PROSESS21

FULL REPORT

Removing emissions, preserving industry

Advice and recommendations for Norwegian competitiveness in a geopolitical cross-pressure

PROSESS21

Purpose of the report

The purpose of this report is to provide advice and recommendations to public authorities and industry on how Norway can implement the necessary emission reductions in the process industry without triggering carbon leakage. At the same time, the report aims to demonstrate how value creation, exports, and long-term competitiveness can be maintained in a situation where the European regulatory framework is becoming increasingly stringent. The report synthesizes and builds on previous analyses conducted by Prosess21, including: (1) an analysis of industrial emissions and industrial structure in Norway, the Nordic countries, and Europe; (2) a description of why investments in emission-reduction measures in industry often fail to materialise; and (3) an assessment of the EU's rapidly evolving framework for industrial competitiveness and decarbonisation. A summary of the recommendations is also presented in a separate note.

Mario Draghi's report on European competitiveness highlights how energy-intensive and strategically important industrial value chains in Europe are subject to significant cross-pressure. Although Draghi's mandate was European and macroeconomic, many of the challenges he identifies are directly relevant to the Norwegian process industry. This report builds on these insights to strengthen the strategic knowledge base and provides an updated assessment of how developments in Europe affect competitive conditions for Norwegian industry.

The analyses presented are intended to serve as a strategic knowledge base for understanding the situation facing the Norwegian process industry and for identifying measures that can enhance adaptability and long-term competitiveness. In parts of the industry, the situation is perceived as concerning, with relation to weakened profitability, limited investment capacity, and the risk of deindustrialisation. Climate targets entail rising costs, while a pressured European market shows limited willingness to pay for low-emission products. This makes the transition challenging for both Norwegian and European industry. High energy costs relative to global competitors further exacerbate these challenges, particularly when combined with increasingly stringent climate requirements. The cumulative effect is weakened cash flow and reduced capacity to invest both in new production facilities and in necessary emission-reduction measures. A contraction of the Norwegian process industry would shift production to regions with significantly higher emissions, thereby increasing global greenhouse gas emissions. The report therefore concludes by proposing measures that strengthen the investment base, reduce risk, and facilitate both decarbonisation and continued industrial value creation.

Executive summary

Europe is facing intensified geopolitical and industrial pressure, where increased instability, higher costs, and stronger global competition are setting new conditions for European and Norwegian industry. This situation underscores the need to analyse developments through a long-term industrial perspective, in which competitiveness, the energy system, climate policy, and geopolitics are considered together. The EU has set ambitious climate targets and views emission reductions both as an environmental policy measure and as a strategic competitive advantage within the framework of the Paris Agreement. Following the pandemic, inflation, rising costs, and weakened margins have broadly affected industry, while China has strengthened its global position. At the same time, increased U.S. tariffs have weakened the role of the WTO in the rules-based trading system, even though a large share of global trade still takes place within the WTO framework.

The EU is caught in a cross-pressure between China and the United States and has launched extensive measures to protect and strengthen European industry. These include, among others, the Carbon Border Adjustment Mechanism (CBAM), changes to the emissions trading system (EU ETS), and new initiatives such as the Clean Industrial Deal and the Industrial Accelerator Act. Access to energy and raw materials is emerging as an increasingly critical prerequisite for industrial competitiveness and value creation in Europe. The recent situation in which the Norwegian ferroalloy industry fell outside the EU's protective regime illustrates how Norway, as a non-EU country, may increasingly find itself excluded from European industrial policy instruments — even as these instruments shape Norway's cost framework, particularly in relation to electricity and climate policy.

The Norwegian process industry differs from large parts of the rest of European industry due to its high degree of electrification and, consequently, a relatively high share of process-related emissions, as opposed to emission profiles that are more closely linked to energy use. Through the EEA Agreement, Norwegian industry is increasingly subject to a European regulatory framework and set of policy instruments that are largely designed for this other industrial structure and emission profile. To ensure that Norwegian interests and specific characteristics are considered, it is therefore crucial that Norwegian authorities and stakeholders have a solid factual basis and actively participate in the design and follow-up of the EU framework.

As a member of the EEA, Norway shares the EU's industrial framework and climate regulations but faces challenges when a power-intensive Norwegian industry must adapt to regulations largely designed for a different emission profile. Norway is closely integrated into the internal market and shares an industrial community of fate with the EU, which is by far its most important trading partner. Norwegian process industry has a low climate footprint due to the use of renewable power and efficient resource utilisation, but is now facing increased climate-related costs, greater uncertainty regarding electricity prices, and a high risk of carbon leakage. The phase-out of free allowances, the introduction of CBAM, and a tighter European carbon budget will require rapid and substantial emission reductions. At the same time, this presupposes that the industry's competitiveness and investment capacity are strengthened, so that the transition can be carried out without undermining value creation and employment.

On this basis, Prosess21 has identified **14 industrial measures across five main areas** that together influence the industry's competitiveness and its capacity to invest in decarbonisation.

1. **Power supply and grid capacity:** Norway has historically benefited from a surplus of electricity, providing industry with stable and competitive framework conditions. Today, however, the country is moving towards a situation where rising demand and widespread electrification may result in a structural power deficit. Against a backdrop of increasing scarcity, growing demand, and intensified international competition, the Norwegian process industry is therefore highly dependent on sufficient power supply and predictable framework conditions. A robust and reliable power base is essential for enabling investments in emission reductions, sustaining industrial value creation, and ensuring that Norway's low-emission advantages translate into real competitiveness in European markets.

   To secure a power system capable of supporting both industrial transformation and new value creation, Norway must rapidly bring additional power generation online. Onshore wind power represents the fastest available option, but its deployment requires clear local incentives, increased municipal ownership, and strengthened administrative capacity in permitting processes to ensure both legitimacy and timely implementation. At the same time, new electricity demand must be governed more strategically than is currently the case. Large, power-intensive industrial investments should be located where generation capacity and grid infrastructure are available and should be subject to requirements for high energy efficiency, effective utilisation of surplus heat, and contributions to new power generation, to avoid further pressure in already strained price areas.

   Existing energy resources must also be utilised more effectively. Energy efficiency measures and heat recovery should be integrated as core elements of the national power strategy, as they can release additional energy without further encroachment on nature while strengthening the overall power balance. Energy recovery represents an important complement, as it can deliver area-neutral, stable, and locally available power within relatively short timeframes. To unlock this potential, Enova's support schemes must be strengthened, and weakened incentives resulting from reduced electricity taxes for energy recovery facilities should be compensated, ensuring that both new projects and necessary reinvestments become financially viable.

   At the same time, it is critical that the documentation of emission advantages is based on location-based methodologies that reflect the actual use of Norwegian renewable electricity. This is necessary to prevent greenwashing and to ensure that Norway's climate advantages are clearly recognised in European markets and under CBAM. Taken together, a credible and durable power foundation requires targeted measures that expand generation, steer consumption more strategically, unlock efficiency potential, and clearly demonstrate the genuine emission advantages on which Norwegian industry is built.

2. **The EU – our most important market:** The Norwegian process industry is deeply integrated into the European market, and continued value creation and exports depend on secure market access and stable participation in the EU's internal market. At the same time, maintaining competitiveness requires Norway to strengthen its domestic framework conditions, enabling industry to adapt and develop in an environment

marked by increasing geopolitical cross-pressure. As the EU sharpens its industrial policy direction and places greater emphasis on strategic value chains, Norway must position itself as an indispensable partner within those value chains that are most relevant to European priorities.

Achieving real influence in Europe requires, first and foremost, avoiding political signals that create uncertainty about Norway's direction in EU processes. Such uncertainty weakens both Norwegian influence and the predictability required for long-term industrial investment. In parallel, Norway must closely follow EU trade negotiations, particularly in a context of growing geopolitical rivalry and an increased risk of dumping effects that may directly affect Norwegian export-oriented industries.

A core element of this positioning is securing Norwegian inclusion in "Made in Europe" and associated market mechanisms, ensuring that Norwegian products are not excluded from politically steered European demand instruments.

At the same time, the negative effects of EU protective measures must be actively addressed, as such measures may weaken Norwegian industry and generate spillover effects across key value chains. Norway should clearly articulate its contribution to the EU's strategic autonomy through access to critical raw materials, low-emission production, advanced technology, and stable value chains, and use this actively in dialogue with EU institutions. This should be complemented by giving existing partnerships more concrete substance, particularly in areas such as minerals, CCS infrastructure, and other strategic domains where Norway can deliver tangible value to a decarbonising Europe.

A responsible and well-managed transition to CBAM is also essential for the competitiveness of export-oriented industry. Norway should work to ensure a level playing field during the transition from free allowances to CBAM and promote improved dynamic allocation mechanisms that provide stronger incentives for gradual scaling-up of low-emission production. Safeguards against circumvention must be strengthened to ensure that the mechanism remains effective and fair without undermining environmental integrity. Any extension of CBAM to additional sectors should only proceed following thorough assessments of competitive impacts and regulatory maturity. Regular and transparent reviews will be necessary to ensure that CBAM functions as intended and does not create unintended distortions for Norwegian industry.

3. **Predictable framework conditions for emission reductions:** Large-scale climate investments in the process industry are highly capital-intensive and entail significant technological and market risk. To enable such investments, the industry requires stable and well-coordinated framework conditions that support long-term decision-making, as well as a governance structure that reduces uncertainty and ensures coherent use of policy instruments. This, in turn, requires cross-party and institutional anchoring, allowing investments in the industrial transition to be undertaken with predictability over time. At the same time, a robust CO_2 compensation scheme is essential to address indirect carbon costs and to safeguard competitiveness in a European market characterised by persistently high electricity prices.

   Strengthening investment incentives depends on greater predictability and transparency in the regulatory framework, enabling companies to plan and commit capital without being exposed to frequent or unpredictable political shifts. Annual debates over the CO_2 compensation scheme, point-source programmes, or auction-based support instruments risk creating uncertainty and weakening incentives to undertake large-scale emission-reduction investments and should therefore be avoided. At the same time, financing frameworks must be better aligned with the risks inherent in technological frontier development. This implies that the state should deploy a combination of financing instruments—including investment grants, contracts for difference, loans, and guarantees—to reduce risk in ways that effectively mobilise private capital.

   In the most capital-intensive projects, such as CCS and other zero-emission technologies, the state should also assume a larger share of downside risk, while ensuring that support schemes are designed with mechanisms that prevent over-compensation should market conditions improve. Any expansion or adjustment of the CO_2 compensation scheme must comply with EU state aid rules and be based on objective criteria, ensuring that exposed industries receive adequate protection against indirect carbon costs without distorting competition.

Finally, consideration should be given to reinvesting a larger share of revenues from the EU ETS and CBAM into the transition of emission-intensive industry, in line with European recommendations that such revenues should be used to finance the very technologies they are intended to incentivise. Taken together, these measures would allow Norway to establish a more consistent, long-term, and competitive framework for investment in climate action.

4. **Scaling up CCS in Norway:** Carbon capture and storage (CCS) is among the most capital-intensive climate measures available to the Norwegian process industry, and the development of CCS projects depends on stable and long-term framework conditions. For CCS to be scaled beyond the demonstration phase, Norway should establish a coordinated governance structure that ensures predictability, integrated planning, and effective alignment of policy instruments. At the same time, costs must be distributed fairly across capture, transport, and storage, so that CCS becomes a viable option for emission-intensive industries that lack alternative technological pathways.

   To enable industrial-scale deployment, Norway should develop a national CCS roadmap with clear, time-bound targets for capture and storage towards 2030, 2035, and 2040. Such a roadmap should be broadly anchored and specify how capacity will be expanded step by step in line with the development of actual emission sources. In parallel, CO_2 infrastructure must be designed to be scalable, providing practical access to capture, transport, and storage for both large European point sources and smaller, more dispersed Norwegian emitters. This will require the state to play an active role in the design and financing of infrastructure systems, including consideration of ownership models and tariff regulation to ensure equal access and efficient cost sharing.

   Norwegian CCS policy should also be closely aligned with EU regulations and financing instruments, particularly considering the Net-Zero Industry Act and ongoing changes to European state aid regimes. This implies that Norwegian projects should be able to participate in European funding programmes and accommodate cross-border CO_2 volumes. To trigger project development, Norway should establish support schemes that reflect European practice, including consideration of an auction-based national programme for carbon removals and emission reductions. Through such measures, Norway can create the conditions necessary for the industrial deployment of CCS at scale.

5. **Making the industry's societal role visible:** The Norwegian process industry holds a strong competitive position, characterised by low emissions, high levels of expertise, and a key role in strategically important value chains. Nevertheless, the consequences of industrial decline are often perceived as remote in policy environments dominated by broad macroeconomic models. As a result, regional impacts tend to be underestimated, and emission reductions are framed primarily as a financial burden rather than as an industrial transformation with substantial societal value.

   Strengthening understanding of the industry's importance requires deeper and more nuanced knowledge of the role the process industry plays in value creation, employment, and national resilience. The industry must articulate more clearly its contribution to preparedness, strategic value chains, and Norway's long-term capacity for industrial transition. At the same time, its concrete contributions to value chains, exports, and climate targets need to be communicated in a more coherent and integrated manner, using channels that effectively reach decision-makers.

   This calls for a knowledge-based and credible communication platform that places the industry's societal role within a broader and more strategic context. To secure lasting legitimacy, the industry should also engage more actively in knowledge arenas and with younger generations, ensuring that understanding of its role is sustained and renewed over time.

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Content

1. Introduction

Since 2008, Norway has participated in the EU Emissions Trading System, and the climate targets for the ETS-covered sector are to be achieved in close cooperation with the EU. Norway's new target for 2035, to reduce emissions by 70–75 per cent compared with 1990 levels, has been submitted to the United Nations and is to be met through national measures and in close alignment with EU climate and energy policy.

Norway has a distinct industrial position in Europe yet increasingly operates within a European regulatory framework that has been designed for an emission profile and industrial structure different from its own. This report clearly demonstrates how the Norwegian process industry differs from large parts of European industry, in terms of structure, emission characteristics, and historical framework conditions. Norwegian process industry is predominantly power-based and characterised by a high share of process-related emissions, whereas emissions in many EU Member States are more closely linked to energy use. At the same time, the European framework, shaped by the EU's competitiveness agenda and initiatives such as the Clean Industrial Deal, the Industrial Accelerator Act and associated state aid rules, is becoming increasingly influential for Norwegian industry through the EEA Agreement.

Norway must therefore be prepared for the pace and direction of European policy to set key parameters for industrial development in the years ahead. This implies operating within a framework that is, by design, tailored to a different industrial and emissions profile, and it is therefore unlikely that Norwegian interests and specific characteristics will be adequately addressed without active engagement. Norway must both seek to influence the development of European regulations and be prepared to rapidly implement national measures if European developments undermine Norwegian competitiveness. Such a proactive approach is necessary to secure both industrial development and successful transition.

At the same time, fragmented responsibilities across multiple ministries make it challenging to pursue a coherent and long-term industrial policy capable of safeguarding competitiveness while delivering climate action in the Norwegian process industry. Framework conditions are currently shaped by several ministries: the Ministry of Trade, Industry and Fisheries is responsible for industrial policy; the Ministry of Climate and Environment for emission requirements; the Ministry of Energy for access to and use of electricity; and the Ministry of Finance for taxation, fees, and budgetary frameworks that in practice determine investment capacity and the scope for risk sharing.

This division of responsibilities means that policy is developed along parallel governance tracks with differing objectives, instruments, and time horizons. For the process industry, which faces capital- and technology-intensive climate investments with long lead times, this creates a structural governance challenge. Industrial policy is influenced from multiple directions without an overarching strategic framework, and the overall result is a fragmented policy landscape. This fragmentation makes it difficult to establish a coherent and long-term industrial policy that both supports transition and safeguards the competitiveness of land-based industry, particularly in the most emission-intensive sectors.

2. Background

Europe under geopolitical and industrial pressure

Europe is facing intensified geopolitical and industrial pressure, where growing rivalry, economic instability and increased competition for strategic resources are challenging both global trading systems and industrial resilience. The European context is characterised by rising geopolitical uncertainty, stronger regionalisation and an increase in trade conflicts. At the same time, the EU maintains high climate ambitions and views emission reductions as a strategic competitive advantage, in line with the commitments of the Paris Agreement, which place responsibility on high-income economies.

In the period following the pandemic, Europe has experienced significant inflation, rising costs and sustained pressure on industrial margins. At the same time, China has further strengthened its position as the world's leading industrial power. Through active state governance, China has both expanded production capacity and pursued a targeted strategy aimed at dominating not only standardised commodities, but also critical inputs and strategically important technology products. China's new five-year plan from 2026 reinforces these geopolitical dynamics through increased state support across integrated value chains, adding further pressure on European producers operating in a market shaped by both political and economic uncertainty.

The United States is also making substantial investments through public-private partnerships to secure access to critical raw materials. One example is the agreement between MP Materials and DoD (US Department of Defense), which aims to strengthen US self-sufficiency in the production of rare earth elements. The agreement includes long-term offtake contracts and financial guarantees, including a minimum price for neodymium and praseodymium, designed to protect domestic production from Chinese price undercutting. According to MP Materials and the Department of Defense, the partnership is intended to support the development of an integrated rare earth value chain in the United States and reduce strategic dependence on China.

China remains the most complex and unresolved element in US trade strategy. Following the Busan meeting between Trump and Xi in October 2025, the two parties agreed on a fragile one-year trade truce. Under this arrangement, China suspended new export controls on rare earth elements, while the United States reduced certain tariffs. Despite this temporary de-escalation, the underlying conflict remains unresolved. Both the United States and China continue to build alliances and implement measures that underscore the persistence of fundamental strategic tensions.

The EU's response: regulation, protection and innovation

The EU has intensified its industrial policy response as European industry faces growing pressure from both China and the United States. Competitiveness has weakened in recent years, prompting the European Commission to launch a broad set of measures aimed at strengthening innovation and safeguarding industrial production. At the same time, the EU maintains its ambition to remain a global leader in emission reductions.

To respond to these challenges, the EU is combining regulatory simplification, protective measures and new instruments such as the Carbon Border Adjustment Mechanism. The objective is to prevent carbon leakage while at the same time stimulating innovation. Secure access to raw materials and energy is critical, yet energy production and industrial activity also account for a substantial share of greenhouse gas emissions. The solution is therefore not to export emissions and import finished products, but to strengthen industrial production within Europe.

Against this backdrop, the EU is rolling out a comprehensive set of climate and industrial policy initiatives designed to combine emission reductions with improved competitiveness. The European Commission has proposed ambitious emission reduction targets, reforms to the EU Emissions Trading System, the introduction of CBAM, and increased support for industrial production through initiatives such as the Clean Industrial Deal and the Industrial Accelerator Act. In addition, action plans to reduce energy prices, together with sector-specific initiatives for steel and metals, chemicals, and updated state aid rules, are intended to reinforce the competitiveness of European industry and enable continued decarbonisation.

Norway's role and challenges

Norway is closely integrated into the European market but faces growing challenges as the EU increasingly protects its own industry and introduces measures with direct consequences for Norwegian exporters. The EU is the most important market for a wide range of Norwegian export products, including metals, chemicals, fertilisers and petrochemical goods. When EU Member States make greater use of industrial protection measures, as illustrated by the ferroalloy case, Norwegian actors are directly affected. Norway's strong historical reliance on access to low-cost electricity has shaped a power-intensive industrial structure that differs from much of Europe, where large parts of comparable production were phased out during the 1980s, 1990s and 2000s. As a result, Norwegian export-oriented industry today competes in global markets against producers in China, Southeast Asia, Canada and South America.

Although Norway is not a member of the EU, Norwegian industry is in practice subject to the same climate regulations and emission constraints through the EEA Agreement. Participation in the EU Emissions Trading System and other elements of the EU climate framework means that Norwegian industry largely faces the same emission-reduction requirements as industry within the EU. This has contributed to substantial emission reductions over time. Since 1990, greenhouse gas emissions from the Norwegian process industry have been reduced by approximately 45 per cent, with the majority of reductions achieved before 2010, when many of the most cost-effective measures were implemented. In more recent years, achieving comparable reductions has proven more challenging, as remaining emissions are primarily process-related and require new technologies and significantly higher levels of investment.

Both the EU and the United States are now considering tighter import regimes for strategic metals and alloys. On 7 October 2025, the European Commission presented proposals for new import restrictions on steel, including sharply reduced tariff-free quotas and a 50 per cent tariff on imports exceeding the quotas. Norway is exempt from these steel measures through the EEA Agreement but remains a relatively small player in the European steel market. The situation is different for ferroalloys, where Norway is by far the largest single supplier to the EU. On 18 November 2025, the EU adopted global safeguard measures on ferroalloys that also apply to Norway. The measure introduces tariffs when imports exceed 75 per cent of historical volumes, combined with country-specific quotas and minimum prices. The measures apply for a period of three years and directly affect Norwegian exports, despite arguments from Norwegian authorities that the EEA Agreement should have provided an exemption. At the same time, the United States is conducting anti-dumping and countervailing duty investigations into silicon metal, including Norwegian producers, with preliminary findings expected towards the end of 2025 and final decisions in 2026. Taken together, these developments increase uncertainty for the Norwegian process industry and for market access for ferroalloys and silicon in Norway’s two most important export markets.

The emissions trading system and industry under pressure

The EU Emissions Trading System has delivered substantial emission reductions across Europe. However, the current combination of high energy prices and rising carbon costs is placing European industry under significant strain. Over many years, the ETS has contributed to major emission cuts, primarily by driving the transition from coal to gas and renewable energy in the power sector. Following Russia’s war of aggression against Ukraine, Europe’s energy markets have been severely disrupted, leading to sharp increases in gas prices. These developments have pushed energy prices in Europe to levels well above those in the United States and China. When high energy costs are combined with rising costs for greenhouse gas emissions, European and Norwegian industry faces mounting pressure that affects both profitability and willingness to invest.

As the emissions cap under the EU ETS is progressively tightened, industry will increasingly be required to deliver larger emission reductions than in the past. The emissions trading system covers emissions from power generation, industry and aviation, and is designed to ensure that the most cost-effective measures are implemented first. While the Norwegian power sector is already largely decarbonised, many EU Member States continue to have substantial emissions from fossil-based power generation and from energy- and material-intensive sectors such as cement, chemicals, petroleum refining and steel production. As emission reductions in the power sector are gradually exhausted and the ETS cap is further tightened, industry will increasingly become the sector required to deliver new emission cuts. This will intensify pressure on both European and Norwegian companies in the years ahead.

Modelled trajectory of the EU ETS towards 2040 [1]

EU regulation is characterised by frequent revisions and progressive tightening, leading to a substantial reduction in the carbon budget towards 2040. The EU agenda entails regular updates to regulatory frameworks, adjustments to ambition levels and shifting the distribution of mitigation responsibilities across sectors. Key milestones include the review of the EU Emissions Trading System and the Market Stability Reserve in 2026 and 2027, the full operationalisation of CBAM from 2026, and the introduction of product-specific requirements in the same year. As emissions from the power sector continue to decline, industry will play an increasingly central role in achieving the EU’s overall climate targets. The EU ETS has now entered a phase in which the carbon budget is gradually tightened towards 2040, and this development will increasingly shape the framework conditions for the process industry.

The phase-out of free allowances will expose industry more directly to carbon costs and significantly increase pressure to reduce emissions. Under the current regulatory framework, free allocation to trade-exposed industry is to be phased out at an accelerated pace. As free allowances are reduced and eventually eliminated, carbon costs will be fully reflected in the cost base of European and Norwegian producers. At the same time, the allowance market is expected to tighten considerably towards 2030 and beyond, with substantial price increases

[1] This section is based on a presentation by Marcus Ferdinand (Veyt) given at a ZERO industry workshop on 26 November 2025.

as the Market Stability Reserve is depleted and the emissions cap gradually approaches zero. This will raise the operating costs of emission-intensive processes and intensify the need for technological development and investment.

Model results indicate that a substantial share of expected emission reductions will occur through reduced demand for emission-intensive products if technological measures are not realised. In the models, emission reductions arise from a combination of technological abatement measures and demand contraction. Demand reduction occurs when higher production costs and increased prices, driven in part by rising ETS prices, reduce market demand for emission-intensive goods. If technological climate measures fail to materialise, these mechanisms may in practice lead to a permanent decline in demand for European and Norwegian industrial products. The result would be job losses rather than a genuine transition towards low-emission production.

The gap between stated climate ambitions and identified industrial projects remains substantial, and increased reliance on carbon dioxide removal will be necessary to meet the 2040 target. To achieve the objective of a 90 per cent reduction in emissions by 2040, the models indicate that emission reductions from industrial processes alone will not be sufficient. In addition to investments in decarbonisation technologies, a significant contribution from carbon dioxide removal is expected, including solutions such as bio-CCS and direct air capture. The models estimate a total removal requirement of approximately 75 million tonnes of CO_2, while projects identified to date cover only around 20 per cent of this need. The resulting gap between ambition and deployable measures highlights the scale of the challenge under current project pipelines.

Model-based analyses further indicate that, without competitive framework conditions and a significantly higher pace of investment, the outcome may be industrial decline rather than a managed transition. In the scenarios examined, continuation of the current regulatory trajectory implies higher carbon prices, fewer free allowances and increasing cost pressure for industry in both Europe and Norway. If investments in technological emission reductions do not accelerate, and if industry is not provided with conditions that allow it to remain globally competitive, the models point towards reduced industrial activity and job losses rather than emission-free production. In such scenarios, emissions are displaced to other regions, while Europe increasingly becomes an importer of industrial products.

Market mechanisms and real-world constraints

Modelled market pathways assume that emission reductions are delivered first through the most cost-effective measures, with higher carbon prices gradually triggering more expensive technological solutions. The considerations above are based on such model assumptions, where emission reductions are primarily realised by implementing the lowest-cost options first, followed by increasingly costly measures as the ETS carbon price rises. Within this framework, the phase-out of free allowances and the introduction of CBAM are intended to shift climate-related costs away from taxation and towards investments in concrete emission-reducing projects. In the models, the outcome is a production system with lower emissions, but also with a higher overall cost level.

These market mechanisms presuppose a level playing field. In today's geopolitical environment, such assumptions are increasingly uncertain. Cap-and-trade mechanisms and market-based governance can function effectively in a predictable world with comparable competitive conditions. In 2026, however, the global economy is characterised by intensified rivalry over markets, technology and strategic influence, as well as by significant differences in climate ambition across regions. If Europe were to unilaterally establish a zero-emission production system, there is a substantial risk that production costs would become significantly higher than in competing regions. This creates uncertainty and weakens the investment case, both for new production capacity and for existing emission-intensive activities. At the same time, there is considerable uncertainty regarding consumers' willingness to pay higher prices for European goods or to accept higher taxes. In addition, Europe faces structural challenges related to access to critical raw materials. These challenges are reflected in initiatives such as the Critical Raw Materials Act and ReSourceEU, which underscore the growing tension between climate ambition, industrial competitiveness and resource security.

Norwegian ambitions and challenges

Norway has adopted ambitious climate targets for both 2030 and 2035. However, current projections indicate that the interim target for 2030 will not be met without extensive use of allowance purchases. Through the Climate Act and the cross-party climate agreement, Norway has committed to emission reductions of 55 per cent by 2030 and 70–75 per cent by 2035. Despite these ambitions, Norway is not on track to meet the 2030 target and is therefore expected to purchase emission allowances at a cost of up to NOK 15 billion in 2030 to compensate for the shortfall. For the energy and industrial sectors, emission reductions are to be achieved in cooperation with the EU within the framework of the emissions trading system. Norway's Climate Status and Plan indicate that domestic emissions are not expected to decline significantly, and that emission reductions are instead assumed to materialise through cooperation with the EU under the ETS. In its illustrative calculations, the government estimates that Norway will have ETS-covered emissions of approximately 18 million tonnes in 2030. If Norway is held responsible for 10 million allowances that year, the remaining 8 million tonnes of emission reductions would be transferred from the EU and used to meet the national 2030 target.

Norway's reliance on the EU ETS means that national target achievement is heavily influenced by developments in the European carbon market and by the availability of allowances. The contribution of the ETS to meeting Norway's climate targets is therefore closely linked to both the evolution of the EU carbon market and the overall supply of allowances. For this reason, the government places strong emphasis on the EU pursuing an ambitious climate policy and succeeding in reducing the allowance volume over time. At the same time, this approach implies that national ambitions for ETS-covered emissions are largely directed towards measures outside mainland industry. These measures primarily include electrification of the continental shelf and stricter requirements on the use of fossil fuels. Policy instruments capable of triggering large-scale industrial investments in the mainland economy are less developed. As illustrated in Figure 1, the ambition level for national emission reductions in mainland industry appears very limited, increasing from a 45 per cent reduction to only 52.3 per cent by 2035. This provides weak and short-term signals regarding the scale and nature of industrial investments expected to be realised in Norway.

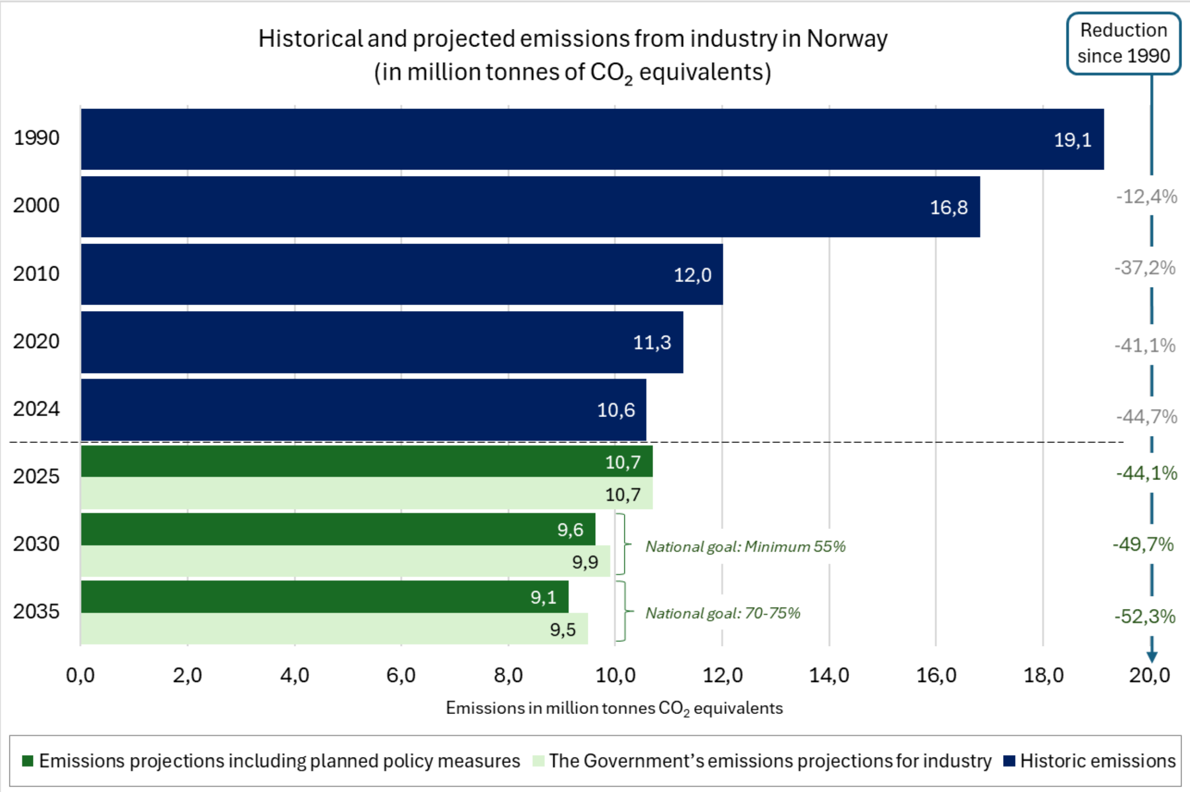

***Figure 1**. Historical industrial emissions and projected emission reductions based on the government's adopted and planned policies for the industrial sector over the next ten years. The government's Climate Status and Plan for 2026 indicates that measures which are planned but not yet adopted could further reduce emissions to 9.63 million tonnes in 2030 and 9.13 million tonnes in 2035. (Source: TIL_NULL_Kvartalsrapport_4_2025.pdf and Ministry and Climate and Environment)*

A predominantly market-based climate policy also provides limited predictability for industrial investments with long time horizons. Successive Norwegian governments have placed strong trust in market mechanisms such as carbon pricing and emissions trading, based on a socio-economic rationale where emission reductions are assumed to occur where costs are lowest. While such an approach may be effective in the short term, it offers limited predictability for capital- and technology-intensive industrial projects with long development and investment cycles. Uncertainty related to future allowance prices, policy instruments and framework conditions makes it challenging for industry to mature technologies, develop viable concepts and commit to investment decisions that often extend over ten years or more. The Climate Committee 2050 has highlighted that a one-sided reliance on allowance purchases and short-term cost considerations increases the risk of failing to meet climate targets, while also undermining industrial development towards 2030 and 2050.

At the same time, while many companies have initiated projects to reduce emissions, implementation is characterised by substantial uncertainty and a lack of predictability in national framework conditions. A number of Norwegian companies with significant emission sources have launched emission-reduction initiatives, yet uncertainty surrounding further implementation remains high. This uncertainty is reinforced by geopolitical instability, high inflation, and the absence of a coherent and predictable industrial policy. In practical terms, these challenges are reflected in sharply increased electricity prices in parts of the country, limited prospects for increased power generation in the short to medium term, and the lack of established solutions and infrastructure for CCS. In addition, low national ambition levels for ETS-covered emissions and weakened, less predictable policy instruments further undermine investment confidence. This includes reduced allocations for innovation projects, annual uncertainty surrounding Enova funding decisions, and cuts to the environmental technology support scheme.

Investment conditions and framework requirements for decarbonisation in the Norwegian process industry

The Norwegian process industry faces capital-intensive decarbonisation projects. For such projects to be investable they require solid profitability and long-term framework conditions in order to be investable. Norway's industrial structure differs from much of Europe, with a high share of energy- and capital-intensive activities operating in global markets. Over time, many companies have developed and matured projects aimed at reducing emissions, particularly in cases where carbon capture and storage is required. For industrial actors, such investments depend on a positive net present value over a period of 10 to 20 years and on the ability to service the investment through ongoing cash flow from existing operations. This is only feasible if underlying profitability is sufficiently strong.

Uncertain and fluctuating framework conditions make it difficult to take final investment decisions on large-scale decarbonisation projects in Norway. These projects often involve multi-billion-kroner investments without a corresponding increase in revenue, making stable and long-term conditions essential. Uncertainty related to electricity prices, developments in the EU ETS, CBAM, EU safeguard measures, willingness to pay for low-emission products, and subsidy levels in major EU countries weakens the investment case. Many Norwegian industrial companies are part of international groups with production in several countries, where capital is allocated to locations offering the highest risk-adjusted returns. As a result, few Norwegian and European companies are currently willing to commit to final investment decisions for large decarbonisation projects under prevailing conditions.

Existing policy instruments such as reduced electricity tax rates, free allowances and the CO_2 compensation scheme help to mitigate some cost disadvantages, but they are not designed to trigger major industrial investments. The Norwegian process industry benefits from measures including reduced electricity tax for energy-intensive activities, free allocation of allowances and the CO_2 compensation scheme. The compensation scheme is a power price-related instrument intended to counter carbon leakage arising from higher electricity prices in Europe, driven by increased carbon costs in fossil-based power generation that set price levels in the integrated power market. These price levels also affect Norwegian electricity prices, even though industry largely relies on renewable power.

The requirement that 40 per cent of financing form CO2 compensation scheme is be used for energy efficiency or emission-reducing measures may support the implementation of small and medium-scale projects. However, the scheme is not intended to trigger large, capital-intensive investments such as full-scale decarbonisation solutions. The purpose of the CO_2 compensation scheme is to partially offset a cost disadvantage that power-intensive industry cannot influence itself. It should therefore not replace instruments designed to provide the level of predictability and profitability required to realise large-scale projects.

A persistent misconception in Norwegian climate policy is that higher allowance prices alone will drive emission reductions, despite the fact that Norwegian industry operates in global markets with

internationally determined product prices. Industrial emissions are often treated as a uniform category, and there is a widespread assumption that gradually increasing taxes or allowance prices will automatically lead to emission reductions. This contrasts with the actual competitive reality, where products such as metals are traded in global markets at international prices. Higher costs related to emissions or decarbonisation therefore place producers in Norway and Europe at a competitive disadvantage and may weaken both investment and ongoing operations unless framework conditions are adjusted accordingly.

Changes to the EU CO_2 compensation scheme from 2026

From 2026, the EU will introduce updated state aid rules for compensation of indirect CO_2 costs, with the aim of strengthening industrial competitiveness and reducing the risk of carbon leakage. As part of the implementation of the fourth trading period under the EU Emissions Trading System, the European Commission has amended a revision of the state aid guidelines to tackle carbon leakage for more energy-intensive industries (in Morway defined a CO_2 compensation scheme).

The revision expands the scope of the scheme and provides EU and EEA countries with greater flexibility to grant higher support intensity to exposed sectors. Several new industries are included, among them battery manufacturing, selected mining and mineral activities, fertilisers, and parts of the chemical and materials industries, many of which are of relevance to Norway. The updated guidelines give Member States increased room to shield vulnerable segments of industry, while maintaining incentives for energy efficiency, electrification and emission reductions within an overall structure that remains largely unchanged.

Requirements for counter-measures are retained and further developed. From 2026, compensation may also be used for measures that improve the efficiency of the power system. Counter-measures have been part of the CO_2 compensation scheme since 2021 and are continued under the revised framework. Companies must meet at least one of several alternative requirements, such as implementing energy efficiency measures, increasing the use of fossil-free electricity, or investing in emission-reducing measures within their own operations. From 2026, an additional voluntary option is introduced, allowing compensation to be used for investments that contribute to more efficient and cost-effective operation of the national power system, including flexibility solutions, storage or other forms of system support.

