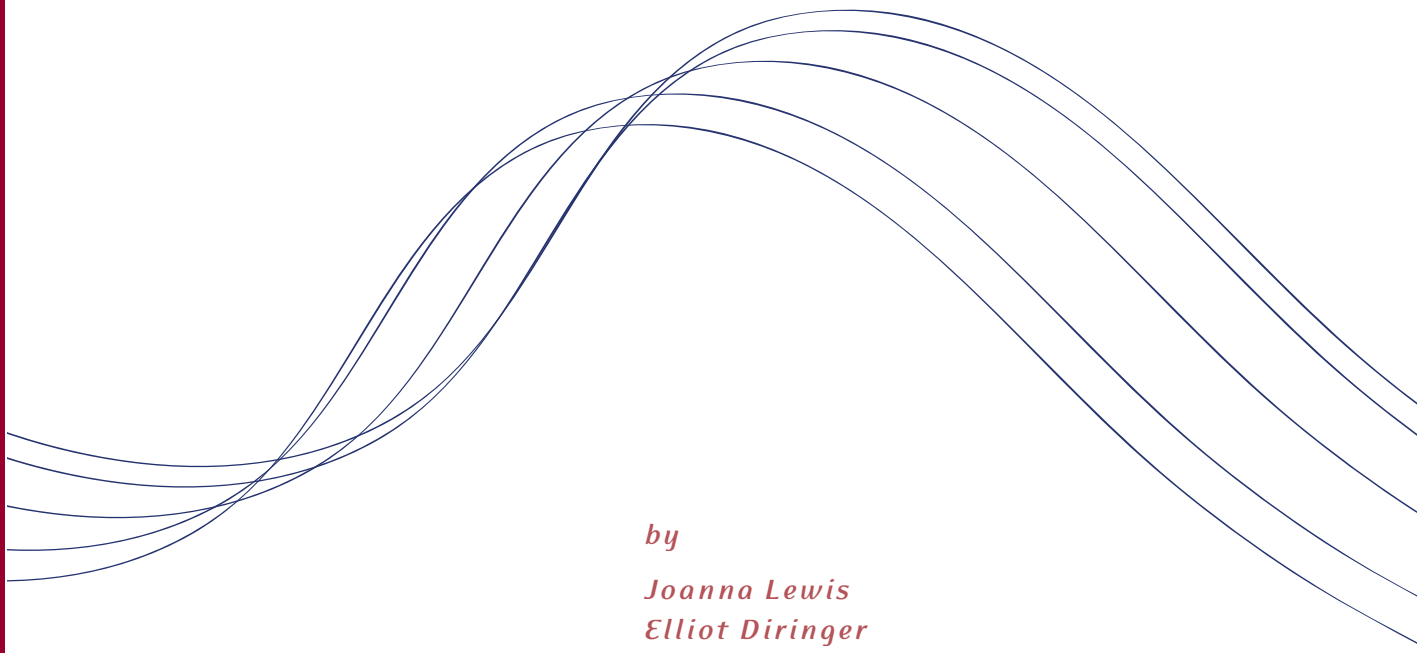
ADVANCING THE INTERNATIONAL EFFORT AGAINST CLIMATE CHANGE

POLICY-BASED COMMITMENTS IN A POST-2012 CLIMATE FRAMEWORK

A Working Paper



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Introduction

A core challenge in addressing global climate change is arriving at multilateral arrangements ensuring adequate effort by all major economies to moderate and reduce their greenhouse gas (GHG) emissions. Thus far, the multilateral effort has relied most heavily on a particular form of commitment—economy-wide emission targets. Developed countries agreed to voluntary targets under the United Nations Framework Convention on Climate Change (UNFCCC), and most later agreed to binding targets under the Kyoto Protocol. Most developing countries, however, view quantified emission limits as a potential cap on their growth and are unlikely to accept binding targets in a post-2012 climate agreement.

In its assessment of post-2012 options, the *Climate Dialogue at Pocantico* concluded that one key to engaging all major economies in a stronger international effort is a flexible framework in which countries assume different types of commitments best suited to their circumstances.[1] Within such a framework, some countries would have binding emission targets as under Kyoto, but mitigation commitments also could take other forms. One possibility suggested by the Pocantico dialogue is a policy-based approach in which countries commit to undertake national policies that reduce emissions but are not bound to economy-wide emission limits.

This paper elaborates on the concept of policy-based commitments as one component of a post-2012 climate framework. As conceived here, the policy-based approach would be an avenue for developing countries in particular to put forward national policies of their choosing as contributions to the global climate effort.[2] These policies could vary widely in scope and form, from economy-wide energy efficiency goals to sector-specific standards or reforms. Presently such policies, often driven by economic or development objectives unrelated to climate change, are helping to avoid or reduce emissions in many developing countries. Undertaken on a voluntary basis, they make a tangible contribution to the climate effort. In the post-2012 context, however, the question is whether these types of policy actions can be translated into binding commitments that other parties accept as adequate and reliable.

A policy-based approach could evolve, as did the target-based approach, from voluntary to binding. Although countries would not be committing to quantified emission limits, reliable quantification of their policies' emission results would be essential to the credibility and success of a policy-based approach. Governments putting forward policies as commitments, for instance, might be expected to project their likely emission impacts so that other parties can assess relative levels of effort. Governments also might be required to report periodically on the implementation of their policies, subject to some form of review or enforcement.

The willingness of developing countries to assume commitments in a post-2012 framework will depend in part on the incentives offered. Linking policy commitments to a crediting mechanism, which would grant tradable emission credits for policy-driven emission reductions, could provide a strong market-based incentive for countries to assume and implement policy commitments. Here, especially, the verification of a policy's emission results would be critical.

Various forms of policy-based mitigation approaches have been proposed both by researchers and in informal discussions within and outside the international climate negotiations.[3] Other research has highlighted the climate co-benefits of policies to, for instance, control conventional air pollutants or improve agricultural productivity.[4] This paper explores key options and challenges in structuring policy-based commitments as one element of a post-2012 climate framework. In subsequent sections, it examines:

- How the concept of policy commitments has figured historically in the climate negotiations;
- The rationale for a policy-based approach;
- How national policies can be integrated into the multilateral framework and evolve from voluntary actions to binding commitments; and
- Options for emissions crediting and other positive incentives to undertake, meet, or exceed policy commitments.

I. Historical Context: Policies and Measures

The idea of incorporating some form of policy-based commitment into the international climate regime has been discussed since the earliest days of the climate negotiations. Among the options considered in the early 1990s by the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change was a system of "pledge and review" to incorporate "national strategies and programmes" into the international framework.[5]

In the Framework Convention, all parties commit generally to formulate and implement national "programmes containing measures to mitigate climate change," taking into account "their common but differentiated responsibilities and their specific national and regional development priorities, objectives and circumstances." Annex I (developed country) parties committed further to "adopt national policies and take corresponding measures on the mitigation of climate change, by limiting [their] anthropogenic emissions of greenhouse gases" with the "aim" of returning their emissions to 1990 levels by 2000.[6] Beyond that, the Convention does not specify the form or content of policies to be undertaken.

