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Governing Climate Change: Lessons from other Governance Regimes

Arunabha Ghosh and Ngaire Woods

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GEG Working Paper 2009/51





Global Economic Governance Programme



Centre for International Studies | Department for Politics and International Relations

The Global Economic Governance Programme was established at University College, Oxford in 2003 to foster research and debate into how global markets and institutions can better serve the needs of people in developing countries. The three core objectives of the programme are:

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- to create and maintain a network of scholars and policy-makers working on these issues;
- to influence debate and policy in both the public and the private sector in developed and developing countries.

The Programme is directly linked to Oxford University's Department of Politics and International Relations and Centre for International Studies. It serves as an interdisciplinary umbrella within Oxford drawing together members of the Departments of Economics, Law and Development Studies working on these issues and linking them to an international research network. The Programme has been made possible through the generous support of Old Members of University College.

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Governing climate change: lessons from other governance regimes

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I. Introduction

At the heart of the existing climate change regime is a divide between developed and developing countries. The UN Framework Convention on Climate Change (UN-FCCC) enshrines 'common but differentiated responsibilities and respective capabilities' and in so doing recognizes that historical responsibility for climate change rests with developed countries and that they have greater capacity to address the problem. That said, the Convention specifies no timetable for the introduction of binding commitments on developing countries, nor any agreed procedures for 'graduating' countries from developing to developed status. As a result, progress in governing climate change rests heavily on finding a North–South agreement. That, in turn, rests on overcoming what Joanna Depledge and Farhana Yamin (2009) describe as 'the persistence of dysfunctional North–South politics . . . negotiations between the groups tend to be dominated by knee-jerk suspicion, defensiveness, and misunderstanding, which hinder the rational discussion of proposals'.

An 'integrated multi-track approach' has been proposed by Bodansky and Diring (2008) as a possible way forward. All major emitters (developed and developing) would commit to reducing greenhouse gas (GHG) emissions, but they would have the flexibility to devise their own approaches (whether economy-wide targets, efficiency standards, efforts towards renewable energy, curbing deforestation, and so forth).¹ Many developing countries are concerned and sceptical about the prospect of new regulatory arrangements. They do not wish to become 'rule-takers' in yet another sphere of global politics which leaves them vulnerable to rules, monitoring, and enforcement which they see as having asymmetric impact to their disadvantage.

We focus on: the participation of developing countries in rule-making, and the monitoring, verification, and enforcement processes. As mentioned above, developing countries are concerned that a small group of powerful, industrialized countries will mostly 'do' the regulating, leaving them highly constrained, but marginalized, with little influence or control over the rules and their application. Below we draw out why developing countries might be concerned and what kinds of arrangements might reduce the risk that they will be marginalized from arrangements.

II. The challenges of participation

Until now climate change negotiations have permitted participation from all countries. Within the UN-FCCC, any state may become a party to the Convention. The

underpinning existing treaties and arrangements are fully discussed by Depledge and Yamin (forthcoming 2009). They underscore that in climate change negotiations there is a 'norm of universal participation'. However, progress towards the real objective of reducing greenhouse gas emissions has stalled because negotiators, including from major developing countries, are at a stand-off and unwilling to commit, let alone implement measures which in fact reduce GHG emissions. The prospects for resolving this stalemate through ongoing large-scale international negotiations look grim, especially when we consider the Doha Round of trade negotiations which have been ongoing since 2001 and still have not reached a conclusion. The urgency of acting to mitigate climate change suggests that agreement among a small group of the largest emitters to reduce their GHG emissions is a crucial immediate step. However, the urgent deal among as few as four or five emitters needs buttressing with a wider deal to ensure that others do not immediately step into their shoes. Such a deal also needs buttressing with measures to alleviate the impacts of the failure to mitigate (to date) on the poorest countries in the world. These wider agreements will require institutional underpinnings to provide information, to monitor compliance, and to adjudicate disputes (Keohane, 1982). Indeed, some have called for a World Environment Organization to meet these needs (Newell, 2001; Esty and Ivanova, 2001). Whatever the institution, the challenge of engaging developing countries in the design and implementation of a global regime will be paramount. For these reasons we explore governance issues which will need to be addressed in the ongoing climate change negotiations.

(A) Using direct incentives to ensure participation

Direct incentives offer one way to ensure greater engagement by developing countries who might otherwise avoid complying by simply avoiding participation in the regime (Barrett, 1999, p. 519). Several kinds of direct incentives are currently on the table, which include direct transfers (Barrett, 2001; Benedick, 2001, p. 71) or allocations of emission quotas (Bradford, 2001), or both (Hahn, 1998; Aldy *et al.*, 2001; Stewart and Wiener, 2001; Victor, 2003, p. 204). In the Montreal Protocol such side-payments were important. The London Amendment to the Protocol ensured increased participation, because rich countries offered to cover the incremental costs for developing countries to comply with the agreement. Much like the emission-reduction requirements, the Protocol obligated rich countries to transfer resources to a Multilateral Fund as payment to developing countries for the incremental costs of reducing the production of ozone-depleting substances (Barrett, 2005a, pp. 347, 349, 357).

New technology holds out another incentive for participation. Transfers from rich to poor countries would involve the adoption of new technology, whether related to cleaner coal with reduced emissions, or renewable sources of energy. The financing would come from developed countries (Benedick, 2001, p. 71) but the process could be strengthened with cooperative R&D and common international standards. But the transfer and use of technology has to be observable. The International Convention for the Prevention of Pollution from Ships (the MARPOL treaty) was effective because it was easier to monitor the adoption of a specific technology (segregated ballast tanks) than to observe actual pollution levels (Mitchell, 1994; Barrett, 2005a, pp. 393–6).

For developing countries the key concern over such promises to transfer resources or technology lies in a scepticism about whether these promises will be fulfilled. Theorists of cooperation have noted that when it comes to financial transfers, most countries prefer that others bear the cost (Barrett and Stavins, 2003, p. 358). More empirically, developing countries have learnt in other negotiations that where they can, developed countries avoid the costs. They look with hindsight at the Uruguay Round of trade negotiations and perceive that they accepted binding commitments in return for what proved to be discretionary future promises. In the final agreement, the priorities of industrialized countries, such as on intellectual property, were made into binding commitments. Meanwhile, progress on developing countries' priorities, such as the liberalization of trade in agriculture, cotton, and textiles, was promised at a future date. The disillusionment with this approach is one of the factors which has stymied further progress on the Doha Round of negotiations.

