

# The Chairs' Update

Department of Economics

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## Foreword

The Department of Economics hosts several chairs, each producing articles, books, conferences, seminars and workshops.

The Chairs Update is intended to be a regular communication link between the Department and its sponsors, to be also diffused to the École's community at large.

Each issue will provide a focused review of an ongoing research program and discuss some of its major policy implications.

The Chairs Update will also inform on future workshops and seminars .

*Francis Bloch,  
Chairman of the Department of Economics*

*Please note that the views expressed in each issue are those of the authors and do not represent those of the École Polytechnique.*

## Copenhagen: A Major Bifurcation in International Coordination of Climate Policies

Since the 1992 Rio Summit, confirmed by the 1997 Kyoto Protocol, the search of international coordination focused on what had been called a "comprehensive approach". This was progressively assumed by most Western experts and governments to be the best way to follow, in spite of political difficulties due to North-South and Transatlantic differences in priorities, and the assessment of a fair burden-sharing. This regime has three components: quantitative targets of greenhouse gas (GHG) emissions assigned to countries, flexibility and cost-efficiency brought by a world carbon market, and financial and technological transfers from industrialized countries to less-developed ones, in order to address unequal responsibility and capacities regarding climate challenge. The Kyoto Protocol stood as a first step but in a limited geographical perimeter (industrialized countries) for a limited time horizon (2008-2012). This settled the premises of an international carbon market. For the future, the EU backed a spatial extension of the regime to emergent countries and the adoption of medium (2020) and long run targets (2050).

In December 2007, the Bali meeting began to set a new agenda by focusing on issues such as registering national policy measures, financial transfers, technological cooperation, and economic incentives for controlling deforestation. Emergent countries renewed a strong opposition to any idea that they should commit to quantitative caps, and simultaneously asked industrialized countries to cut huge numbers (85%, 90%) of their own emissions by the year 2050.

Hostage of two opposite rationales, the Copenhagen Conference was

about to conclude on a complete failure when a small number of big emitters (the USA, China, India, Brazil, South Africa...), not including the EU, prepared a parallel paper that became the 'Copenhagen Agreement', not formally endorsed by the Conference. This paper just asks parties to declare in their own terms what their own objectives will be. Parties should report on their implementation, but will not be placed under international scrutiny. No system of penalties is considered. The international market of carbon offsets is mentioned, but the focus is placed on a register of Nationally Appropriate Mitigation Actions (NAMAs). Specific provisions are taken regarding the financial resources to be gathered in favor of less developed countries and devoted to programs and actions aiming at fighting against deforestation.

In March 2010, cumulated declared quantitative efforts were about 50% short of what they should have been in relation to the max 2°C target mentioned in the agreement.

Copenhagen is a real turn for the way international coordination may be conceived for the next decade or more. With this loose approach, this is the end of both the comprehensive approach and its worldwide carbon market, and of any idea asking for similar effort by countries in similar positions. Mitigation actions will be heterogeneous, with no mechanism to ensure the overall cost-effectiveness of policies. Each country or region of the world will have to take its own responsibility without betting on the support of equivalent effort taken by others. Cooperation will be more limited to specific topics, whereas the crucial challenge will be to design national and regional climate policies with appropriate side measures avoiding unwanted trade and economic mismatch.

*Olivier Godard*

*Stewart R.B. and J.B. Wiener (1992), "The Comprehensive Approach to Global Climate Policy: Issues of Design and Practicality", Arizona Journal of International and Comparative Law, 9(1), pp. 83-114.*

## "Industrial Competitiveness and Climate Policies"

This issue of the Chairs Update focuses on a series of recent contributions of the "Industrial Competitiveness and Climate Policies" project. Namely:

- What analysis can be made of the Copenhagen Summit?
- Which future role can be given to carbon border adjustments?
- Why and how to balance equity and efficiency issues?
- Why sectoral approaches may offer a step forward, both as a tool kit and as good "second best" solutions.

This research project is sponsored by the [Chair for Business Economics](#) and the [Chair for Sustainable Development École Polytechnique-EDF](#).

