Ministry of Foreign Affairs

Norway Below the Surface:

Exploring the Critical Raw Material Landscape

Embassy of the Kingdom of the Netherlands in Norway

Executive summary

This report offers an overview of the Norwegian landscape and associated value chain surrounding critical raw materials (CRMs), key actors, national strategies, and government policies. It analyzes Norway's supply potential from a broader European perspective and provides a SWOT analysis, highlighting the strengths, weaknesses, opportunities, and threats of the current, and future potential, of the Norwegian critical raw material sector. Additionally, the report briefly explores potential opportunities for Norwegian-Dutch cooperation within the sector.

The critical raw materials value chain is extensive and multifaceted, spanning several stages, from resource extraction to processing, refining, end-use, and recycling. Although Norway possesses substantial raw material reserves, both onshore and beneath its continental shelf, the extraction of these materials is in many cases still in an early stage. Additionally, there are significant challenges to establishing sufficient industrial capacity to support profitable domestic processing and refining.

The growing interest in and demand for critical raw materials is well established. Acknowledging both this global need and Norway's potential role in these supply chains, the Norwegian government has intensified its efforts to develop the domestic critical raw materials sector, aiming to establish the world's most sustainable mineral sector. Currently, the extent to which Norway has utilized its raw materials and industry potential is mixed. The country is home to well-established industries around critical raw materials such as aluminium, silicon, and nickel, while other sectors such as those focused on rare earth elements (REE), vanadium, and copper, remain in the early stages of development. Complete domestic value chains remain however absent from Norway, with even well-established industries having to relying on imported raw materials in most cases.

If Norway can effectively leverage its competitive advantages, attract sufficient investment, and ensure the cost-competitiveness of domestically mined and processed materials, it has the potential to establish itself as a key player in the supply chain. However, if domestic extraction and processing prove economically unfeasible, this potential will be significantly diminished or will depend heavily on sustained government support. To address this, government efforts to de-risk the early stages of mineral project development, along with policies that preserve and enhance Norway's competitive advantages, particularly its access to affordable and reliable energy, are essential.

The Norwegian government is actively modernizing its national regulatory framework for mineral extraction, strengthening cooperation through raw material partnerships and alliances, and advancing the integration of the EU Critical Raw Materials Act into Norwegian law. These efforts aim to position the sector for long-term success and help secure reliable export markets for domestically extracted and processed critical raw materials. By maintaining high environmental and ethical standards, fostering positive relationships between local communities and the mining industry, and advocating for the adoption of similar regulations internationally, Norway seeks to establish itself as a preferred and responsible supplier within the global critical raw materials supply chain.

Opportunities for the Netherlands remain limited, as the sector in Norway is still developing. While Dutch industry stands to benefit from a reliable supply of critical raw materials from Norway, particularly in light of growing supply chain risks, the cost-competitiveness of Norwegian minerals remains a key prerequisite. Consequently, the Netherlands primary role lies within the broader European context, where it can act as a facilitator by leveraging its strategic geographic location and advanced innovation capabilities, particularly in circular economy solutions.

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Cover picture: Tom Fisk
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Embassy of the Kingdom of the Netherlands in Norway

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Disclaimer

This report is intended for general guidance and information purposes only, based on data gathered between February and June 2025. Readers should exercise caution as the rapidly evolving Norwegian mineral landscape may render some information outdated in the near future. The report offers information on a non-exhaustive selection of actors and organizations in the Norwegian critical raw material value chain, primarily derived from publicly available sources supplemented by personal consultation. The recommendations in the final chapter reflect the author's personal opinions, and readers are encouraged to apply their own judgment when interpreting the findings of this report.

Reading guide

- The volatility of the Norwegian Krone makes it difficult to employ a standard conversion rate from NOK to EURO in this report. In January of 2024 1 EURO = +- 11.2 NOK while in April 2025 the NOK reached, 1 EURO = +- 12.1 NOK. For the sake of simplicity, a conversion rate of 1 EURO = 11.5 NOK will be employed as a rough average over the last two years.[1]
- For both desktop and mobile readers, the organization names highlighted in blue are clickable and will redirect you to their respective websites

[1] Norwegian krone (NOK) | ECB (europa.eu)

Introduction

"Norway will develop the world's most sustainable mineral industry," declared then-Minister of Trade and Industry Jan Christian Vestre as he presented the Norwegian Government's mineral strategy in 2023. This ambition reflects Norway's response to the accelerating global demand for critical raw materials and the rising strategic importance of secure, resilient supply chains in light of the green and digital transitions and the pursuit of strategic autonomy. Recognizing its geological potential and industrial strengths, Norway has intensified efforts to position itself as a sustainable and reliable supplier of key raw materials. As a result, the country is placing greater emphasis on building a competitive domestic value chain and creating a suited regulatory framework for its mineral industry to develop.

As one of Europe's most promising regions for raw materials, it's no surprise that Norway has attracted growing attention as a potential supplier of these materials. Norway's ambition to become a major player in the critical raw materials sector is however not straightforward considering the complexity of the sector. While Norway has a long-standing mining tradition, and has already developed industries around several critical raw materials, the complete value chain remains dispersed and complex. The value chain around minerals spans multiple stages, from exploration and extraction to processing, refining, and recycling, each of which presents its own set of challenges, including technological barriers and economical obstacles. These value chains are also distinct for every material, with some segments being more developed than others and differing in their domestic potential within Norway, which adds to the overall complexity.

Given this complexity, the Norwegian government and stakeholders must carefully evaluate which materials offer realistic opportunities for further development and upscaling, or which entirely new parts of the value chain have the potential for success. This assessment will need to weigh economic viability, resource potential, global and regional demand, and strategic importance.

To provide a comprehensive overview of Norway's critical raw materials landscape, this report is organized into four main parts. The first part serves as an introduction to Norway and critical raw materials. The second part examines the policy and strategic frameworks shaping the sector, with a focus on the role of the Norwegian government and international cooperation, particularly in connection to the EU. The third part explores Norway's supply potential, detailing key mineral projects and companies, and emerging opportunities such as recycling and deep-sea mining. The final part analyzes the opportunities and challenges facing the sector, outlining the key considerations for Norway to fully realize its potential.

A full value chain analysis for each material is beyond the scope of this report, as many value chains in Norway remain partially developed or are still in their early stages. Instead, the report provides a broad overview of Norway's current position in critical raw materials, its future potential, defined goals, and the government's strategies to realize them. It also discusses the challenges and limitations involved in developing domestic value chains. Finally, the report highlights key areas where cooperation with the Netherlands could be most beneficial.

Part I: Norway & Critical Raw Materials

1.1 Introduction

In her 2022 State of the Union address, European Commission President Ursula von der Leyen emphasized that lithium and rare earths will soon surpass oil and gas in importance, highlighting the EU's urgent need for secure and diversified supply chains to avoid dependency on single suppliers.[2] Currently, critical raw material production is concentrated mainly in China, the largest producer of 14 different CRMs, and Russia, long having been the a key supplier to Europe.[3] Geopolitical tensions, especially Russia's 2022 invasion of Ukraine, have heightened concerns over supply chain resilience. In response, Europe, particularly within the European Economic Area (EEA), is intensifying efforts to explore and develop its own mineral resources. Norway, with its rich geological reserves, established industries, and long history of mineral extraction, has often become a central point in these discussions. To understand the Norwegian position and background better this section provides a foundational overview of Norway's geography, economy, and energy sector, along with definitions and value chain complexities of critical raw materials, setting the stage for examining the government's role, supply potential, and opportunities and challenges throughout the report.

1.2 Norway in a nutshell

To provide a clearer understanding of Norway compared to the Netherlands throughout the report this section will offer a brief comparison between Norway and the Netherlands.

	Norway	Netherlands
Population	5,595,000	18,080.000
Population density	15 per km²	508 per km²
Land area	365,268 km²	41.543 km²
Exclusive Economic Zone	~ 2.200.000 km²	~165.000 km²
GDP per capita	€82,900	€53.200

Figure 1: key figures on Norway in comparison to the Netherlands.[4]

1.2.1 Geography

Norway and the Netherlands differ significantly in geography. Norway's land area is nearly ten times the size of the Netherlands. Though both are coastal nations, Norway's coastline spans over 100,000 km with EEZ of approximal 2.2 million km², while the Netherlands has a 451 km coastline and consists of an EEZ of roughly 165,000 km². Beyond its mainland, Norway includes several arctic islands, including Svalbard and Jan Mayen. Of these only Svalbard is most economically active, with an historical role in mining with the last Norwegian mine closing in 2025.[5] However, despite its 61,000 km² in size, Svalbard has currently limited economic potential and is subject to regulations under the Svalbard Treaty.[6]

Despite being the fifth largest country in area in the EEA, Norway has less than a third of the population of the Netherlands. The majority of the population resides in the southern part of the country, primarily along the coastline. Much of the inland terrain is diverse, featuring mountains, hills, rivers,

[2] State of the Union Address by President von der Leyen | European Commission (ec.europa.eu)
[3] China top supplier of products containing critical raw materials | CBS (cbs.nl)
[4] Statistics Norway | SSB (ssb.no) & Centraal Bureau voor de Statistiek | CBS (cbs.nl)
[5] Sluttdato satt for siste norske gruve på Svalbard | NRK (nrk.no)
[6] Meld. St. 32 (2015–2016) (regjeringen.no)

valleys, and lakes. While these geographical features can make infrastructure development challenging and costly in some areas, they also provide significant opportunities for energy production and mineral extraction.

1.2.2 Economy

Norway has a highly developed mixed economy. In 2023, the Norwegian GDP reached approximately €441.4 billion. Norway enjoys a relatively high GDP-per capita which is about 28.5% higher than in the Netherlands. In 2023 the services sector contributes the largest share, accounting for 50.01% of GDP, followed by industry at 38.98%, and agriculture at 2.1%.[7] However, these figures can fluctuate significantly, as a large portion of Norway's GDP is driven by the export of oil, gas, and other energy-related industries, which are highly sensitive to global market fluctuations.

Despite this, Norway's economy is considered to be highly stable. The government takes active measures to ensure that the abundance of natural resources does not overstimulate the domestic economy. A significant portion of the revenue from these resources is saved in the Government Pension Fund Global, commonly known as the Oil Fund. Each year, the government is permitted to withdraw a limited percentage from the fund to partly finance the national budget, currently set at 3% of the total value of the fund.

1.2.3 Energy

Norway has historically been well-positioned to meet its domestic energy needs and has been able to utilize energy resources as an export product. Traditionally, hydropower has been the country's primary source of power. Until 2005, over 99% of Norway's domestic demand was met through hydropower. Since then, Norwegian electricity production has become more diversified, with other power sources gaining ground. By 2023, non-hydropower electricity generation accounted for 11% of total production, comprising 8.5% from wind, 1% from gas, 0.3% from biomass, and 0.2% from solar PV.[8]

Although Norway's population is projected to grow by only half a million people by 2050, electricity demand is expected to double over the same period.[9] This surge reflects the ongoing electrification of the country, as fossil fuel use continues to decline, as well as the growth of electricity-intensive industries and processing within Norway. It is anticipated that wind energy, in particular offshore, will become the primary source to meet these rising energy demands.

In 2023, the mining sector in Norway consumed just 1,329 GWh of energy, accounting for only about 1.7% of the country's total industrial energy use. However, when including the broader manufacturing sector, where much of the downstream value chain occurs, this figure rises sharply to 76,254 GWh, representing approximately 30% of Norway's final energy consumption.[10] The processing and refining stages, particularly in metallurgy, are significantly more energy-intensive than extraction, estimated at using a quarter of Norway's annual power consumption.[11] This high energy demand is partly driven by facilities that refine exclusively imported raw materials, such as nickel and manganese, rather than

[7] Share of Economic Sectors | Norway Statista (statista.com)
[8] Energy Transition Outlook 2024 | DNV (dnv.com) | 30-31
[9] Energy Transition Outlook 2024 | DNV (dnv.com) | 36-37
[10] Energy use in the manufacturing sector | SSB (sbb.no)
[11] US_Norway_Critical Mineral MoC | Regjeringen (pdf) | 4

domestically mined resources.[12] Large processing companies, such as Norsk Hydro, have traditionally been among the largest individual consumers of energy.

1.2.4 Exports and trade

Norwegian exports have for over half a century been dominated by oil and gas, minerals and seafood products. In 2024 Norwegian exports reached a historical high with a total worth of nearly €215 billion worth of goods being exported. While Norwegian export figures are heavily influenced by the global prices of oil and gas the total value of exports excluding oil and gas also reached its highest recorded level with a value of just over €113 billion. Apart from oil and gas the maritime industry, consisting of offshore suppliers, seafood sector and shipping, is the main driver of Norwegian exports with a value of €19.5 billion of which €14.61 being derived from seafood alone. Mining, meanwhile, plays an increasingly important role, accounting for nearly €4 billion in exports, with nickel exports representing roughly half of this total.[13]

The main trading partners of Norway remain the EU/EEA countries and the United Kingdom. Outside of Europe the United States and China remain large trading partners. In 2024 60% of goods, excluding oil and gas, 58% of services and 71% of oil and gas were exported to the EU/EEA, which grows to 96% when exports to the United Kingdom are included.[14] Likewise the EU/EEA is the main import partner for Norway. The main export market for minerals, like the export of oil and gas, is primary to the EU. The Netherlands is one of the primary importers of Norwegian minerals with 6.28% of total mineral exports going to the Netherlands in 2023, although this percentage also includes oil and gas.[15]

1.3 What are Critical Raw Materials?

The term critical raw materials, henceforth abbreviated CRM, has been increasingly commonly used by governments and industries since the mid to late 2000's. CRM's are a subset of natural resources, materials and minerals that have been deemed essential for modern economies, national security, advanced technologies and continued innovation. What qualifies exactly as a CRM can vary between countries and industries, due to differences in supply risks, domestic resource availability, processing capabilities, and end-use requirements. For this reason this report will take a look at what are considered CRM's by the EU, Norway, the Netherlands and NATO as these are the most relevant for the context of this report.

1.3.1 EU definition

Since 2011, the European Commission has set out to assess the supply risk and economic importance of raw materials across the EEA. These assessments have since resulted in the publication of the EU list of CRM's every three years. The most recent list, published in 2023, was expanded to include a total of 34 materials. For the first time, the Commission also introduced a new categorization system, dividing these materials into two distinct groups:

- Critical Raw Materials: Materials deemed essential for the EU's economy and have a high risk of supply disruption.

[12] Energy use by sector - Norwegian Energy (energifaktanorge.no)
[13] Eksportmeldingen 2025 | Menon Economics (menon.no) | 11 & Statbank Norway: External trade in services | SBB (sbb.no)
[14] Eksportmeldingen 2025 | Menon Economics (menon.no) | 12
[15] Mineral Products in Norway Trade | OEC (oec.world)

- Strategic Raw Materials: A subset of CRM's that are considered even more critical due to their importance in key technologies, industries and the ability to remain competitive.

It is important to note that a material's designation as critical or strategic has little to do with its geological abundance or physical scarcity, despite what the terms might suggest. Instead, raw materials are typically classified this way due to factors such as a lack of supply diversification, limited social acceptance of their extraction or use, competition for access, strategic monopolization, or insufficient processing capacity.

In order to asses if a material is deemed critical the EU makes use of the following parameters: [16]

- Economic importance (EI) – which provides insight into the importance of a material for the EU economy in terms of end-use application and value added of corresponding EU manufacturing sectors.
- Supply risk (SR) – which reflects on the risk of a disruption in the EU supply of the material. This is primarily based on the concentration of the primary extraction, and the availability of viable alternatives. For this governance performance and trade practices are also taken into consideration. With the either extraction or processing stage being potential 'bottle-necks' in this assessment.

