

Employment effects of decarbonisation pathways in EU energy intensive industries

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- Map decarbonization pathways and their employment effect
- Country studies: France, Germany, Italy, Spain, Poland, UK
- Econometric analysis: Germany, EU27, Poland
- Econometric analysis on the possible effects of a CBAM
- Regional case study: Taranto, southern Italy

Project objective

- Examine possible decarbonization pathways in energy intensive industries to meet EU climate neutrality target by 2050, their applicability by basic material (steel, chemicals/plastics, cement), regional characteristics with focus on employment effects
- Differential effects due to technology, regional specifics and carbon leakage
- pathways for the decarbonization of these industries to be explored with estimating their possible employment effects:
 - 1) Increased **materials efficiency**, including new manufacturing processes, new circular business models
 - High-quality **materials recirculation** by reusing materials that have already been produced.

Project objective

- 2) New production processes including the use of **hydrogen** technology. For steel, several EU companies are exploring production routes that switch from carbon to hydrogen. In cement, new materials offer low-CO₂ alternatives to conventional clinker. For chemicals: non-fossil feedstocks such as biomass or end-of-life plastics. These all need clean electricity – not available at scale
- 3) **Carbon capture and storage** (CCS/U) can make for less disruptive change: less reliance on processes and feedstocks not yet deployed at scale (with limited accessibility at some geographical locations)

EII background: by employment and emissions

- Energy intensive industries have a central place in emissions reductions.
- 3.2 million workers are employed (2020) in iron and steel, minerals, refineries and chemical industries in the EU27 - around 11% of total employment in industry and contribute about 15% of total value added of manufacturing in the EU27.
- Iron and steel sector has the greatest share of emissions followed by refineries, cement, petrochemicals and fertilizer. These five sectors make up over 70% of industrial emissions in the EU ETS.
- Adding lime and plaster; paper and pulp; aluminium, inorganic chemicals and hollow glass these all make up 85% industrial emissions

Past emissions reductions

- In the energy-intensive industries, emissions declined by nearly 30% between 1990 and 2018: most profoundly in the iron and steel sector (-41%), followed by the cement and lime (-30%), chemicals (-27%) and refineries (-5%).
- Most of these emissions cuts were crisis related and occurred between 1990-93 (CEE transformation crisis) and during 2008-10. Emissions grew between 2010 and 2018, in spite of gradually strengthening ETS.
- Half of all the emissions in the energy-intensive industries are being caused by heating fossil fuels in furnaces for high-temperature processes.
- The sector needs ambitious emission reductions

Policy context

- Russia` aggression highlighted the EU`s long term fossil fuel dependence and the need to get out of it
- the new geopolitical situation resulted in a price shock making the transition more difficult in the short term but makes it even more inevitable and speeds it up
- Address its worst effects without jeopardizing climate ambition
- REPowerEU in the centre of policy debate
- FF55 package in critical phase (CBAM, ETS...)
- New emphasis on just transition
- Fast changing environment (policy framework, geopolitics) is a huge challenge for the industry given its long-term investment cycle

