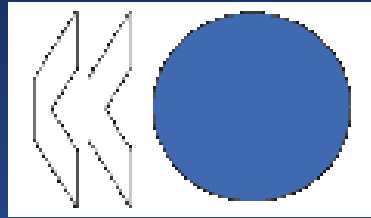


OECD



OCDE

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

Lessons learned from the bio-economy - policy in partnership with research

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Agricultural Policies and Environment Division

EPOBIO Workshop 2, Greece 15-17 March 2007
Products from Plants from Crops and Forests to Zero
Waste Biorefineries

The OECD is...

- a 30 member inter-governmental organisation promoting economic growth in a sustainable way
- takes a multi-disciplinary approach to the economic analysis of relevant policy issues
- is a tool for governments providing comparative data, analysis and forecasts
- shares experiences and identifies good policy practice through peer review processes
- engages with over 70 developing countries

Outline of presentation

- Context
- Policy questions
- Policy analysis by OECD
- Lessons learned?

Context

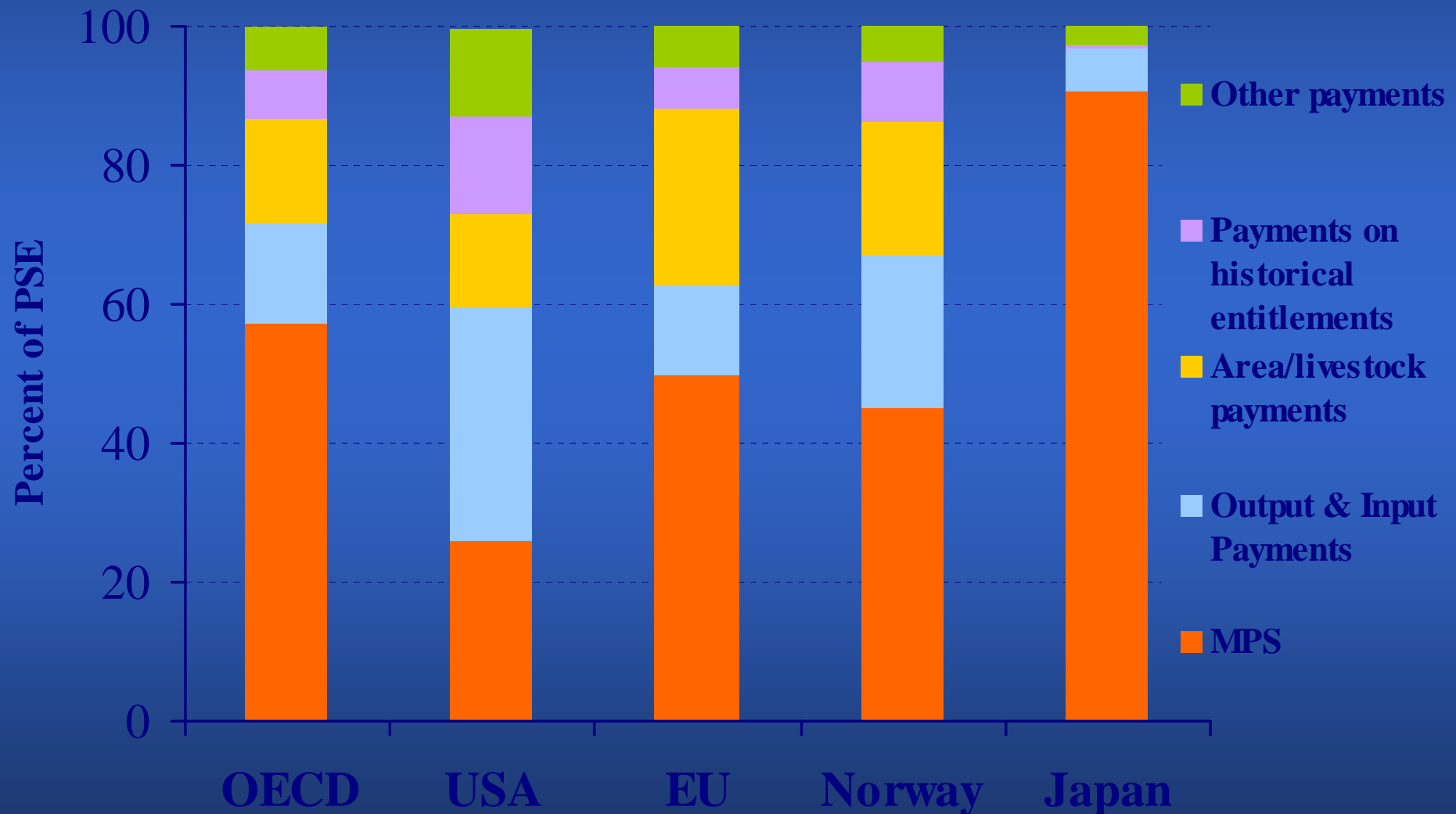
OECD has an interest in the bioeconomy

- The bioeconomy is of growing importance
- Farm sources of renewable energy may ease concerns about energy security, climate change and farm incomes
- Policies are influencing developments, particularly for the supply of renewable energy – which is often not economical without support
- Policy coherence is often weak and the secondary, spill-over effects are not always considered
- OECD research may help to improve policy design

Agricultural policies provide context

- Farm support was \$280 bn or 29% of farm receipts in OECD in 2005
- Agriculture sector support was \$385 bn or 1% of OECD GDP in 2005
- 69% of producer support was based on production in 2005 (91 % in 1986-88)
- Average OECD farm prices were 27% above those on the world market in 2005 compared to 57% in 1986-88
- Wide range of support across countries and commodities and increasing attention to the environmental effects of agriculture.

Composition of farm support 2003-05



Agriculture's share in the bioeconomy

- **Biofuels** contribute around 2% of US (maize ethanol) and 1% of EU (oilseed biodiesel) transportation fuels
