Energy intensive industries are part of the solution, not the problem

Deep decarbonisation is challenging but possible

European energy intensive industries (EIIs) like steel, non-ferrous metals, cement, chemicals, glass, paper are of strategic importance for Europe's value chains. The goods they produce are badly needed by almost all other sectors of the economy. The EIIs are also an important employer as altogether they provide quality jobs to 6.6m employees (although 1.6m less than in 1990). As these jobs are mainly for semi-skilled workers, they contribute to correcting for the ongoing trend of polarisation on labour markets. Because the EIIs have their origin in the coal-based first industrial revolution and the petrol-based second industrial revolution, they are often considered as being obsolete and outdated. Indeed, the current third (or even fourth) industrial revolution will probably put an end to two centuries of economic development based on fossil fuels in order to move to a digitalised and sustainable economy. In this respect it is however often forgotten that the EIIs are also part of this evolution and even at the forefront to support the transition to a low-carbon economy. Indeed, they provide the materials for producing solar panels, windmills, electric vehicles. Moreover, they played a positive and constructive role in meeting the European climate objectives as they were able to significantly reduce their emissions: -36% since 1990.

Pathways to deep decarbonisation.[1]

To decarbonize the EIIs there exist already today a myriad of low carbon technologies and production processes, although there is no silver bullet yet and their technology readiness level is still low. Besides the technological challenge there is also an important economic challenge. Indeed, zero-carbon technologies will entail huge investment and operational costs (without any added value for the customer as the final product will be the same). New cross-sectoral technologies are probably the most important pathway to the deep decarbonisation of the EIIs. They include further improvement of energy efficiency e.g. by the digitalisation of production processes, electrification of heat, use of green hydrogen, better valorisation of secondary materials, biomass to replace fossil fuels. Finally, carbon capture and storage (and -utilisation) will be key for the deep decarbonisation of the EIIs as 41% of their emissions are originating from industrial processes. These emissions are much more difficult to abate than the emissions from fossil fuels being burned during the production process. But technological progress will not suffice to achieve the objective of becoming net-zero. Deep decarbonisation needs to be supported by new business models like industrial symbiosis where by-products from one process are used beneficially by another process. Also the organisation of industrial demand response is promising: EIIs acting as a battery which consumes more electricity when plenty of renewables feed into the grid and reduces consumption at times of high demand and low renewable energy generation. Finally, industrial processes will have to be deeply embedded in the circular economy by closing and narrowing material and energy loops.

Making it happen by connecting industrial and environmental policy.

in order to create the right framework conditions for the uptake of low-carbon solutions in the EIIs, active public intervention will be needed to create strong synergies between climate and industrial policies. The long-term challenges will have to be made operational and turned into achievable

[1] Wyns Tomas, A Bridge Towards a Carbon Neutral Europe, Europe's Energy Intensive Industries contribution to the EU strategy for long-term EU greenhouse gas emissions reductions, Sept. 2018, https://www.ies.be/files/Industrial_Value_Chain_25sept_0.pdf

short-term action plans for sectors/value chains with realistic objectives. R&D funding will have to be provided at all stages of development. A EU flagship 'Mission for low-CO2 technologies' in the Horizon Europe programme is highly welcome in this respect.
Investment support will be needed not only to develop the new low-carbon technologies but also to integrate them in existing production systems which will require costly retrofitting.
Access to finance should also be guaranteed as the investments required are very risk- and capital-intensive with long-term pay back periods. Furthermore, initiatives are needed regarding:

- Establishing shared infrastructure for CCS and hydrogen
- Organising public-private partnerships for the development and market introduction of bio-chemicals, green hydrogen, sustainable process technologies.
- Steering consumer/producer behaviour to low-carbon products
- Promoting industrial collaboration, strategic alliances as a way to allow companies to share costs of R&D and investment. This will require a review of state aid rules.
- Taking care of a fair distribution of costs all over the supply chain.

Finally, decarbonisation will also sharply increase the economy-wide electricity consumption both directly and indirectly (producing hydrogen by electrolysis). Deep decarbonisation could lead to more than doubling the total demand for electricity. This will require huge investments in renewables and infrastructure. Guaranteeing sufficient, reliable and affordable electricity will become important framework conditions for the deployment of low-CO2 processes.

The often forgotten social dimension

The preamble of the Paris Agreement includes a commitment to the 'imperative of just transition'. So far only lip service has been paid to this principle. Deep decarbonisation of the EIIs will have a deep impact on the structure of the workforce and will only be possible when employees are behind it. New jobs will indeed be created, but often somewhere else at another timing and with other skillsets than the jobs that will disappear. Organising a fair transition creates huge challenges about making disruptive economic/technological change socially linear/progressive thereby avoiding mass redundancies. Therefore employment policies should focus on maintaining/ increasing employability of the workforce. The internal mobility of workers in companies should be promoted by up- and re-skilling. For those that have to leave the company a smooth transition to another job should be organized while maintaining a labour contract. Income security should be guaranteed. New job opportunities need to be created in the circular economy connected to the energy intensive industries. Care has to taken of regions that are expected to decline or will have to transform by supporting redevelopment plans. Finally, establishing a culture of social dialogue at all levels (company, sector, regional, national) will be a key element for timely anticipating change and to avoid social disputes.
Reinventing production processes to become zero carbon is only possible when the EIIs maintain their production footprint inside the EU and continue investing. If they relocate because of less stringent rules elsewhere, deep decarbonisation will simply not take place. Maintaining a global level playing field will be key to support the uptake of low-carbon technologies.
As important for a successful transition is social acceptance. Like in any transformation there will be winners and losers. To ensure that nobody is left behind the social implications of this transformation must be considered from the outset and all relevant policy tools be developed and deployed to mitigate the impact on workers and regions. Deep emissions reduction in the EIIs will prove to be a Herculean task, but it deliver a huge contribution to the Commissions' Strategic Vision for 2050 - "A Clean Planet for All" while at the same time offering a springboard to boost the long-term competitiveness of Europe's 'old' industrial sectors.