Energy Governance in the Era of Climate Change

Joseph A. Camilleri

Energy or the powering of human economies has been integral to the course of human evolution. It has played a decisive role in the changing forms of social interaction and levels of organisational complexity. Patterns of energy production and consumption closely correlate with the size of communities, their mode of economic activity, degree of technological sophistication, and ensuing economic and social division of labour. They also reflect particular relationships to space, both physical space (land, water, air) and social space (the way social relationships are understood and practised). As a corollary of this, the sources and end uses of energy as well as the quantities and forms in which it is produced and consumed bear directly upon the society's authority structures, political institutions and decision-making processes. It follows that the governance implications of contemporary energy policy cannot be fully grasped unless they are placed in their evolutionary context – a perspective that is strangely absent in much of the existing literature.

Over millennia, humans have extended and expanded their access to energy, first by the use of fire, followed by the exploitation of animal power and later by harnessing the power of wind and water – these would prove critical factors in the development of agriculture some 10,000 years ago. However, it is only with industrialization and the intensive use of fossil fuels that human societies managed to free themselves from the limitations of natural energy flows. By unlocking the Earth's stores of coal, oil, and natural gas, they were able to accelerate with unprecedented speed the rate at which energy could be channelled into the human economy. The net effect has been the most radical social transformation in human evolution, the full ramifications of which are still only dimly perceived.[1]

The history of energy production and consumption in the United States represents the single most dramatic expression of this trend. Wood remained the dominant energy fuel from the founding of the first American colonies in the early seventeenth century until the late nineteenth century. Coal did not surpass wood until about 1885. By the end of World War I, it accounted for 75 percent of US total energy use, only itself to be surpassed in 1951 by petroleum and then by natural gas a few years later. The annual consumption of both petroleum and natural gas would exceed that of coal in 1947 and quadruple in the space of just three decades. Neither before nor since has any source of energy achieved such rapid dominance.

Figure 1. Energy Consumption by Source, 1635-2000 (Quadrillion Btu)
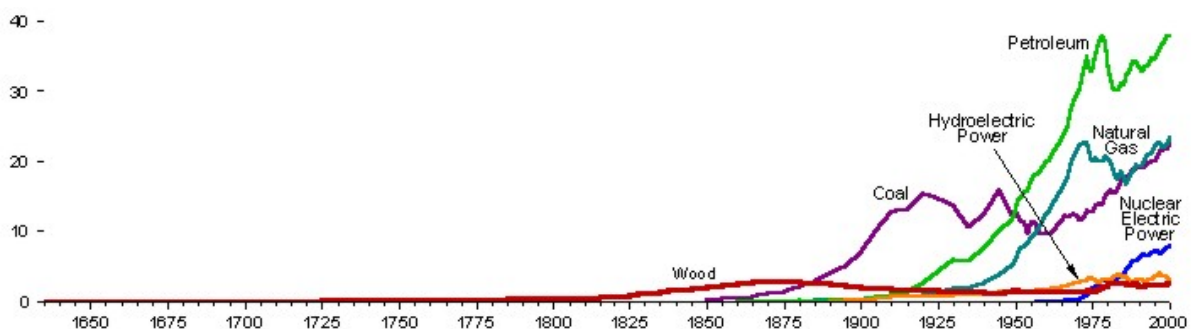
Source: US Energy Information Administration, *Annual Energy Review 2009.*

Cars and trucks soon replaced the railway as the primary form of transport and natural gas acquired extensive heating applications in both industry and the home. The coal industry survived, however, as electricity utilities competed to fill the nationwide demand for electricity. In 2000 fossil fuels accounted for 80 percent of total energy production and were valued at an estimated $148 billion (nominal dollars).

Though the United States remained by far the largest single user of energy per capita in the world, the same general trend applied to the industrialised world as a whole, and to most of the emerging economies.

Figure 2. World Primary Energy Production by source, 2007
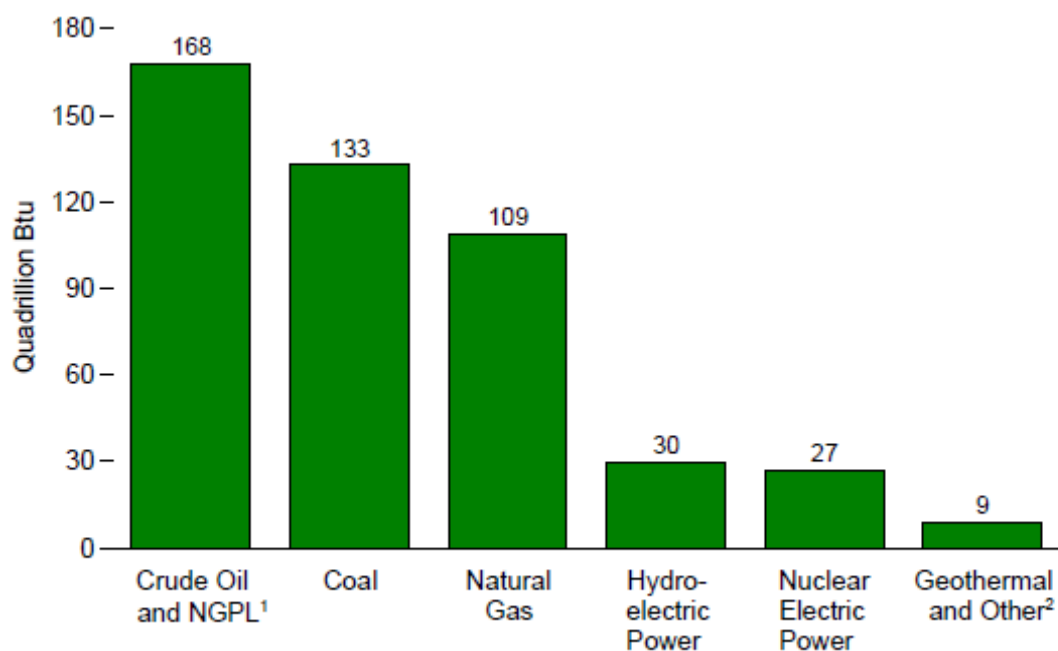
1 Natural gas plant liquids.
2 Net electricity generation from wood, waste, solar, and wind. Data for United States also include other renewable energy.