*Jean Pierre Ponsard,  
Project coordinator*



## Carbon Border Adjustments Revisited

The EU unilaterally committed itself to achieving a 20% cut of its 1990 GHG emissions by 2020. In Spring 2010, the Commission suggested that the interest of the EU would be now to go alone towards -30% by 2020. Promises of development of green technology and green markets, and corresponding new jobs, were the main rationale of the proposal. This proposal made in the post-Copenhagen context confirms the relevance and usefulness of examining altogether issues of carbon leakage, artificial losses of industrial competitiveness, retrofitting the rules of the EU Emissions trading Scheme (ETS) and organizing secured and predictable financial transfers to the benefit of less-developed countries, as agreed in the Copenhagen text.

The Energy-Climate Package of January 2008 introduced a general principle to phase in auctioning in the ETS in a 15-year period. But in order to address carbon leakage and competitiveness issues, a provision of a so-called "carbon inclusion mechanism" was included as an option, in competition with maintaining a broad share of free allocation of quotas to business. Although only half-tailored – importers of GHG intensive goods should take part to the ETS on the same basis as domestic EU producers, but there is no provision for exporters –, the EU would gain to revamp this solution as an integrated key component of EU climate policy. Such a mechanism could be designed in order not to be hostile against foreign countries and their exporters.

The scheme that has been proposed is based on the following components:

- To avoid huge difficulties in gathering information on the specific carbon content of foreign products arriving at its borders, obligations of importers to get quotas would be defined on the basis of the same benchmarks that are used by the EU for allocating quotas to its producers. This would strictly respect the WTO principle of equal treatment of foreign and domestic producers.

- A levelled playing field being set-up for the EU markets of basic materials (iron and steel, cement, aluminium, glass, etc.), full auctioning of quotas could be considered for all facilities on a much faster pace than defined in the 2009 directive.

- With auctioning, EU states would receive significant additional financial resources, a given share of it having to be channelled to a specific EU Fund for international transfers to less-developed countries in the context of Post-Copenhagen agreed climate commitments. A regular and additional source of finance would then be brought that would be plainly measurable, reportable and verifiable (MRV), a key concept of the Bali-Copenhagen discussions.

With this mechanism, compliance with general principles of WTO would be achieved. If a foreign producer claims that its in-

dustrial process emits less than the benchmark used in the EU to fix the amount of quotas it should obtain, it would have to bear the burden of bringing the proof in order to see its obligations levelled-off in proportion.

Such a mechanism should be seen as a pilot scheme to be extended in the future as a new worldwide fiscal mechanism analogous to the international VAT regime, accommodating the fact that various countries used different VAT rates.

*Olivier Godard*

*These issues have been extensively discussed in the Workshop "The EU Climate Policy and Border Adjustment: Designing an Efficient and Politically Viable Mechanism", Ecole Polytechnique, 15 September 2008.*

## Why and How to Balance Equity and Efficiency Issues

Equity issues are central to the international negotiation on the reduction of CO<sub>2</sub> emissions. Developing countries are reluctant to limit their emissions if it jeopardizes their economic growth while developed countries built their own economies without such a constraint. Cost-effectiveness in production calls on the contrary, for significant efforts to control emissions in developing countries since this is where the cheapest reductions can be made. The success of Clean Development Mechanism derives from this economic reality. Indeed, exempt from compensations, the full transmission of the CO<sub>2</sub> price to firms and consumers in developing countries would simply be unbearable.

A central theoretical result of welfare economics is that efficiency and equity in a market economy could be treated in isolation: perfectly competitive markets ensure efficiency, and equity is addressed through lump-sum financial transfers. In the context of an international CO<sub>2</sub> agreement, this result would be in line with (i) the implementation of a global permits market to generate the uniform carbon price associated with a global emission cap, and (ii) international financial transfers done via initial allocations of the permits, developed countries compensating developing ones in buying their permits in excess.

However, it has been argued that efficiency and equity could not be isolated so easily for the production of a public good. The choice of the global cap and not only its allocation is related to equity issues and a unique carbon price is efficient only if transfers are adequately set. Without such transfers, differentiated carbon prices are justified.

Sectoral approaches allow for a middle path realistic solution between the two extreme counterfactual contexts: unconstrained international transfers and no transfer at all. A sectoral approach could be designed in which it is considered that governments in developing countries could hardly implement any direct compensation schemes for their final consumers; therefore intensity targets for domestic consumption in these

countries are justified. These intensity targets could be made consistent with an international market of quotas by implementing an appropriate regime of free allowances. Exports would be subject to the scheme in place in importing countries. Some financial transfers could also be implemented, for instance in the energy sector. They would subsidize the use of clean technologies, so that the price of electricity in developing countries would remain unchanged while emissions are reduced.

