



"Biofuel Policy for a Low Carbon Future", 19th September 2013, Bilbao



The Food vs Fuel Debate

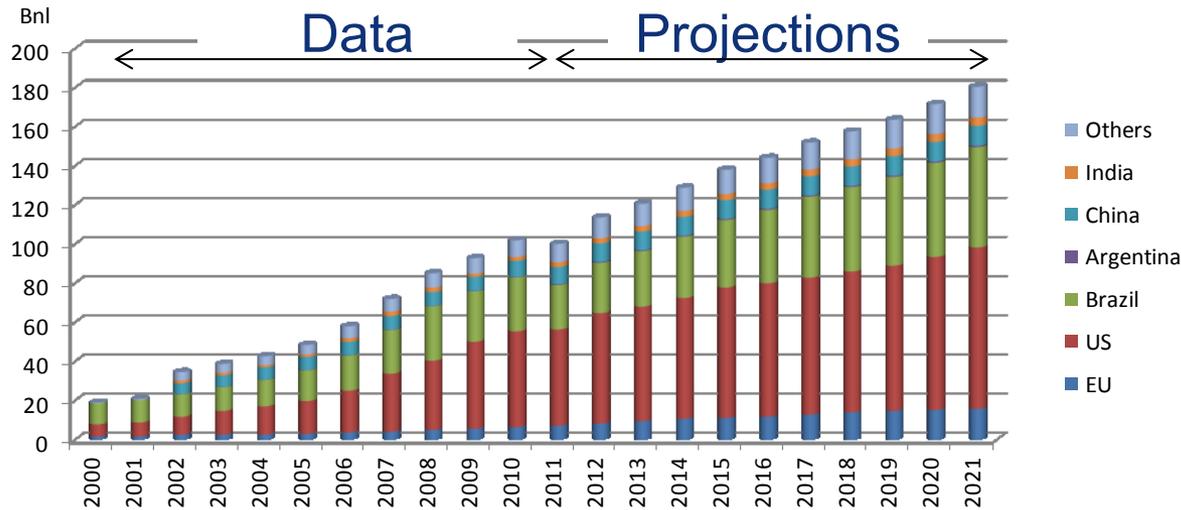
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Outline

- ❑ Biofuels context
- ❑ Food-fuel nexus
- ❑ Impacts of biofuel production on agricultural markets and land use
- ❑ Biofuels and food security
- ❑ Linkages between biofuels and food prices
- ❑ Concluding remarks

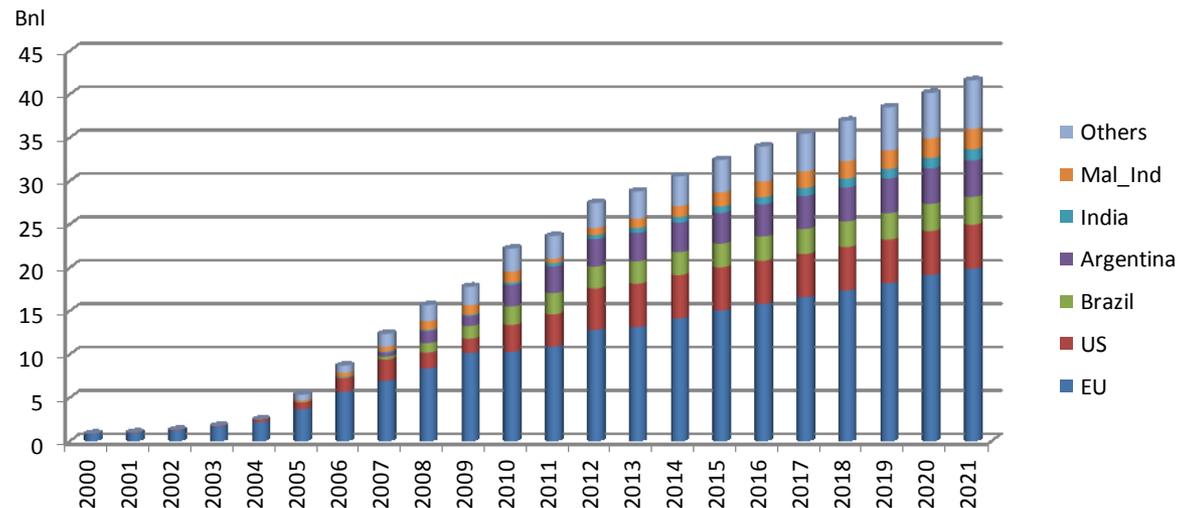
Global production of biofuels has been growing steadily over the last decade



