

## ECN 371 - Environmental Economics

### 09:00-12:00 - May 19, 2011

**A1:** No books except English dictionary, no other aiding tools.  
This exam consists of 4 questions, for a total score of 100 points.  
All questions are to be answered. You may answer in English or Norwegian.

#### Question 1 (20 points)

- (a) Explain why an optimally set emission level also is a subset of the collection of cost effective emission levels. **(10 points)**
- (b) Show how an optimally set emission tax or optimally set aggregate emission quota where permits are tradable give the same distribution of abatement across polluters. **(10 points)**

#### Question 2 (20 points)

- (a) Explain why  $N+1$  reverse price (Vickrey style) auctions assign contracts to the least cost providers, and why truthful revelation is a weakly dominant strategy for such auctions. **(10 points)**
- (b) Suppose that contracts for biodiversity conservation in forests have been allocated using reverse  $N+1$  price auctions. Then, suppose that forest management contracts for carbon sequestration also are to be allocated using the same type of mechanism. Some argue that an area already under a biodiversity contract should not be allowed to participate in the "climate auction", while others argue they should. What is your position on this issue? Briefly justify your answer. **(10 points)**

#### Question 3 (20 points)

- (a) Green taxes have been launched as a way of simultaneously reducing environmental damages and creating financial space for lowering other distortionary taxes, primarily labor taxes. Discuss the validity of this double role of environmental taxes, and suggest how problems – if any – should be dealt with. **(10 points)**
- (b) Environmental issues have this troublesome feature of gradually being revealed, both in the sense of damages being more severe than initially perceived (for example climate), or when it comes to new pollutants emerging. Environmental issues are hence continuously changing, and environmental policy is formulated under incomplete information. What are the implications of incomplete information for how environmental policies should be designed and implemented? **(10 points)**

#### Question 4 (40 points)

The country *Endof* can be described as a "small and open economy". The policy makers in *Endof* consider environmental policies to reduce domestic damages from emissions. About half of the emissions originate from domestic economic activity in *Endof*, while the other half is imported from other countries collectively called *Shipout* countries. Environmental damages in *Shipout* are negligible from own and imported emissions, implying that the *Shipout* countries do not have any current environmental policies to deal with these emissions.

*Endof* only has jurisdiction of its own economy. The government in *Endof* therefore primarily considers domestic policies, even though it knows there could be cost savings from making some of the abatement take place in *Shipout*. Representatives from *Shipout* are also aware of this, and propose to take some of the abatement in their countries in exchange for some yearly payments. The government of *Endof* sees this as an interesting opportunity, but it is uncertain about how to deal with this offer.

You are called in as an external expert with the following tasks:

- (a) The offer from *Shipout* includes options for installing environmental policies in *Shipout*. What kind of policies should *Endof* suggest that the *Shipout* countries put in place? Briefly justify your answer. **(20 points)**
- (b) Assume that *Shipout* accepts the policies proposed in (a). What kind of domestic policies in *Endof* would then be preferable from *Endof's* perspective when the primary focus is on cost effectiveness? Briefly justify your answer. **(10 points)**
- (c) What kind of problems are likely to emerge in the negotiations between *Endof* and *Shipout*, and how would you suggest to resolve these problems? If some problems cannot be resolved, what are the implications for the choice of domestic policies in *Endof* (i.e., what changes are needed in your answer in (b))? **(10 points)**

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