

# **Dark clouds, no silver lining? Re-conceptualising the global governance of energy and climate change**

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## **Abstract:**

It has long been recognised that the challenges of energy security and climate mitigation are inextricably interwoven and present both trade-offs and synergies. A global energy transition to low-carbon sources is indispensable if average global temperature is to be stabilised, but this will require concerted political action, as neither peak oil nor a technological revolution will be sufficient on their own. The quest for an authoritative climate regime to engineer the transition is bound to disappoint, as short-term national interests tend to favour more pragmatic measures to increase domestic energy security. The outlook for institutional strengthening is even bleaker with regard to global energy governance where the underlying conflict between importers and exporters of energy resources has produced a fragmented pattern of governance mechanisms. The focus must therefore shift back to global climate governance and the rebuilding of regulatory momentum. One major alternative perspective on climate and energy policy, the bottom-up approach to emissions reductions, is unlikely to yield sufficient results. Its principal contender – the neo-liberal blueprint of targets, timetables, and global carbon pricing – is an elegant design but may not overcome the political barriers to its realisation. However, combining the two approaches by proceeding with an array of institutional 'building blocks' may represent a way forward. Additionally, insights from analysis of global energy governance suggest the need to

complement this strategy by mobilising the various mini-lateral fora (G8, G8+5, G20, MEF) that assemble many of the world's major greenhouse gas emitters. Only by confronting some of the distributional challenges head-on, and at the highest level, can the emerging geopolitics of climate change be turned into a more progressive cooperative enterprise. Employing a collective climate security discourse carries its own risks, but also offers opportunities for highlighting countries' 'enlightened self-interest', leading to the rethinking of economic strategies and the promotion of long-term planning. Moreover, if notions of resilience and precaution can inform a broader process of social learning and institutionalised programmes of 'strategic foresight', then a more cooperative picture of global governance – serving the objectives of long-term climate stability and energy security – may emerge.

## **Introduction**

The reasons why climate change should be major concern for policy-makers and societies alike are well-known and only require a brief summary for the purposes of this article. While there is no scientific certainty regarding the speed and precise impacts of climate change, robust probabilistic conclusions of the UN Intergovernmental Panel on Climate Change (IPCC) have created a near-universal consensus among policy-makers on the need to avoid global warming in excess of 2 degrees. This objective can therefore be taken as representing an accepted definition of 'climate security' and was reaffirmed by the 2009 Copenhagen Accord. However, careful analyses of countries' various emission reduction pledges announced so far indicate that the world is on track for a temperature increase of around 2.4 - 4.3 degrees (Jackson and McGoldrick 2010: 15).

Even if existing promises were honoured without the strictures of legally binding international obligations, which is far from certain, the world would have to cope with considerable, and potentially catastrophic, consequences for human welfare, ecological integrity/stability and the looming threat of intensifying political conflict over increasingly scarce resources such as food and water. Furthermore, even if a technological 'fix' for climate change, for instance through methods of geo-engineering, could be developed, the inherent uncertainty attached to climatic interventions would pose a colossal obstacle to an effective and equitable system of global governance. Commentators such as Thomas Schelling (1996), who once perceived the "diplomacy of geoengineering" as a straightforward problem of 'cost-sharing', ignore the fact that a conflictual-distributive logic, which underpins even today's climate negotiations, would be heightened and exposed.

While climate change represents a significant long-term threat, it is often trumped by issues of greater short-term relevance such as energy governance. The latter denotes a host of concerns around modern energy services – from low price and economic productivity to energy poverty – but is nowadays, in an era of drastic price fluctuations, most often associated with energy security. There are many competing definitions of energy security which have resulted from various attempts of attaching it to the agendas of global sustainability or a liberalised global energy economy (e.g. Müller-Kraenner 2008). It is, however, better to keep these different logics separate and recall the conventional understanding of energy security as "access to secure, adequate, reliable, and affordable energy supplies" (Bordoff et al. 2009: 214).

Clearly, different countries will adopt different strategies to pursue energy security, mainly based on their natural resource endowments as well as on their positions in the international political system and the global economy. Some may seek to expand their domestic energy sources, while others may invest in energy efficiency or diversify their energy imports. Most importantly, while climate and energy security are nowadays often mentioned in the same breath, there is no necessary compatibility between these policy goals.

The primary purpose of this paper is to shed light on the complex relationship between climate mitigation (or climate security) and energy security and assess the prospects for strengthening international governance in both issue-areas. To this end, I begin by examining potential synergies and conflicts between the two policy objectives and argue that increased international cooperation is indispensable if climate stability is to be achieved. Secondly, I survey the state of global climate and energy governance. Many of the reasons why climate governance is at an impasse after the 2009 Copenhagen summit appear to be related to short-term interests of the major powers in the international system – and the latter's core motives are frequently derived from concerns over energy security and economic development. But if this diagnosis suggests the need for greater efforts in global energy governance, the outlook here is even bleaker than on the climate front. A fragmented landscape of governance mechanisms is unlikely to grow into a more coherent cooperative framework.

Consequently, a third section shifts the analytical gaze back to climate governance. Questioning the recent trend towards privileging pragmatic domestic actions and international technology cooperation, I argue that the dilemmas of energy governance hold an important lesson for the future of the climate change regime. Only a combination of institutional building blocks with stronger political leadership through 'club governance' or 'concert diplomacy' among the great powers offers a chance of significant progress. Climate mitigation is moving into the same category of 'geopolitical' thinking as energy security. And conceptualising it as a collective security issue will both support its longer-term institutionalisation and facilitate the adoption of synergistic strategies for national energy security.

## **(1) Navigating the energy-climate nexus**

A brief review of the recent literature on energy policy indicates that there is a growing awareness that the era of cheap and plentiful energy (especially oil) is nearing its end. Standard economic logic may predict the evolution of new market equilibria based on energy substitution and technological innovation, but these factors will arguably not prevent a considerable price rise within the next two decades which, if historical experience provides any guidance, will trigger another series of global economic crises.