In debating further commitments, parties promoted both policies and measures (PAMs) and quantified emission targets, sometimes as alternative and sometimes as complementary approaches. The 1995 Berlin Mandate, which launched negotiations toward new Annex I commitments, called for consideration of both "policies and measures" and "quantified [emission] limitation and reduction objectives within specified time-frames" (QELROs).[7] Parties advanced a wide variety of policy approaches, including "harmonized" or "coordinated" PAMs (for example, harmonized efficiency standards or fuel taxes for parties), and "non-harmonized" PAMs, which countries might choose from a pre-approved menu of options.[8]

A number of proposals envisioned a blend of harmonized and non-harmonized PAMs with varying or evolving degrees of commitment. Under one proposal, for instance, PAMs initially would be voluntary and non-harmonized and eventually, as groups of parties agreed on harmonized approaches, would become mandatory.[9] Proposals from the European Union, the primary proponent of common and coordinated PAMs, listed specific PAMs and a continuum of commitment levels divided into three annexes: mandatory, highly recommended, and voluntary. However, as the United States and other parties began to favor a target-based approach allowing countries full flexibility in choosing domestic policies, PAMs came to be considered more as a means of fulfilling commitments, rather than a form of commitment.[10]

In the end, the Kyoto Protocol established new Annex I commitments in the form of binding absolute emission limits. Article 2 of the Protocol states that, in achieving their targets, parties shall "implement and/or further elaborate policies and measures in accordance with [their] national circumstances," but does not mandate any specific actions.[11]

Many of the ideas explored in the pre-Kyoto debate bear new relevance in the post-2012 context. For instance, one of the other approaches recommended by the Pocantico dialogue as a potential element of a post-2012 framework is international sectoral agreements, and these could take the form of harmonized PAMs.[12] The policy-based approach explored here, however, differs in many respects from most of the earlier proposals. To begin with, it is intended primarily for developing countries. Rather than an exclusive or predominant form of commitment, it is seen as one of multiple commitment types linked in an overarching framework.[13] And, unlike harmonized PAMs, it accommodates very distinctive policies suited to widely varying national circumstances.

II. Rationale for a Policy-Based Approach

In general terms, a target-based approach to reducing GHG emissions offers clear advantages over a policy-based approach. To the degree it is enforceable, an absolute emissions target provides greater environmental certainty, as the commitment itself is to a specific emissions outcome. Coupled with emissions trading, economy-wide targets also are more economically efficient, allowing emitters to achieve reductions wherever they are cheapest. Finally, a target provides a clear metric for determining whether or not a country has fulfilled its commitment.

A central premise of the present analysis, however, is that a targets-only approach is not politically feasible in the post-2012 timeframe as most developing countries are not prepared to accept quantified emission limits. Their long-standing resistance to binding targets, and to new commitments generally, is rooted in fundamental issues reflected in the Framework Convention. Under the Convention, countries have "common but differentiated responsibilities." While developed countries are to "take the lead in combating climate change," for developing countries, "economic and social development and poverty eradication are the first and overriding priorities."[14] In the view of developing countries, binding targets, by holding them to specific emission levels regardless of the economic consequences, would amount to a cap on their growth. These issues aside, economy-wide targets also may be technically impractical: to accept a binding target, a country must be able to reliably quantify its current emissions and project its future emissions, a capacity that at present few if any developing countries have.

A flexible post-2012 framework in which some countries have binding targets and others have different commitment types would be consistent with the principle of "common but differentiated responsibilities" and would allow developing countries alternatives to quantified emission limits. In this context, policy-based commitments offer several potential advantages. They:

- **Are bottom-up.** Allowing countries to put forward policies of their choosing can enable them to tailor commitments to their domestic needs, priorities, and policy cultures. Commitments are more likely to be accepted and fulfilled if they emanate from national contexts.

- **Promote synergies between climate and other policy priorities.** A policy-based approach can encourage national governments to identify ways that emissions mitigation fits or advances national priorities such as economic growth, energy security, and public health. It can capitalize on the political salience of these domestic policy drivers, and can allow climate action to be seen as a contributor rather than an impediment to development.

- **Are action-based.** Emission targets commit parties to specific environmental outcomes, which often are not as easily forecast in countries experiencing rapid or erratic economic growth. In a policy-based approach, a government agrees to a course of action directly under its control without being bound to a specific emissions outcome.

- **Facilitate support for climate-friendly development.** Policy commitments can provide a basis for financial or technological support through emissions crediting, private investment, or direct assistance.

- **Facilitate sharing of best practices.** Allowing commitments conceived at the national level encourages a diversity of policy approaches. A structured review process would provide opportunities to assess and learn from varied implementation experiences and highlight policy successes.

- **Promote stronger action and broader agreement.** A mechanism for international recognition of developing country actions could encourage them to undertake stronger efforts. This, in turn, would make it easier for developed countries to commit to stronger action, contributing to a stronger collective effort to reduce global greenhouse gas emissions.

III. Structuring Policy Commitments

A policy-based approach can evolve over time, its structure and role changing at successive stages of the international climate effort. This section explores the possible content and form of climate policy actions, and the processes by which they could be incorporated at various stages of the international framework:

- As voluntary actions reported internationally in fulfillment of existing UNFCCC commitments;
- As new commitments negotiated as part of a broader post-2012 package; and
- As further commitments introduced periodically or on an ongoing basis.

An issue addressed at each stage is quantification—how fully, and by what standards, a policy's emissions impact is quantified (quantification issues are further examined in the appendix). Also considered are mechanisms to review implementation or compliance.

Policy Actions

Policy actions could employ any number of instruments across a wide range of sectors and activities. The one essential criterion, if they are to make a meaningful contribution to the international effort, is that they can be reasonably expected to result in quantifiable greenhouse gas reductions.

Possible mechanisms include goals, targets, performance or technology standards, pricing reforms, and tax and other incentives, among others. They could include policies that:

- Promote energy efficiency and conservation (e.g., energy intensity goals, vehicle fuel economy standards, building codes, appliance standards, industrial efficiency standards);
- Promote low- or no-carbon fuels and technologies (e.g., renewable electricity mandates, carbon capture-and-storage requirements, biofuel targets); or
- Encourage carbon sequestration in land use and forestry practices (e.g., low-till agricultural practices, reduced deforestation).