By combining these two parameters, the EU identifies materials that are both of large enough importance to the larger European economy and especially vulnerable to supply disruption. These ongoing assessments and categorizations play an increasingly vital role in shaping EU policies and strategic initiatives focused on securing sustainable and resilient supply chains. By continuously monitoring and updating the list of critical and strategic raw materials, the European Commission aims to improve EU preparedness to tackle emerging challenges in supply chain disruptions, foster innovation in key industries, and reduce dependence on external suppliers. These efforts have resulted in the following list for 2023:

EU Critical Raw Materials 2023		
Antimony	**Gallium**	Phosphate rock
Arsenic	**Germanium**	Phosphorus
Barite	Hafnium	Platinum
Bauxite/aluminium	Helium	Scandium
Berylium	**Heavy Rare Earth Elements (HREE)**	**Silicon metal**
Bismuth	**Light Rare Earth Elements (LREE)**	Strontium
Boron	**Lithium**	Tantalum
Cobalt	**Magnesium**	**Titanium metal**
Cooking coal	**Manganese**	**Tungsten**
Copper	**Natural Graphite**	Vanadium
Feldspar	***Nickel***	
Fluorspar	Niobium	

Figure 2: EU Critical Raw Materials, Strategic Materials are highlighted in **bold.**[17]
Nickel and *Copper* are not considered Critical, but are considered Strategic and thus included.

[16] Critical raw materials - European Commission (europa.eu)
[17] Critical raw materials | CBS (cbs.nl)

1.3.2 NL & NO definition

As both the Netherlands and Norway are part of the EEA they participate in a shared internal market through which both are largely exposed to a similar supply chain. As a result, both countries are likely to face similar disruptions and geopolitical risks throughout industry and the economy. For this reason, both have taken the EU Critical Raw Material List as the foundation for their respective national strategies on raw materials.

As part of the Dutch raw materials strategy the government has set out to further analyze which of the materials deemed critical by the European Commission are specifically important to the Dutch economy and industry in addition to exploring which raw materials might not have been included on the EU's list but might have to be considered in a Dutch context for which a separate national policy could be considered.[18]

The Norwegian government follows a similar approach and acknowledges that Norway, through the inclusion in the EEA and single market, would face similar challenges as the EU if the supply situation for CRM's deteriorates.[19] Therefore, the Norwegian government views the EU's assessment of critical materials as a useful starting point for assessing the potential consequences of reduced raw material access for Norway. At the same time Norway is already a supplier of many resources and hold significant potential for upscaling and expansion. Following the publication of the 2023 list, the Norwegian government, together with the EEA/EFTA states, urged the EU to include aluminum, which had been absent from the 2020 list in its metallic form. Norway also advocated for including synthetic graphite alongside natural graphite, both of which it supplies in large quantities to the European market.[20]

1.3.3 NATO definition

In December 2024 NATO, of which both the Netherlands and Norway are members, published its own list of 12 defense-critical raw materials. With only 12 materials listed this list is more concise than the EU list as the list prioritizes materials essential to the defense industry, military readiness and strategic autonomy, opposed to the entire EEA and needs of several member states. The availability and secure supply of these materials are considered vital to maintaining NATO's technological edge and operational readiness. It is however of note that all of the NATO defense critical-raw-materials are also identified as part of the EU 2023 list.[21]

NATO Defense Critical Raw Materials
Aluminium
Berylium
Cobalt
Gallium
Germanium
Graphite
Lithium
Manganese
Platinum
Rare Earth Elements (REE)
Titanium
Tungsten

Figure 3: NATO Defense CRM
Minerals in Norway are highlighted in **bold**

[18] Raw materials strategy for large transitions | (Rijksoverheid.nl) | 2
[19] Norway mineral strategy | Ministry of Trade, Industry and Fisheries (regjeringen.no) | 22
[20] EØS/EFTA- kommentar til Critical Raw Materials Act (CRMA) | Stortinget (stortinget.no)
[21] NATO releases list of 12 defence-critical raw materials, | NATO (nato.int)

1.3.4 Rare Earth Elements

The term *Rare Earth Elements* (REEs) is often mistakenly used as a synonym for the broader category of *Critical Raw Materials*. In reality, REEs are a subset of CRMs and appear on both the EU and NATO critical materials lists. REEs can be further divided into Light Rare Earth Elements (LREEs) and Heavy Rare Earth Elements (HREEs), based on their atomic mass, with LREEs being more commonly found.

REEs refer to a group of 17 chemically similar elements on the periodic table: the 15 lanthanides, plus scandium and yttrium. As with the broader term CRM, the word "rare" does not reflect geological scarcity, as many of these elements are relatively abundant. However, REEs are even more rarely found in economically viable concentrations and are often recovered only as by-products of other mining activities. In addition, processing capabilities for REEs are currently concentrated in a small number of countries, further heightening supply chain risks.

When it comes to REE Norway is of particular interest, as the Nordic region has been identified as one of Europe's most promising regions for REE. Having both large identified existing deposits and strong prospects for discovering additional deposits.[22]

1.3.5 Value chain & life cycle

The complete value chain of CRMs encompasses all stages from the initial extraction of raw materials to their final use in products and services. It involves multiple interconnected steps as listed below:

1. **Exploration and Mining**
   Identifying and extracting raw materials from natural deposits. This stage involves geological surveys, drilling, and actual mining operations.
2. **Processing and Refining**
   Raw ores are processed and refined to separate the valuable critical minerals and produce intermediate products such as metals, oxides, or alloys.
3. **Manufacturing and Component Production**
   Processed materials are used to manufacture components, parts, and intermediate goods for various industries (e.g., electronics, renewable energy, automotive).
4. **End-Use Application**
   The final use of CRM's in products like batteries, magnets, semiconductors, aerospace parts, and clean energy technologies.
5. **Recycling and Circular Economy**
   Recovering CRMs from end-of-life products to reduce dependency on virgin raw materials and support sustainable supply chains.
6. **Trade and Supply Chain Management**
   The movement of CRMs and intermediate/final products through global markets, including logistics, stockpiling, and strategic reserves.

The life cycle of raw materials includes multiple stages, which can vary depending on the specific material or mineral. If any of these stages takes place in a context considered critical, due to economic importance or supply risk, the entire value chain is often considered as critical.[23]

[22] Europe`s biggest deposit of Rare Earth Elements | NGU (ngu.no)
[23] Raw materials strategy for large transitions | (Rijksoverheid.nl) The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 20

Since Critical Raw Materials (CRMs) comprise 34 distinct materials, there is no single, unified value chain. Instead, each material has its own unique value chain, which, while generally following similar steps, can vary significantly in complexity, associated costs, and processing requirements. Much of the CRM supply chain remains globally distributed, with extraction often taking place in different locations than refining, processing, or manufacturing. For example, in Norway, processing capabilities for nickel, manganese, and aluminum are well established, but extraction largely depends on other countries due to limited domestic resources or economically unfeasible material prices. To achieve strategic autonomy, many are looking towards the possibility of reshoring key segments of the supply chain. However, the feasibility of this depends on several factors, including economic viability and resource availability. Below the life cycle of cobalt presented to provide a clearer understanding of its journey through the value chain.

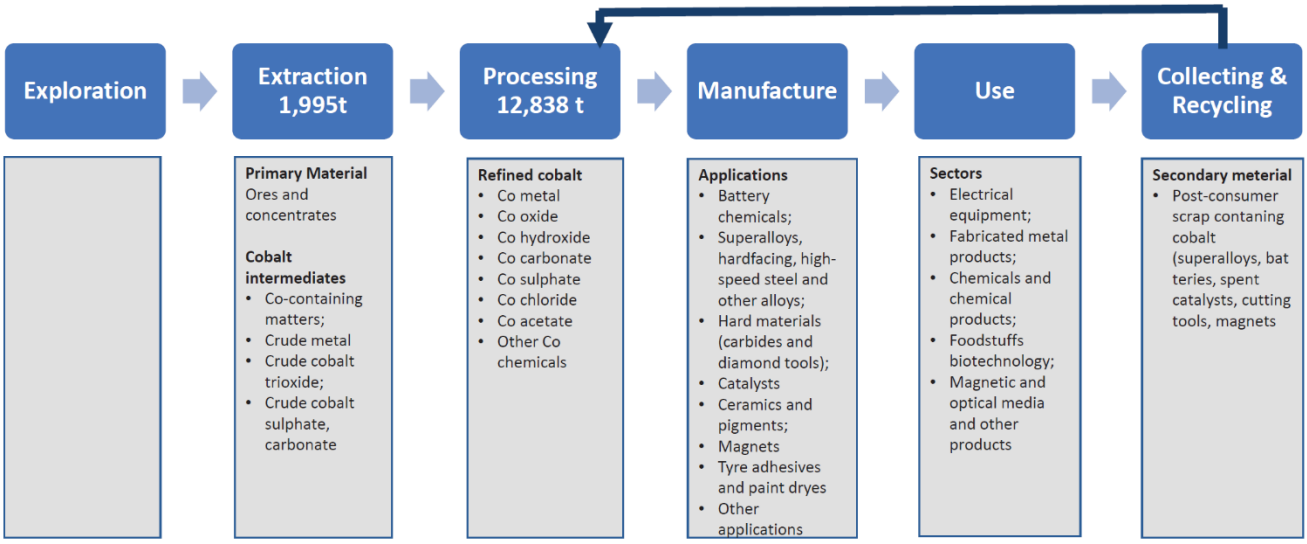

Figure 4. Life cycle of cobalt (Borrowed from Nordic innovation).[24]

1.4 Government, platforms & relevant actors

Norway's mining sector is shaped by a wide network of governmental bodies, industry platforms, research institutions, and other stakeholders. Specific Norwegian companies involved in CRM value chains will be discussed later in the report.

1.4.1 Government actors

At the core of Norwegian mining governance is the Ministry of Trade, Industry and Fisheries, which holds overall responsibility for the development and regulation of Norway's mining sector. The ministry plays a central role in crafting national mining policies, ensuring sustainable resource management, and balancing industrial development with local and environmental concerns. It is responsible for implementing Norway's mining strategy, overseeing subsidies, innovation efforts, and international cooperation, particularly in the context of the green transition.

Operating under this ministry are two key agencies. The Norwegian Directorate of Mining (DMF), including the Commissioner of Mines at Svalbard, serves as the technical authority for mineral

[24] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 20

resource management. It ensures responsible and sustainable access to mineral resources, handles licensing and land-use matters under the Mineral Act and the Planning and Building Act. Additionally, the Directorate monitors that exploration and extraction activities are carried out responsibly, in line with approved plans, while ensuring compliance with safety and environmental requirements.

Also under the ministry's authority is the Geological Survey of Norway (NGU). The NGU main tasks concern geological mapping, mineral resource assessments, and environmental geology. The data the NGU provides inform aid the development of government strategies and support industry and academia alike. NGU also participates in regional cooperation with geological institutions in Sweden and Finland, enhancing Nordic resource mapping and sustainability efforts.

1.4.2 Industry associations

Two principal industry associations represent the Norwegian mineral and industrial sectors. Norsk Bergindustri is the national mining association, representing 185–200 companies engaged in minerals, aggregates, the broader mining sector. It advocates for a safe, economically viable, and climate-neutral mineral industry, emphasizing full resource utilization and zero mineral waste. Norsk Bergindustri plays a central role in representing the mining industry at all levels of government.

Complementing this is Norsk Industri, the Federation of Norwegian Industries which is part of the Confederation of Norwegian Enterprise (NHO). Representing approximately 3,000 companies, Norsk Industri has a broader industrial scope which also includes mining and minerals. Together, Norsk Bergindustri and Norsk Industri form the backbone of industrial representation for CRM's in Norway, supporting industry interests from extraction to processing and providing a voice for the broader industry in political debates.

1.4.3 Research institutions

Research and innovation in the mining sector are done by several institutes, all of which contribute significantly to the development of sustainable and technology-driven mining practices in Norway and the wider Nordic region.

SINTEF (The Foundation for Industrial and Technical Research) is one of Europe's largest independent research organizations. It collaborates with government and industry to develop practical, sustainable solutions for mining, including innovations in automation, digitalization, and low-impact extraction. SINTEF's Materials research division supports the entire mining value chain from raw material sourcing to eco-friendly processing.

NTNU (Norwegian University of Science and Technology), based in Trondheim, is Norway's largest technical university and a hub for mining research through its departments of Geoscience and Materials Science and Engineering. It hosts the Norwegian Mining School and the Centre for Sustainable Materials Technology and operates the NTNU Mining Lab, where research is conducted on mineral processing, environmental impact, and pilot-scale technologies. NTNU serves as a bridge between academic research and industrial applications.

Nordic Innovation, operating under the Nordic Council of Ministers, plays a prominent role in regional research coordination, innovation policy, and sustainability in the mining sector. Its activities include supporting environmentally responsible mining practices, promoting technological development, and publishing influential studies such as *The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition* (2023) and *Recycling of Critical Raw Materials in the Nordics* (2024). Through

close cooperation with national geological surveys and industry stakeholders, Nordic Innovation contributes significantly to knowledge and strategic foresight in the CRM field.

1.4.4 Environmental organization

Environmental organizations in Norway play a vital role in shaping the discourse around mining and mineral resource development, particularly in relation to climate policy, biodiversity, and sustainable land use. These actors function as watchdogs, policy influencers, and public educators, often providing critical perspectives on the environmental and social impacts of mining activities.

Bellona is one of Norway's most well-known environmental NGOs, known for its science-based approach and active engagement in environmental policy and industrial innovation. In the context of mining, Bellona has taken a proactive role in advocating for strict environmental standards, improved recycling of critical minerals, and the development of cleaner technologies. It also engages in constructive dialogue with both policymakers and industry actors to push for climate-neutral solutions in the raw materials sector.

Naturvernforbundet (The Norwegian Society for the Conservation of Nature) is Norway's oldest and largest environmental organization. Naturvernforbundet promotes stronger legal protections for nature and is critical of what it views as insufficient environmental assessments in mining-related projects. The organization is especially active in opposing mining operations in vulnerable natural areas and Indigenous territories. Its youth branch, Natur og Ungdom (Nature and Youth), plays an active role in campaigning against new mining developments, emphasizing the need for a green transition with increased efforts in recycling and circularity.

Framtiden i våre hender (The Future in Our Hands) is a Norwegian environmental organization focused on sustainable consumption and climate justice. It is critical of expanding land-based mining in Norway, advocating instead for reduced resource use and greater emphasis on recycling and circular economy solutions. The organization highlights the environmental costs of raw material extraction and calls for policies that prioritize sustainability over increased production.

In addition to domestic groups, international environmental organizations also have an active presence in Norway. Greenpeace Norway campaigns against environmentally harmful practices such as deep-sea, focusing on the protection of fragile ecosystems and climate goals. Similarly, WWF Norway works on global and national conservation issues, raising awareness about the ecological and biodiversity risks of mining.

Part II: Policy, Legislation, and Strategic Cooperation

2.1 Introduction

Over the past decades, the growing importance of CRM's for the future has become increasingly evident to governments worldwide, especially in the context of the green transition and strategic autonomy. This is reflected in the strengthening of international mineral alliances, the creation of national and supranational strategies, and increased funding for research and strategic projects. Norway launched its Green Industrial Initiative in 2022 which laid the foundation for Norway's raw material strategy. This report explicitly recognized stable, long-term access to raw materials as a prerequisite for industrial development and highlighted the need to improve raw material access for Norwegian industries.

Meanwhile, developments such as the implementation of the EU's Critical Raw Materials Act stand out as some of the most significant milestones in the broader EEA region concerning CRMs. For this reason, the following section will examine the current Norwegian strategy and its implementation, ongoing legislative efforts, and other key developments shaping Norway's strategic partnership with the EU on CRM.

2.2 Norwegian Mineral Strategy

Following the Green Industrial Initiative in 2022, the Norwegian Ministry of Trade, Industry, and Fisheries published the Norwegian Mineral Strategy in 2023, which set a clear and ambitious goal for Norway: "Norway will have the world's most sustainable mineral industry.".[25] This report outlines the strategy that has since become the primary framework to base legislation and initiatives around for managing the country's mineral resources. It serves as a guiding tool for both the industry and international partners, providing insight into what to expect from the Norwegian government as it continues to develops the mineral sector. The report includes 52 proposals, consisting of policies and practices aimed at fostering sustainable growth in the mineral industry. These proposals are organized into five key focus areas.