Ethanol produced mainly in the US and Brazil

Source: OECD-FAO 2012

Major biodiesel producers are the EU (> 50% of global production), the US, Brazil and Argentina



Rapid biofuel expansion mainly driven by public support

Many countries have adopted policies to promote biofuels

Biofuel policies motivated by one or more of the following objectives:

- ▶ Reduce energy dependence on imported fossil fuels (energy security)
- ▶ Reduce greenhouse gas emissions in the transport sector (climate change mitigation)
- ▶ Foster agricultural production (rural development)

Biofuel support policies

Four broad groups of biofuel policy measures:

- ▶ budgetary support, such as direct support to biomass supply and fuel tax exemptions for biofuel producers
- ▶ consumption targets (nonbinding) or mandates (binding), which set a minimum market share for biofuels in total transport fuel
- ▶ trade measures, in particular import tariffs
- ▶ measures to stimulate productivity and efficiency improvements at various points in the supply and marketing chain

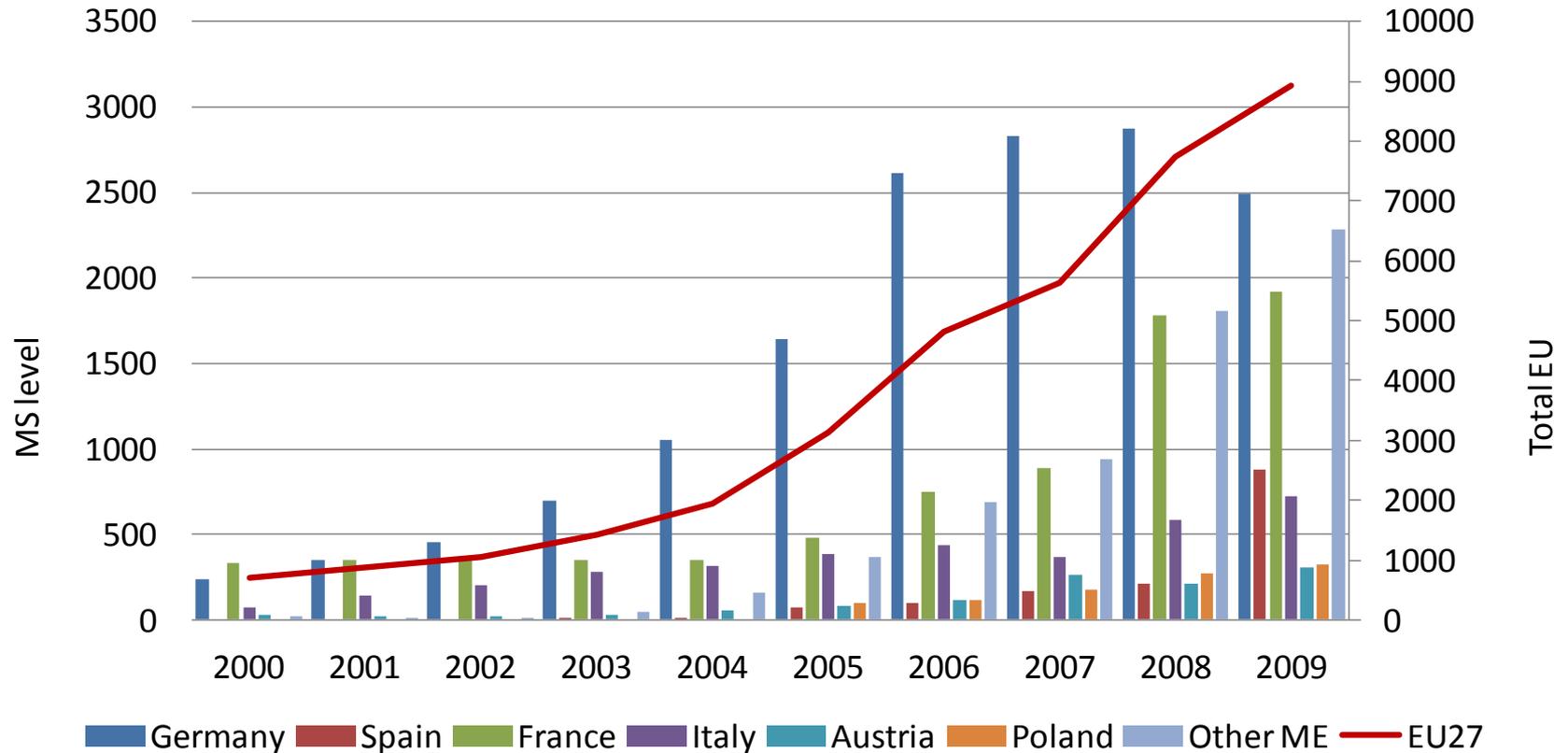
US biofuel policy

- ❖ Energy Tax Act (1978)
 - ◆ tax exemptions for fuel-ethanol
- ❖ Energy Policy Act (2005)
 - ◆ quantitative mandates for renewable fuel consumption in addition to blenders' tax credits and import tariffs
 - ◆ differentiation of renewable fuels based on feedstocks (RFS)
- ❖ Energy Independence and Security Act (2007)
 - ◆ further differentiation and expansion of the mandates (RFS2)

EU biofuel policy

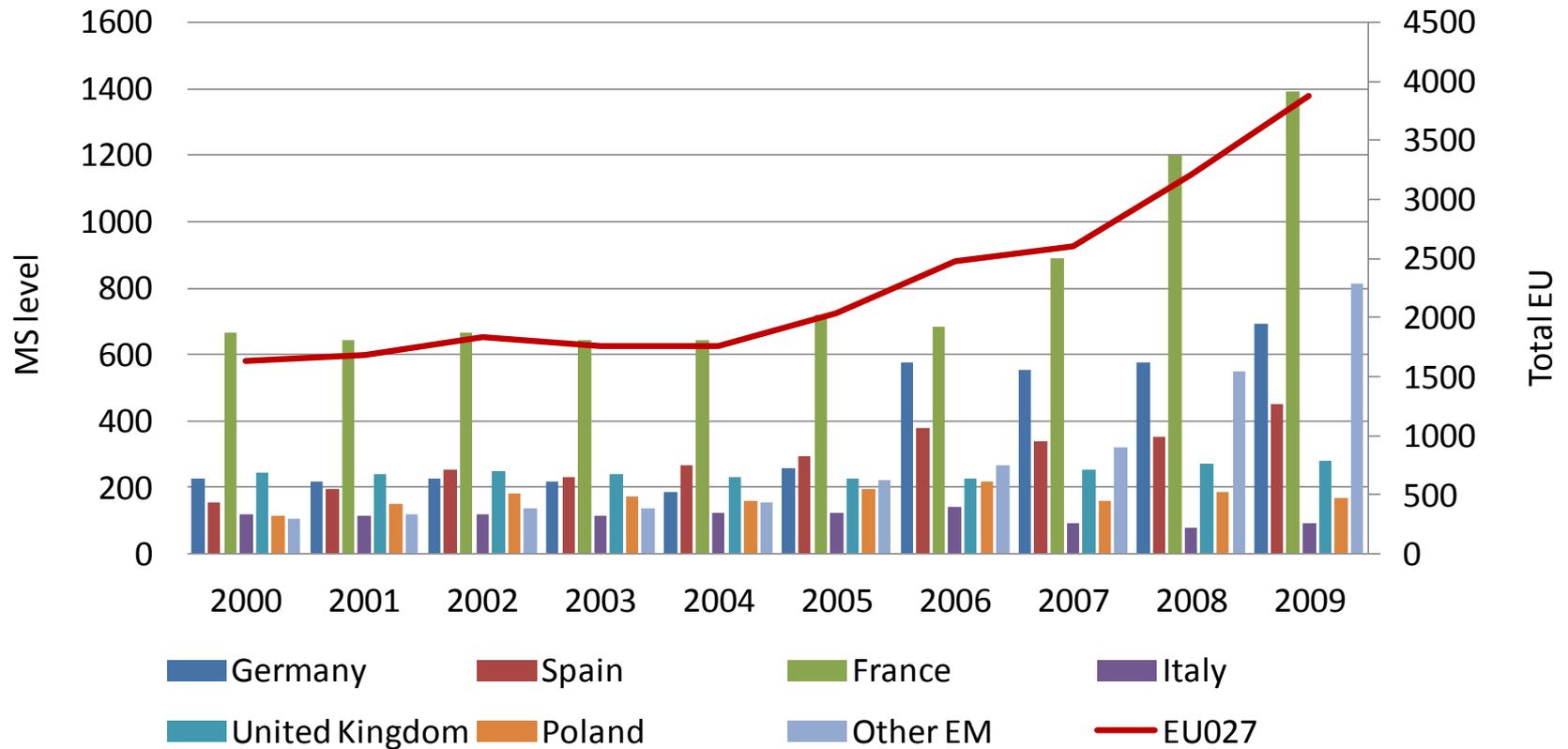
- ❖ Renewable Energy Directive 2003
 - ◆ non-binding target of renewable energy in transport
- ❖ Renewable Energy Directive 2009 (RED)
 - ◆ target of 10% renewable energy in total transport energy consumption by 2020
 - ◆ implementation mechanisms at the MS level: quota obligations and tax exemptions for biofuels
 - ◆ sustainability criteria established both by the RED and the Fuel Quality Directive (FQD)