Source: US Energy Information Administration, *Annual Energy Review 2009.*

The scale, structure and impact of global energy usage have in recent decades become the subject of mounting concern on the part of scientists, policy-makers and the wider public. In question are policy imperatives that are integral to the climate change debate The emerging scientific consensus, to which the Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC) have significantly contributed,[2] points to a number of relatively well known propositions: that atmospheric concentrations of greenhouse gases have increased due to human activities, and that as a consequence global mean surface temperatures have increased, precipitation patterns have changed, sea levels have risen, the El Nino weather phenomenon has become more intense, frequent and persistent, biophysical systems have changed, and economic damages arising from extreme weather conditions have markedly increased.

Figure 3. Changing Temperatures, Sea Levels and Ice and Snow Cover, 1850 to 2005
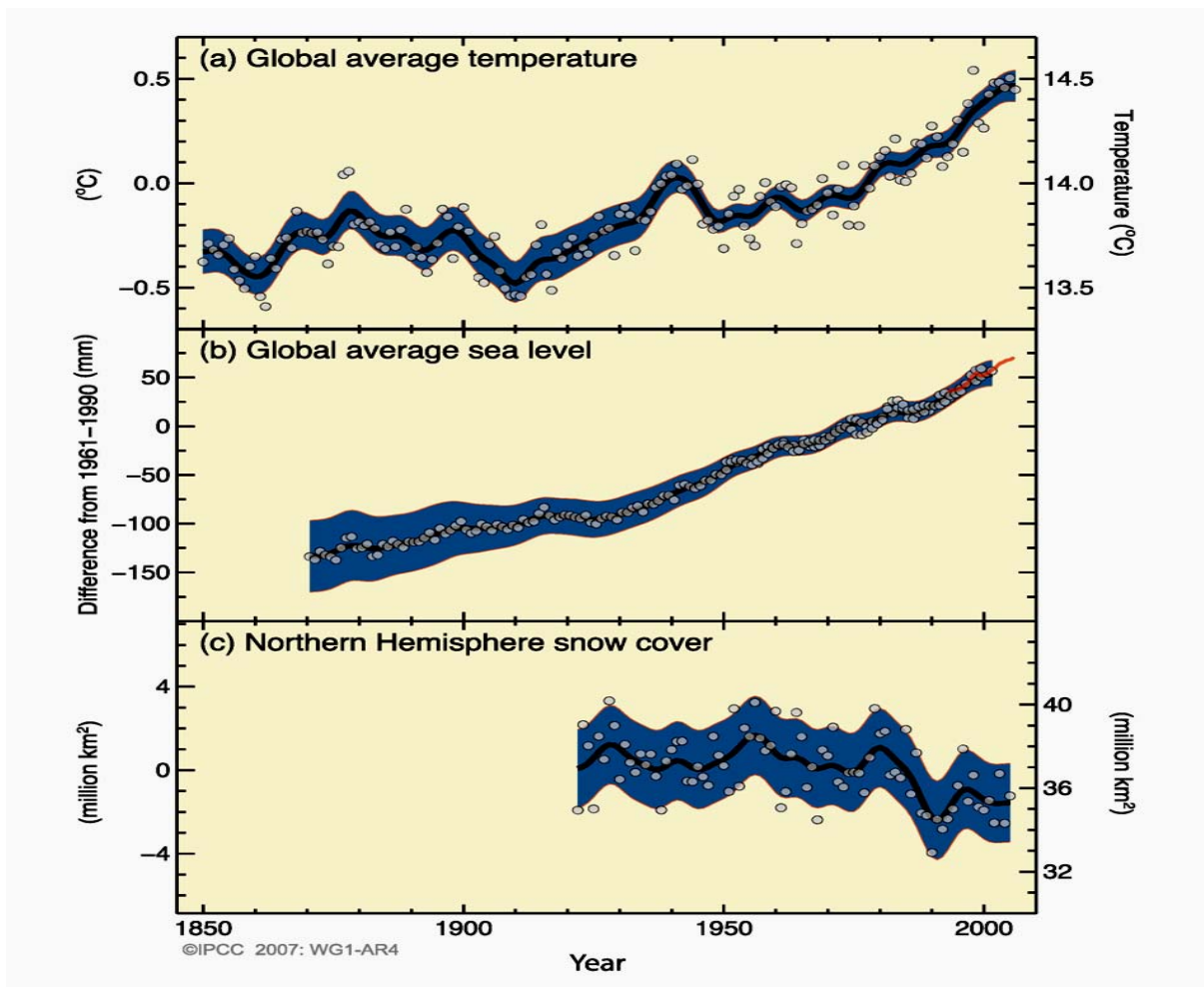
Source: IPCC *Fourth Assessment Report*, 2007.

These effects were expected to become progressively more pronounced, and if current patterns of energy use remained unchanged, were likely to have far-reaching and negative impacts on environmental and economic conditions in almost every region of the world (see Appendix 1).

This chapter argues that the challenge posed by climate change has already elicited substantial policy responses on the part of governments, international organisations, the corporate sector and a wide range of civil society actors.[3] Fifty, let alone a hundred, years ago the scale of these responses, the range of actors involved in both consultative and decision-making processes, and the scope of institutional innovation would have been scarcely imaginable. Yet the normative, legal and political steps taken thus far are not necessarily equal to the task. By way of explanation attention has rightly been drawn to the gap between declaratory and operational policy and to the competing interests of states, hence to the difficulty in arriving at a universal and legally binding climate change regime. However, these shortcomings tell us but one part of the story. Three defining features of the governance response to date must be placed at the centre of the analysis: the uncoordinated and at times contradictory ways in which the multiple tiers of governance interact, the intricate and often elusive web of linkages that connect state, market and civil society, and the propensity to reduce climate change policy to a set of technical fixes that glosses over the deeper societal

and cultural underpinnings of energy policy. To illuminate these critical aspects of the challenge-response dynamic, we must first review, however briefly, the policy and institutional trajectory of the last two decades.

From Rio to Copenhagen

The multilateral response to climate change is best characterised by reference to a number of thresholds,[4] each of which was followed by a period of intense and often acrimonious negotiation. These thresholds and the intervening phases are reviewed here because of the light they shed on the scope, modalities and trajectory of institutional innovation. Specifically, they are revealing of the tensions and incongruities that have emerged between different decision making arenas (notably states, markets and civil society), between different policy domains (notably energy, economy, security and environment) and between different tiers of governance (notably local, provincial, national, regional and global).

The first threshold came with the 1988 Toronto Conference on the Changing Atmosphere, the first major international meeting bringing together governments and scientists to consider the international policy challenge posed by climate change. The conference produced two notable achievements: industrialised countries reached a consensus on the need to reduce greenhouse gas emissions by 20 per cent by 2005 (the so-called "Toronto target"); and a decision was taken to establish the Intergovernmental Panel on Climate Change (IPCC), an international grouping of over 300 leading climate scientists charged with articulating in authoritative fashion the developing scientific understanding of the magnitude and implications of climate change.