- **Acceleration of development**: Mineral projects typically involve lengthy planning, permitting, and development phases that are costly and create uncertainty for investors. Completing Norway's national survey, combined with the introduction of "fast-track" and "one-stop shop" initiatives, coordinated by the Directorate of Mining, are measures through which the government hopes to streamline and centralize the permitting process. This approach is designed to accelerate early-stage project development by providing companies with a solid foundation to assess opportunities, make informed investment decisions, and initiate projects more efficiently. Additionally, it will offer the government valuable strategic and economic insights while clarifying regulatory requirements and identifying responsible authorities at each stage.

- **Embedding circularity**: Embedding circular economy principles is a key focus to minimize the environmental impact and maximizing resource efficiency in the mineral sector. This includes optimizing the reuse and recycling of mining waste, reducing reliance on virgin materials, and applying innovative technologies to extend the lifecycle of minerals. The strategy promotes

[25] Norge skal utvikle verdens mest bærekraftige mineralnæring } Nærings- og fiskeridepartementet (regjeringen.no)

circularity across the entire value chain, from extraction to processing, manufacturing, and end-of-life management. It emphasizes long-term planning and collaboration among industry, researchers, and policymakers. Regulatory revisions will encourage waste reduction and resource recovery, alongside support for investments in circular technologies. By integrating circularity, Norway aims to lower its environmental footprint while enhancing the resilience and competitiveness of its mineral industry.

- **Improving sustainability**: The Norwegian government has committed to a zero-tolerance policy for non-environmentally certified chemicals and aims for all new mining machinery to be zero-emission by 2030. Furthermore, Norway aims to promote sustainability within the global mining sector by actively participating in initiatives such as the development of European emission regulations for mineral activities. This part of the strategy also emphasizes fostering positive relationships with local and indigenous populations, ensuring fair compensation, and giving due consideration to local traditions, livelihoods, and community input.

- **Ensure access to capital**: Recognizing that private capital is essential for profitable and sustainable mineral development, the government aims to attract private investors and reduce financial risk. The strategy also considers the possibility of establishing a state-owned mining company or fund, along with other business policy measures, to stimulate extraction and ensure local economic benefits.

- **Strengthen international partnerships**: In this focus area it is Norway's ambition to strengthen its international role in the mineral value chain in partnerships and strategic alliances. This includes deepening the role Norway plays in partnerships as a leading voice, enhancing strategic cooperation, and positioning Norway as a reliable and responsible supplier. These efforts will be pursued at various levels, including within the Nordics, Europe, and globally. Promoting high regulatory standards, both socially and environmentally, similar to those Norway already has for its own mineral sector, is one of the priorities in this regard.

2.2.1 Critical Raw Materials in the Norwegian Mineral Strategy

The mineral strategy addresses the broader mining sector in Norway, with policy recommendations that apply across the entire sector. However, special emphasis throughout the report is placed on CRM's. The government recognizes the growing need highly industrialized countries to decrease dependency on single exporters, a task made more difficult due to the fact that many of these countries have limited or no domestic extraction of raw materials. The report highlights Norway's potential to play a key role in supplying CRMs both domestically and to partner countries in this regard.

Norway's approach to Europe regarding CRM is thus a central element of the strategy. Norway does not see Europe here as a competitor for its resources but rather as a valuable market, a source of capital for project development, and a key partner in strengthening domestic extraction and processing capacity. Given that the Norwegian industry alone is not large enough to offtake the quantities of material required to make domestic mining economically viable, large-scale extraction will depend on securing reliable export partners to ensure the success of Norway's mining sector.[26]

[26] Norway mineral strategy | Ministry of Trade, Industry and Fisheries (regjeringen.no) | 64-65

Europe is a natural partner in this regard, not only because of its geographical proximity but also due to high level of economic integration, shared supply risks, and extensive trade relations. The strategy also highlights the government's intention to assess whether the EU's Critical Raw Materials Act is in their view EEA relevant and aligns with Norwegian objectives, underlining Norway's commitment to aligning with key regulatory developments.

Many of the focus areas outlined in the mineral strategy are directly relevant to the CRM sector, as they target the mining industry as a whole. However, the strategy also includes specific policy measures designed to address the unique challenges associated with the CRM value chain. Notably, the strategy lays out that priority will be given to applications for strategic and critical metal projects, with a preference for those with minimal environmental impact. Additionally, the NGU will be tasked to prioritize mapping of areas identified as having high potential for critical mineral. Both of these points had already been announced and implemented prior to the release of the mineral strategy in December 2022.[27]

Lastly, the strategy discussed the potential establishment of a national fund or state-owned company to advance the Norwegian mining industry, particularly projects involving CRM. Despite the clear benefits such a fund could provide**,** given the financial constraints these projects often face**,** no concrete proposals or progress have been made by the government to develop such an initiative. In March 2025, a coalition of opposition parties submitted a proposal for the establish a state minerals company, but it failed to gain sufficient support. Nevertheless, the government has not ruled out the possibility of such an initiative in the future.[28]

2.2.2 New Mineral Act

The New Mineral Act, or Ny Minerallov, proposed in March 2025 and adopted in June 2025, is one of the most concrete examples of the Norwegian Mineral Strategy being put into practice. The law represents a significant modernization of Norway's mineral legislation, as it is the first major overhaul of the Mineral Act of 2009. The law has been worked on since 2020 and is based on the findings of an expert committee published the New Mineral Act Report.

The act focuses on accelerating the development of Norwegian mineral projects and streamlining permitting processes. A key feature is the introduction of a unified, exclusive exploration permit that covers state-owned minerals, industrial minerals, and light metals. This replaces the previous priority system, simplifying the process and reducing overlapping claims in the same area, while also providing a transitional period for existing rights holders. To further speed up project development, exploration permits have been shortened in duration, setting strict activity requirements for extensions. Additionally, the act establishes a general obligation for coordinated case processing to prevent conflicting requirements and unnecessary delays. This includes a sequencing rule that mandates clarification under the Planning and Building Act before mining licenses can be granted.

The Directorate of Mining has gained additional competences under the new act, extending its current responsibilities to further include the required overseeing and coordinating competences.

[27] Næringsministeren varsler hurtigspor for mineralvirksomhet i Norge | Nærings- og fiskeridepartementet (regjeringen.no)
[28] Stortingsdebatt om statlig mineralselskap | NRK (nrk.no)

Furthermore, new reporting obligations have bene introduced to enhance transparency and improve data management within the sector.

The Act also revised, introduced, and expanded legislation to strengthen Indigenous rights, most notably by extending Sámi-related mining regulations to cover the entire traditional Sámi territory, which constitutes approximately 40% of Norway. Previously, such protections were limited to the Finnmark region.

In June 2025, the government presented its proposal for a new Minerals Act to the Norwegian Parliament after which it was passed with several amendments. These included enhanced protections for landowners, such as a requirement for landowner consent prior to conducting geological surveys. The proposed compensation scheme for Sámi rightsholders was not accepted by Parliament, which instead instructed the government to return with an alternative model for structuring and governing compensation to Indigenous peoples. While the law was ultimately passed, with an added provision stating that a compensation system will be introduced subject to government approval.

2.3 EU & Norway partnership on CRM

2024 marked the 30th anniversary of Norway's signing of the EEA Agreement. While not a member of the EU, Norway remains closely tied to the Union both politically and economically through its participation in the EEA. Through its participation in the internal market, Norway is firmly integrated into the broader network of European supply chains and politically remains closely aligned with the EU on a range of key issues. As a result, it is no surprise that Norway and the EU regard each other as strategic partners in developing the CRM value chain and advancing the broader green transition.

2.3.1 The EU & CRM

EU interest in CRM has grown substantially over the past decades. As economic integration deepened, the region evolved into a more unified market when it comes to shared access to materials and common supply risks. Since not every member state possesses sufficient raw materials domestically, and many individual states are too small to develop independently viable mineral industries due to limited domestic demand, collective action and securing reliable import and export partners has become essential. Consequently, given the strategic and collective nature of CRMs within the economic bloc this issue has become a key priority for the European Commission.

The EU began formally identifying and listing CRMs in 2010, following the launch of the Raw Materials Initiative in 2008. This marked the beginning of a more focused and strategic EU approach to its raw materials policy.[29] Since, the EU has regularly updated its CRM list to reflect the blocks evolving needs. In 2020, the policy effort accelerated with the publication of the Action Plan on Critical Raw Materials, in which the Commission outlined the challenges ahead and proposed ten key steps to strengthen Europe's resilience and strategic autonomy. Among which the establishment of the European Raw Materials Alliance, increased programs for resource exploration and the promotion of responsible mining practices.[30]

[29] The Raw Materials Initiative | Commission of the European Communities (eur.lex.europa.eu)
[30] Commission announces actions on Critical Raw Materials | European Commission (ec.europa.eu)

2.3.2 Critical Raw Material Act

The most significant piece of EU legislation on CRMs was introduced in May 2024, when the European Commission finalized the Critical Raw Materials Act (CRMA). Serving as the EU's primary legislative framework for CRM, the CRMA aims to secure and diversify supply, strengthen strategic autonomy, and enhance the resilience of CRM value chains across the EEA.

The act aims to: [31]

- Strengthen the EU's strategic partnerships with resource-rich countries, support sustainable mining projects, and promote the development of domestic mining and processing capacities.
- Increase the recycling rates of CRMs by developing new recycling technologies, and improving the design of products that use CRMs so they are easier to recycle or reuse.
- Increase investment in research and development to find alternative materials or technologies that can reduce the EU's dependence on CRMs.
- Promote international standards and due diligence practices to ensure that the extraction and processing of critical raw materials respect human rights, labour standards, and environmental protection.

The CRMA sets specific targets for the EU to domestically produce, process, and recycle these materials, including:

- At least 10% of the EU's CRM demand through domestic mining by 2030, estimated at around 1% at time of implementation.
- At least 40% of the EU's CRM demand through domestic processing by 2030, estimated at around 3% at time of implementation.
- A minimum of 25% of the EU's yearly CRM consumption from recycled sources by 2030.
- No more than 65% of the EU's annual consumption from a single third country.

In addition to these goals, the CRMA builds on several earlier EU initiatives related to raw materials. A central feature of the Act is the establishment of the European Critical Raw Materials Board, which is responsible for overseeing its implementation, advising the European Commission on CRM-related matters, and promoting coordination among member states.

The CRMA is also highly relevant from a Norwegian perspective, as the EU commission has classified the Act as EEA-relevant, meaning it is likely to be incorporated into the EEA Agreement following review by all EFTA states, including Norway. Norway expressed its position on the CRMA proposal in July 2023, broadly supporting the Act's objectives and measures. However, the government raised concerns about maintaining strong environmental standards amid the push for faster permitting processes, and advocated for the inclusion of aluminium and graphite as CRM.[32] With regard to climate and environmental impacts, the Norwegian government has assessed the CRMA as having overall positive effects.

[31] Critical Raw Materials Act | European Commission (single-market-economy.ec.europa.eu)
[32] The Norwegian Government's position to the Critical Raw Materials Act (CRMA) and Net Zero Industry Act (NZIA) | Ministry of Trade, Industry and Fisheries (regjeringen.no)

In March 2025 the Norwegian government announced that the government will work to incorporate the Critical Raw Materials Act into the EEA Agreement as the Act was deemed in line with Norwegian interests.[33]

If the CRMA is incorporated into Norwegian law, it will also have significant implications for national authorities. The act requires the establishment of national central contact points to coordinate permitting processes, ensure digital access to relevant application information, gather and harmonize data related to the availability of CRMs, and establish national programs promoting circularity.[34] These obligations may result in increased costs for the government, particularly during the implementation phase, as it will need to take concrete steps to meet the new requirements. However, many of the required measures are closely aligned with the priorities and action points already outlined in Norway's mineral strategy.

2.3.3 EU-Norway Strategic Partnership

In March 2024 the EU and Norway signed a Memorandum of Understanding launching their strategic partnership to develop sustainable land-based raw materials and battery value chains. The MoU build directly on the EU-Norway Green Alliance which was launched in April 2023 to strengthen collaboration in areas critical to the green and digital transition.

In the strategic parentship five key areas of cooperation were outlined:[35]

- Integration of raw materials and batteries value chains, by facilitating joint investment projects through joint ventures, consortia, special purpose vehicles and other forms of cooperation by industrial actors, including linking final users with raw materials suppliers.
- Cooperation on research and innovation (R&I), Enhancing research collaboration, building on Norway's active participation in Horizon Europe
- Application of high environmental, social and governance standards and practices will be facilitated through mutual consultation and exchange of information on relevant policies and initiatives along the entire value chains, including recycling and waste management.
- Mobilisation of financial and investment instruments to support investment projects under the partnership, notably through Invest EU, the European Raw Materials Alliance and the European Battery Alliance.
- Developing necessary skills for high-quality jobs in raw materials and battery sectors. This includes mobilising stakeholders and financial support for the development and deployment of adequate initiatives and the uptake of existing ones like the European Battery Academy.

2.3.4 EU Strategic Projects

In March 2025, the EU announced its selection of 47 strategic projects. The projects on this list span 13 EU member states, and collectively cover 14 of the 17 strategic raw materials identified by the EU.

These strategic projects are eligible for coordinated support from the European Commission, member states, and EU financial institutions, particularly in terms of access to finance and connecting the projects with relevant off-takers, throughout industry, research and defense sectors. Additionally, it is

[33] Regjeringen vil innlemme EUs regelverk for kritiske råvarer i EØS-avtalen | Nærings- og fiskeridepartementet (regjeringen.no)
[34] CRMA | EØS-notatbasen (regjeringen.no)
[35] EU and Norway sign strategic partnership | European Commission (ec.europa.eu)

intended for these projects to benefit from streamlined permitting processes, ensuring that permit-granting does not exceed 27 months for extraction projects and 15 months for other projects across the EU.

In addition to these internal projects, the Commission has also opened the possibility for projects located outside the EU to apply for Strategic Project Status. In June 2025, the European Commission announced a list of selected projects in non-EU countries. Among those two projects based in Norway were selected: Nussir AS, which is developing Norway's largest known copper deposit in Northern Norway, and Norgraph AS, is currently developing a new industrial facility in Southern Norway to produce active anode material (AAM).[36] (See 3.4.3)

While these Norwegian projects enjoy strategic project status they do not yet benefit yet from the intended EU's fast-track permitting schemes. For similar fast-permitting rules to apply Norway would have to adopt the CRMA into Norwegian law.

2.4 Partnerships

2.4.1 European Raw Materials Alliance

The European Raw Materials Alliance (ERMA), launched by the European Commission in 2020 as part of its Action Plan on Critical Raw Materials, aims to reduce Europe's reliance on external sources by promoting domestic supply, recycling, and circular economy principles. It brings together industry, governments, research institutions, and civil society to foster innovation, attract investment, and support sustainable extraction and processing.

Organized into clusters focused on materials like rare earth elements and energy storage, ERMA identifies challenges across the raw materials value chain. It supports mining projects by connecting key actors, helping secure funding, encouraging sustainable technologies, and strengthening local supply chains in line with EU environmental standards.

Currently, Norway is represented by 16 companies within the alliance's network, 8 of which in the raw material sector, 3 associations, and 3 research institutes, alongside with the NGU. Meanwhile the Netherlands is represented by 18 companies, concentrated in the finished products and recycling stage, and one research institute.[37]

2.4.2 EIT Raw Materials

EIT RawMaterials, established in 2015 and supported by the European Institute of Innovation and Technology (EIT), is Europe's largest innovation community dedicated to securing sustainable supply of raw materials. It aims to strengthen the raw materials sector by fostering collaboration among industry, research, and education to accelerate innovation, enhance skills, and develop new technologies throughout the entire raw materials value chain.

