

White paper

Circularity, Competitiveness & Capital

Introduction

Europe's competitiveness still relies on a largely linear model of resource utilisation. This model supported growth when trade was expanding and materials appeared abundant. It is less suited to an economy shaped by rising resource demand, geopolitical rivalry and concentrated supply chains.

Against this backdrop, this paper examines whether circularity can reduce Europe's material vulnerability while creating financially viable opportunities for Nordic companies and capital providers.

The urgency is increasing. Europe's energy transition, digitalisation and defence ambitions require large volumes of critical materials. Many are imported and their extraction or processing is concentrated in a few countries. New supply cannot be added quickly. It depends not only on geological resources, but also on permitting, infrastructure, skills, processing capacity and complete supply chains.

At the same time, the assumption that open global trade will remain the default is being challenged. Export controls, industrial policy and regional competition are turning material dependence into a strategic and financial vulnerability for Europe, individual countries and companies.

Circularity forms part of the response. By retaining the value of products, components and materials for longer, it can reduce import exposure and strengthen operational resilience. The environmental benefits remain important, but the strategic case is broader.

Danske Bank

From material dependency to strategic resilience

Europe's strategic ambitions could deepen material import dependence

Europe's industrial economy has long relied on imported raw materials. Decades of globalisation, falling trade barriers and cost-driven supply-chain optimisation shifted extraction and processing to countries with larger resource bases and lower production costs. While this improved efficiency and growth, it also created significant dependencies.

Today, Europe consumes a substantial share of global raw materials but produces relatively little domestically. Supply of many critical raw materials is concentrated in a small number of countries, in particular China (see figure 1 and 2).

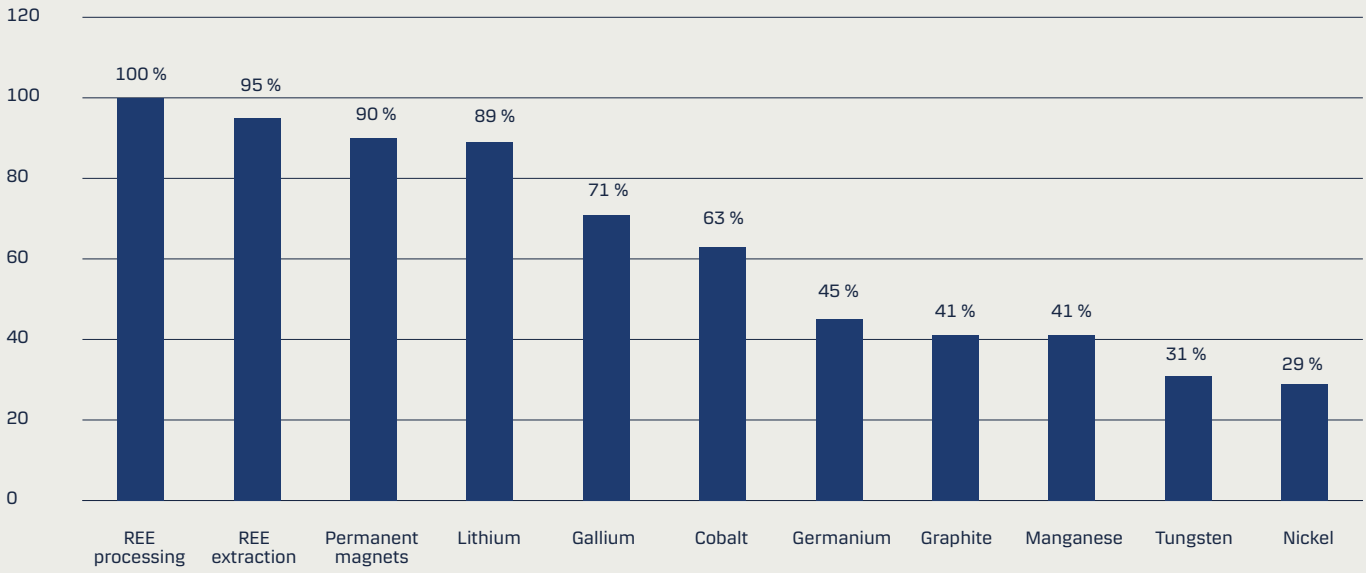
Europe's push for energy transition, digitalisation and defence ambitions implies continued dependence on critical raw materials. To this end, many of the priorities underpinning the EU's Clean Industrial Deal[1] will increase demand for metals and minerals that Europe largely imports.

