

## Practice exam in ECN 371 - Environmental Economics

### Date of exam ...

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

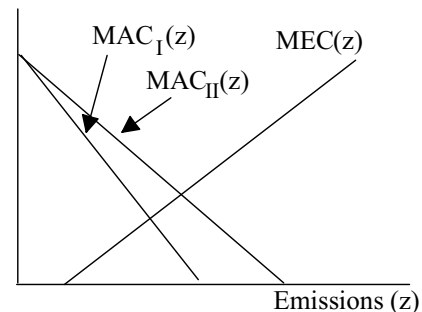
#### Question 1 (20 points)

Coase emphasized that externalities are reciprocal phenomena. Thus, letting the victim carry responsibility would in many situations be the most efficient solution. Furthermore, it could also be better to have the victim move than forcing the polluter to abate.

- (a) What does it mean to say that externalities are reciprocal phenomena. **(5 points)**
- (b) If a firm moves to an area that is exposed to some pollution, emissions and abatement costs may increase.

The figure to the right illustrates the situation before ( $MAC_I(z)$ ) and after ( $MAC_{II}(z)$ ) the non-polluting firm has moved in.

How does the movement of the firm influence the optimal level of abatement? What are the efficiency losses if this change is not reflected in the location specific environmental policy (you may use an emission tax to illustrate your point)? **(15 points)**



#### Question 2 (20 points)

Using the information in question 1 on the relocation of a firm from a high damage to a low damage area, identify under which circumstances a regulator should motivate firms to move? **(20 points)**

#### Question 3 (20 points)

- (a) What are the necessary criteria for a resource allocation mechanism to work as intended, and . **(10 points)**
- (b) Incentive compatibility and Pareto optimality are rarely attainable at the same time. Which of these two conditions are most important when designing regulations, and why? **(10 points)**

**Question 4 (40 points)**

Current regulations to reduce nutrient runoffs from Norwegian agriculture emphasize payments (subsidies) for certain agronomic practices like catch crops in grains, vegetation zones along waterways, catch crops, and reduced tillage in grain production. In addition to these nonpoint measures, there are regulations on when manure can be spread and how manure should be stored (in non-leaching manure storages). Subsidies for reduced tillage are differentiated with respect to the erosion risk from the fields. In certain high risk areas, farmers who do not practice reduced tillage in grain production also have some cuts in their general agricultural payments.

- (a) Discuss the cost efficiency of the current regulations. In your answer recall that transaction costs with the various policy instruments may change their evaluation. When answering this question focus on the principal aspects, not the details of the various regulations. **(20 points)**
- (b) Outline changes in the Norwegian policies for reducing nutrient runoffs from agriculture that would lead to improved overall efficiency and cost efficiency. **(10 points)**

Other sectors than agriculture also cause nutrient runoffs. This is particularly the case for nitrogen and phosphorus from the sewage of dispersed rural dwellings and to some extent to older municipal sewage treatment facilities. The costs of reducing these sewage runoffs are commonly higher than is the case in terms of the equivalent reductions from agriculture.

- (c) What are the implications of this when the objectives of nitrogen and phosphorus runoff policies are improved overall efficiency and increased cost efficiency? When answering, also consider possible impacts of transaction costs and the rights structure. **(10 points)**

NN (sign.)  
(external examiner)

Eirik Romstad (sign.)  
(course responsible)