The guidelines also clarify how the pass-through of CO_2 costs into electricity prices is to be assessed and regulated, providing the basis for national implementation of the compensation scheme. They establish principles for the use of so-called pass-through factors, which are intended to reflect the extent to which increased CO_2 costs are passed on to national electricity prices. These factors are central to the calculation of compensation levels and vary between regions and individual countries based on power mix and market conditions. Norway is not explicitly referenced in the guidelines, as it is not a member of the EU. For EEA countries, it is the responsibility of the EFTA Surveillance Authority to determine how the rules are incorporated and applied nationally, including the assessment of pass-through factors and the approval of compensation schemes.

3. Emission profiles and industrial structure in Norway, the Nordic countries and Europe

Earlier sections of this report describe how Norway's industrial structure and associated emissions differ from those of other European countries. To examine these differences in more detail, Prosess21 has drawn on national greenhouse gas inventories reported annually by each country to the United Nations Framework Convention on Climate Change. A solid factual understanding of emission structures and industrial composition is essential for assessing how different countries face distinct challenges and opportunities in reducing industrial emissions.

Norway developed its hydropower resources at an early stage, often referred to as the harnessing of its waterfalls, which laid the foundation for a power-intensive industrial base. As early as the beginning of the twentieth century, a substantial electricity-based process industry emerged, particularly within metallurgy and chemical production. This industry has long been significant in a European context and has gained increased relative importance over time, as electricity prices in large parts of Europe have remained substantially higher than in Norway for several decades. This has provided Norwegian industry with a competitive advantage, while also contributing to the process industry accounting for a large share of total national emissions.

Another important structural development has been the emergence of petroleum-related industry. Increased extraction of oil and gas from the Norwegian continental shelf created the basis for the establishment of petroleum refineries, of which only Mongstad remains in operation, as well as petrochemical facilities onshore. As a result, Norway today has a relatively high share of emissions from the petrochemical industry compared with many other European countries. This is also a key reason why Norway's industrial emission profile differs markedly from that observed in the EU and in neighbouring countries.

Previous analyses by Prosess21 have shown at an aggregate level that emission profiles in European industry vary significantly between the EU and Norway. Within the EU, industrial emissions are dominated by the production of steel, chemicals and cement and minerals. In Norway, by contrast, the largest shares of industrial emissions stem from the production of ferroalloys and aluminium. This clear distinction underscores the need for a more detailed examination of how emissions are distributed across countries, both in terms of the energy sources used and the industrial processes that contribute most to emissions.

3.1 Industrial production, location and emissions

The degree of trade exposure across industrial sectors is a key factor in determining how sensitive energy-intensive activities are to geographical relocation of production in response to differences in energy prices and climate policy frameworks. The location of energy-intensive industry in Europe is therefore strongly influenced by the extent to which sectors are exposed to international trade, measured by the share of production that is exported or imported across borders. As illustrated in Figure 12 (Figure 15 in the ERT report) [2], trade intensity varies considerably between sectors. Aluminium is a clear example of a sector with high trade intensity, where products are traded on global markets. This makes production relatively mobile, as facilities can be relocated to regions with lower energy prices or less stringent climate requirements without necessarily affecting European customers' access to these products.

By contrast, sectors such as cement and steel exhibit low trade intensity and are closely tied to local markets, with limited flexibility to relocate production. Cement and steel lie at the opposite end of the spectrum compared with more globally traded industries. Their products have a low value relative to weight, making long-distance transport costly and inefficient. Production facilities are therefore typically located close to end-use markets. This strong local anchoring means that any reduction in European production capacity would quickly affect the availability of essential construction materials. Cement and steel are fundamental inputs to construction, infrastructure and industrial activity, and weakened local production would therefore have direct implications for everything from infrastructure development to industrial output.

Iron, steel and cement production are associated with substantial greenhouse gas emissions, arising both from energy use and from the underlying chemical processes. These sectors are among the largest industrial sources of emissions globally, with a significant share attributable to high energy consumption. In iron and steel

[2] ERT – European Round Table for Industry

production, large volumes of coal and coke are used both as energy carriers and as reducing agents in blast furnace processes. Combustion of these fossil inputs generates significant CO_2 emissions. In addition, process-related emissions occur through chemical reactions during production, particularly when iron ore (Fe_2O_3) is reduced to pig iron (Fe), releasing the oxygen bound in the ore as CO_2.

The cement industry also generates substantial emissions due to both energy use in kilns and the fundamental chemistry of the production process. Cement production is among the most emission-intensive industrial processes globally, with emissions originating from two main sources. First, extremely high temperatures are required in rotary kilns, often achieved through the combustion of fossil fuels, which results in CO_2 emissions. Second, large quantities of CO_2 are released through process chemistry when limestone ($CaCO_3$) is calcined into calcium oxide (CaO). These process emissions account for the majority of the sector's total climate impact, typically in the range of 60 to 70 per cent, with the remainder linked to energy consumption.

In the production of ferroalloys and aluminium, it is process chemistry rather than energy use that accounts for the majority of greenhouse gas emissions. These industries differ from steel and cement production in that a significant share of emissions arises from chemical reactions inherent to the production process itself. Ferrosilicon and metallurgical silicon are produced in electric furnaces, where quartz-based raw materials are reduced using carbon-based reducing agents such as coke, charcoal or wood chips. It is this reduction reaction that generates most of the emissions. When silicon dioxide (SiO_2) is reduced to metallic silicon (Si), the oxygen in the raw material reacts with carbon in the reducing agent to form CO_2. This constitutes a typical process emission and represents the dominant share of emissions from this type of production.

In the aluminium industry, most greenhouse gas emissions originate from the electrolysis process, in which carbon anodes are consumed and form CO_2. During electrolysis, aluminium oxide (Al_2O_3) is split into aluminium and oxygen. The oxygen released reacts with the carbon anodes in the electrolysis cell, resulting in CO_2 formation. This is a process-related emission that is independent of the energy source supplying the facility and accounts for by far the largest share of the sector's total emissions.

Large differences in energy intensity across industrial processes have been decisive in shaping the global distribution of industrial activity. Energy requirements per tonne of output vary significantly between processes, and together with trade intensity this has strongly influenced industrial location patterns. In the iron and steel sector, energy intensity typically ranges from 12 to 21 gigajoules (GJ) per tonne of steel, while cement production requires approximately 3,4–5,0 GJ per tonne, mainly to operate rotary kilns. Aluminium production is far more electricity-intensive, with energy use of around 45–60 GJ per tonne of primary aluminium. Metallurgical silicon and ferrosilicon display similarly high energy requirements, with characteristic electricity consumption of 11–13 kWh per kilogram, corresponding to roughly 40–47 GJ per tonne. These high energy demands have led such processes to be located in regions with access to stable and affordable electricity, such as Norway, where hydropower has provided a significant and enduring competitive advantage.

3.2 Data sources

The analysis is based on internationally reported and harmonised emission data, enabling consistent and reliable comparisons across countries. The emission figures used in this analysis are sourced from UN Climate Change under the United Nations Framework Convention on Climate Change. The data are drawn from countries' official reporting to the Greenhouse Gas Inventory Data system, which forms part of the international framework for greenhouse gas accounting. Emission categories follow international reporting standards developed to ensure comparability across countries. As a result, certain categories and definitions may differ slightly from national statistics, such as those published by Statistics Norway. In this analysis, emissions from biological sources used as inputs in industrial production are not included.

The analysis uses 2023 as the most recent year with a complete and comparable data set for industrial emissions. This year represents the latest reporting period with full and detailed greenhouse gas inventories, including sector-specific data for industry, and is therefore used as the reference year. It is likely that some sectors have undergone changes since 2023, particularly about energy use in Europe. These developments are closely linked to the EU's Fit for 55 package which aims to reduce greenhouse gas emissions by at least 55 per cent by 2030 and entails a substantial expansion of renewable energy and stricter energy efficiency requirements. The extent to which these measures have already altered the energy mix in European industry is not yet fully known.

Nor does this analysis assess how emissions may have been affected by reduced industrial activity or plant closures after 2023.

While the data provides valuable insights, they do not capture all aspects of industrial structure in each country. It is also important to recognise certain limitations of the data set. Although the figures offer robust information on emission intensity and sectoral distribution, they provide less insight into broader industrial characteristics such as production value, employment or export shares. The analysis should therefore be understood as a complement to other sources of industrial statistics.

3.3 Analysis

The emission data used in this analysis follow international reporting standards developed under the United Nations Framework Convention on Climate Change. Reporting is highly detailed and covers greenhouse gas emissions expressed in CO_2 equivalents across six main categories: (1) energy, (2) industrial processes and product use, (3) agriculture, (4) land use, land-use change and forestry, (5) waste, and (6) other emissions.

To assess emissions from industry in a meaningful way, the analysis draws on the more detailed sub-categories within this reporting framework. Industrial emissions are primarily reported under the categories of energy and industrial processes and product use. This review is limited to emissions from industry as it is commonly defined in Norwegian statistics, namely manufacturing and mining as classified by Statistics Norway. Emissions from other sectors, such as offshore petroleum activities, transport, agriculture and waste, are therefore excluded.

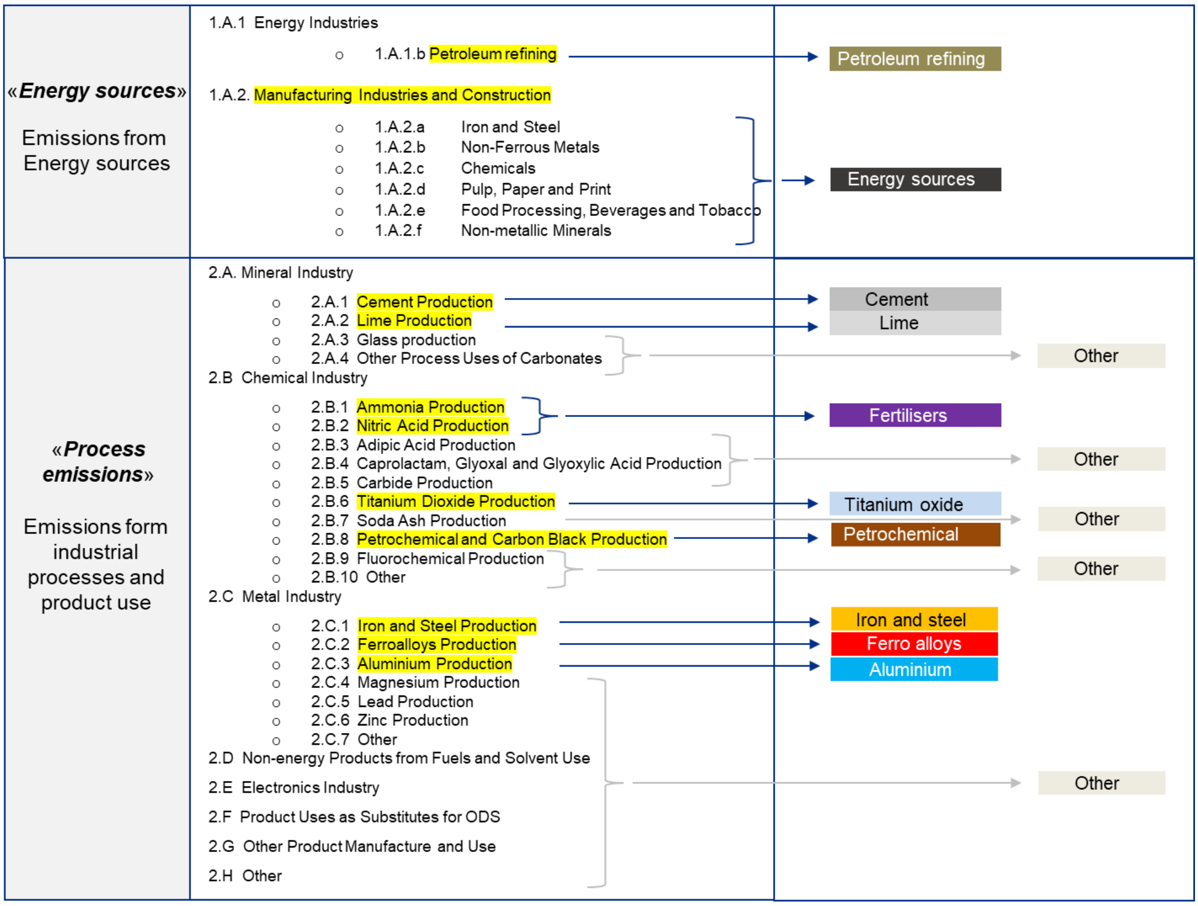

***Figure 2**. Emissions from land-based industry are primarily reported under two main categories in the UN Climate Change reporting framework: **emissions from energy sources** and **emissions from industrial processes** and product use, often referred to as process emissions. See the accompanying text for descriptions of emissions related to energy use and process emissions. (UN Climate Change)*

To understand emissions from land-based industry, it is necessary to distinguish between the two main categories applied in reporting to the UN climate secretariat. These comprise emissions from energy sources and emissions from industrial processes and product use, often referred to as process emissions. For the purposes of this analysis, relevant sub-categories have been used to identify and isolate emissions from land-based industrial activities as reported internationally. Figure 2 illustrates a selection of the emission categories included within this framework.

To describe the emission profile of industry, it is essential to understand how emissions are defined and reported under the framework of the UN Climate Change. The category referred to here as energy sources covers emissions from the combustion of fossil fuels in both industrial activities and the construction sector. This includes energy use for space heating, process heat and steam. If an industrial facility generates electricity for its own consumption, emissions from that production are also recorded under this category. Reporting takes place at the detailed level 1.A.2.a to 1.A.2.f, which distinguishes between different types of industrial energy use.

To distinguish between direct and indirect emissions from industry, it is important to understand how emissions related to electricity use and electricity generation are reported. Emissions resulting from industrial use of electricity purchased from the grid are not attributed to the industrial sector. Instead, these emissions are assigned to the energy sector, as electricity generation is reported under category 1.A.1 Energy Industries, which includes power plants and district heating facilities. This means that when an industrial facility consumes externally produced electricity, the associated emissions are recorded under the energy sector rather than industry. This distinction is critical for understanding the level of direct industrial emissions and for assessing both the degree of electrification and the potential for emission reductions across countries. Petroleum refining is also included in the energy sector and is reported under category 1.A.1.b.

A key part of the analysis is to identify which segments of industry are responsible for emissions in Norway and how this differs from other countries. The analysis therefore examines both emission levels and industrial composition in Norway, compared with selected Nordic and European countries. The objective is to identify common features and differences in the sectors that dominate industrial emissions. Figure 2 illustrates, on the right-hand side, the most emission-intensive industries, including refineries, cement production, petrochemicals, ferroalloys and aluminium. The dataset does not contain a separate category for fertiliser production, but emissions from this sector are assumed to largely stem from production processes related to ammonia and nitric acid.

An important prerequisite for analysing industrial emissions is recognising that energy-related emissions and process emissions are reported at different levels of detail. Energy-related emissions are aggregated under categories 1.A.2.a to 1.A.2.f, but this classification is less detailed than that used for process emissions, which are reported under categories 2.A to 2.C. Another key distinction is that emissions from petroleum refining are reported under the energy sector as category 1.A.1.b and are therefore not classified as industrial process emissions in international reporting. In a Norwegian context, however, refineries are considered an integral part of the process industry, which contributes to differences between national sector classifications and the international reporting structure.

When comparing industrial emissions across countries, it is therefore essential to clearly distinguish between emissions from energy use and emissions arising from production processes. This approach provides a more accurate picture of how industrial sectors are structured in each country. By disaggregating emissions by source, it becomes possible to compare both the scale and composition of emission profiles across countries. This also makes it easier to identify which industries are most significant for national emissions and how differences in industrial structure influence overall greenhouse gas emissions.

Emission profiles across countries depend largely on how emissions are distributed between energy use and process emissions. Figure 3 presents greenhouse gas emissions in CO_2 equivalents for each country, both including and excluding emissions from energy sources. Most countries exhibit a relatively low share of process emissions, meaning that energy-related emissions account for most industrial emissions. This may indicate extensive industrial use of fossil fuels, such as natural gas, for combustion processes, heating, process heat and steam. Among countries with a low share of process emissions are Italy at 25 per cent, Germany at 27 per cent, Denmark at 28 per cent and Spain at 31 per cent. At the other end of the spectrum is Iceland, where as much as 95 per cent of industrial emissions originate directly from industrial processes, followed by Norway at 73 per cent.

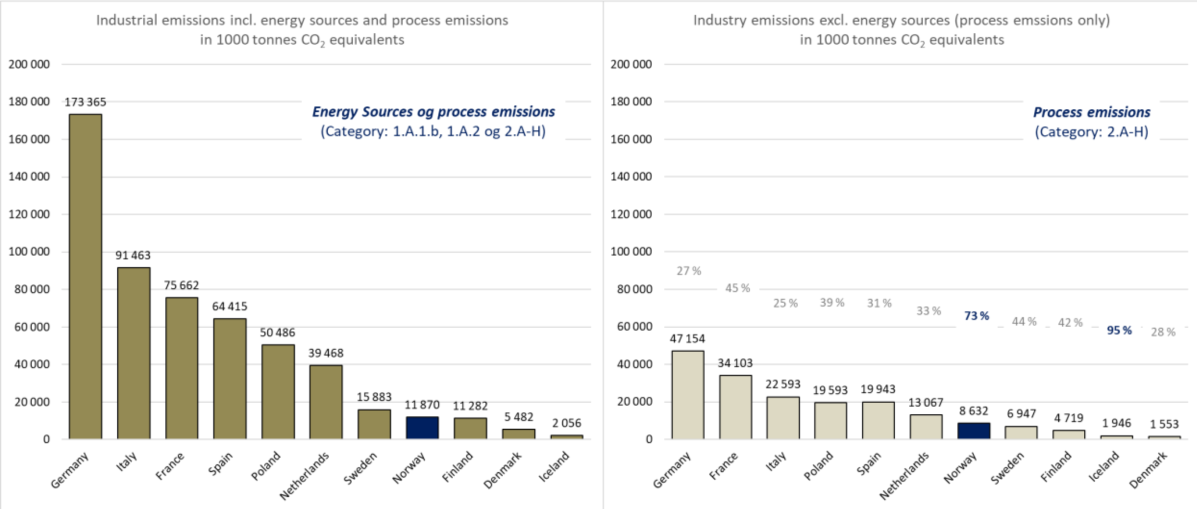

***Figure 3**. Total industrial emissions from energy sources and process emissions (left), and emissions from industrial processes only, referred to as process emissions (right). The share of process emissions as a percentage of total industrial emissions is indicated. Emission data are from 2023, except for Sweden, where data from 2021 are used.*

From an international perspective, it is primarily the high share of process emissions that distinguishes Norway from many other industrialised countries. In this dataset, process emissions in Norway amount to 8.6 million tonnes of CO_2 equivalents, while emissions from energy use in industry and petroleum refining are approximately 3.2 million tonnes. Although Norway is a relatively small country, its share of process emissions is high compared with larger industrial economies. Spain reports 19.9 million tonnes of process emissions, Italy 22.6 million tonnes and Germany 47.1 million tonnes, yet the differences are smaller than population size and industrial scale alone would suggest. Norway also has higher process emissions than countries such as Sweden and Finland. This reflects an industrial structure dominated by process-intensive sectors with high emissions per unit of output.

Table 1 presents emission figures for the most emission-intensive industrial sectors, based on the classification outlined in Figure 2. To ensure meaningful cross-country comparison, the emission data are expressed as percentage shares of total industrial emissions in each country. As the share of emissions related to energy use is significantly higher in many European countries than in Norway, particular attention is given to process emissions (Category 2.A–H) considered in isolation. In the analysis that follows, emission profiles are therefore examined both including and excluding energy-related emissions. By excluding emissions from energy sources and petroleum refining, the differences between Norway and the EU become more pronounced, particularly with regard to which industrial sectors dominate overall emissions.

To assess how different countries can adapt to the EU's climate framework, it is necessary to understand national differences in both energy-related emissions and process emissions. Such differences mean that countries face distinct challenges when common rules are introduced, and that policy instruments which work well in one context may not be equally effective in another. Many EU Member States therefore actively seek to influence the design of the EU's climate policy framework so that it supports both national emission-reduction pathways and industrial competitiveness. At the same time, the overarching objective should be to ensure that the framework is sufficiently general and flexible to be applied across countries with different energy systems, industrial structures and natural conditions.

To ensure that climate policy functions as intended across countries, close monitoring of the ongoing development of EU regulation is required. There is a risk that certain initiatives are, in practice, shaped by specific national circumstances, which may reduce their relevance or create unintended disadvantages for countries with a different industrial structure. For Norway and Iceland, which are not members of the EU but are closely integrated through the EEA Agreement, it is particularly important that future regulatory frameworks also take into account the interests of industry-specific sectors in these countries.

***Table 1**. Emissions from selected countries in the Nordic region, the EU and other European countries. Emissions are aggregated according to the categories shown in Figure 2. The figures do not fully correspond to national reporting by Statistics Norway under the category "Manufacturing and mining". The top table presents emissions in thousand tonnes of CO_2 equivalents. The middle table shows the same figures expressed as percentage shares for each country. The bottom table presents percentage shares excluding emissions from energy use and petroleum refining. Emission data are from 2023, except for Sweden, where data from 2021 are used.*

	Norway	Denmark	Sweden	Finland	Iceland	European Union	Germany	France	Italy	Netherlands	Spain	Poland
Energy Sources	2 459	3 029	6 156	5 052	110	363 430	105 769	35 935	50 489	17 086	34 929	26 417
Fertilisers (NH3++)	782	0	10	106	0	15 349	3 099	1 249	410	2 047	339	2 630
Petroleum refining	779	900	2 780	1 511	0	93 211	20 442	5 624	18 381	9 314	9 543	4 477
Petrochemical	734	0	0	1	0	13 995	1 150	2 893	532	839	1 804	790
Iron and steel	34	0	2 337	1 953	0	54 508	14 624	8 130	1 357	9	1 671	1 002
Ferro alloys	2 551	0	163	0	408	1 093	7	629	0	0	123	165
Aluminium	2 066	0	218	0	1 403	1 585	274	625	0	0	0	0
Titanium oxide	178	0	0	0	0	87	0	5	0	0	0	0
Cement	594	982	1 259	445	0	61 198	10 765	5 675	6 746	0	7 480	6 602
Lime	204	60	375	253	0	14 375	3 830	1 927	1 785	189	1 309	1 037
Others	1 488	511	2 585	1 960	135	102 594	13 403	12 971	11 763	9 984	7 217	7 366
TOTAL summert	**11 870**	**5 482**	**15 883**	**11 282**	**2 056**	**721 425**	**173 365**	**75 662**	**91 463**	**39 468**	**64 415**	**50 486**
TOTAL	**11 850**	**5 482**	**15 883**	**11 282**	**2 056**	**721 425**	**173 365**	**75 662**	**91 463**	**39 468**	**64 415**	**50 486**

% of industry emissions	Norway	Denmark	Sweden	Finland	Iceland	European Union	Germany	France	Italy	Netherlands	Spain	Poland
Energy Sources	21 %	55 %	39 %	45 %	5 %	50 %	61 %	47 %	55 %	43 %	54 %	52 %
Fertilisers (NH3++)	7 %	0 %	0 %	1 %	0 %	2 %	2 %	2 %	0 %	5 %	1 %	5 %
Petroleum refining	7 %	16 %	18 %	13 %	0 %	13 %	12 %	7 %	20 %	24 %	15 %	9 %
Petrochemical	6 %	0 %	0 %	0 %	0 %	2 %	1 %	4 %	1 %	2 %	3 %	2 %
Iron and steel	0 %	0 %	15 %	17 %	0 %	8 %	8 %	11 %	1 %	0 %	3 %	2 %
Ferro alloys	22 %	0 %	1 %	0 %	20 %	0 %	0 %	1 %	0 %	0 %	0 %	0 %
Aluminium	17 %	0 %	1 %	0 %	68 %	0 %	0 %	1 %	0 %	0 %	0 %	0 %
Titanium oxide	2 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Cement	5 %	18 %	8 %	4 %	0 %	8 %	6 %	8 %	7 %	0 %	12 %	13 %
Lime	2 %	1 %	2 %	2 %	0 %	2 %	2 %	3 %	2 %	0 %	2 %	2 %
Others	13 %	9 %	16 %	17 %	7 %	14 %	8 %	17 %	13 %	25 %	11 %	15 %
TOTAL	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**

% industry emissions without energy sources	Norway	Denmark	Sweden	Finland	Iceland	European Union	Germany	France	Italy	Netherlands	Spain	Poland
Fertilisers (NH3++)	9 %	0 %	0 %	2 %	0 %	6 %	7 %	4 %	2 %	16 %	2 %	13 %
Petrochemical	9 %	0 %	0 %	0 %	0 %	5 %	2 %	8 %	2 %	6 %	9 %	4 %
Iron and steel	0 %	0 %	34 %	41 %	0 %	21 %	31 %	24 %	6 %	0 %	8 %	5 %
Ferro alloys	30 %	0 %	2 %	0 %	21 %	0 %	0 %	2 %	0 %	0 %	1 %	1 %
Aluminium	24 %	0 %	3 %	0 %	72 %	1 %	1 %	2 %	0 %	0 %	0 %	0 %
Titanium oxide	2 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %	0 %
Cement	7 %	63 %	18 %	9 %	0 %	23 %	23 %	17 %	30 %	0 %	38 %	34 %
Lime	2 %	4 %	5 %	5 %	0 %	5 %	8 %	6 %	8 %	1 %	7 %	5 %
Others	17 %	33 %	37 %	42 %	7 %	39 %	28 %	38 %	52 %	76 %	36 %	38 %
	100 %	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**

To understand how energy use affects industrial emission profiles, it is essential to recognise how energy-related emissions are categorised in the reporting framework. As noted earlier, emissions from energy sources are reported under categories 1.A.2.a to 1.A.2.f, but this classification is less detailed than the categories used for process emissions under 2.A to 2.C. Table 2 presents energy use across different industrial sectors, providing a more precise picture of how energy consumption varies between industries.

To enable meaningful comparisons of energy-related emissions across European industrial countries, it is useful to take the reporting categories as a starting point. The table presents CO_2 emissions based on categories 1.A.1.b and 1.A.2.a to 1.A.2.f, as shown in Figure 2. These categories cover emissions from petroleum refining as well as energy use for heating, process heat and steam in industries such as iron and steel, chemicals, wood processing, food processing and the production of non-metallic minerals. Germany has the highest total emissions, at approximately 126 million tonnes of CO_2 per year, followed by Italy with around 69 million tonnes. Among the Nordic countries, Sweden and Finland stand out with emissions of 8.0 and 6.6 million tonnes respectively, which are relatively high compared with Norway's emissions of 3.2 million tonnes.

Table 2. Emissions from energy sources for selected countries in the Nordic region, the EU and other European countries. Emissions are based on categories 1.A.1.b and 1.A.2.a–f, as shown in Figure 2. The top table presents emissions in thousand tonnes of CO_2 equivalents. The bottom table shows the percentage distribution for energy use and petroleum refining. Emission data are from 2023, except for Sweden, where data from 2021 are used.

	Norway	Denmark	Sweden	Finland	Iceland	European Union	Germany	France	Italy	Netherlands	Spain	Poland
Petroleum refining	779	900	2 780	1 511	0	93 211	20 442	5 624	18 381	9 314	9 543	4 477
Energy sources												
Iron and steel	57	78	1 342	759	1	67 889	33 972	3 317	9 172	3 614	4 389	3 226
Non iron metals	211	0	117	90	4	7 747	164	664	1 092	102	983	1 017
Chemicals	146	177	323	615	0	47 960	0	7 578	8 121	5 823	7 364	5 044
Pulp and paper	81	27	729	1 395	0	16 839	22	2 039	3 970	647	2 865	1 263
Food processing	354	682	254	96	43	32 454	241	6 740	3 565	3 188	3 884	4 377
non metallic minerals	576	1 047	257	423	0	71 924	10 948	8 251	10 679	1 011	10 316	7 998
Others	1 035	1 018	2 199	1 675	61	116 293	60 422	7 346	13 890	2 701	5 127	3 491
	3 238	**3 930**	**8 001**	**6 563**	**110**	**454 318**	**126 211**	**41 559**	**68 870**	**26 401**	**44 472**	**30 893**

	Norway	Denmark	Sweden	Finland	Iceland	European Union	Germany	France	Italy	Netherlands	Spain	Poland
Petroleum refining	24 %	23 %	35 %	23 %	0 %	21 %	16 %	14 %	27 %	35 %	21 %	14 %
Energy sources												
Iron and steel	2 %	2 %	17 %	12 %	1 %	15 %	27 %	8 %	13 %	14 %	10 %	10 %
Non iron metals	7 %	0 %	1 %	1 %	4 %	2 %	0 %	2 %	2 %	0 %	2 %	3 %
Chemicals	5 %	5 %	4 %	9 %	0 %	11 %	0 %	18 %	12 %	22 %	17 %	16 %
Pulp and paper	2 %	1 %	9 %	21 %	0 %	4 %	0 %	5 %	6 %	2 %	6 %	4 %
Food processing	11 %	17 %	3 %	1 %	39 %	7 %	0 %	16 %	5 %	12 %	9 %	14 %
non metallic minerals	18 %	27 %	3 %	6 %	0 %	16 %	9 %	20 %	16 %	4 %	23 %	26 %
Others	32 %	26 %	27 %	26 %	56 %	26 %	48 %	18 %	20 %	10 %	12 %	11 %
	100 %	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**	**100 %**

The composition of energy use across industrial sectors provides important insight into which industries account for the largest share of emissions in each country. In Norway, emissions are dominated by the production of non-metallic minerals such as cement and lime, together with the food industry and the production of non-ferrous metals. In Denmark, energy use is concentrated in similar core sectors, with non-metallic minerals and food production accounting for the largest shares of emissions. The situation in Sweden and Finland differs, as iron and steel production and wood processing play a more prominent role. While both countries have energy systems that rely heavily on bio-based resources, the data indicate that Finland still has significant emissions from fossil sources.

Emission profiles across European countries reveal clear differences in which industrial sectors dominate, as reflected in both energy use and process emissions. Petroleum refining is a major emission source in many countries and accounts for a substantial share of total greenhouse gas emissions. In both Denmark and Poland, emissions from the production of non-metallic minerals are particularly high, representing around 26 per cent of total emissions related to energy use. This likely reflects significant industrial activity in cement production in Denmark and fertiliser production in the Netherlands. Iceland stands out with very low total emissions, amounting to only 110 thousand tonnes, reflecting the country's limited heavy industry and extensive use of renewable energy. Overall, the table highlights substantial variation across countries, both in emission levels and in the distribution of emissions across sectors. These differences reflect variations in industrial structure, energy use and the degree of process intensity in national industries.

3.4 Emissions by sector (Norway and the EU)

A first step in positioning Norway within the European emissions landscape is to move beyond simple comparisons of total emission levels between Norway and the EU. Emissions from Norwegian industry, including both energy-related emissions and process emissions, account for approximately 1.6 per cent of total industrial emissions in the EU. This means that Norway's overall contribution is small in absolute terms. However, this does not diminish the relevance of Norway's emission profile. On the contrary, Norway's industrial structure and emission sources differ in several important respects from what is typical in the EU. To gain a more precise understanding of these differences, it is therefore more appropriate to analyse individual countries and examine which sectors dominate emissions. By assessing the share that different industrial segments represent of each country's total industrial emissions, it becomes possible to identify national characteristics and to assess which technological and policy instruments are likely to be most effective in different contexts.

A key reason why Norway differs from the EU as a whole lies in how emissions are distributed between energy use and industrial processes. Figure 4 clearly shows that Norway and the EU have distinct emission profiles, beyond the fact that Norway's total emissions are significantly lower in absolute terms. In Norway, emissions from energy sources account for 21 per cent of total industrial emissions, while the corresponding share in the EU is 50 per cent. This reflects both differences in energy use and differences in industrial structure. In Norway, energy use is dominated by the production of non-metallic minerals such as cement and lime, as well as food processing, as shown in Table 2. In the EU, production of non-metallic minerals is also the largest energy consumer, followed by the iron and steel industry and the chemical sector as major contributors.

When comparing process emissions between Norway and the EU, further structural differences become apparent. Figure 4 shows that Norway's two largest sources of process emissions are ferroalloy production, accounting for 22 per cent, and aluminium production, accounting for 17 per cent. The situation in the EU is different. Petroleum refining represents 13 per cent of process emissions, followed by cement production and the iron and steel industry, each accounting for 8 per cent. Norway's very low share of process emissions from the iron and steel sector, at 0.3 per cent, reflects the limited scale of this industry domestically. Emissions from petroleum refining and cement production also represent a smaller share of total process emissions in Norway than in the EU, at 7 per cent and 5 per cent respectively.

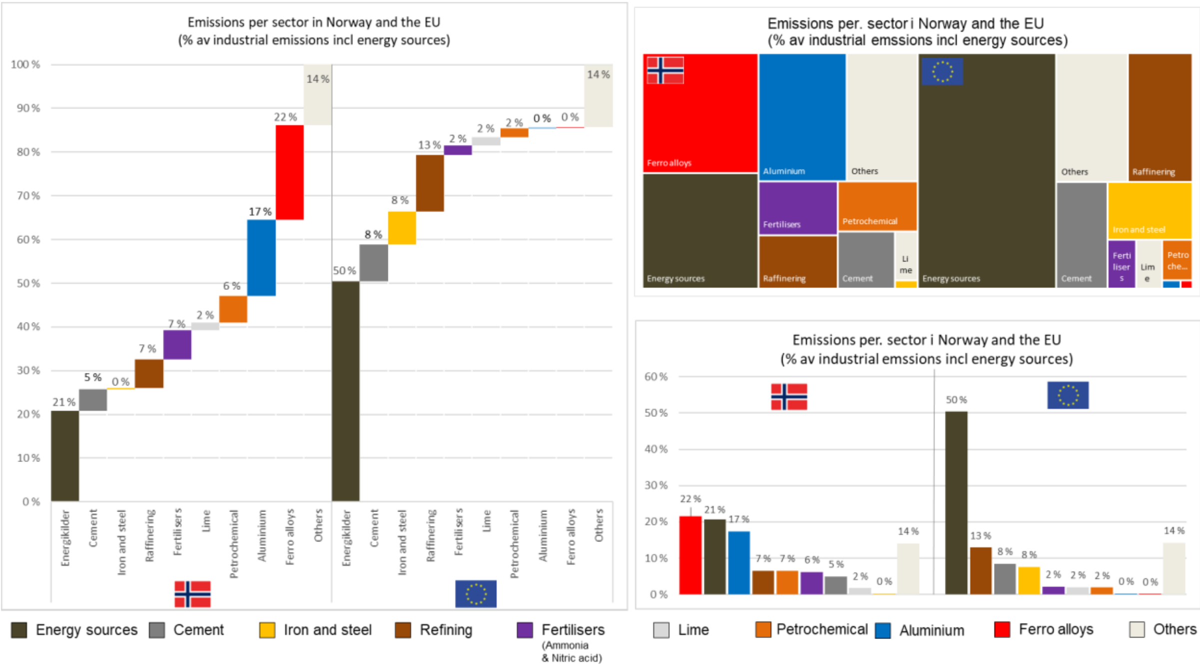

Figure 4. Emission profiles for different industrial segments in Norway and the EU, expressed as a percentage of total industrial emissions, including both energy-related emissions and process emissions. The charts illustrate, in different ways, how the composition of emission sources differs between Norway and the EU.

Et clearer picture of industrial emission structures emerges when the focus is placed on process emissions, as energy-related emissions dominate the overall picture in the EU. Energy-related emissions are not reported at the same level of detail as process emissions, which makes precise sector-by-sector comparisons more challenging. By applying the same mapping as above, but excluding emissions from energy sources and petroleum refining, that is categories 1.A.1.b and 1.A.2.a to 1.A.2.f, the differences between Norway and the EU become even more apparent. These distinctions are illustrated in Figure 5.

What drives process emissions in Norway becomes clear when examining which sectors account for the largest contributions. By far the dominant sources are ferroalloy production and aluminium production, which together account for 54 per cent of total process emissions. This is followed by fertiliser production and the petrochemical industry, each contributing 9 per cent. This pattern is consistent with previous analyses by Prosess21, which have identified these sectors as the most emission-intensive components of the Norwegian process industry. Norway's position as Europe's largest producer of aluminium, ferrosilicon and manganese alloys helps explain why these sectors play such a prominent role in overall process emissions.

In the EU, the structure of process emissions is likewise shaped by the sectors that dominate industrial activity, but the composition differs markedly from that of Norway. Unlike Norway, the cement industry is the single largest source of process emissions in the EU, accounting for 23 per cent of the total, followed closely by the iron and steel industry at 21 per cent. The category labelled “Other” also represents a larger share in the EU than in Norway, which is not unexpected given the EU’s broader and more diversified industrial base. This category largely consists of emissions related to product use, reported under category 2.F (see Figure 2), as well as a larger share of other chemical production that is less prominent in the Norwegian industrial structure.