Another example of asymmetric commitments lies in the 2002 New Partnership for Africa's Development (NEPAD), which was agreed between countries of Sub-Saharan Africa and the G8 countries. On their side, the African leaders agreed to commit to a set of NEPAD political, economic, and corporate governance codes and standards contained in the *Declaration on Democracy, Political, Economic and Corporate Governance*, and created an African Peer Review Mechanism (APRM) to ensure adherence. In exchange for this pledge, the industrialized world committed to Africa's development with enhanced Overseas Development Assistance (ODA), debt relief, favourable trading terms, and direct foreign investments. However, the 'G8 Africa Plan of Action' was very slow in coming. What the G8 announced in 2002 boiled down to some uncoordinated and complex separate national initiatives on aid and trade access by the USA, Canada, and Britain, with no clear commitments on debt relief, market access, infrastructure development, and ODA reforms, nor was any discussion held of a mechanism to review whether the G8 was honouring its commitments. Three years later, at the G8 in Gleneagles, larger promises were made, but many of these have not been honoured.

In the words of a former NEPAD Secretariat official, Khadija Bah, the slow and patchy progress in the delivery of the resources promised in the G8's pledges highlights that 'African leaders simply lack the leverage necessary to hold their industrialized partners accountable and make them deliver on their commitments'. While there is little African countries can do when the G8 fails to deliver, the G8 countries always have the option of suspending aid (Bah, 2009). For NEPAD to have been a genuine partnership, what was needed was 'symmetrical accountability', which would have required the conditions applying to Africa's industrialized partners to be clearly spelt out—for example, the size and composition of aid flows, the pace and sequencing of trade liberalization, and the flow of debt relief (Maxwell and Christiansen, 2002, p. 480).

The examples of the Uruguay Round and NEPAD explain developing country demands in climate change negotiations for verification and monitoring of any promised incentives. Some proposals have been made (Victor *et al.*, 1998). For example, in respect of technology transfers, developing countries are pushing for a multilateral financing and

technology mechanism, to be supported by a Strategic Planning Committee, Technical Panels, Verification Group, and a Secretariat.² Experience suggests that systems to monitor financial contributions may be more difficult to put in place. Although monitoring financial and technology transfers might be technically easier,³ to date reporting on financial contributions has been mixed at best, thanks to gaps in the data, multiple sources of funding, and inconsistencies in definitions (Breidenich and Bodansky, 2009, p.16).

Similar monitoring problems have plagued other regimes. Reviews of ‘aid-for-trade’ found that measurements of actual funding flows were not only affected by multiple sources and double counting, but that there was little verification against commitments, and recipients had little say in the governance of funds. The OECD’s Creditor Reporting System was also proposed for aid-for-trade, but poorer countries insisted on and secured a dedicated monitoring system. Similarly the OECD has developed a reporting standard for climate-related funding (the Rio Markers), but parties are not obliged to follow it.

Monitoring and verifying pledges to transfer resources and technology is not easy. However, efforts to secure a post-2012 climate deal will suffer unless developing countries have good reasons to trust that developed countries are both willing to make financing commitments and will, in fact, deliver on them. Centralized mechanisms which do not rely on appropriations from donor governments alleviate one concern about whether promised money is actually transferred. To some degree the Adaptation Fund set up to complement the Clean Development Mechanism (CDM) is an example of such a centralized mechanism. One part of the fund is financed by a share of proceeds amounting to 2 per cent of certified emission reductions issued for a CDM project activity. That said, two additional issues arise in respect of a centralized funding mechanism. For developing countries, there is a concern about the automaticity of such funding or ensuring that this is not a conduit of World-Bank-style conditionality (the interim arrangements for the Adaptation Fund see it nested in the Global Environment Facility (GEF) with the World Bank as trustee). A second concern is the governance of such a centralized mechanism.

(B) The structure of formal decision-making

Participation will not be secured only by direct incentives. Equally vital is the structure of representation in decision-making that countries will face in governing climate change. As mentioned above, negotiations among 192 countries have proven difficult and frustrating. For some this highlights the need for an institution with a smaller decision-making body such as the Executive Boards of the International Monetary Fund (IMF) and the World Bank. However, developing countries have long expressed dissatisfaction with the lack of votes and voice accorded to them in the Bretton Woods institutions, which are dominated by the industrialized countries in large part because industrialized countries have a majority of votes on their Boards and the United States a veto power. The fact that the institutions are located in Washington DC further underscores the sense of US dominance. The industrialized countries’ grip on the IMF and World Bank has led developing countries to ‘exit’ when they can, in practical terms, from each institution by

not borrowing and not taking advice from the institutions (whenever they can afford not to). In climate change governance, 'exit' of this kind could render shared objectives unattainable.

There is a further reason for ensuring that institutions governing climate change are not dominated by a small group of industrialized countries. Recall that the two tasks facing such institutions are: (1) a rule-based system on emissions; (2) effective financing for mitigation and adaptation. In respect of both tasks participation by developing countries and strong responsiveness to them will be crucial. There is evidence that international rules are more likely to be effectively implemented (as opposed to merely "signed up to") by countries when they have been engaged in formulating the rules (and designing monitoring and enforcement mechanisms) themselves: the limited initial implementation of the IMF's codes and standards initiative in East Asia is one such example (Lombardi and Woods, 2008). Furthermore, to be effective in financing policies in developing countries, the institutions need to be maximally responsive. There is a strong temptation to design policies and finance packages for poorer countries, while sitting in Europe or North America. However, the experience of the past two decades highlights that in development financing "ownership" is crucial to success. This does not mean "persuading" governments to do things they would otherwise not do (which has a dismal record of failure). Rather, it means identifying in-country the projects and policies given priority by local communities and governments, and supporting those. To some degree these lessons have been taken on board.

The Adaptation Fund model has managed to avoid replicating the World Bank or GEF representation. The Adaptation Fund is governed by a Board composed of 16 members and 16 alternates representing the five United Nations regional groups (2 from each), the small island developing states (1), the least developed countries (1), Annex I parties (2), and non-Annex I parties (2). This gives formal representation to a range of countries and interests. That said, formal representation will not alone ensure that all parties' concerns and priorities are reflected in the policy and work of institutions governing climate change.

The regional development banks were created principally to ensure greater developing country 'ownership' and 'voice'. To this end they were structured in ways which ensured that developing countries from each region had a controlling share of votes, of capital, and staffing within their respective organization. Yet the early experience of these institutions was mixed, highlighting the importance of other conditions for exercising effective voice within an institution (Woods, 1999).

In the Inter-American Development Bank (IDB), regional members enjoyed formal control, holding a majority of the Bank's capital and votes and occupying the Presidency and the agency was perceived as being more 'in touch' with the region than the World Bank or the IMF. Yet it is also worth noting that in spite of the Latin American voting power within the Bank, the United States enjoyed enormous dominance through a veto on constitutional decisions, a provision that the Board's quorum required the presence of the US Executive Director, the location of the bank in Washington DC, the fact that one-

quarter of its top management, its Executive Vice-President and usually also the Financial Manager and General Counsel were from the United States, and the resources the US mission to the Bank used to present, argue, and lobby for particular positions or policies. The lesson to be drawn is that effective representation and participation requires not just representation in formal powers and structures. It also requires attention to other organization attributes, including staffing and location. At a subtler level, as evidenced by the experience of the Asian Development Bank, the counter-balancing of a dominant country's power by other powerful countries can create important space for a wider range of influences (Woods, 1999).

