Climate and Energy

Course Name :	Climate and Energy
Degree :	DEEQA
Teacher(s) :	Stefan Ambec
Semester :	2
Teaching Assistant :	
Course hours Nb:	15
Tutorials hours Nb:	0

OBJECTIVES :

Climate change is the greatest market failure the world has seen. Economic growth is coupled with the combustion of fossil energy, which, in the long run, modifies the climate and our ecosystems. Tackling climate change requires decoupling economic growth and the use fossil energy by decarbonating our energy mix. We need to invest in renewable sources of energy, to improve energy efficiency, to stop deforestation, to move to cleaner transportation, to reconsider international aid and trade.

The aim of this class is to introduce PhD students to the research frontier in the economics of climate and energy. The focus will be mainly on the transition to decarbonated sources of energy such as solar or wind power. It requires designing climate mitigation policies – such as carbon taxes or feed-in tariffs - and reorganizing the energy sector – regulate electricity provision, transmission, access to the gird, and competition through better market design. The class is at the intersection of two fields in economics: environmental and resource economics, and industrial organization.

Each class will be divided into two parts. In the first part, a topic is introduced by the teacher: research questions, empirical evidences, public policies, mains results. Students are required to read a research paper on that topic for the next class, to write a referee report on that paper and to discuss it during the second part of the next class.

REQUIREMENT :

Good knowledge of microeconomics, standard econometric methods (both reduced form and structural), and basic mathematics for economists.

TEXTBOOKS :

Lecture notes and papers will be posted on Moodle.

GRADING POLICY :

Two referee reports (two or three pages each) and participation in class.

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OUTLINE

Class 1: Energy transition and electricity markets
Reading: Ambec, S. and C. Crampes (2019) Decarbonizing electricity generation with intermittent sources of energy, *Journal of the Association of Environmental and Resource Economists* 6(6): 1105-1134.
Paper to be discussed next class: Reguant, M. (2019) The Efficiency and Sectoral Distributional Implications of Large-Scale Renewable Policies, *Journal of the Association of Environmental and Resource Economics*, 6(1): 129-168.

Class 2: Fossil fuel
Reading: Covert, T., M. Greenstone and C. Knittel (2016) Will we ever stop using fossil fuels? *Journal of Economics Perspective*, 30(1):117-138.
Paper to be discussed next class: Anderson, S., R. Kellog and S. Salant (2018) Hotelling under Pressure, *Journal of Political Economy*, 126(3) 984-1026

Class 3: International Environmental Agreements
Reading: Barret S. (1994) Self-enforcing international agreements, *Oxford Economic Review*, 878-894 + Nordhaus, W. (2015) Climate Clubs: Overcoming free-riding in international climate policy, *American Economic Review* 105(4) 1339-1370.
Paper to be discussed next class: Harstad, B. (2016) The Dynamics of Climate Agreement, *Journal of the European Economic Association* 14(3): 719-52.

Class 4: Electricity pricing and network pricing
Reading: Joskow P., and J. Tirole (2000) Transmission rights and market power on electricity power networks, *RAND Journal of Economics*, 31(3): 450-487.
Paper to be discussed next class:
Ito, K. (2014) Do Consumers Respond to Marginal or Average Price? Evidence from Nonlinear Electricity Pricing, *American Economic Review*, 104 (2): 537-63.
or
Fowlie et al. (2020) Default Effects, Follow-on Behavior and Welfare in Residential Electricity Pricing Program, *forthcoming REStud*

Class 5: Behavioral economics in energy consumption
Reading: Slides

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