EIT RawMaterials focuses on boosting competitiveness and sustainability by supporting startups and larger companies through funding, education programs, and networking opportunities. Its activities cover areas such as mining, mineral processing, recycling, and substitution, with a strong emphasis on circular economy principles and environmental responsibility.

[36] To norske prosjekter får strategisk EU-status | Nærings- og fiskeridepartementet (regjeringen.no)
[37] Network | European Raw Materials Alliance (erma.eu)

The initiative operates through a wide network of partners including companies, universities, and research organizations across Europe, facilitating knowledge exchange and pilot projects to address supply risks and promote resource efficiency. Norway participates actively via several industry stakeholders and research institutes, while the Netherlands engages through multiple consortium members involved in innovation and education projects.

Through coordinated efforts and strategic funding, EIT RawMaterials significantly contributes to reducing Europe's dependence on external raw materials by promoting domestic solutions, advancing sustainable practices, and developing a skilled workforce ready to meet future sector challenges.

2.4.3 Minerals Security Partnership

The Minerals Security Partnership (MSP) is a U.S.-led initiative launched in June 2022 to foster international cooperation among like-minded countries in securing and diversifying global supply chains for critical minerals. As a multilateral government partnership, it aligns policies and strategies to ensure reliable, sustainable access to these minerals, reducing dependence on single suppliers. The MSP promotes responsible mining, processing, and recycling by sharing best practices and emphasizing strong environmental, social, and governance (ESG) standards. [38]

In April 2024, the MSP Forum was established to expand the partnership, facilitate targeted discussions, and advance selected mineral projects. The Forum focuses on key policy areas, including boosting sustainable production and local capacities through public-private investments and local value addition, supporting reliable supply chains that balance producer and consumer interests, and fostering research and pilot projects. It also encourages regulatory cooperation to ensure fair competition, transparency, and a favorable investment climate, alongside promoting high ESG standards and effective recycling while addressing related pricing challenges. [39]

September 2024 saw the launch of the MSP Financial Network, designed to support MSP projects with co-financing from public sources and coordinated public-private funding. The MSP currently includes 15 partners, such as Australia, Canada, Germany, India, Japan, the UK, the US, and the EU, who are all Forum members, alongside 15 new Forum members including Argentina, the Democratic Republic of the Congo, Kazakhstan, Mexico, and others. Norway is currently a member of both initiatives, having joined the MSP in June 2023, while the Netherlands is represented only through the EU. In January 2025, the Norwegian government proposed granting the Fen Complex MSP status, making it the first project in Europe to be considered for such recognition. [40]

2.5 Public finance

The fourth pillar of the Norwegian Mineral Strategy highlights the crucial need for access to capital to support sector development. While the goal is for the industry to operate independently with private investment driving growth, Norway provides subsidies and public financing to stimulate economic expansion and advance the green transition, including targeted support for mining and mineral processing. Below are key initiatives and enterprises that can play a significant role in supporting the early-stage development of Norway's mineral sector listed.

[38] Q&A on the Minerals Security Partnership Forum | European Commission (ec.europa.eu)
[39] Minerals Security Partnership | United States Department of State (state.gov)
[40] Næringsministeren foreslår Fensfelt-prosjekt som MSP-prosjekt | Nærings- og fiskeridepartementet (regjeringen.no)

Eksfin, Export Finance Norway, is a government initiative overseen by the Ministry of Trade, Industry and Fisheries. It provides government loans and guarantees to promote exports and ensure their competitiveness in global markets. Given the potential of the raw mineral sector as a potential export driver, Eksfin is actively engaged in dialogue with companies in the mining sector. However, no large-scale mining projects have received funding as of yet. Since 2024, Eksfin has been part of the Minerals Security Partnership (MSP) Finance Network, alongside Innovation Norway. [41] (See 2.4.3)

Innovation Norway operates as a government-owned enterprise primarily under the Ministry of Trade, Industry and Fisheries. It is comparable to the Netherlands Enterprise Agency (RVO) and serves a similar role in promoting innovation and supporting Norwegian companies in Norway and abroad. As part of its financing initiatives Innovation Norway offers Green Growth Loans which target climate-friendly investments for Norwegian companies which would also be available for mining, processing and especially recycling projects. Innovation Norway takes also part in the MSP Financial Network.

Enova is a fully government-owned enterprise overseen by the Ministry of Climate and Environment. Its funding primarily comes from the Climate and Energy Fund, which is financed through state allocations and energy tariffs. This support extends to the mining and processing sectors, particularly projects aimed at achieving low- or zero-emission operations. For example, Enova has recently funded key initiatives such as SMA Mineral's processing project at Mo Industrial Park.[42]

Siva, or Selskapet for Industrivekst, is a government-owned enterprise overseen by the Ministry of Trade, Industry and Fisheries, dedicated to industrial growth and innovation. By investing in specialized industrial infrastructure and real estate, Siva provides mining companies with the essential facilities needed to operate efficiently and sustainably. A prime example is their support for Finnfjord AS, where Siva helped develop an advanced service and administration building at a smelting plant aiming to become the world's first emission-free ferrosilicon facility.[43]

2.6 Public discourse

Managing public discourse is also a vital part of policy when it comes to development of mineral strategies and legislation. The Norwegian government highlights in the Norwegian Mineral Strategy the need for broad societal acceptance as a guiding principle for the development of the sector. In order to do so transparency, improving communication between companies and communities, and ensuring that environmental concerns are meaningfully addressed are key. The Hague Centre for Strategic studies ranks negative public opinion as one of the most urgent obstacles to success for the CRM sector in the Netherlands and the EU, and thus poses a significant risk.[44]

Public attitudes toward mining in Norway are relatively favorable compared to many other European countries, partly due to Norway's long history with oil and gas extraction, which has brought significant economic and social benefits. Surveys indicate that around 60% of Norwegians remain neutral toward mining, 34% are supportive, and only 6% oppose the sector overall.[45] However, opposition often intensifies at local municipal level, where communities are directly affected by

[41] Eksfin Joins the International Minerals Security Partnership (MSP) Finance Network | Eksfin (eksfin.no)
[42] SMA Mineral receives Enova support for groundbreaking climate project (mip.no)
[43] Nytt administrasjonsbygg ved Finnfjord smelteverk på Finnsnes | Siva (siva.no)
[44] Advancing European Mineral Security: Insights from the Dutch industry | The Hague Centre for Strategic Studies (hcss.nl)
[45] Geelmuyden, M. 'Kan bedre kommunikasjon dempe konfliktlinjene?' Ny minerallov, (07-05-2025)

individual projects. Concerns about environmental impacts, land use, and can lead to heightened local resistance and have to be balanced against economic opportunities.

To address localized concerns, Norwegian law grants considerable influence to municipal authorities, giving local governments a decisive role in approving or rejecting mineral projects. Municipalities hold the final say on local permits and land use decisions, including control over zoning plans essential for mining operations. This legal framework requires companies to secure local consent before proceeding, ensuring that community voices are heard and respected. Companies must take into account sustainability criteria, environmental protection measures, and local socioeconomic factors, including social and indigenous concerns. This approach ensures that positive local discourse is a prerequisite for projects to start development and continue development. However, even when official acceptance from the municipality is granted local opposition might still take place in the form of activities and heightened public scrutiny when regulations and commitments are not fully being upheld.

For instance, in the case of the Nussir copper mine project in Finnmark, the Sámi Parliament and local municipalities played pivotal roles in scrutinizing the project due to concerns about reindeer grazing lands and potential contamination of the Repparfjord fjord. Despite the Norwegian government's eventual approval, persistent local opposition led to protests and delays. Companies had to demonstrate strong commitments to environmental protection and Indigenous rights to maintain their social license to operate.

Similarly, the Engebø rutile mine project near Førde Fjord has been controversial due to plans to dispose of mining tailings into the fjord, which serves as an important spawning ground for cod and salmon. Although the local municipality expressed support for the project citing economic benefits, environmental groups and local fishermen mounted significant opposition. This tension exemplifies how even municipal approval does not eliminate public scrutiny and potential delays.

Negative public discourse can have tangible financial consequences as well. A notable example occurred in 2020 at Nussir, when the German mining company Aurubis withdrew from a 10 billion NOK deal to invest in the project. The withdrawal was largely attributed to ongoing public concerns and the uncertainty created by protests and legal challenges. This case highlights how unresolved local opposition and reputational risks can lead investors to reconsider or abandon commitments.[46]

Overall, the Norwegian model reflects an understanding that positive local discourse is not just desirable but essential for mining projects to proceed smoothly. Sustainability criteria, environmental safeguards, and respect for Indigenous and community concerns are now embedded prerequisites in the permitting process. Yet, even with official municipal consent, companies must continuously engage with communities and uphold regulatory commitments to avoid renewed opposition and delays.

[46] EU-Norway Green Alliance between vision and reality | NUPI (nupi.no) | 31.

Part III: Norwegian supply potential & value chain

3.1 Introduction

Norway has a long-standing history in mining, with traditional metal and aggregate extraction dominating the country's natural resource industries until the 1980s. While this has largely been overshadowed by the oil and gas industry, Norway's mining industry remains one of the most extensive in Europe, having shifted its focus toward processing ores into highly specialized products. As part of the EEA and a key raw material supplier, Norway occupies a strategic position in Europe's CRM landscape. Interest in the country's resource potential is growing, with the EU, the Norwegian government, and businesses increasingly viewing Norway as a potential supplier.

3.2 Geology

3.2.1 Geological history of Norway

Norway's unique geology, shaped by its geological history, provides a strong foundation for its supply potential. Much of the country's bedrock is composed of crystalline rocks, such as granite and gneiss, which are rich in a variety of minerals. This geological base is part of the larger Baltic Shield, a mineral-rich formation that extends across Scandinavia, the Baltics, and Northern Russia.

Glacial erosion during the last Ice Age played a key role in revealing these mineral deposits. By moving and removing large quantities of surface material, it brought many valuable resources closer to the surface, enhancing their accessibility. In addition, prehistoric volcanic activity, particularly concentrated in the southern parts of Norway, has enriched these regions with many rare earth minerals. As a result, Norway does not only currently hold several large reserves of CRM and rare earth elements but also holds potential for continued further discovery of other CRMs, including cobalt, phosphate and natural graphite.

3.2.2 Geological survey of Norway

Norway is actively advancing its geological survey efforts to enhance the mapping of CRMs, as outlined in the 2023 national mineral strategy. The NGU has been the main body through which the data on Norwegian geology is mapped out, recorded and made available to the public. The NGU has in recent years targeted funding to accelerate the mapping of mineral resources, particularly focusing on critical and strategic metals. The NGU provides valuable intel through fact sheets on selected mineral resources and an extensive collection of geological maps ranging from maps on minerals availability, bedrock mapping, superficial deposits, gravel and aggregates, etcetera.[47]

Though full national coverage remains a work in progress, the Norwegian government has prioritized the mapping of areas which have potential for CRMs and areas based on societal benefit. As of 2024 60.7% of Norway's mainland has been mapped at a scale of 1:50.000 while detailed surficial deposit maps have been made of about 23% of the mainland.[48]

Additionally to the mapping of the Norwegian mainland the NGU together with the Norwegian Petroleum Directorate (NPD) has been involved with the mapping of the Norwegian continental shelf.

[47] Geologiske kart | NGU (nugo.no)
[48] Smelror, S, 'Practically useful, scientifically important, and to the honour of the country': geological maps and services provided by the Geological Survey of Norway these past 165 years, Geological Society of London, 2023 | GeoSicenceWorld (pubs.geoscienceworld.org)

In 2024 the Norwegian government proposed to allocate 150 million NOK in 2025 for the further mapping of potential seabed minerals, resource and environmental mapping.[49] These efforts are however processing at a slower pace considering the size of the Norwegian EEZ and the environmental concerns associated with deep sea mining. (See 3.5)

3.2.3 Mineral compass

The Norwegian Mineral Compass, announced in 2023 as part of the Norwegian Mineral Strategy, is a tool developed by the DMF to support the sustainable development of mineral projects. The tool's primary purpose is to guide exploration and project planning, increasing efficiency and planning.

The mineral compass compiles and visualizes data from the DMF, NGU and other public sources to support the development of mineral projects. While its primary function is to illustrate the suspected availability of minerals, the tool also offers data-driven insights into terrain, land use, infrastructure, energy access, and environmental conditions. It highlights potential overlapping interests, such as protected areas, cultural heritage sites, and reindeer herding regions.

The Mineral Compass is part of Norway's broader efforts to establish a sustainable and competitive mineral industry. It provides the collected data to industry stakeholders, local governments, and strategic partners. The tool was publicly released in December 2024 and, as of 2025, has only been made available in Norwegian.[50]

3.3 Norwegian supply potential

Assessing Norway's total supply potential relative to the current and future needs of the EU/EEA is a complex task influenced by multiple factors. Many deposits remain undiscovered or insufficiently identified, and even when the presence of certain CRMs is confirmed, financial viability can limit a deposit's supply potential. Quantities may be too small or dispersed to justify extraction, or only recoverable as by-products of other mining activities. Additionally, extraction costs, environmental considerations, and market demand play key roles in determining whether a deposit is viable and contributes to supply potential.

3.3.1 Resource vs reserve

For the reasons listed above it is important to note the difference between a resource and a reserve. A deposit is made up of resources, which may be fully discovered or only partially known. The detected part of a deposit can be identified or inferred through trial extractions and further calculations. If the resource is identified and has both; economic potential and is available for operation, it becomes a 'mineral reserve'.[51] Due to the role of economic feasibility, the status of reserves can depend on fluctuations in the global mineral market or available long-term government subsidies. This in turn makes it more difficult to assess total presence of reserve, and make it more difficult to launch projects around reserves at risk of these fluctuations. Not every resource deposit can thus be regarded as a reserve with the potential for extraction. Lowering the total amount of potential extraction despite the minerals being present.

[49] The government proposes to increase the allocation for resource and environmental mapping of seabed minerals | Ministry of Energy (regjeringen.no)
[50] DMF lanserer Mineralkompasset | DMF (dirmin.no)
[51] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 22

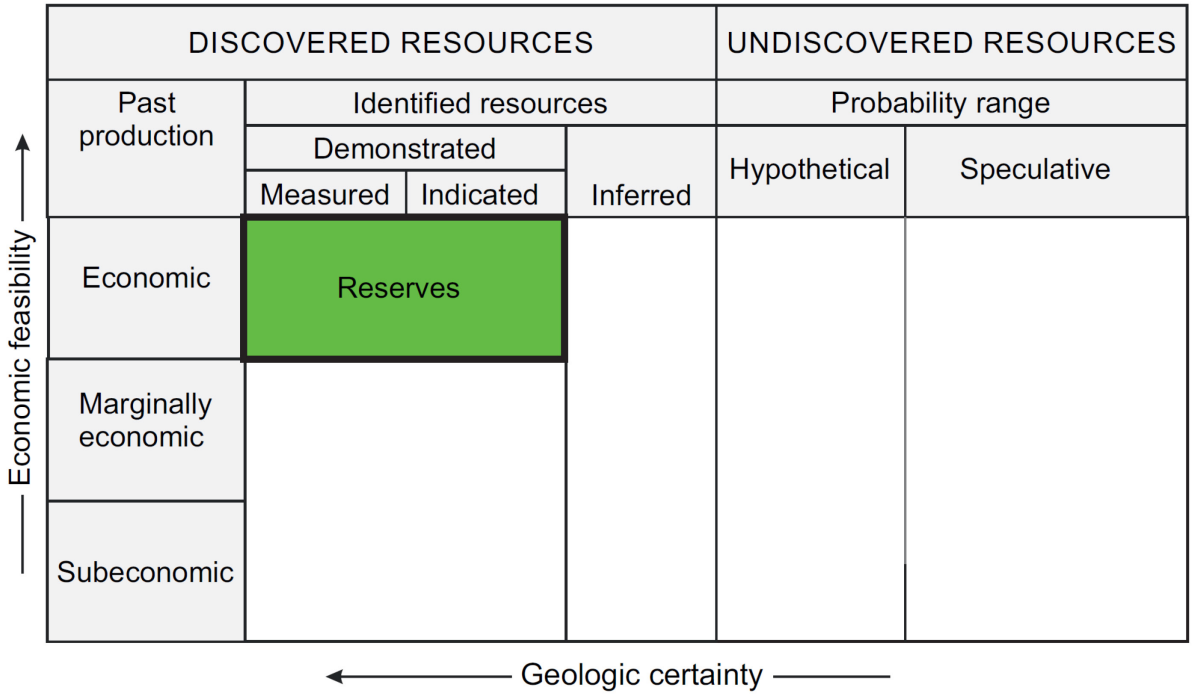

Figure 5: Classification of mineral resources and reserved (Borrowed from Nordic Innovation).[52]

3.3.2 Metal companionality

Most metals are by-products of the extraction process as metals rarely occur as pure standalone deposits. This is particularly true for CRMs, due to their more dispersed and less concentrated nature. Many metals tend to be attached or commonly found together with a specific set of minerals, a phenomenon known as metal companionality.[53]

Companionality can be either beneficial or a negative, depending on the specific circumstances. In cases where the primary metal being extracted already has established potential economic value, by-products can provide an additional source of revenue. The presence of certain minerals may also act as early indicators of more valuable metals in the same area, making exploration efforts more efficient. In addition, if there is an increased demand for a by-product around a deposit with existing extraction infrastructure, scaling up production can be easier when the infrastructure for the primary metal has already been established saving significantly on both time and funds.