Current trends are signalling that global demand for fossil fuels – and oil in particular – may begin to outstrip demand in the coming years. Based on a careful assessment of these trends and mindful of the gaps in the available data due to intentional misreporting by energy exporters, Owen et al. (2010) conclude that conventional oil production has limited capacity to meet future demand. Furthermore, the surging oil price during 2004-2008 was, to a large part, already due to a gulf opening up between supply and demand. This evaluation is supported by the 2008 International Energy Agency's (IEA) World Energy Outlook which underlines a "major upward adjustment" of oil price predictions as compared to its 2007 report. The oil price for 2030 is estimated at just over \$200 per barrel, with sharp price fluctuations expected to become the norm (IEA 2008: 40). A recent report by the insurance specialist Lloyd's and the Chatham House think tank predicted a similar price – albeit within the next 5-10 years – and called for even greater urgency in addressing climate change and energy security as a set of interconnected issues (Froggatt and Lahn 2010).

Standard economic theory has long been used to cast doubt on such predictions. More optimistic voices have thus suggested that energy companies and exporting countries will respond by stepping up the exploration and extraction of fossil fuels. Moreover, substitutes, such as non-conventional oils from tar sands and coal liquefaction, and alternative propulsion technologies, such as natural gas and electricity, will undoubtedly grow in importance. 'Market optimists' thus insist on the victory of economics over geology and expect global demand to become sufficiently elastic to price rises. And given the superior energy density of fossil fuels, they tend to foresee a very gradual pace of the energy transition (Smil 2008: Chapter 3). But, on the whole, these observers do not pay enough attention to the complex economic and political dynamics that influence today's energy markets.

First, both increased extraction and large-scale use of substitutes for cheap oil – such as oil sands, shale gas, etc. – will require significant amounts of investment. The time lag inherent in projects of this size has been compounded by the 2008-09 global financial crisis, the temporary dip in energy demand and the structural weakening of

capital markets. These factors will have caused an additional delay to bringing new production facilities online.

Second, the capacity of oil exporting countries to increase the production and export of oil and gas has rightly been questioned. These countries are often dominated by state-owned companies which control much greater fossil fuel reserves than private companies. The former also tend to be less efficient and more sensitive to political considerations. The price elasticity of energy demand, which market optimists have used to predict a gradual global transition, is likely to be diminished significantly by such political concerns in many of the biggest energy-exporting countries. Massive energy subsidies have long been used by authoritarian and populist governments (e.g. Saudi-Arabia, Venezuela, Iran, Russia) to alleviate energy poverty and 'buy' the consent of their populations. Just to name one example, a Saudi-oil-fired energy utility pays around USD \$0.06 per gallon – in stark contrast to much higher price levels in most industrialised countries. Expectations of cheap energy and a lack of interest in energy efficiency are now so entrenched in most energy-rich countries that a continued rise in energy demand, which could ultimately cancel out increased production, is highly likely (Rubin 2009).

The conventional definition of energy security thus points to an increasingly brittle situation in terms of available low-cost energy resources and the required financial investment. In addition, the rise of energy prices will impose major adjustment costs on fossil fuel dependent economies and will potentially trigger serious political crises in the least developed countries. While political turmoil may often remain confined to the domestic arena, it could spill over in various ways. With regard to international security, the increasing scarcity of low-cost energy resources will strengthen the position of energy-rich states around the world by boosting their financial assets (Friedman 2006). Russia revived interest in natural gas-based 'pipeline politics' is just one example of how ample energy resources can also be used in more direct ways to influence the foreign policy of energy-importing nations (Müller-Kraenner 2008). Finally, even though the integrated nature of the global oil market largely vitiates the withholding of exports as a political strategy, the importance of building alliances and protecting trade routes to secure physical supplies of oil (and gas) has not disappeared. An animated debate in the US on energy security and even 'energy independence' originally took off in the early 1970s. It has been revitalised by the two Gulf wars and the increasing global tendency to nationalise strategic energy industries (Bordoff et al. 2009).

In sum, energy security is justifiably a high priority for policy-makers around the world. While one may already expect considerably higher prices for fossil fuels in the short to medium term, in the longer term there may simply not be enough easily

accessible oil reserves to guarantee the affordability of oil for global transportation and industrial production.

There are, of course, various possible responses to an impending energy crisis. First, a 'laissez-faire' market-based approach favoured by market optimists and multinational energy companies would seek to promote further market liberalisation and support, to a greater or lesser extent, increased investment in technologies with long-term transformative potential such as hydrogen, biofuels from algae, etc. Second, short-term energy security measures may consist of proactively boosting domestic and foreign extraction of oil and gas while expanding the production of non-conventional sources, such as tar sands, shale gas, and coal liquefaction and gasification, as well as pioneering the extraction of methane hydrates from the bottom of the ocean. However, each of these options implies serious drawbacks. The laissez-faire approach will not only clash with the increasingly geopolitical dynamics of world politics, through which energy resources are perceived as strategic assets, but it also fails to cushion the impact of short-term price rises.

The second approach, on the other hand, focuses excessively on a short-term scenario and strives to ensure affordable and plentiful energy resources by continuously developing the expertise gained over the last centuries of fossil fuel extraction. But this method will only gain significant traction when energy markets are not globally integrated – that is, currently not for oil – because greater production adds to the global supply and merely results in a minor price reduction. Moreover, similar to the conundrum faced by today's 'petro-states', by locking in a fossil fuel intensive infrastructure and eliminating early signals of rising prices, short-term energy security policies leave societies unprepared for the growing scarcity of cheap energy resources in the future.

