

**The Economics of Climate change: policies in theory and in practice  
Business implications**

**Enseignant : Christian de Perthuis**

**Statut du cours :** UE fondamentale

**Course Syllabus :**

**Session 1 – Introduction: The climate change issue in the context of sustainability**

We introduce this course presenting the climate change issue as a textbook case of sustainability and its four main components. In practice, this leads to new trade-offs for public and private decisions. The outline of the course and its organization are then detailed.

**Session 2 - The end of free carbon**

Global warming is a perfect illustration of the “Tragedy of the Commons”: for centuries, the world economy has been operating in a free carbon environment, which has led to huge atmospheric GHG accumulation. The different ways for pricing such an externality are then presented, as the choices made to give a price to the carbon with the entry into force of the Kyoto Protocol and the EU-ETS in 2005.

**Assigned readings:**

- IPCC (2007), *Forth Assessment Report (WG 1 and 2 – Executive Summary)*
- Hardin, G. (1968), *The Tragedy of the Commons*, Science, volume 162, décembre 1968, PP1243-1248 (downloadable on the web).

**Session 3 – The Kyoto protocol framework: Emissions reduction commitments of Annex-B countries**

This session presents the international negotiation on climate which began in 1992 and describes the Kyoto protocol framework. After having discussed the consequences of the US retreat in 2001, we analyze the situation of Annex B countries with a focus on Europe and its strategy for the first commitment period (2008-2012).

**Assigned readings:**

- IPCC (2007), *Forth Assessment Report (WG 3 – Executive Summary)*
- Guesnerie, R. (2003), *Kyoto et l'économie de l'effet de serre*, Rapport au Conseil d'Analyse Economique, La Documentation Française, PP.9-21 et 77-81, (downloadable on the CAE website).

**Session 4 – The Kyoto protocol framework: The project-based mechanisms**

In addition to the trading of GHG emission permits, the Kyoto protocol has planned two other flexibility tools based on project mechanisms. This session investigates the development of these mechanisms and their use by the corporate sector in Europe. We end this session by a presentation of the French Domestic Offset Project Policy launched in 2007.

**Assigned readings:**

- Mission Interministérielle sur l'Effet de Serre (2005), *Guide des mécanismes projets prévus par le protocole de Kyoto*, Tome B, (downloadable on the MIES website) + main figures from Rizo data-bank
- All the students have to read the Tome A of the MIES Guide.

**Session 5 – The economics of Cap and Trade schemes: a microeconomic approach**

This session provides microeconomic tools to analyze the functioning of cap and trade mechanisms. It is based on an exercise simulating the reactions of a two-sector economy with different abatement cost curves to several measures: Introduction of a CO<sub>2</sub> tax; regulated GHG emission capping; cap and trade system; cap and trade system with an international CO<sub>2</sub> market.

**Assigned readings:**

- Godard, O. (2003), *L'allocation des quotas d'émission de CO<sub>2</sub> aux entreprises au regard de l'analyse économique*, Ecole Polytechnique, Chaire de Développement durable, Cahier N°2003-008, (downloadable on the Polytechnique website).

**Session 6 – The European ETS: General framework, allocation rules and emissions reduction**

This session starts with a description of the EU-ETS framework. It continues with a presentation of the allocation rules among countries and industries with a specific focus on new installations and on the closure of old installations. It ends with an analysis of the emissions reductions obtained during the first period of the market and the ones aimed to be achieved on the second period.

**Assigned readings**

- European Commission, *EU-Emissions Trading, An open Scheme promoting global innovation*, EU Publications Office, September 2005 .
- Grubb, M. and Neuhoff, K. (2006), *Allocation and Competitiveness in the EU Emission Trading Scheme: Policy Overview*, *Climate Policy*, Volume 6, Issue1, PP.7-30.

**Session 7 – Carbon price signals sent by the European ETS**

Thanks to the liquidity and the reliable institutional framework of the EU-ETS, the European CO<sub>2</sub> price has become an international reference. This session describes the organization of this market and provides a detail analysis of the spot and forward prices covering different market periods. It examines further the question of the links between the EU price and the international CO<sub>2</sub> Kyoto price.

**Assigned readings**

- Fages, E. *European CO<sub>2</sub> Market, SG, Commodities Research*, August 2007
- Ellerman, D & Büchner, B (2007), *Over-allocation or abatement ?*, MIT memo

**Session 8 – Non Kyoto CO<sub>2</sub> markets**

This session describes the main local or regional initiatives aimed at pricing the GHG inside the US. After having listed the main known initiatives we present in details 3 experiences: the Chicago Climate Exchange already in operation, the RGGI initiative on the Eastern coast and

the California scheme. We discuss then the question of a federal emission cap and trade scheme.

**Assigned readings:**

- Ambrosi, P & Capoor, (2007), *State and Trends of Carbon Finance*, World Bank
- MIT, (2007), *Assessment of US Cap and Trade Proposals*, Report N°146.

**Session 9: International climate policies cooperation after 2012**

The post-2012 issue is full of uncertainties, but a return to the free carbon economy prevailing before the Kyoto protocol is very unlikely. This session discusses the condition of a “Kyoto plus” agreement which would include larger commitments from countries, industries, regional areas. It shows the decisive role of a deeper cooperation between the UE and the US to progress in this direction.

**Assigned readings:**

- Höhne, N & Den Elzen, M & Weiss, M, (2006) *Common but differentiated convergence : a new conceptual approach to long-term climate policy*, in Climate Policy Vol-6, Issue 2.
- Stern, N (2006) *The Economic of Climate Change*, Chapters 21-22.

**Session 10: Voluntary approaches and carbon neutrality**

In addition to compelling their obligations from existing schemes, private actors may engage voluntary approaches to reduce and compensate their GHG emissions. This session studies these approaches conducted by companies, local or central government, NGOs or citizens. It gives a direct feedback from the carbon neutrality project management of Caisse des Dépôts and provides the students with all the tools they would need if they wished to reduce or eliminate their own carbon footprint.

**Assigned readings:**

- Hoffman, AJ, (2005), *Climate Change Strategy : The Business Logic behind Voluntary Greenhouse Gas Reductions*, Working Paper, Michigan University
- Belassen, V & Leguet B (2007), *Les démarches de compensation volontaire de carbone*, Note d'études de la Mission climat N°11.