Employment

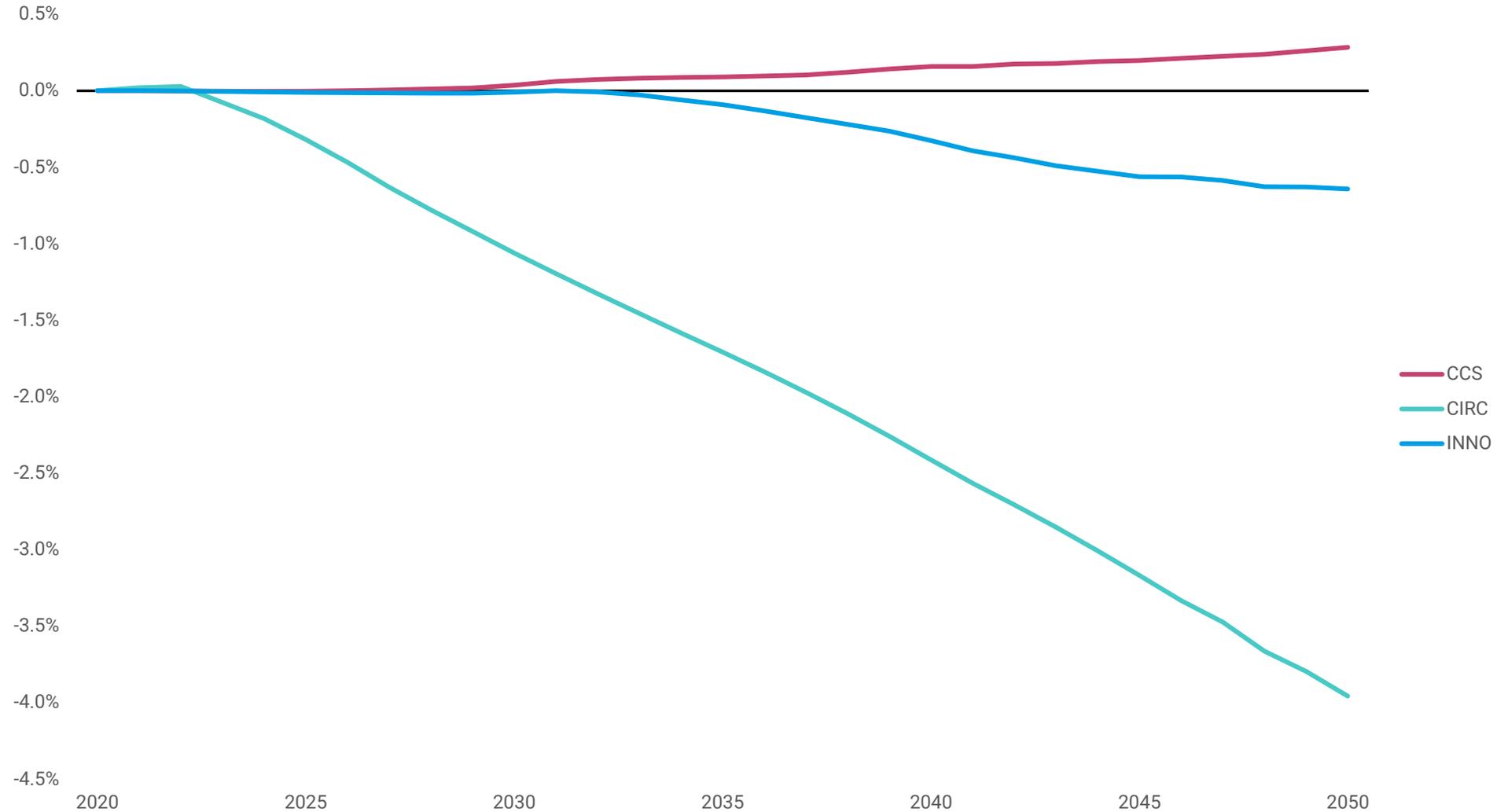
- Employment reductions (varying by country and material) have been taking place in the past 15 years (not due to climate policy, but crises and global overcapacities)
- Eg. there were 326 thousand direct jobs in steel production in the EU28 by 2020, down from 375 thousand in 2011 (a 13% decrease)
- Certain countries Germany, Italy showed increases in output in the last decade but not in employment
- EII-s are not seen as losers (like fossil energy) or undergoing disruptive changes (as car industry)
- Beside construction these industries would benefit from necessary green investments (renewables infrastructure, retrofit programs all need materials)
- Decarbonisation is not expected to lead to comparable
8 further job losses in any of the decarbonization pathways **etui.**

ETUI study on the employment effects of decarbonization for energy intensive industries

- Differences in the employment effect between technology scenarios with given emissions reduction target > at the level of the whole economy: no dramatic effects. In each of the technological pathways however there is a negative employment effect for the EIIs themselves.
- Technology scenarios: innovation (hydrogen); CCS; circular economy
- The circular economy scenario shows higher (although not dramatic) employment loss for the whole economy, but ca. a 3% loss of employment in energy intensive industries
- Viability of Hydrogen and CCS solution shows regional differences (more opportunities for industry clusters, while isolated regions have disadvantage)

Possible employment effects: three technology scenarios, EU27 EII-s

Employment change compared to naïve net-zero (%)



CBAM effects

- While GDP and employment (whole economy) would increase with the introduction of CBAM, no significant employment effect for EII sectors
- Imports (and exports) of the EII sectors shrink, but due to the revenue recycling (collected CBAM revenues are used for decreasing labour and consumption taxes) consumer sectors boost their sales, production and even their trade activity.
- Abolishing free emission allocations - while fully justified - can result in a price shock and negative employment effects, transition periods may be considered.

Current policy debates

- EP ENVI decision (17th May 2022) to reduce free allocations by 40% in three years is seen by the industry as a huge challenge. A radical ETS free allocation phase out of CBAM-affected sectors is seen (Eurofer 2022) as a threat to the viability of these industries, because there is no solution offered for exports. Accordingly, steel industry risks losing up to 20 million tonnes of exports worth €45 billion euros and at least 30,000 jobs. Other proposals on 'rebasings' and on the Market Stability Reserve is also seen critically by the industry.

More robust just transition policies are needed

- Trade unions and works councils need to adapt their vast experiences with managing restructuring in an advance looking way to the concrete cases of restructuring cases due to decarbonisation
- comprehensive and **coherent policy framework needed**
- Public responsibility in facilitating a transformation that is of public interest - JT Fund, regional, industrial policy)
- Timely information and consultation
- Social dialogue, social plans, employment transitions, training
- Big differences in concrete JT strategies by sector
Decarbonisation (in sectors) has different interlinkages to other megatrends (as e.g. digitization /auto/, demography /mining/)