

Policies to Achieve Dematerialisation

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Sustainable Development Commission
ECONOMY 'LITE' – CAN POLICIES FOR DECOUPLING WORK?

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Dematerialisation and decoupling

- **Dematerialisation:** a decrease in the quantity of resources, measured by mass, being used by an economy
- **Decoupling:** a decline in the ratio of the amount used of a certain resource, or of the environmental impact, to the value generated or otherwise involved in the resource use or environmental impact. The unit of decoupling is therefore a weight per unit of value.
- Dematerialisation plus growth \Rightarrow absolute decoupling. In a shrinking economy, its relationship to decoupling is unclear.
- Decoupling: emissions and other environmental impacts as well as resource use.
- Dematerialisation: usually only resource use, but may include emissions.
- Both resource use and emissions may lead to environmental impacts, although these are normally considered as an extension to, rather than as part of, the dematerialisation concept.

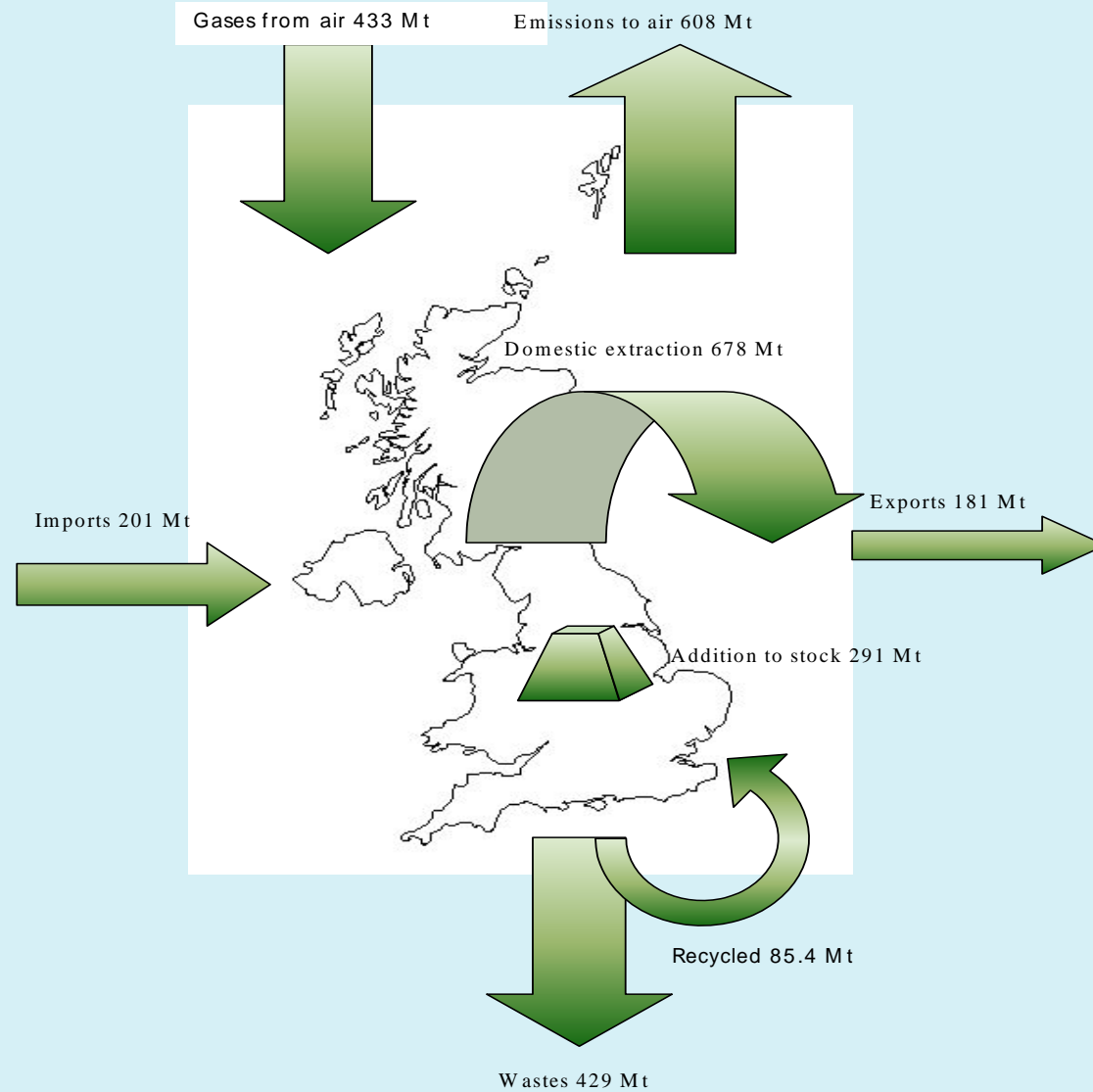
Why dematerialise?