EU Biodiesel Production (1000 t)



Source: CAPRI database (several raw sources)

EU Ethanol Production (1000 t)



Source: CAPRI database (several raw sources)

The development of the biofuel sector raises a number of concerns

- ❖ Contribution to reduce dependence from fossil fuels?
- ❖ Contribution to reduce GHG emissions?
- ❖ Contribution to maintain agricultural income?
- ❖ Food-fuel linkages, in particular competition for land and impacts on food prices

Food-fuel debate

Relevant policy questions with a focus in the EU

- ▶ What are the impacts of the current EU biofuels strategy on global agricultural markets
- ▶ To what extent the EU biofuel policy is driving up food prices
- ▶ What are the implications of the EU biofuel policy for developing countries

Biofuels may have significant implications for agricultural markets and land use

At the current technological state, biofuels are mainly produced from agricultural feedstocks, such as cereals, sugar crops and vegetable oils

- ▶ Thus, biofuel markets are closely connected to agricultural markets
- ▶ Policy support for biofuels generates additional demand for feedstocks and thus put additional pressure on land
- ▶ While small in terms of energy supply, the development of the biofuel sector may have strong implications for both agriculture and the environment

How biofuels contribute to rising food prices is highly debated

Rising food prices and potential links with biofuel policies: clear correlation, but biofuels only one among many other factors

- ▶ Consensus: effect on food prices exists, yet no quantitative evidence to determine the extent to which the EU biofuel policies contribute to rising food prices, especially in developing countries
- ▶ Often mentioned now: the global food demand, stock-to-use ratios, trade policies, strong correlation between food and petroleum products prices, changing diets, speculative investments

Impacts on developing countries (land markets)

- ▶ The EU not only creates a heavily distorted biofuel market but also encourages an artificial land market

UN Rapporteur (2013)

- ▶ Numerous countries are promoting biofuels. Local biofuel policies are key drivers of biofuel developments

AETS (2013)

- ▶ The EU biofuel policy is one of the main drivers of large-scale land acquisitions in SSA