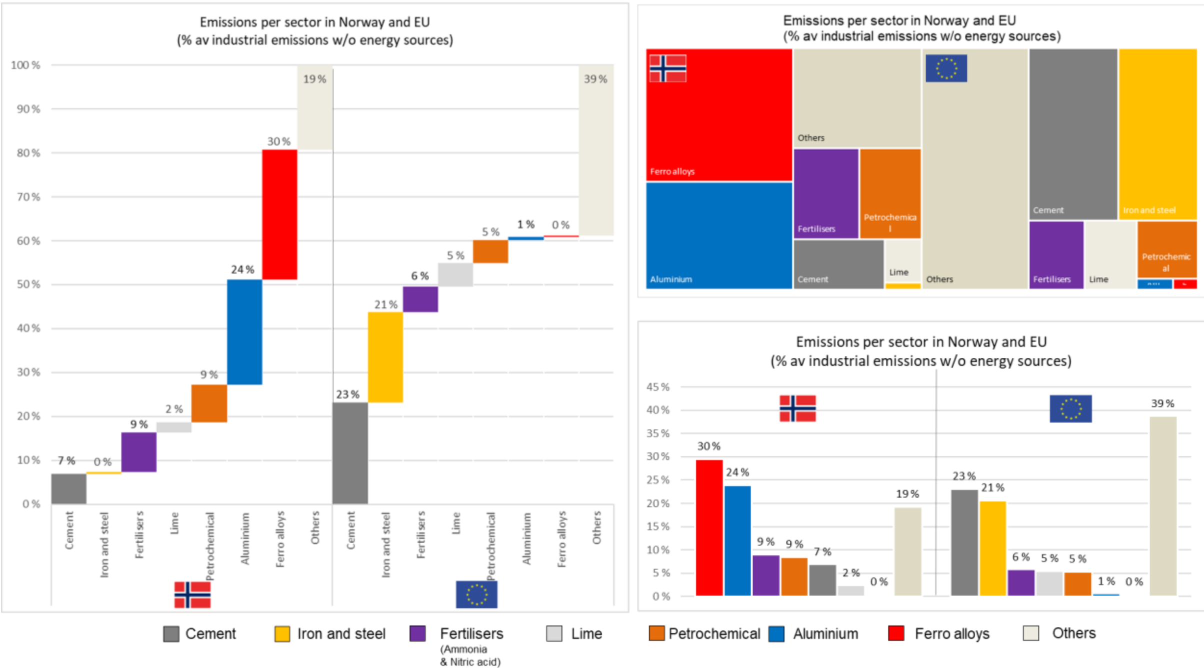

Figure 5. Process emissions, excluding emissions from energy sources and petroleum refining, for different industrial segments in Norway and the EU, expressed as percentages. The charts illustrate, in different ways, how the composition of process-related emission sources differs between Norway and the EU.

3.5 Emission composition in the Nordic countries

To place the Norwegian and European emission profiles in context, it is useful to compare them with other Nordic countries that share broadly similar framework conditions but differ in industrial structure and energy mix. By developing corresponding overviews for Sweden, Finland, Denmark and Iceland, it becomes possible to analyse both energy use and process emissions across countries with many structural similarities, but also with clear differences. Such comparisons provide valuable insight into the specific emission challenges faced by each country and help explain why Nordic countries may take different positions in shaping current and future EU frameworks for industrial decarbonisation and competitiveness.

A comparison across the Nordic countries reveals clear differences in how process emissions are distributed, which becomes particularly evident when examining the figures on a country-by-country basis. Figure 6 presents process emissions in the Nordic countries. As shown earlier in Figure 3, Norway stands out as the country with the highest level of process emissions, followed by Sweden and Finland. Since Norway’s emission profile has already been examined in detail, the focus here is therefore on the other Nordic countries and the characteristics of their industrial structures and emission sources.

In Sweden and Finland, emission patterns largely resemble those of the EU. This applies both to energy use and to the dominant sources of process emissions. In both countries, the overall emission structure broadly aligns with the EU average, with relatively high emissions linked to energy use and petroleum refining. The largest sources of process emissions are iron and steel production, accounting for 15 per cent in Sweden and 17 per cent in Finland. This is followed by the cement industry, with shares of 8 per cent in Sweden and 4 per cent in Finland.

The strongest contrasts within the Nordic region are found between Denmark and Iceland, which represent opposite ends of the spectrum in terms of process emissions and industrial structure. Denmark stands out for having very limited process emissions. The emissions that are reported stem primarily from the mineral industry, notably cement and lime production, which account for 19 per cent. No process emissions are reported from metal production or chemical industry, reflecting the structure of Danish industry. Iceland, by contrast, presents the opposite picture. Energy-related emissions are very low, and almost all process emissions originate from aluminium and ferroalloy production. Despite its small size, emissions from these processes are significant, and Iceland plays an important role in European production of aluminium and ferrosilicon. In this respect, Iceland most closely resembles Norway, as both countries have a high share of process emissions linked to metallurgical industries such as aluminium and ferroalloys.

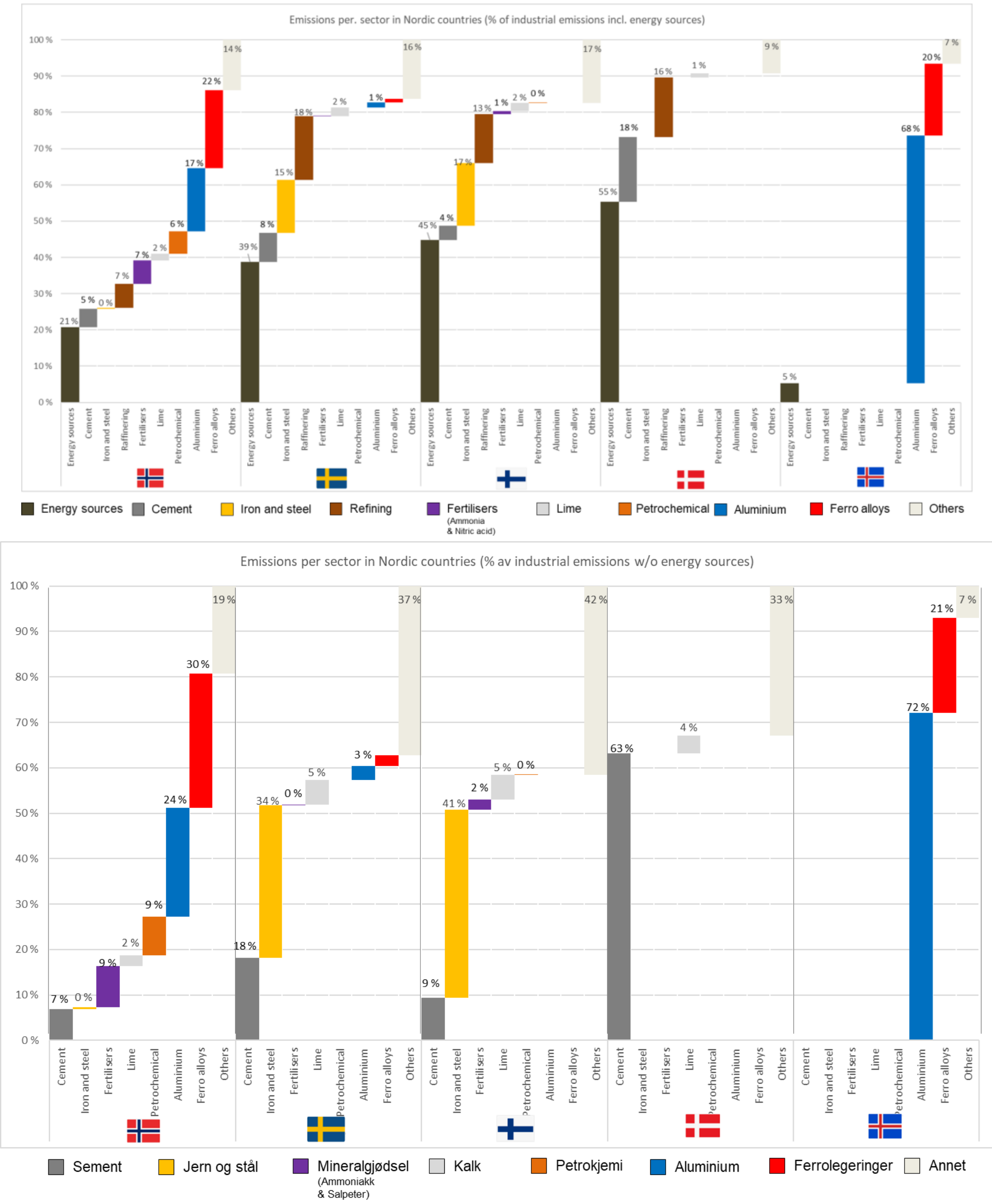

__Figure 6__. Industrial emissions for Norway, Sweden, Finland, Denmark and Iceland, expressed as a percentage of total industrial emissions. The upper bar chart shows emissions including both energy-related emissions and process emissions. The lower bar chart shows process emissions only. Emission data are from 2023, except for Sweden, where data from 2021 are used.

3.6 Emission composition in selected European countries

To place the Nordic findings in a broader context, it is useful to examine how process-related and energy-related emissions are distributed in larger industrial economies. Similar analyses can be carried out for all countries that report emissions, and all EU Member States have submitted the relevant data. Major industrial countries outside the EU, such as the United States, Japan and Australia, also report comparable figures, making it possible to compare emission profiles and industrial structures across regions. On this basis, the following section focuses on selected large industrial countries within the EU to examine how emissions are distributed between energy use and industrial processes.

Norway's emission profile differs clearly from that of the major European industrial economies. Figure 7 presents industrial emissions as percentage shares for Norway, Germany, France, Italy and the EU. The upper bar chart includes both energy-related emissions and process emissions, while the lower chart isolates process emissions only. The overview reveals several clear similarities between the aggregate EU emission profile and those of the major industrial countries represented by Germany, France and Italy. All three countries show a substantial share of emissions linked to energy use in industry, reflecting both the dominant energy sources and the underlying industrial structure.

The EU's heavy reliance on natural gas is a defining feature of both industrial energy use and emission levels. The extensive use of natural gas for industrial purposes is well documented and underpins the large pipeline system connecting Norway with the European continent. Gas is primarily transported from the Norwegian continental shelf via pipelines to receiving terminals in Germany, Belgium, France and the United Kingdom, from where it is distributed further to gas-fired power plants and industrial users. In addition, petroleum refineries contribute significantly to industrial emissions in these countries, although the magnitude varies.

Across Europe, cement production and the iron and steel industry dominate process emissions. A closer examination of the data reveals a relatively consistent pattern, with cement and iron and steel production emerging as the largest sources of process emissions in most countries. Italy deviates somewhat from this pattern, with a lower share of emissions from iron and steel production and a higher share associated with petroleum refining.

Emission contributions from chemicals, fertiliser production and lime production vary across European countries. All the EU countries report process emissions linked to fertiliser production, lime production and petrochemicals, but the relative importance of these sectors differs substantially. Compared with these countries, Norway has a higher share of emissions from fertiliser production and petrochemical activity, and a lower share from cement production. As noted earlier, Norway also has negligible emissions from the iron and steel industry, which further distinguishes its emission profile from that of the large industrial economies in Europe.

Data for the Netherlands, Spain and Poland show patterns that in several respects resemble those of the major EU economies, but with some notable exceptions. Table 1 also includes an overview of industrial emissions in the Netherlands, Spain and Poland, even though these countries are not visualised in Figure 7. All three countries display broadly similar shares of emissions related to energy use. Spain and Poland have emission profiles that largely resemble those of Germany, France and Italy. The Netherlands stands out, however, with a high share of emissions from petroleum refining and some emissions from fertiliser production, while no emissions are reported from cement production or the iron and steel industry.

Emissions from metallurgical industries vary significantly across European countries. In Germany and France, emissions from aluminium production have declined to approximately 270 thousand tonnes and 620 thousand tonnes of CO_2 equivalents respectively, down from around 700–800 thousand tonnes in 2020. These levels are substantially lower than those observed in Norway and Iceland. France also reports around 620 thousand tonnes of CO_2 equivalents from ferroalloy production, a reduction from approximately one million tonnes in 2020, which is less than half of Norway's emissions from the same type of industry. Italy, by contrast, reports neither emissions from aluminium production nor from ferroalloys.

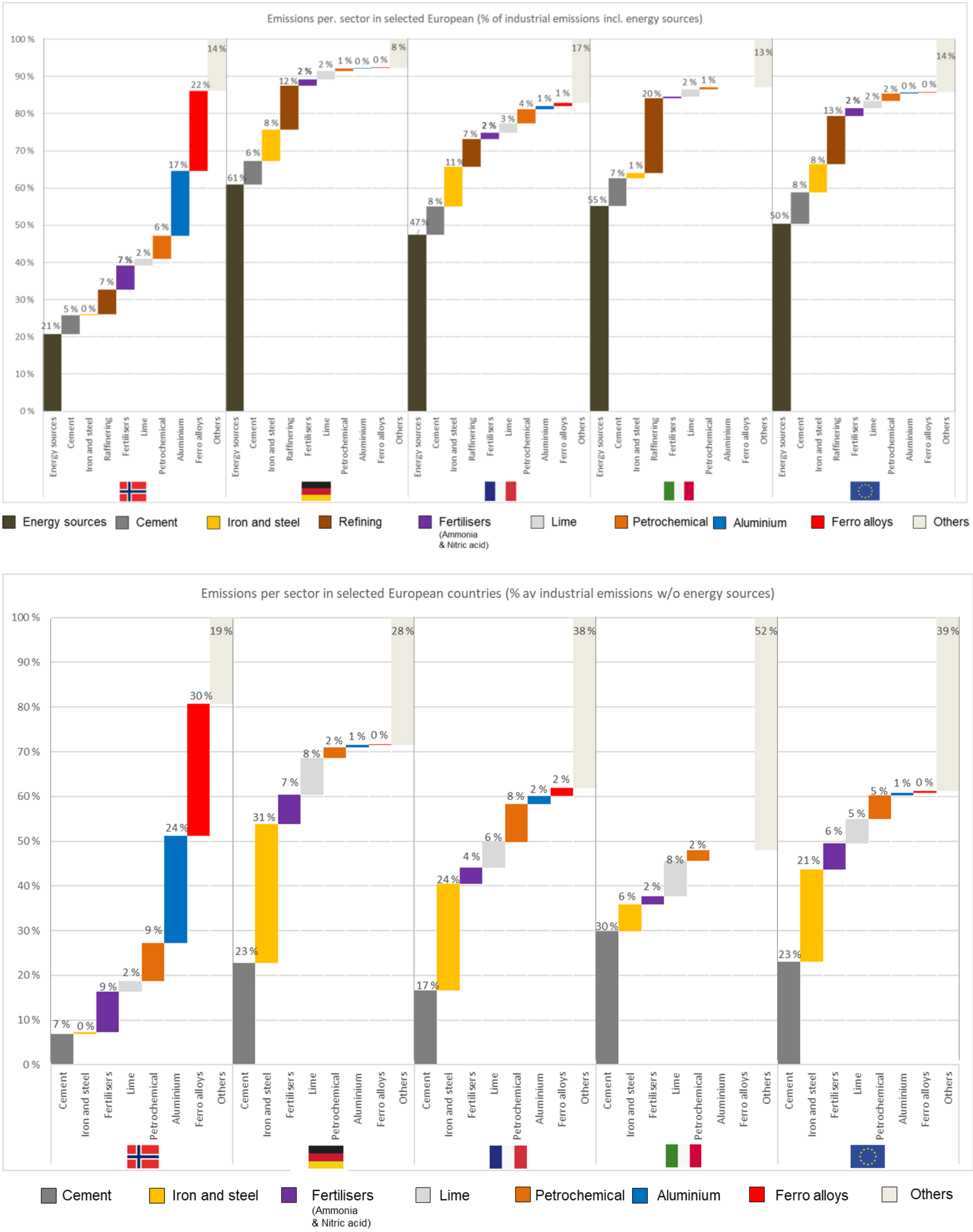

Figure 7*. Industrial emissions for Norway, Germany, France, Italy and the EU, expressed as a percentage of total industrial emissions. The upper bar chart shows emissions including both energy-related emissions and process emissions. The lower bar chart shows process emissions only.*

3.7 Summary and overarching analysis of the emission profiles

The analysis demonstrates that the Nordic and European countries have distinctly different industrial emission profiles, with direct implications for future policy design and framework conditions. This report has examined emissions related to both energy use and industrial processes for Norway, the EU, the Nordic countries and selected EU Member States. Taken together, the findings present a clear picture of Norway as having an emission profile that differs markedly from both its Nordic neighbours and Europe more broadly. These differences can largely be explained by historical developments and structural characteristics of national industries.

Based on the analysis of emission profiles, several overarching observations can be highlighted:

- **The Nordic countries have distinct industrial characteristics that shape how they approach and engage with frameworks for decarbonisation and competitiveness**. It is therefore likely that their positions on future industrial regulation and support schemes will differ. Sweden and Finland have industrial structures that largely resemble those of other EU Member States, with substantial emissions from the iron and steel and cement sectors, in addition to an extensive wood-processing industry that is not fully captured in this analysis. Denmark, by contrast, stands out in that emissions are primarily linked to cement production, and the country has already placed significant emphasis on CCS solutions.

- **Norway and Iceland differ clearly from other European countries due to industries that are strongly concentrated around metal production**. Both countries have industrial profiles in which aluminium and ferroalloy production account for a large share of emissions. Norway alone supplies up to 40 per cent of the EU's demand for aluminium and silicon, making it a central supplier within European value chains. Several of the materials exported by Norway, including aluminium, silicon, nickel and titanium dioxide, are classified by the EU as critical raw materials. Competition for these materials comes primarily from producers in Asia and South America rather than from other European suppliers.

- **Norway's and Iceland's position outside the EU limits their influence in processes that directly affect their industrial sectors**. As non-EU members, both countries have limited access to EU decision-making processes and therefore reduced influence when new regulatory frameworks are developed. This applies even though industries in both countries have characteristics that differ markedly from those prevailing in most of Europe, and which often result in interests that diverge from those of the largest EU Member States.

- **In most European countries, the majority of industrial emissions stem from energy use, indicating substantial potential for further electrification**. The analysis shows that, except for Norway and Iceland, all countries examined have a high share of industrial emissions originating from energy use. These emissions are linked to combustion processes, heating, heat and steam processes. This pattern suggests that the potential for additional electrification in European industry is significantly greater than in Norway, where process emissions account for a much larger share of total industrial emissions.

    - Further electrification is likely to drive additional expansion of renewable power generation on the European continent, particularly in the form of variable renewable energy such as solar and wind. While this type of generation can lead to very low electricity prices during certain periods, it also increases reliance on flexible and balancing power sources to ensure system stability.

    - In this context, Norway's dispatchable hydropower gains increased strategic value. It can supply electricity when solar and wind generation is low and is therefore highly valued in a European power system with a growing share of variable production. This value has increased following the commissioning of interconnectors to Germany and the United Kingdom in 2020 and 2021.

    - At the same time, several developments will increase national electricity demand in Norway. Electrification of the petroleum sector plans for new data centres, and the expected decarbonisation of the Norwegian process industry will all contribute to higher power consumption. Without new domestic power generation or access to imported electricity from surplus regions, this may lead to a more constrained power balance.

    - A tighter power balance and higher electricity prices may make it more challenging to renew long-term power contracts for energy-intensive industry and to undertake the substantial investments required to reduce greenhouse gas emissions. This could, in turn, weaken the competitiveness of the Norwegian process industry, which is highly dependent on stable and predictable electricity costs.

   - Unlike Norway, Iceland does not have cross-border interconnectors.

- **Over the longer term, increased electrification in the EU may alter energy flows in Europe and affect Norway's role as a gas supplier**. An effective electrification strategy in the EU could, over time, change the dynamics of gas imports, with direct implications for Norway's position as an energy supplier to Europe. A gradual shift away from gas in European industry would affect demand for Norwegian exports and, in the longer run, reshape the energy relationship between Norway and the EU.

Nordic countries can cooperate with industrial climate policy, but differences in industrial starting points lead to different policy needs. A common Nordic approach to industrial decarbonisation may be useful, but it is important to recognise that the industrial structures of Sweden and Finland more closely resemble those of other EU Member States. For Norway and Iceland, which are outside the EU and have markedly different emission profiles, it is therefore essential to closely follow the development of EU regulations and to engage actively where possible. This is necessary to ensure that future frameworks also provide sufficient flexibility to accommodate national conditions and industrial needs.

Table 3 presents an overview of industrial sectors whose emissions account for 5 per cent or more of total industrial emissions. For countries with ambitious climate targets, it is natural that regulatory frameworks and policy instruments are designed to address the largest sources of emissions. Table 3 and Figure 8 clearly illustrate that the differences between Norway and European countries are substantial, except for Iceland.

***Table 3**. Overview of emissions from selected industrial sectors in European countries. For each country, the table shows the percentage share that each sector represents of total industrial emissions. "Energy sources" aggregates emissions from fossil energy use across sectors. The table includes only sectors where process emissions account for 5 per cent or more of total industrial emissions. Emission data are from 2023, except for Sweden, where data from 2021 are used. (Source: UN Climate Change)*

Germany	France	Italy	Spain	Poland	Netherlands	Sweden	Finland	Denmark	Norway	Iceland
Energy sources (61 %)	Energy sources (47 %)	Energy sources (55 %)	Energy sources (54 %)	Energy sources (52 %)	Energy sources (43 %)	Energy sources (39 %)	Energy sources (45 %)	Energy sources (55 %)	Ferro alloys (22 %)	Aluminium (68 %)
Petroleum refining (12 %)	Iron and steel (11 %)	Petroleum refining (20 %)	Petroleum refining (15 %)	Cement (13 %)	Petroleum refining (20 %)	Petroleum refining (18 %)	Iron and steel (17 %)	Cement (18 %)	Energy sources (21 %)	Ferro alloys (20 %)
Iron and steel (8 %)	Cement (8 %)	Cement (7 %)	Cement (21 %)	Petroleum refining (9 %)	Fertilisers (5 %)	Iron and steel (14 %)	Petroleum refining (13 %)	Petroleum refining (16 %)	Aluminium (17 %)	
Cement (6 %)	Petroleum refining (7 %)					Cement (8 %)			Petroleum refining (7 %)	
									Fertilisers (7 %)	
									Petrochemicals (6 %)	

Green transition does not require less industry, but zero-emission industry. It can be argued that future innovation should focus on developing new, emission-free industries and related services, rather than placing excessive emphasis on today's established industrial processes. At the same time, it is important to recognise that many of the sectors discussed in this analysis, such as metal production and fertiliser manufacturing, constitute the material foundation of future green value chains. A decline in demand for these products is not expected. On the contrary, demand is likely to increase in line with growing security needs, electrification, digitalisation and the broader green transition. The challenge, therefore, is not to phase out these industries, but to transform them into zero-emission activities. This requires the development and deployment of new technologies, while ensuring that production takes place within the framework of a circular economy, where resources are used efficiently and materials are recycled to the greatest possible extent.

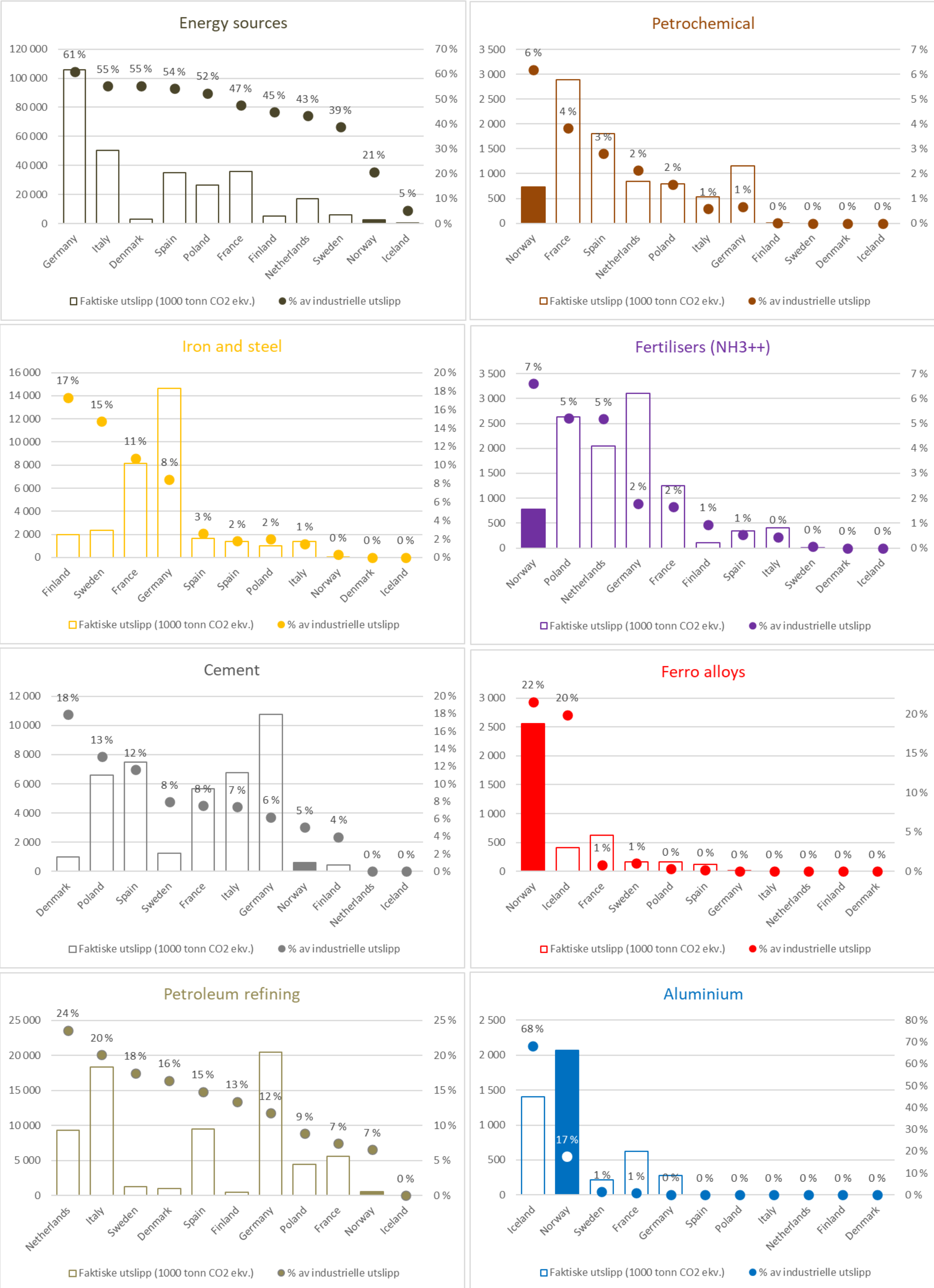

***Figure 8**. Overview of actual emissions, expressed in thousand tonnes of CO_2 equivalents, and the percentage share these emissions represent of each country's total industrial emissions. (Source: UN Climate Change)*

4. Why large emission reductions in the process industry are not being realised today

Over the past 25 years, much of the expansion in process-industry capacity has taken place outside Europe. This indicates that investment has increasingly been directed towards countries with less ambitious climate policies than those pursued in the EU, with carbon leakage consequently. [3]

The process industry has reduced its emissions by 8.6 million tonnes of CO_2, corresponding to a reduction of 45 per cent since 1990. Over the same period, Norway's total emissions have declined by 6.3 million tonnes of CO_2, or 12.2 per cent, indicating that emissions in other sectors have increased. The reduction in emissions from the process industry occurred primarily in the years leading up to 2008 and focused on measures targeting potent greenhouse gases such as nitrous oxide (N_2O), perfluorocarbons (PFCs) and sulphur hexafluoride (SF_6). Today, the 35 largest emission sources account for approximately 90 per cent of total industrial emissions, and all these installations are covered by the emissions trading system.

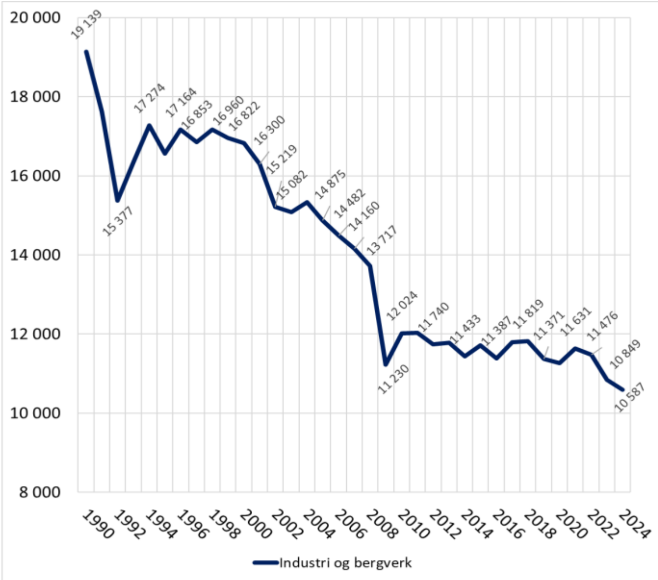

***Figure 9**. Emissions from industry and mining. (Source: SBB Norway)*

The Longship project, which includes carbon capture and storage at Heidelberg Materials' cement plant in Brevik (Norcem), represents a landmark initiative in the process industry and became operational in 2025. In parallel, many companies are undertaking feasibility and concept studies, pre-projects and industrial pilot activities to develop solutions that can deliver future greenhouse gas emission reductions, subject to final investment decisions.

4.1 Why will it pay off in the long term to reduce emissions rapidly?

A temperature increase above 2 °C would have far-reaching economic consequences globally. Based on the IPCC's Sixth Assessment Report (AR6), the economic impacts of warming beyond 2 °C are substantial. These losses arise from factors such as reduced agricultural productivity, higher health-related costs, and damage to infrastructure. As temperatures rise, agricultural yields are expected to decline due to heatwaves, droughts and changes in precipitation patterns. This, in turn, can lead to higher food prices and reduced food security, particularly in vulnerable regions. The health sector will face rising costs as a result of increased heat-related illnesses, vector-borne diseases and respiratory problems linked to deteriorating air quality. Damage to infrastructure from extreme weather events, including floods and storms, will further add to economic losses. Taken together, the global economic costs associated with a 2 °C temperature increase could be very significant, underscoring the need for effective mitigation strategies to limit warming and reduce these impacts.

The costs of transition are small compared with the long-term benefits of avoiding severe climate impacts. Shifting towards a low-carbon economy may appear costly in the short term, but over time the benefits of reduced climate damage are expected to far outweigh the required investments. According to the International Monetary Fund, an orderly transition to net-zero emissions by 2050 could result in the global economy being around 7 per cent larger than under a continuation of current policies.

4.2 What tools are available to make emission reductions economically viable?

The Paris Agreement commits all countries to progressively more ambitious climate targets. Adopted in 2015, the agreement aims to keep global warming well below 2 °C, and preferably limit it to 1.5 °C. All signatory

[3] 241010-industribeskrivelse-2024-m-forside.pdf

countries are required to set ambitious targets for reducing greenhouse gas emissions. In 2025, all parties to the agreement submitted updated and more ambitious targets. The choice of tools, regulatory frameworks, subsidies or taxes used to achieve these targets is determined by each country individually.

The EU operates with common climate targets, to which Member States contribute through national measures. EU countries do not submit individual targets under the Paris Agreement but instead work towards the EU's collective targets through national policies and action plans. This cooperation ensures that all Member States pursue the same overarching climate objectives, while retaining flexibility to tailor strategies to national circumstances. The EU has committed to reducing greenhouse gas emissions by 55 per cent by 2030, relative to 1990 levels, achieving a 90 per cent reduction by 2040, and reaching climate neutrality by 2050. In the updated nationally determined contribution submitted by the EU ahead of COP30, an indicative target for 2035 is also included, with emission reductions of 66.25 to 72.5 per cent by 2035 presented as an intermediate step towards the longer-term climate goals.

National emissions are reported based on three pillars:

- **ESR**: Effort Sharing Regulation [4]
- **ETS**: Emissions Trading System
- **LULUCF**: Land Use, Land Use Change and Forestry

Norway's climate targets are based on a combination of national ambitions and close cooperation with the EU. Norway's Climate Act states that the country is to become a low-emission society by 2050, with greenhouse gas emissions reduced by 90–95 per cent compared with 1990 levels. Together with the EU, Norway has committed to reducing emissions by 55 per cent by 2030. Cooperation with the EU entails national obligations under the Effort Sharing Regulation and LULUCF, as well as a joint target with the EU to reduce emissions covered by the emissions trading system. In principle, this means that emissions within the EU ETS are considered collectively, and that Norway is not required to reduce its own ETS emissions if equivalent reductions are achieved in other EU Member States.

Norway's new climate target significantly raises the level of ambition and further increases the importance of EU regulation for the process industry. The government now proposes to reduce emissions by 70–75 per cent by 2035. The Climate White Paper (Report to the Storting No. 25 (2024–2025)) emphasises that this target is to be achieved without setting a specific national sub-target for emission reductions. Emissions from the process industry are largely covered by the emissions trading system, making the EU framework for decarbonisation particularly important. According to the Industrial Policy White Paper (Report to the Storting No. 16 (2024–2025)), the government will closely follow the development of policy instruments under EU programmes and assess participation in new instruments, reduce the risk of carbon leakage through participation in CBAM, and work to ensure that the mechanism is designed in a way that provides industry with fair and predictable framework conditions and functions as intended.

CO_2 taxation is a central instrument in Norwegian climate policy and today covers almost all greenhouse gas emissions. The CO_2 tax is an environmental levy introduced in Norway in 1991 with the objective of reducing carbon dioxide emissions. The tax applies to various fossil fuels, both onshore and on the continental shelf. Its purpose is to reduce greenhouse gas emissions in a cost-effective manner by increasing the cost of emitting CO_2, thereby incentivising companies and individuals to reduce fossil fuel use and invest in more climate-friendly alternatives. Figure 10 illustrates how nearly all Norwegian emissions are subject to some form of carbon pricing, either through the national CO_2 tax and/or the EU ETS allowance price.

[4] Innsatsfordelingsforordningen (ESR) er en EU-forordning som fastsetter bindende nasjonale mål for reduksjon av klimagassutslipp fra sektorer som ikke omfattes av kvotesystemet,

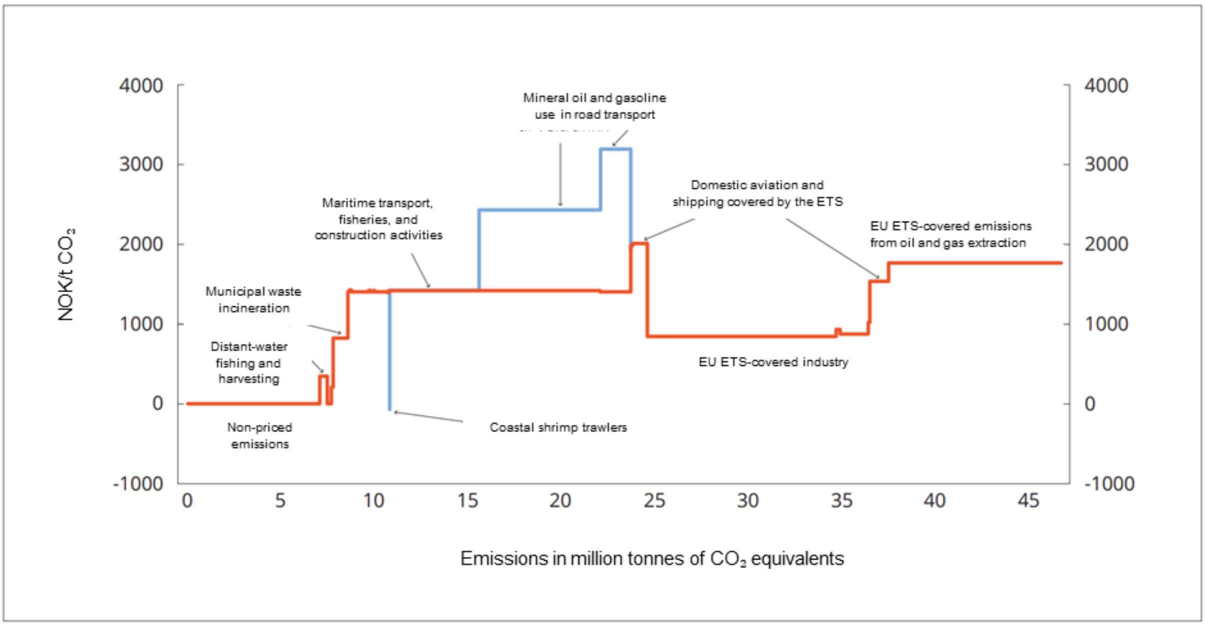

***Figure 10**. Carbon prices across sectors for greenhouse gas emissions. (Source: Government Climate Status and Action Plan for 2026)*

The largest industrial emissions in Norway are regulated through the EU Emissions Trading System. The most significant emissions from the Norwegian process industry are covered by the EU ETS, in which Norway has participated since 2008. Installations subject to the system must either purchase or receive allowances that grant the right to emit a specified amount of CO_2. As a result, the allowance price constitutes a key framework condition for decarbonisation in Norwegian industry.

The price of emission allowances is determined by the market and is gradually tightened through a declining emissions cap. The EU Emissions Trading System operates according to a cap-and-trade principle, whereby an overall limit is set on total emissions and companies are allowed to buy and sell allowances within this cap. The system has been reformed several times to strengthen its effectiveness and ensure additional emission reductions. Phase four of the EU ETS began in 2021 and runs until 2030. If a company emits less than the number of allowances it has been allocated, the surplus can be sold to other market participants. The annual emissions cap is continuously reduced, meaning that companies must either cut their emissions or purchase additional allowances to cover their needs.