With regard to the energy transition and the shift away from fossil fuels, Europe therefore risks replacing one dependency with another. Reduced reliance on imported fossil fuels may be replaced by reliance on imported metals, minerals and processed materials. The technologies may change, but the challenge of concentrated external supply remains.

[1] *Launched on February 26, 2025, the Clean Industrial Deal represents the next phase of the European Green Deal, shifting the focus from setting climate targets to ensuring that European industry can remain competitive while delivering the transition to a net-zero and more circular economy. For more info see: European Commission*

Figure 1: European raw material import dependency on single 3rd country

2025 dependency (%)



Source: European Commission, RESourceEU Action Plan. Note: Selected critical raw materials targeted by the EU to reduce strategic import dependencies across rare earth, battery, space and defence value chains. REE = rare earth element.

Figure 2: Key sectors, technologies and raw materials dependencies underpinning the European Strategic Priorities

Strategic ambition	Key Technologies	Important Raw materials	Largest origin market
Energy Transition	• Wind turbines • Solar panels • Batteries • Electric vehicles (EVs)	• **Lithium, Cobalt, Nickel:** Batteries • **Gallium:** High-efficiency solar panels • **Boron:** Wind turbine blades • **Rare Earth Elements:** Permanent magnets in wind turbine generators	Supply/reserves: • **China:** Gallium, Rare Earth Elements, tungsten, indium, silicon • **Indonesia:** Nickel • **Turkey:** Boron • **Chile:** Lithium • **DRC:** Cobalt, Tantalum • **US:** Beryllium Processed materials: • **China:** Lithium, Cobalt, Gallium, Rare Earth Elements, titanium, tungsten, germanium, indium, tantalum • **Turkey:** Boron • **Indonesia:** Nickel • **US:** Beryllium
Defence	• Guidance & propulsion systems • Airframes & armour • Communication systems	• **Titanium:** Strong, lightweight components • **Tungsten:** Armour and ammunition • **Beryllium & Gallium:** Satellites and military communication • **Rare Earth Elements:** Guidance systems and radar	
Digitalisation	• Smartphones & computers • Semiconductors & chips • Fibre-optic cables	• **Silicon:** Semiconductors and computer chips • **Germanium:** Fibre optics and infrared optics • **Indium:** Touchscreens and displays. • **Tantalum:** Micro-capacitors.	

Source: European Commission, Competitiveness Compass and Critical Raw Materials framework; USGS; China Ministry of Natural Resources; Danske Bank analysis. Note: Mapping of technologies, material applications and key supply markets reflects Danske Bank analysis.

Geopolitics is turning dependency into vulnerability
Europe's vulnerability stems not only from import dependence, but also from the concentration of extraction, refining and processing capacity in a handful of countries. Rising geopolitical tensions, export restrictions, economic sanctions and industrial policy interventions are making access to critical raw materials increasingly uncertain.

Over 2025 and 2026 the economic risks of highly concentrated supply chains have materialised at scale. China's export controls on rare earths and key battery inputs exposed downstream industries to production disruptions. The United States intensified these pressures through tariff hikes, trade restrictions and domestic sourcing requirements designed to strengthen its own strategic supply chains. At the same time, conflict in the Middle East disrupted trade in aluminium, sulphur and other industrial inputs, raising mineral-processing costs. Even the EU is increasingly focusing on supply-chain resilience and the reduction of single-country dependencies. Emerging policy discussions around supplier diversification signal a broader shift towards resource security. Together, these developments show how export controls, protectionist trade policy and geopolitical chokepoints can rapidly translate concentrated supply into operational and financial risk.