- To reduce the depletion, and therefore extend the period of availability, of a scarce resource
 - Not a great deal of evidence of resource scarcity (even oil and gas)
 - Beware linear extrapolations of 'expected resource lifetimes'
 - BUT many rare substances now of large potential application (e.g. indium, platinum), although only used in small quantities in any one product, not the usual focus of 'dematerialisation'
- To reduce the environmental impacts associated with the extraction, transport, processing or use of the resource
 - Importance of life-cycle evaluation of dematerialisation, cradle-to-grave/cradle
 - Especially relevant to carbon emissions
- To reduce the environmental impacts of the disposal of the material at the end of its useful life.
- Importance of whole system evaluation of dematerialisation
 - Imports/exports
 - Supply chains

Measuring dematerialisation

- Mass balance
- Total material requirement (TMR), Direct material input (DMI), Domestic material consumption
 - Bringezu et al. 2004 (p.120) find that, for 26 countries and with the exception only of the Czech Republic , “no significant absolute decline of direct material input per capita has been observed so far in the course of economic growth”, i.e. No dematerialisation

UK Mass Balance



Categorisation of environmental policies

- *Market/incentive-based (also called economic) instruments*: include emissions trading, environmental taxes and charges, deposit-refund systems, subsidies (including the removal of perverse subsidies), green purchasing, and liability and compensation (EEA (2006, p.13).
- *Regulation instruments*, which seek to define legal standards in relation to technologies, environmental performance, pressures or outcomes. Can also include imposition of obligations, e.g. renewable and energy efficiency obligations in the UK.
- *Voluntary/self-regulation (also called negotiated) agreements* between governments and producing organisations. Economic actors may enter into these in order to forestall the introduction of market-based instruments or regulation.
- *Information/education-based instruments* e.g. Eco-labels, 'smart' meters, may be mandatory or voluntary.

Policy principles for materials management

- Owner responsibility
- Producer responsibility (for production process)
- Waste hierarchy (at odds with owner responsibility)
- Prevention of waste by improved technologies and products;
- Recycling and reuse;
- Optimisation of final disposal.
- Extended producer responsibility (EC Directives)
 - Priority waste streams (packaging, tyres, end-of-life vehicles, electric and electronic equipment)
- Sustainable consumption and production (SCP)
- Integrated product policy

UK SCP Strategy

Products	Strengthening and international measures to improve the environmental performance of products and services, including improved product design
Production	Improve resource efficiency and reduce waste and harmful emissions across business sectors
Consumption	Influence consumption patterns, including proposals for new advice for consumers
Procurement	Sustainable procurement in the public sector, to make the UK a leader within the EU by 2009
Innovation	Support for innovation to bring through new products, materials and services
Sustainable business	Increase transparency, corporate responsibility and skill in business and other organisations
Waste	Increased emphasis on reducing waste at source and making use of it as a resource