Such a scheme can be formally analyzed and rough estimations of its welfare consequences can be made: i.e. of the trade-off between efficiency and equity that is made with such a second-best scheme. The efficiency loss is relatively small with respect to the first-best solution; equity issues are addressed at a modest cost. This approach would also reduce the amount of fiscal revenues that should be redistributed by governments in developing countries. A properly designed sectoral approach appears as a significant step forward.

*Guy Meunier*

Chichilnisky, G. and G. Heal (1994). *Who Should Abate Carbon Emissions? An International Viewpoint*. *Economics Letters*, 443-449.

## Sectoral Approaches are Ready for Implementation

Copenhagen marked the doom day for the introduction of a uniform worldwide CO<sub>2</sub> price along the lines of the EU-ETS. Whatever its economic merits, this scheme can only be a very long term goal. In the mean time, we have to work with the imperfections of NAMAs, eventually co-organized among a limited number of countries. Because firms have a genuine interest to operate in a well defined competitive field at the international level, we argue here they may take an active role in this implementation process.

The tools are here. Indeed, much attention has already been given to so-called sectoral approaches. A sectoral approach is a combined industry and government initiative. Such an approach stipulates that for the countries that signed the agreement, there are joint binding rules to mitigate CO<sub>2</sub> emissions in some industries. These rules may either be a cap and trade system, a set of intensity targets or a set of technical norms. They may apply to one sector or to several sectors at once. They may differ from one country to another. The Center for Clean Air Policy provides an exhaustive analysis of the various forms that a sectoral approach may take. Two reports demonstrate that the implementation of intensity targets in developing countries would go a long way in reducing global emissions. The Cement Sustainability Initiative is one among several initiatives in which firms explore the feasibility of a sectoral approach in a given industry.

It is time to move from ideas to implementation: which sector(s),

### This issue builds on the following recent papers:

O. Godard, «La grande bifurcation de la conférence de Copenhague», *Responsabilités & Environnement – Une série des Annales des Mines, 'Après Copenhague'*, (59), juillet 2010.

O. Godard, **Quelle architecture internationale pour la politique climatique ?** I. Les fausses évidences du rapport Tirole. II. Ajustement aux frontières, enchères et transferts Nord-Sud. École Polytechnique, Octobre 2009.

Meunier, G. and J.-P. Ponsard, **A Sectoral Approach Balancing Global Efficiency and Equity**. École Polytechnique. April 2010.

which countries, which mitigation objectives, what financial transfers, what Measurable Reportable Verifiable mechanism, and what governance?

A simple model has been put forward as a challenge for action. It is calibrated in terms of sectors on electricity, cement and steel, and in terms of countries on the EU and China. In this context, a financial transfer from the EU to China is introduced as a way to achieve mitigation objectives in the Chinese electricity sector. The transfers would come from a percentage of the revenues from auctioning permits in the EU. Note that in electricity there are no international competition issues.

Competition issues are important in cement and steel. In these sectors, firms abide to the rules of the countries in which they trade. International competition is not affected so that free allocations in the EU may be eliminated. This provides the fuel to implement ambitious mitigation goals through high financial transfers, in electricity or in other “domestic” sectors such as deforestation, efficiency building... Of course, cement and steel firms need be convinced to give up their free allocations but everyone will concede that free allocation is a poor and perverse answer to the competitiveness issues in any case.

With such a global proposal on the agenda, the EU ambitions to set a 30% reduction target for 2020 would gain in credibility.

*Jean-Pierre Ponsard*

Center for Clean Air Policy (2010), *Global Sectoral Study: Final Report to the European Commission*. Washington DC.

Baron, R., B. Buchner, and J. Ellis (2009), *Sectoral Approaches and the Carbon Market*. IEA/OECD paper.  
Hamdi-Cherif, M., C. Guivarch, and P. Quirion (2009), *Sectoral Targets for Developing Countries: Combining “Common but Differentiated Responsibilities” with Meaningful Participation*. Working Paper CIREN.  
World Business Council for Sustainable Development (2009), *A Sectoral Approach*. Cement Sustainability Initiative. Geneva.