For businesses, the implications extend far beyond higher input costs. Material shortages can disrupt production, delay deliveries, increase inventory requirements and weaken confidence in long-term investments. Price volatility can also undermine the economics of technologies that rely heavily on critical materials. For policymakers, the issue is broader. Critical raw materials underpin the modern economy and a variety of strategic ambitions.

As a result, raw material supply has evolved from a procurement issue into a matter of economic security and strategic resilience. Yet diversification will take time. New mines and processing facilities require significant capital, lengthy permitting processes and broad public acceptance[2]. Moreover, some critical materials are scarce within Europe, while production costs often remain higher than in established supplier regions. To mitigate the risks of external supply shocks, primary extraction and diversified supply chains are key. Greater recovery, reuse and recycling of materials already embedded in the economy is also increasingly becoming a key strategic focus to boost European resilience.

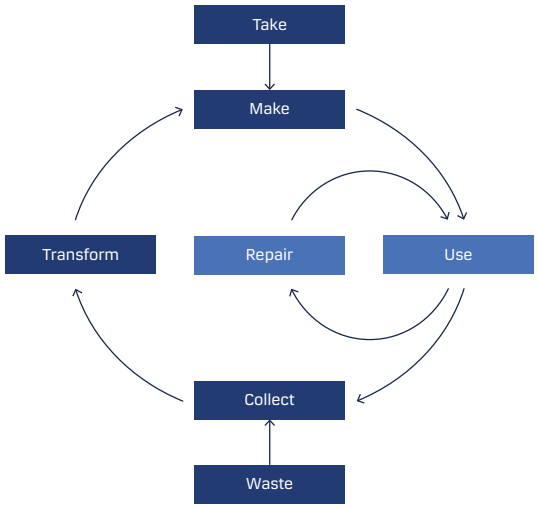
Circularity as a strategic response

Europe needs circularity to strengthen resilience and competitiveness
A circular economy seeks to preserve the economic and functional value of products, components and materials for as long as possible. Rather than following a linear "take, make, use and waste" model, products are designed and managed so that their useful lives can be extended and their materials recovered for future production.

Europe nevertheless remains predominantly linear. Secondary materials accounted for only 12.2% of total EU material use in 2024, up only modestly from 8.2% in 2004 (see figure 4).

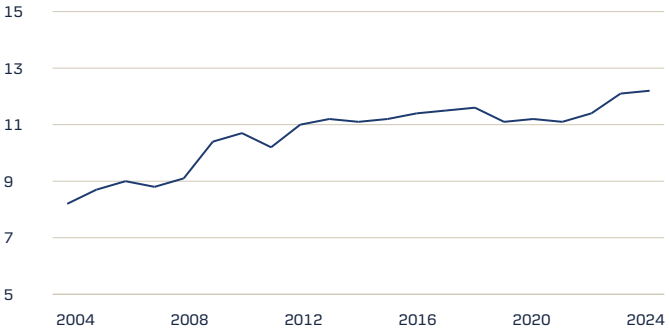
In this context, Europe's "urban mine" can strengthen resource resilience over the longer term. Batteries, vehicles, electronics, magnets, machinery, buildings and infrastructure already contain significant volumes of critical raw materials. Recovering them will not remove the need for primary extraction, particularly as demand grows. It can, however, create a more controllable domestic supply base, reduce import exposure and limit the economic impact of future disruptions. Horizon Europe's FutuRaM[3] project estimates that up to 5,7 million tons of critical raw materials could be recovered in a circular European scenario by 2050, potentially replacing more than half of all virgin material imports. However, the ability to recover these materials at scale depends not only on collection and recycling infrastructure, but also on design choices that determine whether products can be economically repaired, reused, re-manufactured or recycled in the first place.

