



POLICY ISSUES OF INDUSTRIAL BIOTECHNOLOGY IN EUROPE

Jim Philp

Policy Analyst

2 Rue Andre-Pascal, Paris

james.philp@oecd.org



Towards a bio-production policy framework

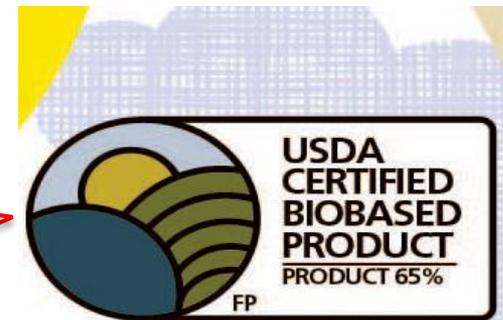
Feedstock/Technology push	Market pull	Push and pull
Local access to feedstocks	Mandates and targets	Metrics, definitions, terminology
International access to feedstocks	Public procurement	Skills and education
R&D subsidy	Standards	Regional clusters
Pilot and demonstrator support	Labels, certification	Public acceptance, raising awareness
Flagship financial support	Fossil carbon taxes and incentives	Governance and regulation
Tax incentives for industrial R&D	Removing fossil fuel subsidies	
Technology clusters		
SME and start-up support		

Example: Public Procurement

- An explanation of what PP is
- Why it's important: OECD governments spend around 13% of GDP on PP

Example:

- Biopreferred Program of USDA
- Some 15,000 products in the catalogue
- Unique label





Some technology and policy topics for Biennium 2017-2018

- Bio- and circular value chains
- Waste to resource:
 - Policy supporting bio-production from waste materials
 - Potential policy black holes to impede bio-waste bio-production
- Cascading use: maximising value from biomass
 - Fuels, products, electricity



Who are the actors? Where are the gaps and weaknesses?

- **Regional clusters:** the linchpin that enables networks?
- Biomass suppliers
- Buyers' cooperatives
- Logistics – transport and warehousing
- Public and private R&D organisations (PPPs, academia, IROs, institutes)
- R&I Funding agencies
- Industries (chemicals, plastics, textiles, furniture, construction)
- Indirect jobs – suppliers e.g. engineering, maintenance
- Standards, certification organisations
- SMEs, spin-outs – near-market R&D
- End-users – customers (public acceptance)
- End-of-life – recycling, composting, CHP



Radical or business as usual?

Value chains for bio-production:

- *Local*, very numerous actors in supply chains (e.g. millions of farmers and forest owners, domestic waste, waste industrial gases)
- Small-to-medium scale biorefineries
- Heavily dependent on high-risk R&D
- Untried products and markets

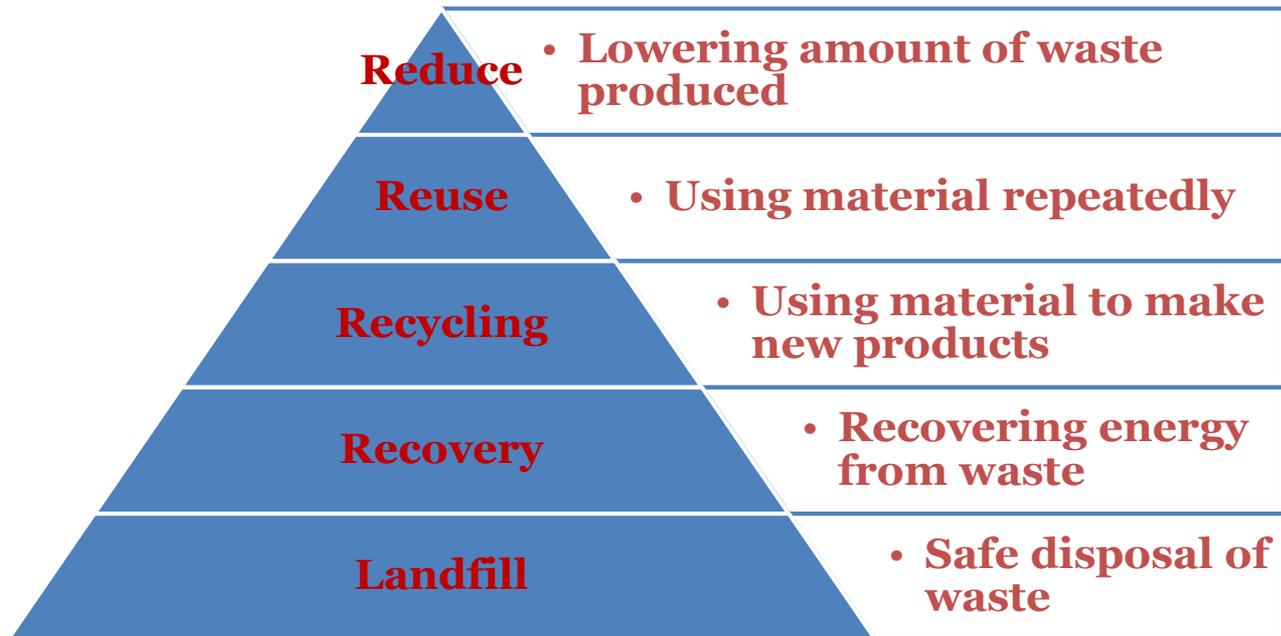
Value chains for petro-production:

- *Global* supply chains, perfected over decades (oil, gas, even coal)
- Huge scale biorefineries, huge economies-of-scale
- R&D is more incremental, lower risk
- Tried and tested products and markets
- **BUT:** unresponsive value chains



Waste hierarchy (EU Waste Framework Directive 2008/98/EC)

Waste = any substance or material that the holder discards, intends to discard or is required to discard



Where does bio-based production come in the hierarchy?



Waste for biorefining

- **Germany:** “Principally, the German circular economy law encourages or foresees *the use of residues and wastes as “secondary raw materials”*. However, the appropriateness of the raw materials is judged by criteria, such as the degree of pollution/harmful substances (others are: emissions, (2) protection of natural resources, (3) energy efficiency/balance).”
- **Ireland:** “Yes if the material is classified as a waste, then the transport of it and the holder of the waste require a license or permit. If it goes to a biorefinery - the facility will require an EPA license or permit and the issues associated with that will mean that *the products coming out of the biorefinery are still classified as wastes* and hence will have very limited options for reuse or recovery.”
- **Italy:** “The current legislation is inadequate for biowaste biorefinery development. For example, *the legal qualification of some residues or co-products as ‘waste’ hinders a broad range of potential biorefinery initiatives*. Furthermore, local environmental and spatial permits for managing biowastes are limiting possibilities.”
- **UK:** “Classification as ‘waste’ or ‘co-products’ can *prevent reuse/reprocessing and often drives use into energy instead of higher value options*.”

Thank you for your time

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