Governments could put forward individual policies or comprehensive programs encompassing multiple sectors. For example, a country could offer a national energy efficiency improvement target along with specific policies in a variety of sectors, such as efficiency standards for appliances or buildings, vehicle fuel economy standards, or efficiency targets in key industrial sectors.

As policy actions would arise directly from domestic agendas, most would likely have economic, health, environmental or other co-benefits, or would contribute more broadly to a country's sustainable development objectives. The benefits of some policies, however, may be entirely climate-related. How well a climate policy commitment serves a country's sustainable development agenda can be decided only by that country.[15] Policies that originate in a domestic context and are shaped primarily by non-climate objectives may need to be reanalyzed or recast if they are to be presented as a basis for commitments. Recent analysis has quantified the climate mitigation benefits of domestic policies in major developing countries.[16] Systematic analysis by countries of the emission implications of their policies and policy options would likely identify broad opportunities to reduce emissions and integrate climate action with development and other national priorities.

Incorporating Policy Commitments

Over time, a policy-based approach could evolve from one that is voluntary and purely bottom-up to a more structured process with binding commitments and some means of enforcing compliance. Key issues that might be addressed differently at successive stages include:

- the manner in which policies are brought forward;
- the rigor with which they are quantified;
- whether they must be accepted by other parties and by what criteria; and
- once accepted, the level of scrutiny they receive.

Voluntary Actions

In recent years, a growing number of UNFCCC parties have expressed support for some means of introducing new voluntary actions into the international framework. South Africa has proposed that developing countries pledge to "sustainable development policies and measures," or SD-PAMS, and quantify the resulting sustainable development and climate benefits.[17] A coalition of tropical forest countries has proposed establishing a process for individual countries to voluntarily put forward policies to reduce deforestation and thereby qualify for financial incentives under the climate framework.[18] Brazil has offered a similar proposal, but opposes incentives in the form of emission credits to be used by developed countries to meet their targets.[19] Russia has called for new procedures enabling developing countries to take on "voluntary commitments" under the UNFCCC that could take the form of absolute targets, relative (intensity) targets, policy commitments, or technology commitments.[20]

In the initial, voluntary stage of a policy-based approach, governments could be given full flexibility on not only the form and content of their policy actions but also the manner and timing of their presentation. Alternatively, parties could agree on a process for bringing actions forward. They might be announced in national submissions, presented at Conferences of the Parties (COPs), or listed on a registry of actions

undertaken in fulfillment of existing Convention commitments. Some projection of the policies' likely emission impacts would be important to indicate their potential contribution to the international effort. But as the actions would be offered at this stage only as unilateral pledges, quantification need not be required.

One key benefit would be to give developing country actions higher visibility. At present, the primary means of reporting on policies and programs are national communications. Although developed countries are required to submit regular communications, developing countries are given greater flexibility. Of 148 developing country parties, 132 have submitted only one national communication since 1992, three have submitted two communications, and one has submitted three.[21] National communications from developing countries often take so long to prepare that they are out of date by the time they are submitted.[22] A process for presenting or registering voluntary actions could be more timely and visible.

Commitments in a Post-2012 Agreement

In the post-2012 context, policy-based commitments could be one key element of a balanced package of commitments across major developed and developing countries. The key difference from the earlier, voluntary approach is that at this stage any policies put forward would be have to be accepted as sufficient by other parties. The willingness of developed countries to assume post-2012 commitments will hinge in part on developing country participation. If this participation is to take the form of policy-based commitments, these would need to be seen as tangible, meaningful obligations, not simply pledges. A policy-based approach would be viable at this stage only if it could strike a balance between what developed countries deem sufficient and what developing countries deem acceptable.

The process by which commitments are offered and accepted could vary tremendously depending on the broader construct of the negotiations—whether they are launched through a formal mandate, for instance, or developed informally. In either case, any policies offered would need to be closely scrutinized by other parties to assess the relative levels of effort being proposed. Whether formally required or not, it would therefore be essential for a country putting forward a policy to provide some projection of its likely emissions impact as a basis for comparison. Such quantification would be viewed most credibly if countries were transparent in their methodologies, including any assumptions regarding the baselines assumed and the emission factors used to estimate reductions.

One option, in a formally structured negotiation, would be to create an expert panel or designate an independent body to evaluate emission projections according to agreed criteria and, if necessary, offer revisions. (Alternatively, or in addition, individual parties might undertake their own assessments.) The purpose, however, would be to validate the emission projections, not to determine whether a proposed policy constitutes an acceptable commitment. This would be determined through the give-and-take of negotiation. If the aim is a mix of quantified (i.e., target) and non-quantified (i.e., policy) commitments, parties are unlikely

to establish an explicit formula for distribution of effort. Rather, parties would independently weigh the range of proposed actions, and agreement would be reached only when each, from its own perspective, accepted the overall package as equitable.

Formally or informally, parties must agree on which countries would take on policy commitments as opposed to quantified targets or other commitments. If there is a negotiating mandate, it can define this grouping of countries, using emissions and other criteria (such as absolute emissions, per capita emissions, emissions intensity, or per capita income) to specify which countries can or should undertake such commitments. It also could identify any grouping of countries for which policy commitments would not be appropriate. In the absence of a formal mandate, such groupings would emerge de facto through negotiation.

At this stage, in order to encourage participation, it would be important for countries to have wide latitude in the form and focus of their proposed policy commitments. However, to facilitate agreement, it would be helpful if countries described their proposed commitments, or projected their emission impacts, in comparable timeframes.

As the aim at this stage would be a comprehensive agreement, there likely would be no need for a process to formally accept commitments one by one. Rather, all would be accepted simultaneously once parties have agreed on the overall package.

Further Commitments

If policy commitments were incorporated in a post-2012 framework, a process also could be established to introduce further policy commitments either periodically or on an ongoing basis. Such a process could include a standing mechanism or body to validate countries' emission projections.[23] Countries also could agree on rules to promote greater consistency in the timing and format, if not the content, of proposed commitments. The bottom-up nature of the policy-based approach might at this stage give way to some degree of harmonization.

To encourage stronger and broader action, countries could be permitted to put forward new commitments at any time. Particularly if commitments were to serve as some basis for emissions crediting, parties would want to be able to offer them whenever they are ready. However, there may be advantages to considering proposals only at fixed times or regular intervals. That way, any new proposals could be considered together alongside other new commitments, such as emission targets, as part of a broader negotiation. This could produce a stronger aggregate effort, as countries may be willing to commit to more when they see that others are prepared to as well. Parties could require consistent timeframes for proposed commitments so that relative levels of effort could be more easily assessed.

Whether new commitments were to be considered individually or collectively, quantification of their emission impacts would remain a central issue. While individual parties might continue to assess such projections on their own, a formal validation mechanism or process could ensure greater consistency and transparency. An expert panel appointed by parties could develop methodologies for projecting the emission impacts of different policy types. When projections were offered, their consistency with these methodologies could be reviewed by the panel or by designated third-party entities.

