-disciplinary review". Paper presented at the 2004 Berlin Conference on the Human Dimensions of Global Environmental Change: Greening of Policies—Interlinkages and Policy Integration, Berlin.
- Micahelowa, A. and K. Michaelowa (2007). "Does climate policy promote development?" *Climate Change* 84: 1-4.
- Moomaw, W., et al. (1999). "The Kyoto Protocol: A blueprint for sustainable development". *Journal of Environment and Development* 8 (1): 82-90.
- Munasinghe, M. (2003). "Analysing the nexus of sustainable development and climate change: An overview". Organization for Economic Cooperation and Development, Development and Climate Change Project, Paris.
- Munasinghe, M. and R. Swart (2005). *Primer on Climate Change and Sustainable Development: Facts, Policy Analysis and Applications*, Cambridge University Press, United Kingdom.
- Najam, A., et al. (2003). "Integrating sustainable development into the fourth assessment report of the Intergovernmental Panel on Climate Change." *Climate Policy* 3.
- Newby, H. (1993). Global environmental change and the social sciences: Retrospect and prospect. The International Group of Funding Agencies for Global Change Research (IGFA) Preparatory Meeting, Noordwijk, Netherlands.
- Nilsson, M., et al. (2007). Introduction: EPI agendas and policy responses. In *Environmental Policy Integration in Practice: Shaping Institutions for Learning*. M. Nilsson and K. Eckerberg, eds. Earthscan Ltd, London.
- Nilsson, M. and A. Persson (2003). "Framework for analyzing Environmental Policy Integration". *Journal of Environmental Policy and Planning* 5 (4): 333-59.
- Organization for Economic Cooperation and Development (2005). *Bridge Over Troubled Waters: Linking Climate Change and Development*. OECD, Paris.
- Persson, A. (2004). "Environmental Policy Integration: An Introduction". Policy Integration for Sustainability Background Paper, Stockholm Environment Institute, Stockholm.
- Rayner, S. and E. L. Malone (1998). Social Science Insights into Climate Change. In *Human Choice and Climate Change*. Battelle Press, Columbus, OH, USA.
- Ribeiro, S. K. and A. Andrade De Abreu (2008). "Brazilian transport initiatives with GHG reductions as a co-benefit". *Climate Policy* 8 (2):220-40.
- Robinson, J., et al. (2006). "Climate change and Sustainable development: Realizing the opportunity." *Ambio* 35 (1).

- Ross, A and Dovers, S (2007). "Policy Integration for Sustainable NRM: Joint Research and Policy Learning". Final report of Land & Water Australia research project ANU-50. Land & Water Australia.
- Sachs, J. (2008). *Common Wealth: Economics for a Crowded Planet*. The Penguin Press, USA.
- Sathaye, J., et al. (2007). Sustainable development and mitigation. In *Climate Change 2007: Mitigation*. Contribution of Working Group III to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom.
- Schipper, E. L. F. (2004). "Exploring adaptation to climate change: A development perspective". Ph.D. dissertation, School of Development Studies, University of East-Anglia.
- Sen, A. (1999). *Development as Freedom*. Anchor Books, New York, USA.
- Siebenhuener, B. (2002). "How do scientific assessments learn? Part 1. Conceptual framework and case study of IPCC". *Environmental Science and Policy* 5: 411-420.
- Siebenhuener, B. (2003). "The changing role of nation states in international environmental assessments -the case of IPCC." *Global Environmental Change* 13: 113-123.
- Swart, R. and F. Raes (2007). "Making integration of adaptation and mitigation work: mainstreaming into sustainable development policies?" *Climate Policy* 7(4): 288-303.
- Swart, R., et al. (2003). "Climate Change and Sustainable Development:expanding the options". *Climate Policy* 3(S1): S19-S40.
- Tompkins, E. L. and W. N. Adger (2005). "Defining response capacity to enhance climate change policy." *Environmental Science and Policy* 8: 562-571.
- Underdal, A. (1980). "Integrated Marine Policy: What? Why? How?" *Marine Policy* 4(3):159-69.
- United Nations (1992). *Earth Summit Agenda 21: The United Nations Programme of Action from Rio*. United Nations, New York.
- Urwin, K. and A. Jordan (2007). "Does public policy support or undermine climate change adaptation? Exploring policy interplay across different scales of governance". *Global Environmental Change* 18:180-191.
- Winkler, H., et al. (2008). "Methods for quantifying the benefits of sustainable development policies and measures (SD-PAMs)". *Climate Policy* 8(2):119-34.
- Winkler, H., et al. (2002). Sustainable development policies and measures: Starting from development to tackle climate change. In *Building on the Kyoto Protocol: Options for Protecting the Climate*. K. A. Baumert, O. Blanchard, S. Llosa and J. F. Perkaus, eds. World Resources Institute, Washington, D.C., USA.
- Yohe, G. (2001). "Mitigative capacity: The mirror image of adaptive capacity on the emissions side". *Climate Change* (49): 247-62.
- Yohe, G. and R. Moss (2000). "Economic sustainability, indicators and climate change". In *Proceedings of the IPCC Expert Meeting on Development, Equity and Sustainability Colombo, Sri Lanka*. Intergovernmental Panel on Climate Change and World Meteorological Organization, Geneva.
- Yohe, G., et al. (2007). Perspectives on climate change and sustainability. In *Climate Change 2007: Adaptation and Vulnerability*. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press, United Kingdom.
- Zakaria, F. (2008). *The Post American World*. Allen Lane, London.