Ecological Debt Agriculture

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Ecological Debt of Belgium as a result of fodder commodity production abroad

Overview of presentation

1. Ecological damage caused by fodder crop production
2. Material Flow Analysis of fodder commodities for the Belgian livestock sector
3. Land requirement abroad for the Belgian livestock sector
4. Assessing Ecological Debt of Belgium as a result of fodder crop production abroad for its livestock sector
5. Origin and economic mechanisms behind the international context of Belgian agriculture
6. Conclusions

Definition of Ecological Debt

The ecological debt of country A consists of

- the *ecological damage* caused over time by country A in other countries or in an area under jurisdiction of another country through its production and consumption patterns
- the *ecological damage* caused over time by country A to *ecosystems beyond national jurisdiction* through its production and consumption patterns
- the *exploitation* or use of ecosystems and *ecosystem goods and services* over time by country A at the expense of the *equitable rights* to these ecosystems and ecosystem goods and services by other countries or individuals

Ecological Debt of Belgium as a result of fodder commodity production abroad

Focus on the Belgian livestock sector

Facts:

- high self-sufficiency rate for meat and milk products
  → production of surpluses

- insufficiency of Belgian arable land to maintain current livestock production
  → import of fodder crops

Ecological Debt of Belgium as a result of fodder commodity production abroad

Focus on the Belgian livestock sector

Research questions:

- How much arable land is cultivated abroad for the Belgian livestock production?
- Where does the fodder crop production take place?
- What is the impact on the environment of the fodder production?
- Is the use of this arable land abroad at the expense of equitable rights of (farmers in) countries in which production takes place?

1. Ecological Damage

Subdivision according to type of interference with the environment

1. Pollution
2. Depletion
3. Degradation

1. Ecological Damage caused by fodder crop production

A. Interference with SOIL ecosystems

Degradation as a result of

- Salinization
- Erosion

Depletion of

- Crop nutrients
- Aquifers

1. Ecological Damage caused by fodder crop production

B. Interference with AQUATIC ecosystems

Pollution as a result of

- Pesticides
- Fertilizers

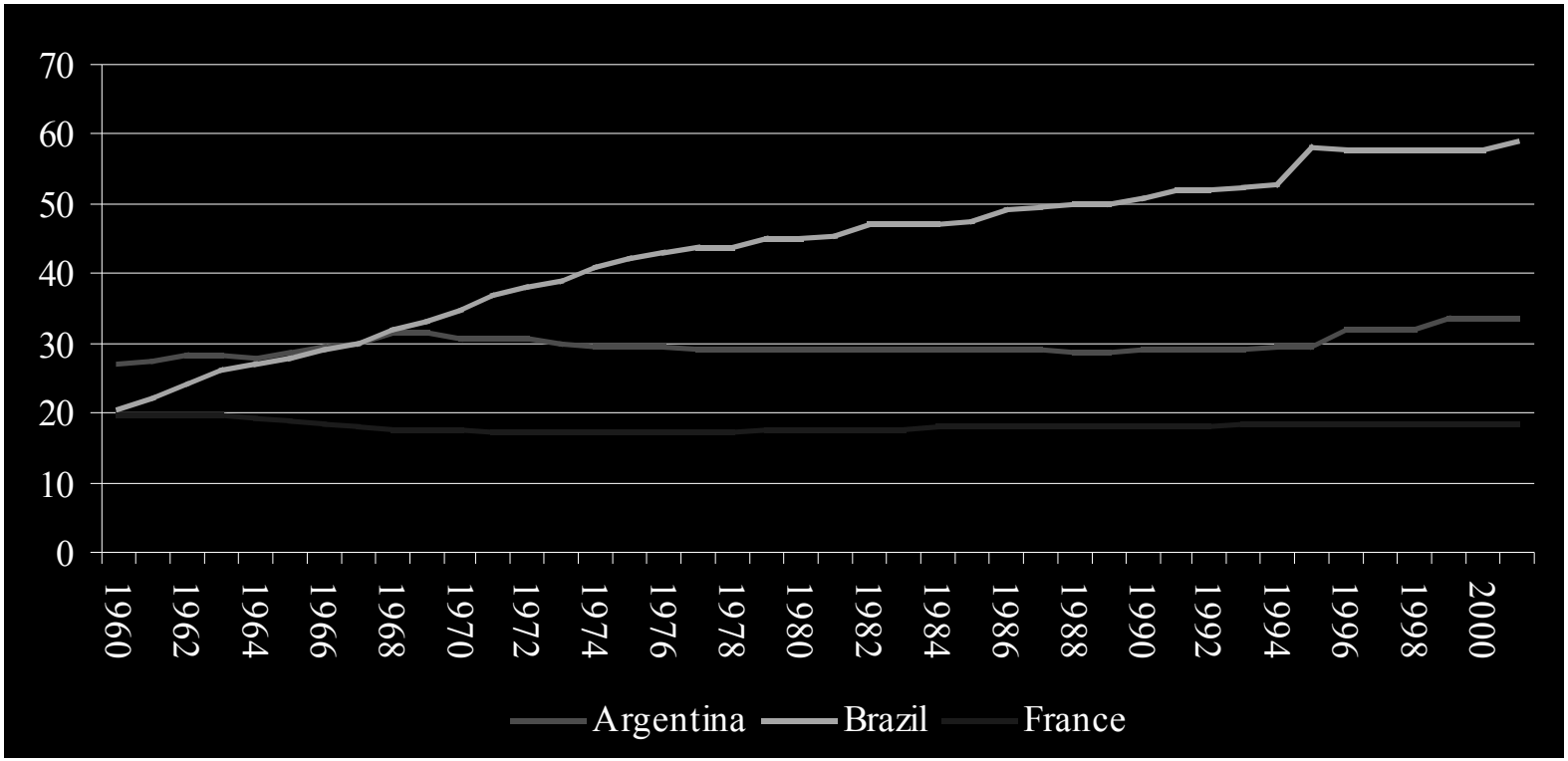
1. Ecological Damage caused by fodder crop production