- **Biopower** generation from agricultural biomass accounts for 7% of heat and 1% of OECD electricity generation
- **Biomaterials** share in industrial materials is small, but annual world trade is over \$250 billion
- **Projections** (IEA) are of 4% annual growth in biomass for electricity, reaching 2% share by 2030, stimulated by farm and energy policies

Wide range of “bioenergy” policies

- **Financial incentives** - production support, import tariffs, tax breaks, investment aid and area payments
- **Good practice guidelines, information and research and development** programmes
- **Compulsory blending shares** in transport fuels
- **Carbon markets** with credits to biomass producers for fossil fuel displacement and GHG sinks – for the future?

Policy questions

Economic and social

- Can agri-biomass be **profitable without subsidies**
- Is there an **infant industry** argument re innovation?
- Under **which scenarios** for energy prices and farm incomes would agri-biomass production be **profitable**?
- What will be the **effect on food, feed and fuel prices and trade** if more land is diverted to biomass production?
- What **effects on jobs and viability of rural areas**?

Environmental

- Are there net environmental benefits from agri-biomass (greenhouse gases, water, soil erosion and biodiversity) compared to land for food, feed or set-aside
- Do environmental effects change over time?
- How would the evaluation of the costs and benefits of agri-biomass change if the environmental externalities of fossil fuel production and delivery were included?

Agricultural policy analysis in OECD

...recently and ongoing

- 2003 workshop in Vienna on *Agriculture and Biomass*
- 2006 study on *Agricultural Market Impacts of Future Growth in the Production of Biofuels*
- 2007 workshop in Umeå on *Bioenergy Policy Analysis*
- 2007-8 activity underway on *Market and Policy Based Approaches to Bio-Energy*
- 2007-8 activity underway on *Sustainable Agriculture and the Bioeconomy*
- May 2007 dialogue with CSOs and government officials
- OECD activities on *The Bioeconomy to 2030* and in IEA

