



*ReIu: AD4RD Anaerobic Digestion for Rural
Development Steering Group, University of Reading,
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Bioenergy Policy in the EU & UK

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Activity 1:

- Review European policy and regulatory drivers for promoting farm-based energy production in a UK context and predict how these may influence the adoption of AD as a major contributor to a diversified energy supply whilst meeting cross compliance criteria
- Centre for Agricultural Policy produced a 1st draft, December 2007
- *But a shifting target*

January 2008:

- The Royal Society: *Sustainable biofuels: prospects and challenges*
- House of Commons Environmental Audit Committee: *Are biofuels sustainable?*
- European Commission, 23 January 2008: *Renewable Energy and Climate Change Package*

The EU's timeframe

- Current initiative launched by the European Commission, January 2007
- Main themes endorsed by the European Parliament and, March 2007, the European Council
 - Tony Blair, not Gordon Brown
- Legislative proposals tabled 23 January 2008
- *Decisions by end 2008??*

EU policy framework

- CAP incentives
- Import restrictions
- Biofuels and renewables
 - 10% biofuel share in transport fuels by 2020, and 20% renewables share in all fuel use by same date
 - tax incentives
 - renewable fuel obligations
- Carbon/Emissions trading

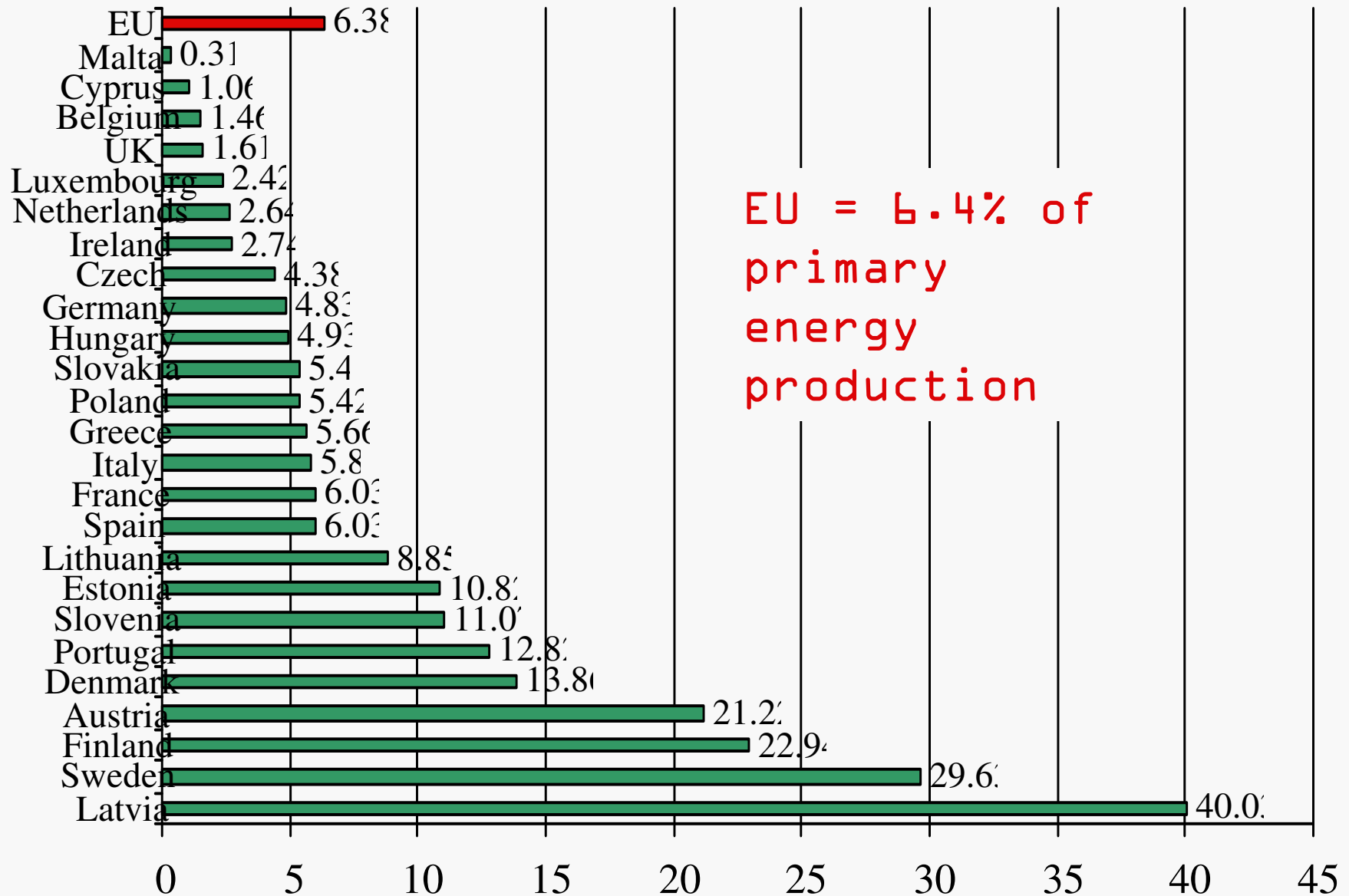
CAP

- Non-food crops can be grown on set-aside land
- €45/ha energy aid on non-set-aside land (maximum of 2 million ha)
 - 0.31m ha 2004, 0.57m in 2005
 - 2.84m ha in 2007: a reduction coefficient of 0.70337 applied
 - *Likely to be abolished in the 'Health Check'?*
- Sugar beet for bioethanol exempt from quotas
- Surplus wine distilled
- Pillar 2 support
 - E.g. Grant aid in England to establish Miscanthus (*was* £800 per hectare) and short rotation coppice (£1,000 per hectare)

Import Tariffs

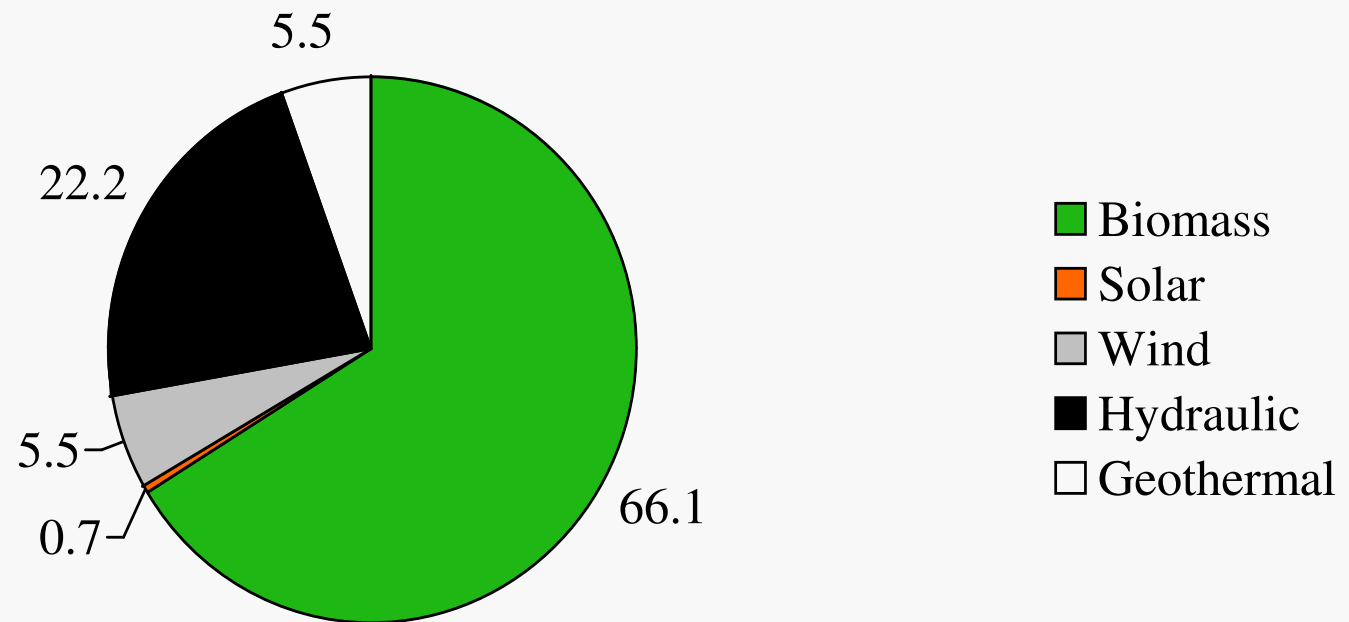
- Biodiesel: MFN rate 6.5%
 - B99.9 blends
- Bioethanol traded under code 2207
 - Undenatured alcohol: €19.2/hl
 - Denatured alcohol: €10.2/hl
 - But 61% of imports 2002/04 duty free (ACP, EBA, GSP+, etc)
 - Mercosur?
 - 'Sugar and bioethanol are Brazil's main offensive interests and are therefore essential elements of these negotiations'