[52] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 22
[53] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 20-21

However, if demand increases solely for the by-product without a corresponding increase in demand for the primary companion metal, increased production could potentially negatively impact the market price of primary material being extracted. In some cases, the additional earnings from the by-product may not be enough to offset the losses in revenue from lower prices for the primary extracted material, making increased production economically unviable. As a result, these market dynamics can potentially halt planned upscaling of the by-product metal altogether.

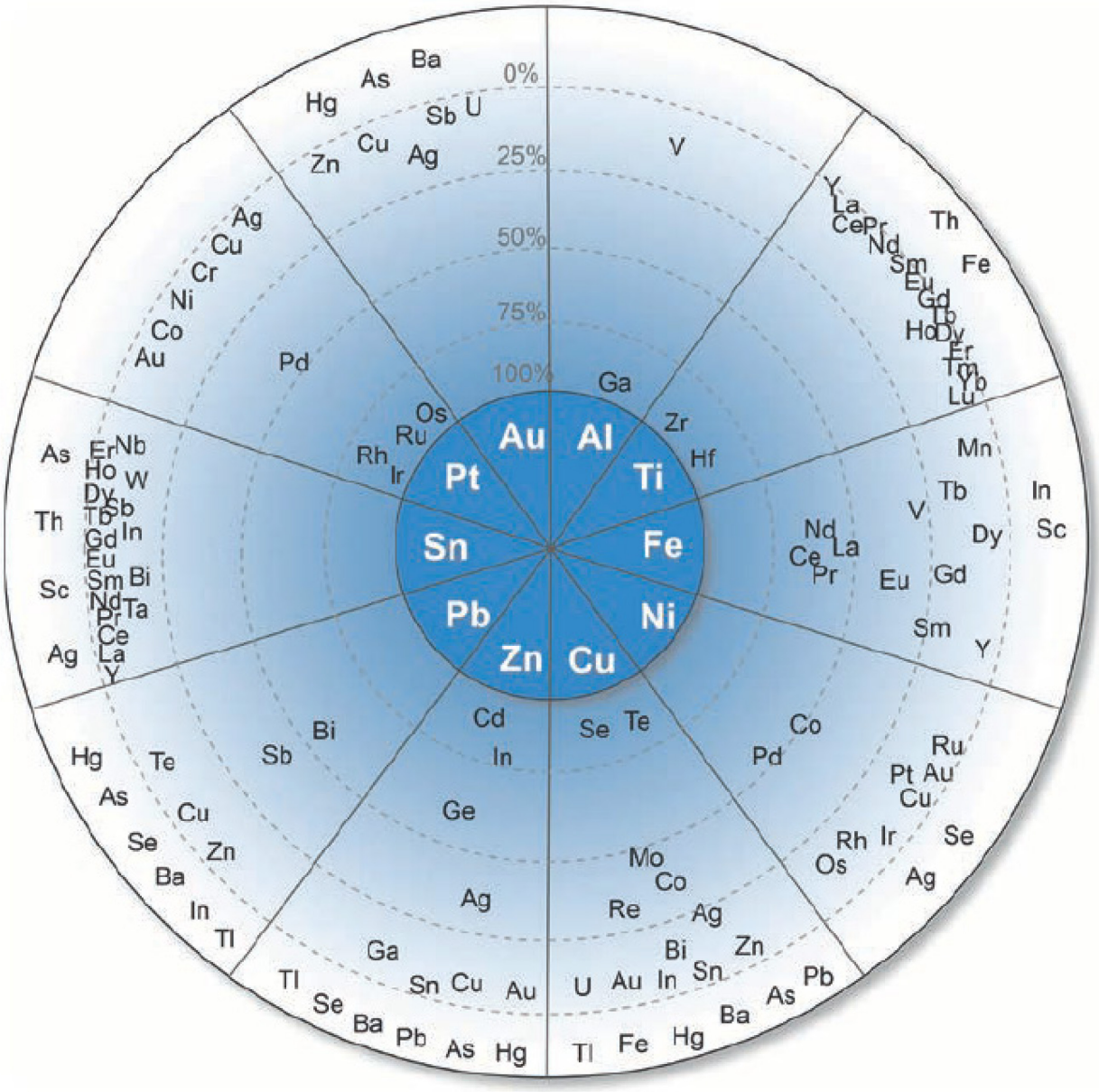

Figure 6: The wheel of metal companionality (Borrowed from Nordic Innovation).[54]

[54] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 20-21

3.3.3 Current supply

A good starting point to understand the supply potential Norway has is to look at what the country is currently supplying to the EU/EEA. Norway already plays an important role in regards to the supply of several CRMs to the EU/EEA. Most important of these being silicon metal, manganese, and nickel.

Material	Extraction Share Global	EU Usage %	Processing Share Global	EU Usage %
Aluminium			2.1%	8.4%
Antimony	<0.1%	1.0%		
Baryte		1.0%		
Cobalt	3.3%	4%		
Copper	0.1%	1.0%		
Feldspar	0.3%	6%		
Manganese	3.4%	21%		
Natural Graphite				8%
Nickel	<0.1%	3%	3.5%	10%
Silicon metal	6.3%	33%		
Titanium metal	3%			1.0%

Figure 7: Norway's current supply of selected CRM to globally & to the EU.[55]

While these figures may appear modest, they represent substantial contributions when originating from a single country. For example, Norway supplies 8% of the EU/EEA's natural graphite, which accounts for 56% of the EU's total graphite imports.

Of selected REE's Norway also provides a considerable amount of the total usage of the EU, especially Scandium compounds, and compounds of gadolinium terbium and dysprosium at 21%, but both represent less than 1% of the overall tonnage of REE imported to the EU. [56]

3.3.4 Supply potential

The next step in assessing Norway's supply potential is to examine what resources have been identified so far and how much is currently processed, however, as previously noted, the presence of these resources does not automatically means these have the status as reserves. The most comprehensive assessment of Norwegian supply potential was conducted by Nordic Innovation in their 2023 report: 'The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition'. This report was developed in collaboration with the geological survey institutions of the Nordic countries, including the DMF and the NGU. It evaluates the overall supply potential across the Nordic region, with country-specific details, including for Norway.[57] An updated version of the report is expected before the end of 2025 and will be made available by Nordic innovation.

The table below presents Nordic Innovation's assessment of CRMs that are either present in, currently processed in, or have potential for exploitation, in Norway:

[55] CRMS 2023 – Scrreen (screen.eu) & Study on the critical raw materials for the EU 2023 | Publications Office of the EU (op.europa.eu)
[56] International trade in critical raw materials | Eurostat (ec.europa.eu)
[57] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org)

Mineral/Metal	Estimated Resources	Current Processing	Additional Details
Barite	-	-	Occurs in Pb-Zn and Ag vein deposits, notably in Bamble, Kongsberg, and iron-rich areas of the Fen carbonatite.
Beryllium	630 t	-	Found in the Høgtuva area, where multiple small deposits are located within an 8 km radius.
Bismuth	-	-	Present in several sediment-hosted Zn-Cu deposits (e.g., Røros area).
Cobalt	11,687 t	4,300 t refined	Resource estimate is the minimum expected.
Fluorspar	-	-	Approximately 30 known deposits across the country.
Gallium	-	-	Elkem operated a plant in the 1980s with a production target of 5 t Ga/year.
Graphite	17.985 million t	16,000 t/year	Over 70 recorded graphite occurrences spread across four main graphite provinces; largest resource in Scandinavia.
Hafnium	-	-	Low potential among all zirconium-rich mineral occurrences.
Niobium	22,000 t	-	Moderate to significant additional resource potential; current figure reflects known reserves.
Phosphate Rock and Phosphorus	14 million t	-	Additional unquantified potential exists, but not yet assessed.
Platinum	0.954 t	-	Resource is considered minor; additional potential is limited.
Rare Earth Elements	611,300 t	-	Known resources with potential for further discoveries.
Nickel	108.000t	92,132 t/year	Processing exclusively with imported raw materials.

Mineral/Metal	Estimated Resources	Current Processing	Additional Details
Scandium	50,000 t	-	Possible resource potential within Nb, REE, and phosphate-bearing deposits.
Silicon Metal	28 million t	240,000 t	Very large potential, as Norway produces 6.3% of global silicon metal.
Titanium	99.4 million t	189,000 t/year extracted. 36,000 t/year refined	Large potential, as Norway holds 4.9% of the global production.
Tungsten	2,625 t	-	Existing known resources suggest further potential.
Vanadium	318,360 t	-	Large potential, but lacks current production capacity.
Copper	1.882 million t	21,962 t/year smelted	Current mining remains minimal. Strong further potential in areas with closed mines and known deposits.
Manganese	-	270,000 t ferro-manganese; 230,000 t silico-manganese	No domestic extraction, despite extensive refining operations.

In its 2022 report, the NGU assessed the economic potential of various minerals, providing valuable insights into which resources may offer the most promising opportunities for both the Norwegian state and private investors. However, these figures do not account for the dispersed nature of many deposits, potential extraction challenges, or continued fluctuations in the Norwegian krone and global mineral. While a useful indicator these numbers should be interpreted with these limitations in mind.

Mineral	Value (NOK Billion)	Value (EUR Billion)
Beryllium	4.68	0.41
Cobalt	6.76	0.59
Copper	175.87	15.29
Ilmenite (Titanium ore)	961.08	83.57
Nickel	22.63	1.97
Niobium	13.18	1.15
Phosphate (P_2O_5)	62.49	5.43
Platinum	1.13	0.10
Rare Earth Elements (excl. Sc)	1132.46	98.47
Rutile (Titanium ore)	231.02	20.09
Scandium	0.07	0.01
Vanadium	229.35	19.94

Figure 8: NGU assessed economic potential of selected CRM[58]

[58] Mineral- og metallressurser i Norge | NGU (ngu.no) | 21

Considering both data sets, certain materials appear particularly promising for further development. graphite, niobium, phosphate, rare earth elements, silicon, titanium, vanadium, copper, and manganese all demonstrate significant potential, either due to Norway's strong supply resources or the presence of established industries with opportunities for upscaling.

3.3.5 Processing capabilities

Norway has developed a substantial processing industry over the past century, specializing largely in materials and semi-finished products such as aluminum ingots, silicon, and ferro-alloys. It stands as Europe's largest producer of aluminum, silicon, ferro-alloys, and certain refined metals like zinc. Additionally, Norway ranks as the second-largest European producer of refined nickel, after Russia, and the second-largest cobalt refiner following Finland. (See 3.3.4)

Norwegian processing activities span a wide range of materials, including aluminum, cobalt, copper, nickel, silicon, silicon carbide, synthetic graphite, manganese, platinum group metals (such as palladium, platinum, and rhodium), and titanium. However, complete value chains are not fully established in Norway, as manufacturing capabilities remain limited for many of these materials. Additionally, the extraction phase is underdeveloped or absent for key Norwegian sectors, such as nickel and aluminum. The table below provides an overview of the primary processing activities currently taking place in Norway for several materials: [59]

Material	Mineral Extraction	Mineral Processing	Smelting	Refining & Forming	Manufacturing	Leading firms
Aluminium			X	X	X	Norsk Hydro (Mutiple)
Sillicon & Ferrosillicon	X	X	X	X		Elkem, Finnfjord (Processing)
Titanium oxide	X	X	X	X		Titania AS (Mining), Kronos WW (Processing), Ineos (Smelting)
Ferro Silico-manganese			X			Eramet (Smelting)
Nickel				X		Nikkelverk (Refining)
Copper			X	X		Nikkelverk (Refining)
Cobalt				X		Nikkelverk (Refining)
Synthetic Graphite	X	X	X	X		Vianode (Multiple)
Silicon Carbide	X	X	X	X		Fiven (Mutiple)

Figure 9: Summary of Mineral and Metal Processing Capabilities in Norway.

[59] US_Norway_Critical Mineral MoC | Regjeringen (pdf) | 5

3.4 Notable projects

Norway is home to several promising projects, some of which have garnered significant attention from various stakeholders. Norway's strategic geographic position, combined with the substantial size and quality of deposits, gives these projects strong potential for further development. Moreover, many of these developments are embracing and experimenting cutting-edge technologies and innovative methods to ensure that extraction processes are as sustainable as possible, aligning with Norway's commitment to responsible mining practices.

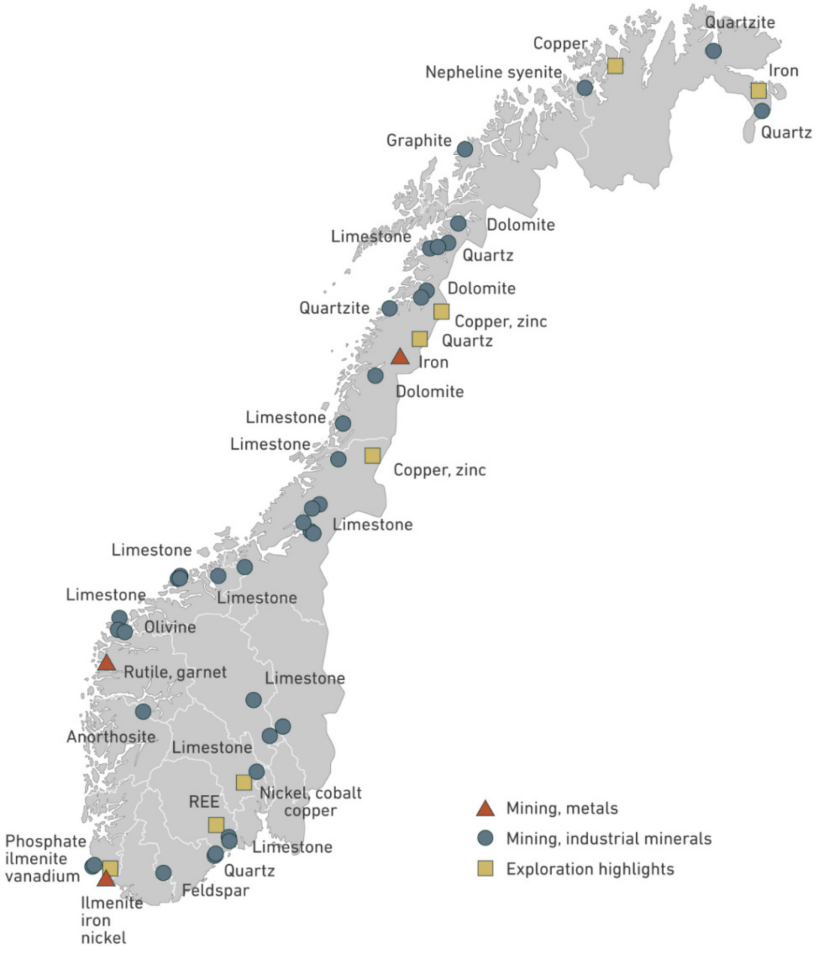

Figure 10: Current Mining sites & Exploration areas (Borrowed from the NGU)[60]

3.4.1 Fen Complex

The Fen Complex, also known as the Fen Deposit or Fensfeltet, located in Nome municipality in Telemark, is one of Europe's most promising deposits of CRM, especially REE. In 2024, it was estimated to be the largest rare earth elements deposit on the European continent and has so far met the necessary criteria for eventual economic extraction. The field holds particularly strong potential for neodymium and praseodymium, which are critical components in industrial-grade magnets.