The experience of the African Development Bank is different but also instructive. From its inception in 1966 the Bank's capital, voting, and staff were structured to ensure African ownership and participation. Furthermore, the Bank was located in Abidjan, Côte d'Ivoire, with an African President and mostly African staff, and did not initially admit non-regional members. Yet for decades the Bank was found to be 'very distant from its African membership': to cite the report of the 1994 Task Force on Project Quality, the Bank had 'no systematic relations' with the African countries who are its majority shareholders. In the field, it was argued 'the Bank is absent when it should be present' (African Development Bank, 1994, p. 2). Furthermore, even within the boardroom, the African members of the Bank had a relatively low level of engagement in defining the Bank's overall direction, in questioning the institution's financial and operational strength, and in assuring the quality of its work and its contribution to African development. This was an institution whose formal structure attempted but failed to ensure the responsiveness and engagement of developing countries.

Developing countries' experience in international institutions highlights that formal 'seats at the table' or 'voting rights' are not enough to secure an effective voice and influence. Other organizational attributes are also important, including the role and selection of senior management, and the staffing and location of an organization. Equally important, however, is the capacity of developing countries to identify their own priorities, to 'politic' within institutions, to monitor and hold institutions to account for strategic goals and outputs, and to hold their own representatives to account (Woods and Lombardi, 2006).

Holding representatives to account will become more important as negotiations on climate change proceed. Although negotiators ostensibly represent countries, in other institutions it is clear that over time representatives can too easily become more entrenched in their positions within their own governments, with their 'win-sets' becoming more defined and therefore more difficult to adjust. Ensuring that "representatives" are held properly to account by those they represent is critical.

For many, the need to make big political decisions and trade-offs in climate change points to the need for engaging heads of government. For example, the G8 meeting of leaders at Gleneagles in 2005 launched a new level of political engagement in international negotiations by some of the major industrialized countries. Clearly, this was not a group endowed with formal representation or legitimacy but the leaders-level

engagement made possible some linkage across issues. The G20 leaders meetings which were launched in Washington DC in 2008 to deal with the global financial crisis may well provide some impetus. Although the group does not represent more than a couple of dozen countries, meeting at the leaders' level, it may provide an important opportunity to shift the goalposts and agenda in climate change negotiations, including on issues of concern to developing countries.

More formal decisions and agreements on rules and the like will require carefully framed decision-making rules and to date this has been every bit as contested (if not more) than participation itself. Members of the UN-FCCC failed to adopt rules of procedure, principally because they could not agree on voting rules. The effect, as noted by Depledge and Yamin (forthcoming 2009), is that most decisions can only be taken by consensus. In the climate change negotiations this has resulted in relatively small minorities (such as OPEC) regularly blocking agreement. The alternative would be to introduce some form of majority voting requirements, or to consider more closely the different ways that consensus operates in a number of different international organizations.

One version of 'consensus' is widely used in the UN Security Council. Formally the Council is made up of 15 members, five of whom are permanent (China, France, Russia, the UK, and the USA) and 10 of whom are non-permanent representatives of various groupings of countries: the formal rule is that a minimum of nine votes is required for any decision, which must include the concurring vote of all five permanent members. Yet most of the Security Council's business is not carried out by formal voting, rather it is conducted in 'informal consultations of the whole', in which consensus decision-making replaces voting. By the late 1990s, it was said that this undoubtedly improved the capacity of the Council to despatch its business. It bred a much higher level of informal consultations, 'private straw votes', and meetings of small groups, according to members of the Council. Key decisions were taken outside of formal meetings. Even on procedural matters, when votes were taken they were 'so to speak, pre-cooked in informal consultations': whereas there used to be frequent votes on the adoption of the agenda, by the late 1990s it was said that 'agendas are always agreed in advance . . . in informal consultations' (Wood, 1996). A serious problem with devolving decision to informal processes is that they are unrecorded and therefore in the absence of informal reporting (some of which emerged in the Security Council), they exclude many states.

Another form of 'consensus' operated from the early days in the World Trade Organization (WTO) where consensus came to mean decisions which reflect the mood of those *present at the meeting*. This prevents decision-making being held hostage by those not present. At the same time, however, it excludes those who cannot be present or who cannot afford to have a delegation at negotiations. A further variation on consensus decision-making within the WTO concerns decisions being made in lower Councils which had rules of procedure of their own. The practice emerged of ignoring these rules when consensus was not reached and instead decisions were 'bumped up' until consensus was reached at a higher level, if necessary going as far as the General Council.

In the climate change negotiations, there are several forms of ‘consensus’ decision-making which could be used, or alternatively a form of majority decision-making. For example, double majority voting requires that the votes cast for a decision represent both a majority of countries as well as a majority of some other stake.⁴ One possibility in climate change negotiations would be to require that decisions command support from a majority of all countries, as well as a majority of the world’s emitters (as measured, say in 1992 so as not to penalize those who have subsequently reduced emissions). The rationale for such voting rules is that they create incentives for countries and groups of countries to consult with and to build up wider coalitions in favour of important issues, without permitting the emergence of relatively small blocking coalitions.

(C) Supporting national processes and national priority-setting

Beyond the legal language and commitments embodied in international rules, the capacities that countries have to implement rules, or make use of exceptions varies hugely. Simply put, once agreements are struck, the same provisions do not impact in equal ways on developing countries.

For example, in the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), to which many developing countries signed up, there is provision for a variety of legal safeguards and options (the TRIPS ‘flexibilities’) which developing countries could use in the application of the agreement. Yet only a small number of developing countries have made use of legal safeguards and the ‘flexibilities’ inherent in the agreement. Curiously, some of the poorest and neediest countries who are signatories have opted for yet more onerous (TRIPS-plus) commitments. The reasons for this lie not in the legal language of the agreement but in the politics of implementation (Deere, 2008). An important part of the explanation lies in the way some smaller and poorer countries, such as those in West Africa, have not embedded their intellectual property laws and compliance into their broader national goals and institutions. As a result, the trade-offs between tight TRIPS-plus implementation and priorities such as national health, expenditure, and other development goals are not reflected in their law-making.

The experience of small states in trade negotiations highlights how crucial national capacities and processes are. Scholars have identified the extent to which small states are impaired by the absence of missions in Geneva, weak inter-governmental coordination, poor communication and information flows within government, and low levels of technical competence among officials (Blackhurst *et al.*, 2000; Ohiorhenuan, 2005). Administrative capacity is severely constrained in countries with small populations (Kotschwar, 1999, p. 14). Crucially, these problems have been magnified by the expanding scope of trade negotiations both within and beyond the WTO which demands ever greater institutional capacity (Tussie and Lengyel, 2002, p. 487).

