



Environmental Policy and Legislation

4201-431

ENVIRONMENTAL POLICY

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Lecture Topic 8

Lecture notes and further information:
<http://www.uni-hohenheim.de/apo>



Agriculture and the Environment



Agriculture and Environment



- Agriculture affects the environment, concerning
 - Land
 - Water
 - Biodiversity
- Over the last 10-15 years
 - Nitrogen and pesticide loading remained relatively high
 - Risk of soil erosion and resource depletion persists in many regions and countries
 - Improvement in wildlife habitats and landscapes
 - Sinks for greenhouse gases provided by agriculture

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Agriculture and Environment

- Environmental Impacts of Agriculture



The main environmental impacts of agriculture may be characterised through the *beneficial* or *harmful* contribution of agricultural activities to:

- **Soil quality**
(erosion, nutrient supply, moisture balance, salinity).
- **Land quantity**
(area of ecological management of agricultural land).
- **Water quality**
(nutrient, pesticide and sediment runoff and leaching, salinity).
- **Water quantity**
(irrigation consumption, use efficiency, water retention capacity, flood prevention).

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- Environmental Impacts of Agriculture



- **Air quality**
(emissions of dust, odours, ammonia and greenhouse gas, absorption of carbon dioxide).
- **Biodiversity**
(farm and indigenous animal and plant diversity).
- **Wildlife and semi-natural habitats**
(diversity of animal and plant habitats associated with farming).
- **Rural landscape**
(environmental features of areas shaped by farming, including those associated with historic buildings and landmarks; it's more and aesthetic and cultural issue).

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Agriculture and Environment



Agricultural support: what are the linkages with the environment?

- Commodity production linked support often exacerbates pressure on the environment.
- The more a policy measure stimulates increased production, the greater the pressure on the environment.
- A reduction of production-linked support (maybe together with environmentally targeted support) can ease environmental pressure.

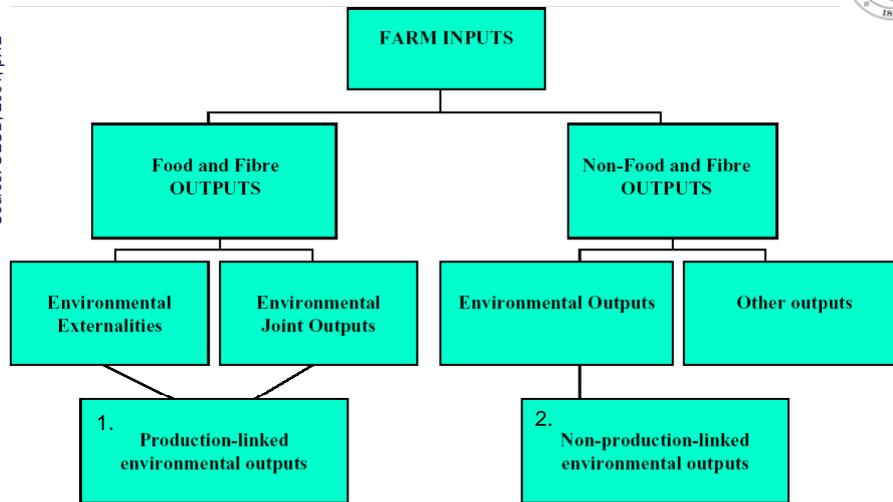
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- Use of Farm Inputs and Environmental Impacts of Agriculture



Source: OECD, 2001, p.12



1: result from the farmer's decision to produce food and fibre

2: produced from a decision by farmers to produce the environmental output

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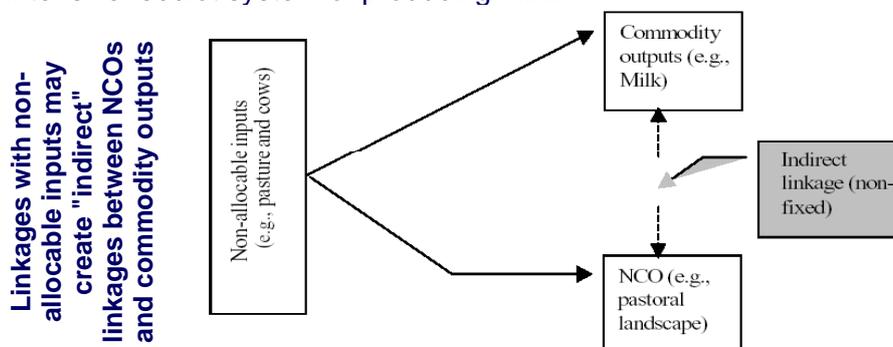
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- Use of Farm Inputs and Environmental Impacts of Agriculture



Indirect linkages between non-commodity outputs and commodity production

E.g.: price incentive to produce milk, in order to preserve a pastoral landscape of which grazing cows are an element, could result in a deterioration of the landscape if farmers choose to move to an intensive feedlot system of producing milk.