The deposit spans roughly 1.5 kilometers in diameter, containing an estimated 1.3 to 3.4 billion tonnes of rock. The rare earth element grades vary between 0.4% and 5%, with approximately 2-3% of the deposit tonnage expected to be able to be processed.

[60] Minerals and metals | NGU (ngu.no)

The site benefits from a strategic location in Norway, enjoying both access to renewable hydropower and being positioned just 35 kilometers from Herøya, Telemark's largest industrial park with a deep-sea harbor. This strategic location would enable a sustainable and efficient value chain for rare earth elements, minimizing environmental impact while ensuring easier and more cost-effective access to key markets.

Currently, the company Rare Earths Norway (REN) is developing approximately 90% of the Fen Complex and plans to launch their industrial pilot operation by 2026. The company expects to start up full operations between 2030-2035, with the expected extraction at that time being able to fulfill 10% of European demand of NdPr, with possibility to scale towards 30% in the following decades.[61]

The Fen Deposit has attracted significant interest from both the government and international partners. So is it first mining project in Norway to be nominated for Minerals Security Partnership project status, as was announced by the Ministry of Trade and Industry in January 2025. [62] The support of the government for the Fen project is further demonstrated by continued funding support from the Norwegian Ministry of Trade and Industry, which granted 5 million NOK in March 2025 to support ongoing municipal efforts. While not yet eligible to become an EU strategic project this is something the company has expressed interest in for in the future.

Furthermore, the Fen project is notable for its innovation and sustainable aim. The project is among the first mines of this scale to utilize the invisible mine concept, emphasizing automated and electrified underground mining to reduce environmental and health impacts directly above the deposit. Techniques such as tailings backfilling optimize resource utilization, while underground crushing limits surface pollution. The processing facilities will be connected via tunnels, enabling an integrated, low-impact mining operation if successfully implemented. This approach has increased the feasibility of this project considerably as the deposit is located under a populated area for which local support is a prerequisite considering the large influence municipalities hold in project development.[63]

3.4.2 Eigersund Project

The Eigersund mining project in Sør-Rogaland, southwest Norway, is a mineral project currently under development which could serve as a significant source of CRM for Europe. Located in the Storeknuten area of Eigersund municipality, the project encompasses a 26 km² exploration zone within a broader 520 km² license area. The project focuses on the efficient extraction and processing of phosphate resources, titanium and vanadium making it one of the only projects in Europe developing the extraction and processing of vanadium.

A 2024 pre-feasibility study validated the viability of the project's first of three zones, representing just 5% of the total exploration area. This initial zone carries an estimated net present value of approximately €1.85 billion, with expectations for further growth as ongoing optimizations are identified.[64] The project suspects to supply critical minerals over an initial 23-year extraction period,

[61] Mineral rights | REE (rareearthsnorway.com)
[62] Næringsministeren foreslår Fensfelt-prosjekt som MSP-prosjekt | Nærings- og fiskeridepartementet (regjeringen.no)
[63] Norway's invisible rare earth mine | DW (dw.com)
[64] Norge Mining confirms viability of critical minerals project with pre-feasibility study | MINING.COM (mining.com)

targeting an annual production rate of around 20 million tonnes. The project is currently being developed by Norge Mineraler AS, a Norwegian subsidiary of the UK-based company Norge Mining. The Norge Mineraler AS anticipates operations to begin in 2029 at the earliest.[65]

3.4.3 Nussir Copper Project

The Nussir Project is a proposed copper mining operation located near Kvalsund in Repparjord, Finnmark. This deposit constitutes Norway's largest known coper sources and aims to revitalize the historic mining site that ceased operation in 1979. The project is currently being exploded by Nussir AS, owned by the Canadian company Blue Moon Metals, which gained its operating license in 2019. The company has since gained an approved zoning plan and discharge permits. The project is both promising due to its size and the previously existing infrastructure already present at the site due to earlier operations.[66]

In 2023 the feasibility study estimated that the deposits measured 1.7 million tonnes at 1.16% copper, with indicated and inferred resources going all the way up to 31.8-33.4 million tonnes at 1.09% to 1.16% copper. Currently it is expected is that the first phase preparatory stage will be concluded in 2026.

As of June 2025 the Nussir project has been selected by the EU as an strategic projects as part of the Critical Raw Materials Act.[67] Due to which the project will have access to several EU instruments, such as guidance related to financing and networking. However, due to the CRMA not having been incorporated yet into the EEA agreement and Norwegian law the project can't make use of the CRMA's fast tracking mechanisms for strategic projects.

As one of the most viable CRM projects in Norway the project is not without controversy. While the municipality and Nussir have mostly aligned internal controversy and activism against the project from Sami and environmental organizations are ongoing. The project located in a Sami area threatens Sami reindeer herding in the Kvalsund grazing area, in addition causes the project environmental concerns with the current plans to dump mining waste into the Repparfjord, drawing opposition from environmental and fishing groups.[68]

3.4.4 Engebø Project

The Engebø Project is a rutile and garnet mining operation located in the municipality of Sunnfjord, Vestland. It is being developed by Nordic Mining ASA and is considered one of the largest undeveloped rutile deposits in the world. Rutile, a key source of titanium, and garnet, make the project strategically significant both for industrial supply chains and the green transition. The mining site, located at Engebøfjellet, has been the subject of geological interest since the 1990s and holds potential for long-term extraction.[69]

In 2018, the Norwegian Directorate of Mining granted Nordic Mining an operating license. The company also received discharge and zoning permits, allowing for both land-based and sea-based waste disposal. The project has a planned operational lifetime of 39 years, with production capacity

[65] Enorme ressurser i Eigersund | Norsk Bergindustri (norskberginidustri.no)
[66] Nussir, Norway | Blue Moon Metals (bluemoonmetals.com)
[67] To norske prosjekter får strategisk EU-status | Nærings- og fiskeridepartementet (regjeringen.no)
[68] EU-Norway Green Alliance between vision and reality | NUPI (nupi.no) | 29-30
[69] EU-Norway Green Alliance between vision and reality | NUPI (nupi.no) | 30-31

estimated at 800,000 tonnes of garnet and 250,000 tonnes of rutile concentrate annually. As of 2024, the company has secured major equipment contracts and begun early construction and infrastructure work.

Despite its economic potential and local political support, the Engebø Project remains contentious. Environmental organizations, marine scientists, and local fishing interests strongly oppose the plan to dispose of mining tailings in the Førdefjord, a protected fjord ecosystem. Critics argue this may have lasting consequences for marine biodiversity and fisheries. While Nordic Mining emphasizes its compliance with environmental regulations and mitigation efforts, the project continues to face legal challenges, public protests, and calls for alternative waste solutions.

3.5 Deep-sea mining potential

Deep-sea mining presents a significant potential source of CRM for Norway. With its extensive coastline and large exclusive economic zone that extends its continental shelf, Norway is a prime candidate for deep-sea mining activities. Its continental shelf is known to contain valuable mineral deposits, including seven of the twelve CRMs identified by NATO.[70] Norway is also well positioned to lead in this emerging sector due to its strong maritime expertise, advanced offshore technology and existing maritime infrastructure. In recent decades, the Norwegian government has shown increasing interest in exploring the resource potential of its continental shelf, intensifying survey efforts to better understand what lies beneath its seabed. According to estimates from the Norwegian Offshore Directorate, the presence of CRMs on the Norwegian shelf includes the following:

Metals	Estimated Volume (tonnes)
Manganese	185,000,000
Copper	38,100,000
Magnesium	24,100,000
Titanium	8,400,000
Cobalt	4,058,100
Rare Earth Elements	3,282,600
Vanadium	1,918,900
Lithium	229,300
Tungsten	80,300
Niobium	73,000
Scandium	55,800
Gallium	19,200
Hafnium	14,700

Figure 11: Presence of critical raw materials on the Norwegian Shelf.[71]

The substantial presence of manganese is particularly significant, as Norway has established itself as a major processor of the material, yet lacks land-based extraction. This presents a clear opportunity to develop more of the complete value chain domestically.

Given the clear potential of deep-sea mining as an alternative to land-based extraction, the first exploration licenses were initially scheduled for issuance in 2025, following preliminary approval in

[70] Norge har syv av de 12 mineralene forsvarsindustrien trenger | DN (dn.no)
[71] Seabed minerals: Substantial resources on the Norwegian shelf | The Norwegian Offshore Directorate (sodir.no)

January 2024. However, growing opposition within the Norwegian parliament has since stalled the government's efforts to advance this sector. Despite rising domestic and international criticism, preparatory work has continued, including the development of regulatory frameworks and environmental impact assessments. Future shifts in parliamentary support could reignite Norway's interest in deep-sea mining..

3.6 Recycling & circularity

Recycling represents the final stage of the CRM, value chain and holds significant potential to enhance resource efficiency and reduce reliance on foreign suppliers. This emphasis is reflected in the Critical Raw Materials Act, which sets a target to achieve a recycling capacity equal to 25% of the EU's annual CRM consumption.

According to the Nordic Innovation report on the recycling of CRMs in the Nordic countries, Norway currently lags behind its neighbors in developing efficient recycling chains. Despite its abundant natural resources and strong industrial base, Norway's recycling infrastructure for materials such as rare earth elements, lithium, cobalt, and nickel remains underdeveloped. This gap is partly due to limited collection and sorting systems for CRM-containing waste streams, like electronic waste and spent batteries, and a historical focus on primary extraction and export rather than fostering a circular economy. Additionally, Norway's relatively small population and industrial scale constrain the economic viability of large-scale recycling projects without reliance on imported waste streams.

With the rapid expansion of the electric vehicle market in Norway, there is significant potential to establish large-scale battery recycling systems capable of recovering valuable materials such as lithium, cobalt, and nickel. So is Hydrovolt currently working on further developing its EV battery recycling plant in Fredrikstad. (See 3.7.3) Beyond traditional waste management, Norway's advanced industrial base presents strong opportunities to promote circularity through industrial symbiosis, where waste or by-products from one sector can be used as inputs in another, enhancing overall material efficiency.

3.7 Notable companies

Norway hosts a diverse range of companies spanning the entire value chain for several critical materials. For clarity, the following overview categorizes these companies into extraction, processing, and recycling sectors. This selection is not-exhaustive but offers insight into the various activities within this broad field. Included are both fully operational companies and those in the early stages of development within their respective segments of the Norwegian value chain. Additionally, some companies involved in multiple stages have been classified according to their primary area of operation.

3.7.1 Extraction Companies

Kuniko

Kuniko based in Oslo, is aiming to advance Norway's battery-metal prospects by exploring nickel, cobalt, copper, and lithium deposits. Main project areas are in Ertelien, Ringerike, and Skuterud. The company emphasizes responsible, low-impact mining, using ESG metrics in site selection and stakeholder engagement. While not yet producing, Kuniko is preparing feasibility studies to supply materials for EVs and energy storage.

Metamorphic

Metamorphic AS is an early-stage exploration firm focused on strategic minerals such as rare earths, titanium, and specialty metals, primarily in of Southern Norway in Bordvedåga, Nore and Nissedal. The company primarily looks historic mining regions in order to re-assessing their potential with modern geological models and tools.

Norge Mineraler AS

Norge Mineraler AS, owned by Norge Mining, is a Norwegian mining company focused on developing a broad variety of CRMs, with its main project being the Eigersund Project in Rogaland. The company aims to establish Europe's only integrated vanadium supply chain and is also advancing projects in phosphate and titanium metal. Norge Mineraler has signed several Letters of Intent with local industrial partners around Nordasundet and Svåheia, highlighting its commitment to regional collaboration. (See 3.4.2)

Nordic Mining

Nordic Mining is aiming to develop sustainable sources of key industrial minerals such as titanium ore. Its flagship project, the Engebø rutile and garnet mine, is currently operational and powered entirely by renewable hydroelectric energy. The company is further looking to expand its role across the titanium value chain through its subsidiary Nordic Titanium. It also advances projects in high-purity quartz at Kvinnherad and explores additional resources including base metals and subsea minerals.

Nussir

Nussir, owned by Blue Moon Metals, is developing Norway's first all-electric copper mine in Hammerfest, Northern Norway. While not yet operational, the project has received key permits and is preparing for construction and production start. The Nussir deposit is one of Europe's largest known copper resources, poised to become a major domestic source of copper for renewable energy and electrification infrastructure. The company has pledged to achieve net-zero carbon operations, using renewable energy and battery-electric mining equipment, setting a new benchmark for Arctic mineral extraction

Rare Earths Norway

Rare Earths Norway (REN), jointly owned by Hustaditt Group and Brennebu AS, is the main party developing the Fen deposit as a sustainable, long-term source of rare earth elements for European industries. The company aims to produce a mixed rare-earth concentrate, focusing on key elements like neodymium and praseodymium, which are vital for manufacturing permanent magnets. The company further looks into the exploitation of by-products such as Thorium to support its main operations. Current pilots are expected to be in operation in 2026 with the start of operations being aimed for 2030-2035. (See 3.4.1)

REE Minerals AS

REE Minerals, founded in 2007, focuses on developing domestic rare earth element sources in Southern Norway, including a minority stake in the Fen deposit. Specializing in geological surveying, the company is in advanced exploration and progressing toward future extraction. Their work supports sustainable, local supply of critical minerals for modern technologies.

Skaland Graphite AS

Located in Senja municipality in Northern Norway, the Skaland mine is the world's highest-grade operating flake graphite mine and ranks as the fourth largest outside China. The current mining operations began in 2007, which now account of a significant part of Norwegian extraction of graphite. In recent years extensive additional deposits have been identified in surrounding areas, offering substantial potential for expansion in nearby municipalities.

Titania AS

Titania AS operates one of Europe's largest ilmenite, titantium ore, mines at Tellnes, in Norway. The fully operational site produces high-quality feedstock for titanium dioxide (TiO_2) supply chains, serving key industries such as pigments, aerospace, plastics, and renewable energy. Titania is owned by Kronos Worldwide, a global leader in titanium dioxide production, which also operates a downstream processing plant in Fredrikstad, Norway.

3.7.2 Processing Companies

Eramet Norway

Eramet Norway AS, part of the ERAMET Group, produces high-quality manganese alloys and processes nickel and cobalt into battery-grade metals and chemicals. With advanced facilities across Norway in Sauda, Porsgrunn and Kvinesdal. Eramet Norway supplies manganese alloys to the international steel industry market. In addition, Eramet invests in green technologies and carbon capture to minimize environmental impact while driving innovation in the metals industry.

Finnfjord AS

Located in Finnsnes, Northern Norway, Finnfjord AS operates one of Europe's most energy-efficient ferroalloy plants. The company is fully operational, operating three furnaces in Norway and producing ferrosilicon for infrastructure, batteries, and renewable technologies. It is privately owned under the Finnfjord Group. With ambitions to achieve carbon-neutral smelting, Finnfjord uses algae-based carbon capture and heat recovery in its operations, supplying steam to an on-site industrial turbine.

Kronos Worldwide AS

Kronos Worldwide operates Norway's only titanium dioxide production plant, located in Fredrikstad. TiO_2 is essential for applications in renewable energy, aerospace, and electric vehicles. As a subsidiary of U.S.-based Kronos Worldwide Inc., the plant is fully operational and provides a secure Scandinavian source of titanium-based materials. The company also owns Titania AS, which operates Europe's largest titantium ore mine in Tellnes.