Most importantly, however, neither of the above approaches integrates climate mitigation into its policy framework. And when a global energy crisis occurs – most likely in the form of peak oil and peak gas – the temptation will always be to keep using the existing fossil fuel infrastructure. Only a third approach to energy security, which focuses on longer-term policy, is able to successfully navigate the energy-climate nexus. The pursuit of long-term energy security implies early, concerted preparation for the coming energy transition by steadily raising energy prices, creating a measure of economic predictability, managing energy demand, and heavily investing in energy efficiency and new infrastructures. Recognising both the economic and political dimensions of future energy scarcity, a strategy for long-term energy security would equally promote greater resilience and energy independence in order to prepare for the possibility of disintegrating global energy markets.

Nonetheless, it is true that even a long-term strategy for energy security is not always compatible with the aims of climate mitigation. Whereas the latter seeks early and

substantial reductions of GHG emissions to create a new regulatory dynamic and kick-start a low-carbon technological revolution, the former attaches greater importance to the guaranteed availability of energy resources, as defined by price and secure access, and is not predominantly concerned about the GHG content of energy carriers. Early and robust action on climate change could also damage the prospects of energy security. For instance, if a substantial carbon tax was imposed, this would increase the price of coal much more than for oil and gas. Coal reserves, however, remain far more plentiful and financial incentives for switching to oil and gas would endanger the objectives of both short- and long-term energy security (Bordoff et al. 2009: 221f.).

Such potential contradictions between the two policy objectives will have to be actively managed (Froggatt and Levi 2009: 1140), but it is also worth identifying 'win-win' measures that promote both agendas simultaneously. The transition to a low-carbon energy infrastructure is one example, especially if this is done in a cost-effective way that increases reliance on domestic energy resources such as wind, solar, wave, biomass and potentially coal (with carbon capture and storage (CCS)). A second pathway is the promotion of energy efficiency which would lower energy demand and reduce GHG emissions simultaneously. Crucially, it needs to be recognised that these measures would not, by themselves, 'solve' the problems of energy security and climate change unless the notion of a finite global carbon budget is integrated into policy-making. As ecological economists have persuasively argued, technological transformations and energy efficiency also tend to produce a concomitant rise in energy consumption – the so-called 'rebound effect' (Herring and Sorrell 2009) – unless this is actively discouraged by significant price rises, policies aiming at sufficiency or stringent national (and global) caps on total GHG emissions.

Lastly, the intersecting agendas for climate mitigation and energy security entail somewhat different prescriptions for international governance. Unless states step up efforts to integrate global energy markets – for instance by rolling back the practice of bilateral supply arrangements and turning natural gas into a fungible commodity (with the help of liquefaction and tanker terminals) – the goal of national/regional energy security will not necessarily mean a new era of international cooperation. As prices rise and scarcity begins to bite, we may rather see moves towards state-led resilience and greater energy independence. Although the close links between energy supply, international stability and human welfare make a strengthening of global energy governance desirable, this ambition may not always be compatible with some countries' more narrowly defined interests. By contrast, any temptation to abandon the aim of stronger global climate governance is doomed in the long term, as resource-saving and low-carbon measures by some countries through technological innovation or demand management are likely to be counterbalanced by other countries taking advantage of cheaper energy and natural resources to grow their economies (Alcott 2008).

In order to construct an effective international architecture for climate governance, some form of – probably market-based – distribution of available global 'carbon space' is a prerequisite. This arrangement will further be accompanied by institutions for climate adaptation. Because there is, so far, no credible long-term 'plan B' for tackling climate change, cooperative efforts at the international level will continue even if they have not achieved the desired effects in recent years. Given the likely persistence of global climate politics, parties with an interest in global and national energy policy may find it advantageous to attach their proposals to the climate discourse. Such a strategic linkage is valuable both for the promoters of stronger global energy governance and for those wanting to ensure against national energy security strategies ignoring the low-carbon imperative.

## **(2) The global governance of climate change and energy**

So what is being done at the international level? In contrast to energy governance, which is discussed in the second part of this section, global climate governance has undergone significant institutional development over the past two decades. It has also had a significant impact on energy policy. Long before the oil price shock of 2004-2008 called into question the existing energy paradigm, climate change was the primary driving force behind a gradual switch to renewable and other low-carbon energy technologies. By gradually raising the price of carbon, and by extension fossil fuels, climate policy was expected to create considerable financial burdens for carbon-based energy carriers and, over time, usher in a clean-energy technological revolution.

Of course, climate governance concerns itself not only with carbon emissions from energy generation, but with a whole basket of greenhouse gases (GHGs) – including methane, nitrous oxide, sulphur hexafluoride, hydrofluorocarbons and perfluorocarbons – arising from industrial activities, agriculture and environmental degradation. By translating their contribution into CO<sub>2</sub> equivalents for the purpose of comparability, the UNFCCC's 1997 Kyoto Protocol nonetheless underlined the centrality of carbon in the climate change regime. This international 'framing' of climate change and the considerable scope for technological innovation are the major reasons why the vast majority of national climate measures in industrialised countries have focused on energy production and consumption (Scrase et al. 2009: 3f.). And despite a broader array of energy policy priorities in major developing countries, a similar linkage between energy and climate change has begun to emerge, as will be discussed below.

## **At an impasse: the global climate change regime**

It is important to recognise that much of the thinking behind global climate governance throughout the 1990s and 2000s has been informed by neo-classical economic assumptions of market failure, cost-benefit analysis, and price internalisation of externalities. Conceptualised as a global public good, climatic stability could only be achieved through a form of international cooperation characterised by broad participation, transparent and efficient design, equitable burden-sharing, and a gradually strengthening framework of legal obligations (Heller 2008: 117f.). Similar to the logic behind the global trade regime, the slow but steady construction of new rules and norms as well as the rational expectation of collective benefits – both climate stability and co-benefits such as cleaner air – were hoped to become sufficiently powerful to whittle away the opposition of entrenched economic interests.