In August 1990 the first IPCC report was sufficiently alarming for the UN General Assembly to launch negotiations for a new treaty. In December 1990, it established the Intergovernmental Negotiating Committee (INC).[5] Following five formal meetings, the INC developed a proposal for a *UN Framework Convention on Climate Change (UNFCCC).[6]* The second threshold came with the United Nations Conference on Environment and Development (UNCED) which convened in Rio de Janeiro on 3-14 June 1992, and at which the UNFCCC was opened for signature. The Convention, which entered into force after the fiftieth ratification on 21 March 1994 (as of October 2010 194 ratifications had been secured), had as its ultimate objective to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous human interference with the climate system. To this end the Convention instituted the Conference of the Parties (COP), an association of all the countries that were Parties to the Convention, with a view to keeping international efforts to address climate change on track. Its task was to review the implementation of the Convention and examine the commitments of Parties in light of the Convention's objective, new scientific findings and experience gained in implementing climate change policies.

A period of protracted and contentious negotiation ensued on ways of implementing the Convention. The first of a series of COP meetings, held in Berlin in March-April 1995, produced the *Berlin Mandate*. Two key problems had to be surmounted. The first had to do with the question of unequal responsibility. Although the Mandate acknowledged the general principle that reducing greenhouse gas emissions would impose considerable costs to national economies, how these costs would be distributed was left unresolved. On the other hand, it was agreed that the least developed countries (Annex 2 countries) should not have to

make any new commitments. The other difficult question, how to institute legally binding emission targets, was left for consideration by a future COP-3 meeting.

Competing interests, perceptions and attitudes would play out against the backdrop of a rapidly solidifying scientific consensus. In December 1995 the IPCC released its *Second Assessment Report* elaborating and sharpening its evaluation of core concerns. The hardening scientific conclusions were, however, at odds with increasing doubts as to the capacity of international decision-making processes to devise appropriate remedial action. The widespread view was that the industrialised world (Annex 1 countries) would not be able to cut its emissions to 1990 levels by 2000.

Reflecting the heightened sense of urgency emanating from the IPCC's *Second Assessment Report*, the Geneva Declaration issued by COP-2 (7-19 July 1996) nevertheless reaffirmed the commitment that COP-3 should set binding emission reduction targets. For its part, the US Administration called for further negotiations and more realistic targets. In the eyes of many, especially the environmental lobby, the US response reflected the powerful pressure exerted by energy companies and their unrelenting lobbying and media campaigns as they attempted to delegitimise the emerging scientific consensus.[7] In the midst of this highly charged atmosphere the COP-3 meeting was held in Kyoto in December 1997 with some 10,000 people in attendance. Significantly, national government delegates were outnumbered by civil society and corporate representatives. COP-3 did not put an end to heated disagreement among state actors or between them and a range of non-state actors, but it did pave the way for the third milestone, namely the signing of the *Kyoto Protocol to the UN Framework Convention on Climate Change*.

The agreement endorsed more sharply than ever before the scientifically legitimised proposition that the burning of fossil fuels released greenhouse gases (in particular carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perflurocarbons and sulphur dioxide), which led to global warming and climate change. It provided for an overall reduction of greenhouse gas emissions by Annex 1 countries over 2008-12 by an average of 5.2 per cent from 1990 levels. Each Annex 1 country was given a specific target as its contribution to this overall outcome. Developing and least developed countries were exempted from making cuts for the foreseeable future. The protocol would come into force when 55 countries – including Annex 1 countries that emitted 55 per cent of GHG emissions in 1990 – ratified the protocol.

Notwithstanding the agreement reached, the Kyoto Conference was followed by a period of even sharper contestation. Estimates varied widely as to how onerous these targets would be, since the burden depended on the extent to which emissions would have grown in the absence of intervention.[8] Conflicting assessments of the projected impact of national emission targets on economic growth mirrored and reinforced the divergent positions of the United States and the European Union (positions in each case shared by powerful voices in their respective corporate sectors) on the feasibility and desirability of implementing the treaty. The incoming Bush Administration soon made it known that it would not ratify the Kyoto Protocol, with Australia immediately following suit, even though its target allowed for an 8 per cent increase in emissions. US recalcitrance represented a severe blow to the prospects for ratification, since the United States accounted for about one quarter of the world's emissions. It was only with Russia's belated decision in September 2004 in favour of accession (in part

the result of immense pressure exerted by the European Union) that the Kyoto Protocol entered into force on 16 February 2005.[9]
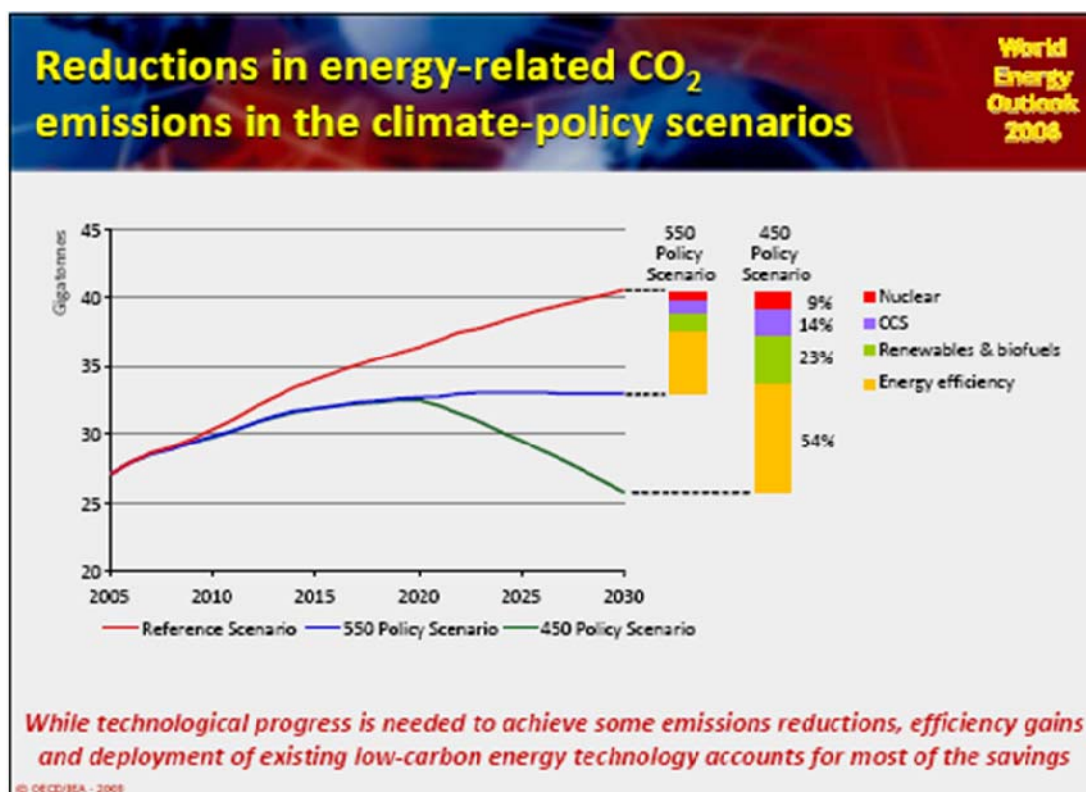
Ratification was a significant political milestone. It was the strongest multilateral affirmation yet that states responsible for the bulk of greenhouse gas emissions were prepared to take mitigative action. Especially significant was the fact that fierce US opposition had failed to derail ratification. However, the Protocol's strength was also its weakness.[10] The United States and Australia, two of the world's highest per capita emitters, remained outside the treaty. So did many rapidly industrialising economies, notably China, India and South Africa, whose economic growth trajectories were predicated on high and rising levels of coal burning.[11]

