POLICIES AND MEASURES AS A TOOL TO ACHIEVE THE OBJECTIVES OF THE CONVENTION AND THE KYOTO PROTOCOL

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Abstract

The Intergovernmental Panel on Climate Change (IPCC) recently published its Third Assessment Report (TAR). The paper summarises the main findings of this assessment with respect to policies and measures. It addresses the importance of taking into account a broad set of criteria when selecting and weighing policies and measures to mitigate and/or adapt to climate change. Rather than selecting one preferred policy from the wide range of options, a portfolio of options can be more effective. The paper also discusses two selected aspects of policies and measures: spillovers from measures in one country on other countries, and the importance of linking climate change response objectives with broader socio-economic objectives. The paper ends with some thoughts of potential future work of IPCC in the area of policies and measures.

1. Introduction

In April 2000, IPCC co-chair Bert Metz presented selected findings in the area of policies and measures from the IPCC Second Assessment Report of the IPCC and of the Special Reports on Emissions Scenarios and on Methodological and Technological Issues in Technology Transfer, as well as some preliminary insights from the Third Assessment Report, which was under preparation at that time. In 2001, IPCC's Third Assessment Report(TAR) has been finalised, published and presented to SBSTA in Bonn in June. This paper summarises some key findings from that report, primarily in the area of mitigation (Metz *et al.*, 2001), but it also touches upon adaptation (McCarthy *et al.*, 2001). IPCC reports contain information, which aims at being policy-relevant without being policy-prescriptive. Therefore, the TAR does not recommend any particular type of policy or measures, but merely describes the pros and cons of the wide variety of options as they are discussed in the scientific, technical and economic literature. But even if theoretically the IPCC could formulate recommendations, which it doesn't, the literature would not provide a basis for this in any general sense, since the choice of policies very much depends on the particular local circumstances, and on the selection and weighing of evaluation criteria. In this short paper, first possible evaluation criteria are discussed. Second, some examples are given of the available policies and measures at the national and international level. Examples of many of these are presented discussed at this workshop. Third, special attention is iven to spillover effects of some market instruments, and linkages with other issues. Finally, some thoughts on future IPCC activities are presented.

Criteria for evaluation of policy and options

The selection and design of policy measures is very dependent on local circumstances and preferences. There is a very wide range of possibilities to respond to climate change and in order to facilitate decision making, options can be evaluated using the following criteria (Bashmakov *et al.*, 2001):

- ***Environmental effectiveness.*** How well does the policy achieve the environmental goal, such as a GHG emissions reduction target? How reliable is the instrument in achieving that target, does the instrument's effectiveness erode over time, and does the instrument create continual incentives to improve products or processes in ways that reduce emissions? But also: what are the wider environmental effects, such as local air-quality improvement (usually referred to as the ancillary benefits)?
- ***Cost effectiveness.*** Does the policy achieve the environmental goal at the lowest cost, taking transaction, information, and enforcement costs into account? Are there any additional economic benefits depending on if and how the revenues are recycled? What are the wider economic effects such as the potential effects on variables such as inflation, competitiveness, employment, trade, and growth? Are there any secondary effects such as changes in attitudes and awareness, learning, innovation, technical progress and dissemination and transfer of technology?
- ***Distributional considerations.*** How are the costs of achieving the environmental goal distributed across groups within society, including future generations and between regions?
- ***Administrative and political feasibility.*** How flexibly can the policy be adjusted if new knowledge becomes available? Is it understandable and acceptable to the general public? What are the impacts on the competitiveness of different industries?

2. Types of policies and measures

Most policies and measures can be grouped under the following categories: (a) market-based instruments, (b) regulatory measures, (c) voluntary agreements, and (d) research, development and demonstration, and information campaigns. Box 1 and 2 summarise some of the options available. Rather than selecting one or just a few options, countries could chose a portfolio of options to make climate change response more effective. Some of these policies can be very sector specific, or can address particular socio-economic or institutional barriers (Sathaye *et al.*, 2001), other are more generic (Bashmakov *et al.*, 2001).

3. Spillovers and links with objectives other than climate change

The TAR discussed more aspects of policies and measures than can be presented here. In this paper, two issues are highlighted that have received particular interest during the TAR development and approval process. The first is the issue of so-called spillover effects (Hourcade *et al.*, 2001). If domestic or sectoral mitigation measures are taken, this can have an influence on other countries or sectors. These spillover effects can be positive or negative. Positive examples include accelerated development, transfer and diffusion of environmentally sound technology. A negative example is carbon leakage, i.e. part of emissions reductions in the countries taking the measures may be offset by an increase of the emission in other countries. This can occur through (1) relocation of

energy-intensive production; (2) increased consumption of fossil fuels in these other regions through decline in the international price of oil and gas triggered by lower demand for these energies; and (3) changes in incomes (and thus in energy demand) because of better terms of trade.

Box 1: Definitions of Selected National Greenhouse Gas Abatement Policy Instruments