UN Rapporteur (2013)

- ▶ Share of land acquisitions linked to biofuel projects had been overestimated

Land Matrix (2013)

Impacts on developing countries (food prices)

- ▶ SSA is a region particularly exposed to negative risks connected to biofuel production

UN Rapporteur (2013)

- ▶ In developing countries, local markets for some food staples are quite isolated from global market fluctuations

DG-DEVCO (2013)

- ▶ Public incentives for biofuels impact food prices significantly, both on international and domestic markets

UN Rapporteur (2013)

- ▶ Local food markets are often disconnected from global markets

ECOFYS (2013)

Impacts on developing countries (food security)

- ▶ The EU biofuel policy contradicts the EU Food Security Policy Framework

UN Rapporteur (2013)

- ▶ Bioenergy can increase or reduce food security
- ▶ Right to food closely related to access to land

AETS (2013)

- ▶ 2010 crop production enough to feed the world population. Food insecurity is an access problem
- ▶ Local price variability driven by bad harvests, lack of local market organization, ...
- ▶ Higher food prices can improve food security

ECOFYS (2013)

Linkages between biofuels and food prices

- ▶ 70-75% of the 2006-2008 increase in food prices attributed to biofuels

Mitchell (2008)

- ▶ Biofuels have had a minor impact on global food prices over the last decade

Baffes (2013)

- ▶ Public incentives for biofuels impact food prices significantly

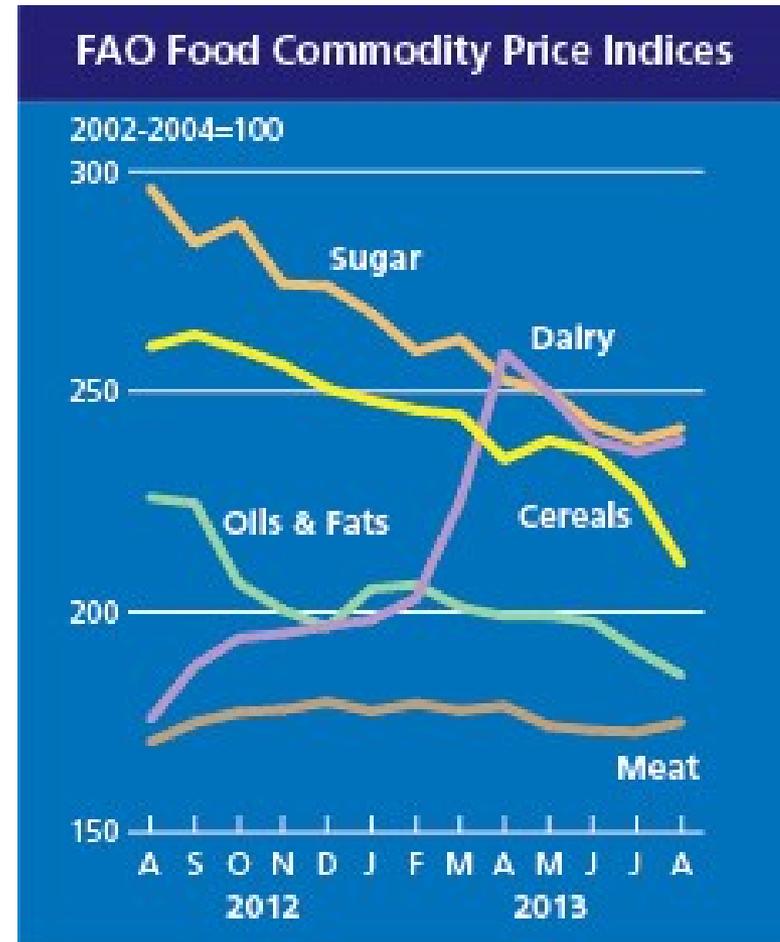
UN Rapporteur (2013)

- ▶ Food commodity prices respond strongly to energy prices, stock-to-use ratios, and to exchange rate movements

Baffes (2013)