The best-known and eloquent example of the solid, rational economic case for early action on climate change is the 2006 Stern Review, commissioned by the UK government. The Review estimated that early, concerted action would only reduce global GDP by around 1 percent per year, while avoiding significantly higher welfare losses caused by rapid climate change in the future (Stern et al. 2006). It further proposed a raft of economic policies to inform international cooperation, from cap-and-trade measures and carbon markets to compensation for forest protection and the development and diffusion of low-carbon technologies. Although some of the economic estimates have been revised in subsequent years – such as raising the total cost of early action to 2 percent (Jowit and Wintour 2008) – the Review still retains its status as the most authoritative primer of economic argumentation. While the debate on cost estimates and discount factors continues in the economic literature, a large number of additional benefits from early action have also been identified. Given that real-world market actors cannot confidently predict the damages from climate change and (rising) prices of energy over time, strong early action could imply a number of advantages which orthodox analyses have not included. Van den Bergh (2010) thus lists supplementary benefits such as steeper learning curves for renewable energy technologies, stimulating the required socio-technical transition (by boosting capitalism's capacity for 'creative destruction'), sending signals to economic actors and societies, and providing a form of insurance for the uncertain extent of climate disruption.

However, with the increasing (geo)political salience of global climate regulation, the economic agenda for providing the global public good of climate stability has increasingly lost out to competing objectives derived from short-term national interests and discourses on redistribution and equity. After the Copenhagen climate summit in December 2009, many observers believed that the idea of a comprehensive global architecture with increasingly stringent, top-down timetables and targets had become a

dead end. The 'global deal' approach, which embodies the economic case for global climate regulation, had originally been designed to circumvent political opposition: emission targets are intended to be tightened gradually, redistributive elements are included, and carbon trading mechanisms ensure the lowest costs for early measures.

Yet, neither did the advocates of this approach truly understand the lack of powerful political constituencies for this global compact with a long-term horizon, nor were they prepared for the competitive dynamics of world politics which are inevitably triggered by negotiations over natural resources and financial compensation. In many ways, the liberal paradigm of international regime theory, which emphasises the danger of free-riding as the chief obstacle to global cooperation, had crowded out alternative conceptions of global governance. It downplayed, for instance, the importance of international competition, both political and economic. In addition, the availability of time-honoured compensatory mechanisms, such as vastly increased financial flows to the developing world, has sharply declined following the 2009 financial crisis and spiralling public debts in most industrialised nations.

The outcome of the Copenhagen summit is not entirely disappointing for the proponents of a 'global deal'. Apart from voluntary pledges to reduce emissions, or at least the carbon intensity of economic growth, progress has also been made on the 'MRV' agenda – the measurement, reporting and verification of national-level carbon emissions – which promises to lower the risk of free-riding. Three weighty reasons, however, have – for years to come – conspired to dash all hope of a comprehensive and durable global settlement

First, the rising political and economic salience of climate change governance, evidenced by the attendance of over 120 heads of state at Copenhagen, has boosted the competitive logic of international bargaining and the defence of relatively short-term national self-interests. Second, even more than most other environmental issues, climate change is inherently a long-term problem which requires economic costs to be borne up front for sizable mitigation benefits in the future. The economic argument of global public goods always risks losing out to the urgency of, and organised interests behind, short- to medium-term political priorities. Third, given the absence of a supportive context for international cooperation, a global compact on climate change would require a high degree of political leadership from one or several powerful countries. Whilst directly 'power-based' leadership, which draws on political coercion or economic side-payments, has so far been deployed to a limited extent, there are additional means of persuasion in international politics.

Directional leadership through 'leading by example' both enhances the political credibility of a country and instigates a process of social learning which may, over time, serve to redefine the national interests of other countries (Underdal 1994). In the case of climate governance, this refers not only to ambitious GHG reduction targets for

industrialised nations and the associated sense of justice felt by poorer nations with lower cumulative emissions. Directional leadership in the form of innovative, effective domestic programmes on adaptation and mitigation would equally serve to demonstrate that a low-carbon economy can be achieved without sacrificing a high degree of social welfare. More than anything else, this would help to undercut the conventional wisdom of economic development as necessarily proceeding through the phases of pollution and 'post-materialist' clean-up – a conception that is unconvincing when set against the probability of rapid climate change in the future. Historically, both the EU and the US have employed directional leadership in international environmental negotiations (Vogler and Stephan 2007), but the short-term cost implications of 'unilateral' leadership have largely prevented its use in the climate case. The EU's offer to increase its emission reduction target from 20 to 30 percent if an ambitious international agreement was achieved does not qualify as genuine directional leadership. It represented a 'conditional' negotiating tactic and ultimately failed due to a lack of similar ambition among the major powers.

When unpacking the commitments made by the most important players in climate governance, one finds not so much badges of leadership, but rather more evidence of carefully balanced cost-benefit analysis, particularly with regard to energy-related GHG emissions. In general, emerging powers such as China and India resisted a legal codification of global and even national targets because this would have implied a de facto distribution of global carbon space and, consequently, a curtailment of their own development aspirations.

While initiating a comprehensive energy efficiency programme and heavily investing in low-carbon energy technology, China, for instance, has not primarily undertaken these efforts for the purpose of climate mitigation. Although representing a good example of the potential synergies between climate and energy policies, the trinity of national priorities remains economic development, security of energy supply, and the rise to global power status. China's economic power and domestic political stability is heavily reliant both on energy-intensive heavy industry and on remaining the favourite investment environment for global manufacturing. Both of these branches require great amounts of cheap and reliable energy (The Economist 2010). The Chinese government has grown increasingly concerned about the surging energy imports – especially oil and gas – which, on current trends, may raise its vulnerability in this domain even beyond the 'energy insecurity' of the US. This prediction is compounded by the fact that China's major energy corporations have a disproportionate number of contracts with unstable political regimes (Kennedy 2010).

