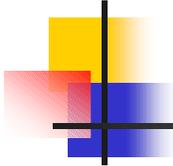


15 key issues from  
TAR WG-III Chapter 6  
(Policies and Measures)

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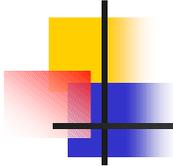
Catrinus J. Jepma  
CLA - Chapter 6



## 1. There is a large set of PAMs for mitigation/ sequestration that countries can choose from, either individually or collectively.

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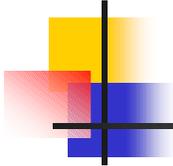
- These include (in arbitrary order): (1) taxes on emissions, carbon, and/or energy, (2) tradable permits, (3) subsidies, (4) deposit–refund systems, (5) voluntary agreements (VAs), (6) non-tradable permits, (7) technology and performance standards, (8) product bans, and (9) direct government spending and investment. The first four are often called market-based instruments, although some VAs also fall into this category.
- A group of countries that want to limit their collective GHG emissions could agree to implement one, or a mix, of instruments (in arbitrary order) (1) tradable quotas, (2) JI, (3) CDM, (4) harmonized taxes on emissions, carbon, and/or energy, (5) an international tax on emissions, carbon, and/or energy, (6) non-tradable quotas, (7) international technology and product standards, (8) international VAs, and (9) direct international transfers of financial resources and technology.



## 2. There is a whole range of evaluation criteria for PAMs; effectiveness is just one of them.

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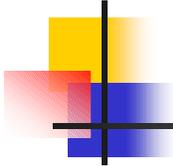
- The criteria are:
  - Environmental effectiveness
  - Cost-effectiveness
  - Distributional considerations
  - Administrative and political feasibility
  - Wider economic effects
  - Wider environmental effects
  - The impact on changes in attitudes and awareness
  - Dynamic effects, *i.e.* the impact on learning, innovation, technical progress, and dissemination and transfer of technology
- The economics literature – particular theory development – focuses more on the cost-effectiveness criterion than on the other criteria mentioned.



### 3. There is no single superior policy instrument or policy mix.

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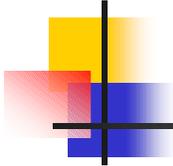
- Each government may apply different weights to the criteria when it evaluates GHG mitigation policy options.
- Moreover, a government may apply different weights to the criteria when it evaluates national and international policy instruments, and the appropriateness of the criteria may vary depending on the degree of uncertainty about the pollution abatement cost and pollution damage functions.



## 4. Dynamic effects of PAMs are crucial for their long-term impact.

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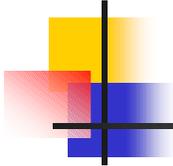
- Market-based approaches, performance standards, technology standards and voluntary agreements. All have the potential to induce or force some amount of technological change, because they induce or require firms to do things they would not otherwise do.
- The effect of public policies on the development and spread of new technologies may be among the most important determinants of success or failure in environmental protection.
- Policies with large economic impacts, such as those intended to address global climate change, can be designed to foster technological invention, innovation, and diffusion.



## 4. Dynamic effects of PAMs are crucial for their long-term impact. *(cont)*

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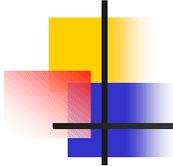
- In the case of obstructed technology, regulators know quite well the technology improvements that are feasible. Thus, although the problem of standards being either too low or too ambitious remains a possibility, it does not make standards inherently incapable of implementing some portion of the available technology base, and to do so cost-effectively on the basis of cost-benefit tests.
- Empirical analyses of the relative effects of alternative environmental policy instruments on the rate and direction of technological change are limited in number.



## 5. Political economy aspects may have an important impact on PAM design.

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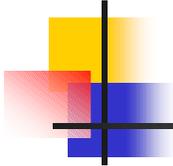
- The economics literature emphasizes the importance of interest-group pressures, focusing on the demand for regulation.
- However, it has tended to neglect the “supply side” of the political equation.
- Some forms of regulation actually benefit the regulated industry.
- A policy that imposes costs on industry as a whole might still be supported by firms who, as a consequence, would fare better than their competitors.
- Regulated firms, of course, are not the only group with a stake in regulation: opposing interest groups will fight for their own interests.



## 6. Structural reforms and non-GHG PAMs matter a lot.

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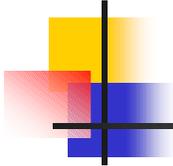
- To develop reasonable assessments of the feasibility of implementing GHG mitigation policies in countries in the process of structural reform, it is important to understand this new policy context.
- Recent measures taken to liberalize energy markets were inspired mainly by desires to increase competition in energy and power markets, but they can have significant positive and negative emissions implications also.
- In the long run, the consumption pattern change might be more important than the sole implementation of climate change mitigation measures.



## 6. Structural reforms and non-GHG PAMs matter a lot. *(cont)*

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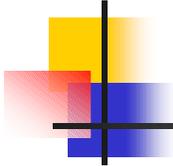
- Experience shows that it takes time for economic agents to adjust their behavior to new price signals.
- Energy-sector structural reform cannot, in itself, guarantee a shift towards less carbon-intensive power generation.
- The impacts of energy-sector structural reforms can be enhanced if appropriate additional policy measures are taken, such as demand-side management (DSM).
- There is a growth in literature that focuses on the impacts of liberalization and restructuring of energy markets on the key technologies of interest in the context of GHG reduction, such as energy efficiency, co-generation, and renewables.