Nickelverk

Nickelverk, based in Kristiansand, is a leading nickel refinery in Europe and a wholly owned subsidiary of Glencore. It refines nickel, cobalt, and copper concentrates into high-purity products used in EV batteries and stainless steel. Nickelverk ensures a stable European supply of key battery metals. Nickel is one of the most important CRMs that Norway is already processing and exporting at scale, with Nickelverk playing a central strategic role in this value chain.

Norsk Hydro

Norsk Hydro, often referred to simply as Hydro and headquartered in Oslo, is one of Norway's most prominent industrial companies and a leading global producer of aluminium. Partly owned by the Norwegian state, at 34.3%, and with a long-standing industrial legacy, Hydro has grown into a vertically integrated company that spans most of the aluminium value chain within Norway, while owning bauxite mines internationally. Norsk Hydro is currently the 7th most valuable company in NorwayThe majority of its smelting operations are powered by renewable hydropower, making Hydro's production among the most carbon-efficient in the world. Norsk Hydro plays a crucial role in supplying aluminium to key European industries.

REEtec

REEtec, based in Høvik near Oslo, specializes in environmentally friendly rare-earth element (REE) separation technology. The company is building Norway's first full-scale REE separation plant at Herøya, Porsgrunn, after successfully operating pilot and demonstration units since 2019. Once operational, the plant is expected to supply about 5% of the EU's demand for neodymium and praseodymium. A second plant is planned for 2026, sourcing raw materials from Sweden's LKAB mining operations starting in 2027.

Elkem

Elkem, headquartered in Oslo, Norway, is a global leader in the production of silicon-based advanced materials, with a strong foundation in its extensive domestic manufacturing network. Norway hosts several of Elkem's key production facilities, where high-quality silicon, silicon alloys, and specialty materials are produced to serve critical industries such as electronics, automotive, construction, and renewable energy. These Norwegian plants leverage sustainable energy sources and advanced technologies to ensure efficient, low-impact production.

3.7.3 Recycling Companies

Hydrovolt

Hydrovolt, based in Fredrikstad, operates Europe's largest EV battery recycling plant. Initially a joint venture between Norsk Hydro and Northvolt, it became fully owned by Norsk Hydro in 2025. The plant is fully operational, recovering valuable metals such as lithium, cobalt, nickel, and manganese from used batteries. Hydrovolt contributes directly to Europe's circular economy goals, ensuring strategic materials are reused and supply risks are minimized.

Shift Materials AS

Shift Materials looking towards opportunities in urban mining, recycling of CRMs, with a particular focus on rare earth elements and magnet materials. The company is in the early commercial phase, currently working on establishing scalable, circular solutions to recover neodymium, dysprosium, and other valuable elements from end-of-life products such as wind turbines and EV motors. Through partnerships and innovative technology, Shift Materials aims to increase sustainability in the European supply chain for permanent magnet materials and reduce dependency on primary extraction.

Part IV: Opportunities and Obstacles for Norway

4.1 Introduction

Understanding the strengths and challenges Norway faces in developing its CRM value chain is key to assessing the sector's potential as a supplier to the European and Dutch markets. For this reason this chapter will go deeper into these areas, as well as in which areas there is the most potential for Norwegian-Dutch cooperation.

4.2 SWOT analysis overview

The SWOT analysis provides an overview of the strengths, weaknesses, opportunities, and threats Norway faces in developing a domestic CRM value chain. These factors are critical for both businesses and investors, as they influence the likelihood of project success and the overall attractiveness of potential investment.

Strengths	Weaknesses
• Strong potential for sustained affordable and reliable energy supply. • Long history of mining and existing infrastructure . • Close proximity to European markets and access to maritime trading routes. • Political stability in policy and rule of law.	• High labour costs. • High regulatory standards. • Long permitting processes, with an extensive ability to appeal. • Need to catch up with already established supply competitors. • Competition in a sector where many competitors enjoy extensive state support.
Opportunities	**Threats**
• Proven supply potential, among which some of the largest deposits found in Europe. Notably for Rare Earth Elements. • Norway is well positioned to be the preferred supplier when it comes for sustainable minerals. • Shifting away from oil and gas the mineral sector can use the existing expertise. • Further potential in deep-sea mining, with large deposits beneath the Norwegian continental shelf. • Increased interests and funding through governments and intergovernmental organisations and partnerships.	• High concentration of monopolies in the value chain with the potential to employ unfair trade practices to limit competition. • Long term uncertainty on pricing and economic viability, downturns in global prices can challenge long term viability.

Figure 12: SWOT analysis critical raw materials in Norway

4.3 Competitive advantages

Norway's competitive advantages are key to the economic viability and global competitiveness of its domestic CRM value chain. In order to succeed these advantages need to be sufficient, and successfully leveraged, to be able to compete economically with cheaper alternatives alternative suppliers.

4.3.1 Availability & scalability

Select CRMs hold significant potential in their availability in Norway. Larger and more concentrated deposits of certain materials could offer a strong competitive advantage as they require only a single project to be approved, developed, and operated. This concentration enables companies to benefit from economies of scale, spreading fixed costs over a higher output. This could increase the competitiveness of these materials, making it more likely that the project remains economically viable. Availability and scalability can be further taken advantage of by strategically leveraging metal companionality in both resource exploration and extraction. The Fen Complex, which host the largest reserve of REE in Europe, is an clear example of a project where scalability can be a considerable competitive advantage over more dispersed deposit of REE in third countries and efforts in metal companionality are considered to lower the cost basis for its overall operation. Continued efforts in surveying Norway's geology could aid in utilizing this potential advantage.

4.3.2 Energy availability

Norway's unique energy profile, characterized by abundant renewable resources and significant growth potential, offers strong prospects for providing a stable and affordable energy supply. This advantage is crucial for the energy-intensive stages of the CRM value chain. Access to low-cost electricity can significantly reduce operational expenses, helping Norwegian operators remain competitive despite high cost basis in Norway.

Beyond potential cost savings, Norway is in a good the position to provide energy security, not being reliant on third parties for its domestic energy supply, aiding long-term price and supply predictability. This in of itself is can be a benefit in mitigating investment risks for companies, and provides the ability to set up long term contracts with potential customers. So far Norway has successfully been able to utilize its strong energy position to establish itself as an important producer of silicon metal, nickel and aluminium.[72]

However, Norway's potential for stable and affordable energy hinges on sustained efforts to maintain it this position, particularly as electricity demand is expected to double by 2050.[73] This is especially pressing as the country is projected to temporarily become a net importer of energy in the coming decades before returning to its status as an energy exporter. (See 1.2.3)

4.3.3 Stability & predictability

Norway's strong democratic tradition and stable political environment contribute significantly to its reputation as a secure and attractive location for mining projects and investment. A predictable and transparent regulatory framework helps reduce investment risks, streamline permitting processes, and address financial concerns. This stability enables companies and investors to plan for the long term with greater confidence. Furthermore, Norway's consistent approach to legislation and trade

[72] The Nordic Supply Potential of Critical Metals and Minerals for a Green Energy Transition | Nordic Innovation (nordicinnovation.org) | 78
[73] Energy Transition Outlook 2024 | DNV (dnv.com | 36-37

policy means fewer abrupt policy shifts, while a robust legal system and appeals process provide mechanisms to resolve disputes fairly. Together, these factors strengthen Norway's position as a trustworthy and dependable partner in the CRM sector.

That said, the same regulatory framework that ensure stability can also present challenges. Local communities and municipalities hold significant influence, and their right to appeal can lead to delays in project approval. However, once a project successfully navigates the early stages of consultation, permitting, and negotiation, this stability becomes an asset, ensuring long-term regulatory consistency and operating conditions.

4.3.4 Geography

Norway's proximity to major European markets and access to maritime routes offers select advantages for the sector. Shorter transport distances and reliable delivery times help reduce logistics costs and supply chain risks. Access to efficient sea transport further strengthens Norway's position, enabling cost-effective, large-scale shipping of both raw and processed materials. In some cases, these logistical advantages can justify higher prices for off-takers that prioritize consistent deliveries, thereby enhancing the overall economic viability of Norwegian CRM projects.

Furthermore, Norwegian fjords allow for natural deep-water harbors, often located close to potential mining and processing sites, reducing the need for extensive infrastructure investments such as artificial ports or long overland transport routes. Fjords have also historically been used for waste rock and tailings disposal. While this remains controversial due to environmental concerns, ongoing research is being conducted to better understand the environmental impact of these practices. Currently the practice remains politically sensitive and could affect public perception and local support for the mining industry. This however has not stopped the use of the practice entirely as it has been approved as a waste disposal solution for mineral project such as at Nussir and Engebø.[74]

4.3.5 Infrastructure

Norway benefits from a well-developed and modern infrastructure in the form of both maritime and land-based infrastructure. This extensive network of roads, rail, harbors and advanced energy grid gives projects developed in Norway a distinct edge over CRM operations in more remote or less developed regions globally. This existing infrastructure can reduce project development costs, facilitate the transport of materials, and support more rapid scaling of operations.

Additionally, many of Norway's potential CRM sites already include legacy mining infrastructure such as tunnels, excavations, and access roads. These existing assets can significantly streamline project development by allowing easier site access, potentially speeding up permitting processes in previously approved areas, and minimizing the need for new environmental disruption.

4.3.6 Technological expertise

Norway's longstanding expertise and experience in the mineral industry provide a solid foundation for advancing the country's CRM value chain. With institutions such as SINTEF and NTNU being among Europe's leading research institutions in mining and mineral extraction, Norway possesses a strong research and technological edge that can provide strong and continued support for the sector. These strengths can be further utilized through active collaboration between Norwegian institutions and

[74] EU-Norway Green Alliance between vision and reality | NUPI (nupi.no) | 30-31

broader Nordic and European partnerships and institutions, offering Norwegian CRM projects access to an expanded network, shared infrastructure, and valuable knowledge exchange.

Experience in the oil and gas sector contribute significant expertise in large-scale project management and subsurface resource handling, skills directly applicable to mineral exploration and extraction. As the oil and gas sector gradually declines in size, there is considerable potential to repurpose this existing expertise, industrial-knowledge and workforce toward building a competitive and resilient CRM value chain, thereby aiding the overall development of the sector.

4.3.7 Sustainability

As global demand grows for sustainably and ethically sourced CRMs, Norway is well positioned to become a preferred supplier. The 2023 Norwegian Mineral Strategy also highlights Norway's ambition to prioritize sustainability in its mineral sector to develop world's most sustainable mineral sector. This approach, while often associated with higher costs and slower project development, can also serve as a potential strategic advantage.

With its already high standards, Norway is well-placed to meet the EU's tightening regulatory requirements, including those outlined in the CRMA, which emphasizes ethical sourcing, due diligence, and sustainability for industries. Compared to many third countries, Norway offers a more reliable, traceable, and regulation-compliant supply chain. The Norwegian government has also advocated for stricter sustainability and ethical standards in international partnerships involving other raw material suppliers. If successful, this approach could enhance Norway's competitiveness, as other suppliers would be held to similar standards, or companies may increasingly prefer sourcing from Norway due to its compliance with set benchmarks. By advocating for the adoption of similar regulatory standards internationally as those applied domestically, Norway can help reduce competitive pricing disparities, or position itself as a preferred supplier able to meet regional or international set benchmarks from the outset.

4.4 Challenges & weaknesses

The development of a domestic CRM value chain in Norway faces several challenges. As outlined in the SWOT analysis, various weaknesses and threats could hinder sector growth without sufficient support or risk mitigation. Financial constraints pose significant risks to project development, while environmental concerns and the protection of indigenous rights may raise costs or limit possible investment.

4.4.1 Financial challenges

Financial challenges in developing a CRM value chain in Norway are most prominent in two key areas. The first involves economic viability, specifically, whether raw materials extracted and processed in Norway can compete with those from other countries. This viability depends not only on the competitive advantages previously discussed but also on a range of challenges that can substantially affect a project's financial outlook. Without a compelling economic case from the outset, it is unlikely that such projects will be sustainable through the operational phase.

The second challenge is the ability to secure sufficient and continuousness access to capital. Establishing a CRM project is capital-intensive and typically involves high upfront costs, long lead times, and considerable operational and regulatory uncertainty. From exploration and permitting to infrastructure development and environmental safeguarding, each stage requires significant

investment before any revenue can be expected. This long time horizon and high-risk profile can make the sector less attractive to private investors. This comes in addition to concerns about uncertain geopolitical factors where geopolitical factors can further complicate the economic viability of a project. (See 4.4.2)

Access to capital is a persistent challenge. Private investors are unlikely to funds projects when without confidence in long-term profitability and stability of a project. For many mineral projects in Norway to be viable, a certain degree of state involvement or public financing will likely be necessary to mitigate investment risks and attract private sector participation. Such support could include direct funding as well as instruments that provide long-term market certainty, such as price stabilization schemes or guaranteed off-take agreements, particularly for sectors such as defense.

4.4.2 Geopolitical risks

Established suppliers of CRMs often wield significant market influence, with monopolies or near-monopolistic control being common in this sector. These suppliers have strong incentives, both economic and political, to limit diversification of supply in order to maintain their dominant positions. To achieve this, supplier countries may engage in unfair trade practices such as price manipulation, export restrictions, and strategic supply management.[75] These tactics can severely hinder the economic viability of developing projects and obstruct efforts to build independent and resilient supply chains for emerging producers.

For Norway, these tactics pose a direct threat to the viability of domestic projects. Initiatives that might otherwise be economically feasible under normal market conditions. This is made all the more challenging due to the entrenched nature of existing suppliers, who often benefit from significant economies of scale and, in some cases, substantial government backing. These advantages enable these actors to engage in these aggressive market tactics over prolonged periods, potentially forcing developing projects to halt operations or even shut down entirely.

These geopolitical concerns and additional market pressures can also have an effect on initial investment in the development of projects. The heightened risk of unfair competitive practices and market volatility may deter potential investors from committing capital to domestic CRM projects.

4.4.3 Environmental concerns

Norway generally enjoys strong public support for mining operations due to its long-standing history in the mineral sector and reputation for environmental awareness and sustainability. However, developing new projects still requires careful consideration of public opinion and the higher costs associated with sustainable mining practices. Methods that cause extensive and permanent environmental disruption, such as open-pit mining, landfilling and fjord tailings, or deep-sea mining, remain highly controversial. Environmental NGOs and advocacy groups such as Bellona, Naturvernforbundet, and Natur og Ungdom actively monitor mining activities and their environmental impacts, often advising against or advocating to halt practices and projects deemed harmful.

Norway's comprehensive environmental regulations reflect the government's commitment to their sustainable goals, as also set out in the 2023 Mineral Strategy. These rules require however comprehensive impact assessments and extensive public consultations. While important for

[75] Norway mineral strategy | Ministry of Trade, Industry and Fisheries (regjeringen.no) | 19

safeguarding the environment and reaching the sustainability goals set out by the government, these processes can slow down mining development significantly increasing the initial financial requirements.

Complying with Norway's high environmental standards also drives up operational costs.[76] Mining companies can be required, depending on the project, to invest in pollution management, responsible waste management, and site rehabilitation efforts as part of long-term plans. Additionally, there is increasing pressure to lower carbon footprints in the processing stage by adopting renewable energy and circular economy principles, adding further complexity and potential expenses. While these initiatives and regulations aid sustainability and reaching environmental targets it can also drive up costs compared to alternative suppliers, making projects economically less viable and competitive.

Restrictions on land use due to protected areas and ecological sensitivity limit suitable mining locations, sometimes forcing companies to operate in less optimal sites affecting both efficiency and competitiveness, if the less optimal site is viable in the first place. Similarly, environmental concerns are also at the forefront of the question surrounding deep sea mining, while there are sizable reserves in the Norwegian continental shelf as of current mining licenses are not being approved for deep sea mining. (See 3.5)

4.4.4 Safeguarding of indigenous rights

Striking a balance between further economic development of natural resources and safeguarding the rights of Indigenous peoples in Norway presents a complex and ongoing challenge. The Sami, whose traditional homeland approximal 40% of Norway, are at the forefront of this challenge.

