Time to Adapt – Climate Change and the European Water Dimension

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Invalidenstraße 48, 10115 Berlin

"Agriculture: Impacts, Adaptation Challenges and Options"

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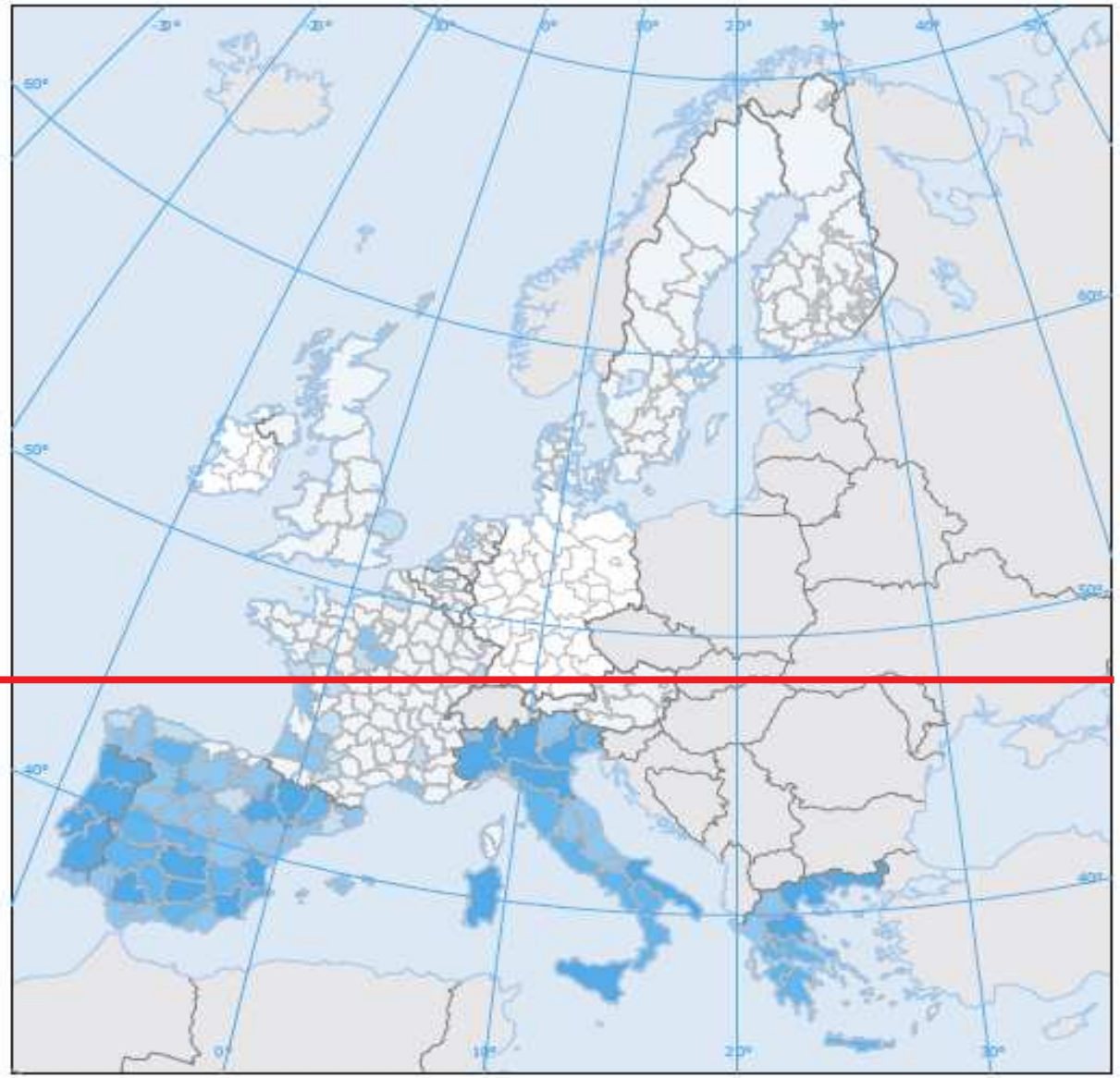
Sector overview

- **Agricultural area:** 162 million hectares (50% of EU-25's land)
- **GDP:** 1.6% of EU-25 in 2004
- **Farmers activities:**
  - Food production
  - Countryside management
  - Nature conservation
  - Tourism
  - Biomass production (renewable energy sources)
- **Irrigated area:** 11.7% of UAA

Figure 4.2 Regional water abstraction rates for agriculture (million m³/year) during 2000 (31)



Source: Community survey on the structure of agricultural holdings (FSS), Eurostat combined with information from OECD/Eurostat questionnaire.