C. Interference with FOREST ecosystems

Degradation of forests which implies:

- loss of biodiversity
- loss of CO_2 sequestration capacity
- loss of overall forest ecoservices

Evolution of arable land (million hectares) in France, Brazil and Argentina



1. Ecological Damage caused by fodder crop production

D. Ecological Damage caused by GMOs

GMOs as fodder crops: *soy*, *corn*, *rapeseed* and *cottonseed*

Environmental impact of GMO fodder crops:

- Increase in herbicide application → increased water pollution
- Disappearance of beneficial organisms
- Crossing with wild relatives → herbicide tolerance in weeds

2. Material Flow Analysis of fodder crops for the Belgian livestock sector

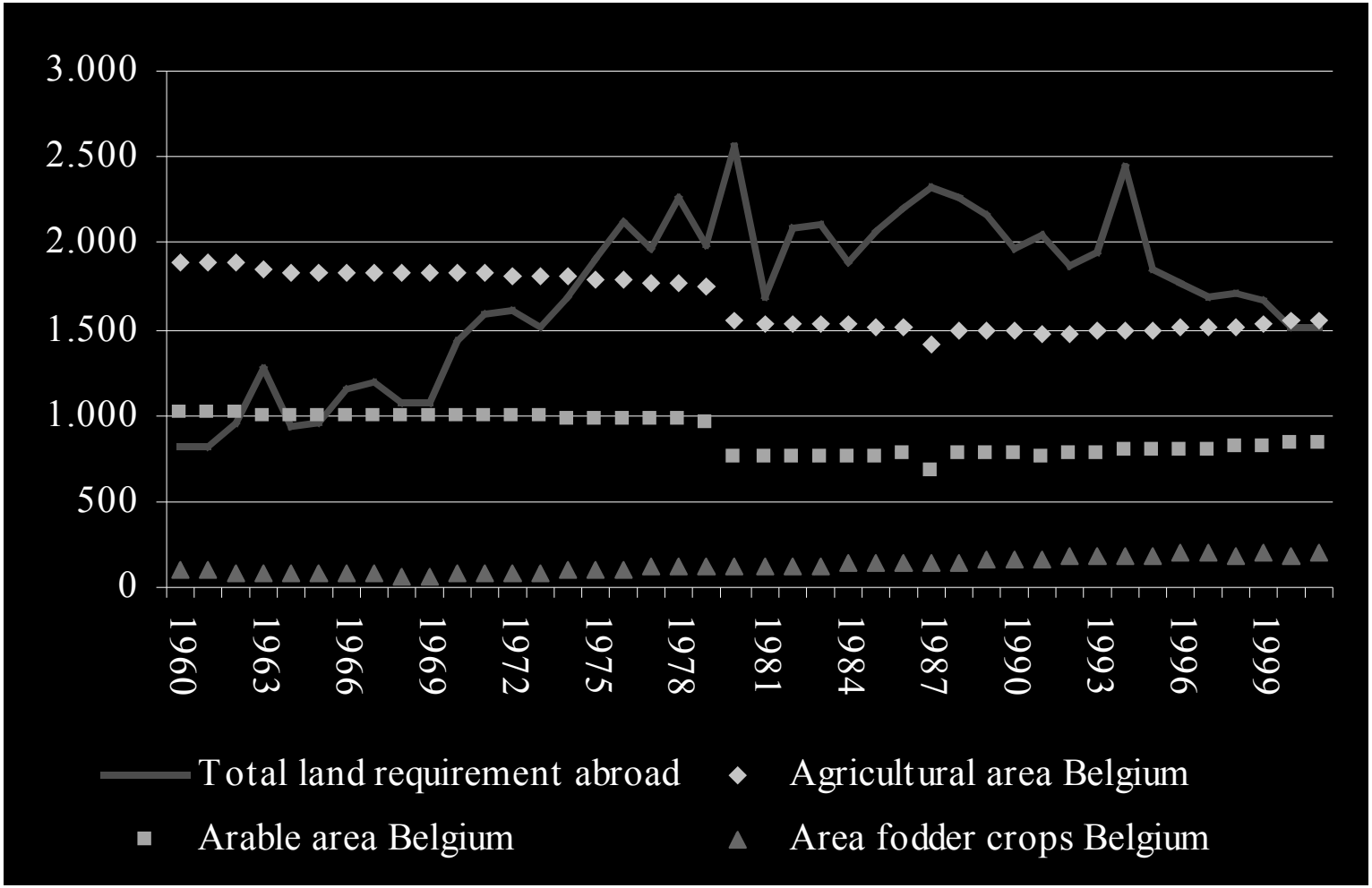
Crop Overview

2. Material Flow Analysis of fodder crops for the Belgian livestock sector

- Calculation of Physical Trade Balances (PTB) = Imp - Exp
- PTB are generally positive
- Origin of imported fodder commodities is diverse in time and space (imports from 5 continents)
- Belgium and the Netherlands are important ‘ports’ of EU