- An *emissions tax* is a levy imposed by a government on each unit of carbon dioxide equivalent (CO_{2eq}) emissions by a source. Since virtually all of the carbon in fossil fuels ultimately is emitted as CO_2, a levy on the carbon content of fossil fuels—a carbon tax—is equivalent to an emissions tax for emissions caused by fossil fuel combustion. An energy tax—a levy on the energy content of fuels—reduces the demand for energy and so reduces CO_2 emissions through fossil fuel use.
- A *tradable permit* (cap-and-trade) system establishes a limit on aggregate emissions by specified sources, requires each source to hold permits equal to its actual emissions, and allows permits to be traded among sources. This is different from a credit system, in which credits are created when a source reduces its emissions below a baseline equal to an estimate of what they would have been in the absence of the emissions reduction action. A source subject to an emissions-limitation commitment can use credits to meet its obligation.
- A *subsidy* is a direct payment from the government to an entity, or a tax reduction to that entity, for implementing a practice the government wishes to encourage. GHG emissions can be reduced by lowering existing subsidies that in effect raise emissions, such as subsidies to fossil fuel use, or by providing subsidies for practices that reduce emissions or enhance sinks (*e.g.*, for insulation of buildings or planting trees).
- A *deposit–refund system* combines a deposit or fee (tax) on a commodity with a refund or rebate (subsidy) for implementation of a specified action.
- A *Voluntary Agreement* (VA) is an agreement between a government authority and one or more private parties, as well as a unilateral commitment that is recognized by the public authority, to achieve environmental objectives or to improve environmental performance beyond compliance.
- A *non-tradable permit system* establishes a limit on the GHG emissions of each regulated source. Each source must keep its actual emissions below its own limit; trading among sources is not permitted.
- A *technology or performance standard* establishes minimum requirements for products or processes to reduce GHG emissions associated with the manufacture or use of the products or processes.
- A *product ban* prohibits the use of a specified product in a particular application, such as hydrofluorocarbons (HFCs) in refrigeration systems, that gives rise to GHG emissions.
- *Direct government spending and investment* involves government expenditures on research and development (R&D) measures to lower GHG emissions or enhance GHG sinks.

Source: Bashmakov et al., 2001

Box 2: Definitions of Selected International Greenhouse Gas Abatement Policy Instruments

- A *tradable quota system* establishes national emissions limit for each participating country and requires each country to hold quota equal to its actual emissions. Governments, and possibly legal entities, of participating countries are allowed to trade quotas. Emissions trading under Article 17 of the Kyoto Protocol is a tradable quota system based on the assigned amounts (AAs) calculated from the emissions reduction and limitation commitments listed in Annex B of the Protocol.
- *Joint Implementation* (JI) allows the government of, or entities from, a country with a GHG emissions limit to contribute to the implementation of a project to reduce emissions, or enhance sinks, in another country with a national commitment and to receive ERUs equal to part, or all, of the emissions reduction achieved. The ERUs can be used by the investor country or another Annex I party to help meet its national emissions limitation commitment. Article 6 of the Kyoto Protocol establishes JI among Parties with emissions reduction and limitation commitments listed in Annex B of the Protocol.
- The *Clean Development Mechanism* (CDM) allows the government of, or entities from, a country with a GHG emissions limit to contribute to the implementation of a project to reduce emissions, or possibly enhance sinks, in a country with no national commitment and to receive CERs equal to part, or all, of the emissions reductions achieved. Article 12 of the Kyoto Protocol establishes the CDM to contribute to sustainable development of the host country and to help Annex I Parties meet their emissions reduction and limitation commitments.
- A *harmonized tax on emissions, carbon, and/or energy* commits participating countries to impose a tax at a common rate on the same sources.[1] Each country can retain the tax revenue it collects.
- An *international tax on emissions, carbon, and/or energy* is a tax imposed on specified sources in participating countries by an international agency. The revenue is distributed or used as specified by participant countries or the international agency.
- *Non-tradable quotas* impose a limit on the national GHG emissions of each participating country to be attained exclusively through domestic actions.
- *International product and/or technology standards* establish minimum requirements for the affected products and/or technologies in countries in which they are adopted. The standards reduce GHG emissions associated with the manufacture or use of the products and/or application of the technology.
- An *international VA* is an agreement between two or more governments and one or more sources to limit GHG emissions or to implement measures that will have this effect.
- *Direct international transfers of financial resources and technology* involve transfers of financial resources from a national government to the government or legal entity in another country, directly or via an international agency, with the objective of stimulating GHG emissions reduction or sink enhancement actions in the recipient country.

Source: Bashmakov et al., 2001

[1]A harmonized tax does not necessarily require countries to impose a tax at the same rate, but to impose different rates across countries would not be cost-effective.

The second issue highlighted here is the importance of linkages between climate change and broader socio-economic developments (Metz *et al.*, 2001). According to the WGIII TAR Policymakers Summary "the effectiveness of climate change mitigation can be enhanced when climate policies are integrated with the non-climate objectives of national and sectorial policy development and be turned into broad transition strategies to achieve the long-term social and technological changes required by both sustainable development and climate change mitigation." This works two ways: climate policies can yield ancillary benefits for other pressing socio-economic and environmental problems, and policies addressing these other issues can positively influence mitigative and adaptive capacity to climate change. The assessment suggests that in some cases the ancillary benefits can be comparable to mitigation costs. In the above criteria some of these environmental, social and economic "co-benefits" are mentioned. An important example is the transfer and adoption of state-of-the-art environmental technologies which can lower operational costs, abate air pollution, and can positively influence local employment opportunities at the same time as lowering greenhouse gas emissions. Enhancing socio-economic development in vulnerable areas will not only increase local welfare but also decrease vulnerability to climate change impacts through increasing adaptation capabilities.

4. Future activities

During its last Plenary meeting, IPCC decided to prepare a Fourth Assessment Report, to appear in 2006 or 2007. In the meantime, other assessment activities may be initiated, some of which on the request of SBSTA. These may imply Special Reports, Technical Papers or so-called supporting material. One idea that could be considered is IPCC support to SBSTA through an inventory, or catalogue of national and sectoral experiences with policies and measures related to climate change mitigation and adaptation, including those taken in the context of the UNFCCC and Kyoto Protocol. Such a – possibly web-based – inventory would not only be helpful in supporting the development of the IPCC 4th Assessment Report, but could also be useful as a source of information for SBSTA deliberations, and in general for decision makers around the world.

5. References

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