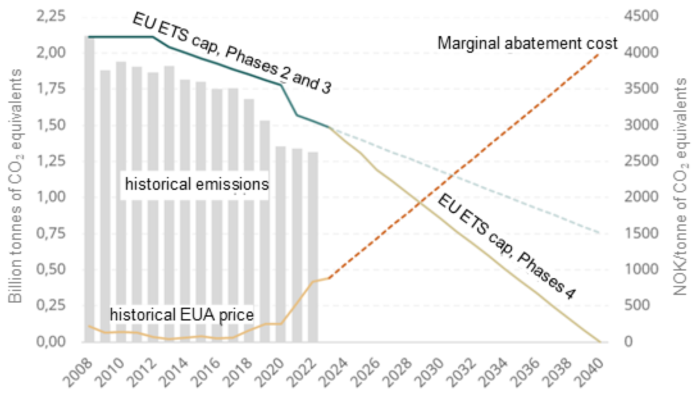

***Figure 11.** Illustration of the emissions trading system, showing the emissions cap, actual emissions, allowance price and marginal abatement costs in industry and power generation. (Source: Norwegian Environment Agency)*

The EU Emissions Trading System has evolved into a global reference point for carbon trading. It was the world's first emissions trading system and remains the largest, covering around 45 per cent of the EU's total greenhouse gas emissions. Similar systems have been established in other jurisdictions, including South Korea, which launched its emissions trading system in 2015, and the United Kingdom, which introduced its own system in 2021 following Brexit. In 2025, the EU and the United Kingdom agreed to link the EU ETS and the UK ETS, meaning that emission allowances will be usable across both systems once a formal agreement has been implemented.

China's national emissions trading system, launched in 2021, and the Regional Greenhouse Gas Initiative in the United States primarily cover the power sector.

Allowance prices in the EU ETS have fluctuated significantly in recent years but remain at a relatively high level. Following reforms to the system in 2018, prices began to rise markedly. In February 2023, the allowance price peaked at more than EUR 100 per tonne of CO_2, before declining to around EUR 65 per tonne later that year. As of February 2026, prices have again increased substantially and are approximately EUR 80 per tonne of CO_2, based on market prices in the range of EUR 78–84.

The allowance price in the EU ETS cannot be understood in isolation, as the system is influenced by a range of other European policy instruments. Future allowance prices are difficult to predict [5], as ongoing EU reforms continuously affect the market, and different analytical institutions provide divergent estimates. Measures such as the Renewable Energy Directive have already reduced emissions independently of the allowance price, illustrating that price signals alone are not sufficient. The ETS is not designed to operate in isolation but is supported by a broad set of complementary instruments aimed at technology development, market creation, infrastructure and coordination. The emissions cap towards 2030 therefore does not indicate how much emission reduction the ETS alone is expected to deliver, but rather how much is to be achieved within the ETS pillar through the combined effect of carbon pricing and other European and national measures. As a result, the allowance price does not represent the actual marginal cost of emission reductions. [6]

4.3 What effects do the tools aimed at reducing emissions have under global competition?

In the absence of a global carbon price, companies covered by emissions trading schemes face weaker competitive conditions than actors that do not incur climate-related costs. The lack of an internationally harmonised carbon price creates challenges for companies subject to systems such as the EU Emissions Trading System that compete in global markets. These companies must pay for their emissions, which increases production costs and can weaken competitiveness compared with producers in countries without comparable carbon pricing. A global carbon price could reduce this imbalance, but competitiveness is also shaped by a range of other factors, including technology, innovation capacity, labour costs and regulatory frameworks. This section therefore focuses specifically on how increased climate-related costs affect competitiveness.

Climate costs trigger investment only when companies perceive them as less risky and more profitable than maintaining existing production. The purpose of taxes and allowance prices is to encourage companies to invest in technologies that reduce or eliminate emissions, thereby lowering or eventually avoiding greenhouse gas costs. In practice, companies must weigh these incentives against the total cost of the required measures. Decisions on whether to invest, relocate production or continue paying for emissions depend on factors such as capital requirements, financing costs and the ability to pass costs on through higher product prices, relative to expected future CO_2 taxes or allowance prices. These assessments become more complex when technologies are immature or require extensive retrofitting of existing facilities. This applies, for example, to carbon capture and storage, the substitution of natural gas with hydrogen in heat-intensive processes, electrification, or the deployment of entirely new and innovative production processes. In some cases, such measures may require a complete redesign of industrial processes and entail the write-down of large parts of existing production assets.

Competitive challenges arise because only some actors face climate-related costs, while others operate without any form of CO_2 pricing. In an ideal world with a global CO_2 price, all competitors would face higher costs associated with emissions, although the burden would vary across companies. Under such conditions, innovative firms with strong financial positions would have a clear competitive advantage. In practice, however, the situation is far more complex. Companies operate under very different competitive conditions depending on whether they are active in markets with or without CO_2 taxes or emissions trading systems.

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[5] What are the EUA price forecasts for 2030? | Homaio

[6] Klimatiltak i Norge 2026: Veivalg og utslippsbaner mot 2050 - miljodirektoratet.no

For companies producing heavy and less transportable goods, competition is often primarily national or regional. By contrast, producers of higher-value and more easily transportable products tend to compete globally and are therefore more exposed to competitors that do not pay for emissions. Changes in energy prices, raw material costs or other input factors in one region can quickly further shift competitive dynamics.

Transport costs and product value play a decisive role in determining whether industrial products are traded regionally or globally. Products such as cement and glass are typically produced and consumed locally or regionally, as they are heavy and costly to transport over long distances, making short supply chains more economically attractive. At the other end of the spectrum are commodities such as aluminium and ammonia, which can be produced in large volumes and transported efficiently over long distances. These characteristics make them far more integrated into global trade.

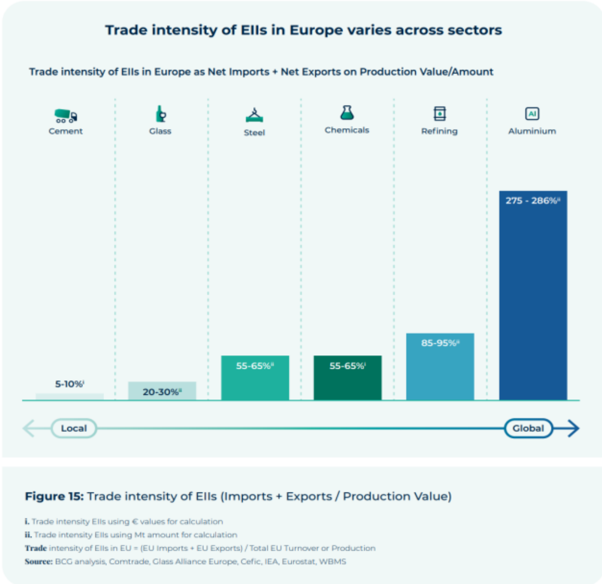

***Figure 12**. Trade intensity of energy-intensive products. (Source: ERT, 2024)*

The Norwegian process industry operates in global markets and faces intense competition from producers with very different cost structures and emission frameworks. It is largely export-oriented, with the EU as its most important market. Products exposed to global competition include aluminium, silicon, ferrosilicon, silicon carbide, fertilisers, manganese alloys, nickel, copper, zinc, chemicals and paper. The production of such metals and materials is often highly energy-intensive and can result in substantial greenhouse gas emissions. The main competitors to the Norwegian process industry are located in Asia, particularly China, as well as in Russia and South America.

4.4 How does this affect Norwegian companies?

The Norwegian process industry is geographically dispersed yet closely linked to strong industrial clusters that generate substantial export revenues. Industrial activity is concentrated in large industrial parks such as Herøya and Mo i Rana but is also located in smaller communities across the country, including Lista, Karmøy, Sauda, Bremanger, Sunndal and Finnsnes. In Østfold county several of the country's largest pulp and paper companies are located. Figure 13 shows export values for the largest industrial sectors. Refined petroleum products are primarily produced at the refinery in Mongstad. Aluminium includes both primary aluminium and downstream products such as rolled and cast components. Nickel, cobalt, copper and precious metals originate from nickel refining in Kristiansand. Silicon, ferrosilicon and ferro- and silicomanganese are collectively referred to as ferroalloys. Several sectors experienced a decline from 2019 to 2020 due to the COVID-19 pandemic, followed by significant growth up to 2022 and a renewed decline in 2023, while other sectors exhibited a more stable development over the same period.

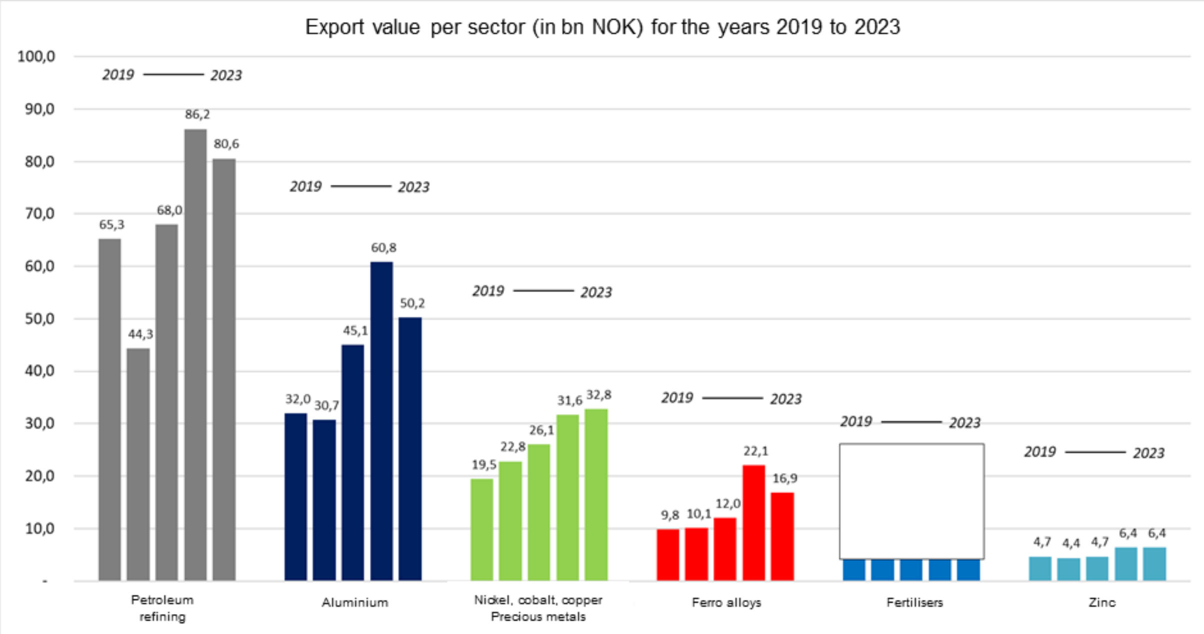

***Figure 13**. Overview of export values in billion NOK for the largest sectors within the process industry.* [7]

To understand Norway's role in international value chains, it is important to examine where the Norwegian process industry is positioned along the value chain and how it supplies critical and strategic materials to European and global industry. Three illustrative examples of products from Norwegian companies operating under global competition are described below: fertilisers, aluminium, and silicon and ferrosilicon.

Mineral fertilisers – from fertiliser production to bread production

Mineral fertilisers are produced through energy- and resource-intensive processes that combine ammonia production with the extraction of phosphorus and potassium resources. Mineral fertilisers, also referred to as synthetic fertilisers, are industrially manufactured products consisting of water-soluble inorganic salts. They contain high concentrations of the essential plant nutrients nitrogen, phosphorus and potassium, which are critical for plant growth. The nitrogen component is produced through the Haber–Bosch process, in which nitrogen from the air reacts with natural gas in a chemical process to form ammonia. Phosphorus is extracted from phosphate rock, while potassium is sourced from salt deposits.

Mineral fertilisers are indispensable to modern food production, and Norwegian facilities play an important role in supplying essential nutrients to the global population. Fertilisers are primarily used in agriculture to provide crops with necessary nutrients, contributing to higher yields and improved plant health. As such, they are a key component of modern farming systems and help meet growing global demand for food. In Norway, Yara operates two facilities producing chemicals and mineral fertilisers, located in Porsgrunn and Glomfjord. Yara's fertiliser production contributes to feeding approximately 265 million people worldwide.

Yara's Norwegian production facilities are among Europe's largest suppliers of nitrogen-based fertilisers and are strongly export-oriented. The Herøya plant is one of Europe's largest production sites for nitrogen-based products such as NPK fertilisers and calcium ammonium nitrate. The facility includes an ammonia plant, four nitric acid plants and a calcium nitrate plant, and produces a wide range of fertilisers and chemicals. Fertiliser output from Herøya alone is sufficient to feed around 50 million people. The Glomfjord plant also has substantial production capacity, with two nitric acid plants, one compound fertiliser plant and a calcium nitrate plant. Production at Glomfjord relies on imported ammonia. Approximately 70–75 per cent of output is exported to overseas markets, with the remainder supplied to Europe.

While mineral fertiliser production is essential for global food security, it is associated with significant emissions, primarily from CO_2 and nitrous oxide (N_2O). These emissions stem from the use of fossil natural gas as a feedstock and from the chemical processes involved in production. Nitrous oxide is formed during nitric

[7] Yara has confirmed export values to Prosess21 sekretariat.

acid production, but Yara has developed catalyst technology that reduces these emissions by approximately 95 per cent. This has contributed to substantial reductions in greenhouse gas emissions from the fertiliser industry.

Figure 14 illustrates the value chain from mineral fertiliser production, through farming and grain milling, to flour that reaches bakeries before being sold to end consumers. The figure also shows where relative greenhouse gas emissions occur along the value chain. As illustrated, mineral fertiliser production accounts for a substantial share of CO_2 emissions within the overall value chain.

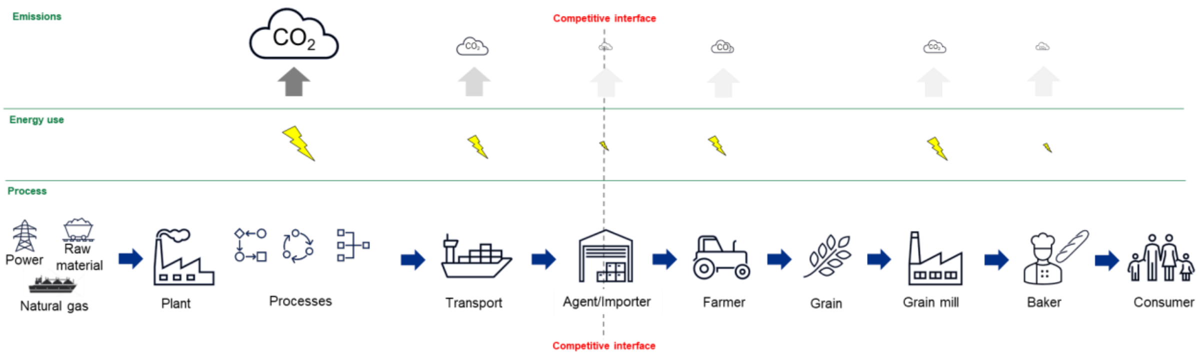

***Figure 14**. Value chain for mineral fertilisers, from raw materials and inputs through fertiliser production and delivery to farmers, grain mills and flour production, ending with bakeries and final consumers. The illustration of greenhouse gas emissions shows the relative fossil-based emissions across different stages of the value chain. Norwegian producers face competition once the product has been shipped to the final market (competitive interface).*

Modern food production depends on mineral fertilisers, making access to fertilisers critical for both crop yields and global food security. When purchasing bread in a shop, few people reflect on the fact that a key input in its production is mineral fertiliser. Farmers purchase fertilisers to increase yields and ensure that crops receive sufficient nutrients. Without mineral fertilisers, grain yields could be significantly reduced, and with the same human and mechanical effort, global food production would be insufficient, leading to hunger and very high prices. Without the supply of nitrogen, some crop yields could be reduced by half from one year to the next. Alongside energy, food is a fundamental prerequisite for human societies. Given that a large share of global food production relies on fertilisers, access to fertilisers is also a matter of preparedness and security.

It is the production of mineral fertilisers that accounts for the largest share of emissions along the value chain. When yeast ferments sugar in dough, it produces carbon dioxide (CO_2) and alcohol as by-products. The CO_2 forms small bubbles that cause the dough to rise and become airy. However, these emissions are minor compared with those associated with fertiliser production. To reduce emissions, CO_2 allowances have been introduced in the EU and EEA for emission-intensive products. If fermentation were a significant contributor, bread itself would be subject to a CO_2 tax. Instead, it is mineral fertiliser production that contributes substantially to emissions in the value chain, and these emissions are covered by the EU Emissions Trading System.

Norwegian mineral fertiliser production operates under conditions of international competition. Finished fertilisers are shipped to markets in Asia, the EU and the United States. As Yara operates production facilities in 23 countries, the company manages transport and sales across multiple markets. In each country, Yara competes directly with other producers. Where trade barriers are absent, Yara competes with producers both within and outside the EU, including suppliers from countries such as Russia. Competition takes place within each national market once the product has been delivered, as illustrated by the competitive interface shown in Figure 14.

Mineral fertilisers are therefore a clear example of a product exposed to global competition. Production facilities in the EU and EEA face higher climate-related costs because they are required to pay for their emissions, which can weaken their competitiveness relative to producers in countries without comparable carbon pricing. A more detailed discussion of the competitive situation follows in later sections.

Aluminium – from primary aluminium to components in electric vehicles

Norway is a major producer of primary aluminium and the largest producer within the EU and EEA, followed by Iceland. China accounts for more than 60 per cent of global aluminium production. Owing to its low weight and high resistance to corrosion, aluminium has a wide range of applications. In the transport sector, aluminium is particularly important in the production of electric vehicles and aircraft, where it contributes to lighter structures and improved energy efficiency. In the construction sector, aluminium profiles are widely used in applications where strength combined with low weight and corrosion resistance is required.

The figure below illustrates a value chain from the extraction of bauxite to aluminium components in an electric vehicle, using the example of a battery enclosure made from formed aluminium. The value chain shown is a simplified representation and does not include recycled aluminium, which accounts for a significant share of input materials in the production of aluminium components and represents a key aspect of aluminium as a sustainable material.

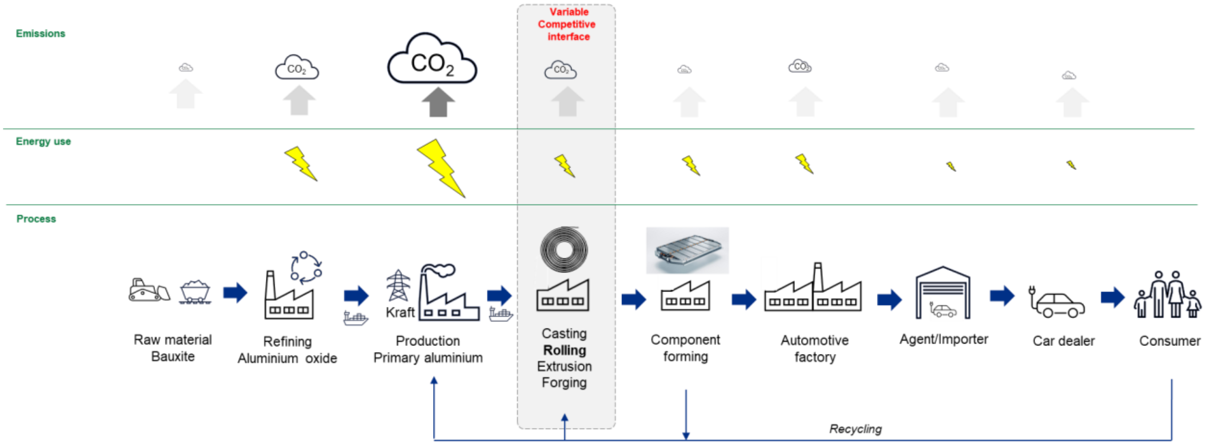

***Figure 15**. Example of the aluminium value chain, from raw materials and inputs through primary aluminium production, rolling and component forming (illustrated by a battery enclosure), to vehicle manufacturing and electric vehicles sold to end consumers. The illustration of greenhouse gas emissions and energy use shows the relative emissions across different stages of the process. Norwegian producers face competition once primary aluminium or rolled products are shipped to the final market.*

Primary aluminium production is based on a global value chain in which raw materials are extracted internationally and further processed through energy-intensive operations in Norway. The process begins with the extraction of bauxite, an ore rich in aluminium oxide. The bauxite is refined through the Bayer process, in which aluminium oxide is separated. The aluminium oxide is then transported to production facilities in Norway, where it undergoes electrolysis in the Hall–Héroult process. In this process, aluminium oxide (Al_2O_3) is reduced to molten aluminium (Al) using electrical current, while the oxygen binds with carbon to form CO_2. The molten aluminium is subsequently cast into ingots or other forms that can later be processed into a wide range of products.

Norway has developed a world-leading aluminium industry based on strong industrial competence and access to renewable power. Although Norway does not have domestic bauxite deposits, the country has produced primary aluminium for more than a century and has built globally recognised expertise in this field. Access to abundant and reliable electricity has been a fundamental prerequisite for this development.

Energy use and emissions along the aluminium value chain are highest in the production of primary aluminium. There are also emissions associated with the refining of aluminium oxide and with downstream forming processes, but these are relatively lower. Primary aluminium can be shaped through processes such as casting, rolling, extrusion and forging, depending on the intended application and required material properties. If we follow the value chain for a battery enclosure used in an electric vehicle, the process typically starts with a rolled aluminium product. Aluminium is highly formable, and slabs with a thickness of around 60 centimetres can be rolled down to sheets of 2–6 millimetres. Rolled products are collected into long coils of varying widths and thicknesses and shipped to companies specialising in the shaping of aluminium components. For a battery enclosure, this may involve subjecting an aluminium sheet to significant pressure and heat in order to achieve the required geometry for housing battery cells. The battery enclosure is then delivered to a vehicle manufacturer or a tier-one supplier for assembly of the battery cells, before the complete unit is installed in the electric vehicle.

Competition in the aluminium market is primarily price-based, although some customers have demonstrated a willingness to pay a premium for products with lower emissions. Primary aluminium in ingots or billets, as well as downstream products such as profiles and rolled coils, are exported from Norway, with the EU as the primary market. Competitive dynamics vary depending on whether suppliers deliver primary aluminium or fabricated products. Importers and customers can source aluminium from multiple countries, and competition for deliveries to hundreds of customers is largely driven by price. However, some manufacturers, such as Porsche and Mercedes-Benz, are willing to pay a somewhat higher price for aluminium with a lower carbon footprint. Competition takes place between producers within each national market once primary aluminium or fabricated aluminium products have been shipped to the final destination, as illustrated by the varying competitive interfaces shown in Figure 15.

Silicon and ferrosilicon – silicon-based alloys for electric vehicle motors

Outside China, Norway is among the world's largest producers of silicon and ferrosilicon, and the largest producer in Europe. As much as 40 per cent of the EU's imports of silicon and 26 per cent of its imports of ferrosilicon originate from Norway. Elkem, with more than 120 years of experience as a technology and industrial company, has developed substantial expertise and competence in the production of silicon-based alloys. Elkem owns and operates five smelters in Norway. In addition, Wacker Chemie operates a plant producing silicon metal, and Finnfjord operates a plant producing ferrosilicon.

The value chain begins with the extraction of quartz, a key raw material for silicon production. In Norway, Elkem operates a quartz mine in Tana in Finnmark, as well as a quartzite quarry in Mårnes in Nordland. Quartz is processed and smelted together with carbon and other materials in electric furnaces at temperatures of around 2,000 degrees Celsius to form silicon (Si) and various silicon-based products and alloys. The oxygen in the quartz (SiO_2) binds with carbon and is released as CO_2.

Ferrosilicon is one of the most important ferroalloys and plays a central role in the production of modern materials. It contains both iron and silicon and is essential for the production of electrical steel, also known as silicon steel, due to its unique magnetic properties. Silicon contributes to reducing the weight of steel and aluminium used in motors and vehicle bodies, which is particularly important in electric vehicles. Other applications of silicon in electric vehicles include semiconductors, silicones used in wiring, protection of electronics and batteries, as well as safety equipment and interior components. Silicon is also used in brake discs. Beyond electric vehicles, silicon is a key material in the production of wind turbines, smartphones, microchips, solar cells, batteries, and aluminium and steel alloys.

Electrical steel is a key component in electrification, and its silicon content makes ferrosilicon essential for its production. Electrical steel typically contains up to 3.5 per cent silicon, which makes it highly efficient in conducting magnetic fields in transformers, generators and electric motors. This type of steel is particularly important in today's market, given the rapid growth in electric vehicle production, wind power and broader electrification. Norwegian producers face competition when ferrosilicon is sold to specialised steel mills capable of producing electrical steel.

Norway has significant advantages in silicon production, including access to high-quality quartz, advanced technology and strong expertise in ferrosilicon manufacturing. Renewable power is a critical factor that makes Norwegian producers competitive in the global market for electrical steel and electric motors, which are key components of the green transition and future transport solutions. The use of emission-free electricity and efficient operations means that silicon produced in Norway has only around one third of the average emissions per tonne of silicon.

Nevertheless, production still results in CO_2 emissions, amounting to approximately 1.9 million tonnes annually from Norwegian silicon and ferrosilicon production. These emissions can be partially reduced through increased use of biocarbon in the process, but complete elimination of emissions will require carbon capture or other breakthrough technologies. Elkem is actively researching such solutions together with Norwegian and international research institutions and partners. At present, these technologies remain very costly. Further details are discussed in the Prosess21 industry description.

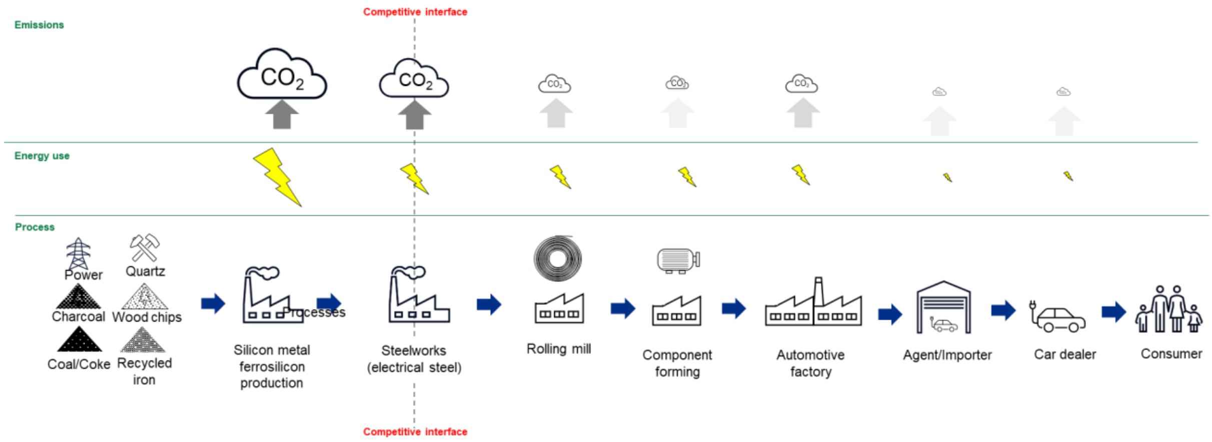

***Figure 16**. Example of the ferrosilicon value chain, from raw materials and inputs through ferrosilicon production as an alloying element for the manufacture of electrical steel (silicon steel). The steel is subsequently rolled and formed into components, for example for electric motors, before being delivered to vehicle manufacturers and sold as electric vehicles to end consumers. The illustration of greenhouse gas emissions and energy use shows the relative emissions across different stages of the process. Norwegian producers face competition when ferrosilicon is sold to specialised steel mills capable of producing electrical steel.*

Silicon and ferrosilicon are essential for the success of the green transition and digitalisation. Silicon metal is included on the EU's lists of critical and strategic raw materials. Producers are working to develop a portfolio of products with even lower emissions and are exploring whether these products can command a higher market price through a green premium. The market for silicon is global and highly competitive, with strong competition from producers in Asia that operate with higher emissions and lower production costs.

4.5 Polluter pays principle

The polluter pays principle means that those who cause pollution should also bear the costs of preventing, controlling and remedying it. This principle is a core element of environmental legislation in many countries and ensures that polluters take responsibility for the impact of their activities. In the value-chain examples described above, actors at each stage of the value chain are responsible for their own operations. To reduce greenhouse gas emissions, those actors that contribute most to emissions must therefore also undertake the largest measures and investments.

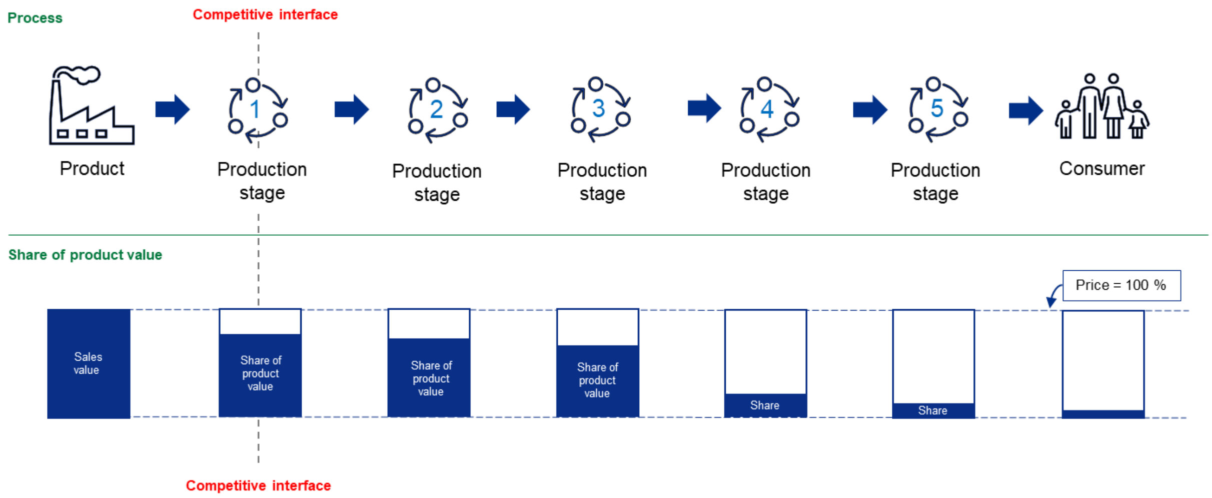

***Figure 17**. Illustration showing how a product's value share evolves along the value chain towards the end consumer.*

Within a value chain, competition takes place at each individual stage. For example, producers of mineral fertilisers, aluminium or silicon compete to supply customers further downstream. Price is often the most important factor for customers, but sustainability, quality and product specialisation also play a role in competitive positioning. In many value chains, however, materials are considered largely homogeneous commodities and are exposed to strong global competition. When examining the value of mineral fertilisers, aluminium or silicon as a share of the final product, the illustration below shows how the value contribution declines along the value chain towards the end consumer.

CO_2 taxes or payments for emission allowances, together with investments in emission-reduction measures, increase product costs. In an ideal situation, producers would be able to pass these costs along the value chain, so that the end consumer ultimately pays for the emissions component embedded in the final product. In practice, however, many producers compete against suppliers that do not face comparable climate-related costs (see Figure 18). This includes actors that are not subject to CO_2 taxes or emissions trading systems such as the EU ETS, for example in countries like China, India, Russia and the United States.

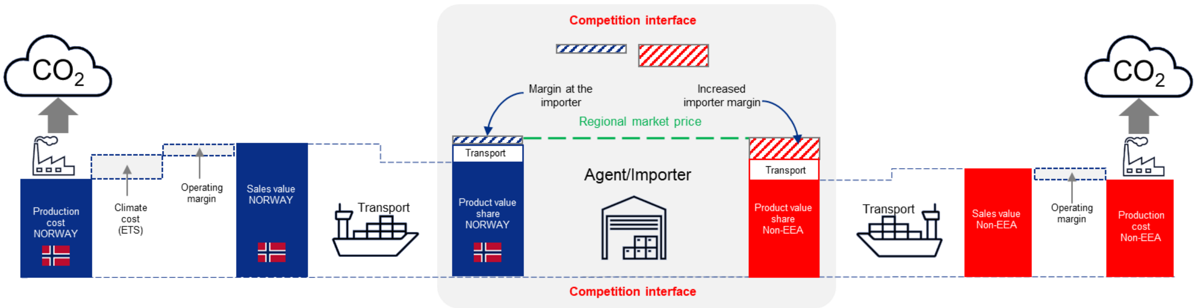

***Figure 18**. Illustration showing a Norwegian product competing with a product from a country where no climate costs are applied to emissions. Increased climate costs must be reflected in the product price. At the point of competition, a hypothetical importer would experience a higher margin when importing a product that is not subject to climate-related costs.*

Such asymmetries in climate costs affect competitive conditions in the market. They create a challenging environment in which producers must balance the delivery of products with lower carbon intensity against the need to keep prices competitive. In the absence of comprehensive labelling of final products, it also becomes difficult for consumers to assess how sustainable the value chain leading to the end product. This further increases pressure on companies to improve resource efficiency and secure access to lower-cost inputs, such as affordable electricity, to maintain competitiveness.

In the absence of a global greenhouse gas tax, companies operating in the EU and EEA that are required to pay such costs, while competing in global markets, are particularly vulnerable. Higher climate-related costs lead to higher product prices, allowing importers to source products from regions with lower or no greenhouse gas pricing. Without effective safeguards against producers that do not pay climate costs, imports of such products increase, while demand for products manufactured in the EU and EEA declines.

The purpose of introducing climate-related costs is to create incentives to reduce greenhouse gas emissions, not to undermine the competitiveness of production in the EU and EEA. When the emissions trading system was introduced, compensatory measures were therefore established for sectors exposed to global competition, with the aim of preventing companies from relocating production to regions without climate pricing.

Nevertheless, the build-up of production capacity outside the EU and EEA affects global market prices for traded products. This puts pressure on profitability and limits investment capacity. Investment leakage is a common reason why emissions are displaced rather than reduced. For the EU and EEA, this results in less renewal and reinvestment in industrial facilities. Over the past 25 years, much of the expansion in process-industry capacity has taken place outside Europe, indicating that investments have been channelled towards countries with less ambitious climate policies than those in the EU, leading to carbon leakage. Weaker profitability in EU and EEA industry also reduces the ability to develop, test and industrialise new technologies that can deliver emission reductions.

Rising climate-related costs have weakened the competitiveness of European industry. In 2023, the EU reduced emissions by 9 per cent, corresponding to a reduction of 220 million tonnes of CO_2 equivalents, of which approximately one third was due to a decline in industrial production [8]. Norway reduced emissions by 4.6 per cent in 2023, equivalent to 2.2 million tonnes of CO_2 equivalents, with 28 per cent of the reduction attributable to lower industrial activity [9].

4.6 Consequences of carbon leakage

Lower production levels in Norway do not necessarily reduce global emissions, as other producers often fill the gap with products that have higher emission intensity. We are seeing increasing global production of industrial materials and products, driven by strong growth in global economies, particularly in Asia, and by rising demand for materials that enable the green transition. Electrification, digitalisation, growing infrastructure needs and the expansion of renewable energy are all material-intensive processes that increase demand for metals and chemicals. How emissions and energy use are associated with these products therefore has a direct impact on global emissions. The objective must be to achieve industrial processes with the lowest possible emissions, powered by renewable energy.

A lack of competitiveness erodes profitability and limits a company's ability to reinvest in renewal and capacity. Deindustrialisation typically unfolds gradually, beginning with declining profitability and a reduced ability to invest in modernisation and expansion. Global companies invest where returns are highest. Each process-industry facility is supported by substantial infrastructure, including buildings, process equipment and supporting systems such as power grids, water supply, off-gas handling and auxiliary installations. To maintain competitiveness and efficiency, industry must continuously renew and upgrade a large and capital-intensive asset base. While deindustrialisation develops over time, plant closures have significant consequences for industrial communities when they occur.

Measured in CO_2 equivalents, direct and indirect emissions (Scope 1 and 2) from Norwegian companies are among the lowest in the world. Emission intensity associated with electricity use varies considerably across countries. The average climate footprint of electricity consumption in Norway is around 12 grams of CO_2 equivalents per kilowatt-hour in 2024. By comparison, the EU average is approximately 187 grams of CO_2 equivalents per kilowatt-hour in 2024, while the global average was around 445 grams per kilowatt-hour in 2024. Although emission intensity varies internationally, these figures demonstrate that Norway has a substantially lower climate footprint from electricity use than both the EU average and the global average.

The core technologies used in industrial production processes in Norway are not fundamentally different from those applied elsewhere in the world. Many of today's production processes for basic materials such as mineral fertilisers, aluminium, nickel, zinc and silicon were developed more than a century ago and have since been optimised for energy use and resource efficiency. Certain technological solutions have contributed to significant reductions in greenhouse gas emissions. For example, the aluminium industry has reduced emissions of perfluorocarbons through technological innovation and improved process control that prevents the so-called anode effect. In the mineral fertiliser industry, particularly through Yara, catalyst technologies have been developed that reduce nitrous oxide (N_2O) emissions by approximately 95 per cent.