Legally the Sami enjoy protected rights to land use and meaningful participation in decisions affecting their territories. Compliance with national legislation, such as the Sami Act, as well as international frameworks such as ILO Convention 169 and the UN Declaration on the Rights of Indigenous Peoples, mandates thorough consultation and, in many cases, consent processes, particularly concerning activities that impact reindeer herding and other traditional Sami practices. The Sami Parliament plays a critical role in safeguarding these Sami interests with the right to be consulted on topics which affect the Sami people, especially in policymaking related to natural resource management and mining,.

Historically, the Sami Parliament has approached mining activities with caution, highlighting potential adverse effects on reindeer herding, the environment, and Sami cultural heritage. The Parliament has advocated for stringent safeguards, comprehensive consultations, and at times, opposition to mining projects perceived as threats to traditional livelihoods or the integrity of Sami lands. This cautious stance reflects the broader Sami priority of protecting cultural and economic rights, which can sometimes create tensions between development objectives and Indigenous rights.

Compensation and royalties for mining on Sami land themselves pose an additional challenge to the industry, increasing the cost base for mining companies and potentially reducing the global competitiveness of Norwegian CRMs. Furthermore, negotiating agreements with Sami communities can prolong project timelines and introduce legal uncertainties, as well as political scrutiny, especially for projects located within traditional Sami lands. The government's efforts to clarify compensation

[76] EU-Norway Green Alliance between vision and reality | NUPI (nupi.no) | 41-42

frameworks for state-owned minerals may help provide companies with greater cost predictability and reduce negotiation times, offering a clearer pathway forward.

4.5 Opportunities for the Netherlands

In 2022, the Dutch Ministries of Foreign Affairs, Economic Affairs, and Infrastructure jointly released a raw materials strategy focused on securing the supply of critical minerals, promoting circularity, and minimizing environmental impact. Given that the Netherlands lacks a significant domestic sector for CRM, direct opportunities in mineral extraction and processing are limited. Likewise, the country's industrial demand alone is insufficient to serve as a major off-taker capable of driving significant growth in Norway's CRM sector.

In 2022, total CRM imports amounted to €5.6 billion, yet only €25 million, or just 0.4%, were imported for direct domestic use. The majority, 57.2%, worth €3.2 billion, was re-exported directly to other European countries. An additional 42.4% of imports came in the form of intermediate goods and products. Of these, 30.1% of the total CRM imports were re-exported in this form, while only 12.3%, valued at €696 million were used domestically. Leaving the domestic CRM market at just €721 million.[77] Consequently, the country's role, and opportunities for cooperation, lies within the broader European market for these minerals. Given that the Netherlands already serves as a key transit hub, it is well-positioned to play a central role in facilitating this market by leveraging its strategic location, advanced infrastructure, and strong culture of innovation.[78] Many proposals outlined in the strategy presented by the Ministries of Foreign Affairs, Economic Affairs, and Infrastructure therefore emphasize the Netherlands' facilitating role within the wider European context, as well as the country's commitment to environmental sustainability and mitigating supply risks.

A notable exception is the import of nickel, which accounted for €967 million in 2022, representing approximately 17.27% of the total value of imported CRMs. This is especially noteworthy given that nickel is a well-established industry in Norway, supplying 10% of the total EU/EEA consumption of Nickel. However, it should be noted that, like most imported CRMs, a large portion of this import is likely re-exported.

Below is a non-exhaustive list of Dutch companies and CRM-related firms active in the Netherlands, compiled by HCSS.

[77] Bestemming en herkomst van Nederlandse import van kritieke materialen | CBS (cbs.nl)
[78] Grondstoffen voor de grote transities | (Rijksoverheid.nl)

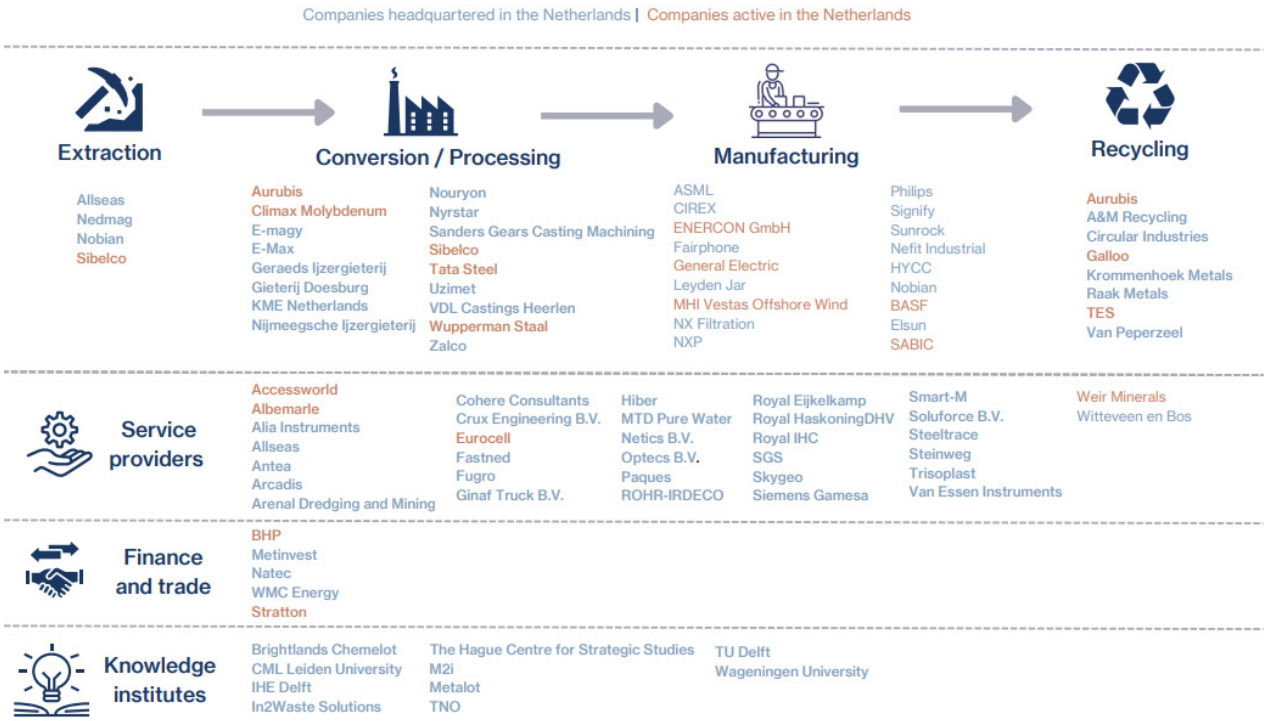

Figure 13: Companies active in metals and minerals supply chains in the Netherlands (Borrowed from The Hague Centre for Strategic Studies).[79]

4.5.1 Mineral hub

The Netherlands is well positioned to become a regional European CRM hub, and play an increasingly important role in strategic stockpiling, thanks to a combination of strategic geographic advantages, advanced infrastructure, and a strong focus on sustainability and innovation. In 2022, the Netherlands was already the largest importer of CRMs within the EU, placing it at the heart of European CRM trade. Currently, the country primarily serves as a transit hub, with the majority of imported materials destined for export to other European markets. At the heart of this is the Port of Rotterdam, Europe's largest port, which serves as a key gateway for importing and distributing raw materials across the continent. Its highly developed logistics network, including ports, extensive rail and road connections, and inland waterways, enables efficient and reliable movement of materials from the Netherlands to various industrial centers throughout Europe.[80]

Within the Dutch raw mineral strategy there is speculation on the possible establishment of strategic reserves of CRMs, which could potentially mitigate short-term supply risks, similar to existing oil and gas reserves. Given the country's strategic position, role as transit country, and well-integrated network connecting key centers of European industry, the Netherlands could serve as a strategic hub for such reserves. However, the strategy highlights the complex political and financial decisions involved and acknowledges that strategic stockpiling is most effective when coordinated at the EU level.[81]

[79] Advancing European Mineral Security: Insights from the Dutch industry | The Hague Centre for Strategic Studies (hcss.nl)
[80] Advancing European Mineral Security: Insights from the Dutch industry | The Hague Centre for Strategic Studies (hcss.nl) | 40-41
[81] Grondstoffen voor de grote transities | (Rijksoverheid.nl) | 16-17 & 22

4.5.2 Circularity

As previously mentioned, Norway currently lags behind both its Nordic neighbors and the Netherlands in recycling CRMs. This is partly due to its small population and limited waste streams, which make it challenging to scale circular economy initiatives domestically. In contrast, the Netherlands is a recognized leader in circularity, supported by a well-developed infrastructure for recycling and materials recovery, as well as strong government backing. Notably, circularity is integrated into national strategy through procurement policies and other supportive measures.[82]

Collaboration between the Netherlands and Norway on circularity could take several forms, including the exchange of knowledge, technologies, and best practices to support Norway in making its CRM value chains more circular. Additionally, the redirection of Norwegian CRM containing waste streams to the Netherlands could serve as a valuable secondary source of raw materials. Such cooperation could offer mutual benefits by helping Norway accelerate its circular transition while strengthening the Netherlands' position as a leading European hub for the advanced processing and reuse of CRM.

4.5.3 Post-initial processing & manufacturing

The Dutch raw materials strategy outlines an intention to further assess the potential benefits and drawbacks of developing domestic refining capacity. However, the direct processing of CRMs is unlikely to become a viable model for Dutch industry, with only €25 million worth in import of CRMs being used in this form in 2022. While securing raw material supplies is possible, the Netherlands lacks certain inherent competitive advantages that countries like Norway can leverage more effectively, despite facing many of the same challenges. Instead, in line with the potential position as a mineral hub and potential industries focused on the reuse of materials in the Netherlands. The Netherlands could play a key role further along the value chain, particularly in the post-processing and manufacturing of components that require multiple raw materials, especially when those materials are not processed in the same country of origin.

4.5.4 Deep-sea mining

Despite the controversial nature of deep-sea mining, this sector could emerge as primary area of cooperation between Norway and the Netherlands. Given the strength of Dutch companies in developing deep-sea technology, maritime operations, and maritime expertise, the Netherlands is well-positioned to play a valuable and influential role if the industry moves toward more active development. [83] Dutch firms have a long-standing reputation for innovation in underwater robotics, offshore engineering, and sustainable marine practices, which could be crucial in advancing responsible deep-sea mining operations.

While the Dutch government has not yet taken a definitive stance on commercial deep-sea mining, however the government continues to emphasize the importance of balancing economic opportunities with environmental protection. The government supports ongoing scientific research and international cooperation to ensure that any future developments adhere to set environmental standards and safeguards.[84]

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[82] Grondstoffen voor de grote transities | (Rijksoverheid.nl) | 15-16
[83] Advancing European Mineral Security: Insights from the Dutch industry | The Hague Centre for Strategic Studies (hcss.nl) | 40-41
[84] Grondstoffen voor de grote transities | (Rijksoverheid.nl) | 14-15

Conclusion

The increasing focus on Norway's potential to supply critical raw materials from both the Norwegian government and international actors, particularly the European Union, is unsurprising. Norway's abundant mineral resources, both onshore and offshore, offer substantial opportunities for the extraction and processing of a broad range of CRMs. The country's long-standing experience in resource extraction, supported by a well-developed regulatory framework emphasizing environmental sustainability, reinforces its capacity to scale up responsibly. Moreover, Norway benefits from a relatively favorable public perception of the larger mineral extraction sector, shaped by decades of successful oil, gas, and hydropower development. These factors collectively position Norway as an increasingly strategic player in European raw material supply chains, particularly as the EU seeks to reduce dependence on third-country imports and strengthen domestic sourcing.

To date, much of Norway's critical raw materials sector remains in the early stages of development, with many value chains only partially established. As a result, the country's ability to fully capitalize on its CRM and industrial potential remains uneven. Currently, at least seven critical raw materials are being extracted or processed within Norway. Notable industries have developed around sectors such as nickel, silicon, and aluminum, where Norway is already capable of supplying significant volumes to the European market. Yet, Norway presently controls only portions of the full value chains for these materials and in some cases relies on imported raw materials to maintain production.

Looking ahead, both ongoing and planned initiatives are increasingly targeting new market segments, particularly in rare earth elements, vanadium, and copper. These efforts aim to harness Norway's significant geological potential, which includes some of Europe's largest known mineral deposits, and to revitalize former mining sites using modern, more sustainable extraction technologies. In addition, the prospect of deep-sea mining, with Norway being one of the first countries to open parts of its continental shelf for exploration, represents a potentially transformative expansion of the country's resource base. However, despite its promise, this frontier remains highly politically contested, with unresolved environmental and regulatory concerns continuing to generate public debate and political controversy.

Even with its well-documented resource potential, the development of mineral projects in Norway remains slow-moving, capital-intensive, and subject to numerous risk factors across project lifecycles. These include the need to meet strict regulatory requirements, obtain multiple and continuous permits, address environmental and social concerns, and ensure the safeguarding of Indigenous rights. However, at the heart of the challenge facing Norway's critical raw materials sector is the question of whether domestically extracted minerals can compete in an increasingly global and cost-sensitive market. The sector's ability to scale depends on establishing a clear and compelling economic case for local extraction and processing. Without this, attracting sufficient investment and maintaining viable operations will be extremely difficult, or will be dependent on sustained government support. To move forward, Norwegian companies must either ensure international cost competitiveness or secure long-term offtake agreements that guarantee stable and predictable revenue.

Geopolitical tensions and monopolistic market structures further complicate the landscape, introducing risks of unfair market dynamics that could significantly undermine the economic viability of Norwegian projects and deter potential investors. This creates a particularly steep challenge for Norwegian initiatives, which must compete against well-established and often state-supported supply chains abroad.

While sustained government support could help level the playing field, especially in light of growing ambitions for strategic autonomy in Europe, such support in Norway has so far been limited primarily to early-stage development and sustainability-related initiatives. Without broader and longer-term policy backing, domestic projects may struggle to gain the momentum and economic viability needed to compete globally.

The Norwegian government's recent initiatives to modernize the national regulatory framework for mineral extraction, including the adoption of the New Mineral Act in 2025, the strengthening of raw material partnerships and international alliances, and the stated intention of incorporating of the EU Critical Raw Materials Act into the EEA agreement and Norwegian law, all aim to secure long-term success for the sector. By maintaining high environmental and ethical standards, fostering positive relationships between local communities and the mining industry, and advocating for the adoption of similar regulations internationally, Norway seeks to establish itself as a preferred and responsible supplier within the global critical raw materials supply chain.

This approach to position Norway as a preferred supplier could prove as a significant boost for the Norwegian mineral sector. Should international standards rise to match Norway's, competitors abroad might be forced to comply with similarly high requirements, thereby likely narrowing the cost gap between Norwegian and foreign-mined minerals, or face potential exclusion from key markets altogether. The Norwegian government appears aware of this strategic opportunity and seems to be working to elevate global regulatory benchmarks to align with domestic practices. Yet, it remains uncertain if such elevated standards can be widely adopted globally given the current constraints on supply and increasing demand.

Opportunities for the Netherlands currently remain limited, as Norway's critical raw materials sector is still in development. While Dutch industry stands to gain from a reliable supply of CRMs from Norway, particularly amid increasing supply chain risks, the cost competitiveness of Norwegian minerals remains a crucial prerequisite. Additionally, the Netherlands currently primarily serves as a transit hub for raw materials, where the origin of the materials often holds less significance.

Consequently, the Netherlands primary role is within the broader European context, acting as a strategic facilitator by leveraging its geographic location and advanced innovation capabilities. This is especially true in areas such as circular economy solutions, where close cooperation with Norway could yield significant benefits. Furthermore, Dutch companies are well-positioned to play a larger role in emerging fields like deep-sea mining, drawing on the country's extensive maritime expertise.