



# **Electricity and Gas: Market Design and Policy Issues**

SPM 9541

Laurens de Vries & Aad Correljé

# Today

- Introduction to the class
  - background, teachers, structure, method, evaluation
- Essay assignment
- Electricity market simulation game

# Course background

- Electricity and gas are no 'natural' markets, due to residual monopoly functions
    - need to be created and regulated
  - Wrong design can have disastrous consequences (California)
  - However, few people understand these sectors due to their complexity
- therefore a prime TPM subject!

# Learning objectives

To understand electricity and gas market design:

- A framework for analyzing and structuring electricity and gas markets
- The application of the market design framework to real-world cases

To be able to analyze policy issues:

- In-depth understanding of current issues and their relationship to the socio-technical structure of the system

# Course objectives - detailed

To learn:

- how the electricity and gas systems physically work
- which functions need to be performed
- how these functions can be organised institutionally
- different types of market models
- how this is done currently in key countries
- how to identify inconsistencies in the design
- current policy issues with respect to market design

# What do you hope to get from this class?

# Teaching methods

- Interactive lectures
- Discussion
- Essay + feedback
- Simulation game
- Reading

# Teachers

- Laurens de Vries
  - module manager
  - electricity markets
- Aad Correljé
  - gas markets
- Guest lectures are to be confirmed





# Methods

- Lectures
- Essay
- Other (short) assignments
- Simulation game
- Excursion

# Evaluation

- Written exam: January 28, 14:00 (2/3 of grade)
- Essay
  - 1/3 of grade
  - deadline: January 7
  - turn in digital copy and paper copy (in class)

# Essay assignment

- Write an essay about an electricity and/or gas market issue.
- No more than 3500 words
  - If you write it together, size is 3500 words x number of authors (max. three authors)
- Choose from list of topics
- Or choose your own topic – obtain approval from Laurens or Aad
- Write an argument pro or con a policy proposal.

# Essay topics (1)

- Electricity/gas market integration with neighboring countries: what are the issues, what are possible solutions?
- Electricity/gas interconnector development: what is the need, how to create the necessary investments, how to regulate?
- Investment in power plants versus climate goals: in which technology to invest, how to regulate, how to deal with uncertainties, how to deal with path dependence?
- Carbon capture and storage: options, challenges, how to regulate?
- Instruments for stimulating renewables: goals, relation to climate policy and e and g markets, evaluating alternatives

# Essay topics (2)

- The impact of the “3rd package” of EU Energy market regulation on the gas market regulation, as regards the actor network, responsibilities and mandates.
- TSO or ISO: does it matter? And how?
- Shifting supply patterns in natural gas in the medium term? What challenges, what solutions?
- Exemptions for large scale gas infrastructures: What criteria are accepted?
- Underground gas storage: A patchwork of governance in the U?
- Comparison US/EU regulation and investment: pipelines
- Comparison US/EU regulation and investment: storage
- Comparison US/EU regulation and investment: LNG terminals

# Essay outlines

- Essay outline:
  - problem statement, scope, approach
  - outline (section titles, brief description)
  - expected (type of) conclusions
  - references

# Essay structure

- *Structured* analysis of an issue or policy argument
- Based on literature/empirical information
- Introduce problem or question clearly
- Build up the argument systematically
  - include counterarguments
- Use explicit evaluation framework and motivate the choice of this framework
  - what are the goals, whose goals are they, why are they relevant, how do you operationalize them?
- Draw sharp, clear conclusions that answer the main question
  - make sure that they are fully supported by the text

# Evaluation criteria for the essay

- Quality of the argumentation
- Structure
- Reference to sources
- Use of scientific literature
- Originality



# Essay schedule

- Submit outline (1 page) on November 19
- Feedback on November 26
- Submit draft on December 10
- Feedback on December 17
- Final essay due on January 7