Norway already produces products with some of the lowest emissions globally, and reduced activity would lead to higher global emissions rather than lower ones. When examining point-source emissions and emissions from electricity use in Norwegian companies producing aluminium and ferroalloys, including silicon, ferrosilicon and manganese alloys, these products have significantly lower greenhouse gas emissions when produced in Norway than the global average emission intensity for the same products. This is due both to the very low climate footprint of Norwegian electricity and to highly optimised industrial operations. In Norway, production of

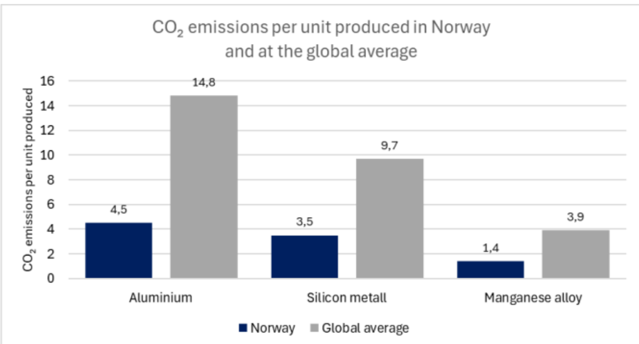

***Figure 19**. Emission intensity for three selected products produced in Norway, compared with the global average emission intensity for the same products. (Source: Hydro, Elkem and Eramet).*

[8] CO2 Emissions in 2023
[9] 241010-industribeskrivelse-2024-m-forside.pdf

aluminium and ferroalloys accounts for approximately 4.8 million tonnes of CO_2 equivalents per year, corresponding to around 10 per cent of total national emissions. If this production were replaced by output from other producers operating at global average emission intensities, global emissions would increase to around 15 million tonnes of CO_2 equivalents per year [10]. The example illustrated in Figure 19 clearly demonstrates that reductions in industrial activity in Norway would result in a substantial increase in global emissions. This effect is particularly pronounced for products that must be regarded as globally traded commodities. [11]

Labour productivity in the power-based process industry is high compared with other sectors in Norway. In 2022, this industry generated direct value added of NOK 68 billion and employed 22,000 full-time equivalents, corresponding to value added per employee of approximately NOK 3.1 million [12]. This is almost twice the average for market-oriented activities in mainland Norway and roughly three times higher than manufacturing outside the power-based process industry. The high productivity reflects, among other factors, the industry's ability to utilise knowledge, labour and invested capital efficiently. Furthermore, the power-based process industry is among the most productive land-based industries in Norway, surpassed only by sectors such as power generation and finance and insurance. This high productivity is critical for Norway's overall income development. It is important to recognise that results from input–output analyses and labour productivity assessments can be influenced by market prices. In 2022, demand for products from the process industry was strong, accompanied by high market prices.

Power-based process industry in Norway is world-leading in the adoption of research and in the development of new solutions and products. Companies in this industry invest substantial resources in research and development (R&D) and account for approximately 35 per cent of total R&D and innovation expenditure in Norwegian industry. In 2022, the power-based process industry spent close to NOK 3 billion on in-house R&D, representing an increase of 76 per cent compared with 2010. This industry invests roughly twice as much in R&D and innovation as companies in the pharmaceutical industry and the data and electronics industry. Although most research activity is carried out in companies' own laboratories and test facilities, purchased R&D has also increased by 40 per cent since 2010 and amounted to around NOK 1 billion in 2022.

Loss of communities
in rural areas

Losses in Norway's second-largest export industry(**12 %**)
(metals, chemicals, pulp & paper)

Loss of labour-productive jobs
3,1 MNOK per employee

A tripling
of global greenhouse gas emissions

Reduced annual R&I
from **3 bn** NOK in-house R&D
from **1 bn** NOK purchased R&D

Innovation is critical for improving production processes and developing new products. For example, Borregaard operates a research centre with close to 90 employees, and approximately 3–5 per cent of the company's revenue is allocated to innovation activities. This has resulted in 15 per cent of Borregaard's revenue now coming from products that did not exist five years ago. The industry also collaborates closely with universities and research institutions, such as Norwegian University of Science and Technology and SINTEF, to advance research and development.

4.7 Measures to prevent carbon leakage

To avoid an increase in global emissions resulting from reduced industrial activity in Europe, compensatory measures have been introduced. When industry in the EU and Norway faces higher climate-related costs than producers outside the EU, a framework is needed to balance competitive conditions with products imported from countries without such costs. A range of instruments, including CO_2 compensation schemes, free allocation of allowances and the proposed carbon border adjustment mechanism (CBAM), have been introduced or are planned to address this imbalance.

[10] The emission intensity of aluminium and ferroalloy production varies significantly across facilities and regions, depending on factors such as energy sources, technology and process design. Comparisons with global average emission intensity therefore provide a simplified picture and should be interpreted with caution. In practice, emissions associated with any potential relocation of production would depend on which specific facilities take over production, and these may have either higher or lower emissions than the global average.
[11] The power-based process industry is the most electricity-intensive segment of the process industry.
[12] ringvirkninger-av-kraftforedlende-industri---september-2024-publ.pdf

To mitigate this competitive disadvantage, free allocation of allowances was introduced when the emissions trading system was established, targeting industries exposed to global competition. This means that certain companies receive allowances at no cost despite their emissions. The objective is to prevent companies from relocating or shutting down due to the competitive disadvantage created by higher CO_2 costs. As the overall cap on allowances in the emissions trading system is gradually reduced, the number of free allowances will also decline. The most recent revision of the cap and the reduction in allocated allowances were introduced through the EU's "Fit for 55" package. Under this package, emissions in ETS-covered sectors are to be reduced by 62 per cent by 2030.

The share of free allowances a company receives is determined by several factors. Companies must first apply containing data from the previous five years, which is used to calculate historical emissions and production levels. Emission intensity, defined as emissions per unit of output, is also assessed. Sectors considered to be at high risk of carbon leakage and thus exposed to competition from countries with less stringent climate regulations may receive a higher share of free allowances. In addition, a cross-sectoral correction factor may be applied if the total volume of free allowances exceeds a predefined threshold, ensuring an overall reduction in the share of allowances allocated free of charge.

An important instrument for preventing carbon leakage is the CO_2 compensation scheme. In 2024, the parties reached an agreement on the scheme for the period up to 2030, which includes an annual compensation cap of NOK 7 billion from the state to companies. Companies are required to allocate at least 40 per cent of the compensation to measures that contribute to climate action, energy efficiency, and research, development and innovation aimed at reducing greenhouse gas emissions. The scheme provides financial compensation for higher electricity prices resulting from the EU emissions trading system. Norwegian producers primarily use emission-free hydropower, yet they are still affected by price spillover from European electricity prices that incorporate CO_2 costs. This means that even though electricity produced in Norway is renewable, domestic power prices are influenced by CO_2 prices in the EU. As the share of renewable energy production in the EU increases, the need for compensation is expected to gradually decline, and the scheme will be phased out over time. Every five years, the extent to which price spillover from EU electricity market prices affects Norway is reassessed.

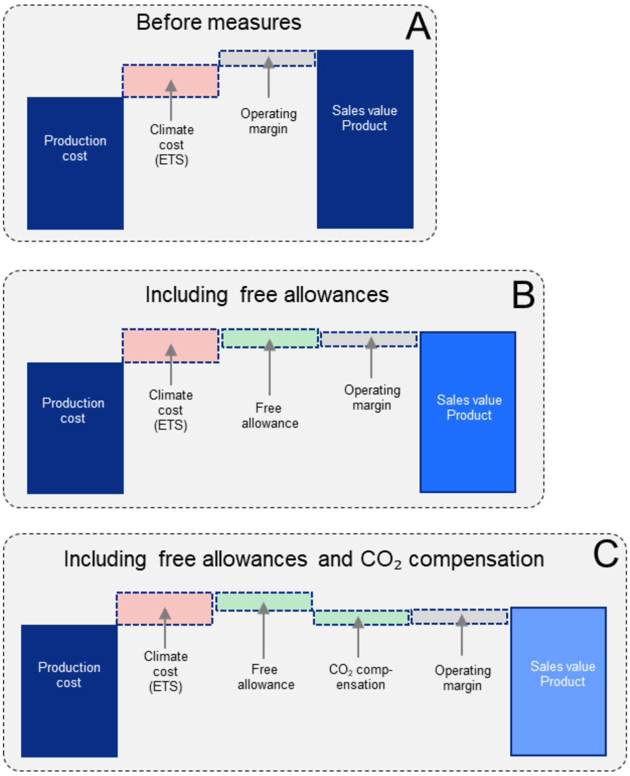

***Figure 20**. Illustration showing the compensatory reduction in costs for a company as a result of free allocation of allowances and CO_2 compensation. As a result, the company can maintain a more competitive product price.*

Over several years, the Fiscal Policy Council has criticised the CO_2 compensation scheme. The Council argues that the scheme hinders transition and that the funds allocated to it, as well as the labour and electricity used by recipient companies, could generate higher value creation elsewhere. It is therefore noteworthy that the Council does not sufficiently consider that the scheme compensates industry for costs it has not caused, that it is an integral part of the EU ETS, and that the EU explicitly encourages continued use of the scheme precisely in order to safeguard European competitiveness.

The European Commission has signalled increased use of the scheme. Through the Steel and Metals Action Plan, the need for more countries to make use of the scheme is reiterated, while work is also under way to ensure appropriate compensation mechanisms beyond 2030 in line with measures to prevent carbon leakage.

Taken together, these instruments help maintain competitiveness relative to companies located in countries without climate-related costs. The combined effect of allowance prices, free allocation of allowances and CO_2 compensation on product prices is illustrated in Figure 20. In example A, a company must fully bear the EU ETS allowance price while also maintaining an operating margin to ensure the ability to invest in new projects. In example B, the company is entitled to a certain share of free allowances, reducing total costs. In example C, the company is also eligible for CO_2 compensation.

Overall, these measures are intended to ensure competitive conditions comparable to those faced by products imported from countries with low or no greenhouse gas pricing. Figure 18 illustrates how climate-related costs increase production costs for producers within the EU and EEA. Figure 21 shows how instruments such as free allowances and CO_2 compensation help level the playing field between EU and EEA producers and externally imported materials, so that importer margins are equalised. In practice, this leads to more balanced competitive conditions and competition that results in downward pressure on prices.

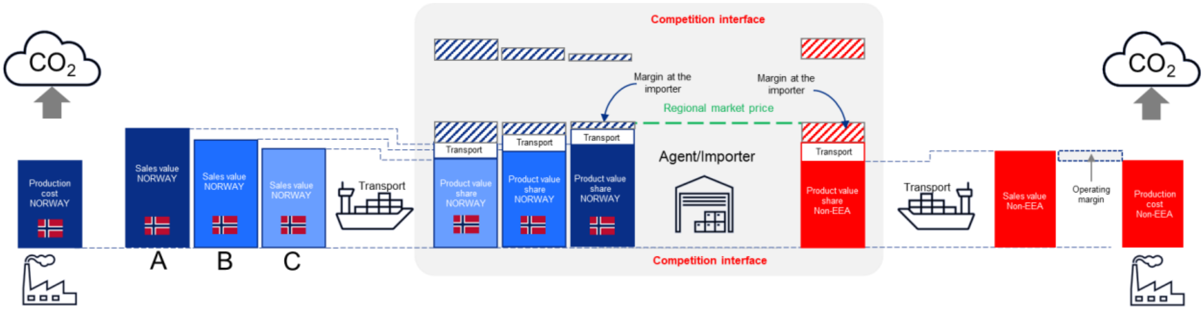

__Figure 21__. Illustration showing how the measures of free allowances (B) and CO_2 compensation (C) create more level competitive conditions between EU/EEA producers and imported materials, resulting in equal margins for importers. In practice, this leads to more balanced competition and increased competitive pressure that contributes to lower prices.

The Carbon Border Adjustment Mechanism (CBAM) is intended to put a fair price on the carbon intensity of goods imported into the EU. The objective is to prevent carbon leakage as the emissions cap under the EU Emissions Trading System is tightened. CBAM is designed to ensure that the cost of greenhouse gas emissions embedded in imported goods is equivalent to the carbon cost faced by goods produced within the EU and EEA. In this way, the mechanism aims to create a level playing field between imported and European-produced goods, while enabling the EU to achieve its climate targets. The mechanism operates by requiring importers to purchase CBAM certificates corresponding to the amount of greenhouse gas emissions embedded in the imported goods. The price of these certificates is based on the average auction price of EU ETS allowances. As part of the Clean Industrial Deal, the EU has announced several adjustments to CBAM. These include measures to simplify the mechanism and reduce the administrative burden on industry, while maintaining incentives for global carbon pricing and continued decarbonisation.

4.8 Summary – why investments to reduce greenhouse gas emissions are not being sufficiently triggered

Rising costs associated with greenhouse gas emissions affect the competitiveness of companies operating in global markets. CO_2 taxes or the cost of purchasing emission allowances increase expenses, and it is often difficult to pass these costs on to customers. This is illustrated in Figure 18, where importers achieve higher margins by sourcing products from regions without such costs. As long as production costs are broadly comparable and transport costs do not exceed climate-related costs in the EU and EEA, it remains profitable for importers to sell products originating from regions without climate pricing.

The purpose of imposing climate-related costs is to drive change. For manufacturing companies, this means investing in measures that reduce or eliminate greenhouse gas emissions. Such investments can be relatively straightforward and profitable when they require only minor changes to production processes. However, when emission reductions require large-scale investments, such as carbon capture and storage or the development of new technologies, the challenge becomes far greater. Norwegian industry has already reduced its emissions by 45 per cent since 1990. These reductions largely reflect measures that could be implemented in a cost-effective manner, while the remaining emission cuts are significantly more demanding.

An alternative pathway involves electrification and the development of zero-emission production processes. Examples include the use of hydrogen produced from renewable electricity instead of fossil natural gas in ammonia production for mineral fertilisers, Hydro's HalZero technology for new aluminium production, and the Mecalo project for silicon and manganese alloy production based on Elkem's Sicalo project. Such processes involve substantial technological risk and scaling challenges, as well as high costs associated with renewable hydrogen production, which is highly energy-intensive. New processes or the replacement of existing ones also require the write-off of existing book values. Figure 22 illustrates an example where measures to reduce greenhouse gas emissions leads to increased capital expenditure and higher operating costs. In this example, the company is no longer competitive, and the importer would incur a negative margin if prices were to remain aligned with competing materials.

Investments required to reduce the remaining greenhouse gas emissions are very substantial. For example, carbon capture and storage requires investment in new flue-gas systems, compression and cooling of CO_2 into liquid form, interim storage, and transport of CO_2. Taken together, this leads to higher costs through increased depreciation and financing expenses. In addition, companies face higher operating costs related to the capture facility itself, as well as the transport and permanent storage of CO_2.

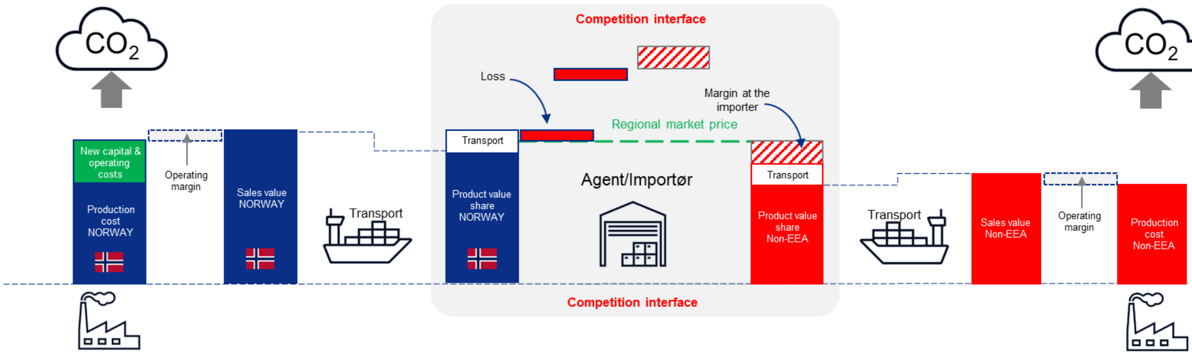

Figure 22. Illustration showing a company that invests in new technology, resulting in higher capital expenditure and operating costs. This leads to an unfavourable competitive position compared with producers that are not subject to greenhouse gas pricing.

Carbon capture and storage requires substantial investments and leads to higher operating costs. Investments needed to remove greenhouse gas emissions in the process industry are high and exceed historical levels. Looking at investment levels in aluminium, ferroalloys and other metal production, average annual investment per facility over the past decade has been close to NOK 400 million. A CCS investment over a four-year period (2026–2030) with a total cost of around NOK 4.0 billion illustrates the scale of such projects. For individual facilities, this implies a multiple increase in annual investment levels. Comparable investment requirements apply to alternative process technologies or the use of hydrogen as a reducing agent. If similar investments are to be implemented across several plants within the same company, they must be staggered over time.

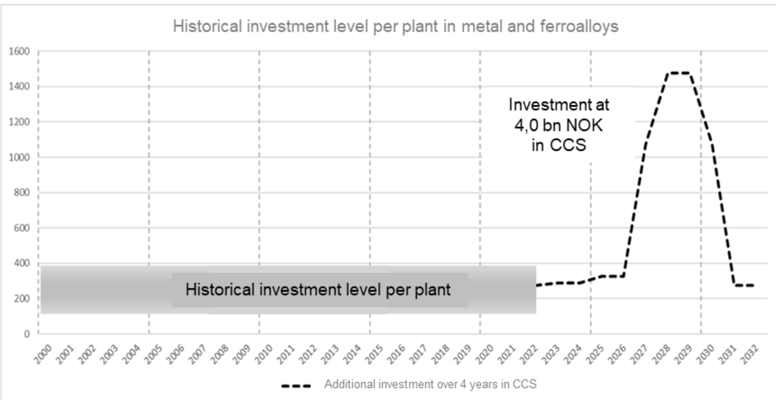

Figure 23. Illustration showing the range of historical investment levels at the individual plant level compared with investment in carbon capture facilities.

One might assume that steadily increasing climate-related costs would eventually make emission-reduction measures profitable. This, however, presupposes equal competitive conditions and equivalent climate costs for all producers. In practice, this would require that all producers compete on equal terms and face similar carbon pricing for polluting activities. In reality, producers in China, the United States, Russia and South America do not pay sufficiently for their greenhouse gas emissions. CBAM has been developed to address this imbalance, but further development of the carbon border adjustment mechanism is necessary to prevent deindustrialisation in the EU and EEA. The EU's new regulatory framework is described in the following chapter.

5. The EU framework for competitiveness and decarbonisation

At the beginning of 2025, the EU launched its new strategic framework through the Competitiveness Compass and the Clean Industrial Deal. This framework forms the basis for the European Commission's work in the 2024–2029 period and will lead to the development of a range of regulations with significant implications for Norwegian industry. An updated timeline for the Competitiveness Compass is available separately.

The purpose of this chapter is to describe how the EU is now developing a comprehensive framework to strengthen industrial competitiveness while simultaneously ensuring the necessary decarbonisation. Norwegian companies will be affected by this framework, as several of the measures are EEA-relevant and Norway shares a joint commitment with the EU to reduce greenhouse gas emissions.

The EU is a critical partner for Norway, both as a recipient of energy and as an importer of critical and strategic raw materials. The Norwegian process industry supplies large volumes of strategic materials such as aluminium, silicon, nickel and manganese alloys to European industry, and holds market shares of 30–40 per cent in several sectors. Norway is Europe's largest producer of some of these materials, which are essential inputs for key European industries such as automotive manufacturing, infrastructure development and electronics.

5.1 EU regulatory frameworks as the basis for Norway's climate targets and industrial development

In the Climate White Paper, the government presents its ambitions for continued climate policy. The design of national instruments to reduce greenhouse gas emissions is to consider factors such as cost-effectiveness, access to and pricing of electricity, technological development, fiscal implications, and the cost level faced by Norwegian industry. The Climate White Paper also addresses measures to reduce the risk of carbon leakage, including participation in the EU's Carbon Border Adjustment Mechanism (CBAM). The government expresses an ambition to influence the further development of CBAM to ensure that Norwegian industry is provided with fair and equivalent framework conditions and that the mechanism functions as intended. In addition, the government intends to further develop the CO_2 compensation scheme to strengthen protection against carbon leakage. Norwegian participation in the EU Emissions Trading System is a key instrument, intended to ensure competitive framework conditions for Norwegian companies on a par with their European counterparts.

The government emphasises that emission reductions towards 2035 are to be pursued without differentiating the use of policy instruments between ETS-covered and non-ETS emissions. The Climate White Paper states that the structure is therefore not organised according to the distinction between emissions covered by the emissions trading system and those covered by the Effort Sharing Regulation, unlike the approach taken in the plan for the 2030 commitment presented in the Climate Status and Action Plan. In the 2030 strategy set out in Report to the Storting No. 41 (2016–2017), *Climate Strategy for 2030 – Norwegian transformation in European cooperation*, industrial emissions for 2030 are projected with a distinction between ETS-covered and non-ETS emissions.

The Climate White Paper was adopted with several additional resolutions. It was debated in the Storting on 11 June 2025, and several supplementary decisions were adopted. Among these was a request that the government return to the Storting during the next parliamentary term [13] with a joint climate and energy white paper. This white paper is to be presented in the first half of the four-year term, describe the status of Norway's climate targets, and highlight necessary priorities in climate and energy policy. The main messages of the Climate White Paper therefore remain unchanged. This is in line with the recommendation from the Climate Committee 2050 to address greenhouse gas reductions and access to energy in an integrated manner.

The Labour Party, the Liberal Party and the Conservative Party have agreed on a new climate target for Norway. The target is to be submitted to the United Nations as part of Norway's commitments under the Paris Agreement. The Storting has adopted amendments to the Climate Act establishing a climate target for 2035, specifying that greenhouse gas emissions are to be reduced by at least 70–75 per cent by 2035 compared with 1990 levels. In addition, the Storting has requested that the government plan for the statutory 2035 climate target to be achieved through emission reductions in Norway and in cooperation with the EU and return to the Storting

[13] Sak - stortinget.no

during 2026 with proposals on how this can be ensured. The government is also asked to assess the consequences if the EU adopts a climate target different from Norway's and to return to the Storting with a recommendation on how this should be addressed [14]. Considering this, it is essential that Norway has a solid factual basis to contribute actively to the development of EU regulatory frameworks.

5.2 European industry in transition: from the European Green Deal to the EU Competitiveness Compass

In December 2019, the European Commission under the leadership of Ursula von der Leyen launched the European Green Deal. The objective of making Europe climate-neutral by 2050 was framed not only as an environmental policy initiative, but as a new economic and industrial strategy. The Green Deal was developed as a framework to mobilise investment, reform energy systems and create new markets for green technologies. At the same time, it laid the foundation for a renewed industrial strategy, in which Europe's position in the global competition for future technologies and value chains was elevated as a strategic priority.

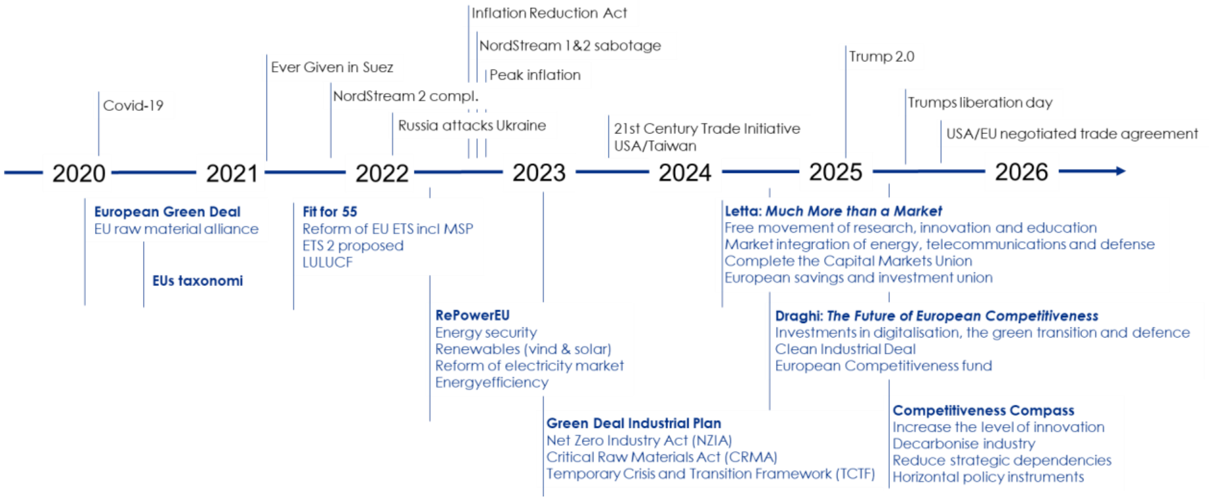

Figure 24. Selected industrial and climate-related reform initiatives launched by the European Commission from 2019 to the present.

In 2021, these ambitions were translated into concrete measures through the Fit for 55 package which aimed to ensure that the EU reduces its greenhouse gas emissions by at least 55 per cent by 2030. The package contained a broad set of legislative proposals affecting all sectors, with implications for industry. A central element was the reform of the EU Emissions Trading System (EU ETS), which was continued with stricter emission requirements and a faster reduction of allowances through the Market Stability Reserve (MSR). At the same time, the establishment of a separate ETS2 for buildings, road transport and fuels was proposed, to be phased in gradually from 2028. This two-pillar structure marks an important development in which the ETS remains a cornerstone of EU climate policy, while being extended to new sectors in order to ensure broader emission reductions.

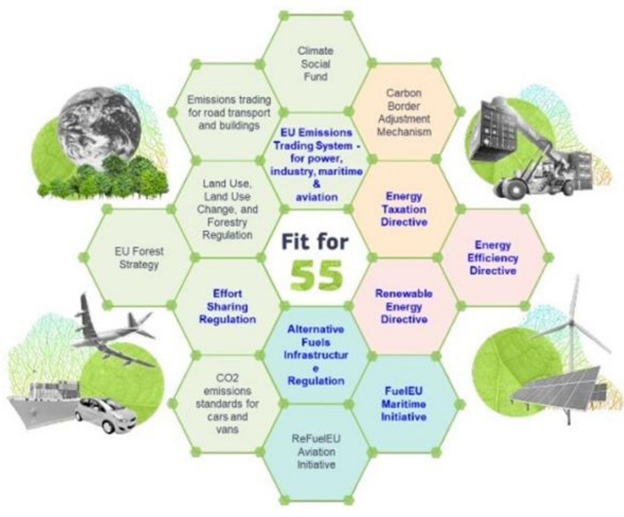

Figure 25. Illustration highlighting key policy packages within the Fit for 55 framework that complement the EU Emissions Trading System. (European Commission, 2021).

14 Sak - stortinget.no

Nevertheless, the Fit for 55 package clearly states that the emissions trading system was never intended to operate in isolation (Figure 25) but is complemented by instruments such as the Carbon Border Adjustment Mechanism (CBAM), the Renewable Energy Directive and the Energy Efficiency Directive.

In the aftermath of Russia's invasion of Ukraine in 2022, Europe's energy security came under severe pressure, prompting the EU to launch REPowerEU as a response to the acute crisis. The objective was to make Europe independent of Russian fossil energy by 2027, while at the same time accelerating the green transition. REPowerEU entailed a large-scale expansion of solar and wind power, increased focus on hydrogen and energy efficiency, and ambitions to reform the electricity market to reduce price volatility. The plan strengthened the need for European production capacity in technologies for renewable energy generation, such as solar panels and batteries, and introduced joint gas procurement and national diversification plans to reduce dependence on Russian oil and gas. In this way, REPowerEU helped link energy security more closely with industrial development and geopolitical resilience.

At the same time as Europe was managing the energy crisis, global competition for green technologies intensified significantly. When the United States adopted the Inflation Reduction Act (IRA) in 2022, with extensive subsidies for green industry and strong "Buy American" requirements, the EU perceived this as a threat to European industry and investment. Although the IRA has lost some of its force as a comprehensive climate policy, it continues to have a major impact on the development of specific technologies and on access to raw materials. The EU responded with a set of policy initiatives that together mark a transition to a new phase of European industrial policy, with strategic autonomy and technological sovereignty at its core. These initiatives include support for key technologies, reforms of state aid rules, and strengthened coordination among Member States.

One of the most important initiatives was the Green Deal Industrial Plan, launched in 2023. The plan [15] is built around four pillars: (i) a simpler and more predictable regulatory framework, (ii) faster access to financing, (iii) skills development, and (iv) open trade for resilient value chains. As part of this plan, the Net-Zero Industry Act (NZIA) was introduced, with the objective that the EU should be able to cover 40 per cent of its own needs for net-zero technologies by 2030. At the same time, the Critical Raw Materials Act (CRMA) was launched to secure access to strategic raw materials such as lithium, cobalt and rare earth elements. These initiatives were supported by the Temporary Crisis and Transition Framework (TCTF), which provides Member States with greater flexibility to support green industry, while safeguarding competition within the internal market.

In April 2024, Enrico Letta presented his report on the future of the internal market, entitled *Much More Than a Market*. The report [16] proposes expanding the internal market with a fifth freedom, the free movement of research, innovation and education, and integrating energy, telecommunications and defence into the internal market. Letta highlights the need to complete the capital markets union and to establish a European savings and investment union. The report positions the internal market as a strategic platform for Europe's global role and as a key instrument for delivering the green and digital transitions.

Later that year, in September 2024, Mario Draghi presented his report on European competitiveness. *The Future of European Competitiveness* provides a diagnosis of Europe's economic challenges, with declining productivity growth and demographic change identified as central concerns. Draghi proposes the establishment of a Clean Industrial Deal and a European Competitiveness Fund, and underscores the need for massive investment in digitalisation, the green transition and defence. The report warns against a gradual erosion of Europe's position and calls for rapid and coordinated action.

In January 2025, the European Commission launched the EU Competitiveness Compass, a strategic framework for the period 2024–2029. The Competitiveness Compass [17] builds on the recommendations of both the Letta and Draghi reports and is structured around three pillars: (i) closing the innovation gap, (ii) decarbonising the economy, and (iii) reducing strategic dependencies. Decarbonisation, the second pillar, is particularly important in linking climate ambition with industrial competitiveness. The Compass also introduces horizontal measures aimed at simplifying regulation, strengthening skills and improving access to finance, and serves as a roadmap for Europe's industrial development in a period marked by global uncertainty.

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[15] The Green Deal Industrial Plan - European Commission

[16] Enrico Letta - Much more than a market (April 2024)

[17] Competitiveness compass - European Commission

5.3 Strategic direction in the EU: competitiveness, decarbonisation and autonomy

The European Commission aims to strengthen competitiveness while at the same time implementing a comprehensive green and digital transition. In the context of rising geopolitical tensions, intensified technological competition and increasingly ambitious climate requirements, the Commission has articulated a strategic direction intended to secure Europe's economic and industrial resilience. This direction is expressed through the EU Competitiveness Compass, which defines three core transformation areas: innovation, decarbonisation and strategic autonomy. It is also reflected in the proposal for the EU's long-term budget for the period 2028 to 2034, where substantial funding is proposed to support the delivery of these ambitions. Taken together, these elements constitute a new architecture for European industrial policy, in which strategic governance and financial instruments are intended to shape future value creation in Europe.

5.4 The EU Competitiveness Compass: a new strategic direction for Europe's economic future

The European Commission has launched the Competitiveness Compass as a strategic framework to strengthen Europe's economic position. The Compass is designed as a governance platform for the entire Commission mandate period and is built on the analyses presented in the Draghi and Letta reports. The European Commission provides an updated implementation timeline for the Competitiveness Compass.

Over time, the EU has lost ground to other major economies, particularly in terms of productivity growth and technological innovation. The Draghi report highlights that Europe has become overly dependent on external growth drivers such as cheap energy, global demand and geopolitical stability, factors that are now changing. At the same time, European industry has been constrained by high energy costs, regulatory complexity and strategic dependencies.

The Competitiveness Compass is the Commission's response to these challenges. It is intended to function as a roadmap for mobilising investment, reforms and policy action across Member States and sectors, with the aim of restoring Europe's economic dynamism and securing sustainable prosperity. The framework focuses on three areas where transformative change is needed:

- **Closing the innovation gap.** Europe has a strong research base but struggles to commercialise innovation and scale up new technology-based companies. The Competitiveness Compass outlines an innovation model in which productivity growth is to be driven by both disruptive innovation and efficiency gains in established industries. Emphasis is placed on removing barriers for startups, strengthening access to risk capital, and harmonising regulation within the internal market.
- **Decarbonisation and competitiveness**. Climate targets are not only an environmental ambition, but also a driver of industrial renewal. The Compass promotes a common roadmap for the green transition and industrial competitiveness, where measures such as energy efficiency, electrification, the circular economy and support for green transition and production are integrated with investment and market development.
- **Strategic dependencies and strengthened economic security**. The EU aims to reduce its vulnerability to external shocks and political pressure by diversifying supply chains, strengthening domestic production capacity and entering strategic partnerships. This applies to critical raw materials, medicines, energy and advanced technologies. The Compass also calls for a more active use of trade instruments and stronger protection against unfair competition.

To support the three strategic transformation areas, the Competitiveness Compass presents a set of horizontal instruments intended to strengthen implementation capacity across the EU. These include regulatory simplification, with particular emphasis on reducing administrative burdens for small and medium-sized enterprises. The internal market is to be reinforced through the removal of barriers and improved coordination among Member States. A new framework is intended to mobilise private capital and strengthen venture financing, while the "Union of Skills" initiative aims to ensure access to relevant skills and increase labour market participation. A new Competitiveness Coordination Tool is designed to improve alignment between national and European investments and reforms, thereby laying the foundation for a more coherent and coordinated industrial policy. Taken together, these instruments constitute a new governance framework intended to link reforms, investments and strategic priorities, including through the establishment of a European Competitiveness Fund, as outlined in the European Commission's proposal for the EU's long-term budget.

The communication on the Competitiveness Compass includes a total of 40 flagship initiatives. These can be described as a set of priority actions and concrete measures intended to operationalise the EU's strategy. They are designed to function as political and practical tools for delivering the three transformation areas. Table 2 provides an overview of the various initiatives and their planned launch timelines. Prosess21 has assessed the relevance of these initiatives based on the transformation needs of the Norwegian process industry and, in the following, highlights the measures considered most relevant based on information available as of September 2025.

A description of a single flagship initiative within the Competitiveness Compass will quickly point to other strategies, as legislative acts and planned measures are closely interconnected. The initiatives are mutually embedded within the overall structure of the Competitiveness Compass, making it less meaningful to consider each measure in isolation. Instead, they should be understood as components of a comprehensive framework in which the European Commission clearly signals a shift towards a more active, coordinated and strategic industrial policy, with stronger implementation capacity and a closer linkage between policy, investment and industrial development.

A renewal of the EU's industrial framework is a core element of the Competitiveness Compass, and the key measures affecting industry are summarised in the table below. These include action plans, new regulations and legislative packages. The initiatives expected to be of greatest significance for Norwegian industrial companies include the Clean Industrial Deal, together with the accompanying framework for public support under the Clean Industrial State Aid Framework, adjustments to the EU Climate Law, the Industrial Accelerator Act, changes to the Carbon Border Adjustment Mechanism, and the framework for the EU Emissions Trading System beyond 2030. In addition, EU action plans developed through dialogue with industry, particularly for steel and metals, chemicals and affordable energy, will be important to monitor closely.

Table 4. Overview of the EU's priority initiatives and concrete measures as set out in the Competitiveness Compass. Prosess21 has made an assessment of their relevance for the Norwegian process industry.

Q1 2025	Q2 2025	Q3 2025	Q4 2025	Q1 2026	2026
Omnibus simplification og definisjon av small mid-caps	Start-up and Scale-up Strategy	Joint purchasing platform for Critical Raw Minerals	Digital Networks Act	28th Legal Regime	European Research Area Act
Clean Industrial Deal	Life Sciences Strategy	Sustainable Transport Investment Plan	Industrial Decarbonisation Accelerator Act	European Innovation Act	European Biotech Act og Bioeconomy Strategy
Affordable Energy Action Plan	Space Act	European Port Strategy and Industrial Maritime Strategy	Chemicals Industry Package		Advanced Materials Act
Vision for Agriculture and Food	New State Aid Framework	High Speed Rail Plan	Trans-Mediterranean Energy and Clean Tech Cooperation initiative		Revision of directives on Public Procurement
White Paper on the Future of European Defence	Oceans Pact	Amendment of the Climate Law	Quality Jobs Roadmap		European Climate Adaptation Plan
Preparedness Union Strategy	Water Resilience Strategy		Carbon Border Adjustment Mechanism Review		Revision of the Standardisation Regulation
Internal Security Strategy	Single Market Strategy		EU Cloud and AI Development Act		Skills Portability Initiative
Critical Medicines Act	EU Quantum Strategy		Electrification Action Plan og European Grids Package		Circular Economy Act
Savings and Investments Union	Steel and Metals Action Plan				
Union of Skills					
AI Factories Initiative					

Relevant for process industry	Assumed relevant for process industry

The EU's climate target for 2040 marks an important turning point for European climate policy beyond 2030. In July 2025, the European Commission presented a proposal for a net emission reduction of 90 per cent compared with 1990 levels, as an amendment to the European Climate Law. Following extensive negotiations, Member States reached a common position in November 2025, and in December of the same year the Council and the European Parliament entered into a provisional political agreement on the target. The European Parliament approved the agreed text in February 2026.

The final target combines high ambition with a degree of flexibility, including limited use of international carbon credits and greater scope for permanent negative emissions. This has been the subject of considerable political debate, as the degree of flexibility affects how much emission reductions are to be achieved within the EU versus through measures in third countries or through technologies such as carbon capture and storage. The clarification of the 2040 target therefore sets important parameters for the development of EU climate policy after 2030, not least about how the EU ETS will be further tightened. This is of direct relevance for the Norwegian process industry, which fully follows the ambition level of the emissions trading system through the EEA Agreement.