It is therefore in China's strategic interest to curb its energy imports and invest in alternative domestic sources. Much praise has been heaped on its record-breaking investment in renewable energy which, in 2009, was almost twice the size of US investment in this sector (Bradsher 2010). While this is indeed an important

development towards a low-carbon and more secure energy supply, the acclaim needs to be balanced against the fact that, due to the continued rise in fossil fuel consumption, renewable electricity capacity is still decreasing in relative terms (Wang et al. 2010). Furthermore, coal-powered electricity generation will continue to grow in absolute terms even if its overall percentage share is projected to fall from 75% to 65% (The Economist 2010). In the foreseeable future, China's enormous domestic reserves of coal will remain the backbone of its economy and thus one of the primary sources of its global economic power.

A similar constellation of interests pertains in India where both energy security and energy poverty are core political priorities. Around half of rural Indian households still lack access to electricity and the national economy is growing at 8-9 percent annually. These factors suggest substantial year-on-year increases in energy consumption. India's 2006 Integrated Energy Policy predicted that the country's primary energy supply would eventually have to increase by 3-4 times. Domestic coal still accounts for around 53 percent of primary energy production, but the share of oil and natural gas – around 75 percent of which is imported – is growing (Dadwal 2009; Rong 2010). Given the salience of energy security as well as energy poverty, it is no surprise that India's 2008 'National Action Plan on Climate Change' gives pride of place to expanding solar energy, which can greatly facilitate rural access to electricity, and enhancing energy efficiency – a win-win-win measure on all criteria of sustainable development.

While the vulnerability of emerging powers such as China and India to climate-related natural disasters – flooding, droughts, sea-level rise – is very significant (Rong 2010), the short-term priority of energy security serves the purpose of continued economic growth. In addition, it supports both poverty reduction and the strategic aspiration to join the ranks of the great powers in international affairs. Even if climate change mitigation is gradually becoming a major political objective, it is sufficiently long-term and global in nature to play second fiddle to the imperative of climate adaptation. And this second aim, in turn, tends to be facilitated by greater financial resources and, thus, economic development. A similar analysis can, incidentally, be made for other emerging powers such as Brazil and South Africa. The latter country resembles the Chinese and Indian contexts by being able to draw on enormous coal reserves.

If it can be argued that domestic political priorities, and particularly the pursuit of energy security, lay behind the negotiating positions of emerging powers at Copenhagen, then a similar case could be made for the strategies of industrialised nations. Dadwal (2009: 839) thus contends that the language of 'climate security' has been used by both the EU and the US to conceal the underlying global competition for scarce fossil fuel resources. While Dadwal rightly highlights the fact that domestic climate policy predominantly concentrates on the energy sector, she fails to account for

the long history of international climate negotiations and significant diplomatic activity even at a time of cheap energy resources. Moreover, while the EU's climate agenda has indeed been reinforced by recurrent scares over natural gas supplies in the mid-2000s, in the US an explicit discourse of energy security has proved more successful than the theme of climate change for mobilising particular constituencies in support of a low-carbon industrial policy.

But while the overarching objective of national energy security may indeed be central to many countries' climate and energy legislation, it is not necessarily compatible with aspirations for greater global cooperation on energy-related issues. Indeed, while climate governance is currently stalling, global energy governance has never evolved beyond a fragmented jigsaw of partial institutions and has, until recently, rarely been discussed as a collective enterprise.

### **Global energy governance: a mosaic of partial institutions**

The incipient literature on global energy governance, by contrast, generally promotes such cooperative aspirations and often subscribes to policy goals drawn from the sustainable development agenda, such as energy poverty, human health, economic development, and climate mitigation. But there are, as yet, few practical proposals setting out how stronger global energy institutions are going to be constructed. The present landscape of global energy governance displays a fragmented picture and a weak degree of institutionalisation. Formal organisations, often based on restricted membership, exist alongside 'club' arrangements with limited ambition, weak universal institutions, and a variety of public-private networks.

As an example from the first category, the International Energy Agency (IEA) emerged from the OECD's response to the 1973 oil crisis and today numbers 28 countries, many of which are among the biggest global energy consumers. Its significant resources and its remit of crisis coordination, policy advice and assessment arguably make it the most effective institution in this issue-area. But an expansion of the IEA's membership to include the major emerging countries has not been seriously discussed. On the other hand, countries such as China, India, Brazil, South Africa, and Mexico have participated in energy-related consultations in high-level international 'clubs' – for example, the G8+5 and the G20. The G8+5 responded to the surge in energy prices in the mid-2000s by agreeing on a whole series of assessment exercises, as well as by promoting energy efficiency and the diffusion of clean energy technology. However, mirroring the decline of energy prices in the wake of the 2008 financial crisis, energy and climate change have somewhat receded from the G8's agenda. Furthermore, the G20, which comprises an even greater number of pivotal countries and proved very effective at dealing with urgent global financial matters, has already

toned down its language on clean energy investments. At its June 2010 meeting, it also weakened a previous pledge to reduce energy subsidies that encourage excessive consumption – a measure originally designed to enhance energy security and slash carbon emissions (The Earth Times 2010).

Partly due to the fluctuating nature of high-level attention to energy governance, numerous sectoral organisations have equally developed over the years. Some of these are primarily based on inter-state cooperation, whereas others represent loser cooperative networks or public-private partnerships. Among the former are the recently established International Renewable Energy Agency (IRENA), which currently has 148 member states, and the International Partnership for Energy Efficiency Cooperation (IPEEC), a programme initiated in 2008 by the G8 and other interested countries. A prominent public-private partnership is the Renewable Energy and Energy Efficiency Partnership (REEEP), a British-led initiative started at the 2002 World Summit on Sustainable Development. Bringing together state regulators, business, banks, and NGOs, it relies on voluntary contributions to finance hundreds of small projects, ranging from capacity-building and facilitation to policy-related research and advice (Florini and Sovacool 2009: 5245f.; Parthan et al. 2010).