The financing of climate change mitigation and adaptation could play an important role in strengthening and supporting national and local processes. That said, there is a long history of efforts to “incentivize” policy-makers in developing countries in the area of economic policy. Few have been successful. The main impact of “structured incentives”

or conditionality is to give “assurance” to donor countries, offering a tempting mirage of policy change which lures them across the policy-equivalent of a desert. Far more likely to induce success is a careful examination (as already mentioned above) of how much local ownership there is of a project, and by whom. This can only be ascertained by investigating who initiated the project and what local resources are being dedicated to it. Similarly important is to ascertain the extent to which local expertise and institutions will be used to implement, report, and decide upon renewal (or not) of a project. Finally, countries promising finance should investigate themselves and in particular should ascertain whether the timing of disbursements, the certainty (or not) of finance, and its possible recurrence have been planned to suit the project and recipient of financing. Far too often projects fail because their financing has been arranged to suit a donor’s budget cycle and reporting requirements.

The lesson for developing countries in climate change negotiations is one which underlines how important it is that their national positions be integrated across governments, so that the trade-offs for other national goals are properly considered, and so that implementation and enforcement cohere with other parts of government. For other countries in the climate change regime, these elements of national ownership and coherence are vital for effective compliance.

III. The challenges of monitoring

An effective information system is at the heart of regulation and the governance of mitigation. Effective monitoring, which provides information and reduces uncertainties, should facilitate international cooperation (Keohane, 1982, p. 325; Simmons, 2000, p. 819). The UN-FCCC and the Kyoto Protocol have extensive provisions for monitoring, especially for the emissions of Annex I countries. But monitoring is still imperfect, both in terms of linking it to effective enforcement⁵ and in broadening its scope to include issues of importance to developing countries. The Bali Action Plan explicitly recognizes the need for measurable, reportable, and verifiable (MRV) actions. It applies not only to ‘mitigation commitments and actions’ by developed countries but also to ‘nationally appropriate mitigation actions’ by developing countries ‘*supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner*’.⁶ Yet, many of the new or alternative proposals for the climate regime either engage with monitoring only as a marginal question or not at all.

Monitoring and verification in the climate change regime may be necessary but it will not be easy. In a world of sovereign states, monitoring is one of the most contested aspects of international regulation. No surprise, then, that it is a further area of concern for developing countries. On the one hand, developing countries do not want to take on strong obligations for monitoring emissions, because they consider that to be a first step towards rule-bound commitments to reduce emissions. Moreover, they recognize that building domestic systems for continuous emissions monitoring would entail significant costs. On the other hand, poor countries want improved monitoring of financial and technology transfers from rich countries. Thus, developing countries have an important

stake in designing an MRV system for the climate regime. It is a precondition for improved compliance, which would not be limited only to measuring emission reductions but would apply transfers from rich to poor countries as well. Yet, their experiences in other monitoring regimes, discussed below, have put developing countries on guard.

(A) *What needs monitoring?*

Several aspects of the climate change regime are likely to require monitoring. These include a global emission reduction and trading system, or linkages between national/regional trading schemes, or harmonized taxes, compliance, and enforcement. Each of these would be contingent on monitoring and reporting, verification, and procedures for peer pressure. Accurate, consistent, and internationally comparable data on emissions are essential for enabling member states to measure their performance against their commitments. This could include monitoring individual firms and sectors, evaluating performance against baselines, reporting and registering total emissions by states, and verifying the data via independent sources. Further, information on the best available technologies and the means to adapt to climate change is also needed to chart a path of sustainable development and to hold rich countries accountable for their promises to poorer ones.

Developing countries have concerns about their obligations for reporting and the legitimacy of procedures to promote compliance. The climate regime already has a complex set of obligations and voluntary requirements for monitoring and verification, which pertain to the supply of information. But the experience with designing effective monitoring mechanisms in international regimes suggests that it is equally important to understand the demand for information: who seeks information, of what kind, in what format, and how often. In an evolving climate regime, member states would have periodically to decide on the minimum standards for the information they seek from each other and from the UN-FCCC Secretariat.

Economists tend to focus on the problem of asymmetric information, which makes parties unwilling to enter into an agreement (Akerlof, 1970, p. 488) or creates moral hazards when some actors free ride and increase the risk burden for others.⁷ But the information problem in the climate regime has to be conceived not only in a relational sense (as asymmetries *between* parties) but also in an absolute sense (the absence of timely, relevant, and credible information for *all* parties). This is partly because of the uncertainties associated with the impact of climate change on different countries, and partly due to the fact that the baselines, methods, and procedures for reporting and reviewing different aspects of the climate regime have not been fully resolved yet.

Provided a climate agreement is flexible (see previous section on rule-setting), uncertainties about the impact of climate change on specific regions might actually induce international cooperation (Koremenos *et al.*, 2001, pp. 778–9). Further, the reduction in uncertainty can also motivate parties to negotiate a deal by increasing awareness of the adverse consequences of inaction.⁸

Once countries have agreed on the need for mitigation actions, monitoring is needed in order to prevent free riding by individual states or other actors. Emission trading is central to several proposals for a global climate regime.⁹ Some proposals recommend that countries undertake voluntary pledges regarding specific policies or actions (Schelling, 1998). A slightly different approach links tradable permit schemes across different jurisdictions to offer low-cost compliance options (Jaffe and Stavins, 2008).

Voluntary emissions cuts or not, the system would still require institutional monitoring to measure performance. At present, the provisions for annual national inventory reporting are limited to Annex I countries. If developing countries were to take on commitments for emission reductions, then emissions from all countries would have to be credibly verified (Barrett and Stavins, 2003, p. 359). In addition to measuring the quantity of emissions, the data also have to be comparable. Thus, emissions reporting cannot be the responsibility of governments alone. International institutions would need to ensure data quality for comparability because the trading of permits mixes the inventories from different countries (OECD, 2001, p. 37).

Another proposed design for the climate regime eschews emissions trading in favour of harmonized carbon taxes applied by all countries (Cooper, 2001, p. 11484; 2008, p. 1). Internationally-determined taxes would be applied on domestic carbon use, while the rates could be set based on cost-benefit analyses (Nordhaus, 1998). A harmonized tax regime, in turn, would need monitoring of actual charges imposed by national regulatory agencies. One suggestion is for the IMF to include an assessment as part of its usual surveillance activities (Agarwala, 2008). The process would entail more inter-agency coordination between the IMF and UN-FCCC. But a bigger threat to credibility would come from the asymmetric representation of members in the two institutions. Developing countries, with much less voting power in the IMF, would be unwilling to cede control to that organization to assess their compliance with carbon-tax obligations.¹⁰

The trade regime has also struggled with problems of comparability of data. Members submit data on tariff lines based on their own commodity classification standards. The WTO incorporates the data in a common database, but reviews are based on national data. More recently, however, databases on regional trade agreements (RTAs) and sanitary and phytosanitary standards (SPS) have sought to increase comparisons.

