

# **Environmental Economics**

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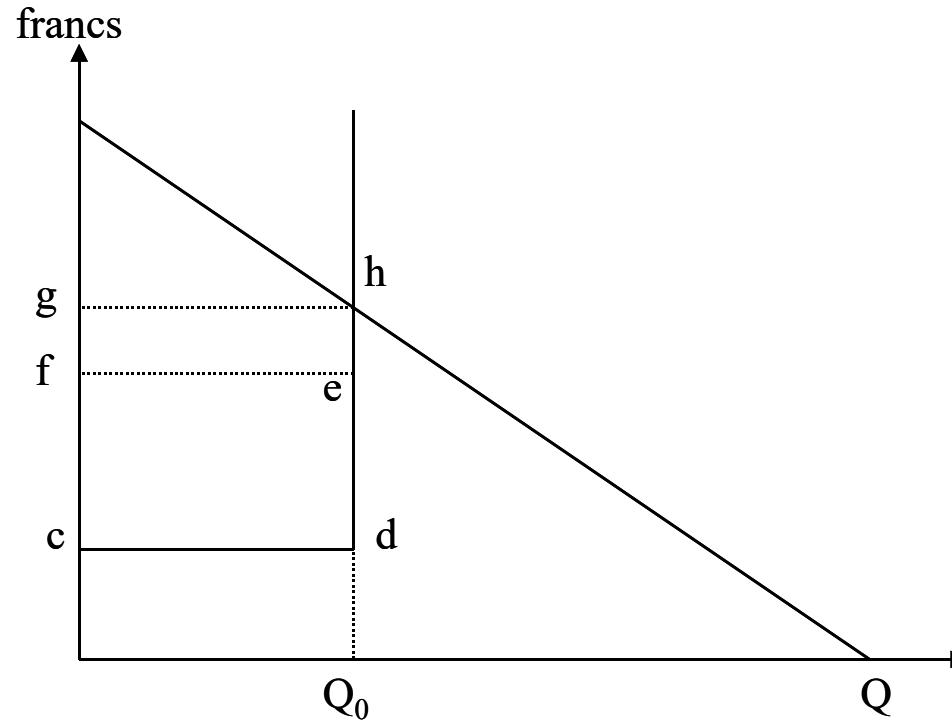
ENV-471

Master semester 2 or 4

Exercises

# PUBLIC CHOICE

# Is doubling a power plant welfare increasing?



The figure illustrates the production costs of an electric power plant and the demand for its electricity

$Q_0$  is the production capacity of the plant

c is constant marginal cost

Surface cdef corresponds to the fixed cost

- 1) What is  $f$  ?
- 2) What is  $g$  ?
- 3) Represent total surplus in the figure above
- 4) Discuss whether it is in the public's interest to double capacity with a second plant identical to the first one (draw a figure)

# Private vs social costs and benefits

	Price per unit
Production costs:	
• labour: 1 worker (2 months)	3,000 / month
• equipment: 1 tractor (depreciation, maintenance, etc.)	3,000 / year
• diesel: 1,000 litres	1.50 / litre
• fertilizer: 500 litres	5.- / litre
Receipts:	
• tomatoes: 10 tonnes	2.- / kg

A farmer wishing to diversify his business, applies to the competent authority for permission to use a plot of land for tomato production. To obtain authorization, he submitted the financial data above.

- 1) Calculate the financial profitability of the activity for the farmer
- 2) Discuss and calculate the profitability from a public point of view, assuming the following:
  - (i) the price of tomatoes includes a subsidy of 1 frs per kg
  - (ii) diesel is taxed at 60 cts per liter
  - (iii) fertilizers seep into the water table, resulting in additional water treatment costs, estimated at 2 frs/litre of fertilizer use
  - (iv) the labour market is alternatively characterized by:
    - full employment or
    - unemployment; unemployed farm workers receive unemployment benefits of 1,500 frs/month