If commitments were to be considered individually, parties would have to agree on a process and possibly criteria for accepting or rejecting them. The Kyoto Protocol establishes a very basic process and no explicit criteria for considering a party's request to take on an emissions target: it is decided at a meeting of the parties (MOP).[24] However, in the absence of formal rules of procedures, all MOP decisions are taken by consensus, which enables any one party to preclude others from taking on commitments.[25] One approach to considering new policy commitments on a rolling basis would be to make a proposal's approval automatic upon validation of the associated emission projections. Other options would be delegating the decision to a panel appointed by the parties, or putting it to all parties under agreed procedures, with additional criteria possible in either case. If proposals are to be considered as part of a broader periodic negotiation, not individually, there may be no need for a set process or criteria beyond the validation of emission projections.

The process for considering policy commitments could become more structured over time, and the criteria more rigorous. For example, it might be agreed that countries meeting certain criteria would commit to policies in specified sectors, although with full flexibility in their policy design. Alternatively, the emission reductions that a proposed commitment is projected to produce might have to fall within an agreed range. These and other approaches could introduce some degree of harmonization and encourage a stronger collective effort while retaining some of the bottom-up nature of a policy-based approach.

Reviewing Implementation

For a policy-based commitment to be credible, there must be some means for other parties to assess its implementation. At a minimum, countries taking such commitments would likely be required to report periodically on their progress and the estimated emission results, subject to some form of review. The nature of review could vary or evolve from simple information-sharing to an in-depth assessment of a party's implementation or, potentially, some determination of a party's compliance. While any review would seek to gauge a policy's actual emissions impact, a country's performance or compliance would be judged on how well it implemented its commitment, not on the achievement of a particular emission result.

If commitments were brought forward individually, each could specify a timeframe for review. If they were considered and accepted en masse on a periodic basis, review could take place at designated regular intervals tied to commitment periods. In its simplest form, the review could entail posting the party's implementation report and inviting other parties to comment. This would afford some opportunity to share and learn from varied policy experiences, and the prospect of international criticism might be some incentive for implementation. But such a review might not produce a full or accurate picture of the implementation effort. This would require a more in-depth review—possibly by the secretariat, an expert panel, or a subgroup of parties serving rotating terms—to evaluate and critique a party's submission.[26]

To facilitate review, parties might be required to report measures of effort and progress other than emission results. These could include key legislative or regulatory milestones or levels of funding and personnel devoted to implementation. In many cases, the policy commitment might take the form of a quantified goal—for example, an energy efficiency or renewable energy target, or a reduced rate of deforestation—providing a clear metric for gauging performance. While the primary purpose of a review might be evaluative, it could also serve a facilitative role, helping parties that have achieved only limited progress to identify the reasons and develop options for improving implementation.

At later stages in the policy-based approach, one purpose of review could be to formally determine whether a party is complying with its commitments, possibly as a basis for enforcement. Whether and how issues of compliance and enforcement were addressed at any given stage would determine where along the binding/non-binding continuum policy commitments would fall.

IV. Emissions Crediting and Other Incentives

In preliminary discussions of post-2012 efforts, a number of developing countries have expressed a willingness to take stronger action, but they also have emphasized the need for positive incentives. Indeed, the willingness, if not the ability, of developing countries to take on any form of mitigation commitment in a post-2012 framework may depend heavily on the level and nature of support provided by developed countries.

Incentives could take many forms and address different needs at different stages:

- Building capacity within developing countries to develop and assess policy options and to implement policies;
- Facilitating access to technologies needed to meet policy commitments; or
- Providing market-based opportunities for financing policy-driven emission reductions.

This section focuses largely on the option of policy-based emissions crediting but also discusses other types of incentives.

Policy-Based Crediting

The Kyoto Protocol's Clean Development Mechanism (CDM) is demonstrating how emissions crediting can generate climate-friendly investment in developing countries while affording developed countries lower-cost reduction options. If successfully completed, the 633 CDM projects approved to date are expected to generate 870 million tons of emission credits worth an estimated $6 billion to $9 billion at current values.[27] The World Bank, in developing its Investment Framework for Clean Energy and Development, concluded that an expanded carbon market backed by a global climate policy framework would be a principal source of finance for substantially de-carbonizing electricity generation in the developing world.[28] In a post-2012 framework that includes new emission targets for developed countries, the strongest incentive for developing countries to take on policy commitments may then be the prospect of generating marketable emission credits.

Crediting as now structured under the CDM is on a project-by-project basis. If a future framework were to incorporate policy commitments, allowing crediting on the basis of those commitments could channel investment to industry- or sector-wide strategies delivering reductions on a far broader scale.[29] Policy-based crediting would face the same fundamental issues that arise in project-based crediting: how to establish that actions to be credited are "additional," not "business as usual (BAU)," and how to verify actual emission

reductions.[30] In either approach, the judgments are partly technical and partly subjective. The key difference is that in policy-based crediting they would have to be addressed at a larger scale.

Although countries with policy commitments would provide emission projections at the time they are negotiated, qualifying those commitments for crediting would require more rigorous quantification. As in project-based crediting, quantification would take place at two stages. A policy's emissions benefit would be projected at the outset when it is "registered" in the crediting system (the same projection used for the commitment could be used for crediting purposes, provided it met the more stringent criteria). Then, following implementation, or at the end of a commitment period, actual reductions would be calculated as a basis for crediting. At both stages, third-party verification could be required.

Some issues related to policy-based crediting have begun to emerge, and to some degree have been addressed, within the framework of the CDM. An early critique of the project-based approach was that it acted as a "perverse incentive" against new policies in developing countries because activities driven by them would be considered business as usual and therefore not eligible for crediting. To address this concern, the CDM Executive Board clarified that national policies favoring less emissions-intensive technologies, such as subsidies for efficiency and renewables, are not considered business as usual (and therefore do not affect the estimation of a baseline) if implemented after November 2001.[31] The Board also has begun to address the question of scale by inviting methodologies for "programmatic" crediting."[32] This expands the definition of "project" to allow crediting of reductions from a "program" or bundle of actions over time, whether the result of government policy or private initiative.[33] Few methodologies for crediting a program of activities have been approved, though several are under review.[34]

Taken together, these developments could lay the groundwork for the crediting of policy-based commitments. If the uncertainty over "additionality" were resolved across other policy types, and if methodologies were adopted allowing the bundling of actions by industry, sector, or geographic area, the CDM might evolve on its own to a system allowing crediting for much if not most of the activity likely to flow from policy commitments.