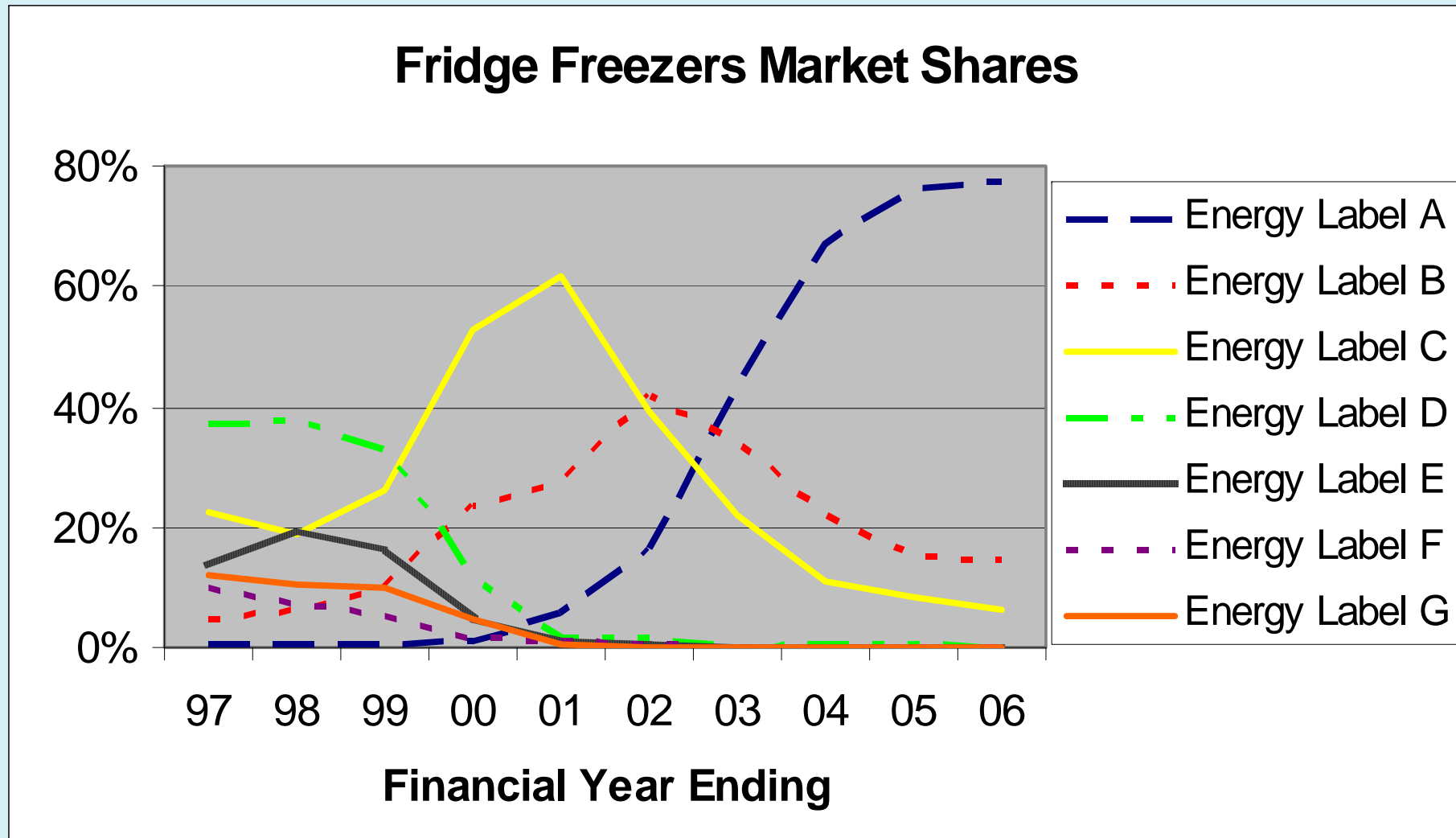
Policies for dematerialisation (1)

- Economic instruments: importance of resource and emission prices, driver of efficient use, emission and waste reduction
 - Aggregates tax: 2002 £1.60 per tonne, 2007 £1.95 per tonne “strong evidence that the levy is achieving its environmental objectives, with sales of primary aggregate down and production of recycled aggregate up” (HMT 2007, p.189).
 - Energy taxes: climate change levy (carbon reduced by 3.5 mtc by 2010), fuel taxes (EU emissions half what they would have been at US prices)
 - Landfill tax: 2007 £24 per tonne, £8 escalator in 2008, 2005-06 landfill down by 25% from 1997-98
 - EU ETS/Carbon Reduction Commitment

Policies for dematerialisation (2)

- Regulation
 - EU Landfill Directive: tough reductions in landfill of biodegradable waste
 - UK implementation: landfill tax, subsidies to local authorities for recycling, Landfill Allowance Trading Scheme (LATS)
 - Renewables Obligation, Energy Efficiency Commitment (Carbon Emissions Reduction Target)
 - Integrated Pollution Prevention and Control (emission control may *increase* flow of materials)
- Voluntary agreements
 - Climate change agreements
 - EU fuel efficiency agreements (targets will not be met; targets will be mandatory in future, i.e. Regulation)
- Information/education
 - Energy efficiency labels for appliances

UK fridge freezer market and energy labels



Combinations of policy instruments

- Market transformation
 - Result of the combination of a number of policy measures affecting different actors, including: EU energy labelling; marketing campaigns (e.g. Energy Efficiency Recommended branding and advertising) by the Government and its agencies (e.g. EST); consumer advice from Energy Efficiency Advice Centres; media coverage on climate change; retail staff training and point of sale material from the EST; EU Minimum Performance Standards; EEC funding for incentives for consumers to purchase the energy-efficient models.
- SCP (see earlier)
- EU Integrated Product Policy
 - SCP; state aid; voluntary agreements; standardisation; environmental management systems; eco-design; labelling and product declarations; greening public procurement; encouragement of green technology; and legislation in areas including waste and chemicals.

Conclusions

- Widespread relative, but not absolute, decoupling (i.e. No dematerialisation)
- More stringent application of policy instruments (especially price-based to avoid rebound effects) probably more important than further conceptual development or ‘policy package’ approaches (e.g. SCP, IPP)
- ‘Angelised GDP’? Not yet.
- Greater clarity on net imports and exports of materials, and associated environmental impacts