The Kyoto agreement would encounter a number of other difficulties. The adequacy of the Protocol's monitoring and enforcement mechanisms, and more importantly the adequacy of the targets themselves now came under sharper scrutiny. Even if Kyoto did reach its goal – a 5 per cent fall in 1990 emissions by 'Annex I' countries over 2008-2012, this would still be well short of the IPCC's call for a 60-80 per cent cut in global emissions. The exemption of Annex II countries from legally binding targets, ethically defensible though it was, would soon become a persistent source of tension.[12] The fact that these countries were required to report their emissions, improve their emission accounting practices and participate in clean development mechanisms, did little to placate those arguing for universal burden sharing. Finally, ratification of the Protocol highlighted a number of unanswered questions relevant to the process of implementation: How would commitments under the Protocol relate to the Global Environment Facility (GEF) which was established in 1991 to help developing countries fund environmental projects and programs? Similarly, what role might other international organisations both outside and within the UN system (e.g. UNDP, UNEP, UN Population Fund, World Bank), whose mission straddled the energy, development and environment policy domains, play in promoting the objectives of the Kyoto Protocol?

Well before the Kyoto Protocol had come into force, international negotiations for a post-Kyoto climate change regime were already under way. The negotiating process had to contend with sharply competing political and economic priorities on the one hand and an increasingly confident scientific assessment of the dangerous implications of rising levels of fossil fuel consumption on the other. In this context, the scenarios constructed by various international agencies merit attention not so much for their predictive accuracy as for the light they shed on the implications for governance. Here, we confine our attention to the World *Energy Outlook 2008* prepared by the International Energy Agency (IEA)[13] – an assessment echoed by a number of other reports[14] but one which carried particular weight given the IEA's coordinating function among OECD countries.

The IEA REPORT contrasted three climate change policy scenarios: the reference scenario (or business as usual with world energy demand expanding by 45 per cent by 2030) and two scenarios predicated on greenhouse gas emission reductions to 550 and 450 parts-per-million CO_2-equivalent (ppm CO_2e) respectively. It is worth stressing that both reduction scenarios envisaged that, while technological innovation would play a part, most energy savings would derive from efficiency gains and the deployment of existing low carbon energy technologies. The 450 policy scenario, which corresponded to a 2^oC global temperature rise, envisaged energy demand growing half as fast as in the Reference Scenario. This outcome would be secured through the rapid deployment of low carbon technologies, in particular carbon capture

and storage (CCS), a substantial reorganisation of energy consumption patterns in non-OECD countries, the introduction of carbon pricing (the CO_2 price in 2030 would reach $180 per tonne), and additional investment equal to 0.6 per cent of GDP.

Reductions in energy-related CO_2 emissions in the climate-policy scenarios

While technological progress is needed to achieve some emissions reductions, efficiency gains and deployment of existing low-carbon energy technology accounts for most of the savings

Though these policy assessments were fiercely resisted by industries most likely to be adversely affected by their implementation, they were nevertheless influential in setting the tone for policy discourse, especially in Europe. In December 2005, the first Meeting of the Parties to the Kyoto Protocol (MOP1) established the Ad Hoc Working Group on Further Commitments by Annex 1 Parties under the Kyoto Protocol ((AWG-KP). Two years later COP13, meeting in Bali in December 2007, adopted the Bali Action Plan which established the Ad Hoc Working Group on Long-Term Cooperative Action under the UNFCCC (AWG-LCA) with a mandate to focus on mitigation, adaptation, finance, as well as technology and capacity building. The Bali conference also agreed on a two-year process, the Bali Raodmap, which envisaged parallel and interlinked negotiations under UNFCCC and the Kyoto Protocol leading to a legally binding agreement to be concluded at COP15/MOP5 in Copenhagen in December 2009. As the Copenhagen Conference approached, the prevailing sentiment was that the two working groups had made moderate progress on the issues of adaptation, technology and capacity building, but that deep divisions remained on mitigation and key aspects of finance.

Copenhagen and its Aftermath

The UN Climate Change Conference held in Copenhagen on 7-19 December 2009 attracted unprecedented international attention and the attendance of 120 heads of state and government. Participants included 10,500 delegates, 13,500 observers and more than 3,000

