



Cutting the Gordian Knot: Industrial Strategies of the EU's Green Deal

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1 Executive Summary

The European Green Deal sets ambitious targets for decarbonising the European Union, particularly within its industrial sector. To achieve industrial decarbonisation, the Green Deal deploys a mix of instruments including binding goals, investment support, and carbon pricing. However, there is a noticeable gap in understanding the key policies and their corresponding impacts. Consequently, the effectiveness of the multitude of strategies and instruments designed to promote industrial decarbonisation remains unclear. This policy brief aims to address this gap by providing a comprehensive overview of the European Green Deal's strategies for industrial decarbonisation, tailored for non-experts.

2 The European Green Deal – the policy mix for decarbonisation strategies

The European Green Deal (EGD) is the European Commission's (EC) strategic roadmap for guiding the European Union (EU) toward achieving net-zero greenhouse gas emissions (GHG) by 2050 (EC, 2019). Decarbonisation is a central component of the EGD, integrated into a broader framework addressing critical challenges, including biodiversity, digitalisation, and industrial competitiveness. Since its inception in 2019, the focus on industrial competitiveness has gained prominence, especially in light of geopolitical shifts, such as the Russian invasion of Ukraine and ensuing uncertainties. These developments have led to a surge in energy prices and supply chain disruptions (EC, 2023a).

The EC must ensure that its industries remain competitive while achieving a 55% carbon emissions reduction by 2030 compared to 1990 levels, in line with the following key objectives: (i) achieving net-zero GHG emissions in the EU by 2050; (ii) expediting global decarbonisation efforts; and (iii) investing in the energy transition (Claeys et al., 2019). These

Policy Mix: European Green Deal Industrial Strategies

Elements

Policy Strategy:		Instrument Mix:
Objectives:	Plans and Laws:	Binding goals (Regulation, Systemic): GHG emission reduction goals 2030 & 2050
(i) Carbon neutrality by 2050 in EU and -55% GHG emissions by 2030 compared to 1990	(i) European Climate Law	Investment support (Economic instrument, Technology push): Horizon Europe, InvestEU, Innovation Fund, Global Gateway
(ii) Advancing the global energy transition and increase competitiveness	(ii) Fit for 55	Carbon pricing (Economic instrument, demand pull): Trading of emission allowances, carbon tariff on imported products
(iii) Investing in the transition	(iii) MFF & NGEU	
	(iv) REPowerEU	
	(v) GDIP	
	(vi) ETS & CBAM	

Figure 1: EGD industrial decarbonisation policy mix, including its objectives, plans & laws, as well its instrument mix. The structure follows the methodology of Rogge & Reichardt (2016) and the image is taken from Wakounig (2023).

objectives are pursued through a range of policies, regulations, and delegated acts.

As identified by Wakounig (2023), the primary policies guiding the EGD's decarbonisation strategies include:

1. The European Climate Law, which sets a binding decarbonisation pathway through 2050;
2. The Fit for 55 Package, comprising measures aimed at contributing to the achievement of the intermediate 2030 decarbonisation goal;
3. The Multi-Annual Framework, which defines the EU budget and the Next Generation EU, the EC's emergency response to address terms of extra-budgetary expenditure due to the COVID-19 pandemic;
4. the REPowerEU package, serving as the emergency response mechanism to safeguard energy sources in the context of the Russian invasion of Ukraine;
5. the Green Deal Industrial Plan, designed as a response to the United States' Inflation Reduction Act;
6. The Emission Trading System as well the Carbon Border Adjustment Mechanism, both of which establish a price on CO₂ emissions.

In essence, the EGD encompasses a wide array of strategies aimed at decarbonising the EU economy, with a particular emphasis on the industrial sector. Given its multifaceted and strategic scope, along with the implementation of a multitude of policies, the EGD can be aptly characterized as a policy mix. This mix consists of (i) policy strategies, delineating objectives and plans; and (ii) an array of instruments (Rogge & Reichardt, 2016). Figure 1 illustrates the policy mix within the EGD, focusing on industrial decarbonisation. It is evident that the EC employs a range of policies to reach its decarbonisation goals and incentivise industries to transition.

While the abundance and diversity of policies and instruments offer the potential to tackle various challenges, they can also lead to confusion among industrial stakeholders and policy

inefficiencies. In their annual report on industrial policy in the EU, the Federal Austrian Ministry for Climate Action BMK (2022) identified the absence of a clear overview of the industrial strategies within the EGD. Furthermore, the overlap of these strategies and funding options may result in inefficiencies in the decarbonisation strategy. Therefore, it is crucial to provide a comprehensive overview of the EGD's industrial strategies (Siddi, 2020; Sikkora 2021). This policy brief aims to cut the Gordian Knot of EGD industrial strategies by building on the results of Wakounig's (2023) master's thesis.