Linkages between biofuels and food prices

- ❖ Due to the complexity of food markets, difficult to isolate the impact of biofuels on food prices
- ❖ What about price volatility?
 - ◆ Biofuel mandates add an inelastic demand to already inelastic feedstocks demand



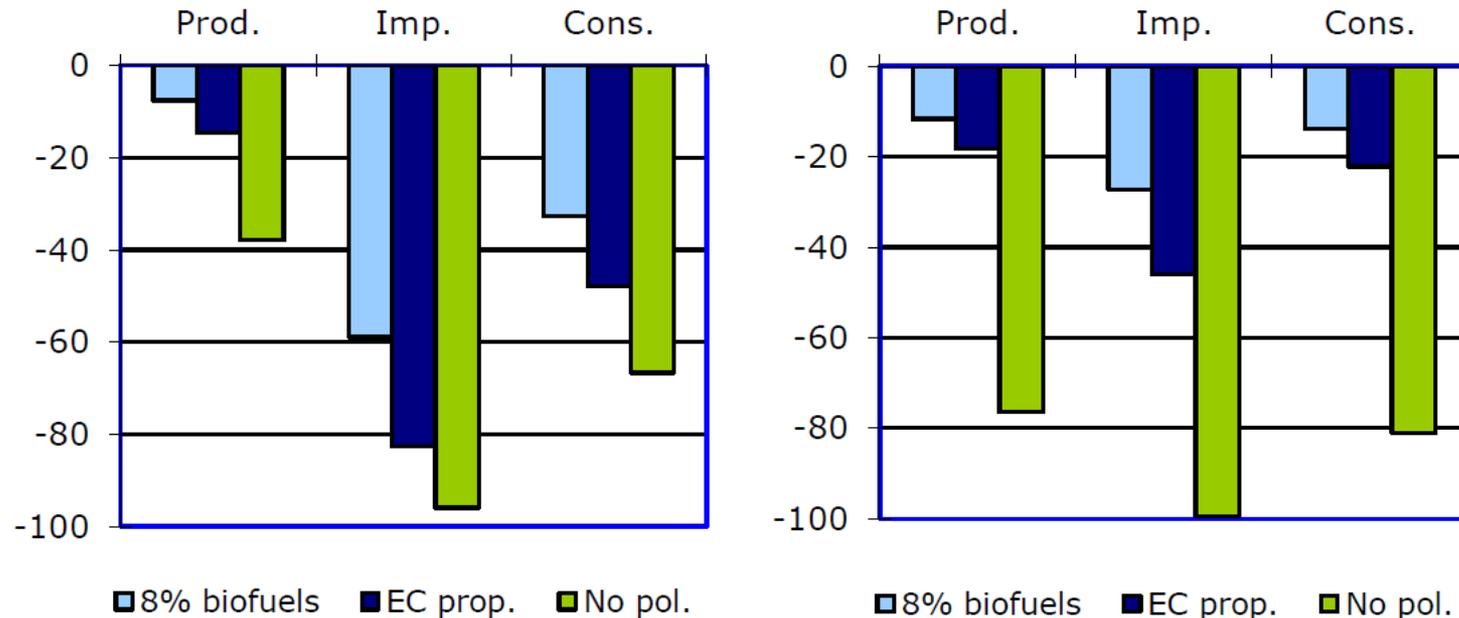
Role of economic models

- ❖ Economic models helpful to understand the complex interactions between biofuels and agricultural markets
- ❖ Quite a few agro-economic models have been extended to depict biofuel markets
- ❖ Most models aim to analyse different biofuel scenarios by comparing them to a baseline
- ❖ Underlying assumptions crucial to interpret model results (product and regional coverage, crop yield growth, by-products, ...)