Linkages with non-allocable inputs may create "indirect" linkages between NCOs and commodity outputs

Source: OECD (2003): Multifunctionality: The Policy Implications, p.14

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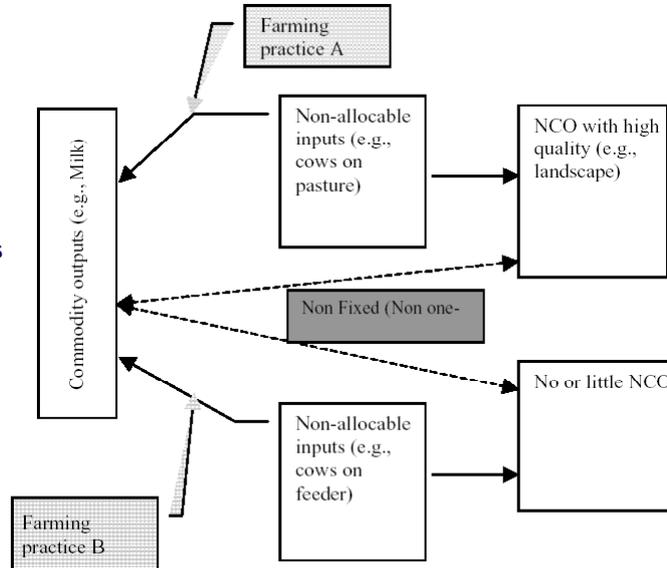
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But:

indirect linkages are not "fixed" because they depend on farming practices



Source: OECD (2003): Multifunctionality : The Policy Implications, p.14

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- General Criteria for Policy Action



- General criteria to determine whether there is a case for any policy action to improve environmental performance:
 1. Is there **evidence** that there is a **demand** to enhance environmental benefits, and/or a **need to reduce** environmental costs currently generated by farmers?
 2. Is it **technically possible** and **economically efficient** to change current farming practices?
 - What are the desired environmental **target levels** ?
 3. Are current farming practices covered by existing farmers' **property rights**?

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- How to choose Appropriate Agri-environmental Policy Measures?



Alternative options to achieve a given environmental objective or outcome may be characterised by the following elements:

- The **environmental target** defined in terms of the level of emissions, farming practices or environmental output.
- The **policy instrument** defined by the type of instrument - incentive (payment) or disincentive (tax).
- The **instrument target** defined by the primary incidence or economic level of application of the instrument.
- The **policy target** defined in terms of the primary incidence or geographical level of application of the policy.

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- Design and Implement Agri-Environmental Measures

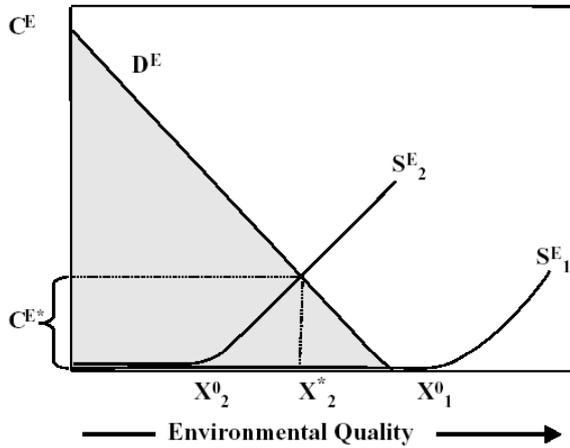


- **production-linked environmental harm** → when farmers' property rights do not cover the prevailing farming practices → the costs of reducing should be at the expense of the farmers.
- **production-linked beneficial environmental outputs** → up to the level where the demand is satisfied at zero additional costs to farmers, there is no reason for any policy action.
- **Some non-production-linked environmental outputs** are amenities linked to farm features. Up to the level where the demand for such amenities is satisfied at zero additional costs, there is no reason for any policy action.
- **Other non-production-linked environmental outputs** are not linked to farm features → satisfied by farmers if appropriate incentives are in place.

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- Agricultural Production and Externality Output



⇒ Economic relationship between agriculture and the associated environmental outcome (externality or output).

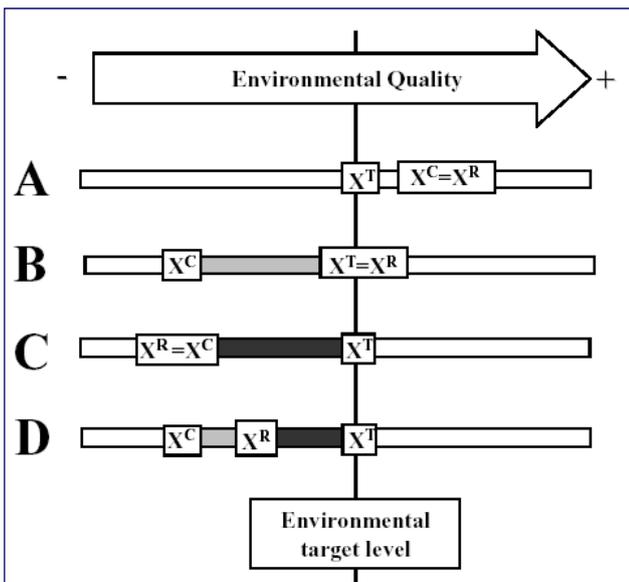
S^E = supply D^E = demand
 X^0 = environmental quality C^E = cost

Source: OECD, 2001, p.47

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- Allocation of Environmental Costs and Benefits



⇒ **Environmental reference levels**

X^T Environmental target
 X^C Current farm practice
 X^R Reference level
 Environmental Charges
 Environmental Payments

Source: OECD, 2001, p.51

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- Agri-environmental Measures/Schemes in the EU



- Designed to encourage farmers to protect and enhance environment on their farmland.
- It provides payments to farmers in return for a service.
- Eg. EU: Co-financed by the EU and the Member States.
- Designed at national, regional or local level.
- Broad objectives:
 - Reducing environmental risks
 - Preserving nature and cultivated landscapes
- Have to go beyond Good Farming Practice (GFP).

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- Measures related to *productive* land management



- Input reduction
- Organic farming
- Extensification of livestock
- Conversion of arable land to grassland and rotation measures
- Undersowing and cover crops, strips and preventing erosion/fire
- Actions in areas of special biodiversity/nature interest
- Genetic diversity
- Maintenance of existing sustainable and extensive systems
- Farmed landscape
- Water use reduction measures

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- Measures related to *non-productive* land management



- Set aside
- Upkeep of abandoned farm land and woodland
- Maintenance of the countryside and landscape features
- Public access