# ECN 371:
# Environmental Economics

*arken.nmbu.no/~eiriro/ecn371/*
*or access via ClassFronter*

Course resp.: Eirik Romstad  *eirik.romstad@nmbu.no*

Mon 10:15-12.00, Wed 08:15-10:00
U322 (Clock bldg, 3rd floor)

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## Lecture 1:
## Course introduction

- Objectives
  - ▶ overview of the course objectives
  - ▶ provide a theoretical frame
  - ▶ provide key information about practical matters
  - ▶ motivate for your input (I offer an opportunity for you to learn - you do the learning)

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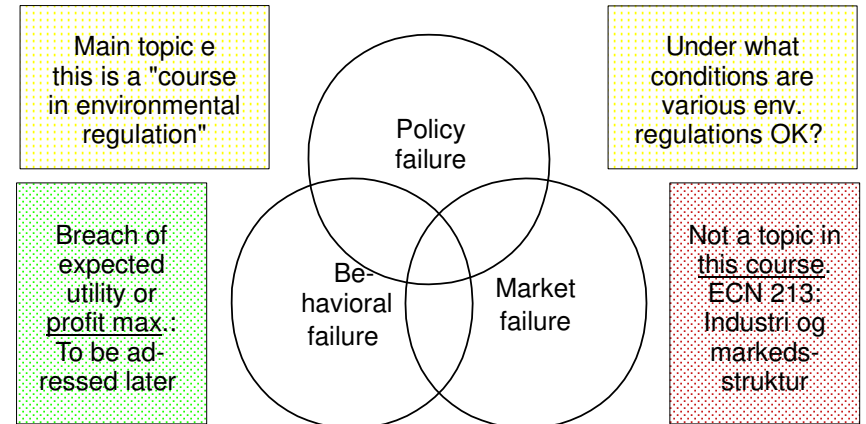*http://www.nmbu.no/hh/*

## Goals for the course

- Create insights in environmental and resource economics on an advanced level

- Make students capable of analyzing problems and the effects of using various policy instruments to resolve these problems

- Course focus: theory and practical use of policy instruments
  - ▸ provide a theoretical foundation
  - ▸ point to limitations and challenges
  - ▸ practical relevance

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## Theoretical frame (1)

Reasons things do not go as planned/expected:



Main topic e this is a "course in environmental regulation"

Under what conditions are various env. regulations OK?

Breach of expected utility or profit max.: To be addressed later

Not a topic in this course. ECN 213: Industri og markedsstruktur

Policy failure

Behavioral failure

Market failure

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## ... theoretical frame (2)

Participants in economy: game theory terminology

- agents: anyone who is part of the economy
  - ► env.econ: polluters, providers of public goods, etc.
  - ► in more general terms: individuals, households or firms

- principal: the policy maker who seeks to induce agents to behave to maximize overall welfare
  - ► env.econ: the regulatory agency / environmental protection agency

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## ... theoretical frame (3)

Principal - agent modeling (or its exstension): Resource allocation mechanisms

- strong focus on asymmetric information
  - ► agents: the best informed (about own type or actions)
  - ► principal
    - ➡ the least informed about agents' characteristics
    - ➡ seeks to max social welfare (benign regulator)

- how to design regulations under incomplete information

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## ... theoretical frame (4)

- Agents are assumed to behave as homo economicus, aka. "econobot"
  - ► does not really exists

- ... but as a model construct the "econobot" is a useful stylized tool
  - ► models are (by definition) a simplified re-construction of what one sees to enable analysis
  - ► ... so also with the behavioral assumptions of the econobot

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## ... theoretical frame (5)

- Examples of observed behavioral failure = choices agents make inconsistent with expected utility or profit maximization

- Possible explanations:
  - ► other than exp. max. behavior govern behavior (= rejection of the econobot)
    - ➜ reciprocal behavior / "warm glow" / altruism
  - ► inability to process info. (limited rationality)
    - ➜ the information is so vague that agents fail to seek their objective of max $U$ or $\pi$
  - ► ... or both may be the case

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## ... theoretical frame (6)

- Environmental problems are externalities
  - ► unintended side effects of agent actions
    - ➜ the agent(s) causing the problem: no ill will or intended harm onto other agents
    - ➜ may be reinforced by lack of knowledge about side effects
  - ► arise because of insufficient incentives for the agent(s) to correct their actions