Policy-based crediting would present certain issues less relevant to a project-based approach. One is the need to prevent a country from "double-counting"—seeking credit for the same emission reductions under different policy commitments (or as both a policy and a project, if both types of crediting are permitted). Another issue is the scope of a policy's coverage. While one policy in a given sector could be reducing emissions, and therefore may be eligible for crediting, other policies could be driving emissions up. To guard against this possibility, a crediting mechanism could favor sector-wide policies such as sectoral efficiency targets. In practice, crediting of such policies would be similar to a "no-lose" target, in which a sector-wide

emissions baseline is established and a country earns credit for reductions below it.[35] A "no-lose" target differs from the approach described here, however, as by definition it is not a binding commitment.

Parties might choose to limit policy-based crediting for a number of reasons. Full crediting of policy-driven reductions could flood the carbon market with credits and, within developed countries, might be seen as over-subsidization of another country's commitment. Open-ended crediting also could be a disincentive to developing countries to move in time from policy commitments to other types of commitments such as emission targets. Crediting could be restricted by:

- Limiting the volume of credits a country can buy or sell (for example, after selling a certain volume a country could be allowed credits for only a portion of future reductions, or no longer be eligible for crediting);[36]
- Discounting all policy-based crediting so that countries receive credits for only a portion of their verified reductions; or
- Crediting only reductions that exceed those initially projected, providing an incentive for countries to go beyond their commitments.

At later stages, commitments and crediting could be linked in ways that more directly promote the adoption of policies and their full implementation. For countries meeting certain criteria, for instance, taking on policy commitments could be a condition for access to the crediting mechanism.

Other Positive Incentives

Apart from emissions crediting, other types of financial incentives could be offered for the adoption and implementation of policy commitments. These could include upfront grants to help countries assess policy needs and develop policy commitments, or new mechanisms, such as long-term concessionary loans by multilateral development banks or tax incentives through export credit agencies, to provide ongoing finance for deploying low-carbon technologies.

As with crediting, these incentives could be linked to the adoption or implementation of commitments. For example, countries with policy commitments could qualify for simplified procedures to access funding.[37] Or continued eligibility for these incentives could be contingent on satisfactory reviews of implementation.

While crediting channels incentives through private investment, incentives of these types would rely on funding from developed country governments. Such funding could be committed as part of a post-2012 agreement and channeled through the climate framework. Alternatively, or in addition, it could be provided through bilateral assistance and other channels. It would serve most effectively as an inducement to developing countries to assume policy commitments if negotiated as part of a comprehensive post-2012 package.

V. Conclusions

This paper has explored the option of policy-based commitments as an element of a post-2012 international climate change framework. Rather than a specific approach, it has presented a range of possibilities and some of the key issues associated with them.

In assessing options for a post-2012 framework, the overriding criterion is whether they can help achieve broad participation in a fair, effective long-term effort to reduce GHG emissions. Mobilizing global action on the scale needed to avert dangerous climate may be possible only if the world's major economies agree on a set of mutual commitments, as each can sustain an ambitious national effort only with confidence that others are contributing their fair share. However, in fulfilling their "common but differentiated responsibilities," countries must have some flexibility to choose the type of commitment that suits them best.

One of the strongest virtues of the policy-based approach is that it would allow developing countries to tailor their commitments to national circumstances and priorities. As such, it offers a commitment pathway more readily integrated with sustainable development objectives. If accompanied by suitable incentives, policy-based commitments could be a viable alternative for developing countries not prepared to accept economy-wide emission limits. The flexibility afforded by a policy-based approach presents challenges as well, however. Chief among them are ensuring that a country's policy commitments are commensurate with its responsibility and that they deliver real GHG reductions.

Ultimately, the value of a policy-based approach rests on the credibility of the commitments taken. They must be seen as meaningful, concrete contributions to the global effort. If that credibility can be established, policy commitments could be a critical means of promoting broader international agreement and action. Although this approach alone is likely not sufficient to prevent dangerous climate change, it could serve as a vital element in a balanced package of commitments guiding the post-2012 climate effort.

Appendix: Quantifying Policy Commitments

In a policy commitment, a country would commit to undertake a policy expected to reduce greenhouse gas emissions, not to achieve a specific emissions outcome. Still, reliable quantification of the policy's emissions impact would be critical to the credibility and success of a policy-based approach, particularly if it is to be linked to emissions crediting. This appendix identifies key challenges in quantifying a policy's impact on emissions, sample methodologies, and additional resources.

Challenges to Quantification

There are many challenges to quantifying the emissions reductions that are driven by policy activities. The key challenges relate to determining the scope or reach of the policy, and isolating the emissions driven by a specific policy action from other confounding factors. In addition, estimates must deal with general uncertainty surrounding emissions data.

Determining the Reach of the Policy—In some cases it can be difficult to determine the reach or scope of a policy, and where lines should be drawn when generating an emissions reduction estimate. For example, if a policy provides incentives for investment in renewable energy technology by offering low-interest loans to cover the capital cost of investing in renewable power capacity, should all the emissions offset from the entire lifespan of the renewable power plant be counted as an emissions reduction associated with that specific policy? What if combinations of policies are contributing to promote renewable energy use, such as a national target, utility-level portfolio standards, pricing subsidies and low-interest loan programs?

The lack of a clear boundary in the quantification of emissions reductions associated with specific policies can lead to the double-counting of emissions reductions, in which the same emissions reductions are attributed to more than one policy. There are several ways to avoid double-counting; for example, policies can be grouped by sector and the cumulative emissions reductions cross-checked against sectoral emissions trends. In situations where a measurable amount of double counting has occurred, this may be reflected in a discrepancy between policy-driven emission reduction claims and overall sectoral emissions performance.

Isolating Policy Drivers from Confounding Factors—It can often be difficult to discern whether a policy is having its intended emissions impact if other confounding factors are also driving emissions trends. For example, absolute emissions reductions can be driven by economic downturns. Even if economic growth trends are accounted for when examining emission trends, transitions away from heavy industries and towards service industries that are less energy-intensive (consume less energy per unit of economic output) can reduce the

overall emissions intensity of an economy. In some cases it can be difficult to determine whether emissions reductions were driven by a specific policy, or by one of these other factors. To the extent that these other factors are understood, they can be assessed in determining the source of emissions reductions.

Uncertainty Surrounding Emissions Data—There is uncertainty associated with all estimates of emission reduction, including those associated with policy activities. In developing countries, where resource constraints result in limited data quality, inventories of national greenhouse gas emissions are notoriously inexact.[38] The uncertainty associated with national inventories makes it very difficult to implement greenhouse gas reduction commitments that rely on baseline inventories and estimated annual improvements at the national level, particularly in developing countries. A benefit of individual policy commitments is that more accurate estimates of emissions reductions achieved by developing countries can result if bottom-up estimation methods are used.

