

# Policies to Achieve Dematerialisation

Presentation as part of the project of the  
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.

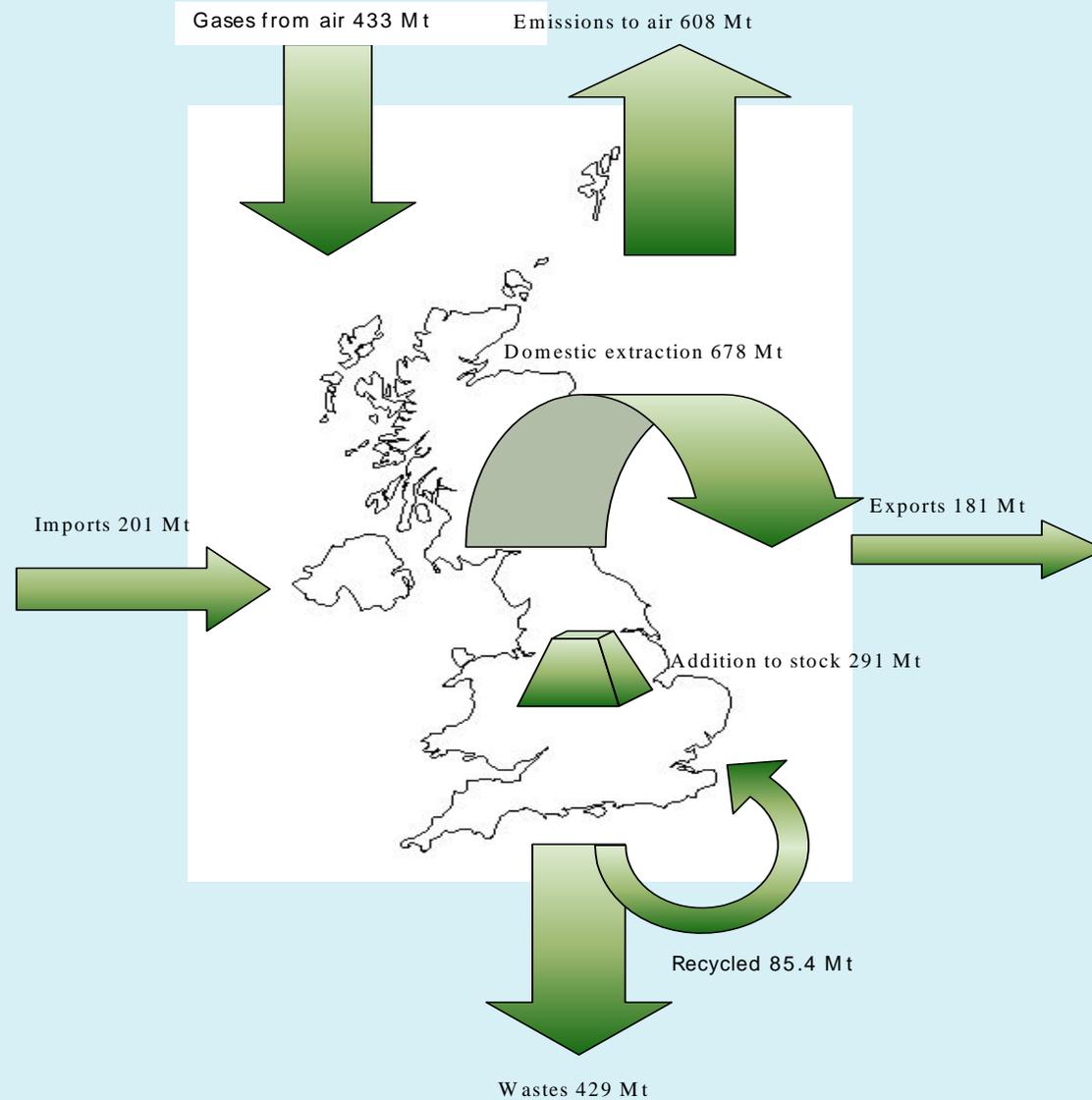
# Why dematerialise?