EU Renewables in 2005:



EU = 6.4% of
primary
energy
production

EU's Renewables in 2005



EU Policy (1)

- European Council agreed a 20(30)% reduction in greenhouse gas emissions by 2020 (1990 base)
 - *Proposed for the UK: 16% reduction (2005 base) from sources not covered by the Emissions Trading Scheme*
 - *Transferable certificates from LDCs*
- European Council agreed a mandatory target that 20% of EU fuel supplies should come from renewables by 2020 (but allocation by Member State to be determined) *-6.4% in 2005*
 - *Proposed for the UK: 15% -1.3/1.6% in 2005*

EU Policy (2)

- Minimum 10% blend of biofuels in transport diesel and petrol by 2020, for all Member States *-1% in 2005*
 - And proposed 'Environmental Sustainability' criteria for EU and imported biofuels and bioliquids: for financial support, transport biofuel obligation, and renewables obligation
 - *WTO dimension*
- Review of Emissions Trading Scheme

Proposed criteria for biomass production for environmental sustainability



- Greenhouse gas emission savings of at least 35% (deferred to 2013 for installations operating January 2008)
- Not produced from land with high biodiversity potential in January 2008 (includes species-rich grassland)
- Not produced from land with a high carbon stock in January 2008 (forest, wetlands, etc.)
- Report on possible extension to other biomass by end 2010

Proposed additional incentive for certain biofuels



- 'For the purposes of demonstrating compliance with national renewable energy obligations placed on operators, the contribution made by biofuels produced from wastes, residues, non-food cellulosic material, and ligno-cellulosic material shall be considered to be twice that made by other biofuels'
(18(4))

UK Policy



& Energy White Paper May 2007

- Renewables Obligation

- Licensed electricity suppliers have to source some of their supplies from renewables, or face a financial penalty
- 7.9% in 2007/08, rising to 15.4% in 2015, through to 2027 when the obligation ceases (*proposed to increase to 20%*)
- Buy-out price currently £34.30 per M/Wh: revenues shared by the renewables suppliers
- Last auction, 8 January 2008: £49.92 per M/Wh

Proposed Bandings

<i>Technologies. Some examples:</i>	<i>ROCs/MWh</i>
Landfill gas, co-firing of non-energy crops	0.25
Co-firing of energy crops	1.0
Offshore wind	1.5
2nd generation includes advanced conversion technologies (gasification, pyrolysis and anaerobic digestion)	2.0

UK Policy



& Energy White Paper May 2007

- Transport Fuels
 - 2003: the Biofuels Directive set “reference values” of a 2% market share for biofuels in 2005 and a 5.75% share in 2010
 - 2005 target not achieved: 0.6% in 2004
 - UK <0.05%
 - Sweden 2.3%
 - The Energy Taxation Directive allows tax rebates
 - In the UK: 20 pence per litre on biodiesel and bioethanol, compared to 50.35 (*upped 2p 1st October 2007*) and the equivalent on biogas
 - *But red diesel used on farms*