media representatives. Delegates engaged in some 1,000 official, informal and group meetings, while observers took part in more than 400 meetings, and media attended over 300 press conferences. Some 220 exhibits had been prepared by governments, the UN, other multilateral agencies and civil society organisations.[15] The negotiations, which took place in the context of COP15 and MOP5 and in conjunction with meetings of AWG-KP and AWG-LCA, had two clear goals: a legally binding treaty to cover the period 2013-2020, and a well defined vision for long-term collaborative action beyond 2020.
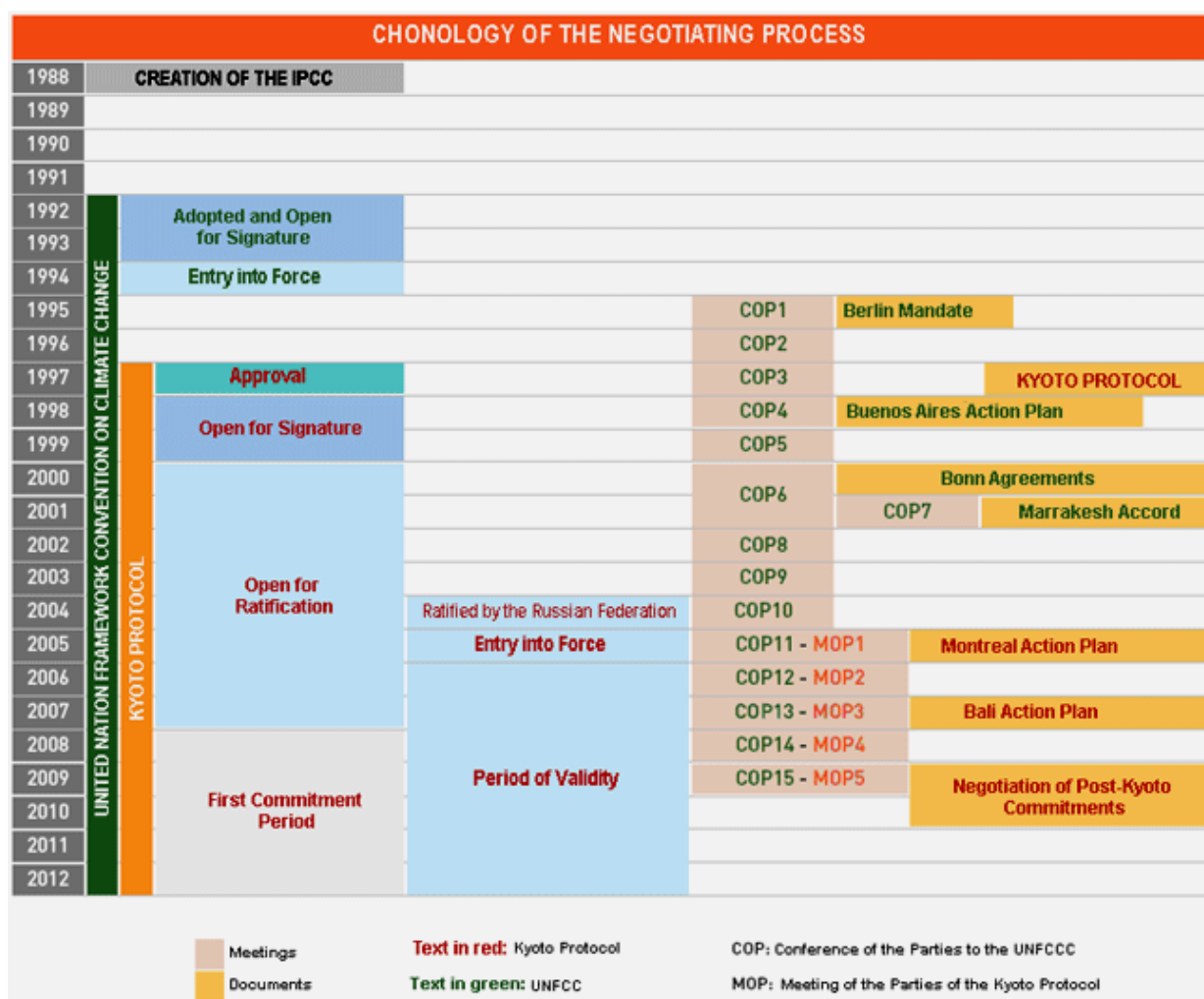
Source: Spanish Ministry of Environment, *Guía para periodistas sobre cambio climatico y negociación internacional*, 2009 (http://www.mma.es/portal/secciones/cambio_climatico/guia_periodistas.htm)

As many had feared, the Conference produced a cacophony of voices, most of them rehearsing well known arguments, with both weak and powerful states seemingly unable to deviate far from their prepared scripts. The only substantial document to emerge was the Copenhagen Accord, brokered by the United States in discussions with four of the leading industrialising economies (China, India, Brazil and South Africa). Key elements included: a general commitment to limit the rise in global temperatures to 2 degrees Celsius; a process whereby countries would indicate mitigation pledges by 31 January 2010, broad principles for reporting and verification

of undertakings by national governments, a collective pledge by developed countries to provide developing countries with additional funds 'approaching $30 billion' for the period 2010-2012 to assist with mitigation and adaptation efforts and a promise to mobilize $100 billion dollars a year by 2020 to address their needs though a mix of bilateral and multilateral, public and private resources. The Accord also envisaged the creation of the Copenhagen Green Climate Fund, a High Level Panel to explore ways of meeting the 2020 finance objective, and a new Technology Mechanism.[16]

For many the outcome was deeply disappointing. The Conference failed to produce a binding agreement or a feasible pathway for achieving that objective and merely 'took note' of the Accord, although more than 120 states, responsible for more than four-fifths of global greenhouse gas emissions, opted to engage with the provisions of the Accord. No agreement was reached on a timetable for achieving emission reduction targets. A global coordination mechanism, a viable verification system, and ways of enforcing compliance even with self-imposed targets remained similarly elusive.

The undertakings given by States in response to the Copenhagen Accord were at best uneven. As of September 2010, 111 parties (counting the 27 member states of the European Union as a single party) had responded: 16 Annex I countries submitted 2020 emissions targets; 42 non-Annex I countries submitted mitigation actions; and 53 other non-Annex I countries associated themselves with the Accord. However, the total emission reductions proposed fell far short of what was needed to achieve the 450-ppm pathway by 2020. Most assessments pointed to rising global temperatures of between 3.0 and 3.9 degrees Celsius.[17] As for the financing arrangements, the amounts envisaged were not pegged to inflationary pressures, were generally less than UN agencies considered necessary and riddled with ambiguities as to the source of funding. Nor was it entirely clear how much new money was involved and how much was simply the repackaging of existing aid programs.[18]

This cursory review of the Copenhagen Accord is instructive not so much for what it tells us about the complexities of climate change policy as for the light it sheds on the dynamics of energy governance in a period of profound transition. Why did the decision-making framework painstakingly developed over two decades of sustained international negotiations not yield the desired outcomes? In the wake of Copenhagen the scepticism with which multilateral processes and institutions had been viewed for some time quickly gathered pace.