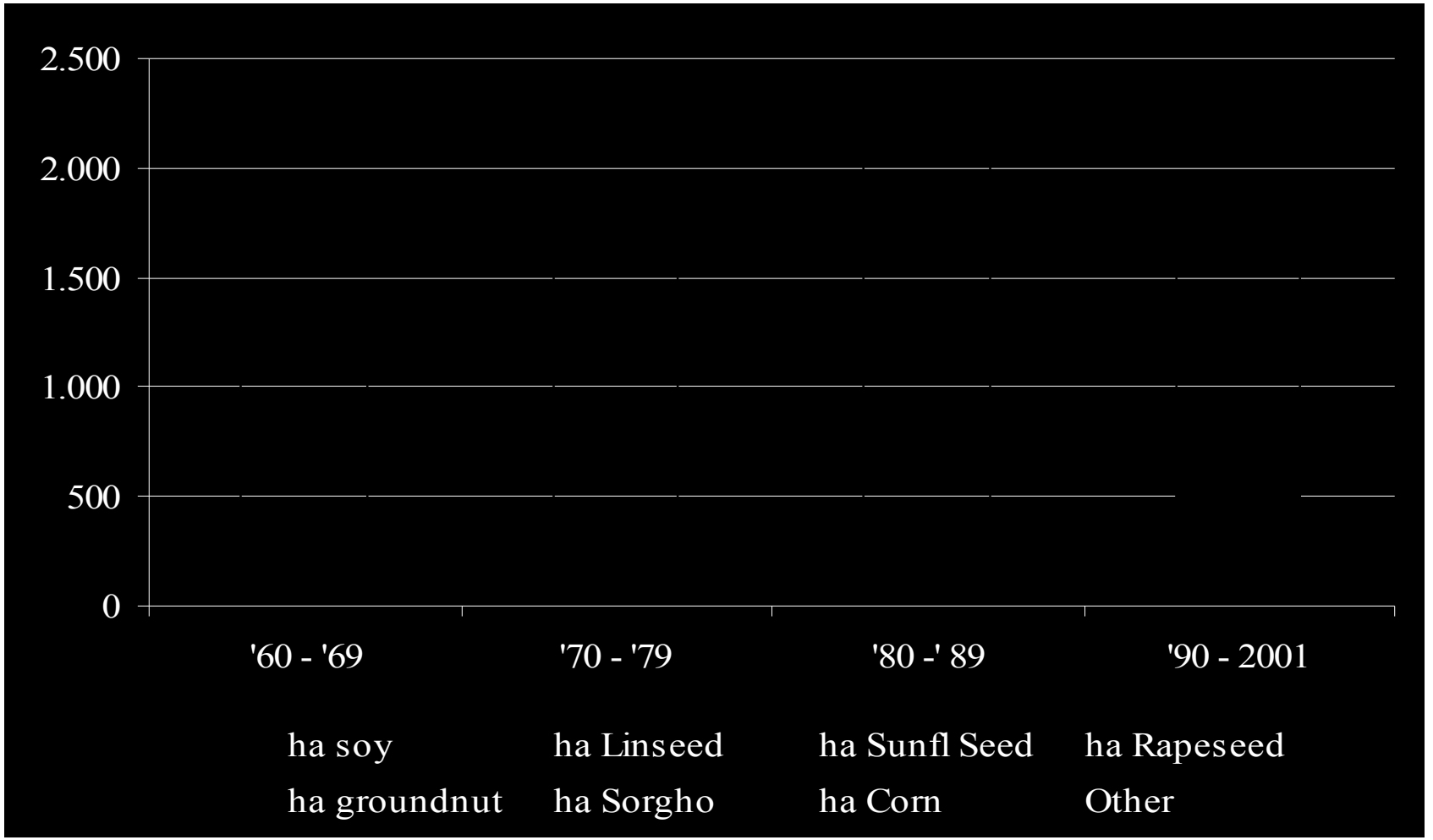
3. Land requirement abroad (1000 ha) for the Belgian livestock sector