For the climate regime (cap-and-trade, linkage schemes, or taxes), the format and content of reporting from a disparate group of countries would need more attention. The UN-FCCC's International Transaction Log, which tracks transactions for Assigned Amount Units, became fully operational only in 2008, so its performance has not been assessed yet (Breidenich and Bodansky, 2009, p. 14). Moreover, reporting of mitigation measures is subject to less critical review. Although Annex I parties are expected to submit detailed information on their policies and measures, there are no common standards to adhere to. The review teams do not verify the reported information.

(B) Reporting and the challenge of building national monitoring systems

One of the functions of international regimes is to reduce hidden/inaccurate information about members' behaviour. For this purpose, regimes adopt various types of reporting mechanisms: self-reporting, other-reporting, institutional reporting, and non-state actor reporting.

When states are unwilling to cede sovereignty to the secretariat of an international regime, self-reporting systems emerge. Enforced properly, self-reporting is a valuable source of information and puts pressure on members to comply. The International Labour Organization (ILO) considers timely reporting by member states so important that it blacklists states that habitually fail in the task (Chayes and Chayes, 1995). The United Nations Convention on the Law of the Seas (UNCLOS) is the only major environmental agreement that has no formal reporting procedure, but here, too, the Secretariat requests information from states on straddling fish stocks.

In the General Agreement on Tariffs and Trade (GATT) and WTO, notifications have long been considered a principal way to improve transparency and promote compliance (GATT, 1990, para. 2). But the system of notifications, which the WTO inherited, has become increasingly problematic. Even rich countries, with fewer capacity constraints, fail to submit notifications on time. A recent review of agricultural subsidies resulted in an unprecedented number of questions on delayed notifications by developed countries. Developing countries fear that gaps in notifications are no longer an issue of administrative capacity, but deliberate strategies to withhold information.

Under the UN-FCCC, Annex I parties are expected to submit annual inventories of GHG emissions along with reports on methodologies and data sources. Non-Annex I (NAI) parties submit inventories as part of their national communications (which are less frequent) and are not bound by the same standards of data quality. The submissions do not include time-series data and cover only three GHGs, namely carbon dioxide, methane, and nitrous oxides.

Preliminary evidence, however, suggests difficulties in fulfilling these functions. The self-reporting structure is under strain, with both developed and developing countries having problems in maintaining accuracy and quality in their submissions (Kawamoto, 2005, p. 2). In the initial years, reports suffered from incomplete data or have under-reported emissions (Subak, 1998). National communications from developing countries have been delayed, in some cases, by more than 8 years.¹¹

In other words, resource constraints within developing countries need more than marginal attention. At present there are no emissions-trading schemes in the developing world. For developing countries to participate in cap-and-trade schemes in future, they would have to maintain national registries and inventories, which have non-trivial cost implications.

In the trade regime, poor countries were shocked to discover the actual costs of improving their domestic regulatory capacities. Costs linked to implementing agreements

on intellectual property, customs valuation, and SPS measures exceeded the annual development budget of a typical least-developed country (Finger and Schuler, 2000, p. 525). That experience has made them wary of agreeing to new obligations within the WTO.

Building capacity for domestic surveillance and external monitoring is not easy. Nearly 20 years after the WTO's Trade Policy Review Mechanism (TPRM) started operating, most developing countries still suffer from capacity constraints. A survey of 70 countries (just under half the WTO's membership) found that only a fifth of them had independent agencies for policies reviews. Even fewer had the ability to publish reports on other countries' trade barriers. Some of the larger developing countries have sought to build analytical capacity at home, but they, too, are forced to make trade-offs about which issues they can analyse (Ghosh, 2008).

It can be expected that high regulatory costs would affect countries' willingness to participate in the climate regime as well. Developing countries expect technical support from a Consultative Group of Experts (CGE) under the UN-FCCC. But the resources allocated under the CGE were capped at \$100,000 per country. The assistance was provided only at the time of preparing national communications, not for collecting emissions data on a continuous basis. Moreover, its mandate, which expired in 2007, was not renewed until mid-2009.

Thanks to the challenges with self-reporting, institutional reporting is often required. Institutional surveillance can be directed at individual countries, conducted regionally, or undertaken simultaneously for all member states. For example, the IMF conducts country-specific consultations periodically, along with comprehensive reports such as the *World Economic Outlook*. Among environmental regimes, the Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) is the only one that allows its secretariat to report on national performance.

Another response is reporting by non-state actors (non-governmental organizations (NGOs), firms, experts, and scientific institutions). But the division of responsibility for collecting and disseminating information is a deeply political issue.

In the climate regime, primary data is collected and disseminated by international organizations (UN Statistics Division, the Food and Agriculture Organization, the United Nations Environment Program, the World Bank), by national or regional agencies (Carbon Dioxide Information Analysis Centre, International Energy Agency, Eurostat, United States Environmental Protection Agency), by sectoral institutions (International Iron and Steel Institute), and by NGOs (World Resources Institute). Each of these options raises institutional design questions of sovereignty, availability of resources and capacity, and type and quality of data collected.

In the past, NGOs have also published emissions projections that differ by more than 5 per cent from official projections (Subak, 1998, p. 5). The role of NGOs serving as 'fire alarms' was enshrined in the North American Agreement on Environmental Cooperation

(a North American Free Trade Agreement side-agreement), which introduced a Citizens Submissions Process (Raustiala, 2003–4, p. 389). NGOs can also monitor transfers of technology and financial resources to developing countries, thereby pressuring rich countries to comply with commitments.¹² Recent discussions on aid-for-trade monitoring found that poor countries had limited capacity to monitor flows. They demanded that NGOs be included in forums to discuss aid flows.

But there are questions about the political power of NGOs versus the capacity of developing countries. During the Kyoto Protocol negotiations NGOs used activist and advisory strategies to ensure that they would have a significant role in Enforcement Branch deliberations (Andresen and Gulbrandsen, 2003, p. 10). Developing countries have opposed NGO participation in multilateral institutions (such as the WTO) when their interests have clashed with those of developed-country-based organizations. Even for aid-for-trade, where interests converge, the WTO's role in monitoring was considered paramount. Similar apprehensions should be expected to prevail even in the climate regime.

A related challenge is the relationship between weak regulatory capacity and the role of non-state actors. Scholars have proposed buyer-liability systems to put the burden of verification on the developed-country buyers of permits (Victor, 2001; Keohane and Raustiala, 2008). But the system would put a huge burden on permit-long (developing) countries to create the regulatory mechanisms that would ensure the validity of permits being sold from their territory. Further, the role of independent, non-governmental rating agencies would have to be specified when assessments of performance are carried out in intergovernmental settings. In the CDM, for instance, Brazil has been in favour of a National CDM Secretariat governed by state authorities. The United States, by contrast, prefers decentralized market mechanisms. As the current financial crisis demonstrates, however, decentralized systems are also susceptible to regulatory capture. Building institutions and processes to audit the auditors would put an additional burden on developing countries (Repetto, 2001, p. 303).