Some now advocated the imposition of sanctions to discourage non-compliance, others canvassed mechanisms designed to dissuade 'free-riders' and agreements to limit in modest but explicit ways traditional notions of state sovereignty. Others still made the case for numerically more manageable negotiating forums paving the way for bilateral or 'minilateral' accords. Negotiations, it is argued, would make more headway if they centred on

> . . . the small number of actors responsible for the lion's share of the world's carbon dioxide emissions, including China (21.5 percent), the United States (20.2 percent), the European Union (13.8 percent), and a handful of other developed and emerging economies.[19]

Smaller, less formal frameworks, including the G20, the G8+5[20], and the Major Economies Forum on Energy and Climate (MEF)[21] already existed, but they did not as yet occupy centre stage. Selective state-based forums on climate change were proposed as preferable forums for negotiations precisely because they operated outside the universal structure of the

UNFCCC regime. For Steve Rayner and Gwyn Prins the politics of inclusion risked becoming a recipe for gridlock:

> Relying on an international agreement that requires the consent of all national governments inevitably results in the very lowest of common denominators. Since fewer than twenty countries account for 80% of the world's emissions . . . it would be better for diplomacy to focus upon them. In these early stages, the other 150 countries only get in the way.[22]

In the interests of more effective decision-making, some argued that the UNFCCC negotiations should replace the consensus principle, which gave each state a virtual power of veto, with a majority based system of decision making, while others were attracted to the notion of 'complementary processes'. 'Coalitions of the willing', precisely because they brought together the like-minded, were thought more likely to reach agreement and take initiatives and so demonstrate the kind of progress that others might wish to emulate at a later date. Others still questioned the wisdom of those who saw verifiable, legally binding commitments as the only way to guarantee that countries would cut their emissions.[23] They argued instead that such commitments would be difficult or impossible to secure, and in the unlikely event that they could be secured, the risk of non-compliance would remain high.[24] A more promising strategy might be to seek an international agreement based on political pledges supported by legal domestic targets. In short, a multifaceted intellectual effort was under way to reassess the institutional and legal foundations of climate change policy in the light of the disappointing outcome at Copenhagen and the tortuous process that had led to it.

Rethinking the Governance Agenda
Commendable though it was, much of the emerging academic and policy discourse seemed strangely unable to grasp the import of two inescapable realities: the multidimensional character of the policy challenge posed by climate change; and the magnitude of what had already been attempted by way of institutional innovation over the preceding decades.

Normative, legal and institutional responses to any policy challenge are unlikely to prove equal to the task unless they rest on a lucid assessment of that challenge. When it comes to climate change, both the scientific evidence and the responses of both experts and policy makers have rightly focused on the magnitude of societal risks associated with rising temperatures, rising sea levels, and other shifts in weather patterns. To keep these risks to manageable proportions, the conclusion has been reached that an appropriate policy goal is to limit the rise of global average temperatures to 2^0C, which then translates to a carbon emissions target of 450 ppm. The problem with this technical formulation of the risks involved and of the measures needed to mitigate or adapt to those risks is that it loses sight of the many other foreseen and unforeseeable consequences associated with high and rapidly rising levels of energy consumption, of which climate change is but one, albeit the most dramatic, manifestation. In other words, in both academic and policy discourse a clearly discernible trend has emerged, which treats climate change policy – and the governance processes needed to give effect to it – in relative isolation from the many other areas of policy formulation and implementation with which it is integrally connected.

In both theory and practice climate change governance is inseparable from energy governance. The rise of new and high energy consuming economies (notably China and India), the uncertainties generated by the global financial crisis and economic slowdown, the

accelerating shift in the global geopolitical and geoeconomic balance, the shifting geography of fossil fuel supplies and the complex geopolitical and strategic considerations associated with long-distance transport of oil and gas, the fast approaching peak of oil production and the inevitable rise in the price of oil, the risks surrounding the foreshadowed expansion of the nuclear industry and the vagaries of renewable energy markets are as integral to climate change policy as they are to 'energy security' calculations.[25]

There is in any case much more to energy security, and by extension to energy policy, than a simplistic geopolitical calculus would suggest. Conventionally defined in geopolitical terms to mean the scramble by states for energy supplies (at acceptable cost), energy security as a concept and the complex mix of stated and unstated values and objectives on which it rests have become the subject of increasing contestation. On the one hand energy security can be understood with reference to such state-centric norms as national economic growth and national security, but other critical considerations now include: profitability of key industries, employment, levels of consumption, and delivery of pubic goods. More recently, ecological values and notions of equity have gained greater prominence. The vicissitudes of climate change policy cannot but reflect the multidimensional character of energy security and energy policy generally. The governance challenges posed by climate change and the responses to them make sense only if they are placed in the larger energy policy context and the complex interdependence of actors and policy priorities on which it rests.

What all this tells us is that climate change governance requires a normative, legal and institutional framework equipped to handle the multiplicity of policy challenges which lie at the interface of economy, security and environment. Climate-friendly 'development' and 'decarbonisation' of the economy may at first sight seem relatively neutral concepts amenable to relatively straightforward technical solutions. But even the most cursory examination soon reveals a highly fractured terrain, in which competing values, interests and perceptions are vying for influence and attention. Is an effective climate change policy compatible with higher levels of economic prosperity for everyone? Or is it predicated on diminished economic prospects, whether in absolute or relative terms, at least for some? Once the question is framed in such stark terms, whether in a national or international setting, the intensity of the contestation becomes readily apparent. The technical formulation of mitigation and adaptation measures and financing and technology transfer mechanisms might serve to obscure but cannot eliminate fundamental and disturbing questions about the future organisation of human affairs. These questions relate to notions of distributive justice (how the costs and benefits of energy policy in the era of climate change will be distributed within and between countries), to the inclusiveness of decision-making (who will have an effective say over the vital decisions to be made), and to the efficacy of policy-making (will the policies adopted and implemented effectively cope with the mounting threats to economy, security and environment).[26] The principle of 'common and differentiated responsibilities' (adopted within the UNFCCC framework) and notions of trust-building (in relation to the monitoring and verification of national commitments) are but small steps in this direction.