Examples: Methods for Quantifying Policy Commitments

Quantifying an Energy Efficiency Technology Standard—In order to quantify the GHG reductions associated with an energy efficiency technology standard, assumptions need to be made about the amount of energy that would be used by the technology that otherwise would have been implemented—the BAU energy baseline—and its associated emissions. The reductions are determined by the type of fuel that is displaced. If electricity is displaced, the associated emissions are estimated using an emissions coefficient that represents the displaced electricity mix.

This BAU energy baseline can be calculated for each technology being replaced by estimating the number of devices being replaced, multiplying that by the rated power of the devices being replaced (which will need to be averaged over the fleet of existing devices), and by the average number of hours the device operates annually. This energy baseline is then multiplied by an emissions coefficient to calculate the emissions reduced by this technology replacement.[39]

There are uncertainties associated with each variable needed to calculate the energy baseline, which can lead to uncertainty in the number calculated. One example includes the uncertainty surrounding the energy consumption associated with the technologies currently in use and subject to replacement (measured by the rated power times the hours in use), particularly if there are a large number of diverse models of devices at large. There are also uncertainties associated with the rated power and efficiency of current technologies, as well as with use patterns. In many cases sampling techniques will need to be used for a subset of technologies and replacements, with the results then extrapolated to the entire scope of the policy.

Quantifying a Renewable Energy Technology Dissemination Program—When quantifying the emission reductions associated with renewable energy programs, the reduction is directly measured by the amount of emissions displaced through the renewable energy generated. There are many types of renewable energy

policies that could be quantified in this manner: for example, a government program to equip rural households with solar photovoltaic home systems, or a government program to install a certain target capacity of wind power. Programs to indirectly promote renewable energy, such as through a power or technology subsidy, may also be quantified in this manner, but will ultimately require an assumption about the amount of renewable energy that will be generated due to this program.

To quantify the BAU energy baseline associated with such renewable energy programs, the energy consumption that would have taken place without the program needs to be determined, along with the associated emissions coefficient to convert that energy baseline into CO_2 equivalent. In order to estimate the amount of energy that will be offset by the renewable projects, a baseline can be calculated in several different ways. It could be estimated by determining the number of people being served by the renewable energy projects, and multiplying that by the average individual energy consumption over this population. Alternatively, the amount of energy expected to be generated by the renewable technologies to be implemented can be estimated using the rated power and capacity factor of each technology. In some cases, a projection based on historic fuel consumption trends may be sufficient.[40]

If renewable energy cannot be shown to be directly substituting for the use of fossil fuel energy, then the question of whether any GHG emissions are being offset is raised. In cases of rural electrification, where renewable energy technologies may be providing power to households that previously had no access to electricity, the determination of an emissions offset may be difficult. If however, these same households are likely to be connected to a larger power grid, or are currently using a very dirty fuel oil for lighting or cooking, then the GHG offset calculation may be significant. Since the ultimate goal is to promote the widespread utilization of low- or zero-carbon energy sources through a policy-based approach, then perhaps this determination is not necessary, and the offset should be assumed.

Quantifying a National Renewable Energy Target—Similar to the methodologies discussed above, a calculation will need to be made of the BAU baseline so that the amount of energy that would have been used in absence of the policy can be estimated. In the case of a national-level renewable energy target, it is not necessary to distinguish what types of renewable energy technologies will be used to meet the target, since all renewable energy technologies can be said to generate no GHG emissions.[41] However, an assumption will need to be made about the total quantity of electricity that will be generated by renewables in order to meet the target, depending on how a target is set.

Generation targets are based on reaching a percent of electricity generated within a given portfolio, so the only assumption that needs to be made is the business-as-usual electricity generation over the period in which reductions are being estimated. For example, if a policy states that 20 percent of a country's electricity must come from renewable sources by 2020, an assumption of the cumulative electricity generation over that

time will need to be made. In addition, to estimate the reductions associated with the renewable electricity, an emissions coefficient must be established based on the fuel mix of the electricity portfolio, taking into account the extent to which that may shift over time.

Quantifying a National Energy Efficiency Target—In order to estimate the emission reductions associated with a national-level energy efficiency target, a BAU baseline needs to be estimated that forecasts national energy demand and expectations for economic growth. However, the uncertainty associated with this BAU baseline can be quite large, which makes it difficult to accurately quantify emissions reductions below such a baseline. If national-level targets are broken down into sectoral implementation plans that are comprised of multiple energy efficiency activities (e.g., energy performance standards and end-use efficiency standards), it may be more accurate to quantify the emissions reductions associated with these discrete activities.

Useful References and Methods for Policy Quantification

Depending on the nature of the policy being committed to, a variety of methods for quantifying emissions can be utilized. The methodology used would depend on the structure of the policy. For example, different methods are appropriate for a policy geared at technology substitution than for an energy efficiency target.

There are some useful references that provide insight into quantifying policy-based emission reductions, including CDM programmatic methodologies and energy models that assess policy-driven mitigation options at the national level.

Programmatic CDM Methodologies—Although a range of studies that quantify emissions reductions associated with discrete policy activities exist, a specific source of useful examples is the database of proposed methodologies for estimating emissions reductions associated with CDM project activities. For example, CDM methodology II.C.v.7, "Demand-side energy efficiency programs for specific technologies," proposes a method for quantifying the GHG emissions reductions associated with an energy efficiency technology standard. Although several submitted CDM projects have used this methodology, no projects have been approved for registration to date. There are several other methodologies under review for similar demand-side energy efficiency projects, including for energy efficient lighting and air conditioner standards in Ghana.

Energy Modeling of Mitigation Options—Some energy models are particularly suited towards quantifying the emission reduction estimates associated with specific policies. One such model is LEAP, the "Long range Energy Alternatives Planning system." Developed by the Stockholm Environment Institute, it is an integrated energy-environment modeling tool based on a comprehensive accounting of how energy is consumed, converted and produced in a given region or economy.[42] According to the LEAP website, it has been used by governments, researchers and NGOs around the world to conduct energy modeling exercises, and 85 countries have chosen to use LEAP to assist in their Greenhouse Gas Mitigation Assessments as part of their national communications to the UNFCCC.

Notes

1. The Climate Dialogue at Pocantico was convened by the Pew Center on Global Climate Change to provide an opportunity for informal discussion among senior policymakers and stakeholders from 15 countries on options for advancing the international climate change effort. Four sessions were held from July 2004 through September 2005. http://www.pewclimate.org/pocantico.cfm

2. Policy commitments for developed countries have been considered in past negotiations, as discussed in section 2, and are among the options suggested by the *Pocantico* report. However, this paper focuses primarily on policy commitments as an option for developing countries in a post-2012 international climate agreement.

3. For example, Winkler et al., 2002; Kameyama, 2003; Baumert et al., 2005; Stern, 2006; Government of South Africa, 2006b; Council of the European Union, 2007.