These and numerous other initiatives collectively amount to a 'regime complex'<sup>1</sup> on energy governance, but the capacity for the intentional 'steering' of governance efforts is clearly rather weak, particularly due to oscillating interest from the world's major powers. It therefore seems appropriate to agree with Victor and Yueh's (2010) assessment: "There is no shortage of institutions in today's energy markets; what is missing, however, is a practical strategy for setting effective norms to govern the global energy economy." Their own proposal to remedy this governance gap involves a minimalist 'Energy Stability Board' which would gather interested states and businesses in order to craft a set of global investment and trading rules for energy. Given the penchant of today's emerging powers to retain governmental control over their energy industries and to scour the globe for new contractual partners, this market-based scheme would already represent a genuine endeavour. Other commentators may harbour rather more ambitious institutionalist plans (e.g. Karlsson-Vinkhuyzen 2010; Yueh 2010), but even these scholars do not possess the confidence to predict a speedy evolution of currently disparate elements towards a more coherent framework of global energy governance. The fact that even incremental steps, such as expanding the IEA, have stalled should give proponents of institutional reform pause for thought. Existing member states are committed to the status quo and fear losing influence if emerging powers such as India and China were to join. The latter, in turn, are reluctant to comply

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<sup>1</sup> Keohane and Victor (2010: 4) define regime complexes as broad range of institutional patterns that include "nested (semi-hierarchical) regimes with identifiable cores and non-hierarchical but loosely coupled systems of institutions."

with the IEA's partial control over national emergency reserves of oil and prefer to continue as informal participants.

Finally, the greatest obstacle to coordinated global energy governance arguably derives from the central distinction between producer and consumer countries of fossil fuels. The Organization of Petroleum Exporting Countries (OPEC) assembles twelve member states and accounts for about 40 percent of the world's oil as well as 75 percent of proven oil reserves. By adding Russia, which has entered into an alliance of sorts with OPEC, the share of global oil production increases to 58 percent (Lesage et al. 2010: 58). This configuration gives rise to a fundamental clash of interests with major energy-importing countries around the world which has played out for decades and, among other things, resulted in the creation of the IEA as a counterweight. There have, of course, been organised attempts to mitigate this tension. For example, the International Energy Forum (IEF), based in the Saudi-Arabian capital Riyadh, has held bi-annual ministerial summits since 1991. While making some progress, particularly on verifying data on global oil reserves, the gulf between the two camps has so far proved impossible to bridge (Bradford 2009; Lesage et al. 2010: 61ff.).

Nor are relations likely to become more cooperative in the future. It is, after all, the declared interest of fossil fuel exporters to delay the substitution of their valuable resources with renewable or other 'home-grown' energy (Lesage et al. 2010: 58). This implies a fundamental conflict between the conventional definition of energy security cited at the beginning of this chapter, which reflects the interests of numerous energy-importing countries, and the definition favoured by fossil fuel exporters, which seeks the security of stable and prolonged demand for their energy exports. Given this deep-seated divide, there is, at least in the medium term, little hope for a stronger and more inclusive institutionalisation of energy governance.

This pessimistic reading has certainly not discouraged some scholars from outlining the desirable functions of global energy governance. "[A] global energy regime", write Lesage et al. (2010: 37),

"should foresee the possibility of technology transfer to developing countries, create a level playing field in energy trade, and address energy supply security similar to a global public good that can only be achieved and preserved collectively."

The obstacles to realising this vision remain very large indeed. Nevertheless, the United Nations have certainly begun to prepare the ground for greater global cooperation on energy issues by creating the UN-Energy inter-agency mechanism in 2002 and, in 2009, initiating a succession of biannual energy conferences in Vienna. Even champions of UN activism in this area do, however, concede that the emergence of

genuinely *global* energy governance would require the abandonment of time-honoured realist assumptions of energy politics as a "zero-sum game". A business-as-usual scenario, by contrast, would mean that

"the normative and institutional vacuum within the UN on energy remains, that institutions within the UN system will continue to engage in energy-related projects [...], but that in parallel some groups of countries will pursue much more bilateral and international cooperation outside the UN through their own 'coalitions of the willing' on, for example, energy efficiency and renewable energy" (Karlsson-Vinkhuyzen 2010: 193).

The same author also points out that "everyone expects the most significant *indirect* global governance process for the future energy policies of countries to be the UNFCCC regime" (ibid., original emphasis). And indeed, reconstructing alternative pathways for global climate governance is arguably the only way to satisfy the requirements of both climate stability and energy security.

### **(3) Global climate governance and the pursuit of collective climate security**

Although some advocates of global energy governance recognise that global climate regulation is the more likely focus of cooperative efforts, there has been a recent countervailing trend in the literature on climate policy. Given the relative stalemate in international climate negotiations, it seems appropriate to briefly consider the alternative options and ask whether climate governance can learn some lessons from energy policy. The latter has frequently focused on domestic measures and the formation of coalitions of like-minded parties.

#### **A bottom-up alternative to global climate governance?**

Is it, for example, advisable to reconceptualise climate policy as a bottom-up rather than a top-down and international approach? Put differently, could co-benefits (such as cleaner air), energy security motives and the pursuit of first-mover advantages (from profitable low-carbon technologies) herald the beginning of a new era of bottom-up climate regulation? Some scholars have indeed argued that we should make a virtue of necessity and initiate a low-carbon transformation by building on pragmatic national interests and domestic measures. One major contention of a bottom-up approach is the political impossibility of a top-down process of rationing CO<sub>2</sub> because this implies significant adjustments for recalcitrant nations and societies accustomed or aspiring to

high material standards of living (Nordhaus and Shellenberger 2010). Prins et al. (2010) propose that instead of branding carbon as a dangerous pollutant and struggling in vain to achieve strong international coordination, countries should set up national-level systems of energy and climate regulation.