(C) Assessment and verification at the international level

An effective climate regime needs to distinguish verification and review processes. The former is a technocratic certification of the validity of data; the latter is inherently a political process. Even without reference to legal judgments on compliance, peer reviews can potentially apply sufficient pressure on members to change their policies.

But restricted mandates can hamper even technocratic verifications. Trade policy reviews in the WTO, or IMF Article IV consultations suffer from the same weakness—namely that the assessments do not verify the quality and accuracy of the data. A new monitoring mechanism for RTAs also deliberately forsook examination procedures and the WTO Secretariat only got the mandate to prepare 'factual presentations'.

Among major multilateral environmental agreements, the Montreal Protocol is the only one that has dedicated non-compliance procedures. But it, too, does not permit the

verification of the accuracy of nationally supplied data. Instead, the non-compliance procedures are *ad hoc* and rely on complaints brought by other parties. The CITES also has some features of a non-compliance procedure. In practice, compliance review in these regimes is treated as facilitative of compliance rather than merely as deterrence against non-compliance.

The climate regime also has various mechanisms: a compliance committee under the Kyoto Protocol, a supervisory committee for Joint Implementation activities, a CDM Executive Board, and the annual Conference of the Parties (COP) meetings.¹³ Reviews by experts ascertain whether the methods used conform to the IPCC's Guidelines for National Greenhouse Gas Inventories (IPCC, 1996) and Good Practice Guidance and Uncertainty Management in national inventories (IPCC, 2001*b*). The reported data are also compared to data from other sources. But there is no provision in the UN-FCCC for a final verification and assessment of compliance under the Convention (OECD, 2001, p. 38). And there is no formal review process for GHG inventories from developing countries. If similarly high standards of data verification were applied to NAI parties in future, developing countries would be concerned that such detailed information could be used to impose new commitments for emission reductions.

Further, in order to evaluate the GHG-mitigation policies of Annex I parties, the issue of causality is critical. It is easier to measure changes in policy rather than establish the causal impact of the said policy. This is what makes the promotion of compliance via MRV mechanisms harder. The review process for national communications has no clear guidelines and is only facilitative: expert teams liaise with national officials but do not have the capacity to credibly verify the reported information (Breidenich and Bodansky, 2009, p.15).

Part of the problem relates to the high cost of sending large teams for in-country missions, as the WTO has discovered. In the late 1990s at least four to five IMF staff members would go on country missions, although frequent rotation of staff members meant that there was lack of continuity. In 2005 the IMF used 9 per cent of its staff resources on multilateral surveillance and 29 per cent on bilateral monitoring (IMF, 1999, pp. 25, 31; Independent Evaluation Office of the IMF, 2006, p. 12). By contrast, the Trade Policy Review Division only accounts for 6 per cent of the WTO's staff. Given the small size of the teams and the range of countries to review, individual economists do not have the requisite expertise to engage with each country in depth. If expert teams in the UN-FCCC had to verify reported emissions by Annex I *and* NAI parties and also review and assess their mitigation activities, there would have to be a proportionate increase in technical and financial resources in addition to an expanded political mandate to conduct in-depth reviews. Resource constraints would also affect any attempts to establish international reviews of non-target mitigation activities.

(D) Compliance promotion via peer-to-peer surveillance

What processes and forums do countries find legitimate to review each other's actions? Surveillance is interdependent with enforcement: information could be used to apply peer pressure during negotiations or it could be used as evidence in formal litigation/arbitration proceedings. Recent work has suggested three possible routes through which surveillance can influence a regime's members: by the direct provision of information, which reduces uncertainties for the states under review and for other actors; by peer reviews among regime members that produce social pressures to improve compliance; and by asymmetric power relations, which give the international institution more leverage over some members than others (Simmons *et al.*, 2006, p. 781; Lombardi and Woods, 2008).

An important question is who applies pressure for improved compliance. As enforcement mechanisms become more robust, countries would become more sensitive about the credibility of monitoring. In fact, too much legalization could undermine international agreements owing to concerns over the distribution of gains and losses (Goldstein and Martin, 2000, p. 606).

The IMF's influence under bilateral surveillance is at its most influential in respect of countries borrowing (or hoping to borrow) from the IMF, or relying on its stamp of approval to access other finance. For the rest of the membership, bilateral surveillance at best can provide some signal to the market rather than specific informational inputs that market participants use. There is some evidence that competition among peers has resulted in growing adoption of the IMF's voluntary standards and codes, but equally there is evidence that 'sign-up' to these standards provides little guarantee that members actually comply with them. Although the IMF emphasizes the value of 'learning' and dialogue within the context of IMF reviews, there are, in fact, few opportunities for peer-to-peer exchanges between government officials and IMF staff, in either bilateral or multilateral surveillance processes (Lombardi and Woods, 2008). This is, in part, a reflection of the way the IMF management has structured the surveillance process. Equally, however, it reflects how little authority the IMF's membership has delegated to the organization so that it might conduct surveillance effectively for its entire membership.¹⁴

Similarly, in highly legalized regimes (such as international trade), members have been reluctant to give much authority to the Secretariat and have undermined follow-up procedures. The WTO's TPRM aimed to institutionalize peer pressure and improve adherence to trade rules (Curzon Price, 1992, p. 87). At the same time, its mandate restricts the use of information from trade policy reviews in dispute settlement proceedings. But a perverse outcome has been that, thanks to the greater domestic capacity of rich countries to monitor others, the pressure on poor countries to comply is greater. An analysis of review meetings shows that much of the 'peer pressure' is directed from developed towards developing countries: developing countries get asked more questions both before and during meetings. Moreover, the majority of discussants for TPRs have also come from developed countries. In turn, developing countries are

unable to apply similar pressure because they do not have the requisite information and the review meetings lack teeth. These dynamics have served to reduce the confidence of poor countries in trade policy surveillance (Ghosh, 2008).

Article 8 of the Kyoto Protocol creates the possibility for extensive peer review. It has provisions for expert review teams to verify inventories and national communications.¹⁵ But it is also a step beyond technical assessments, because it demands that review teams should flag potential problems and implementation questions to the COP/MOP (Meeting of the Parties to the Kyoto Protocol). The idea is that both the Secretariat and the Parties would raise questions regarding a Party's non-implementation or non-compliance. This is a move away from the 'shared learning' in non-confrontational settings that dominates other procedures under the UN-FCCC.¹⁶

The Compliance Committee of the Kyoto Protocol (with its constituent Facilitative and Enforcement Branches) has balanced geographical representation. Representatives of NAI parties are also in a position to review the implementation of commitments by Annex I parties. But if NAI parties take on commitments in a post-2012 regime, then drawing on the experience of the IMF and the WTO, developing countries would be concerned about which countries participate regularly in reviews, which ones ask questions, and which countries become the targets of peer pressure. They would also want to establish strong review procedures for evaluating rich countries' performance with commitments to transfer financial and technological resources. The asymmetry of peer pressure and pressure from non-state actors in the WTO is a key reason why many members have stopped actively engaging with its monitoring mechanism, or why they have opposed opening up review processes to non-state actors.