Figure 3: Circular Economy logic



Illustrator: Elise Motalli, first used in the publication "Can we fix it? How to build a repair economy", by Marte Ulltveit-Moe (2024)

Figure 4: European circular material use rate, 2004-2024
Circular material use rate (%)

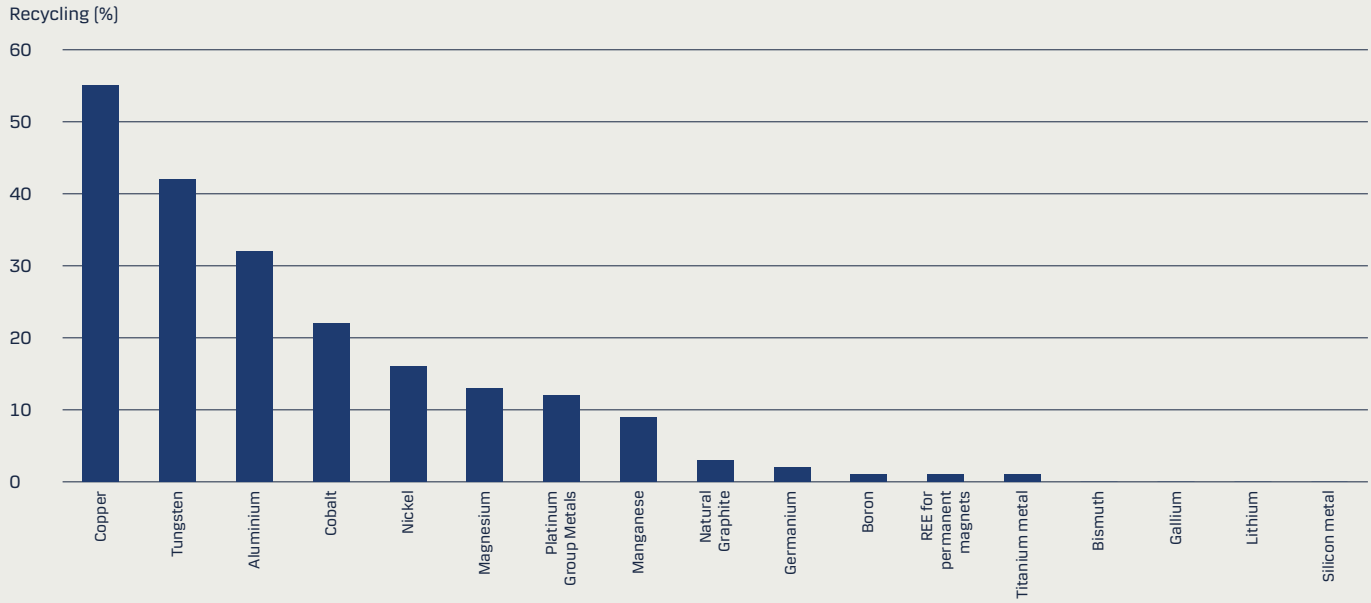


Note: The Circular Material Use Rate measures how much of the circular secondary materials used come from recycled waste divided by the overall total material consumption. Source: Eurostat, EU 27 data

[2] *Major mines typically take 10–20 years from discovery to production, reflecting lengthy development and permitting processes. Capital needs are also substantial, with Nordic projects ranging from ~EUR 780m for Keliber's lithium project to >SEK 10bn for LKAB's planned full-scale rare-earth and phosphorus industrial park. Sources: IEA; Government Offices of Sweden; Norwegian authorities; Sibanye-Stillwater; LKAB*

[3] *FutuRaM (Future Availability of Secondary Raw Materials) is a completed Horizon Europe project that assessed critical raw materials embedded in Europe's waste streams.*

Figure 5: Recycling's contribution to EU supply of selected raw materials



Source: European Court of Auditors (2026), Critical raw materials for the energy transition, based on European Commission, Study on the critical raw materials for the EU 2023, Annex 11. Note: Latest available end-of-life recycling input rates; reference periods vary by material. Some metals, such as copper and aluminium, have relatively mature recycling markets, while recycling contributes little or nothing to EU supply of several critical raw materials.