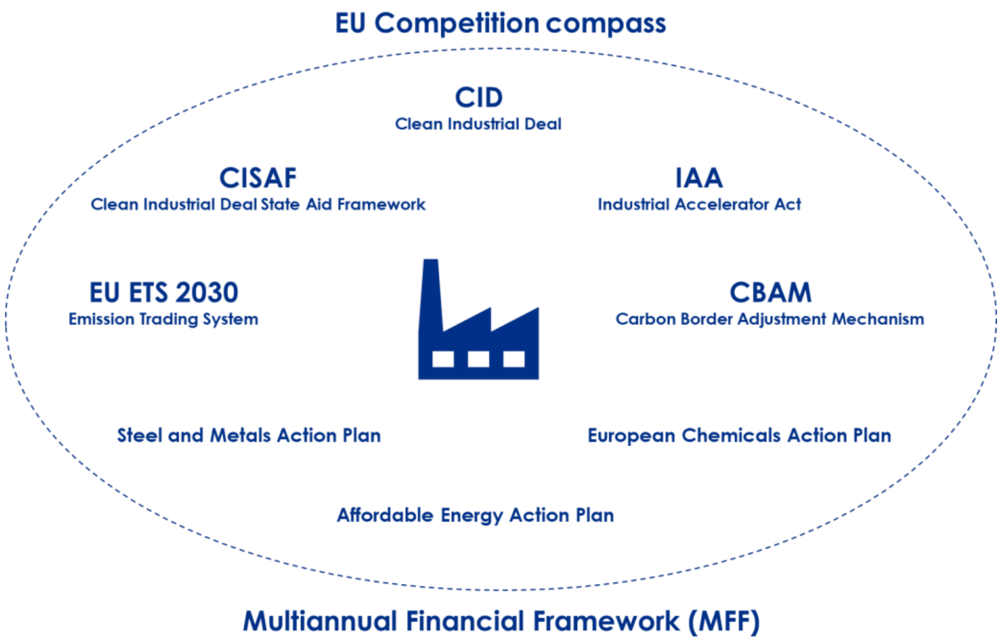

***Figure 26**. Key measures in the EU framework under the Competitiveness Compass expected to affect Norwegian industry*

EU ETS 2, which was originally scheduled to enter into force in 2027, has now been postponed to 2028 as part of the political agreement on the EU's 2040 climate target. ETS 2 will cover CO_2 emissions from fossil energy use in buildings and road transport, as well as fossil fuel use in smaller industrial installations below the 20 MW threshold and therefore outside the current emissions trading system. The system targets fuel suppliers, but in practice the costs may be passed on to households and small and medium-sized enterprises through higher prices for fossil fuels. Although full compliance obligations will only apply from 2028, requirements for monitoring and reporting have already been established. ETS 2 will therefore function both as an incentive for decarbonisation and as a new cost factor that may affect competitiveness in sectors that have previously been shielded from carbon pricing.

5.5 Clean Industrial Deal

The European Commission's Clean Industrial Deal represents a new phase in European industrial policy, in which decarbonisation and competitiveness are more closely integrated. The strategy [18] was launched in February 2025 as a further development of the European Green Deal and the Green Deal Industrial Plan and

[18] Clean Industrial Deal - European Commission

constitutes a central element of the Competitiveness Compass. The objective is to strengthen Europe's industrial base in the face of high energy costs, technological rivalry and geopolitical challenges.

The Clean Industrial Deal is particularly targeted at two sectors: energy-intensive industry and green technologies. For energy-intensive industry, the focus is on ensuring access to affordable and clean energy, reducing costs and supporting electrification. For green technologies, the emphasis is on building European manufacturing capacity and creating markets for sustainable products. The strategy is structured around the following areas:

1. **Access to energy**: The Affordable Energy Action Plan was presented on the same date as the Clean Industrial Deal, and most of the measures related to energy access are therefore addressed within the action plan described below.

2. **Market development for decarbonised products:** The European Commission proposes to develop strategic domestic markets for decarbonised products through targeted measures that stimulate demand. Public and private procurement is to increasingly rely on non-price criteria such as sustainability, resilience and European content. In March 2026, the Industrial Accelerator Act is to be announced. This initiative will, among other things, establish a voluntary labelling scheme for product carbon intensity [19], introduce procurement requirements in strategic sectors, and lay the groundwork for a revision of EU public procurement rules. The Commission has also announced a delegated act on low-carbon hydrogen. An ambition has been set for 40 per cent of key components in green technologies to be produced in Europe. These measures are intended to incentivise producers to invest in green technologies and to strengthen Europe's industrial autonomy.

3. **Mobilisation of investment:** The European Commission proposes a broad package to mobilise investment in green industry and technologies. Key measures include the establishment of an Industrial Decarbonisation Bank with a planned capitalisation of EUR 100 billion by 2026, based on resources from the EU ETS, InvestEU and the Innovation Fund. In 2025, proposals include a pilot auction for industrial decarbonisation projects, a new TechEU instrument for scaling up innovative industry, and a targeted call under Horizon Europe aligned with the Clean Industrial Deal. The Commission also intends to strengthen InvestEU by increasing its risk-bearing capacity and establishing an IPCEI Design Support Hub. A new state aid framework, described below, together with recommendations on tax incentives, is intended to make it easier for Member States to support investment. The overarching ambition is for the EU to become a leading destination for green industrial capital, with measures aimed at reducing investment risk and strengthening Europe's competitiveness.

4. **State aid and tax incentives:** A new Clean Industrial Deal State Aid Framework, described below, is intended to simplify and expand the scope for state aid to green industry. Standardised support schemes will be introduced for technologies such as solar and wind power, as well as support for flexibility measures and the production of strategic equipment. The Commission will also recommend tax incentives, including accelerated depreciation and tax deductions for investments in green technologies, along with measures to phase out fossil fuel subsidies.

5. **Circularity and access to raw materials:** The Clean Industrial Deal places strong emphasis on the circular economy as a source of competitiveness. The share of circular materials is to increase from 12 per cent to 24 per cent by 2030. The Commission will establish an EU Critical Raw Materials Centre for joint procurement and stockpiling and present a Circular Economy Act to harmonise rules on waste, recycling and secondary raw materials. Regional circularity hubs will also be developed to scale up recycling capacity and promote industrial symbiosis among actors.

6. **International cooperation and trade:** The EU will enter Clean Trade and Investment Partnerships with third countries to secure access to raw materials, clean energy and technologies. The Commission will also simplify and expand the Carbon Border Adjustment Mechanism and assess measures to address carbon leakage related to exports outside the EU [20]. In addition, scrutiny of foreign investments will be

[19] Carbon intensity refers to the amount of greenhouse gas emissions, such as CO_2, released to produce one unit of a product, for example one tonne of steel or one kilowatt-hour of electricity.

[20] Export support: CBAM increases CO_2 costs for EU producers, reducing competitiveness in non-EU markets. Export compensation is therefore being considered to offset higher production costs
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strengthened, along with the use of trade defence instruments to protect European industry against unfair competition and overcapacity.

7. **Skills and labour:** A new Union of Skills will strengthen skills development in strategic sectors, supported by Erasmus+. A Quality Jobs Roadmap will also be launched to ensure good working conditions and a just transition. The Commission will establish a Fair Transition Observatory to monitor the social impacts of the green transition.

For Norwegian industry, it is essential that measures under the Clean Industrial Deal are incorporated into the EEA Agreement or through a dedicated agreement. The Clean Industrial Deal is a comprehensive and cross-sectoral strategy that confirms the EU's shift towards a more active industrial policy. It builds on earlier initiatives, while also introducing new instruments and institutions. For Norwegian industry, it is crucial that measures under the Clean Industrial Deal are included in the EEA framework or through a specific arrangement, and that Norway is recognised as an integrated part of European value chains, particularly regarding the definition of European content. This is likely to have direct implications for market access and eligibility for support schemes.

Clean Industrial Deal State Aid Framework

The European Commission adopted a new and permanent state aid framework on 25 June 2025. Through the Clean Industrial Deal State Aid Framework (CISAF), the EU establishes a new and lasting framework for state aid to investments that promote industrial decarbonisation, green technologies and energy infrastructure. The framework replaces the Temporary Crisis and Transition Framework introduced during the energy crisis and is intended to apply until 2030. It is designed to support the implementation of the Clean Industrial Deal.

CISAF allows Member States to support investments that contribute to emission reductions, energy efficiency and the build-up of strategic production capacity. The framework covers support for the deployment of renewable energy, including hydrogen and energy storage, for industrial decarbonisation, for the manufacturing of green technologies, as well as investment incentives such as accelerated depreciation. It also enables increased support for projects awarded a Sovereignty Seal from the EU Innovation Fund, a quality label for high-quality strategic projects that contribute to the EU's objectives of control over critical technologies and strengthened technological sovereignty. Such projects may benefit from simplified procedures and higher aid intensity through the Innovation Fund.

The rules specify that support may be granted in the form of direct grants, tax advantages, loans, guarantees or equity injections. To ensure proportionality and avoid distortion of competition, the European Commission considers that aid should be limited to the minimum amount necessary to enable the project to proceed, so-called incentive aid. Support should preferably be allocated through open and competitive procedures. Where this is not possible, the aid amount may be calculated based on the difference in project profitability with and without support. For large projects, a thorough assessment is required, and mechanisms must be introduced to allow for the repayment of unexpected excess profits to the state through claw-back arrangements.

Eligible projects must contribute to reduced greenhouse gas emissions or lower energy consumption and must become operational within defined timeframes. For projects based on natural gas, a phase-out plan by 2040 is required, along with strict emission-reduction criteria. Aid may not be granted to investments that result in relocation of production within the EEA.

CISAF also includes requirements related to social and environmental responsibility. Member States are encouraged to attach conditions related to a just transition, working conditions and tax compliance. Projects must comply with the "do no significant harm" principle, and emphasis is placed on the circular economy and the bioeconomy as drivers of competitiveness and resource efficiency. Support may be granted to projects that promote material efficiency, the use of secondary raw materials and the substitution of fossil inputs.

For the production of net-zero technologies such as batteries, solar panels and electrolysers, clear limits are set for aid intensity and requirements related to local value creation. The EU applies differentiated regional aid rules that provide varying levels of public support. In areas without special status, companies may receive support covering up to 15 per cent of eligible investment costs, while in designated assisted areas this share may increase to 35 per cent. Small and medium-sized enterprises may receive even higher support. In addition, companies investing in green technologies may benefit from tax incentives allowing full and immediate expensing of investment costs, provided the equipment has a lifetime of less than 15 years.

CISAF also enables Member States to establish investment funds or special-purpose vehicles that pool public and private capital for green projects. Public support may be provided in the form of guarantees, loans or equity, and must be designed so that risk and return are shared between the state and private investors. Requirements are set for professional management, risk diversification and exit strategies, and support may be granted to projects in energy, industry, the circular economy and infrastructure. The framework is closely linked to the Net-Zero Industry Act, the EU Emissions Trading System and other strategic initiatives, and is intended to contribute to the objective that 40 per cent of production capacity for strategic technologies should be located within the EU.

On 10 October 2025, the Council of the European Union adopted conclusions supporting the European Commission's recommendations on targeted tax incentives for green industry. These include measures such as accelerated depreciation and tax deductions for investments in net-zero technologies, energy efficiency and strategic production capacity. The objective is to reduce capital costs and make it more attractive for companies to invest in green projects. These tax incentives are intended to complement the state aid framework and to strengthen the EU's industrial competitiveness and overall investment climate. [21]

Affordable Energy Action Plan

Rising energy prices in Europe have a major impact on the competitiveness of companies. The European Commission's Affordable Energy Action Plan addresses a critical challenge: European industry, and particularly energy-intensive sectors, faces significantly higher energy costs than competitors in the United States, China and Japan. In 2024, electricity prices for European industry were more than twice as high as in China and the United States, and almost 50 per cent higher than in Japan. This threatens investment, production and employment, and contributes to weakened competitiveness and deindustrialisation.

Energy prices in Europe are shaped by several underlying factors. High energy prices reflect a combination of structural conditions. Energy costs in the EU are influenced by three main components: costs related to energy supply, network and system costs, and taxes and levies. Wholesale energy prices, which constitute a large share of supply costs, are driven by factors such as the energy mix, the degree of competition, weather conditions, geopolitical risk, and the level of market integration and interconnection.

A key challenge is the EU's continued dependence on imported fossil energy. Although gas consumption has declined, around 90 per cent of natural gas demand is still met through imports. This leaves the EU vulnerable to global price fluctuations and political pressure, as demonstrated during the 2022 energy crisis when Russia used gas exports as a geopolitical instrument. In the same year, the EU's fossil energy import bill reached EUR 604 billion, nearly four times the level in 2020. The action plan includes a range of measures, particularly targeted at the needs of industry:

1. **Strategic energy partnerships for industrial energy access** (*tripartite contract for affordable energy*): The Commission proposes a structured cooperation model between public authorities, energy producers and industry. The objective is to create predictability in energy prices and supply, thereby reducing investment risk. This is intended to support industrial electrification needs and enable long-term energy purchasing agreements. The approach requires contributions from both governments and industry to the expansion of power generation, grids and storage solutions. It is not a subsidy scheme for industry, but a framework for shared responsibility and joint investment.

2. **Support for long-term power contracts (PPAs):** Energy-intensive industry is to gain improved access to long-term contracts with renewable energy producers. The European Commission and the European Investment Bank are launching a EUR 500 million pilot programme to support such arrangements, including power purchase agreements and contracts for difference.

3. **Tax and levy reductions:** Member States are encouraged to use the flexibility provided under the Energy Taxation Directive to reduce taxes and levies for energy-intensive industry, particularly when renewable energy is used. This is intended to stimulate electrification and reduce costs.

4. **Grid expansion and digitalisation:** Industry is to gain improved access to affordable energy through investments in modern and flexible electricity grids. The Commission will launch a European Grid

[21] Taxation: Council approves conclusions on the use of tax incentives to support clean technologies and industry - Consilium

Package in 2026, and the European Investment Bank will support the manufacturing of grid components through guarantees of at least EUR 1.5 billion.

5. **Flexibility and energy management:** Industry is expected to contribute to system flexibility by adjusting energy consumption to periods of lower demand. The Commission will remove regulatory barriers and introduce incentives for energy storage and demand-side management.

6. **Efficiency and technology:** Through support schemes and guarantees, industry will gain access to energy-efficient solutions such as waste-heat recovery and process electrification. These measures are intended to significantly reduce energy consumption and operating costs.

There are also significant challenges related to the integration of the energy market. Although the EU has one of the most interconnected electricity grids in the world, it still lacks sufficient cross-border capacity, flexibility and digitalisation to manage the growing share of variable power generation from solar and wind. Lengthy and complex permitting procedures for new projects delay the deployment of renewable energy and grid infrastructure, contributing to inefficient use of resources and higher costs. Finally, network charges, taxes and levies constitute a large and growing share of the energy bill. As investment needs in grids and energy systems increase, this cost component may become an even greater burden for industry going forward.

At the same time, the EU energy system faces several structural challenges. While the European Commission's Affordable Energy Action Plan focuses on technical and regulatory barriers to the expansion of renewable energy and grid infrastructure, it does not fully address the underlying system challenges related to the composition of power generation. Following the large-scale deployment of solar and wind power and the shutdown of nuclear power plants in Germany, the EU has developed a higher share of intermittent generation. This makes the system more vulnerable to weather-related phenomena such as Dunkelflaute, periods with little sun and wind across large geographic areas. Such conditions create a need for more balancing power and improved storage solutions, which cannot be fully addressed through grid expansion alone.

Another important factor is that the cost of CO_2 allowances now represents a significant component of electricity prices. Fossil-fuel power plants must purchase allowances for their emissions, and since these plants often set the marginal price in the electricity market, the cost of allowances influences electricity prices across large parts of Europe. This falls within the EU's policy scope, and instruments such as the CO_2 compensation scheme demonstrate that there are tools available to mitigate the impact, particularly for energy-intensive industry.

In a joint statement to the European Commission, Finland, Norway and Sweden emphasise that more efficient use of existing infrastructure is essential to reduce system costs in the energy system. They underline that adequate access to dispatchable, fossil-free baseload capacity is necessary for a well-functioning power system, and that internal bottlenecks must be addressed through the establishment of efficient price zones. The countries call on the Commission to respect Member States' right to set their own levels of electricity taxation. At the same time, they caution against further EU regulation of cross-border interconnectors and stress that new initiatives in renewable energy, energy storage and grid development must be based on thorough impact assessments. [22]

5.6 Industrial Accelerator Act

The European Commission is preparing new legislation, the Industrial Accelerator Act (IAA), intended to strengthen Europe's ability to deliver the green transition in energy-intensive industrial sectors. The proposed legislation forms part of the Clean Industrial Deal and aims to increase sustainable and resilient industrial production in the EU by supporting investments in emission reductions. The proposal is designed to address three main challenges: high energy costs, lengthy permitting procedures, and insufficient demand for low-emission products. According to the current timeline, the legislative proposal is expected to be presented at the end of February 2026. As previously outlined in the Competitiveness Compass, the following elements have been proposed:

1. **Accelerating permitting processes for industrial decarbonisation**: Many emission-reduction projects face lengthy and complex permitting procedures, particularly related to access to electricity, hydrogen

[22] final-common-positions-fi-no-se.pdf

and carbon capture. The Industrial Accelerator Act is intended to simplify and digitalise these processes, building on experience from initiatives such as the Net-Zero Industry Act, the TEN-E framework and the Renewable Energy Directive. Measures to improve coordination among authorities and the use of shared datasets are also under consideration.

2. **Identifying and supporting priority projects and industrial clusters**: Investments in green technologies are often capital-intensive and high-risk. The Industrial Accelerator Act is intended to help identify projects and industrial clusters of strategic importance, and to facilitate targeted support and improved access to financing. Consideration is being given to introducing a category of "priority projects" with specific advantages, as well as to developing tools for the planning and coordination of industrial clusters at national level.

3. **Creating and protecting European markets for low-emission products:** To make the production of greener industrial goods economically viable, demand must increase. The Industrial Accelerator Act will promote the use of environmental and sustainability criteria in public procurement, support the development of voluntary European standards or certifications for low carbon intensity, for example for steel and other metals, and assess requirements related to European content in strategic products. Protective measures may also be considered to shield European producers from competition from subsidised actors outside the EU and to ensure that foreign investments deliver real value creation within Europe.

The proposed legislation is also intended to support a just transition, including measures related to skills development, working conditions and social inclusion. Consideration will be given to how the Industrial Accelerator Act can support small and medium-sized enterprises, and how the measures can contribute to regional development.

The Industrial Accelerator Act is intended to complement existing EU legislation. This includes Net-Zero Industry Act, the EU Emissions Trading System, the Carbon Border Adjustment Mechanism, and the EU's trade and energy policies. A comprehensive impact assessment will be carried out, including broad consultation with Member States, industry, trade unions and civil society.

The Act targets sectors such as chemicals, steel, paper, refineries, cement, metals, glass and ceramics, and considers related value chains. These sectors account for 19 per cent of the EU's greenhouse gas emissions, while at the same time being critical for strategic autonomy, value creation and employment. In a Norwegian context, this sectoral composition is less representative. As discussed earlier, aluminium, ferroalloys and the petrochemical industry dominate the emission-intensive sectors in Norway. These differ from the EU average in that emissions largely stem from the production processes themselves rather than from energy use. This gives Norway a distinct emission profile and underscores the need for future EU regulation to take national differences in industrial structure into account to ensure fair and effective policy instruments.

The Norwegian government submitted its formal input to the European Commission on 23 July 2025. In its submission, the government emphasised the importance of access to electricity, the development of markets for low-carbon products, and the prioritisation of strategic decarbonisation projects [23]. The government underlined that Norwegian industry is closely integrated into European value chains. If the Industrial Accelerator Act introduces requirements related to European content in public and private procurement, such requirements should be defined as products originating from the entire internal market, including the EEA countries. The government also encourages the use of criteria for excellence in projects and new technologies and calls for any labelling scheme for low-carbon products to be based on existing reporting systems for emissions data and environmental information, in order to avoid duplication and unnecessary administrative burden.

5.7 Carbon Border Adjustment Mechanism

The Carbon Border Adjustment Mechanism (CBAM) is a central instrument in EU climate policy aimed at preventing carbon leakage and ensuring a level playing field between European industry and imported goods. The mechanism requires importers of selected products to pay a carbon cost equivalent to that incurred for

[23] Norsk uttalelse til Kommisjonens arbeid med ny rettsakt om industriell avkarbonisering - Industrial Decarbonisation Accelerator Act - IDAA

production within the EU, through the purchase of CBAM certificates [24]. This is intended to counteract the relocation of production to countries with lower climate ambition, while at the same time encouraging third countries to introduce carbon pricing.

CBAM was adopted as part of the Fit for 55 package and entered into force in a transitional phase starting on 1 October 2023. This phase runs until 31 December 2025 and involves reporting obligations only, covering the embedded emissions in imported goods. From 1 January 2026, the full mechanism will apply, requiring importers to purchase and surrender CBAM certificates based on the embedded emissions of the goods. The price of the certificates will follow the average allowance price in the EU Emissions Trading System. Initially, the mechanism covers cement, iron and steel, aluminium, fertilisers, electricity and hydrogen. Importers may deduct documented carbon costs paid in the country of origin [25]. From 2026, all major importers must be registered as "authorised CBAM declarants". CBAM will be gradually phased in in parallel with the phase-out of free allowances in the EU ETS, which is scheduled to continue until 2034.

Planned changes and ongoing processes: As part of the Omnibus package and the Clean Industrial Deal, the Commission has proposed several simplifications to reduce administrative burdens and ensure smooth implementation. Among the most important measures is the introduction of a minimum threshold exempting imports below 50 tonnes of CBAM-covered goods per year from reporting obligations. Further digitalisation of reporting systems is intended to make compliance easier for small and medium-sized enterprises. The Omnibus package also includes a common anti-circumvention strategy aimed at preventing third countries from redirecting low-carbon products to the EU while continuing carbon-intensive production for other markets. The Omnibus package was formally adopted by the European Parliament on 10 September and approved by the Council on 29 September 2025.

Critical challenges: Despite these adjustments, CBAM faces several structural challenges. First, the mechanism does not provide compensation for EU producers exporting to markets with low or no carbon pricing, which may weaken their global competitiveness. Second, CBAM currently covers basic materials only and not finished products, which could incentivise the relocation of downstream manufacturing to countries outside the EU. In addition, there is a risk of circumvention and "resource shuffling", whereby producers supply low-carbon products to the EU while maintaining carbon-intensive production for other markets.

Call for Evidence and upcoming revisions: In August 2025, the European Commission launched a Call for Evidence to collect input on three key implementing regulations to be adopted in the fourth quarter of 2025. These regulations are critical for CBAM to function in its final form from 1 January 2026. The consultation covers three main areas:

- **Methodology for calculating emissions:** The EU will establish new rules for how to calculate the amount of CO_2 "embedded" in imported goods. Currently, temporary methodologies are used, but from 2026 a permanent methodology will apply that is simpler, more precise and, where possible, based on actual emissions. This means that companies will need to better document their own emissions, and that the EU will define clear default values where verified data are not available.
- **Adjustment for free allowances in the EU ETS:** From 2026, free allowances in the EU ETS will be gradually phased out in parallel with the introduction of CBAM, with free allocation continuing to be reduced until 2034. To avoid placing imported goods at an unfair disadvantage, CBAM rules will be adjusted so that importers pay a lower CBAM charge as long as EU producers continue to receive free allowances. The EU is therefore developing a methodology to calculate this "discount" in a fair and transparent manner.
- **Deduction for carbon pricing paid in third countries:** If a company has already paid a carbon tax or similar carbon price in the country where the goods were produced, this cost should be deducted from the CBAM charge. The EU will establish rules on how such payments are to be documented, how prices are to be converted into euros, and what requirements apply to independent verifiers responsible for confirming the information.

[24] Carbon Border Adjustment Mechanism - Taxation and Customs Union

[25] Carbon costs are the economic costs associated with greenhouse gas emissions, because a price must be paid for the emissions, such as for European producers covered by the emissions trading system.

The results will form the basis for implementing regulations intended to ensure a harmonised, fair and effective application of CBAM across the EU.

Future developments: The Commission has signalled several possible changes to CBAM towards 2030. Among the first areas expected to be revised are an extension to downstream products, such as automotive components and machinery, and measures to address carbon leakage related to exports, including possible compensation mechanisms. In addition, strengthened anti-circumvention measures are being considered, particularly with regard to the handling of scrap metals and the redirection of low-emission products to the EU market. These three themes, downstream products, export solutions and circumvention, are expected to be included in the European Commission's first revision proposal, which has been announced for the fourth quarter of 2025.

Consideration is also being given to how CBAM can be aligned with other initiatives under the Clean Industrial Deal, such as the Industrial Accelerator Act and sectoral plans for steel, metals and chemicals. These changes will be critical for CBAM to function as an effective and fair instrument in EU climate policy, both to ensure a level playing field and to avoid unintended market distortions.

For Norge er CBAM både en utfordring og en mulighet. For Norway, CBAM represents both a challenge and an opportunity. The mechanism does not apply to trade between Norway and the EU, as EEA countries are exempt from the CBAM Regulation (europalov.no). Nevertheless, Norwegian exporters must comply with stricter documentation requirements. The Norwegian government has stated that CBAM may strengthen incentives for global carbon pricing and thereby contribute to fair competition (regjeringen.no). At the same time, it is essential that Norwegian authorities participate actively in EU processes to ensure that Norwegian characteristics, such as a high share of process emissions and extensive use of renewable energy, are reflected in the regulatory framework (EØS-note). This is important to avoid unintended competitive disadvantages and to position Norwegian industry in an increasingly carbon-regulated global economy. In Norway, it is planned that the CBAM framework will apply from 1 January 2027 as part of the EEA Agreement [26].

Many Norwegian industrial companies also export a significant share of their products to markets outside the EU and EEA. CBAM is primarily designed to address imports into the EU and does not provide compensation for emission-related costs associated with exports outside the EU and EEA. This creates a challenge for export-oriented industry in both Norway and the EU, which may face increased competition from producers in countries without carbon pricing. This underscores the need for Norwegian authorities to closely monitor developments and consider measures that can ensure fair competitive conditions also in third-country markets.

5.8 Sector specific action plans

European Steel and Metals Action Plan

The European Commission's Action Plan for Steel and Metals, published on 19 March 2025, is a sector-specific follow-up to both the Clean Industrial Deal and the Affordable Energy Action Plan [27]. It aims to strengthen Europe's ability to maintain and develop competitive production of steel, aluminium, copper, nickel and other base metals, while ensuring that the sector delivers the necessary green transition. The EU action plan is built on structured dialogue with steel and metals industry stakeholders.

Steel and metals are essential to European industry, defence and infrastructure. At the same time, the sector faces major challenges: high energy costs, global overcapacity, subsidised competition from third countries, large investment needs for low-emission technologies and regulatory complexity. The EU has lost significant market share, particularly in aluminium, and risks further capacity erosion without targeted measures. The action plan therefore sets out seven strategic priorities:

1. **Access to clean and affordable energy:** Energy costs account for a substantial share of production costs, up to 40 per cent of aluminium. The plan builds on the Affordable Energy Action Plan and includes measures to reduce network charges, taxes and levies, promote power purchase agreements, and accelerate grid connections. The Commission will provide guidance on contracts for difference and support schemes for renewable energy investments. Hydrogen and waste heat are also expected to play an important role in electrification and energy efficiency.

[26] CBAM innføres i Norge - miljodirektoratet.no

[27] A European Steel and Metals Action Plan - Internal Market, Industry, Entrepreneurship and SMEs

2. **Preventing carbon leakage:** The plan reinforces the Carbon Border Adjustment Mechanism, which from 2026 will impose carbon costs on imported goods in parallel with the phase-out of free allowances under the EU ETS. It signals measures to protect exports of EU-produced metals that continue to compete with products from countries with lower climate ambition. A dedicated anti-circumvention strategy will be developed, including a possible extension of CBAM to finished products and measures against greenwashing, such as when low-emission products are redirected to the EU while carbon-intensive production continues for other markets.

3. **Protecting European industrial capacity:** Global overproduction and state-subsidised competition from third countries challenge Europe's metals industry. The EU has already introduced several trade measures, and the plan signals further protection, including a review of steel safeguard measures and consideration of a new rule of origin, "melted and poured". This rule would determine the origin of metal products based on where the metal was melted, rather than where it was subsequently processed, making it harder to circumvent trade defence measures by shifting processing to countries with weaker regulation. The aluminium sector is being assessed for specific measures, and the Commission will rapidly open investigations where injury is suspected. The plan also includes follow-up of sanctions against Russia and simplification of chemicals regulation under REACH.

4. **Promoting circularity:** Metal recycling can reduce energy use by up to 95 per cent for aluminium and 80 per cent for steel. The plan announces targets for recycled content in products, particularly in the automotive and construction sectors, and measures to improve sorting and treatment of scrap. The Commission will consider trade measures to secure access to scrap, including possible export restrictions and reciprocity rules. Harmonisation of classification and standards is also envisaged to strengthen the internal market for secondary raw materials, including through the Circular Economy Act planned for 2026.

5. **Securing high-quality industrial jobs:** The plan emphasises the importance of preserving and developing highly skilled jobs in the metals industry. It highlights social dialogue, a just transition and skills development, including through the Pact for Skills and the Union of Skills. The Commission will propose changes to the Globalisation Adjustment Fund and strengthen the use of the European Social Fund+.

6. **Reducing investment risk through support and market development:** Many low-emission projects are not commercially viable without public support. The plan proposes measures to create markets for climate-friendly metals, including sustainability and supply-security requirements in public procurement. A voluntary EU labelling scheme for carbon intensity will be developed, with steel as the first sector. The Commission will also launch a EUR 1 billion pilot auction for industrial decarbonisation projects and reform the Research Fund for Coal and Steel. Horizon Europe and the Innovation Fund will provide additional financing.

7. **Cooperation on implementation:** The plan will be followed up through a renewed High-Level Group for Energy-Intensive Industries and through implementation of the Transition Pathway for Metals, a strategy to support the green and digital transition. The Commission will monitor sector developments and adjust measures as needed, in close dialogue with industry, trade unions and Member States.

European Chemicals Industry Action Plan

The European Commission's Action Plan for the Chemicals Industry, published on 8 July 2025, is a sector-specific follow-up to the Clean Industrial Deal, the Competitiveness Compass and the Affordable Energy Action Plan [28]. The plan aims to strengthen Europe's ability to maintain and develop competitive chemical production, while ensuring that the sector delivers the necessary green transition and adapts to a more circular economic model. As with other sectoral initiatives, the EU chemicals action plan is built on dialogue with industry stakeholders.

The chemicals industry is the EU's fourth-largest industrial sector and is involved in more than 96 per cent of all manufactured goods. It is critical to strategic value chains in defence, healthcare, green technologies and

[28] Plan for stronger EU chemical industry - European Commission

digitalisation. At the same time, the sector faces major challenges, including declining global market share, high energy and raw material costs, and increasing regulatory complexity. More than 20 large production facilities have been closed over the past two years, putting thousands of jobs at risk [29]. The action plan therefore sets out measures across six main areas:

1. **Strengthening industrial resilience:** The EU aims to preserve and modernise critical chemical production, particularly in petrochemicals, ammonia and chlorine. The Commission will establish a Critical Chemicals Alliance, bringing together industry, the Commission and Member States, to map risks of plant closures, identify strategically important molecules and production sites, and coordinate investments. The Alliance will also contribute to defining criteria for which production facilities should be considered strategically important for the EU and therefore eligible for targeted support for modernisation and green transition. Cooperation with Member States and regions is intended to improve alignment between local needs and available EU funding, including IPCEI projects, the Just Transition Fund and InvestEU.

2. **Ensuring access to global markets and protecting European industry:** The chemicals industry is a major export sector with a substantial trade surplus. To strengthen international competitiveness, the EU will expand free trade agreements and conclude sector-specific agreements for regulatory cooperation and access to raw materials. At the same time, trade defence measures against dumping and subsidised competition, particularly from China, will be reinforced. The Commission will expand import monitoring, strengthen border controls and improve market surveillance, including through the Digital Product Passport, the Information and Communication System on Market Surveillance (ICSMS), and Safety Gate, the EU alert system for dangerous products. These measures are intended to ensure that imported products comply with the same rules as goods produced within the EU.

3. **Ensuring affordable energy and supporting decarbonisation:** Energy costs can account for up to 75 per cent of production costs in the petrochemical industry. The Commission will update ETS state aid guidelines to include additional chemical subsectors and use the CISAF framework to provide temporary electricity price relief in exchange for investments in green technologies. Faster and more digital permitting processes will be introduced through the Industrial Accelerator Act, while improved grid access and storage solutions will be promoted through the European Grid Package.

   Hydrogen is central to the transformation of chemical production, and the Commission will support infrastructure development and production, including through the Hydrogen Bank and a new delegated act on low-carbon hydrogen production. In addition, a regulatory framework for CO_2 markets and infrastructure will be developed, and options to better reward carbon capture and utilisation and carbon capture and storage within the EU ETS.

4. **Creating lead markets and promoting innovation:** To make investments in low-carbon technologies economically viable, the Commission will introduce requirements related to EU content, sustainability and resilience in public procurement. Tax incentives will also be developed, including accelerated depreciation for investments in green technologies. Innovation will be supported through EU Chemicals Innovation Hubs, which will facilitate the development and scaling of safer and more sustainable chemicals. The Commission will also establish a Common Data Platform for Chemicals and propose an Advanced Materials Act to stimulate innovation across the entire value chain.

5. **Simplifying the regulatory framework:** The plan includes extensive regulatory simplification, with the objective of reducing administrative burdens for businesses by 25 per cent and for small and medium-sized enterprises by 35 per cent. The Commission has already launched several Omnibus packages and will present a dedicated simplification package for chemicals legislation in the third quarter of 2025, covering the Classification, Labelling and Packaging Regulation, as well as the cosmetics and fertilisers regulations. A targeted revision of REACH [30], a new regulation for the European Chemicals Agency [31], and further simplification of environmental legislation are also envisaged.

[29] The competitiveness of the European Chemical Industry - a Cefic & Advancy report - cefic
[30] REACH – Registration, Evaluation, Authorisation and Restriction of Chemicals
[31] ECHA – European Chemicals Agency

6. **PFAS [32] and health:** The Commission will advance a proposal to restrict per- and polyfluoroalkyl substances. Bans in consumer products are under consideration, along with stricter requirements for emission reductions in industrial applications. An EU-wide PFAS monitoring platform will be established, and a public-private initiative will be launched to develop affordable and effective remediation methods.

5.9 The EU Emissions Trading System after 2030: evaluation and possible changes

EU sitt kvotehandelssystem, EU ETS, er et av de viktigste virkemidlene for å redusere klimagassutslipp i Europa.

The EU Emissions Trading System, EU ETS, is one of the most important instruments for reducing greenhouse gas emissions in Europe. The system sets a cap on emissions and allows companies to buy and sell allowances. The EU is now planning how the ETS should be designed after 2030 to ensure that Europe reaches its objective of climate neutrality by 2050. In April 2025, the European Commission launched a Public Consultation and a public consultation on the EU ETS and the Market Stability Reserve to gather input for this process. The results of the consultation will be used as the basis for a major revision in 2026.

The aim of the consultation is to ensure that the emissions trading system remains an effective instrument for achieving climate neutrality by 2050. The consultation addresses several key issues, including the pace at which the emissions cap should be tightened, whether the ETS should be extended to new sectors such as waste incineration, how market mechanisms can be adjusted to stabilise allowance prices, and how carbon removals can be integrated into the system. A central element of the process is the phase-out of free allowances and the gradual introduction of CBAM from 2026. These are two sides of the same strategy:

- A tighter emissions cap in the ETS is intended to push European industry to reduce emissions more rapidly.
- CBAM is intended to prevent production from relocating to countries without carbon pricing by applying a CO_2 cost to imported goods.

The Draghi report pointed out that energy-intensive industry faces higher carbon costs and a need for large investments in decarbonisation, at the same time as demand for renewable energy is increasing sharply. Analysts expect allowance prices to reach around EUR 100 per tonne of CO_2 towards 2030. CBAM is intended to ensure a level playing field, but Draghi highlights several challenges:

- There is complexity in implementation, as CBAM is product-based while ETS is installation-based.
- There is a risk of circumvention and downstream leakage, as imports may shift towards finished products not covered by CBAM.
- There are export disadvantages, since European producers do not receive reimbursement for ETS costs when exporting, which may weaken global competitiveness.

To succeed, CBAM must be combined with strong support mechanisms such as CISAF and the Innovation Fund, as well as a rapid scale-up of renewable energy. This is essential to avoid carbon leakage and to ensure that European industry remains competitive in a more carbon-regulated world.

The Market Stability Reserve is a mechanism that removes allowances from the market when there is a surplus and releases them when there is a shortage [33]. After 2030, the rules governing the Market Stability Reserve may be adjusted to avoid large price fluctuations and ensure stable investment signals. The Commission is seeking input on how the parameters should be adjusted as the emissions cap is tightened and new sectors are potentially included. This is important because the allowance price affects both competitiveness and the pace of the green transition.

The EU is also assessing whether permanent carbon removals, such as bio-CCS or direct air capture, should become part of the ETS after 2030. This could provide flexibility and contribute to net-zero outcomes but

[32] PFAS is the abbreviation for per- and polyfluoroalkyl substances, which constitute a large group of fluorinated chemicals. PFAS substances consist of a carbon backbone to which fluorine atoms are attached. These strong bonds make the substances difficult to break down.

[33] Market Stability Reserve - Climate Action - European Commission

also raises concerns about integrity and the risk that emission reductions are delayed. The Commission is seeking input on how such mechanisms can be introduced without undermining the core objective of real emission reductions.

Norway is fully integrated into the EU ETS through the EEA Agreement, and changes after 2030 will therefore generally also apply in Norway. The Norwegian Environment Agency describes how the ETS covers industry, power generation, petroleum activities, aviation and maritime transport, and how ETS2 for buildings and road transport is being rolled out from 2027. Norwegian authorities have submitted written input to the Commission's ETS consultation, emphasising the need for predictable framework conditions, effective handling of carbon leakage under a tighter emissions cap, and strong interaction with CBAM and the Innovation Fund [34]. The Innovation Fund is a key financial anchor for reducing technology and implementation risk in ETS-covered sectors.

The issue of using international climate credits after 2030 has largely been clarified through negotiations on the EU's 2040 climate target. In the provisional agreement between the European Parliament and the Council, it is foreseen that up to five per cent of emission reductions towards 2040 may be achieved through international climate credits under Article 6 of the Paris Agreement. The use of credits is to be phased in gradually from 2036, following a pilot period from 2031 to 2035, and will be limited to high-quality credits with strict environmental integrity requirements.

