Environmental Economics

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1 Course's objectives & content

This course explores some of the models used in microeconomics and game theory to deal with environmental issues. The course is particularly focused towards economic instruments to regulate pollution from both positive and normative points of view. The course is structured in several parts:

1. **Introduction**. Provides an overview of both environmental issues and environmental economics, including topics not covered at large in this course
2. **Environmental regulation**. Presents the main mechanisms of environmental regulation (taxes, standards, permits markets, compensation schemes etc.) and key elements to compare these mechanisms.
3. **Environmental regulation under uncertainty and imperfect competition**. Reassesses the efficiency of environmental regulation tools under uncertainty and under imperfect competition.
4. **Sharing a polluted river through environmental taxes**. Several agents located along a river generate residues or pollutants coming from agricultural, biological and industrial waste. River pollution is a negative externality: when an upstream country pollutes a river, this creates external cleaning costs for downstream countries. Several taxe rules are given to determine the division of the total pollutant-cleaning cost among of the agents.

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5. **Sharing a clean river through compensation schemes**. Several agents (countries, farmers, cities) share water from a river. Each agent enjoys a benefit function from consuming water up to a satiation level. A fair river sharing problem is a fair division problem in which the waters of a clean river has to be divided among agents (countries) located along the river. Each agent enjoys a benefit function from consuming water. It differs from other fair division problems in that the resource to be divided - the water - flows in one direction - from upstream countries to downstream countries. To reach an optimal consumption plan, it may be required to limit the consumption of upstream agents. This chapter investigates what kind of monetary compensation schemes are acceptable for the upstream agents.

6. **Data sharing in the REACH regulation** A new implementing regulation adopted by the European Commission defines more clearly what the terms ?fair, transparent and non-discriminatory' mean for data sharing in the REACH Regulation. Discussions on sharing data must take place before joint registration when a substance is manufactured or imported by more than one company. This data sharing process take place in a substance information exchange forums (SIEFs), which were used for phase-in substances that were pre-registered. This chapter investigates several fair methods to share the total cost of the information within a SIEF.

Altogether, the course will bring discussion elements to several questions: How pollution arises? How should the government set taxes, environmental standards and/or constraints on polluters? How the government should behave when not knowing how costly depolluting is? What environmental regulation should be in non-competitive sectors? What are the consequences of regulating pollution somewhere but not everywhere? How to share the tax burden among agents? Who should be liable for environmental damages? How to share the benefits of cooperation on international rivers?

2 Prerequisites

Students should be familiar with the core notions studied in microeconomics, public economics and (cooperative) game theory taught during previous years. However, some course reminders will be carried out if necessary.

3 Practical information

This is a 4 week-course, typically with two 3 hours lectures each week.

Evaluation will be based on students' presentation of a pool of paper on a subject. Students will typically have to present core ideas and models and establish research paths they would follow on this subject.

4 Bilbiography

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