- "Obvious solution": create incentives for agents to behave as desired

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## ... theoretical frame (7)

- Complicating features ... more to policy or behavioral failure than insufficient incentives

- Transaction costs
  - ➜ may render some direct policies too costly
  - ➜ "solution": looking at institutions more closely (carry over to organizations literature)

- Behavioral "failures"
  - ➜ cognitive skills of agents (and principals)
  - ➜ impacts of norms (social aspects) on behavior

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## Environmental policy (1)

Important elements when formulating environ-
mental policy

- Understand its physical characteristics
- Understand what characterizes the agent
  - ▸ what motivates behavior?
  - ▸ types of rationality/behavioral assumptions
- Understand the characteristics of the social
  system/economy - or the institutions
  - ▸ who acts: firms, households, individuals
  - ▸ who has the rights: victims or polluters
  - ▸ transaction costs

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## ... environmental policy (2)

Policy has intended and unintended impacts --
awareness of the implications

- Understand economic equilibria
  - ▸ while the economy rarely is in equilibrium,
    understanding equilibria concepts helps
    explain
    - ➜ entry/exit
    - ➜ adjustments at the margin
- Understand that models are simplifications of
  the "real world"
  - ▸ ability to differ between simplifications that
    are robust and that are not

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## Elements of the course (1)

- Lectures
  - ► theory + integrated demos/in class exercises
- Exercises
  - ► not to be handed in
    - ➜ suggested answers on course web page
    - ➜ try without looking at answers, but don't struggle too long - your time is valuable
- Cases - replace the former group term paper:
  - ► students write many other term papers ($\Rightarrow$ marginal learning impact falls)
  - ► students spend to much time on non-econ matters (cases $\Rightarrow$ exposure to more issues)

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## ... elements of the course (2)

- Case studies
  - ► in groups of 3-4 students you are to look at a specific issue, and present the issue to the rest of the class
  - ► summarize and propose solutions
  - ► each group will present 3 case studies
  - ► each presentation ca. 15 min $\Rightarrow$ 15 min for in class discussion after presentations led by a discussant group (5 min)
- Participation in the case studies are required (a pass on all needed to be allowed to take the exam)

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## ... elements of the course (2)

- Student participation
  - ► prepare for lectures by reading suggested readings
  - ► form informal groups
    - ➜ to discuss aspects you find interesting or controversial
    - ➜ to work together on exercises or old exams
    - ➜ because it is more fun than working by yourself
- Seek out alternate sources of literature

- Take responsibility for your own learning (nobody else will)

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## Practical matters (1)

- Course web will provide (most) info on lecture topics, links to lecture overheads, information on working on the group term paper, etc.
  - ► (I aim to produce) all lecture overheads at least 2-3 days before each lecture on the course web: *arken.nmbu.no/~eiriro/ecn371/*
    - ➜ ClassFronter only for you to identify names/e-mail addresses of fellow students in the course
    - ➜ hand ins via e-mail to *eirik.romstad(at)nmbu.no*

- "Open door policy" for short questions, otherwise by appointment only (e-mail)

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# ... practical matters (2)

- The case studies
  - group formation/auction (deadline on WEB) - failure: may be refused to take the course
  - presentation dates on course WEB
  - discussiant groups

- Purpose: apply economic approaches form the course onto environmental problems
  - focus: the economic application (use economic theory to solve a problem)
    = stylize the argumentation and discuss weaknesses of base assumptions
  - NOT a lengthy description of the problem

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# ... practical matters (3)

- The exam
  - date: see course WEB
  - format: 3 hours written, A1: no calculator, no books or notes - in line w/past years exams
  - again: emphasis on the economics
  - ... and read the questions

- Other courses
  - "pre req 0": one term of MSc level economics
  - "pre req 1": intro level env.res.econ (NMBU ECN 170)
  - "pre req 2": ECN 271 (valuation/BC-anal)
  - follow ups: ECN 372 Climate economics

17:18

# Take home lessons

- ECN 371: a course in environmental **economics**

- Start working from day one
  - ▸ prepare for lectures
  - ▸ form informal groups and work together on excercises, former exams, and to talk on matters of relevance
  - ▸ use the case studies as an extra way of becoming part of a group
  - ▸ use the course WEB

- Take responsibility for your own learning

- Don't forget to have fun :-)

18:18