In addition to assessing compliance by individual parties, regime members might want impact analyses and evaluations of the operation of the regime as a whole. General reviews are useful to monitor trends and systemic risks that tend to affect all members of a regime. In international finance, there has been a history of system-wide surveillance, whether as part of meetings of the G-7 finance ministers or more recently through the Financial Stability Forum. The IMF also undertakes general surveillance of international financial markets, reported in the *Global Financial Stability Report*, and of development-oriented issues via the *Global Monitoring Report* (Lombardi and Woods, 2008).

Similarly, information systems interpret rules, but in doing so they apply different yardsticks to individual countries and thereby suggest new rules. The evaluation of the regime and its impact on different categories of states is an iterative process of learning. The IMF's Article XVIII in the original Articles of Agreement explicitly provided for interpretation (questions were to be submitted to the Executive Directors). The ILO Governing Body has also been requested from time to time to interpret conventions. Although non-binding, such opinions are rarely challenged, giving them significant influence over compliance with labour conventions at the national level (Chayes and Chayes, 1995, p. 215). Similarly, GATT (and now WTO) dispute-settlement panel reports set precedents for how international trade law would be interpreted in future.

An interesting precedent in national environmental legislation relates to Sections 202 and 211 of the US Clean Air Act. The Environmental Protection Agency (EPA) has the authority to prescribe emissions standards for any air pollutant that it believes could 'endanger public health and welfare'. Such assessments are expected to draw on the latest scientific evidence from multiple sources, including IPCC reports, National Research Council reports, and peer-reviewed regional assessments (Grundler, 2007). There have been recent controversies over delays in reporting after a Supreme Court judgment in 2007 asked the EPA to determine whether GHG emissions from new motor vehicles endangered public health or not. But the process underscores the importance of regime evaluation to reduce uncertainties and to develop improved regulatory standards.

In sum, the climate regime already has extensive provisions for monitoring, verification, and review, mostly targeted at Annex I parties. Extending those provisions to developing countries would mean confronting concerns about new commitments, enforcement procedures, and effective monitoring of financial and technological transfers. Developing countries' experience in other regimes, particularly with regard to the problems of reporting capacity, unbalanced reviews, and the lack of accountability for developed countries' commitments, has some bearing on the climate regime as well. The challenge of monitoring in the climate regime would be to determine the extent of differentiation in MRV obligations and processes: based on a country's domestic capacity; based on its systemic importance as regards the flows and stock of GHGs; and based on levels of responsibility for tackling all aspects of the climate change problem.¹⁷

IV. The challenges of enforcement

A final area of concern to developing countries in the structure of a new mitigation regime will be the nature and locus of enforcement. Without centralized review and adjudication at the international level, enforcement can take various forms.

The first option is to combine centralized adjudication with decentralized enforcement. In this model, the regime leaves it up to individual members (or actors within them) to pursue redress actions against an erring party. The multilateral trade regime is the foremost example. The reports of dispute settlement panels and the Appellate Body determine the extent of non-compliance and legitimate compensation. But whether the complainant actually imposes the sanctions or not depends on several factors, which render enforcement particularly difficult for small, developing countries (Nottage, 2009).

The most important constraint for developing countries is market-size. The market-restricting sanctions of many small economies are not sufficient to impose the pressures needed to change the behaviour of larger powers. Second, small economies, heavily dependent on trade, suffer potentially severe welfare losses if they try to impose sanctions on their larger trading partners. For many of these countries, the WTO's retaliation rules are 'virtually meaningless' (Footer, 2001, p. 94). However, one study finds that, even without retaliation, compliance with panel and Appellate Body reports is high (Davey, 2005, pp. 46–8). Thus, enforcement also depends, in part, on the domestic political

economy within countries, as well as the desire for members to maintain their reputations in a rule-based global regime (Hudec, 2002, pp. 82–3).

The second option is centralized adjudication combined with centralized enforcement. The European Union's Stability and Growth Pact, which governs fiscal discipline within the euro-zone, adopts this approach. Under the Pact, the European Commission and the Council monitor the fiscal policies of member countries. States failing to limit their budget deficits to 3 per cent and national debt to 60 per cent of GDP, could be subject to sanctions, after several warnings. However, in this centralized system, the application of sanctions has not proven easy when powerful states are involved. The EU Council of Ministers has repeatedly failed to impose sanctions against France and Germany for violating the pact.

Other examples of centralized adjudication and enforcement include the Board of Governors of the International Atomic Energy Agency (IAEA) and the United Nations Security Council. However, in these cases enforcement relies on getting all necessary states to agree to resolutions which indicate non-compliance, or in the case of the Security Council can mandate enforcement measures. This has proven extremely difficult.

The third enforcement option is through linkage. Trade linkages have been proposed regularly to promote labour and environmental standards. Such linkage was originally conceived as negative sanctions: countries failing to adhere to commonly agreed standards could lose access to export markets. A frequently cited example of such linkage design was the NAFTA side-agreements. However, developing countries fear that linkage will too easily become a backdoor through which protectionist measures are introduced against them. More recent proposals have pushed for positive linkage, whereby countries committing to and delivering on higher standards would be rewarded with greater market access as well as direct financial transfers (Barry and Reddy, 2008). The main attraction of such proposals is that they create a potential win–win opportunity: a 'race to the bottom' of standards is avoided, which is a public good, and countries putting in the effort to raise standards receive additional rewards.

An effective and equitable climate regime would need to overcome the gaps highlighted in the above examples. If decentralized, the system would need to overcome the economic and political constraints on applying sanctions on bigger powers. The WTO Dispute Settlement Mechanism's activity is concentrated in a handful of regular users, all too few of which are developing countries.

With these concerns in mind, developing countries might prefer centralized enforcement in the climate regime. Centralized enforcement would, in turn, continue to face the difficulty of sanctioning powerful states. Further, the regime's members would have to determine whether sanctions should be applied against individual entities within a country's jurisdiction, or against countries as a whole. The difficulty in establishing the validity of permits traded by each single entity has given rise to proposals based on 'jurisdiction equality' (Keohane and Raustiala, 2008).

Finally, enforcement through trade linkages would come up against opposition from developing countries. Unlike international trade, where linkages are used to deter mercantilist behaviour, developing countries do not accept responsibility for mitigating climate change. Thus, linking their non-target mitigation actions to potential trade sanctions would be considered unethical and unfair.

V. Conclusions

An urgent reduction in greenhouse gas emissions is unlikely to be achieved in ongoing negotiations among nearly two hundred countries. A small group of the world's largest emitters will need to take immediate action, individually and/or collectively. Longer-term, however, actions by the largest emitters will need to be buttressed by global agreements which prevent other countries from becoming large emitters, and which offer assistance to poorer countries forced to adapt to the consequences of a failure to mitigate to date. The challenge for governing climate change at the global level is thus twofold: (1) to create, monitor and enforce a rule-based regime to ensure emissions continue to reduce; (2) to channel financing to poorer countries for them to use to adapt or mitigate. To be effective the global regime will need to be both participatory and responsive, especially towards developing countries.

