Policy Instruments and Principles for the Circular Economy Transition

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Circular business models for the CE transition

- Product life extension
- Circular supply
- Sharing economy
- Resource recovery
- Product service systems

Diagram:
- Recycling
- Remanufact.
- Re-use
- Repair

Process stages:
- Extract
- Process
- Design
- Manufact.
- Retail
- Use
- End of life
- Disposal

Inputs:
- Renewable or bio-based inputs
- Indust. symbiosis
- Sharing

Product service systems
### What enabling policies for innovative circular business models (CBMs)?

<table>
<thead>
<tr>
<th>CBM characteristic</th>
<th>Barriers/enablers</th>
<th>Relevant policies</th>
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<tbody>
<tr>
<td><strong>Unconventional sales/revenue model</strong></td>
<td>Consumer attitudes and access to finance are important</td>
<td>• Awareness raising</td>
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<td>• Product labelling</td>
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<td>• Support for SMEs</td>
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<td><strong>Use nat. resources relatively sparingly</strong></td>
<td>Resource and pollution prices are important</td>
<td>• Prices on externalities</td>
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<td></td>
<td></td>
<td>• Subsidy reform</td>
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<td></td>
<td></td>
<td>• Environ. fiscal reform</td>
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<tr>
<td><strong>Collaboration in and across value chains</strong></td>
<td>Informational barriers and transaction costs are</td>
<td>• Industrial Symb.</td>
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<tr>
<td></td>
<td>important</td>
<td>• Online marketplaces</td>
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<td>• Certification schemes</td>
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<tr>
<td><strong>Novel, often niche, can be disruptive</strong></td>
<td>Status quo biases and lock-in effects are important</td>
<td>• Green public proc.</td>
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<td>• Allow firm exit</td>
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<td><strong>Close material and product loops</strong></td>
<td>Ability to undertake reverse logistics is important</td>
<td>• Address trade barriers</td>
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Policy toolkit for the CE transition
Supporting sound waste management and resource efficiency

- Regulatory-based approaches
  - Bans, licensing, technology standards
  - Extended producer responsibility (EPR) schemes, Green public procurement

- Economic instruments
  - Taxes, tax exemptions, subsidies and tradeable permit schemes
  - Eco-labelling, information disclosure

- Voluntary approaches
  - Product stewardship, voluntary commitments

- Information-based instruments
  - Voluntary approaches
Deploy appropriate policy instruments across the material and product life cycle

Material extraction

Production

Consumption

Recycling and waste disposal

Example: economic instruments

- Taxes on virgin material
- Advance disposal fees
- Extended Producer Responsibility
- Household waste charges
- Deposit-refund schemes
- Landfill taxes
- Landfill allowance trading schemes

→ Is environmental policy “enough” to support the CE transition by itself?
Integrating environmental policy with cross-cutting and other sectoral policies

Environmental policy toolkit for the CE transition

- Innovation for green growth
- Voluntary approaches
- Regulatory-based approaches
- Economic instruments
- Information-based instruments
- Investment and infrastructure
- Environmental fiscal & subsidy reform
- Education & skills
Three examples of economic instruments in practice

1. **Landfill taxes**
   – Taxation on waste disposal to divert recyclables away from landfill.

2. **Virgin materials taxation**
   – Taxation on extraction with the purpose of encouraging substitution to recycled alternatives.

3. **Extended producer responsibility schemes**
   – Extending a producer’s physical and/or financial responsibility to the post-consumer stage of a product’s life cycle.

→ How can these policy instruments support circular innovation and ensure a just transition?
OECD definition:
EPR is an environmental policy approach in which a producer’s responsibility for a product is extended to the post-consumer stage of a product’s life cycle.