Circular business models are already trying to unlock economic value

Circularity creates financial value only when it changes the economics of a product or material flow. Substituting virgin materials with recovered inputs can lower material costs, provided collection and processing do not cost more than virgin supply. Reducing waste and scrap from production processes entails a more efficient use of materials altogether.

Circular models can also create value beyond material savings. Longer product use, services and resale can generate additional revenue but may also reduce replacement sales or require additional capital. The financial case ultimately depends on whether the value created outweighs the costs and capital required.

In short, circular business models seek to preserve and unlock value through resource efficiency and recovery in different ways that have in common that they aim to create financial value. Figure 6 groups them into four broad models and shows how each affects operations, financing and risk.

Circular business models are complementary, but they differ significantly in complexity and capital intensity. Life extension models are often the most incremental, building on existing products and service capabilities. Reuse, remanufacturing and recycling typically require increasingly sophisticated reverse-logistics systems, recovery infrastructure and predictable material flows. Where technically and economically feasible, repair, reuse and remanufacturing can preserve more embedded labour, energy and economic value

Figure 6: Summary of four circular business models

Model	How value is retained	Main implementation challenge	Indicative financial effect
Life extension	Maintenance, repair and upgrades keep products providing value for longer.	Requires durable design, spare parts and a capable service network.	• Can generate service revenue and extend income from installed assets. • Balance-sheet effects are generally limited where ownership transfers to the customer.
Access models	Leasing or product-as-a-service raises utilisation and keeps control of the asset and its materials.	Requires upfront funding, asset management and sufficient customer adoption and utilisation.	• Can create recurring revenues and provide access to products and materials at end of life. • Assets and debt may remain on the provider's balance sheet, increasing utilisation and residual-value risk.
Reuse and remanufacture	Products or components are recovered, restored and sold or deployed again.	Depends on take-back systems, reverse logistics and predictable quality and volume of returns.	• Can create resale margins and preserve residual value. • May increase inventory and working-capital needs.
Recycling	Materials are recovered from production scrap and end-of-life products and returned to production.	Economics depend on feedstock volume, recovery yield, material quality and processing cost.	• Can reduce virgin-material costs and import exposure • Often requires scale and remains exposed to commodity prices and recovery economics.

Source and illustration: Danske Bank

than recycling, although recycling remains essential for recovering materials that cannot be returned to productive use. Ultimately, the commercial viability of each model depends on measurable unit economics rather than circularity alone.

These differences help explain why many circular business models remain difficult to scale despite their strategic potential. Reliable return flows, transparent material information, common standards and economically viable secondary-material markets are often prerequisites for success. Regulation is increasingly seeking to address these barriers and improve the conditions under which circular business models can compete and grow.

EU policy is embedding circularity regulation across the economy

The EU has pursued greater resource efficiency and circularity for more than a decade, but the policy and regulatory landscape is now entering a new phase. Earlier initiatives focused on waste management and recycling, while the current framework increasingly seeks to reshape how products are designed, produced, used and recovered throughout their lifecycle. This shift is reflected in the EU's ambition to double its circular material use rate to 24% by 2030, and sits within this wider policy trajectory.[4]

Several regulations are already creating direct implications for companies. The Ecodesign for Sustainable Products Regulation (ESPR) introduces requirements related to durability, repairability, recycled content and product information. The Batteries Regulation establishes obligations across the battery value chain, including material recovery, recycled content and digital traceability. Extended Producer Responsibility schemes and packaging legislation influence collection and recovery economics, while the Critical Raw Materials Act links circularity to resource security through targets for recycling and material recovery.