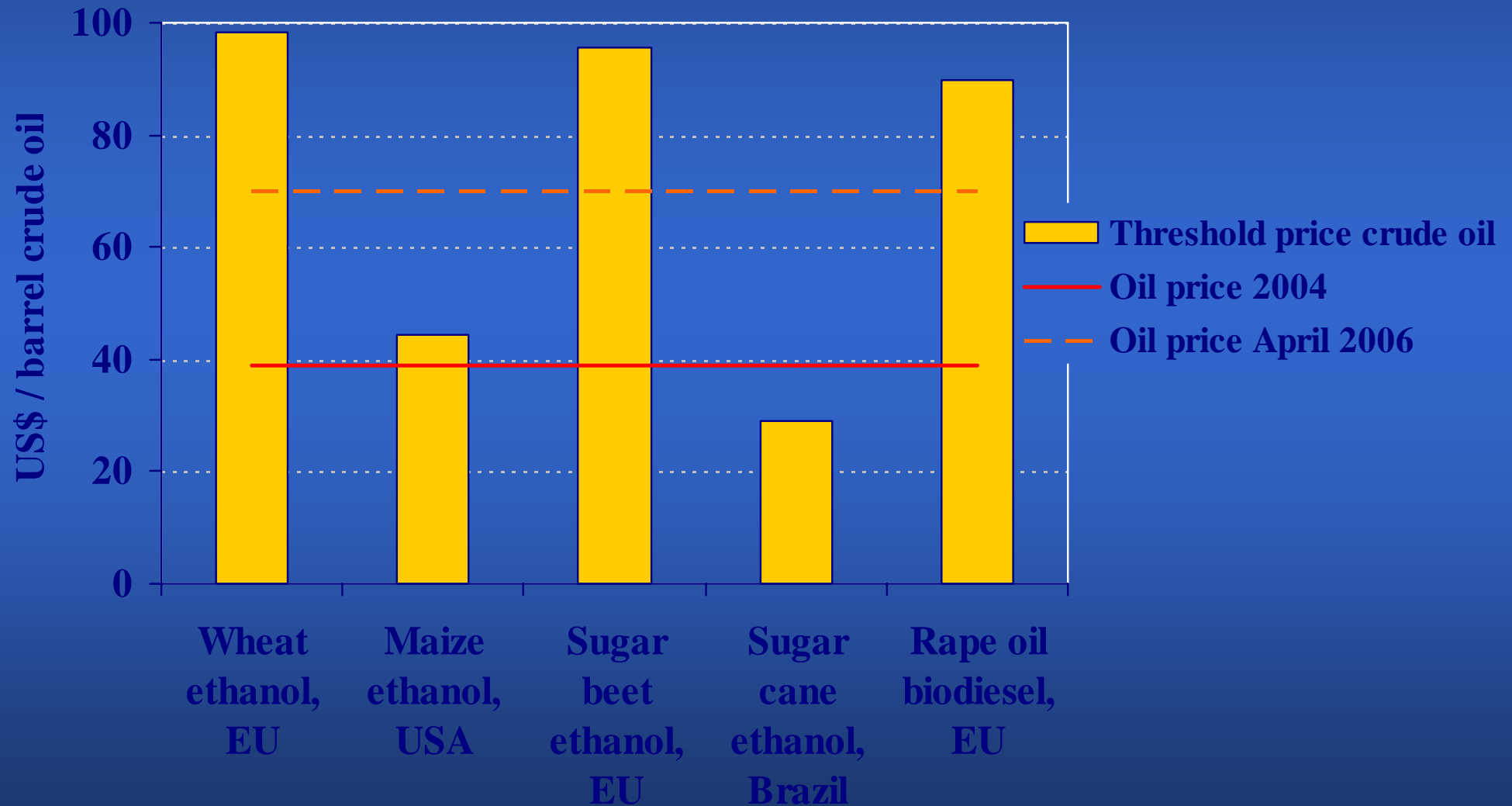
OECD 2006 study concluded.....