4. For example, Aunan et al., 2006; Paustian et al., 2006.

5. See paragraph 81 of the "Report of the Intergovernmental Negotiating Committee for a Framework Convention on Climate Change on the work of its third session, held at Nairobi from 9 to 20 September, 1991." Document A/AC.237/12 25 October 1991. Available: http://www.ccsr.u-tokyo.ac.jp/unfccc1/pdfs/unfccc.int/resource/docs/a/12.pdf

6. UNFCCC, Article 4. http://unfccc.int/essential_background/convention/background/items/2853.php.

7. "The Berlin Mandate." FCCC/CP/1995/7/Add.1 Available: http://unfccc.int/resource/docs/cop1/07a01.pdf

8. Options included annex-based, sectoral, cross-sectoral, technology, and instrument approaches. See, for example, the "Synthesized list of policies and measures identified by Annex I Parties in their national communications." FCCC/AGBM/1995/6. Available: http://www.ccsr.u-tokyo.ac.jp/unfccc1/pdfs/unfccc.int/resource/docs/1995/agbm/06.pdf

9. A list of proposals discussed is detailed in FCCC/AGBM/1997/3/Add.1. Available: http://www.ccsr.u-tokyo.ac.jp/unfccc2/pdfs/unfccc.int/resource/docs/1997/agbm/03a01.pdf

10. The EU, with a long history of internally developing and implementing coordinated PAMs and concerns about its competitiveness with the US and Japan, was in favor of harmonized policies and measures. Oberthur and Ott (1999) p. 51, 103–105.

11. Examples of PAMS listed include energy efficiency, sinks and reservoirs, agriculture, new and renewable energy sources and carbon sequestration, among others.

12. Sectoral agreements would structure multilateral commitments (standards, targets, or other types) around one or more sectors, possibly including both developed and developing countries, and in concert with other commitment types. For more on sectoral approaches, see Bodansky, 2007 and Watson et al.; 2005.

13. See, for example, Climate Dialogue at Pocantico, 2005; BASIC, 2006.

14. UNFCCC Article 3 states: "The Parties should protect the climate system for the benefit of present and future generations of humankind, on the basis of equity and in accordance with their common but differentiated responsibilities and respective capabilities. Accordingly, the developed country Parties should take the lead in combating climate change and the adverse effects thereof." Article 4 states: "The extent to which developing country Parties will effectively implement their commitments under the Convention will depend on the effective implementation by developed country Parties of their commitments under the Convention related to financial resources and transfer of technology and will take fully into account that economic and social development and poverty eradication are the first and overriding priorities of the developing country Parties."

15. The SD-PAMS proposal describes ideas for how policies can be evaluated on the basis of climate and sustainable development criteria. See Winkler et al., 2002; Baumert et al., 2005; Winkler et al., 2007.

16. For example, Zhou et al., 2003; CCAP et al., 2006.

17. Government of South Africa, 2006a and 2006b.

18. Statement on policy approaches to address deforestation, submitted by Bolivia, Central African Republic, Costa Rica, Democratic Republic of the Congo, Dominican Republic, Fiji, Ghana, Guatemala, Honduras, Kenya, Madagascar, Nicaragua, Panama, Papua New Guinea, Samoa, Solomon Islands, Vanuatu at the second SBSTA Workshop on reducing emissions from deforestation in developing countries, 7–9 March 2007 in Cairns, Australia. The workshop was part of a two-year process on deforestation launched at COP 11 in Montreal in December 2005. Available: http://unfccc.int/files/methods_and_science/lulucf/application/pdf/bolivia.pdf

19. Brazil proposes voluntary domestic actions to reduce emissions from deforestation linked to financial incentives or credits, but "does not envisage any mechanism that could be used by Annex I countries to meet their quantified greenhouse gas emission limitation and reduction commitments under the Kyoto Protocol." Available: http://unfccc.int/files/methods_and_science/lulucf/application/pdf/brazil.pdf

20. The "Russian proposal" is undergoing informal consultations that began at COP/MOP2 in Nairobi. Current version available at: http://unfccc.int/files/meetings/workshops/other_meetings/application/pdf/rusproposal_en.pdf.

21. According to the UNFCCC Secretariat, as posted at http://unfccc.int/national_reports/non-annex_i_natcom/items/2819.php

22. For example, China's initial national communication received by the UNFCCC in November 2004 reported national emissions data through 1994—emissions estimates that at that point were 10 years old and therefore revealed little about China's current emissions situation and likely future trajectory.

23. Similar to the role of the Methodology Panel of the CDM's Executive Board.

24. Kyoto Protocol Article 21, paragraph 2, states: "Any Party may make proposals for an annex to this Protocol and may propose amendments to annexes to this Protocol." Article 21, paragraph 3, states: "Annexes to this Protocol and amendments to annexes to this Protocol shall be adopted at an ordinary session of the Conference of the Parties serving as the meeting of the Parties to this Protocol. The text of any proposed annex or amendment to an annex shall be communicated to the Parties by the secretariat at least six months before the meeting at which it is proposed for adoption. The secretariat shall also communicate the text of any proposed annex or amendment to an annex to the Parties and signatories to the Convention and, for information, to the Depositary."

25. At COP4 in Buenos Aires in 1998, Argentina announced its intention to establish a voluntary GHG emissions target for 2008-2012 and to formalize its commitment in the international negotiations. However, in the absence of a clear procedural framework for adopting voluntary commitments, Argentina's proposal was blocked by developing countries fearing the precedent it would set. (Bouille and Girardin, 2002.) The issue of voluntary commitments is being revisited in the context of the "Russian Proposal" discussed above.

26. Composition could be similar to the CDM's Executive Board which is comprised of a rotating membership made up of a fixed distribution of country representatives. "The CDM Executive Board is composed of 10 members from Parties to the Kyoto Protocol, including one member from each of the five United Nations regional groups, two other members from the Parties included in Annex I, two other members from the Parties not included in Annex I, and one representative of the small island developing States, taking into account the current practice in the Bureau of the Conference of the Parties." FCCC/KP/CMP/2005/8/Add.1, 30 March 2006. Available: http://cdm.unfccc.int/Reference/COPMOP/08a01.pdf#page=7

27. As of April 24, 2007. From http://cdm.unfccc.int/Statistics/index.html. Estimate of value based on CER range of $5–$10/ton.