Above all, these regulations should be geared towards delivering gradual price rises for fossil fuels, for instance through modest carbon taxes, and facilitating massive investments in low-carbon technologies. By prioritising a supply-side response to energy security and climate change, the bottom-up approach hopes to usher in a green industrial revolution which will see low-carbon energy eventually become cheaper than fossil fuels. Just as in previous historical phases of energy transition, cheaper and more advanced energy carriers will crowd out existing energy systems. While supply-side measures, such as energy efficiency and new technologies, do not always sufficiently counteract the long-term trend of rising energy consumption, their deployment will bring some immediate economic benefits and meet with more popular support than traditional climate policy.

At the international level, Prins et al. (2010: 22) suggest that the regulatory focus ought to shift from carbon towards more narrowly defined 'low-hanging fruits' such as energy efficiency and tackling other greenhouse agents that are responsible for up to 40 percent of anthropogenic global warming. 'Black carbon', the soot resulting from the inefficient burning of biomass, is one prominent example for which there is already a technological solution – stricter regulation and the provision of clean and efficient stoves as part of development efforts – while bringing significant co-benefits in the shape of cleaner air and better health. The 2005 Asia-Pacific Partnership on Clean Development and Climate is one example of a loose coalition of countries grouped around the themes of energy security, air pollution reduction and climate change.

The bottom-up approach, however, does not fully get to grips with the achievements of the international climate regime over the last few decades – including the creation of a far-reaching political and scientific case for action, institutional mechanisms for continuous cooperation, the emergence of carbon markets, and so on. Moreover,

"by abandoning efforts to create more comprehensive international climate regime, the bottom-up approach removes a major stimulus for developing more ambitious domestic policies, thus solidifying the lowest common denominator. It turns climate change from a political into a technological challenge and eschews the difficult distributive conflicts that are central to international climate politics" (Falkner et al. 2010).

It attests to the strength of global climate institutions (or expectations of future regulation) that the Japanese government, for instance, has recently decided to finance

feasibility studies for emissions-cutting projects in nine developing countries (Reuters 2010). Although increased exports of Japanese energy technology were undoubtedly a major motivation, comparable financial resources would probably not have been committed if these projects did not promise carbon credits that could be used to meet Japan's own national emission target.

Overall, therefore, a predominantly bottom-up approach to climate governance misconstrues the nature of the problem. If climate stability is understood as a form of collective 'climate security', it is evident that such an objective can only be achieved through concerted and prolonged cooperation which becomes embodied in institutions such as a global carbon market. However, the same dynamics do not necessarily occur in issue-areas such as clean technology *per se* or energy security. Both of these could, in principle, be attained by individual countries or regions through strategies of autarky, demand management, technological innovation, and so on. Because neither of them constitutes a global common-pool problem, solutions are not bound to be of a global nature.

### **The pursuit of collective climate security**

On the other hand, a bottom-up strategy would still be a good complement to ongoing efforts at constructing global institutions for climate change governance. Plans for demonstration projects of carbon capture and storage (CCS) for coal-powered energy generation are one fitting example of how effective and affordable domestic action could change the terms of the debate at the international level. But it is equally plain that the bottom-up measures alone will not succeed in bringing about low-carbon transformation of the global economy without significant advances in the international domain. At this level of policy-making, however, as the previous section made clear, one is faced with the evident centrality of short-term political and economic interests by the most powerful players. Many of the pivotal countries may rhetorically subscribe to an assumed common, rational global interest in a low-carbon economy and climatic stability, but quickly return to particularistic political considerations when strategies are defined and negotiations commence. Distributive concerns over financial flows to developing countries and the total global carbon space will persist.

Within this political context, ideas of intra- and intergenerational justice or fairness will equally flourish, but they are unlikely to provide the ideational 'glue' which could join together nations with divergent short-term interests. As climate change impacts gradually begin to manifest themselves in all world regions, the concept of 'mutual vulnerability' will increasingly resonate with international policy-makers (cf. Vogler 2000: 190) who are growing concerned about the potential political fall-out from climatic perturbations, which range from political instability to migratory

flows and conflicts over basic resources (German Advisory Council on Global Change 2008; Rogers 2009). Similar claims about a degree of "intervulnerability" have also been made for global energy governance (Lesage et al. 2010: 84), especially in relation to heavily fluctuating prices, but effective global governance in this realm does not carry the same existential connotations or evoke a similar imperative of cooperation.

In the light of the political obstacles described earlier in this paper, the principal task for advocates of international climate governance is to lay out alternative options to the elusive top-down 'global deal'. The best way forward may well be relatively flexible multi-track framework that draws on a 'menu' of regulatory options (Bodansky and Diringer 2007) rather than imposing a single category of targets and timetables on every party. In fact, post-Copenhagen climate governance is already proceeding along this path. While numerous industrialised countries will probably continue to face emissions reduction targets – provided that the Kyoto Protocol's first commitment period is renewed (Grubb 2010) – other countries, such as developing nations and a reluctant US, will undertake a variety of domestic measures to bring down emissions or at least the carbon intensity of economic activities. Major developing countries have thus committed to a series of 'nationally appropriate mitigation actions', including increased investment in renewable energy and energy efficiency.