3 Instruments for Industrial Decarbonisation

The goals of the policy mix outlined above can be summarised as follows: (i) binding decarbonisation goals; (ii) investment support; and (iii) carbon pricing.

- **Binding decarbonisation goals:** Decarbonisation goals are set out in European Climate Law. These binding objectives encompass not only the previously mentioned target of reducing CO₂ emissions by 55% by 2030 – compared to 1990 levels – along with achieving zero CO₂ emissions by 2050 (EC, 2021b), but also include the incorporation of an intermediate reduction goal for 2040. This intermediate goal will be determined six months after the global stocktake at COP28 in the UAE, scheduled to take place from November 30 to December 1, 2023.
- **Investment support:** A crucial component of the decarbonisation toolkit involves investment support for decarbonisation technologies. The funding for this support is sourced from the Multiannual Financial Framework, the Next Generation EU Package, or revenues generated through the Emission Trading System. These funds are allocated through a range of programmes designed to facilitate research and development, test emerging technologies, and promote the widespread adoption of

green technologies. The key programmes in this regard include:

- **Horizon Europe:** Horizon Europe boasts a budget of EUR 89 billion¹ allocated for the period spanning 2021 to 2027. Notably, one-third of this budget is dedicated to research and development in the realm of green technologies. These initiatives encompass sectors such as power, agriculture, and industry, and they are primarily funded through grants (Wakounig, 2023).
- **Innovation Fund:** Financed by the revenues generated through the Emission Trading System, the Innovation Fund is expected to amount to approximately EUR 29 billion for the period of 2021 to 2027 (Wakounig, 2023). This funding is allocated in the form of grants, with project promoters required to contribute to the financing of their projects. The primary objective of the Innovation Fund is to facilitate the establishment of decarbonisation testing facilities.
- **InvestEU:** InvestEU is designed to encourage private sector investment in EU priority areas, even in potentially risky endeavours. It achieves this by offering EU budgetary guarantees. For the period spanning 2021 to 2027, a guarantee of EUR 25 billion has been allocated with the aim of leveraging private sector investments totaling EUR 358 billion. Notably, 30% of these investments are earmarked for climate-related initiatives (Wakounig, 2023)
- **Global Gateway:** The Global Gateway programme represents an external investment initiative. Combining grants and guarantees, this program is projected to stimulate private sector investments of approximately EUR 264 billion in physical infrastructure within third countries, of which 30% are climate related (Wakounig, 2023)
- **Carbon pricing:** As a component of the Emission Trading System, industrial and energy-related installations are required to obtain or purchase emission certificates for their CO₂ emissions. Over the years, the number of certificates decreases, effectively introducing costs into the CO₂ emissions market (EC, 2003). To prevent carbon leakage – a scenario where EU industries relocate to countries with lower or no carbon pricing schemes – certain energy-intensive industries are granted a free allocation of emission certificates. However, this free allocation is scheduled to be phased out between 2026 and 2034, making way for the Carbon Border Adjustment Mechanism (EC, 2023b). This mechanism imposes a CO₂ price on unabated goods imported into the EU, aiming to equalise the carbon price and ensure a level playing field for industrial products within the EU (Wakounig, 2023).

¹ All values are from 2018.

4 Impact

The instruments outlined above, particularly the binding goals, investment support, and carbon pricing, are expected to play a pivotal role in achieving the objectives of the policy mix (Rogge & Reichardt, 2016), with varying impacts within the EU and beyond its borders.

4.1 Domestic Impact

Within the domestic context, significant private sector investments are poised to flow into decarbonisation technologies. This surge in investment can be attributed to multiple factors, including EU investment support, more stringent CO₂ pricing, and the implementation of updated decarbonization objectives at the national level. Consequently, it is highly probable that the EGD industrial strategy will drive a substantial push toward the development of clean technologies domestically. This shift is anticipated not only to result in reduced CO₂ emissions, but also the transformation of the EU industrial sector, fostering the emergence of new industries, such as those centered around batteries and hydrogen applications.

Nevertheless, it remains challenging to predict in advance the extent to which CO₂ emissions reduction will materialize and the specific role that policies will play in achieving this outcome. One contributing factor is the diverse scope of the EGD industrial decarbonisation policy mix, with many areas falling under the jurisdiction of member states. These areas are indirectly influenced by EU strategies. Furthermore, while the surge in investment is poised to drive industries toward cleaner technologies, it's essential to recognize that a feasible market environment is often a prerequisite for investment decisions (Wakounig, 2023). Unless the EC supplements the EGD with regulations that foster the creation of green markets, the transition toward green technologies may encounter obstacles due to a lack of policy support for private investments in decarbonisation technologies.