Aggregation of results



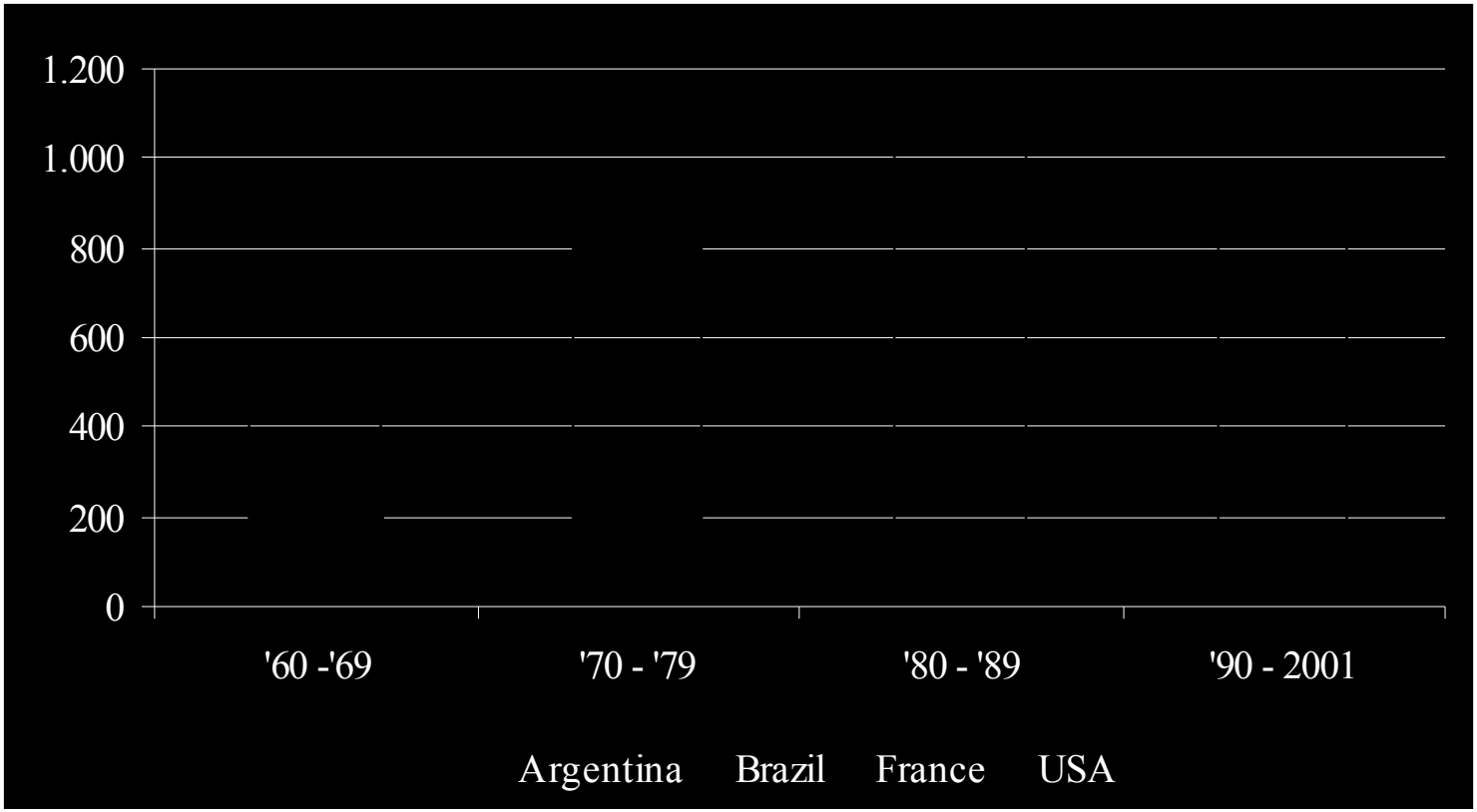
3. Land requirement abroad (1000 ha) for the Belgian livestock sector:

Per *crop* assessment



3. Land requirement abroad (1000 ha) for the Belgian livestock sector:

Per *country* assessment



4. Assessing Ecological Debt17 of Belgium caused by its livestock sector

Ecological Debt by Ecological Damage

Ecological Damage caused by agriculture depends on several variables:

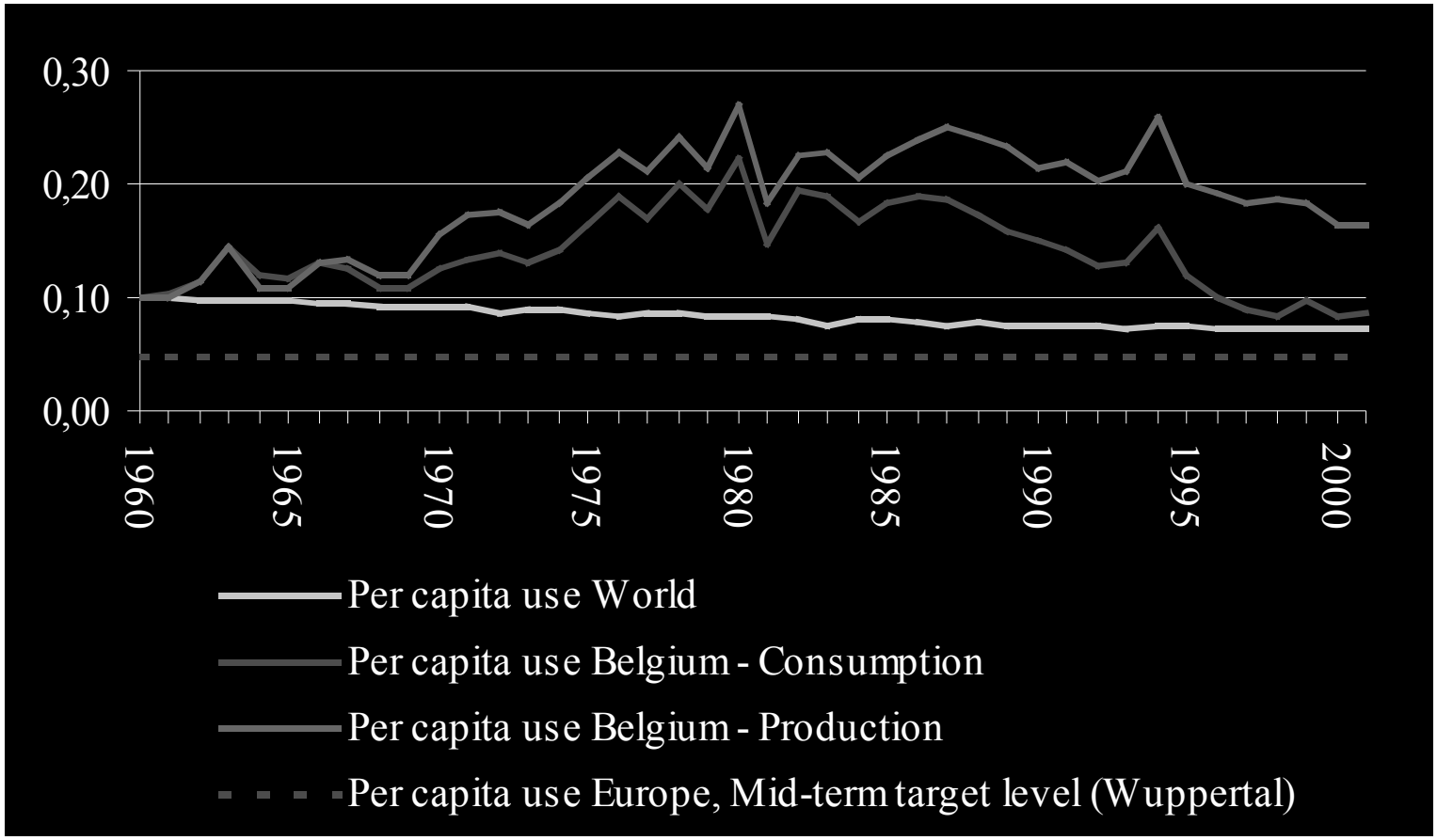
- Crop
- Country of production
- Producer
- Year of production

Environmental Damage =

$$\Sigma \text{ damage per ha} * \text{number of ha}$$

4. Assessing Ecological Debt of Belgium caused by its livestock sector

Equitable rights: Per capita use of fodder crop area (ha)



5. Origin of the international context of Belgian agriculture

1945:

Unification of European agricultural interests

Instrument: Common Agricultural Policy (CAP)

Goals of CAP:

- Secure food supplies
- Ensure farmers' income

5. Mechanisms behind the international context of Belgian agriculture

From CAP:

- Price support
- Import levies
- Export refunds

From International Trade agreements:

- WTO Trade Negotiations and Agreements
- Lomé Agreements

6. Conclusions

1. Analysis of the 4 main import countries: Total land requirement for fodder crop production for the Belgian livestock sector increased over time until 1995. Land requirement in the South (Brazil and Argentina) increased over time. Land requirement in the North (France and USA) has decreased.
2. Concomitant ecological damage is diverse. Aggregated damage or compensation is difficult to assess
3. Belgium overuses world's arable area. A transition towards intra-Europe land use for fodder crops is a possible solution

6. Conclusions

4. Belgium's policies towards its livestock sector are embedded in a CAP; transition will have to be implemented on a European level

5. Currently, world trade agreements enhance export oriented trade of fodder commodities from South to North and the concomitant environmental damage