UK Policy



& Energy White Paper May 2007

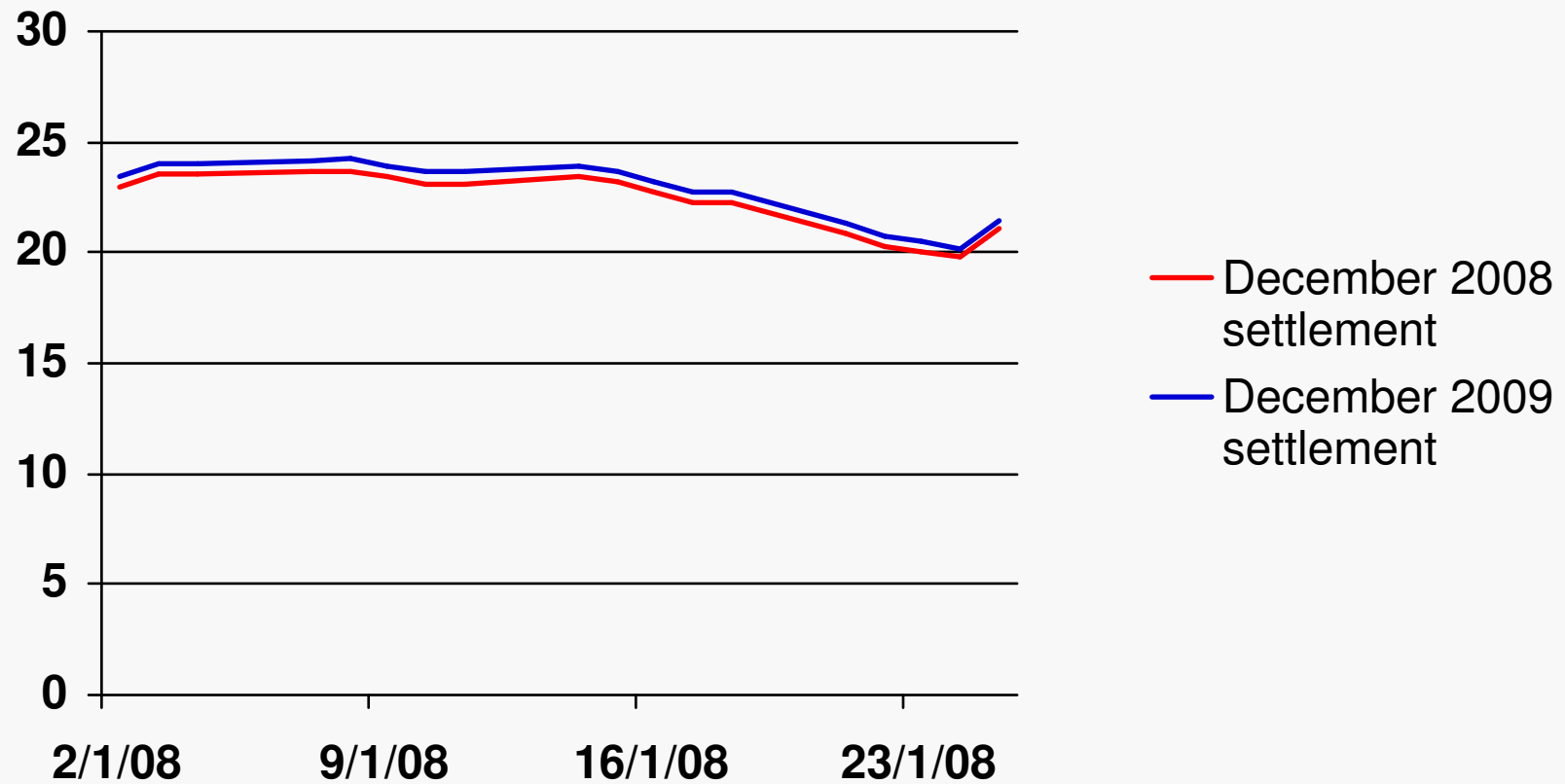
- Transport Fuels *continued*
 - A new Renewable Transport Fuel Obligation (RTFO) will apply from April 2008
 - 2.5% in 2008
 - 5% from 2010
 - Will increase thereafter
 - If technically feasible
 - If biofuels are produced sustainably
 - If politically acceptable
 - Will last until 'at least 2020'
 - Buy-out price of 15 pence/litre; with incentive shifting from duty concessions to RTFO
 - Developing Environmental Assurance Scheme