The introduction of international credits increases flexibility in the EU's overall climate framework but also raises questions about the balance between domestic emission reductions and measures in third countries. The outcome will affect the future tightening of the EU ETS, which is still expected to deliver most emission reductions, and thus also the cost level faced by the Norwegian process industry. As Norwegian industry is fully integrated into the EU ETS through the EEA Agreement, EU decisions on the use of international credits and associated quality criteria will have direct implications for Norwegian competitiveness and strategic considerations related to carbon management and international cooperation projects.

Indirect electricity costs and CO_2 compensation

From 2026, the EU will amend state aid rules for indirect CO_2 costs, aimed at strengthening industrial competitiveness and reducing the risk of carbon leakage. As part of the follow-up to the fourth trading period of the EU Emissions Trading System, the European Commission has adopted a targeted update of the state aid guidelines for CO_2 compensation [35].

The update expands the scheme and provides EU and EEA countries with the option to grant higher aid intensity to exposed sectors. Several new industries are included, such as battery production, selected mining and mineral activities, fertiliser production, and parts of the chemicals and materials industries, many of which are particularly relevant for Norway. The revised guidelines give Member States greater flexibility to shield vulnerable parts of industry, while maintaining incentives for energy efficiency, electrification and emission reductions within a largely unchanged structural framework.

Requirements for countermeasures are maintained and expanded. From 2026, compensation may also be used for measures that strengthen the efficiency of the electricity system. Countermeasures have been part of the CO_2 compensation scheme since 2021 and are continued under the updated rules. Companies must fulfil at least one of several alternative requirements, such as energy efficiency improvements, increased use of fossil-free electricity, or investments in emission-reducing measures within their own operations. From 2026, a new optional alternative is introduced, allowing compensation to be used for investments that contribute to more efficient and cost-optimal operation of the national power system, including through flexibility, storage or other system benefits.

The guidelines clarify how the pass-through of CO_2 costs into electricity prices is to be assessed and regulated and provide the basis for national implementation of the compensation scheme. They also set out principles for the use of so-called pass-through factors, which are intended to reflect the extent to which increased CO_2 costs are passed on into national electricity prices. These factors are central to the calculation of compensation levels and vary across regions and countries based on the power mix and market conditions. Norway is not explicitly addressed in the guidelines, as it is not an EU Member State. For EEA countries, it is the responsibility of the EFTA

[34] Open public consultation concerning the review of the EU ETS - comments from Norway

[35] Commission amends ETS State aid Guidelines

Surveillance Authority to determine how the rules are to be incorporated and applied nationally, including the assessment of pass-through factors and the approval of compensation schemes.

5.10 The European Commission's proposal for the Multiannual Financial Framework (MFF) 2028–2035

Considerable attention has been focused on the European Commission's proposal for the EU's long-term budget, particularly about whether it supports the ambitions articulated in instruments such as the Competitiveness Compass. In the proposal for the Multiannual Financial Framework for the period 2028 to 2034, the budget is described as designed to address Europe's dual challenge: strengthening competitiveness in the face of global technological and industrial rivalry, while at the same time delivering a rapid green and digital transition. [36]

The proposed overall ceiling of EUR 1.98 trillion represents an increase of approximately 85 to 90 per cent in nominal terms compared with the current budget. It is important to note that this increase also reflects inflation, new priorities and greater flexibility in the use of funds. The MFF is intended not only to finance traditional programmes, but also to function as an investment platform for strategic sectors, technologies and infrastructure. The ambition is to make it easier to move from research and ideas to industrial deployment, while ensuring that Europe remains a leader in strategic technologies and key industrial sectors.

European Competitiveness Fund

The MFF proposal also entails a clear shift in priorities. Significantly greater support is proposed for competitiveness, technology and security, including through the establishment of a European Competitiveness Fund. This comes partly at the expense of traditional budget items such as agricultural support and, to a somewhat lesser extent, cohesion policy. This reprioritisation reflects the EU's strategic ambitions but may also create tensions between Member States with differing economic structures and political priorities.

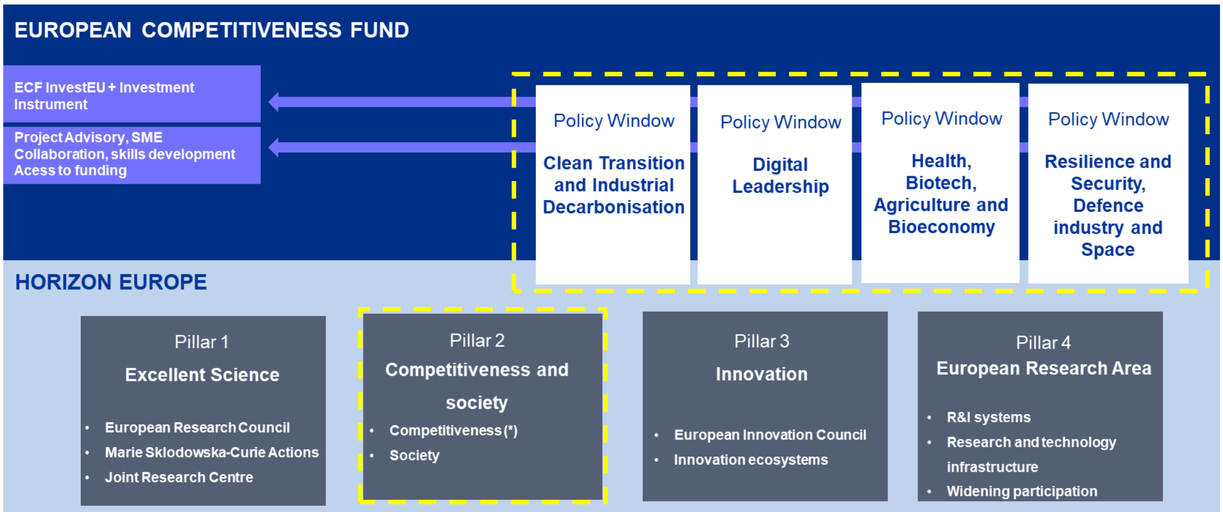

Figure 27. The new European Competitiveness Fund, in interaction with Horizon Europe, is intended to provide seamless support to innovators, from research to scale-up. The Fund aims to strengthen Europe's position in strategic sectors.

The EU is now strengthening its efforts to consolidate and better target industrial policy. To enhance competitiveness in the face of global technological and industrial rivalry, and to deliver a rapid green and digital transition, the proposal envisages closer coordination of policy initiatives, regulatory frameworks and financial instruments, with the European Competitiveness Fund as a central tool [37]. The Fund is the new flagship of the MFF and is intended to consolidate and simplify 14 existing EU programmes, including Horizon Europe, the Innovation Fund, Digital Europe, InvestEU and several others. With a total envelope exceeding EUR 400 billion, including Horizon Europe and the Innovation Fund, the European Competitiveness Fund is designed to serve as a common

[36] EU budget 2028-2034
[37] European Competitiveness Fund - European Commission

investment platform covering the entire value chain, from basic research and innovation to scale-up, industrial deployment and infrastructure.

ECF is structured around four main policy windows (Figure 27):

- **Green Transition and Industrial Decarbonisation:** Support for technologies, infrastructure and projects that reduce emissions and strengthen industrial competitiveness. This includes support for scaling up the production of net-zero technologies, electrification, hydrogen, carbon capture and the circular economy.
- **Digital leadership:** Investments in digital infrastructure, artificial intelligence, semiconductors, cybersecurity and digital skills, with the objective of strengthening Europe's technological sovereignty.
- **Health, Biotechnology, Agriculture and Bioeconomy:** Support for innovation, production and preparedness in the health sector, as well as the development of the bioeconomy and food security.
- **Resilience and Security, Defence industry and space:** Investments in defence, security, critical infrastructure and space technologies.

The Competitiveness Fund is designed to make it significantly easier for companies and research organisations to realise industrial projects throughout the entire investment journey. The Fund enables the combination of different financing instruments, such as loans, grants, guarantees, equity and advisory services, allowing projects to be tailored to different needs and development phases. To reduce administrative burden and ensure equal conditions, a common regulatory framework, a "single rulebook", will be introduced together with a single digital application portal. This means that applicants will only need to engage with one application process regardless of the source of funding.

The Competitiveness Fund will also contribute to the establishment of a "Competitiveness Seal", a quality label intended to highlight and promote projects with particularly high value for European competitiveness. In addition, a central project office will be set up to provide guidance and help actors identify the most relevant support schemes. Emphasis is placed on ensuring that small and medium-sized enterprises gain easier access to support, both through simplified procedures and targeted measures to lower the threshold for participation in large, strategic initiatives.

The long-term budget is intended to provide stronger political steering and greater flexibility. A new policy coordination instrument, the Competitiveness Coordination Tool, will be introduced to ensure that investments are aligned with the EU's strategic priorities. The budget will be more results-oriented, with increased use of performance-based financing and simplified reporting requirements. A single portal for applications and reporting will be established, along with a common set of indicators to measure impact and progress.

Through the long-term budget and the Competitiveness Fund, the EU aims to establish a coherent framework that makes it easier to move from research to industrial deployment. The Clean Industrial Deal, the Clean Industrial Deal State Aid Framework, the Carbon Border Adjustment Mechanism, the Industrial Accelerator Act and the EU Emissions Trading System constitute the regulatory and policy pillars, while the Competitiveness Fund, Horizon Europe and the Innovation Fund serve as the financial engines. Together, these elements are intended to ensure that Europe both reduces emissions and strengthens its industrial and technological position in an increasingly competitive global environment.

With the establishment of the Competitiveness Fund, which will include parts of Horizon Europe, the EU is introducing new financing mechanisms for research, innovation and industrial transformation. For Norwegian authorities, industrial actors and research institutions, it will therefore be important to develop a detailed understanding of how these schemes will function, both in terms of substance and practical implementation. Norwegian actors have previously achieved strong results in applications to the Innovation Fund and have been successful in securing research funding from EU programmes. As the framework conditions now change, actors will need to adapt quickly to ensure continued access to support schemes and strategic positioning within European value chains.

5.11 New challenges for Norway and the EEA in the face of the EU's changing framework and geopolitics

The following assessments are based on a review of three key analyses of the EEA Agreement and Norway's relationship with the EU in a new geopolitical context. Three briefing papers were prepared for Norsk Industri in connection with an event marking the 30th anniversary of the EEA Agreement. The papers examine how the EU's new policy frameworks and political direction create new challenges for the EEA Agreement and for Norway's management of its relationship with the EU.

- Melchior & Rosén: The EEA and trade policy towards third countries (NUPI/University of Oslo, 2025) [38]
- Fredriksen: The EEA Agreement, the internal market and the EU customs union in turbulent times (University of Bergen, 2025) [39]
- Riekeles & Folkman: Squaring the circle: challenges in Norway's relationship with the EU in new geopolitics, (European Policy Centre -EPC, 2025) [40]

Limitations of the EEA Agreement in the face of new EU trade policy instruments

The EEA Agreement grants Norway access to the EU internal market but does not cover the EU's common trade policy. This creates growing challenges as the EU develops new instruments to protect and promote its economic interests globally. Instruments such as investment screening, the anti-coercion instrument, rules on foreign subsidies and international procurement rules are directed at third countries and are often considered not EEA-relevant. As a result, Norway is left outside, even though Norwegian companies operate within the internal market. This means that Norwegian actors may face new barriers, requirements and competitive disadvantages without having influence over the design of the rules. This raises questions about how Norway can secure market access and equal treatment at a time when the EU increasingly links trade policy to strategic and security considerations.

Cross-sector EU legislation and challenges for the EEA

At the same time, the EU is developing an increasingly complex regulatory landscape. In parallel with the introduction of new trade policy instruments, the EU is increasingly adopting cross-sector legislation that combines multiple legal bases, such as the internal market, competition policy, climate policy and security. Examples include the Carbon Border Adjustment Mechanism, the Digital Markets Act and the Foreign Subsidies Regulation. These frameworks challenge the EEA model because they cannot be clearly assigned to a single policy area and because they often have both internal and external effects. This creates uncertainty about which elements are EEA-relevant and how they should be incorporated and enforced. Norwegian authorities must therefore manage increased complexity in EEA adaptation, while companies face risks of double regulation and reduced legal certainty. This development calls for better coordination among Norwegian authorities and a more strategic approach to EU legislative processes.

Geopolitical shift, economic security and increased issue linkage in EU–Norway relations

In recent years, the EU has placed greater emphasis on economic security, supply security and strategic autonomy, changing the dynamics of its relationship with Norway. The EU increasingly views its relationship with Norway in a more holistic and strategic manner, linking different policy areas in dialogue and negotiations. Norwegian exemptions or delays in fulfilling EEA obligations may have consequences for Norway's access to new areas of cooperation, such as health, space or defence. Issue linkage is used more actively to ensure that Norway fully aligns with European developments if it wishes to participate in the internal market. This places new demands on strategic dialogue, coordination and proactivity on the Norwegian side, and makes it necessary to view the EEA Agreement and other EU relations in the context of broader geopolitical and economic considerations.

Institutional and political challenges in the EEA–EU relationship

Although the EEA Agreement has proven robust, it has become increasingly demanding to manage in the face of rapid EU policy development and a stronger focus on geopolitics and economic security. Growing delays in the incorporation of EEA-relevant legislation, particularly in the areas of energy and climate, have created frustration within the EU and contributed to a more centralised and professionalised handling of Norway by the European Commission. There is a risk that Norway is perceived as benefiting from market access without fully

[38] 2025-05-15-eos-notat-arne-melchior-nupi-guri-rosen-uio.pdf (in Norwegian)
[39] 2025-05-15-eos-notat-halvard-haukeland-fredriksen-uib.pdf (in Norwegian)
[40] 2025-05-15-eos-notat-riekeles-folkman-ok.pdf (in Norwegian)

fulfilling its accompanying obligations, which could weaken trust in the EEA cooperation and increase pressure for closer alignment with EU policies. Taken together, these developments point to the need for a strategic renewal of Norway's relationship with the EU, with strengthened dialogue, reduced backlog and a more comprehensive and proactive approach to the EU's new frameworks and institutional practices.

Overall, the three analyses conclude that Norway must strengthen its strategic dialogue with the EU, reduce delays in the incorporation of legislation, and consider how to address cross-sector and geopolitically driven EU measures in a more proactive and integrated manner.

6. Structural barriers to climate investments in Norwegian industry

The Norwegian Environment Agency describes how Norwegian industry faces a set of structural barriers that market mechanisms alone cannot resolve. The report [41] highlights market failures, regulatory uncertainty and the need for sequential policy instruments, and specifies which policy packages are required in practice to deliver large industrial emission reductions in Norway. These insights complement the assessments made by Prosess21 and provide a basis for understanding why industry is not carrying out climate investments at the pace required

Market failures constrain industry's ability to adopt zero emission solutions. Industrial climate measures such as carbon capture, zero emission processes and large-scale electrification face multiple parallel barriers related to externalities, coordination failures and network effects. Today, emissions are still too cheap relative to technologies that require large upfront investments, meaning that projects that are socio economically beneficial may appear unprofitable from a company perspective. Industrial actors are also not rewarded for learning effects, technology diffusion or risk reduction that benefits the market.

Carbon capture and storage are relevant for several industries, and coordination failures represent a major barrier. Coordination failures arise when CCS projects depend on transport and storage infrastructure that has not yet been established. This creates mutual dependence that no single actor can solve alone. For metallurgical industries, cement and waste incineration, CCS is therefore the most realistic measure for substantial emission reductions over the coming decades, both because alternative zero emission processes are either not available or remain far in the future, and because these sectors have large, unavoidable process emissions that can only be addressed through capture and storage of CO_2.

Regulatory and political uncertainty leads to a wait and see approach in industry. Norwegian industry faces significant risk when framework conditions change rapidly and unpredictably, including uncertainty related to the future allowance price, the phase out of free allowances in the EU ETS, the design of the CO_2 compensation scheme and other instruments intended to prevent competitive distortions after 2030. Industrial companies are also uncertain about how EU requirements and the CBAM framework will affect competitiveness. As a result, large investments such as CCS or permanent restructuring of production processes are postponed. For CCS projects, access to CO_2 storage is a critical barrier, because actors are reluctant to invest before they know that storage infrastructure and capacity will in fact be available. This also weakens investment willingness for projects that are technically ready for implementation.

These barriers mean that existing policy instruments are not sufficient for large industrial projects. The report emphasises that the combination of high investment costs, risk and lack of coordination means that industry will not deliver major emission reductions without a substantial strengthening of policy instruments. Current CO_2 prices, CO_2 compensation and existing support schemes are not sufficient to trigger multibillion investments in technologies such as CCS, hydrogen solutions and zero emission processes. Realising such measures requires clear and long-term framework conditions for carbon costs, and robust schemes that share risk between public authorities and industry. Without such measures, both transition capacity and competitiveness will be weakened, and the risk of carbon leakage will increase. Competition from regions without comparable climate related costs is significant, and barriers for such actors to participate in the same European markets remain weak.

The Norwegian Environmental Agency recommendations for industry involve a combined policy package. Proposed measures include competitive support for CCS, adjusted against the allowance price, support for project maturation, schemes that ensure access to storage capacity, and a model for CO_2 management in which the state takes a significant share of the risk. The report also highlights the need for scalable CO_2 infrastructure, clear requirements for low emission solutions in new industrial establishments, and integrated policy instruments that make it possible to implement multiple large industrial projects in parallel across sectors. These recommendations align closely with developments in the EU, where the combination of the ETS, CBAM, support under the Clean Industrial Deal, requirements for low emission products and the Industrial Accelerator Act illustrates that competitiveness and decarbonisation must be addressed together.

[41] Klimatiltak i Norge 2026: Veivalg og utslippsbaner mot 2050 - miljodirektoratet.no

EU policy supports technology scale up, risk sharing and market building. In a similar way, the recommendations set out a coherent framework that enables Norwegian industry to participate in, and compete within, the European low emission market. Taken together, this points to the need for a Norwegian strategy that links risk sharing, infrastructure, requirements and carbon pricing into a single sequential package, aligned with EU developments, to secure both emission reductions and continued industrial value creation.

To close the investment gap, fiscal frameworks and priorities must also be adjusted. This may involve subsidies or changes to tax and fee rules. Such support schemes presuppose that investments are considered socio economically beneficial, and what is regarded as beneficial at the societal level is shaped by political priorities, time horizon, risk and uncertainty. Fiscal policy therefore plays a central role. Although state aid frameworks allow support for emission-reducing technology, budget priorities often determine the real constraints. The fiscal rule and the distinction between expenditures above and below the line can in practice prevent investments that strengthen industrial competitiveness over time and deliver emission reductions in line with Norway's objectives and the EU framework.

If Norway is to succeed in triggering large industrial projects, fiscal policy must more clearly recognise capital intensive climate measures as strategic investments rather than ongoing operating costs. This is necessary to implement the policy packages recommended in the report and to ensure that Norwegian industry can participate in, and benefit from, the European transition towards low emission production.

7. Strategic choices viewed through a long-term industrial lens

It is important to distinguish between areas of development that industry itself can drive, and decarbonisation measures that depend on political framework conditions and close interaction between industry and public authorities. Several other factors that are important for industrial development are not addressed in this report. These include investments in research and development, the development of specialised products and services, positioning in new and growing markets, cost improvements, and increased use of digitalisation, automation and artificial intelligence. These are areas where industry itself bears clear responsibility and is already making significant efforts. Climate costs and decarbonisation differ from these areas in that they are largely shaped by political framework conditions and therefore require close and predictable cooperation between industry and government in order to be realised.

The World Economic Forum Global Risks Report 2026 shows that economic and social resilience increasingly depends on the ability to secure sustainable industrial development and safe employment in a more uncertain world. The report describes a global situation characterised by stronger geopolitical and geoeconomic tensions, intensified competition for strategic resources, and a weakened multilateral order. Geoeconomic confrontation is identified as the most severe short-term risk, creating new challenges for societies and businesses that depend on stable framework conditions, functioning markets and reliable access to inputs. At the same time, the report highlights that technological change, particularly related to misinformation, digital vulnerabilities and advanced AI systems, increases the need for robust societal structures and an industrial base capable of supporting both transition and employment. Although environmental risks rank lower in the short term, they are assessed as the most severe over the longer term and will also require substantial industrial capacity to address. In this landscape, the ability to develop and maintain competitive and sustainable industry becomes critical to ensuring economic stability, social sustainability and national resilience in the face of an increasingly complex global risk environment.

Norwegian policy development is based on strong confidence in the EU ETS and short-term socio-economic analyses, which has resulted in an industrial policy that only to a limited extent captures the structural investments and risks that the transition requires. In Norway, there is still a strong belief in open markets, and industrial policy has largely refrained from strategic prioritisation of technologies or sectors, apart from increased emphasis on the defence industry. There is a widespread perception that higher climate costs will be evenly distributed across society, without fully recognising that the largest climate investments must be made by a limited number of actors, often upstream in value chains and in sectors exposed to intense international competition. This is the reality for large parts of what characterises the Norwegian process industry.

A forward-looking industrial policy requires that climate transition, access to raw materials and security are analysed in an integrated and long-term perspective. To meet these challenges and develop relevant solutions, it is necessary to look beyond the current situation and consider alternative future scenarios. NOU 2023:28 emphasises that Norway is increasingly exposed to geopolitical and geoeconomic risks through dependence on critical inputs and raw materials, and that this calls for much stronger scenario development, early warning mechanisms and systematic analysis of vulnerabilities in value chains [42]. The absence of such scenarios means that decision-makers may underestimate how international competition for strategic resources, particularly critical raw materials as defined by the EU, NATO or individual countries, can rapidly affect Norway's industrial room for manoeuvre and its ability to meet climate targets.

Norway's National Security Strategy identifies industrial production capacity and critical raw materials as important for Norway and Europe. The Report to the Storting No. 16 (2024–2025), *Industry – competitiveness for a new era*, highlights the need for a comprehensive mapping of the role of Norwegian industry in national and allied strategic and critical value chains. This work is to be seen in conjunction with similar initiatives in the EU and other relevant countries. NOU 2023:28 also stresses that increased great-power rivalry will make Norway more exposed to pressure, and that the state must develop a stronger understanding of, and capacity to manage, risks related to foreign dependencies in vulnerable supply chains.

At the same time, there is a lack of a clear and operational strategy to strengthen and decarbonise industry in line with the long-term climate challenges Norway faces. This makes the gap between targets and policy

[42] NOU 2023: 28 - regjeringen.no

instruments increasingly evident. Report to the Storting No. 25 (2024–2025), *The Climate White Paper 2035 – on the path towards a low-emission society*, reinforces this picture by placing primary emphasis on Norway's participation in the EU emissions trading system as the main instrument for achieving climate targets, rather than on national emission reductions in ETS-covered sectors.

To illustrate what it means to adopt a long-term industrial perspective, Prosess21 developed a future scenario highlighting how framework conditions and investment willingness may evolve. Prosess21 therefore organised a workshop with participants from industry and organisations, where a background scenario was presented for how framework conditions, competitive dynamics and investment appetite might develop towards 2030. The scenario draws on experience and assessments from competition-exposed, internationally oriented industry, and shows that under current framework conditions it is extremely challenging to realise major investments in new production capacity and comprehensive climate measures. The purpose of the workshop was not to describe an inevitable future, but to clarify which structural barriers must be addressed in order to achieve both decarbonisation and continued industrial value creation.

The background for the workshop was therefore described through the following hypothetical scenario:

Norwegian process industry faces significant challenges related to climate costs, competitiveness and investment willingness. Strong reliance on the emissions trading system and gradually weakened compensation schemes have increased the risk of carbon leakage and reduced profitability. At the same time, companies experience that markets do not reward low-emission products, and that investments in emission reductions appear unrealistic. To address these challenges, the government establishes a temporary "super-ministry" and invites key stakeholders to a workshop to identify concrete measures for transformation in the process industry.

The summary highlights the challenges and solutions that industry itself considers most critical to achieving real emission reductions while maintaining commercial viability. In the following section, the challenges and solutions that industry itself views as decisive for successful decarbonisation and sustained commercial viability in the years ahead are presented in order of priority. The measures primarily target framework conditions and the interaction between industry and public authorities but are based on the clear assumption that companies already take, and must continue to take significant responsibility for delivering the necessary emission reductions. The overarching theme is how real emission reductions can be implemented in practice.

8. Industry proposals for action: 14 industrial measures

The following chapters provide a systematic review of key areas for action, with concrete recommendations on how the Norwegian process industry can be strengthened in response to a more demanding and volatile European and global landscape.

***Figure 28**. Overview of 14 industrial measures across five thematic areas*

8.1 Power and grid capacity

Power generation and capacity (1)

The competitiveness of the process industry is directly dependent on predictable access to sufficient and affordable electricity, and current developments are making this predictability increasingly uncertain. Norwegian process industry is facing a situation in which growing competition for power, combined with electrification needs and the phase-out of fossil energy use, makes access to electricity a critical framework condition for further development. While increased power availability is necessary, it is not sufficient in itself. Without a coherent policy design that safeguards industry's need for stable supply and competitive prices, there is a risk that emission targets will be met through reduced industrial activity rather than through real and lasting transformation.

Competitive and stable access to electricity has been a fundamental prerequisite for the development of Norwegian industry, and an integrated European power market makes it necessary to secure framework conditions that preserve this position going forward. For decades, access to affordable and stable power has been one of Norwegian industry's strongest structural advantages. In today's European power market, where price formation and power flows are influenced by factors beyond Norway's control, it becomes crucial to design framework conditions that reflect industry's geographical location, export orientation and capital-intensive nature. To maintain investment willingness and enable further development, industry therefore needs long-term solutions that provide the necessary predictability in both power availability and cost levels.

Faster access to power requires both efficient deployment of onshore wind power, utilisation of excess heat and improved use of existing energy resources, provided that local incentives and conflict-mitigating measures are in place. Onshore wind power can deliver relatively rapid additions of new power capacity, but faces significant local opposition related to land use, environmental impacts and distributional effects. Clearer local economic incentives strengthened municipal capacity in licensing processes, and better linkage to already assessed areas and brownfield sites can reduce conflict levels and make processes more predictable. At the same time, energy efficiency measures and increased utilisation of excess heat represent a substantial potential to free up power without new land use conflicts or environmental impacts. These so-called “negawatts” should be an integral part of a comprehensive power strategy.

A competitive industry requires a power policy built on a clear industrial policy objective and providing stable framework conditions for both existing and new electricity consumption. It is well documented that access to affordable and stable energy is closely linked to both industrial growth and broader societal welfare. If Norway is to maintain and further develop a competitive industrial base, power policy must be anchored in a clear industrial policy objective that secures existing activities and facilitates responsible growth in new ones. This entails framework conditions that provide long-term predictability, including support schemes for energy efficiency and energy recovery, as well as mechanisms that compensate for weakened investment incentives resulting from changes in electricity taxes or other regulatory factors. At the same time, new power consumption should be prioritised based on societal benefit, project maturity and the sector’s ability to contribute to value creation and tangible emission reductions.

Main recommendations:

- **Increased power generation must be a central priority** to secure the foundation for industry, welfare and the green transition
- **Onshore wind power should be realised through clear local incentives, ownership structures and municipal support**, ensuring legitimacy and faster project delivery
- **Municipalities should be strengthened** through both financial instruments and increased capacity in regulatory processes.
- **Framework conditions must provide long-term predictability** and support energy efficiency and increased utilisation of excess heat.
- **Industry should act collectively** to highlight the societal benefits and spillover effects of new power generation to strengthen the legitimacy of power development.

Prioritisation of new electricity demand (2)

Large new electricity consumers, such as data centres, can quickly create imbalances in the power system if increased demand is not accompanied by new generation and sufficient grid capacity. This can lead to a higher risk of scarcity and rising electricity prices, making the transformation of Norwegian industry more costly, delaying the green transition and, in the worst case, resulting in the closure of energy-intensive industrial activities. At the same time, capacity expansion and increased electrification will also increase the need for grid capacity for existing industry. The loss of production of important industrial products such as aluminium, chemicals and mineral fertilisers to countries with more favourable energy and grid conditions therefore represents a real risk.

Locating new or expanded electricity demand in areas with high prices and limited grid capacity exacerbates power scarcity and weakens the competitiveness of existing industry. The relationship between grid capacity and power availability within individual price zones is critical for the functioning of the power system, the competitiveness of existing industry and the potential for new industrial establishment. In a situation of increasing power scarcity, it is therefore more appropriate to locate new demand in areas with surplus generation and available grid capacity, rather than intensifying shortages and grid congestion in already constrained regions.

New industrial establishments and activities should be subject to clear requirements for energy efficiency and the utilisation of excess heat. At the same time, new industrial investments have the potential to contribute to financing and strengthening both existing and new power and grid capacity. Clear requirements should therefore be set for high energy efficiency and the actual use of excess heat where this is socio-economically justified. In addition, both new and existing electricity demand should contribute to measures that strengthen the power and grid system, either through investments in new generation, provision of system services, or reductions in overall peak demand and energy consumption.

To ensure balance in the power system, large new electricity consumers should contribute to new generation and system capacity. Licensing and allocation regimes that were largely designed for a power system with persistent surplus must be adapted to a situation of increasing scarcity of both power and grid capacity. Maturity criteria should therefore not prioritise projects solely based on ease of implementation, but should also place weight on societal benefit, climate contribution and impacts on existing industry. At the same time, long-term framework conditions must ensure predictability for established industry and responsible growth for new actors, including through consideration of industrial pricing arrangements and a more robust industrial power regime.

Main recommendations:

- **Electricity and grid capacity are scarce resources**, and without new generation and necessary grid expansion, both industrial competitiveness and the potential for genuine green transformation will be weakened.
- **New electricity demand should be in areas with available power and grid capacity,** and subject to requirements for energy efficiency and utilisation of excess heat.
- **New large-scale electricity demand should be linked to requirements for new power generation** and assessed because of societal benefit and contribution to emission reductions and value creation.
- **Licensing and allocation systems must be adapted to a power system characterised by increasing scarcity**, so that new demand, generation and grid capacity are assessed in an integrated manner.
- **Industry requires predictable and long-term framework conditions for electricity**, and a positive power balance that supports competitive electricity prices.

Energy recovery as a power resource (3)

Energy recovery enables industry to produce stable and land-neutral power by utilising surplus heat that would otherwise be lost. Over many years, Norwegian industrial companies [43] have invested substantially in facilities that convert excess heat into electricity. In smelters and similar operations, such solutions can recover around 25–30 per cent of total energy consumption and deliver power when and where demand is greatest, regardless of weather conditions. This strengthens both local and regional power balances and helps free up grid capacity. Energy recovery facilities are established within existing industrial sites and therefore do not require new land use or additional impacts on nature.

Energy recovery represents a significant and rapidly realizable power potential, both through reinvestments in existing facilities and the development of new projects. Total electricity generation from energy recovery facilities in Norway currently amounts to around 1 TWh per year, corresponding to the annual electricity consumption of approximately 60,000 households. Several existing facilities are now approaching the need for reinvestment, while there is also considerable untapped potential for new projects. Some individual companies have identified opportunities of around 0.4 TWh in annual production. In many cases, a new energy recovery facility can be realised and commissioned within three years of an investment decision, representing a rapid and conflict-free contribution at a time of increasing scarcity of both power and grid capacity.

Although energy recovery is highly beneficial from a societal perspective, projects are often challenging from a business perspective because current incentives are insufficient and have partly been weakened. From a socio-economic standpoint, energy recovery facilities are highly cost-effective compared with many alternative forms of new power generation, yet they are often difficult to realise commercially. Incentives have mainly consisted of investment grants from Enova and exemption from electricity tax on generated power. Enova's programme for large climate and energy investments in industry is, however, constrained by state aid rules, with support caps that are in many cases too low to trigger larger investments. In addition, the reduction in the electricity tax from 2026, while positive in isolation, has resulted in a significant loss of revenue for energy recovery facilities, estimated at around NOK 100 million per year for some installations.

Weakened incentives mean that both reinvestments and new energy recovery projects are being stalled, even though these measures provide rapid and conflict-free strengthening of the power system. Taken together, the current situation implies that incentives for both reinvestments in existing facilities and the development of new energy recovery projects have been weakened. At a time when energy recovery can deliver fast, land-neutral and grid-relieving contributions to the power system, this points to a need for more targeted and predictable policy instruments. This includes both investment support and compensation for the loss of ongoing revenues, if the potential within existing industry is to be realised.

[43] Elkem, Eramet, Finnfjord og Norske Skog mfl.

Main recommendations:

- **Strengthening Enova's support schemes for energy recovery in industry** and make better use of the flexibility within the state aid framework so that investments in converting surplus heat into electricity can be realised, including through access to more favourable financing.
- **Compensation for revenue losses resulting from reduced electricity tax**, as this has significantly weakened profitability in many existing energy recovery facilities. Compensation can be designed through dedicated electricity tax arrangements for power generated from surplus heat, contracts for difference, or reduced grid tariffs, within the framework of state aid rules.

Credible reporting of carbon footprints (4)

Differences in carbon footprint reporting practices risk undermining Norway's advantages by allowing actors to present themselves as low-emission producers without achieving actual emission reductions. Divergent methodologies for carbon footprint reporting, particularly the tension between location-based approaches and the voluntary use of guarantees of origin, can weaken the credibility and competitiveness of Norwegian industry. Although Norwegian industry benefits significantly from access to renewable power and a high degree of electrification, this advantage may be eroded if actors in other countries purchase guarantees of origin and thereby appear as low-emission producers without delivering real emission reductions. This creates a risk of greenwashing, as guarantees of origin have no physical link to actual power delivery or the timing of generation.

An important international shift is now under way towards basing corporate climate footprints on actual physical electricity consumption rather than on financial market instruments. The Greenhouse Gas Protocol, the world's most widely used standard for measuring, calculating and reporting corporate greenhouse gas emissions, has issued a consultation proposal advocating reporting approaches that place greater emphasis on actual electricity consumption as the determinant of a company's footprint, rather than financial instruments such as guarantees of origin. This represents an important shift towards the position articulated by the Norwegian government, namely that real physical power flows should determine a company's carbon footprint.

CBAM further reinforces the importance of correctly documented emission factors and allows the use of actual values only where there is a genuine physical connection or qualifying power purchase agreements. Under CBAM, indirect emissions are generally calculated using standardised emission factors for electricity. The framework nevertheless allows companies to use actual emission factors if they can document a direct physical connection to the power source or a qualifying power purchase agreement. Guarantees of origin alone, without such documentation, do not provide a basis for reporting lower emissions. At the same time, increased emphasis on indirect emissions in regulation, product requirements and market demand will make carbon footprint documentation increasingly important beyond CBAM. If reporting practices do not reflect actual emissions in the power system, this may lead to competitive distortions and undermine the credibility of low-emission claims.

To ensure fair competition and high credibility, the government should, in line with its stated policy, continue to actively promote location-based reporting as the preferred standard in relevant European regulatory frameworks and market practices. This provides more accurate incentives for real emission reductions and rewards countries with low carbon intensity in their electricity systems. At the same time, Norwegian industry should highlight its genuine advantages through robust climate documentation, transparency and consistent use of recognised methodologies.

Main recommendations:

- **Divergent reporting practices weaken the competitive advantage** of Norwegian industry, particularly in markets where access to renewable power and high electrification normally result in low actual emissions.
- **Guarantees of origin entail a risk of greenwashing**, as they do not document physical power supply or actual emission reductions.
- **The introduction of indirect emissions under CBAM amplifies this challenge** and may create competitive distortions if reporting does not reflect real emissions from the power system.
- **Location-based reporting should become the preferred standard** to ensure credibility, appropriate incentives and genuine recognition of low emissions in the Norwegian power system.

- **The government should continue its efforts to establish location-based reporting as a European standard in regulation and market practice,** thereby strengthening Norway's position and ensuring that reporting better reflects actual emissions and physical power flows.
- **Norwegian industry should demonstrate its advantages through documentation, transparency and consistent methodologies**, so that its low-emission profile is accurately recognised in the market.

8.2 The EU: our most important market

Norway in global and European value chains (5)

Rising protectionism and weakened trade regimes make Norway's export-oriented industry more vulnerable, particularly as Norway's market access is largely dependent on developments within the EU. Global protectionism and a weakened WTO framework may create increasing challenges for Norwegian export industries. As a small country without a large domestic market, Norway is entirely dependent on stable market access, especially to Europe. The EEA Agreement has for many years provided a secure framework, but geopolitical polarisation and new trade policy initiatives mean that this can no longer be taken for granted. EU trade agreements with major economies such as India may trigger dumping effects that affect Norwegian producers. At the same time, China subsidises its exports, creating imbalances in global markets.

To maintain a strong position in global value chains, Norway should offer competitive and long-term investment conditions based on its genuine advantages. Securing a robust position in global value chains requires strengthening industrial competitiveness through attractive investment conditions and stable, long-term framework arrangements. This entails matching the conditions offered to companies in alternative locations, without compromising Norwegian standards for wages and working conditions. At the same time, Norway should fully leverage its comparative advantages, particularly a low carbon footprint, high product quality and good working conditions. Taken together, these provide Norwegian industry with a strategic and sought-after competitive advantage in a transformation-oriented European economy.

Norway should be far more active within the EU and key EU Member States to secure market access and influence framework conditions that directly affect Norwegian industry. Norway should pursue a proactive approach in the EU and international forums, with a strong and continuous presence in Brussels, while prioritising bilateral relations with countries such as France and Germany. It is essential to closely monitor EU trade negotiations to identify and counteract negative impacts on Norwegian industry. Existing partnerships should also be given concrete substance, for example through cooperation on mineral extraction, strategic and critical raw materials, and the development of CCS infrastructure. These are areas where Norway can offer solutions that strengthen Europe's decarbonisation and industrial transition.