In this paper we have drawn out lessons which could inform progress towards this goal. The first lesson is that direct incentives to developing countries to induce their participation in the climate regime cannot be viewed as 'side payments'. The climate regime aims to provide a public good (the prevention of global warming). But action is necessary to solve a problem which developing countries had little part in creating. If their participation in a solution to the problem is now necessary, then negotiations on incentives have to be centre-stage and not treated as an afterthought. It bears remembering that, in these negotiations, poor countries have real veto power. They can stall the negotiations if the incentives to induce their participation lack guarantees, effective monitoring, and adequate accountability. In this instance, climate change negotiations are not like the mercantilist trade negotiations of old, where developing countries were successfully pressured to agree to new standards and regulations in return for trade access.

A second lesson is that formal inclusion in a regime's governance structures is vital but offers no guarantee of voice, influence, or effective representation. Other organizational features are vital. Consensus decision-making in climate change negotiations has permitted relatively small blocking-coalitions to prevent progress. In other organizations, consensus has been interpreted differently to permit more forward motion. More broadly, the lessons from other institutions demonstrate how quickly representatives or negotiators can get stuck, clinging to a narrow mission and within a structure which does not hold them adequately to account. Better transparency and formal accountability is one part of a solution. The other part may lie in manifestly less representative structures which are capable of opening up a broader agenda, such as the G20 meeting at leaders level. Finally, the experience of trade rules and their implementation highlights the importance of capacity—specifically the capacity of developing countries to formulate national and

regional goals and strategies, and to have the trained personnel to pursue these in international negotiations is crucial to their influence.

Third, more attention has to be devoted to implementation concerns. Much of the discussion centres on trying to secure a deal. Just as the Kyoto Protocol suffered because negotiators postponed decisions on implementation and enforcement, the post-2012 regime might also stumble when countries have to implement their commitments. Here, the concerns of developing countries are two-fold: that they maintain the maximum flexibility to develop national policies while being in compliance with international rules; and that they build real capacity at home to integrate climate concerns into development plans and to regulate activities within their jurisdictions.

The concerns over reconciling domestic and international regulation are nowhere more politically problematic than for measuring, reporting, verifying, and reviewing performance. The fourth lesson is that the climate regime's information system has to respond directly to the information needs of developing countries. Rather than building elaborate reporting structures that increase the supply of information in the regime, a more honest appraisal is needed of the demand for different kinds of information. Thus, credible, timely, and relevant information is needed not only for GHG emissions, but also for trading schemes, tax structures, policies and measures, financial and technology transfers, and efforts towards adaptation. Developing countries are not interested in only providing data on their emissions (even though capacity-building efforts must be scaled up for that purpose). They are equally interested in getting information on policies, activities, and contributions of other countries. Were developing countries to become a part of a global emission-trading system, there would be additional questions about verifying the accuracy of reported data and compliance-promoting review mechanisms. Reviews and assessments of all countries' activities would gain credibility only when there is balanced representation and active participation in multilateral review meetings.

Finally, developing countries are right to worry about enforcement. While adjudication can (and probably should) be centralized, there is no easy lesson about how best to enforce rules, especially when it comes to enforcing them in respect of powerful countries. Decentralized enforcement, as in the WTO, has had some successes. It has been used by some developing countries, and provisions made for legal assistance and support are useful to those wishing to take cases. That said, even if small or poorer countries win their case and are granted rights to use retaliatory measures, it is unclear that these could be effective, or even conceivable to apply—nowhere is this more obvious than in considering the case of aid-dependent countries. More centralized enforcement options, such as that embedded in the European Union's Stability and Growth Pact, do not always sanction powerful states who fail to meet commitments. That said, a solution probably does lie with a centralized form of enforcement which may even be linked to economic incentive schemes.

¹ Bodansky and Diring (2008). Unlike purely ‘bottom-up’ flexibilities, here the individual commitments of countries would be integrated in an over-arching framework to improve coordination among countries and facilitate trade-offs.

² Proposal by the G77 and China for a Technology Mechanism under the UN-FCCC, available at <http://www.twinside.org.sg/title2/climate/info.service/20081111/G77-Tech%20Proposal%20Accra.pdf>

³ Annex II parties are required to report in National Communications on their contributions to the Global Environment Facility or their bilateral climate-related aid.

⁴ A range of measures is laid out in Dervis (2005).

⁵ Victor (2003, p. 204); Barrett and Stavins (2003, p. 366); Barrett (2005a, pp. 360, 396). Under Article 18 of the Protocol compliance cannot be enforced with ‘binding consequences’ without an amendment.

⁶ Paragraphs 1(b)(i) and 1(b)(ii) (emphasis added).

⁷ Arrow (1971). See also, Spence (1973, p. 355) and Stiglitz (1975, p. 283).

⁸ There are parallels between the Montreal Protocol and recent developments in climate change. For the former, a cost-benefit study from the US President’s Council of Economic Advisers found the monetary benefits of reducing skin-cancer-related deaths outweighed the costs of reducing chlorofluorocarbons (CFCs) (Benedick, 1998, p. 63). Similarly, the Stern Review found that the cost of inaction far exceeded the costs of reducing GHG emissions (Stern, 2007).

⁹ Variations include: formulas for gradual inclusion of developing countries (Frankel, 2008); hybrid systems with additional permits available at fixed prices (Aldy *et al.*, 2001); no fixed cap on emissions but regular purchasing and retiring of allowances by international agencies (Bradford, 2001); and separate domestic markets for trading in annual emissions and in endowments (McKibbin and Wilcoxon, 2000).

¹⁰ Their experience of existing IMF surveillance is that it is highly asymmetric in its impact (Lombardi and Woods, 2008).

¹¹ To date, 134 NAI parties have submitted their first communications, nine have submitted their second, and only one has submitted a third.

¹² For instance, the World Bank includes NGOs in implementing technology-transfer projects through the Global Environment Facility.

¹³ Of course, at the project level, monitoring, evaluation, reporting, and verification present additional financial, management, and technological capacity hurdles, amounting to 5–10 per cent of a project’s budget. (See Vine and Sathaye, 1999, p. 43.)

¹⁴ Elsewhere, however, the OECD’s or the ILO’s reports make non-binding recommendations, but they carry weight that states cannot ignore.

¹⁵ In 1999 a Common Reporting Format was adopted for inventories, and inventories are subject to a three-stage review: initial checks, synthesis and assessment, and expert review (Tenner, 2000, p. 160).

¹⁶ Note that although Article 8 provisions feed directly into Kyoto Protocol enforcement procedures, the Protocol itself does not provide strong incentives for participation or compliance (Barrett, 2008, p. 4).

¹⁷ Thanks to Dan Bodansky for raising this important set of questions.

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