4.2 International Impact

At the international level, the EGD industrial strategies are poised to exert a significant influence across various sectors, ranging from decarbonisation to technology development and supply chains. In this context, the most pertinent policies include the Green Deal Industrial Plan, the Carbon Border Adjustment Mechanism, and the Global Gateway.

4.2.1 Green Deal Industrial Plan

The Green Deal Industrial Plan encompasses the Net Zero Industry Act, the Critical Raw Materials Act, and the update of the Electricity Market Regulation (EC, 2023a). The Net Zero Industry Act and the Critical Raw Materials Act are instrumental in fostering the development of EU-based production of industrial goods and securing the sourcing of primary materials. These initiatives are positioned to catalyze a shift

in the prevailing global industrial production processes. The domestic production of goods is expected to reduce the EU's dependency on products, albeit potentially leading to higher prices. Additionally, the local sourcing of primary materials will contribute to a reduction in the EU's import dependency.

Simultaneously, the transformation of the industrial sector will give rise to the formation of new supply chains, particularly in critical raw materials such as Lithium or Cobalt. These materials can only be domestically sourced within the EU to a limited extent (EC, 2023c). As a substantial portion of these materials will need to be sourced from third countries outside the EU, often from regions in the Global South, the development of green industries within the EU will likely lead to the establishment of primary (and potentially secondary) material industries in those third countries. While the development of new technologies in the EU may have the potential for spill-over effects to other countries, contributing to their decarbonisation efforts, there is currently no clear pathway established for such technology transfer to third countries.

4.2.2 Carbon Border Adjustment Mechanism

The Carbon Border Adjustment Mechanism places a CO₂ price on goods imported into the EU, especially when the product's country of origin lacks CO₂ pricing (EC, 2023b). Essentially, it can therefore be viewed as a carbon toll, aiming to standardise the CO₂ costs for products sold within the EU to prevent EU industries from facing a competitive disadvantage.

Scheduled to take effect in 2026, this mechanism will gradually replace the Emission Trading System's free allocation of emission certificates by 2034, placing industries under increased CO₂ price pressure. Consequently, foreign industries exporting to the EU will also face higher CO₂ costs, potentially encouraging non-EU industrial players to embark on decarbonisation efforts. However, it is worth noting that many countries have already introduced CO₂ pricing schemes,² and more are likely to follow suit in the upcoming years. Therefore, the extent to which the Carbon Border Adjustment Mechanism will promote international decarbonisation remains uncertain.

Additionally, even though the Carbon Border Adjustment Mechanism aims to equalise the carbon price for products sold within the EU, a higher carbon price will still apply to products exported from the EU to third countries, resulting in an uneven CO₂ pricing pressure. The impact of this unequal CO₂ pricing will be evaluated in 2027 and may lead to changes in the pricing scheme (EC, 2023b).

² According to the World Bank's Carbon Pricing Dashboard, as of 2023, there are 73 carbon pricing schemes implemented globally, collectively covering 23% of global GHG emissions ([Carbon Pricing Dashboard | Website](#))

4.2.3 Global Gateway

The Global Gateway represents the EU's external investment package, with the aim of mobilising private investments totalling EUR 264 billion from 2021 to 2027, of which EUR 97 billion are earmarked for climate-related initiatives (Wakounig, 2023). These investments are primarily destined for developing countries, including Africa and South-East Asia, with a focus on constructing sustainable infrastructure in the areas of health, education, and renewable energies (EC, 2021a). While this will likely lead to investments in decarbonisation technologies within those countries, potentially leading to a reduction in GHG emissions, there remains uncertainty regarding whether these projects are tailored to meet local needs or primarily align with the requirements of EU industries, such as green hydrogen production.

This scenario raises the possibility that, instead of facilitating the decarbonisation of local economies in the third countries, their economies might primarily serve the decarbonisation goals of the EU. Further analysis will be necessary in the coming years to assess the extent to which the Global Gateway has contributed to the decarbonisation efforts of both third countries and the EU.

5 Conclusion

The attempt to cut the Gordian Knot of EGD industrial strategies has guided us through the unwinding of key policies and instruments designed to facilitate industrial decarbonisation within the EU. This journey has also involved assessing the domestic and international ramifications of these instruments. Through the EGD, the EC endeavours to assist EU industries in their decarbonisation efforts by implementing a policy mix consisting of binding decarbonisation goals, investment support, and carbon taxation. This combination of instruments exerts multifaceted influences on industrial decarbonisation, impacting both the EU and the global landscape. Within the EU, the primary drivers of decarbonisation stem from the binding decarbonisation goals, investment support, and carbon taxation. Simultaneously, at the international level carbon taxation and investment support play pivotal roles in shaping the impact of the EGD on decarbonisation efforts beyond the EU's borders. Top of Form

6 Bibliography

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The policy brief has been produced as a part of Utrecht University's InFront Project: <https://infront.sites.uu.nl/>

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