Enough has been said to indicate that the effectiveness of climate change governance will in large measure depend on the extent to which it recognises the complex interconnectedness that lies at the core of the energy (and climate change) policy domain and the contentiousness of the issues to be addressed. It is difficult to see how any emerging normative, legal and

institutional framework can effectively manage these two realities unless inclusiveness and new cooperative mechanisms are made a defining feature of that framework. Inclusiveness, it should be noted, operates along two axes. One axis denotes the tiers of governance (municipal, provincial, national, regional and global), and the other the sites (states, markets and civil society) within which authoritative and influential actors (or stakeholders) operate.[27] The emerging framework of energy governance may be said to be inclusive to the extent that it incorporates in different yet complementary ways all tiers of governance and all three sites of decision-making. The question arises: how are inclusiveness and cooperation to be institutionalised? The large and diverse gatherings, exemplified by the Rio (1992), Kyoto (1997), Bali (2007) and Copenhagen (2009) Conferences represent one possible model. Participants at these world summits – a model that has been applied, at least intermittently, to other policy domains, including development, human rights population, food, disarmament and arms control – were drawn not just form national governments but from all other tiers of governance, and at the same time encompassed a wide cross-section of influential actors operating in civil society and the marketplace. The sheer number and range of voices to be heard and the sheer scale of the attempted dialogue have prompted theorists and practitioners alike to question the utility of a single global multilateral framework, and to advocate instead 'polycentric' approaches of one kind or another.[28]

As already noted, a common reaction to the apparent failings of the inclusive multilateralist design of the UN climate regime has been to propose increasing reliance on 'minilateral' approaches and innovations. Smaller clusters of states, it is argued, formed by virtue of economic weight (e.g. G8, G20), common interests (e.g. the BRIC countries), or regional integration (e.g. EU, APEC), are more likely to make for coherent decision-making and to spawn energy specific organisational forms (e.g. Asia Pacific Partnership on Clean Development and Climate) tailored to particular needs or interests.[29] This approach, also labelled 'exclusive minilateralism', has the advantage that it acknowledges the profound divisions that continue to obstruct the emergence of a global policy consensus. They seek to take advantage of the benefits said to derive from smaller hence more manageable forums and from likeminded groupings or 'coalitions of the willing'. Perhaps the most incisive contribution to this discourse has been the proposition that, in the absence of an integrated, comprehensive climate change regime, we are seeing the emergence of a 'regime complex', that is, a cluster of arrangements of the loosely coupled variety, 'with no clear hierarchy or core yet many of its elements linked in complementary ways'.[30] Significantly, the proponents of this formulation see it not only as a faithful representation of emerging trends but as a more promising approach to the imperatives of climate change than the globalist ambition of the UNFCCC regime.

At one level the notion of a loosely structured regime complex appears to have a surface plausibility to it. There is no denying that the last twenty years have witnessed the growth of a great many unilateral, bilateral and multilateral initiatives to which individual states and diverse inter-governmental bodies (e.g. IPCC, G8, G20, MEF, specialised UN agencies, multilateral development banks) have contributed at different times and in different ways. This conceptualisation is nevertheless deeply flawed on three counts: it reveals only one facet of the complex multilateral patchwork that has unfolded; its conceptual orientation remains unconvincingly state-centric; and it fails to provide a satisfactory explanation of the way these

diverse initiatives, forums and mechanisms can or are likely to be integrated into anything approaching a coherent policy framework.

The first deficiency – the tendency to concentrate on certain types of initiatives and ignore others – derives from the failure to connect climate change with the larger energy policy domain. The reality is that a great many institutions now exist – the IEA and OPEC are two obvious examples, which have a global impact on energy policy and governance mechanisms. The World Trade Organisation and various regional trade bodies bear considerably upon both national energy policy and international negotiations. The issue here is not so much that the multilateral patchwork is more extensive or diffuse than even Keohane or Victor appear to realise, but that, as we have already noted, climate change responses are inseparable from the larger energy policy nexus, in which economic, environmental and security concerns all play a decisive role. It follows that the framework for climate change policy, if it is to be at all coherent or viable, must somehow take account of highly interconnected policy domains that are now central to the task of international coordination and regulation. It is not at all clear how the loosely coupled 'climate change regime complex' described by Keohane and Victor does, or could in the future, manage this complex interconnectedness.

The second difficulty, closely related to the first, is the state-centric rendition of the governance problématique. Crucial here are the significant functions now performed by markets and civil society. Energy policy is increasingly a product of decisions made in global energy markets. As Goldthau and White have succinctly observed, markets are structured by a broad variety of different actors, private as well as private:

> In addition to governments, private companies, i.e. international energy firms, financial institutions and others interact through market-based transactions, and thus determine outcomes in global energy.[31]

Put simply, the production, distribution and consumption of fossil fuels, nuclear energy and their renewable counterparts are organised largely by private actors that engage with one another primarily through market-based interactions, though these are increasingly embedded by international rules and institutions.

Civil society relates to international multilateralism in strikingly different ways, yet its impact on the policy-making process is no less significant. Expressed at its simples level, any society's 'intent to decarbonise' is inextricably linked to the community's understanding of energy options and level of support for ambitious climate policy. What any one state is able or willing to do, regardless of the complexion of its political system, cannot but take account of societal capacities and dispositions. The positions adopted by political elites, whether in the United States, Europe, India or China, cannot deviate far from prevailing public attitudes and perceptions – given that energy consumption patterns are such an integral part of quality of life expectations. The societal and cultural underpinnings of the political process are evident in the rise to prominence of significant initiatives in energy policy at the municipal, provincial, regional and global tiers of governance. A growing number of highly skilled and well organised civil society actors have found in these different arenas new and expanding opportunities to shape the policy agenda across a range of time frames. The immense impact of the scientific community, through the IPCC and just as importantly through prestigious national and

international peak bodies, has been widely observed.[32] The development of local, national and international environmental networks, which operate in increasingly flexible spatial and temporal domains has markedly their capacity to influence the context and even the outcome of political negotiation.

Finally, the regime complex hypothesis, while it correctly highlights the diffuseness and fluidity of the emerging policy making process in relation to climate change, seems unable to account for the persistent and not altogether negligible steps already taken in the development of a global regulatory framework, not to mention those contemplated for the coming decade and beyond. That these steps have often been hesitant and subject to acute contestation is hardly surprising. How could it be otherwise? What is especially striking, however, is that despite the roadblocks and disappointments, key actors have continued to engage in global negotiations, partly because the pressure to do so remains intense – pressure that emanates largely from civil society but also with increasing vigour from the marketplace. There is, however, another contributing influence, namely the exigencies of the present conjuncture. Though unilateral, bilateral and minilateral initiatives will remain an important feature of the policy response to climate change and energy security, these arrangements require an overarching framework which alone can give them guidance and potency. An integrated normative and political accord remains the destination, however faltering and painful the intervening steps might be. The scaffolding will undoubtedly be messy and rise slowly and unevenly, yet an 'umbrella' framework is gradually emerging. A normative, legal and institutional framework remains the necessary though not sufficient condition for the global transition to sustainable development, and for animating the old and new coalitions that can help achieve this outcome.

[1] See David Price, 'Energy and Human Evolution', *Population and Environment: A Journal of Interdisciplinary Studies*, 16(4), March 1995, 301-19. Though its Malthusian argument is stridently overstated, the analysis offers nevertheless an illuminating overview of the evolutionary context of energy use.