- 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

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

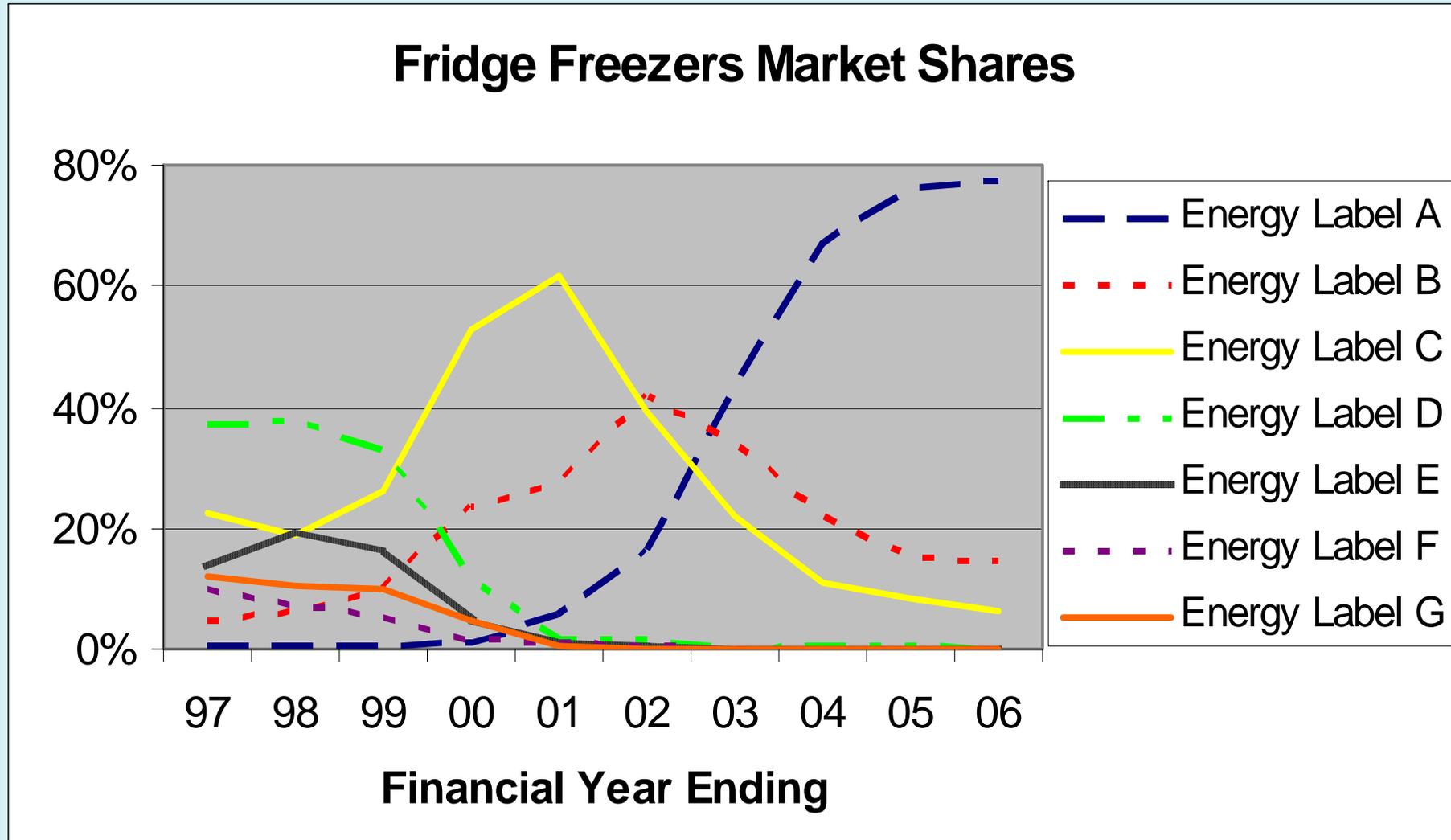
# Policies for dematerialisation (1)

- 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