EU Emissions Trading Scheme



- 'Cap and trade' scheme
- The combustion of biomass assumed to be emission-neutral
- Sectors covered:
 - Electricity generation;
 - Iron & steel;
 - Mineral processing industries such as cement manufacture;
 - Pulp and paper processing industries
- Proposed to extend to petrochemicals, ammonia and aluminium; and possibly shipping
 - Should not be extended to agriculture or forestry because of the difficulty of monitoring, reporting and verifying
- A Carbon Reduction Commitment (CRC) was announced in the UK's 2007 *Energy White Paper*. This will extend emissions trading in the UK to other large private and public sector organisations (including supermarkets and presumably universities) not yet covered by the EU scheme

Futures contracts £/tonne CO₂



http://www.ecx.eu/default_flash.asp

Summary of Incentives



CAP Pillar 1	<€45/ha
CAP Pillar 2	Investment grants Planting grants e.g. £1k/ha
Biofuels for road transport	20p/litre tax rebate RTFO of 10% by 2020, current buy-out price of 15p/litre
Renewables for electricity	RO of 20% by 2020, ROCs trading at about £50 per M/Wh
Emissions trading	About £20/tonne CO ₂



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Social perspectives

Richard Tranter

Centre for Agricultural Strategy

AD4RD: Social perspectives

Two broad objectives:-

1. Detail benefits of AD adoption to farmers and rural community
2. Assess acceptability of adoption of AD onto farms from both public's and farmers' viewpoint

AD4RD: Social perspectives

Methods to achieve Obj. 1 - benefits of AD
adoption to
farmers and rural community

1. Stakeholder workshop
2. Correspondence and interviews
3. Informal survey of digester operators

AD4RD: Social perspectives

Methods to achieve Obj. 2 - acceptability
of AD adoption
from farmers' and landowners' viewpoints

1. Postal survey
2. Follow-up visits to sub-sample

AD4RD: Social perspectives

Methods to achieve Obj. 2 - acceptability
of AD adoption
from the public's viewpoint

1. Focus groups
2. Telephone survey



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Farm-level modelling

Philip Jones

Centre for Agricultural Strategy

AD4RD: Farm-level modelling

Combines outputs from other work packages to assess the economics of farm-based biogas production and any associated land use and farm practice changes.

Two linked objectives:-

1. Model the profitability of AD energy production at the farm level
2. Energy and economic analysis for co-digestion of farm waste and/or off-farm organic waste

AD4RD: Farm-level modelling

Objective 1 - model the profitability of
AD energy production at the farm level

1. Develop a UK based digester cost model
 - *Two models of different scales*
2. Construct a suite of farm-level models
 - *Spreadsheet based or LP*
3. Embed the digester cost model into the farm models

AD4RD: farm-level modelling

Objective 1 - constructing the farm-level models

1. 8 separate models:
 - *dairy and general cropping farm types*
 - *medium & large farm sizes*
 - *small & large digesters*
2. Real-world data used - incl. FBS
3. Performance measure - Net Margin
4. Data on different enterprises (incl yields), cropping/ rotational systems will be defined

AD4RD: Farm-level modelling

Objective 1 - running the farm level models

1. Stakeholders help to develop feedstock scenarios
2. Model runs to include benefits from subsidies/financial incentives using only farm grown crops as digester feedstocks
3. Results fed back to stakeholder farmers for feedback/verification
4. Model runs refined

AD4RD: farm-level modelling

Objective 2 - economic analysis for co-digestion of farm waste and/or off-farm organic waste

1. Incorporate the use of farm wastes and other off-farm organic wastes into the digesters
2. Assess the economic implications of substituting feedstock sources and/or increasing energy production
3. Calculate impact on energy balances of above scenarios for varying feedstock use