Two objectives:
- implements the “polluter pays principle”
- provides an implicit incentive for sustainable design of products (DfE)
A just transition?
Integrating the informal sector in EPR development

- The informal sector has a potentially important role in EPRs and should be engaged in the system.
  - Challenge: Secure its positive contribution while mitigating environmental impacts from downstream informal waste processing

<table>
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<th>Positive impacts</th>
<th>Negative impacts</th>
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<tr>
<td>• Efficient collecting and sorting waste with positive economic value</td>
<td>• Unsound practices (downstream informal dismantling and recycling) need to be eliminated</td>
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<td>- Some evidence that informal systems collect more material than formal</td>
<td>• Emissions of hazardous substances from poor recycling processes</td>
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<td>• Additional services that are not provided by the formal sector</td>
<td>• Relatively inefficient materials recovery</td>
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<td>• Residual waste without economic value is dumped or not treated</td>
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Supporting circular innovation
EPR fee-modulation to support eco-design

• Pillar of EPR = **polluter pays principle**
  – Producers pay EPR “**fees**” (typically to Producer Responsibility Organisations, PROs) to cover waste management costs

• **Eco-modulation of EPR fees can support eco-design**

• How to modulate EPR fees? For example according to:
  – *Packaging*: recyclability of different polymers; packaging for consumers / businesses...
  – *Electronic waste*: ease of disassembly of electric products, availability of spare parts (affecting durability)...
  – *Batteries*: rechargeability, charge capacity...

→ **Building green innovation incentives into “classical” environmental policy tools**
Key policy recommendations for the CE transition

1. Apply policy mixes along the product value chain
2. Adopt a life-cycle approach in policy making
   - Extended producer responsibility
   - Green public procurement
   - Partnerships with business
3. Correct policy misalignments
   - Support for primary resource extraction
   - Integrate low carbon and CE objectives
   - Mainstream CE across policy silos
4. Integrate CE into cross-cutting and sectoral policies
   - Innovation
   - Education
   - Investment
   - Fiscal policy
THANK YOU!
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Supporting innovation in technology and business model development

- Integrate CE into national innovation policies and regularly assess the results achieved.
- Prioritise basic, longer-term, riskier research in public R&D programmes, and provide support for interdisciplinary initiatives.
- Avoid policy measures that create barriers to the entry of new firms to markets; establish an enabling environment to facilitate innovation and the take-up of resource-efficient, circular products and processes in SMEs.
- Promote research partnerships involving the private sector, universities and the government;
  - Any support for specific technologies should favour those with a potentially broad range of applications.
- Remove any unnecessary regulatory barriers to the development of new circular business models.
1. Landfill taxes are increasingly popular

Source: OECD (2014)
1. Landfill taxes are reducing waste directed to landfills

Source: Bio Intelligence Service (2012)
... and increasing the rate of recycling
2. Taxation of virgin materials

• Taxation of virgin materials can reduce the quantity of new materials used and the volume of waste requiring disposal.  
  – Increase the relative attractiveness of recycled materials.

• OECD countries with taxes on virgin construction aggregates (sand, gravel, rock, etc.) include Denmark, Sweden, UK  
  – The tax seems to have reduced use of the taxed virgin materials.  
  – But impact is difficult to assess, due to other measures in parallel.

• Assessment  
  – Virgin materials taxes are a blunt instrument for reflecting the environmental damage caused by quarrying.  
  – The scope of virgin materials which can be taxed is often limited to goods that are not internationally traded.
Assessment of EPR

- EPR schemes have increased recycling rates, contributing to decoupling downstream.
- Provide a stable source of revenue for separate waste collection, recycling
- Not enough information on cost-effectiveness
- Relatively few EPR systems oriented towards incentivising eco-design
- In emerging economies, EPR is a relatively new policy approach
  - Aim to formalize the informal sector and to establish a safe and environmentally sound waste infrastructure.
The structure of the informal sector can be complex.
Advantages of economic instruments

• EIs offer a number of advantages, including:
  – Static and dynamic efficiency
  – Flexibility
  – Revenue generation possibilities
  – Comprehensive incentives

• Instrument design needs to take account of the impact on the overall structure of incentives for producers, consumers and the waste management and recycling industries.
Challenges of economic instruments

• Flexible compliance can be undesirable in cases where:
  1. Highly toxic emissions have damage potential far in excess of the cost of abatement
  2. Significant environmental damage is generated by individual sources.

• Effectiveness of implementation of EIs depends on:
  – Ability to monitor and enforce compliance
  – Knowledge of abatement costs of private companies
  – Functioning markets to transmit price signals

• Some EIs can be fiscally regressive, although there are ways to address this (e.g. by recycling revenues)

• Presence of a large informal sector calls for integration efforts