[2] The four Assessment Reports published thus far (1990, 1995, 2001, 2007) have painted an increasingly bleak picture of the severity of the problem, and argued with increasing confidence that the problem is attributable largely to human economic activity.

[3] These responses are examined in some detail in Joseph A. Camilleri and Jim Falk, *Worlds in Transition: Evolving Governance Across a Stressed Planet*, Cheltenham, UK, Edward Elgar, 2009, pp. 260-267, 304-313.

[4] The less useful or precise term 'milestone' is often used in the literature. The notion of threshold is developed in Camilleri and Falk, *Worlds in Transition*, pp. 49-50. Though here thresholds are meant to separate longer historical periods or epochs, the same logic applies.

[5] United Nations General Assembly (UNGA), *Protection of Global Climate for Present and Future Generations of Mankind*, (A/RES/45/212), NY, 1990.

[6] United Nations, *Annex 1 to the report of the Intergovernmental Negotiating Committee for the framework convention on climate change on the work of its fifth session*, held at New York from 30 April to 9 May 1992, (9A/AC.237/18(Part II)/Add.1), New York, 1992.

[7] Sharon Beder, Brown Paul & Vidal, John, 'Who Killed Kyoto?,' *The Guardian*, October 29 1997, 4; Sharon Beder, 'Corporate Hijaking of the Greenhouse Debate', *The Ecologist*, 29, (2), 1999, 119-122.

[8] 'The Collapse of Kyoto', (editorial), *Oil & Gas Journal*, 4 December 2000, 25.

[9] Kyoto Protocol comes into force, *BBC News*, 2005, Last Updated 2005 [accessed on 5 March 2008]; at http://news.bbc.co.uk/2/hi/science/nature/4267245.stm#_jmp0_.

[10] Though the EU had largely spearheaded the Kyoto process, it nevertheless acknowledged that a number of weaknesses would have to be addressed. See European Commission, 'International Climate Policy Post-Copenhagen: Action now to Reinvigorate Global Action on Climate Change'9 March 2010, pp. 5-6 (accessed at ec.europa.eu/environment/climat/pdf/com_2010_86.pdf on 29 October 2010).

[11] See information provided by the US Energy Administration in Country Analysis Briefs

(http://www.eia.doe.gov/cabs/index.html).

[12] See 'Position of Various Governments on the Kyoto Protocol:, in

[13] International Energy Agency, *World Energy Outlook*, Paris: OECD/IEA, 2008 (accessed at www.worldenergyoutlook.org/docs/weo2008/WEO2008.pdf on 25 October 2010).

[14] Two especially influential government commissioned reports were: Nicholas Stern, *The Economics of Climate Change: The Stern Review*, Cambridge: Cambridge University press, 2007; Ross Garnaut, *The Garnaut Climate Change Review: Final Report,* Cambridge: Cambridge University press, 2008.

[15] See UN Climate Change Conference official website (accessed on 4 November 2010 at http://unfccc.int/meetings/cop_15/items/5257.php).

[16] See Pew Centre on Global climate Change, *Summary: Copenhagen Climate Summit* (accessed at http://www.pewclimate.org/international/copenhagen-climate-summit-summary on 2 November 2010).

[17] Pew Centre on Global Climate Change, 'Adding up the Numbers: Mitigation Pledges under the Copenhagen Accord' (accessed at http://www.pewclimate.org/copenhagen-accord/adding-up-mitigation-pledges on 4 November 2010).

[18] See A. Ballesteros, C. Polycarp, K. Stasio, E. Chessin, Xing Fu-Bertaux, K. Hurlburt, 'Summary of developed Country "Fast-Start" Climate Finance Pledges', World Resources Institute, 6 October 2010 (accessed at http://www.wri.org/publication/summary-of-developed-country-fast-start-climate-finance-pledges on 29 October 2010).

[19] Council on Foreign Relations, 'The Global Climate Change Regime', *Backgrounder,* 20 April 2010 (accessed at http://www.cfr.org/publication/21831/global_climate_change_regime.html#p2 on 3 November 2010).

[20] The G8+5 includes the heads of government from the G8 nations as well as those from the five leading emerging economies (Brazil, China, India, Mexico and South Africa).

[21] The MEF, which consists of the major economies, was launched in March 2009 to facilitate a candid dialogue on climate change among major developed and developing economies.

[22] Gwyn Prins and Steve Rayner, 'The Wrong Trousers: Radically Rethinking Climate Policy', London School of Economics, 2007, p. 27 (accessed at http://www.lse.ac.uk/collections/mackinderProgramme/pdf/mackinder_Wrong%20Trousers.pdf on 2 November 2010).

[23] Pew centre on Global Climate Change, 'A Copenhagen Climate Agreement', November 2009 (accessed at http://www.pewclimate.org/international/copenhagen-climate-agreement on 21 November 2010).

[24] Joseph Aldy and Robert N. Stavins (eds), *Architectures for Agreement: Addressing Global Climate Change in the Post-Kyoto World*, Cambridge, Cambridge University Press 2007.

[25] See Kirstern Westphal, 'Energy Policy between Multialteral Goverance and Geopolitics: Whither Europe?', *IPG* 4(44), 2006, 44-62 (accessed at library.fes.de/pdf-files/id/ipg/03931.pdf on 28 October 2010).

[26] This is in some respects a simpler yet more revealing statement of the hurdles which an effective climate change governance regime must overcome than the six dimensions (coherence, accountability, effectiveness, determinacy, sustainability and epistemic quality) proposed by Keohane and Victor (see Robert O. Keohane and David G. Victor 'The Regime Complex for Climate Change', The Harvard Project on International Climate Agreements, January 2010, Discussion Paper 10-33, pp. 19-20).

[27] For definitions of these concepts and their implications see Camilleri and Falk, *Worlds in Transition*, pp. 162-167.

[28] For an exemplar of this approach see Elinor Ostrom, 'A Polycentric Approach for Coping with Climate Change', World Bank Background Paper to the 2010 World Development Report, WPS 5095.

[29] See David Victor, 'Toward Effective International Cooperation on Climate Change: Numbers, Interests and Institutions', *Global Environmental Politics*, 6(3), 2006; Moisés Naím, 'Minilateralism', *Foreign Policy*, Issue 173, July-August 2009, 136-137.

[30] Keohane and Victor, 'The Regime Complex for Climate Change', p. 4.

[31] Andreas Goldthau and Jan Martin White, 'From Energy Security to Global Energy Governance', Journal of Energy Security, March 2010, pp. 1.

[32] Camilleri and Falk, *Worlds in Transition*, pp. 308-313.