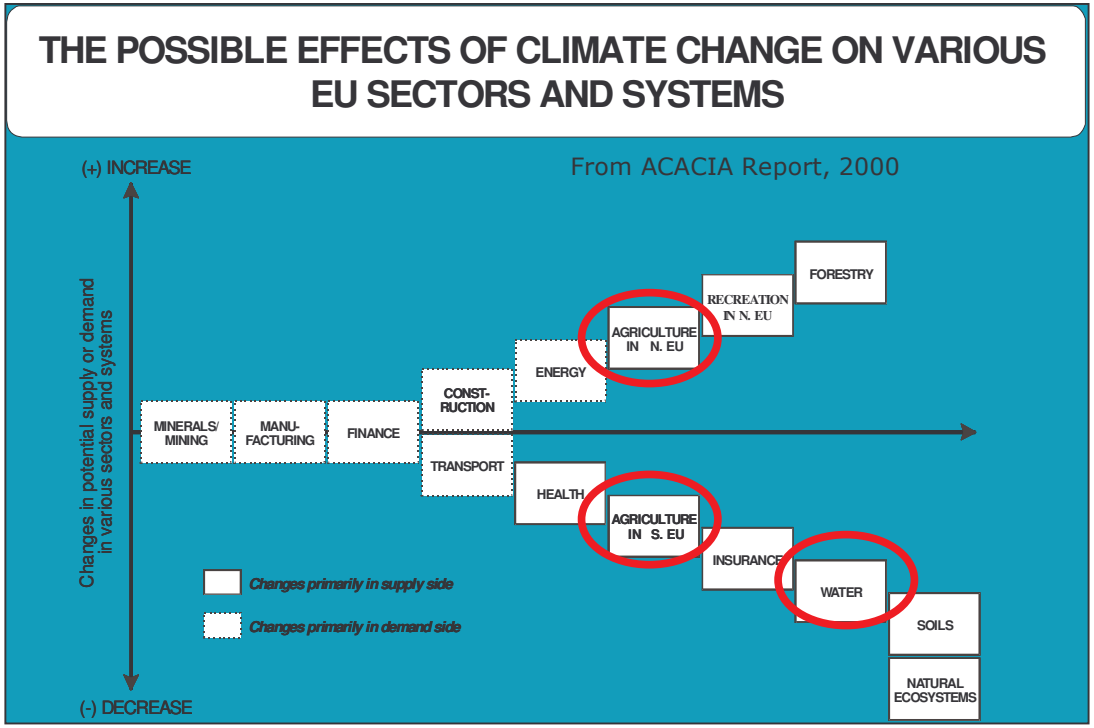
Low

High

From EEA Report, 2005

Climate change and EU economic sectors

- ***Agriculture and water resources*** are strongly affected by climate change



- ***Adaptation options*** should be developed and implemented

Adaptation options (technological and management opt.)

Short-term adjustments:

- ***Improving irrigation efficiency:***
  - Land management techniques (e.g. conservation tillage)
  - Irrigation management (e.g. adjusting timing and volumes of water application)
- ***Crop substitution*** to reduce dependence on irrigation or to increase water availability
- ***Changing or improving harvest insurance mechanisms*** to protect farmers from the economic impacts of flood or drought damage

Adaptation options (technological and management opt.)

Long-term adaptations

- ***Changes in farming systems*** to make them more flexible and adapt to higher variability in climatic conditions (e.g. mixed farms; organic farming)
- ***Changes in land use and landscape management:***
  - To conserve water and reduce sensitivity of farming systems to flood damage, e.g. replacing arable land by grassland
- ***Crop breeding and development of more resistant varieties:***
  - Developing crops that are more resistant to water stress

Adoption of "Adaptation strategies" (within CAP)

- ***Policy-making at EU level (e.g. CAP)*** may play a key role to set appropriate incentives and support adaptive measures.

- ***Existing instruments of CAP*** may be used to introduce and support a*daptation strategies*:
  - Market and income support (Pillar 1)
  - Rural Development Regulation (RDR) (Pillar 2)

Adoption of "Adaptation strategies" (within CAP)

- ***Market and income support (Pillar 1):***
  - **De-coupling farm payment** will not longer encourage farmers to continue with particular type of production in order to take advantage of the payments
- ***Rural Development Regulation (Pillar 2):***
  - Climate change mitigation and adaptation are acknowledged as ***Community priorities***,
  - ***Member States (and regions)*** are encouraged to incorporate appropriate actions in their RD programmes to address these priorities
  - There are ***measures within RDR to support adaptation*** (e.g. improvement of environment and countryside; development of new products, processes and technologies)

Interaction with other policy areas

- **Other EU, national or regional policies** may influence the adaptive capacity of the agricultural sector:
  - **Energy policy:** the EU has the objective to promote the use of biomass for producing renewable energy:
    - ***Biofuel crops*** (e.g. maize), exacerbate pressures on water resources requiring large amounts of water, fertiliser and pesticides
  - **Water supply and sanitation sector** might require an higher priority in water uses determining lower availability for agriculture

Other issues:

- **Requirements from Research:**
  - ***integrated impact assessment*** of CO_2 increase and climate change on farming systems,
  - ***adaptation strategies*** that can improve sustainability and resilience of farming systems under more variable climatic conditions.
  - ***breeding of drought- or heat-resistant crops*** (e.g. role of genetic modification and biotechnology for seed breeding)
- **Appropriate communication strategies:**
  - ***to ensure that farmers and farm advisory services are sufficiently informed*** to take the necessary actions.

Key questions:

- **Impacts and vulnerability:**
  - Which climate change-driven changes in water resources will pose the greatest challenges to agriculture?
  - Which benefits can be expected?
  - Which regions will be most affected?
- **Adaptation options:**
  - What options for adaptation are available, and which of them should be implemented in a long term perspective?
- **Policy action:**
  - What could be gained from coordinating and implementing adaptation at EU level?
  - Which modifications of the Common Agricultural Policy are needed to better support adaptation processes?
  - What can be done to ensure that different (agriculture-related) policies are consistent, more coordinated and compatible with adaptation to climate-driven changes in water resources?

Key questions:

- **Integrated approach:**
  - What role should the agricultural sector play in an integrated adaptation effort at river basin level?
  - What are suitable approaches to mitigate conflicts between agriculture and other water users when water becomes scarce?
- **Research needs:**
  - Which knowledge gaps need to be addressed with regard to impacts, vulnerability and adaptation options?