Designing a Policy Package to Decarbonise CO2-intensive basic materials sectors

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Industry sector emissions reduced by a ~85% by 2050 (-94% combustion & -75% process emissions).
⇒ dramatic scale up and deployment of ultra low carbon tech (supply side) during next 10-15 years.
⇒ significant improvements in material resource efficiency and material recirculation (demand side)
Strong implications for construction sector value chain

**EC 2050 vision:**
EU wide process emissions reductions (%)

- Cement and non-metallic mineral products
- Iron and steel
- Chemicals
- Non-ferrous metals
- Other industries

**Tech scenario**

**EC 2050 vision:**
Energy indicators for industry sector

- Energy Intensity
- Energy Use
- Carbon intensity
Net zero also requires significant improvements on demand side, through material efficiency of production, services, and especially enhanced recycling.
1. Create a business case for the first *commercial scale* sites

2. Scale up demand for ultra-low-carbon technology

3. Phase out for old, high carbon tech

4. Infrastructure, including access to significant quantities of decarbonised energy

5. A robust long-term anti-leakage framework
1. **Missing business case for first commercial scale projects**:

   - Carbon price-linked Contracts for Difference (competitive tender)
   - Public innovation equity for first commercial projects (compatible with national Long Term Strategy for climate neutrality)

2. **Scale up demand for ultra-low carbon materials**:

   - Public procurement
   - Embedded CO2/material labels and ultimately standards for buildings, automobiles, etc.

3. **Sunset clauses for old, high carbon tech**:

   - Set clear phase out schedule (e.g. ICE cars or coal plants)
   - Operating licences will not be granted to plant beyond those dates.
4. Infrastructure/access to decarbonised energy

- Zero-CO2 energy infrastructure plans for energy-intensive industrial clusters
- Enable signing of long-term supply contracts for decarbonised energy for certain categories of sites (Competition law issue)

5. Robust log-run anti-leakage framework:

- Border carbon adjustments are desirable but difficult
- Stronger legal (WTO) footing may be to use protect standards (sunset policies relating to what can be sold in internal market).
- Both solutions would require int. coordination and take time…
Main drivers for deep CO2 reductions? (materials demand side)

1. Preserve material value to enable high value recycling/re-use

2. Raise material efficiency in production

3. Increase quantity & quality of collection of old scrap

4. Create demand for recycled materials in high quality applications
1. **Preserve material value for high circularity rates**
   - Set policy targets based on quality of recycling
   - Strengthen Extended Producer Responsibility schemes
   - Eco-design and labelling

2. **Raise material efficiency in production**
   - Product design guidelines, reporting, labelling, lead markets and ultimately standards
   - Financing for research/pilot demonstration of material efficient production technologies
3. Increase quantity & quality of collection of old scrap

- Disincentive demolition and shredding (prior to full decontamination).
- Promote innovative technology that improve material recovery (e.g. SmartCrusher, automation, prefab)
- Improve collection and tax incentives of single use packaging

4. Enable demand for recycled materials

- Systems to guarantee and track quality of circular material flows
- Promote localised, closed-loop recycling for market niches
- Public procurement and private sector pledging
Further information on policy packages

Decarbonising basic materials in Europe:
How Carbon Contracts-for-Difference could help bring breakthrough technologies to market

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Basic industrial materials, such as steel, cement and concrete, aluminium and certain chemicals/food staples—account for about 25% of greenhouse gas emissions. However, despite high technological potential, industrial companies often cannot commercialise and therefore fail to develop the technologies. The carbon tax is a key mechanism where there is no market willing to pay the higher production costs of very low-carbon basic materials.

In this paper, we present a variety of policy suggestions based on recent experience from large public procurement, carbon pricing, consumption change on basic materials and lower carbon alternatives. However, these options, although potentially feasible as part of a wider policy package, are not sufficiently well targeted to address core problems, i.e. the very low-carbon business as a result of the current market. These technologies.

This study therefore explores the idea of setting carbon contracts for difference (CCFs) to help commercialise the first low-carbon basic materials projects. It suggests that this approach could be economically efficient, is compatible with EU state aid rules, and is highly complementary to other policy instruments, such as those mentioned above.

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Industrial Transformation 2050
Towards an Industrial strategy for a Climate Neutral Europe

In collaboration with

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EU policy momentum is increasing, but national competences also crucial

EU level initiatives focus increasingly on heavy industry/basic materials:
• Long-term strategic vision for a GHG neutral economy in 2050
• EU Industrial Strategy: 2020
• ETS Reform & Innovation Fund
• Next EU Budget and budget earmark for climate (public procurement? )
• Circular Economy Strategy
• Eco-design regulations
• Revision of Env State Aid rules for 2020
• Discussion about reinforcing carbon pricing and BTAs/Anti-leakage options

However, national competence and leadership will also be important:
• Management of transition for brownfield industrial sites
• Fiscal or public procurement policies
• Reform of local building codes & recycling policies