## 7. A dilemma of market-based instruments.

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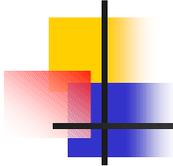
- The certainty provided by a tradable permit system that a given emission level for participating sources is achieved incurs the cost of uncertain permit prices (and hence compliance costs).
- To address this concern, a hybrid policy that caps compliance costs could be adopted, but the level of emissions would no longer be guaranteed.



## 8. Taxation and actual implementation.

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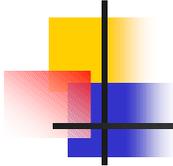
- Although equity considerations could be, in theory, better addressed through other redistribution mechanisms, in practice most energy and emissions taxes apply differential tax rates to different sources.
- Modeling studies show that taxing fossil fuels on a basis other than carbon content – for example, energy content or value – also reduces CO<sub>2</sub> emissions, but usually at a higher cost for a given emissions reduction target.
- In an open economy, countries are often concerned about the impact of emissions taxes on tradable goods sectors. In practice, therefore, current carbon taxes generally tend to have a lower rate on the tradable goods sectors, especially when they are energy intensive.
- In general, a tax is more efficient than a subsidy because the subsidy can result in too many firms in the industry, and thus an inefficient amount of both pollution and goods associated with the pollution.



## 9. Standards and their impact.

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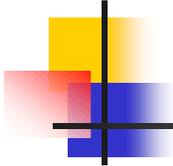
- On the whole, energy efficiency standards have proved to be an effective energy conservation policy tool.
- Energy efficiency standards are widely used in over 50 nations and the number of standards is still growing.
- Standards may also help develop the administrative infrastructure needed to implement market-based policies.
- Regulatory standards can be effective policies to address market failures and barriers associated with information, organization, and other transactions costs.
- They also are widely used to require actors to account for environmental externalities and, if continually modified to account for technical progress, they can provide dynamic innovation incentives.



## 10. Voluntary agreements.

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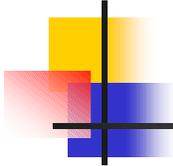
- VAs may take a variety of forms.
- Proponents of VAs point to low transaction costs and consensus elements,
- while skeptics emphasize the risk of free riding, and the risk that the private sector will not pursue real emissions reduction in the absence of monitoring and enforcement.



## 11. PAMs and the interaction with the economy.

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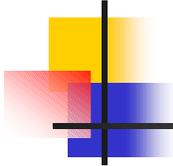
- The interaction of abatement costs with the existing tax structure and, more generally, with existing factor prices is important.
- Policies that generate revenues can be coupled with policy measures that improve the efficiency of the tax structure.
- A significant number of European studies concludes that the net costs of mitigating policies (taxation) can be close to zero and even slightly negative; in the USA few models report negative costs.
- Various sources provide evidence that using emissions and/or energy taxes to reduce distortionary labor taxes tends to increase employment.



## 12. The Kyoto mechanisms.

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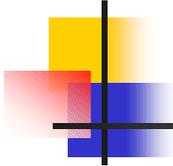
- A substantial number of economic models suggest that use of the Kyoto mechanisms, established by Articles 6, 12 and 17 of the Kyoto Protocol, combined with efficient domestic policies could significantly reduce the cost of meeting the emissions limitation commitments in the Protocol.
- When part of the GHG emissions reduction needed to realize the Kyoto commitments offers net economic benefits to the national economy, the role of the Kyoto mechanisms can change significantly.



## 13. WTO compatibility.

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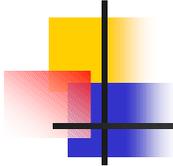
- The UNFCCC is one of more than 200 multilateral and bilateral international environmental agreements (MEAs) whose compatibility with free trade and investment is debated.
- Several domestic policies and measures that may be taken in conjunction with the Kyoto Protocol might be considered to pose WTO problems, such as excessively restricting trade regulations, GATT-inconsistent border charges, or illegal subsidies.
- National programs of permit distribution for emissions trading or national environmental aid (subsidies) might benefit domestic firms or sectors over importers or foreign competitors.



## 13. WTO compatibility. *(cont)*

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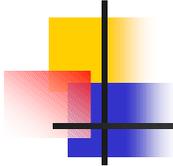
- A Party or group of Parties (as part of the national implementation programs) might apply taxes or environmental policies and measures in a way that arguably discriminates against WTO trade partners.
- Environmental regulations, taxes, or voluntary measures could be challenged as indirect forms of protection that fall disproportionately on imported products. Recent cases suggest there may be more cases that could be argued under the agreement on Technical Barriers to Trade (TBT) rather than GATT.
- WTO law does allow compensating charges or border adjustments to similar imported products to equalize the tax burden on domestic production.



## 14. Technology transfer.

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- Policies with large economic impacts, such as those intended to address global climate change, can be designed to foster technological invention, innovation, and diffusion.
- Three conditions have to be fulfilled for an effective transfer of technologies. First, the technology holder country must be willing to transfer the technology. Second, the technology must fit into the demand of the recipient country. Third, the transfer must be made at reasonable cost to the recipient.



## 15. Policy mix.

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- To select the best approach to attain the environmental goal, various cost and other aspects must be taken into account. For these reasons, it can be anticipated that in most countries GHG emissions will be managed using a portfolio of policy instruments, rather than a single policy instrument.
- The most effective and economically efficient approach to achieve lower energy sector emissions is to apply market-based instruments, standards, and information policies in combination.
- One important aspect in the policy analysis has been a shift of attention from the assessment of single policy instruments to questions of the optimal policy mix.