## Selected Related Publications

- *Social Responsibility: From Compliance to Opportunity?* Crifo, P. and Ponsard J-P (ed.), École Polytechnique Editions.
- Barrios, S., Outtara O., and E. Strobl, 2008. The Impact of Climate Change on Agricultural Production in Sub-Saharan Africa, *Food Policy*, 33, pp. 287-298.
- Bourgeon, J.M, and D. Trégüer, 2010. Killing Two birds with One Stone: The US and the EU Biofuel Programs, Forthcoming in *European Review of Agricultural Economics*.
- Bourgeon, J.M, and H. Ollivier, 2010. Commerce des bioénergies et émissions de gaz à effet de serre, *Revue Economique*, 61(1): 161- 184.
- Creti, A., 2010. How energy works? Electricity and Gas Markets in Europe, Forthcoming in *Handbook of Sustainable Use of Energy*, Edited by A. Markandya, I. Galarraga and M. González, Edward-Elgar Publishing.
- Godard, O., 2009. Time Discounting and Long-Run Issues - The Controversy Raised by the Stern Review of the Economics of Climate Change, *OPEC Energy Review*, 33 (1), 1-22.
- Godard, O., 2008. The Stern Review on the Economics of Climate Change: Contents, Insights and Assessment of the Critical Debate, *Surveys and Perspectives Integrating Environment and Society (SAPIENS)*, (1), 17-36.
- Godard, O., 2008. Climate Modelling for Policy-Making: How to Represent Freedom of Choice and Concern for Future Generations?, *Interdisciplinary Science Reviews*, 33 (1), 51-69.
- Meunier, G., 2008. Emissions Permit Trading between Imperfectly Competitive Output Markets revised in *Environmental and Resources Economics*.
- Nicolai, J. P., Péchoux I., Ponsard, J.P, and J. Pouyet, 2010. Politique environnementale et ajustements aux frontières en présence de concurrence imparfaite, *Revue Economique*, 61(1), 57-77.
- Ponsard, J.P, and Walker, N., 2008. EU Emissions Trading and the Cement Sector: A Spatial Competition Analysis, *Climate Policy*, 8, 467-493, 2008.
- Sanin M.E. A Note on the Effect of the Adoption of Clean Technology in Tradable Emission Permits Prices - Forthcoming *Environmental and Resource Economics*.

## UpNext

### Recent events

**June 1, 2010:** Conference "*Corporate Social Responsibility: From Compliance to Opportunity?*" co-organized with the Institute Caisse des Dépôts for Research for the launching of the book edited by Patricia Crifo and Jean-Pierre Ponsard, École Polytechnique Editions.



**June 11, 2010:** Academic Workshop : « *Les effets de la loi NOME sur le marché électrique français : Echange de points de vue académiques* », co-organized with the CERNA and CIRED.

### Forthcoming events

**October 21, 2010:** Workshop "*Smart Grids*". Co-organized by the Chair for Business Economics (DuPont, GDF-Suez, Lafarge, and Unilever) and Chair for Sustainable Development École Polytechnique-EDF. The workshop will bring together the economists' view and the industrial perspective on the following topics: (i) Technological impact and advance to sustain smart grids projects, (ii) Integration of renewable power, (iii) Demand changes.

**November 17, 2010:** Workshop "*Consumers' Perception and Regulations of Genetically Modified Organisms (GMOs)*" Co-organized by INRA and the Chair for Business Economics.

The workshop will provide a critical overview of the different methods used to study consumers' attitudes towards GMOs through several aspects.

- Which kind of information about consumers' thinking the different methods convey?
- How to improve the empirical methods used?
- How practitioners (producers, retailers, regulators) can analyse the information provided by these different methods?

Workshop "*Hydropower as a Solution to Africa's Energy Problem in the Context of Climate Change*" (**date to be announced**)

It is generally accepted that energy consumption and economic development are closely linked. This is particularly evident in Africa. Much of its rural population relies on traditional biomass for cooking and heating. A common perception is that the inefficient and unreliable nature of Africa's power sector has been impeding Africa's economic development. The invited speakers will address the following main themes: Climate Change, the Energy Problem in Africa, and the Role of Hydropower in Africa.