28. World Bank, 2006.

29. Samaniego and Figueres, 2002; Heller and Shukla, 2003.

30. To estimate emissions reductions associated with a CDM project, a baseline must be established which represents "business as usual" (BAU) emissions trends (projections of the "counter-factual' situation, i.e. if the project did not occur). Emissions reductions must then be demonstrated to be additional to BAU trends, stating that "a CDM project activity is additional if anthropogenic emissions of greenhouse gases by sources are reduced below those that would have occurred in the absence of the registered CDM project activity" (Winkler, 2004). See also CDM "Tool for the demonstration and assessment of additionality (v.3)." Available: http://cdm.unfccc.int/methodologies/PAmethodologies/AdditionalityTools/Additionality_tool.pdf

31. Clarifications on the treatment of national and/or sectoral policies and regulations (paragraph 45(e) of the CDM Modalities and Procedures) in determining a baseline scenario, EB 16 Report Annex 3 (available: http://cdm.unfccc.int/EB/Meetings/016/eb16repan3.pdf/) and EB 22 report Annex 3 version 2 (available: http://cdm.unfccc.int/EB/022/eb22_repan3.pdf).

32. As outlined in COP/MOP 1, Decision -/CMP.1, paragraph 20: http://unfccc.int/files/meetings/cop_11/application/pdf/cmp1_24_4_further_guidance_to_the_cdm_eb_cmp_4.pdf.

33. For more information on programmatic CDM see Figueres, 2005; and Ellis, 2006.

34. For more information on the status of programmatic methodologies and projects to date see the Appendix of this paper.

35. Philibert, 2000; Schmidt et al., 2006.

36. The Sao Paolo Proposal (BASIC, 2006) describes a post-2012 agreement in which credits earned from meeting "no-lose targets" in developing countries can be sold to the carbon market up to a cap on the amount of total credits that can be sold. After this cap of credit sales is reached, the developing country must then shift to take on a more stringent emissions target. Michelowa et al. (2005) suggest that eligibility for flexibility mechanisms might be withdrawn if a country does not introduce its own mandatory national policy frameworks once it has passed a graduation threshold.

37. Under the Sao Paolo Proposal, countries choosing to report emission reductions achieved under SD-PAMs would qualify for simplified fast-track procedures to access adaptation funding and a proposed technology fund.

38. Streets et al., 2001; GAO, 2003; Sharma et al., 2006.

39. For more information see CDM methodology II.C.v.7 "Demand-side energy efficiency programs for specific technologies."http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_UQU74DBX8GDNTMV8IU6MF8VMHIR2EY. Although several registered CDM projects have used this methodology, no CDM projects to date have been successful at being approved for programmatic energy efficiency projects. There are several methodologies under review for such projects proposed in Ghana, including for energy efficient lighting and air conditioner standards. For more information see http://www.ieta.org/ieta/www/pages/getfile.php?docID=1999.

40. These methodologies are described in more detail in CDM Small-Scale Methodology AMS-I.A: "Renewable energy projects-electricity generation by the user." http://cdm.unfccc.int/UserManagement/FileStorage/CDMWF_AM_2ZSRNILTV4VOW4FWVCGCCECNBM3ONC. For an example of a CDM project that uses this methodology see: "Photovoltaic kits to light up rural households in Morocco" http://cdm.unfccc.int/UserManagement/FileStorage/DQ6ICT8NJZ9XTOX2FTBHL4VLDMD2X2.

41. The estimation of emissions from biomass is somewhat more complicated. This does not include the life cycle emissions associated with each technology.

42. For more information see the LEAP website: http://www.energycommunity.org/default.asp?action=47

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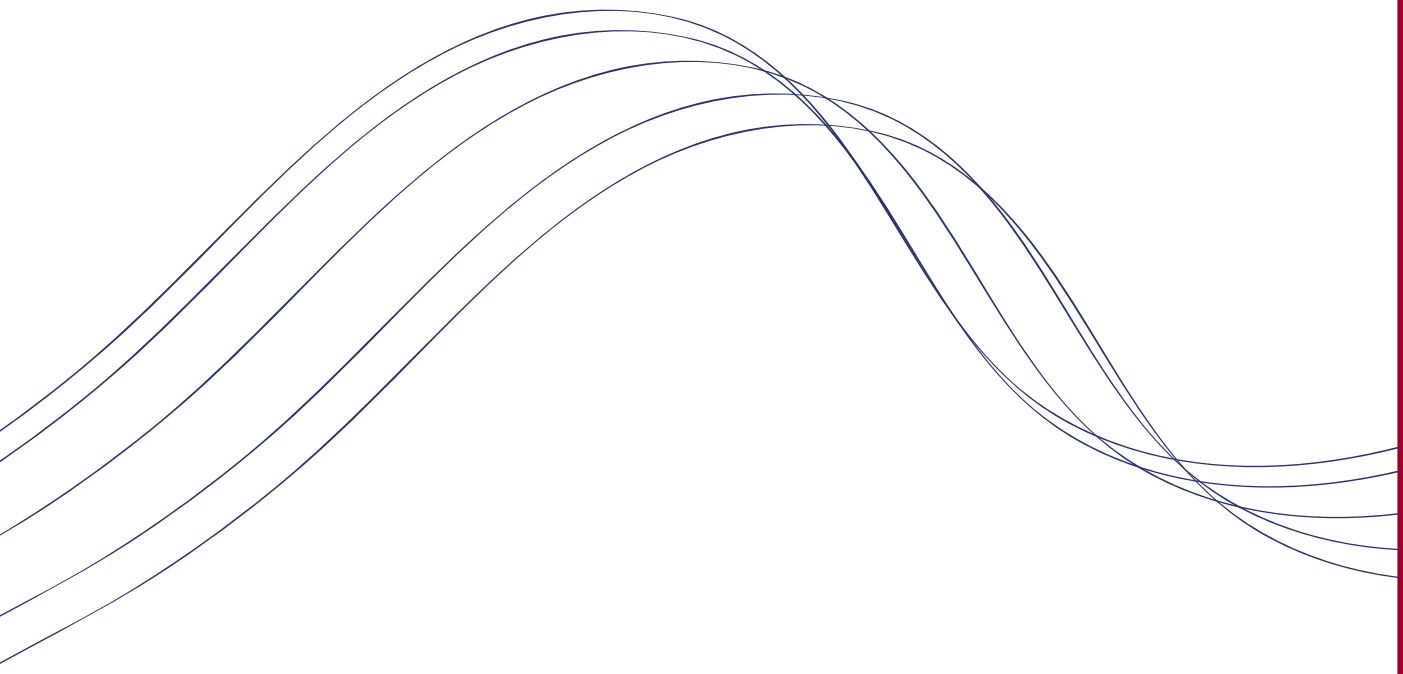
This paper examines policy-based climate commitments as an element of a post-2012 international climate framework. It is part of a Pew Center series expanding on key recommendations of the Center's *Climate Dialogue at Pocantico*. The Pew Center was established by The Pew Charitable Trusts to bring a new cooperative approach and critical scientific, economic, and technological expertise to the global climate change debate. We inform this debate through wide-ranging analyses in four areas: policy (domestic and international), economics, environment, and solutions.



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