- Large differences in **land** required and costs for bio-fuels
- **Brazil** has a large comparative advantage
- Bio-fuel production often depends on **public subsidy**
- Policy **goals** vary: alternative energy, environment, farm income?
- Benefits for **farm income** may be only short term
- Policies risk creating **trade barriers**, may be quickly outdated and hard to change or eliminate

Costs of bio-fuel production

- Large differences across countries and processes:
 - Net costs range between 0.33 and 0.87 US\$ per litre gasoline equivalent in 2004
 - Lower costs in southern countries - Brazil
- Feedstock's are the largest cost component:
 - Half to two thirds of ethanol costs
 - 90% in biodiesel costs

Price comparisons



Implications of high oil prices...

- Higher fossil based oil prices have important effects on agricultural markets
- Higher production costs reduce global crop supply by 1-3% in the medium term
- Higher bio-fuel production incentives stimulate crop demand
- Higher world crop prices of 12-17% compared to a situation with lower oil prices

...and meeting policy targets...

- To meet bio-fuel policy targets in EU and US requires substantial additional quantities of agricultural commodities
- Between 4% and 50% of projected total use of grains, sugar crops and vegetable oils in USA, Canada, EU and Brazil
- Substantial changes in trade patterns
- Price effects modest for grains, but substantial for vegetable oils, sugar

...and if more land used for bio-fuels

- In most countries bio-fuels still represent less than 2% of transport fuel use but the exception is *Brazil* where it exceeds 20%
- Area required for a 10% share in transport fuels is 30-50% of crop area in most OECD countries with current technology, but much lower in some countries such as *Brazil* where it is 3%

OECD Agricultural Outlook 2007-16

- By 2016 ethanol production could use 30% of US maize production and 60% of Brazil's sugar cane output
-while biofuels production in the EU could absorb 12% of wheat production and 55% of oilseeds
- In Canada about 5% of wheat production and 12% of maize could be used for biofuels
- In China maize use for ethanol could increase 3x by 2016

Lessons learned?

Assumptions driving policy: act now as markets alone are not sufficient

- Technology and economics favour renewable energy from agriculture, but farmers hesitant to take long term investment risks
- Agricultural policy reform is the opportunity to promote biomass and bioenergy
- Expanding renewable energy sources from biomass will deliver net environmental benefits...
- ...but farmers have little incentive to take environmental effects in production decisions
- Public concerns about energy security and climate change

OECD-IEA research conclusions

- Bioenergy is currently viable only with policy support – which is increasing
- Advances in technologies and scale economies could close the biomass-fossil fuel price gap
- Bioenergy offers only modest improvements to energy security
- Environmental effects are mixed and vary spatially and by feedstock
- High fossil fuel prices increase land use for profitability of bioenergy, but raise food prices

Implications for policy

- Risk that distortions and lock-in effects of 60 years of agricultural policies will be repeated - let the market work
- Base policies on evidence - “arms length” from production
- “Get the prices right” taking into account economic and environmental costs and benefits
- More attention needed on policies to reduce demand and improve the efficiency of energy and materials consumption
- Biomass is not likely to be the “golden bullet” to meet energy, environment and farm welfare goals
- Biomass issues challenge governments to move from “silo thinking” to “coherent actions” – and to communicate

Implications for research

- Impressive research effort in recent years
- Policy interest has largely led (and financed) research
- Secondary impacts of bioenergy production on food prices, land and water resources not fully understood
- Environmental assessment is complicated and knowledge gaps remain – e.g. comprehensive life cycle analysis
- Benchmark to measure environmental costs and benefits is complex in a dynamic and forward looking context
- Uncertainties about future policies, market developments and technological change may hamper private sector investment – can research help design effective policies?

Remember, the bioeconomy is not new

For more than a century there has been interest in promoting - or stalling - renewable energy developments through government actions or from market developments, vested interests and geopolitical concerns.....

...and a view from 75 years ago



"The fuel of the future is going to come from fruit, weeds, sawdust - almost anything. There's enough alcohol in an acre of potatoes to drive the machinery necessary to cultivate the field for a hundred years."

Henry Ford, *New York Times*, 1925

Thank you for your attention!

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