Alongside these tailored national actions, some progress is being made on issues that already command a certain degree of consensus, such as financial compensation for avoided deforestation and a framework for technology transfer and capacity-building in developing countries. In the future, however, more attention will also have to be paid to the emergence of competitive dynamics among these various institutional elements. Although some observers have advocated the acceptance of a more fragmented institutional landscape (Michonski and Levi 2010), it is not desirable to reproduce the strongly disaggregated 'regime complex' that characterises global energy governance.

Other features of global cooperation on energy, however, could certainly inform the evolution of the climate change regime. Just as the great economic powers elevated energy security to priority status on the agendas of the G8, G8+5, and the G20 in recent years – until its importance declined again with decreasing energy prices – these alternative fora should also step up their efforts on climate change. To some extent, of course, this has already happened. The US initiated the Major Economies Forum on Energy and Climate (MEF) in March 2009 which assembles sixteen countries plus the EU. Its brief consists of facilitating mutual understanding and generating a high degree of leadership to influence both UN climate negotiations and domestic policies. It also features concrete initiatives such as Technology Action Plans for key low-carbon innovations. In addition, ever since the Gleneagles G8 Summit in July 2005, climate governance has been an integral part of an incipient global 'concert diplomacy'.

It has often been pointed out that these mini- rather than multilateral diplomatic efforts do not satisfy widespread demands for inclusiveness and legitimacy. Nor do they provide a 'voice opportunity' for the most vulnerable countries whose precarious situation ought to be at the centre of global governance (Biermann et al. 2009). But these smaller, high-level fora do provide an important political arena in which the major economic powers, which emit up to 80 percent of all greenhouse gases (McColl 2010), can develop shared understandings and strike a compromise. They can further serve to complement the ongoing discussions in the UNFCCC which can easily be blocked by a small group of parties, as happened during the Copenhagen Summit. Some commentators have indeed argued that small groups of powerful countries can offset reduced legitimacy with more effectiveness in decision-making, especially if the 'club' membership represents different continents and diverse interests (Collier 2009).

And if the 'security' framing of climate governance is likely to become increasingly influential, then it is worth recalling that most of today's principal security issues – from nuclear proliferation to terrorism, from global disarmament to regional peace-making – are undertaken by small groups of major powers. An 'enlightened oligarchy', rather than a single hegemonic country, may also be able construct credible linkages between climate policy and other issue-areas, not merely offering incentives, such as technology transfer and other privileges, but penalties as well, for instance in the form of trade restrictions and border carbon taxes. Such measures, of course, will for now remain highly contentious among the major powers, but it is not inconceivable that a group of 'climate leaders' will eventually protect their economies through such a mechanism. If national sovereignty cannot be restricted by an overall UN agreement, than these partial agreements may represent a second-best option (Helm 2009: 34). The fact that concert diplomacy has not yet proven particularly effective in global energy governance does not necessarily imply the same fate for climate change governance. The latter is unlikely to be subject to similarly fluctuating attention and cannot be addressed effectively through national action alone.

Despite this global 'imperative', however, the domestic level of policy-making will retain its critical importance, as any version of 'two-level game' theory would correctly predict (Sprinz and Weiß 2001). Mobilising domestic constituencies in support of climate policy will be a crucial task for pressure groups and policy-makers alike. This would be helped by significant international incentive structures, such as carbon markets. But the perception of climate change as a long-term security issue must also manifest itself at the national level and become a cornerstone of governments' planning procedures. The institutional framework for the successful integration of such concerns could be 'strategic foresight' programmes which already exist in a number of countries. In order to fulfil their potential, however, these would have to be well-resourced and occupy a central advisory position (Habegger 2010). If they were to become influential in national governments, climate security may well become a shared international

preoccupation similar to today's focus on nuclear proliferation and international terrorism.

## **Conclusion**

Before industrialised nations and emerging powers recognise their "enlightened self-interest" (Hilton 2009) in cooperative climate security, however, a large amount of conceptual work and political advocacy will be required. This paper has laid out a research agenda that examines the governance priorities and regulatory strategies which should be pursued towards this end. The most important first step consists of recognising that climate policy can no longer be thought of in isolation and that, above all, it is by now inextricably intertwined with energy policy and security of supply. Moreover, because a global energy crisis is likely to occur earlier than major climate change impacts, policy-makers should now design a long-term energy and climate strategy and not risk falling victim to the path dependencies that may assert themselves during such crises.

At the international level, both climate and energy governance are currently suffering from a persistent conflict of short-term interests among the major powers. This is unlikely to change in the case of global energy governance. With regard to climate change, however, the disappointing outcome of the 2009 Copenhagen summit at least contained a rudimentary agreement on collective action. Most of these measures can equally be interpreted as strategic policies on domestic energy security, although, despite their political significance, their scope is insufficient to change the foundations of the modern, energy-intensive industrial economy. Some commentators have traced back this limited progress to the overly ambitious plan of forging a comprehensive global climate regime. Instead, they argue, emphasis should be placed on massive investments in low-carbon technologies and on triggering a bottom-up dynamic of techno-industrial transformation.

Their considered advice notwithstanding, the common-pool problem of climate change requires a global framework for concerted action, not least to prevent systematic free-riding and enable the construction of credible enforcement mechanisms. Climate governance should therefore advance along multiple tracks. First, the UN framework ought to continue its incremental evolution and focus on elementary building blocks – such as financing, measurement and verification, and technology transfer/cooperation – to reignite its political momentum. Second, climate governance can learn a valuable lesson from global energy cooperation by recognising the centrality of political and economic power. The traditional institutions of climate policy-making must be supplemented by mini-lateral fora in which the world's pivotal countries can build

shared understandings and strike overarching bargains (Giddens 2009). These institutional pathways should be joined by innovative domestic climate policies that are informed by long-range strategic thinking. If these conditions are fulfilled, the pursuit of cooperative climate security may materialise as a durable political project. A sound, precautionary response to looming energy insecurity will be one of its many co-benefits.

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