Overall strategy: Secure market access, build industry at home, and position Norway as an indispensable supplier in a transformed Europe.

Main recommendations:

- **Secure market access to Europe as a strategic top** priority through closer alignment with EU trade policy, ensuring that Norwegian industry does not fall between the EU and the United States in a period of increasing protectionism.
- **Strengthen domestic competitiveness through attractive and long-term investment conditions,** and leverage Norwegian advantages such as a low carbon footprint, high quality and safe working conditions.
- **Closely follow EU trade negotiations** to prevent dumping effects and adverse consequences for Norwegian export-oriented industry.
- **Give existing partnerships concrete substance,** particularly in minerals, CCS infrastructure and technology development, where Norway can contribute to Europe's decarbonisation.
- **Position Norway as an indispensable partner** for a transformed Europe, through deliveries that combine low environmental impact, high quality and resilience in critical value chains.

Increased influence in EU industrial policy (6)

Norway's ability to influence EU policy is too weak relative to the pace of EU policy development and requires both a stronger presence and better coordinated efforts. EU policy is evolving rapidly, and Norway is currently not sufficiently equipped to safeguard its interests in this process. Norwegian authorities should strengthen their presence and engagement in Brussels and coordinate influence efforts far more effectively than today. The Norwegian delegation has limited formal influence, while Norwegian companies often enjoy strong access through pan-European industry associations. This combination represents an underutilised potential and should be used more systematically to increase Norway's influence.

The EU's "Made in Europe" agenda illustrates how politically driven market measures can shape future demand, and Norwegian products risk being excluded if Norway is not closely involved in the design of the regulatory framework. The discussions on "Made in Europe" reflect a broader shift within the EU, where regulation, standards, public procurement and increasingly so-called lead markets are used to stimulate demand for European and more climate-friendly and sustainable production. If Norwegian products are not included in such definitions and schemes, demand may be weakened, not because of lower quality, but because market access and willingness to pay are increasingly politically determined. Norway should therefore support the ambitions behind "Made in Europe", but only if Norwegian actors are recognised as an integral part of these schemes. This requires close and continuous involvement in the design of overarching EU rules, including how CBAM and related instruments are to be applied in practice.

The EU's increasingly transactional approach makes it necessary for Norway to actively contribute to strategic European initiatives to strengthen its negotiating position and market access. EU policy has become more transactional, with clearer elements of reciprocal exchanges and expectations. To strengthen its position, Norway should play a more active role in strategic European initiatives, such as infrastructure projects and energy and industrial investments, which can provide greater leverage in negotiations and policy development. At the same time, the expansion of state aid rules provides greater scope for targeted national initiatives, particularly where these can be linked to European financing instruments such as the European Investment Bank. Such efforts can both support European objectives and secure competitiveness and market access for Norwegian industry. This presupposes that Norwegian authorities ensure stable and predictable domestic framework conditions, so that national decisions do not undermine these ambitions.

To achieve real influence in the EU, Norway must combine work on regulation and market rules with targeted advocacy in Brussels and close dialogue with key Member States. An effective strategy requires sustained focus on EU framework conditions and market rules, combined with active use of lobbying channels and industry organisations in Brussels, as well as targeted dialogue with key Member States such as Germany and France. Nordic cooperation can be important in specific cases, but on its own provides limited leverage in the structural debates that are now shaping Europe's industrial future.

Main recommendations:

- **Strengthen Norway's influence in the EU through coordinated efforts and clearer prioritisation,** ensuring that Norwegian interests are safeguarded in an increasingly fast-moving and politicised decision-making environment.
- **Secure Norwegian inclusion in "Made in Europe" and related schemes**, and work for the application of relevant EU rules in ways that do not create competitive disadvantages for Norwegian industry.
- **Actively contribute to strategic European initiatives in infrastructure, energy and industry,** and make use of expanded state aid rules and European financing mechanisms to strengthen Norwegian competitiveness and market access.
- **Avoid political signals and decisions that create uncertainty about Norway's direction in European processes**, as this weakens Norway's credibility and influence in the EU.
- **Make more systematic use of pan-European industry associations and networks**, as Norwegian companies often have greater influence through these channels than through formal Norwegian representation alone.

Strategic partner for the EU (7)

The EU's increased use of protective measures may weaken Norwegian industry and affect investment, employment and critical value chains across Europe. Expanded EU protection measures could have significant consequences for Norwegian producers and value chains. Such measures may reduce investment willingness, weaken value creation and generate spillover effects in the form of job losses, particularly in regions where industry is a central part of the economic base. At the same time, they may undermine Europe's strategic autonomy by limiting access to stable supplies of critical raw materials and processed industrial products from Norway, which currently contribute to European security of supply and industrial resilience.

As a small and open economy, Norway is fully dependent on the EU internal market, making it necessary to prevent negative EU measures through strategic positioning and closer alignment with relevant trade policy arrangements. Norway's strong reliance on the internal market makes unilateral countermeasures largely ineffective. At the same time, developments within the EU suggest that both Norway and Iceland should consider more strategic approaches to prevent adverse effects. This may include clearer positioning in dialogue with the EU, testing the scope for action within existing agreements, and assessing more formalised links to selected elements of the EU's trade policy instruments, such as the customs union.

Norway should base its engagement with the EU on shared strategic interests, particularly the need for industrial capacity, critical raw materials and resilient value chains. Arguments vis-à-vis the EU should be grounded in common strategic interests, including the need for industrial capacity, secure access to critical raw materials and robust value chains in a more unstable geopolitical environment. Norway can offer far more than raw material supplies, with the capability to deliver processed products, complete value chains and technological solutions within the framework of EU regulations. Norwegian industry operates within a stable labour market, with high competence and values aligned with those of Europe, and is geographically positioned to contribute to preparedness, security of supply and economic activity across the country.

Norway should position itself as a strategic industrial partner for the EU by offering resources, technology and value chains that strengthen Europe's strategic autonomy. At an overarching level, Norway should be positioned as a strategic industrial partner and flank in Europe, providing resources, technology and expertise that can enhance the EU's strategic autonomy. To ensure continued investment capacity and competitiveness for Norwegian industry, predictable access to the EU internal market is essential, alongside sufficient flexibility for Norway to further develop industrial value chains based on its own resources and comparative advantages.

Main recommendations:

- **Counteract negative effects of EU protection measures** that may weaken investment, value creation and employment in Norwegian industry.
- **Secure continued and unhindered access to the EU internal market,** which is crucial for future investment, market access and the development of industrial value chains based on Norwegian resources.
- **Strengthen Norway's position through clearer strategic dialogue with the EU,** including testing the scope for action within existing frameworks and assessing closer alignment with selected trade policy arrangements such as the customs union.
- **Highlight Norway's contribution to the EU's strategic autonomy,** particularly through critical raw materials, processed products, complete value chains and technologies that support Europe's energy and industrial policies.
- **Leverage values shared with Europe, such as stability, quality and competence,** to strengthen Norway's position as an indispensable industrial partner in a more geopolitically uncertain era.

Responsible transition to CBAM (8)

The transition from free allocation to CBAM has particularly significant implications for the Norwegian process industry, as the framework has been designed primarily with the European steel industry in mind and only to a limited extent reflects Norwegian conditions. The phase-out of free allowances and the parallel introduction of CBAM will have substantial consequences for export-oriented Norwegian process industry. Both European and Norwegian producers will face higher costs, while uncertainty remains as to whether CBAM will, in practice, prevent circumvention and carbon leakage. For Norwegian actors, the challenges are especially pronounced. Aluminium and mineral fertilisers are already included in the first phase of CBAM, while the mechanism has largely been designed with the steel industry as the reference point, an industry in which Norway does not have primary production. Norwegian production conditions and specific characteristics have therefore received limited attention in the design of the framework. As a country outside the EU, Norway has also had limited influence in the formal process, and delayed follow-up of necessary adjustments may create lasting competitive disadvantages.

CBAM creates risks of circumvention and competitive distortion because important downstream products and aluminium scrap are excluded from the mechanism, undermining both environmental integrity and European industry. CBAM may generate unintended incentives along the value chain, in part because many downstream products are not covered. This makes it more attractive to import finished goods from outside Europe rather than producing semi-finished and processed products within Europe. A particular challenge is aluminium scrap, which is currently excluded from CBAM and can be used to circumvent carbon costs. If scrap is not included with appropriate emissions accounting, the environmental integrity of the mechanism is weakened while European competitiveness is undermined. Standardised carbon-intensity values should therefore be set sufficiently high to prevent circumvention and ensure a level playing field. At the same time, CBAM must be designed so that incentives promote emission reductions across the entire value chain, rather than relocation of production or new forms of circumvention.

Free allowances should be maintained during a transition period to ensure that the shift to CBAM does not weaken the competitiveness of Norwegian industry. Free allocation should not be phased out before CBAM is fully operational and functions as intended. Industry emphasises the need for a gradual and risk-mitigated transition, as the CBAM mechanism is still immature and because European products may risk becoming relatively more expensive than goods from other regions. Before free allowances are removed, CBAM should be robust, effective and practically workable, so that it prevents carbon leakage and ensures equal competitive conditions for Norwegian and European industry.

Current rules for dynamic allocation of free allowances provide weak incentives for gradual scale-up and should be improved to support real production and industrial transition. Under the current system, production must typically increase by at least 15 per cent before allowance allocation is adjusted. This favours abrupt capacity increases and provides weak incentives for gradual scale-up or restart after shutdown, even when market conditions would support increased activity. An improved system should allow for earlier and more incremental adjustments, so that free allowances better support actual production, investment and real emission reductions.

Main recommendations:

- **Ensure a level playing field in the transition from free allowances to CBAM** by maintaining free allocation until the mechanism functions as intended and does not undermine Norwegian or European competitiveness.
- **Reform dynamic allocation of free allowances** so that adjustments occur earlier and more gradually, thereby supporting real production, incremental scale-up and genuine transition rather than abrupt capacity increases.
- **Prevent circumvention and competitive** distortion by including aluminium scrap.
- **Highlight Norwegian specificities in the design of CBAM,** particularly for aluminium and mineral fertilisers, which are already covered in the first phase and where the framework is only to a limited extent adapted to Norwegian production conditions.
- **Strengthen the environmental integrity of CBAM** through high and robust standard values for carbon intensity, ensuring that the mechanism is not undermined by mispricing, data manipulation or relocation of emissions.
- **Ensure that downstream products are covered by CBAM,** so that the mechanism creates emission-reduction incentives across the entire value chain and counteracts imports of finished goods from countries with weaker regulation or relocation of production away from Europe.
- **Conduct regular and transparent reviews of CBAM** to document that the mechanism functions as intended and to allow for adjustments where evaluations identify a need for improvement.
- **Extend CBAM to new industrial sectors with caution** and only following thorough evaluations demonstrating that the mechanism functions as intended with respect to environmental integrity, competitive conditions and control of circumvention.

8.3 Predictable frameworks for emission reductions

Long-term frameworks and risk sharing for climate investments (9)

Large-scale and costly emission reductions in the process industry require a long-term social contract that provides stable framework conditions and reduces risk over time. Norwegian process industry faces very substantial emission-reduction investments, and the risk of closures or significant reductions in activity is real if higher climate-related costs are not accompanied by profitable and feasible investment opportunities. To achieve both national and European climate targets, a long-term social contract between the state and industry should be established, building on and further developing the existing Climate Partnership for the process industry. Such a contract should ensure predictable framework conditions and competitiveness over a horizon of at least 10 to 15 years, enabling industry to take decisions on large and high-risk investments.

The state should share risk and develop policy instruments that make decarbonisation projects commercially viable, based on a shared understanding of the climate challenge and the associated cost structure. The state should take an active role by contributing to predictable access to power, as addressed separately, sharing risk and developing instruments that make investments in decarbonisation commercially defensible. This requires a common understanding between authorities and industry of both the scale of the climate challenge and the cost profile of the necessary measures. Public support should therefore be directed towards the development and realisation of future emission-reducing solutions, rather than towards maintaining current operations.

Major climate investments require financing mechanisms that both reduce investment costs and manage uncertainty over time, while avoiding overcompensation. Financing mechanisms should include both investment support and arrangements that address uncertainty over time. A combination of instruments such as contracts for difference, multi-year agreements and increased support shares within loan and guarantee schemes should therefore be considered and prioritised. At the same time, it is important that such instruments are designed with safeguards against overcompensation, including clear provisions for repayment or adjustment of support if market conditions develop more favourably than anticipated, through clawback mechanisms.

To realise the necessary climate measures, the state and industry should cooperate through a coordinated structure that reduces risk and ensures long-term predictability. The challenge is characterised by high investment costs, significant financing constraints, technological risk and an increasingly demanding geopolitical landscape. To deliver the required climate measures, the state and industry should collaborate through a coordinated structure with a clear mandate, where policy instruments are aligned and long-term predictability is secured irrespective of political cycles. This is a prerequisite for industry to make long-horizon investment decisions and to deliver lasting emission reductions alongside broad industrial value creation in Norway.

Main recommendations:

- **Climate investments in the Norwegian process industry are highly capital-intensive,** often amounting to several billion kroner per project, and without risk sharing may threaten companies' continued operations and competitiveness.
- **The state and industry should enter a long-term social contract,** building on the climate partnership, that provides predictability and security for major investment decisions over a 10 to 15-year horizon.
- **The state should assume a significant share of downside risk** in large decarbonisation projects and develop instruments that make investments commercially viable.
- **Financing mechanisms should be combined,** including investment support, contracts for difference, multi-year agreements and increased support shares within loan and guarantee schemes, to reduce risk over time.
- **Policy instruments should be designed with clear safeguards against overcompensation,** for example through requirements for repayment or adjustment of support if market conditions develop more favourably than expected.

Further development of a well-functioning CO_2 compensation scheme (10)

The CO_2 compensation scheme is designed to reduce indirect carbon costs embedded in European electricity prices and is a critical instrument for preventing carbon leakage from electricity-intensive

industry. Today, the CO_2 compensation scheme is the most important tool for addressing indirect, electricity price-related carbon costs that arise when CO_2 pricing of fossil power generation in Europe, particularly gas-fired power that often sets the marginal price, drives up electricity prices. Although Norwegian industry primarily uses renewable electricity, price levels are nevertheless affected through the integrated European power market. The scheme is therefore designed to reduce the risk of carbon leakage resulting from this indirect cost burden and to maintain the competitiveness of electricity-intensive industry within the EU climate framework.

The CO_2 compensation scheme has acquired a clearer climate dimension but must still be understood as a measure to alleviate cost disadvantages rather than as the primary driver of major industrial investment. From 2024, the Norwegian CO_2 compensation scheme includes a climate component requiring that 40 per cent of compensation funds be used for investments in energy efficiency and other emission-reducing measures up to 2035. This provides potential climate benefits. At the same time, it is important to recognise that the scheme is intended to partially compensate for a politically imposed cost disadvantage, not to trigger the large, capital-intensive investments or technological risks associated with the deployment of new decarbonisation technologies. The CO_2 compensation scheme can operate alongside other national and European support mechanisms. The climate component can strengthen the overall profitability of projects and enable additional investments, including in combination with instruments such as Enova.

The scheme's focus on electricity-intensive industry has left several trade-exposed sectors unprotected against indirect carbon costs, but changes in EU state aid rules now open the door to expansion. The CO_2 compensation scheme has primarily targeted electricity-intensive industry. Historically, this has meant that sectors with high trade exposure and significant carbon leakage risk, but lower electricity intensity, such as mineral fertilisers and parts of the chemical and petrochemical industry, have fallen outside the scheme. The revised EU state aid guidelines now allow mineral fertilisers and parts of the chemical and petrochemical industry, including NACE codes 20.14 and 20.15, as well as a range of other activities, to be covered by CO_2 compensation from 2026. This may reduce the risk of carbon leakage from these sectors.

Predictable and well-coordinated framework conditions are essential to secure long-term investments in industrial transition. Uncertainty surrounding the design of the CO_2 compensation scheme has contributed to weakening investment appetite in industry. It is crucial to ensure predictability regarding the current CO_2 compensation scheme up to 2030, as well as its continuation beyond 2030. Although the scheme has largely been perceived as stable following the 2024 agreement, recurring political debates on its design and scope create significant uncertainty for industry. In addition, rising ongoing operating costs, for which the market largely does not pay a green premium, constitute a barrier at least as significant as the investment costs themselves.

Main recommendations:

- **Maintain the role of the CO_2 compensation scheme as a targeted instrument to address indirect carbon costs,** ensuring that electricity-intensive industry can remain globally competitive in a system where European electricity prices are influenced by fossil power generation. It is essential that the CO_2 compensation scheme is extended beyond 2030 to strengthen competitiveness.
- **Acknowledge that the climate component delivers climate benefits, but only as a supplement to other instruments** whose primary purpose is emission reduction and climate technology deployment.
- **Ensure that any expansion of the scheme follows EU state aid rules and objective criteria,** so that eligible sectors receive the necessary protection against carbon leakage.
- **Strengthen predictability and transparency regarding the design of the scheme** and avoid annual political debates that create uncertainty and dampen investment willingness in industry.

Principled use of ETS and CBAM revenues (11)

The Norwegian debate lacks a clear distinction between resource rents and climate-related charges, which makes the use of ETS and CBAM revenues unclear and insufficiently targeted. In public discourse, revenues from natural resources are often conflated with revenues from climate-related instruments such as the EU Emissions Trading System and the Carbon Border Adjustment Mechanism. Resource rent taxation on power generation is based on the principle that the value of natural resources should accrue to society, whereas carbon pricing is a policy tool intended to reduce emissions and finance the transition that the charge is designed to trigger. The Draghi report highlights that ETS and CBAM revenues should to a greater extent be reinvested in emission-intensive industries to cover the substantial costs of decarbonisation, particularly where emission reductions cannot be achieved through simple measures. Draghi points to the need for support for both investment and operation of technologies such as CCS, CCU, hydrogen-based processes and production upgrades.

Industry requires stable and long-term frameworks that enable investment decisions on a multi-billion scale, rather than short-term support packages. The process industry calls for stable framework conditions that make it possible to take investment decisions amounting to billions, instead of relying on short-term support schemes. Long-term and competition-based mechanisms such as contracts for difference, multi-year agreements and increased risk sharing through state loan and guarantee schemes can ensure that ETS and CBAM revenues contribute to accelerating decarbonisation. Public procurement, access to affordable capital and competitive electricity prices can serve as important complements, but only if they are predictable over time. For industry, coherent coordination and stable frameworks are more important than isolated instruments. At the same time, policy measures should be designed to be fair, long-term and capable of mobilising significant private capital.

To ensure stability over time, the recycling of ETS and CBAM revenues should be politically and institutionally anchored, so that the main principles are not altered with changing governments. To prevent annual shifts in direction, Norway should consider a cross-party industrial agreement that locks in the principles for recycling ETS and CBAM revenues. A unified government structure with a clear mandate to coordinate energy, industrial and climate policy would contribute to greater consistency in the use of instruments. This aligns with the recommendations in the Draghi report, which emphasises the need for clear governance, stable financing and institutional frameworks that ensure continuity in industrial transition.

Main recommendations:

- **Clarify the principled distinction between resource rents and climate-related charges,** so that ETS and CBAM revenues are treated as instruments for transition in affected sectors rather than as general budget revenues.
- **Promote a broader and more knowledge-based debate on the use of ETS and CBAM revenues,** with the guiding principle that funds should help finance the emission reductions and technologies that the charges are intended to trigger, in line with the recommendations of the Draghi report.
- **Ensure political and institutional stability around these principles,** so that the discussion on revenue recycling is framed by long-term predictability for industrial investment decisions.

8.4 Scaling up CCS in Norway

Building national CCS infrastructure for industrial scale-up (12)

Carbon capture and storage is essential for emission-intensive industry, but without a national roadmap and clear ambitions Norway risks remaining at the demonstration stage and missing out on industrial scale-up. The Norwegian Environment Agency shows in its report A 2035 contribution ensuring national transition that carbon capture and storage represents the climate measure with the greatest potential to reduce national emissions. CCS is critical for achieving climate targets in emission-intensive industry, but costs are high and companies cannot realise projects that generate persistently negative cash flows. The Longship project has given Norway an early position in full-scale CCS, but on its own it is not sufficient to trigger a broad roll-out of new carbon capture projects in Norway. Without a national ambition for deployment and commercialisation, Norway risks stagnating at the demonstration stage on the capture side. There is therefore a need for a national roadmap with concrete and time-bound targets for capture and storage towards 2030, 2035 and 2040, as well as a plan ensuring that transport and storage infrastructure is developed in line with Norway's actual emissions profile.

For CCS to deliver real climate impact and broad industrial participation, infrastructure must be developed so that smaller and more dispersed emission sources also gain practical access. New projects will naturally be initiated close to existing infrastructure, but to achieve genuine climate and industrial impact, solutions must also provide access for smaller and more geographically dispersed Norwegian emission sources. Infrastructure designed primarily for large point sources will not be sufficient to enable broad participation from industry. It is therefore essential that the further development of CO_2 infrastructure in Norway facilitates flexibility, scalability and practical access for smaller actors as well.

To make CCS commercially viable, financing models should reduce risk, ensure cost sharing and combine public and private investment in industrial infrastructure. Financing models for CCS should account for cost sharing across capture, transport and storage, while also contributing to a level playing field among actors. The state can take an active role in building CO_2 infrastructure modelled on gas pipelines, including tariff regulation and full or partial public ownership. Standardisation of capture technology can yield significant cost reductions, particularly for waste incineration and bio-CCS. Policy instruments such as investment support and contracts for difference should be combined with measures that attract long-term investors, such as infrastructure funds, to participate in financing. This will reduce risk, mobilise private capital and help move CCS from demonstration to a durable industrial solution. Achieving this requires close and coordinated cooperation between the state and industry within stable and long-term frameworks.

Gassnova's roadmap shows that CCS technology is mature, but that lack of profitability, uncertain framework conditions and ill-adapted infrastructure hinder broad deployment in Norwegian industry. The Roadmap for CO_2 management in Norwegian onshore industry towards 2050 supports the assessments outlined above. The roadmap concludes that technologies for carbon capture, transport and storage are largely available and mature, but that implementation of multiple industrial projects is constrained by insufficient profitability, high investment costs, uncertainty in framework conditions and limited access to suitable infrastructure. A particular challenge highlighted is the prevalence of small and dispersed emission sources in Norway, which leads to higher unit costs for transport and storage compared with larger, concentrated emission clusters in Europe. Gassnova emphasises that further CCS development must move from demonstration to an industrial phase, with Longship representing an important first step, but not sufficient on its own to enable widespread implementation. The roadmap therefore points to the need for a clear national roadmap with time-bound targets, further development of transport and storage solutions adapted to Norway's emissions structure, and a coordinated policy framework that reduces risk and provides predictability for industrial investment decisions.

Main recommendations:

- **Establish a national CCS roadmap** with time-bound targets for capture and storage towards 2030, 2035 and 2040, enabling Norway to move from demonstration to industrial deployment.
- **Build flexible and scalable CO_2 infrastructure** so that both large point sources and smaller, dispersed emission sources gain practical access to capture, transport and storage.
- **Ensure fair and effective cost sharing across capture, transport and storage,** and give the state an active role in developing transport and storage systems, including ownership and tariff regulation.
- **Combine investment support, contracts for difference and long-term financing models** to mobilise private capital and reduce risk for both industry and public authorities.
- **Provide stable and long-term framework conditions through coordinated governance,** giving industry the predictability required to make major investment decisions related to CCS technology and infrastructure.

Harmonising Norwegian CCS instruments with the EU (13)

Norway should be an integrated part of the European CCS market and participate actively in EU programmes for carbon capture and carbon removal. A lack of harmonisation with EU regulations, in particular EU state aid and competition rules and the requirements in the Net-Zero Industry Act that CO_2 storage must take place under EU jurisdiction, may render Norwegian measures unlawful and at the same time prevent planned European storage volumes from being transported to Norway. These volumes are essential to ensure cost-effective development of Norwegian transport and storage infrastructure. At the same time, well-designed Norwegian policy instruments can provide competitive advantages as markets increasingly demand products with lower carbon footprints.

Norway has strong advantages in climate documentation, storage expertise and international credibility, and these should be actively leveraged to build partnerships and promote Norwegian solutions in the European market. The strategy should be to link Norwegian CCS projects to European value chains and financing mechanisms, including through competitive schemes, contracts for difference and investment support. Such participation can provide both market access and risk sharing in the future European CO_2 market.

Several European countries, including Denmark, Sweden, Germany, the Netherlands and France, have established auction-based support programmes to reduce emissions and achieve negative CO_2 emissions. Norway has not yet introduced comparable schemes. This may weaken Norwegian competitiveness in a market where access to European funds, contracts for difference and carbon removal support is becoming increasingly important. To strengthen Norway's position, national instruments should be aligned with European practice, while Norwegian projects are more closely linked to EU programmes for financing and technology development.

Main recommendations:

- **Harmonise Norwegian CCS instruments with EU state aid, competition and market requirements, including the Net-Zero Industry Act,** so that Norwegian storage projects can receive European CO_2 volumes and avoid regulatory barriers.
- **Link Norwegian CCS projects to European value chains and financing mechanisms,** and use Norway's strengths in climate documentation, storage expertise and international reputation to build strategic industrial partnerships.
- **Safeguard Norwegian competitiveness by developing support schemes that mirror European practice,** including consideration of a Norwegian auction-based programme for carbon removal and emission reductions in line with schemes in Denmark, Sweden, Germany, the Netherlands and France.

8.5 Highlighting the societal role of industry

Strengthening national understanding of the role of industry (14)

The role of industry as a driver of value creation, employment, low emissions and strategic value chains must be made more visible in a period of increasing geopolitical uncertainty. Norwegian process industry supplies inputs and materials that are fundamental to European value creation and critical to the delivery of the green transition. The combination of low emissions, high energy efficiency and strong industrial ecosystems makes Norwegian industry a stable supplier at a time when many European countries are experiencing growing vulnerabilities in their value chains. At the same time, industry delivers broad societal benefits through skills development, regional economic activity and the facilitation of technological innovation. This combined role should be promoted as a strategic asset, not only within Norwegian policy debates, but also as a contribution to Europe's industrial resilience.

To strengthen the impact of industrial policy, communication must be directed at national decision-makers, with a clear and credible presentation of the importance of industry for value creation, climate objectives and societal security. Achieving influence requires a visible and credible voice that can convey the link between industry, value creation, climate and societal security in a way that is understandable and builds trust. The key is not to persuade local communities, but to reach national decision-makers, particularly members of parliament and political environments that shape framework conditions. Communication must make clear the consequences that industrial decline would have for national transition capacity, preparedness, value chains and economic development, and why robust industrial environments are a prerequisite for Norway to succeed in meeting its own climate and security objectives.

Long-term legitimacy for industry requires targeted engagement in knowledge arenas and systematic communication of documented contributions to transition, innovation and regional development. To strengthen understanding of industry's role, the sector must maintain a strong presence in key knowledge environments such as NTNU and other universities and research institutions, and work systematically with young people, professional communities and political parties. Some knowledge-based framework supported by solid documentation and analysis makes it possible to demonstrate how industry contributes to green transition, technological development and sustainable regional value creation. Communication must be tailored to different audiences, from policymakers and the public to socio-economic experts and be grounded in facts and forward-looking perspectives rather than nostalgic narratives.

Industry must contribute to a broader national understanding of how value creation, preparedness and transition capacity are interconnected, so that policy development better reflects the societal role of industry. A key challenge is that the consequences of industrial closures are often perceived as distant by central decision-making environments, particularly in Oslo. This can reduce attention to industrial framework conditions and the systemic role of industry. To counter this, industry must work to build a broader national understanding of how value creation, transition capacity and societal benefit are closely intertwined. The objective should not be to defend individual companies, but to highlight the socio-economic value of strong value chains and industrial ecosystems that continuously develop technology, skills and adaptive capacity. In this way, industry can secure the attention and predictability necessary for long-term political decision-making.

Main recommendations:

- **Make visible the role of industry in value creation, employment and critical value chains,** and highlight the low carbon footprint as a strategic competitive advantage at both national and European levels.
- **Strengthen national understanding of the importance of industry at the political level** and clearly demonstrate how weakened framework conditions affect value chains, preparedness and long-term transition capacity.
- **Build a unified, knowledge-based and credible communication platform** that conveys the societal role of industry and the consequences of industrial decline in a clear and fact-based manner.
- **Mobilise systematically within knowledge arenas** and towards younger generations to secure long-term legitimacy, recruitment and broad support for industrial transition.

9. Concluding reflections

The further development of Norwegian process industry requires that challenges and opportunities are considered in an integrated manner, and that efforts are coordinated across technology, policy and markets. To secure the competitiveness of Norwegian process industry and its ability to deliver on climate targets, a holistic approach to the challenges and opportunities facing the industry is essential. The prioritised thematic areas presented here are based on thorough preparatory analyses and dialogue between industry, public authorities and other stakeholders. These areas range from power generation and electricity consumption, through international positioning and framework conditions, to financing, infrastructure and the visibility of Norwegian advantages. Taken together, they form a comprehensive picture of the industry's strategic room for manoeuvre.

Industry is operating at the intersection of increasing pressure and significant opportunities, and future competitiveness depends on the ability to combine ambitious emission reductions with targeted industrial development. The starting point for the proposals in this paper is that both Norwegian and European industry face a highly demanding situation. At the same time, it is assumed that substantial CO_2 reductions and continued competitiveness in global markets are achievable, provided that forward-looking business strategies are combined with active and targeted industrial policy, both in the EU and in Norway. It is in the interaction between these factors that the necessary pace of transition can be achieved.

Behind the industrial opportunities lies serious underlying pressure, where high energy costs and weakened margins create a real risk of deindustrialisation and reduced transition capacity. At the same time, it is necessary to recognise that the situation in several industrial sectors is perceived as more severe than what emerges from a purely structural perspective. In parts of industry, day-to-day operations are characterised by strong pessimism, with concerns about weakened commercial viability, deindustrialisation and limited ability to implement necessary emission reductions. A fundamental challenge for European industry, and for parts of Norwegian industry, is that energy costs today are significantly higher than those of global competitors, often estimated at around three times the level in comparable industrial countries. At the same time, companies are subject to additional requirements and specific levies. This erodes operating margins and cash flow and sustains a persistent risk of closures in the medium-to-the-long term.

The realism of the proposed measures depends on a clear understanding of the industries' actual economic situation and the risk environment in which they operate. These perspectives are decisive for assessing the proposals put forward. How the realism and feasibility of the measures are judged will largely depend on the diagnosis of the current condition and outlook for Norwegian and European industry. If the process industry is exposed to strong global competitive pressure and has weak operating margins, the scope for investment in decarbonisation is limited. This challenge is reinforced by the fact that many climate measures involve significant risk and uncertainty regarding future markets.

The EU sets important framework conditions for Norwegian industry, but many of the most decisive industrial policy measures in Europe are taken at national level, indicating that Norway should combine an EU-oriented approach with a more active national industrial policy. This paper uses the EU's new framework and developments in European industrial policy as an important reference point for assessments and proposals. At the same time, it is necessary to recognise that an exclusive focus on the EU may be too narrow. The EU provides important direction through political processes, regulation and supranational support schemes, but many of the most substantial industrial initiatives in Europe are in practice driven by national policies, with dedicated budget allocations, loan schemes and targeted strategies. In such cases, the EU framework often functions as a supplement to national policy rather than as the primary driver. This offers important lessons for Norway, both in terms of ambition level and the pace of national initiatives.

Developments in European industrial policy show that national initiatives are now playing a far greater role, particularly through expanded scope for state aid. France is a clear example of an active and nationally anchored industrial policy, while Germany has traditionally been more restrained in its use of direct state aid and more reliant on EU-level instruments. This picture is, however, changing under the current Merz government, which is increasingly using national measures to support industry and technological development. In this context, the Clean Industrial State Aid Framework is particularly relevant, as it opens significantly greater scope for state aid and enables Member States to pursue a more active industrial policy. Both Germany and France are now making more systematic use of this space.

At a more overarching level, the European industrial policy landscape is increasingly shaped by three structural changes, partly driven by the heightened sense of crisis and fear of deindustrialisation described above.

- Industrial support in Europe is increasingly driven by national authorities, particularly in Germany and France, while the EU's role as a direct source of financing has become relatively less significant.
- Liberal market principles have gained less traction in industrial policy, and a more active, state-oriented industrial policy is increasingly accepted as a legitimate use of policy instruments.
- The design of EU policy appears less anchored in stable, long-term principles and rule-based frameworks, and more the result of negotiations, compromises and transactional processes among Member States.

Norway should actively position itself within the EU's new industrial policy frameworks while simultaneously developing its own national strategies, as European integration alone will not secure long-term industrial competitiveness. For Norway, it is essential to closely follow developments in European industrial policy, influence the design where possible, and position itself so that Norwegian industry can benefit from new frameworks and support schemes under the Competitiveness Compass, the Clean Industrial Deal and the Industrial Accelerator Act. At the same time, Norway must not lose sight of its own conditions and room for manoeuvre. Experience from European countries shows that active participation in the EU system is important, but not sufficient in itself. Norway's long-term competitiveness and transition capacity will also depend on national industrial policy decisions, instruments and investment willingness.

A more transactional Europe makes it necessary for Norway to strengthen its own negotiating position through concrete resources and strategic contributions that create genuine reciprocity. As European policy becomes more transactional, it becomes increasingly important for Norway to build concrete assets and bargaining chips that can be used in dialogue with the EU and key European countries. Such contributions may include strategic investments, infrastructure, specialised expertise or other forms of industrial policy cooperation that deliver tangible value to European partners. The ability to offer such reciprocal contributions can strengthen Norway's position and increase the likelihood of securing improved framework conditions for Norwegian industry.

Taken together, these developments raise a more fundamental question for Norwegian decision-makers.

Is it possible to remain outside the EU, maintain liberal principles of limited state involvement, and still expect Norwegian industry to compete successfully in a European industrial landscape that is increasingly characterised by active state steering and targeted support schemes?

Participants and contributors

The work carried out under the auspices of Prosess21 has been led by an expert group consisting of the following individuals:

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Annex – Invitation to workshop

Imagine the following scenario:

Norwegian industrial policy stands at a critical crossroads. For a long time, the authorities have relied on the assumption that the emissions trading system alone would be sufficient to drive the necessary emission reductions in the process industry. It has been acknowledged that several actors are at risk of carbon leakage, yet the CO_2 compensation scheme, which was intended to counteract this risk, has gradually been weakened.

Although CBAM has now been introduced, companies experience that the mechanism contains significant loopholes. This makes competition with actors from countries with lower climate ambition both difficult and unfair.

The consequences are clear: It is the process industry that must make the major investments to reduce carbon intensity along value chains. At the same time, willingness to pay in the market is limited, price outweighs climate considerations. Profitability is weakened, and investments in emission reductions appear unrealistic from a commercial perspective. Industry has been clear in its message: *Companies do not need subsidies for their core operations. Most Norwegian process companies have strong competitive positions and solid market shares. However, when Europe, and Norway, have chosen to lead the green transition, it must be acknowledged that this requires more than individual adaptation. It requires a new social contract, a shared understanding and commitment to share the costs of achieving a low-emission society*.

We are now seeing the consequences of fragmented and insufficient policy. Several companies are announcing capacity reductions, and some are considering winding down operations in Norway. This creates concern in regional communities, where many of these companies constitute the backbone of local economies. At the same time, the EU has been clear. The emissions trading system was never intended to stand alone. Yet because Norway has chosen to implement EU legislation in a piecemeal manner through the EEA Agreement, the Norwegian framework appears fragmented and inadequate.

Deliveries from Norwegian process industry are critical to European industry and strategic security. The EU expects Norway to take responsibility and make use of the instruments available under the EEA, whether through action plans for affordable energy, metals and chemicals, or measures under the Clean Industrial Deal and the updated state aid framework.

New measures to secure transition in the process industry

The government recognises that a lack of investment decisions threatens Norway's ability to meet both climate targets and export ambitions. To ensure a rapid and targeted transition, without being constrained by sectoral silos and administrative inertia, a new super-ministry is established. This ministry, bearing some resemblance to the former Ministry of Industry of the 1980s, is given responsibility for all areas of government that influence investment decisions in the process industry.

The super-ministry is established for a limited period of one parliamentary term, four years, with a clear mandate. Norway is to reduce greenhouse gas emissions while at the same time securing the transition and further development of an industry that is strategically important for Europe.

At the core of the super-ministry's work is ensuring coherence between objectives and instruments. The aim is to establish framework conditions that trigger investments and contribute to achieving both climate targets and export ambitions. The Prime Minister has identified two main challenges that currently hinder transition in Norwegian process industry:

Climate costs: Measures to reduce emissions without reducing production involve significant costs.

- Electrification requires new processes, technology development and retrofitting of existing facilities, and entails higher energy costs for electricity compared with fossil alternatives. Access to capacity, flexibility and competitive electricity prices is crucial.
- Carbon capture and storage involve costs related to altered processes, new technologies, retrofitting and new costs for transport and storage of CO_2.
- At the same time, attention must be directed towards technologies that over time can ensure zero-emission solutions.

Competitiveness: Norwegian process industry competes in global markets.

- If low-emission products do not succeed in international competition, export ambitions will not be realised.
- It is not only products that face competition, but production itself.
- The combined framework conditions in other countries may cause Norway to lose the competition for green investments. The result may be that climate targets are met only through the closure of Norwegian production and the relocation of emissions to other countries.

The super-ministry begins its work by inviting Norway's leading experts to a workshop. The assignment is straightforward. Within each thematic area, participants are asked to prepare a concrete overview of the measures required to address the challenges and secure transition in the process industry.

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