Some recent modelling results

Impacts of EU biofuel policies on biofuel markets

Figure 3.1 Change in EU biofuel market in comparison to base in 2020 (%)
Ethanol **Biodiesel**

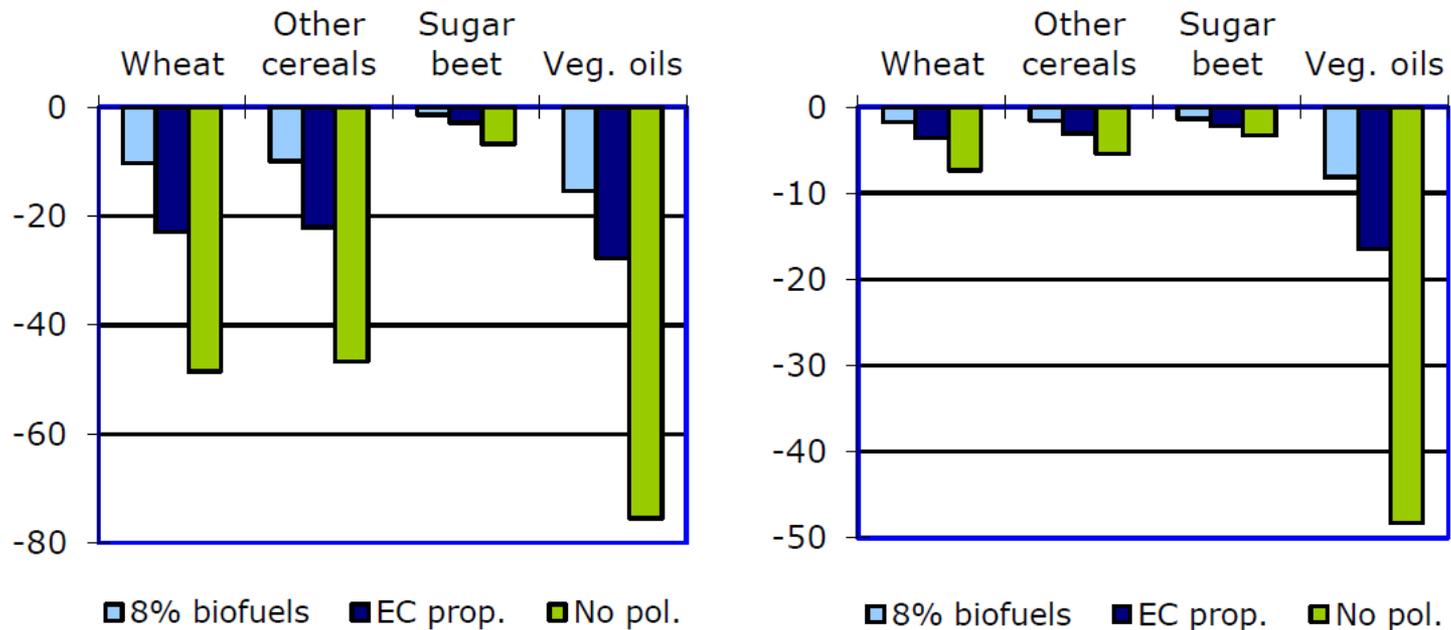


Source: AGLINK results (JRC-IPTS 2013)

Some recent modelling results

Impacts of EU biofuel policies on producer prices

Figure 4.1 Change in EU feedstocks market in comparison to base in 2020 (%)
Use for biofuel production **Producer price (EU)**



Source: AGLINK results (JRC-IPTS 2013)

Some insights on implementation issues

Effectiveness of EU sustainability criteria

- ▶ How effective sustainability criteria can be given that:
 - ◆ These criteria only target the EU biofuel sector...
 - ◆ ... but linkages exist to other sectors/regions
- ▶ **Simulation exercise:** just imagine that biodiesel from Malaysia and Indonesia is “unsustainable” and, therefore, cannot enter the EU market.
 - ◆ What effects will be observed globally?
 - ◆ Will Malaysia and Indonesia reduce their “unsustainable” production of oil palm?

Concluding remarks

- ❖ Strong links of biofuels to agricultural markets
- ❖ Development of second generation technologies would ease food-fuel links
- ❖ Impacts of biofuel policies on food security ambiguous
- ❖ Difficult to isolate the impact of biofuels on food prices

Questions? Comments?

Thank you for your attention!