Circularity is also becoming increasingly relevant in corporate reporting and sustainable finance. The Corporate Sustainability Reporting Directive (CSRD) is the EU framework requiring companies within scope to report comparable information on material sustainability matters. For companies where resource use and circular economy are material, ESRS E5 sets out specific disclosure requirements covering their implications for strategy and the business model.[5] This includes related policies, actions and targets, as well as metrics on resource inflows, product and material outflows, and waste. The EU Taxonomy further reinforces this direction by recognising the transition to a circular economy as one of its six environmental objectives and identifying economic activities that can contribute to it. Together, the frameworks provide investors and lenders with information to assess companies' circularity performance and identify revenues, capital expenditure and financing needs linked to Taxonomy-aligned circular activities.

The next wave of regulation

Existing EU regulation is increasingly shaping how products are designed, used and recovered. Yet these requirements alone do not ensure that recovered materials can be traded and used competitively at scale. Fragmented rules, uncertain material flows and weak demand for secondary inputs continue to constrain circular markets. The next wave of regulation therefore aims to complement product-level requirements by strengthening the market conditions for circular value chains.

The planned Circular Economy Act (CEA), expected to be presented by the European Commission before the end of 2026, is intended to strengthen the Single Market for secondary raw materials and improve the economics of circular value chains. A key issue is the regulatory distinction between waste and secondary raw materials. Materials classified as waste remain subject to specific waste-management and shipment requirements, which can make their use and movement more complex even where they could

[4] *The Clean Industrial Deal (2025) aims to double the EU circularity rate to 24% by 2030 and positions circularity alongside decarbonisation and industrial resilience as a pillar of European competitiveness.*

[5] *The European Sustainability Reporting Standards (ESRS) set out the detailed sustainability disclosure requirements under the CSRD. ESRS E5 specifically covers resource use and the circular economy.*

Figure 7: Barriers to scaling circular business models and potential regulatory and policy levers

Barrier	Description	Potential regulatory and policy levers
Weak economics	Recycled inputs often cost more than virgin alternatives.	Recycled-content rules, public procurement and pricing of negative externalities can strengthen demand and competitiveness.
Uncertain feedstock	Low collection rates and fragmented return flows constrain reliable supply.	Recovery targets, take-back obligations and collection infrastructure can increase material availability.
Complex products	Products can be hard to repair, dismantle or recycle.	Ecodesign requirements can promote durability, repairability and recyclability.
Variable standards	Inconsistent quality and legal classification hinder secondary-material trade.	Common quality standards and clearer end-of-waste rules can reduce uncertainty.
Limited traceability	Incomplete product and material data complicate recovery and reuse.	Digital Product Passports can improve information flows across the value chain.
Misaligned incentives	Design, use and end-of-life costs fall on different actors.	Producer-responsibility and recovery obligations can better align incentives.
Financing and capability gaps	New infrastructure, systems and skills require upfront investment.	Targeted policy support can reduce investment risk and help models reach commercial scale.

Source and illustration: Danske Bank

serve as valuable inputs into new production. Differences in how waste and end-of-waste rules are applied can therefore restrict material flows and fragment markets for secondary raw materials. The CEA could help address these barriers through more harmonised definitions and end-of-waste criteria, fewer barriers to cross-border material flows, stronger demand for recycled content, and support for collection, recycling and refining capacity.

For these measures to strengthen European competitiveness, supply and demand need to develop together. More reliable flows of secondary materials of consistent quality can support scale and reduce uncertainty, while recycled-content requirements can strengthen demand. Regulation can therefore make circular business models easier to scale and create more predictable market conditions, but commercial viability ultimately depends on the costs, prices and investment needs of each value chain. Figure 7 summarizes the main barriers and regulatory levers that could help address them.

Complementing the CEA, Digital Product Passports (DPPs) are set to be gradually introduced through product-specific legislation under ESPR. They will create standardised digital records that link physical products to structured information about origin, materials, environmental impact, repairability, and end-of-life recycling. In combination, the CEA and DPPs point towards a future regulatory framework where material traceability, resource recovery and circular value creation become increasingly embedded in market conditions rather than remaining voluntary sustainability initiatives.



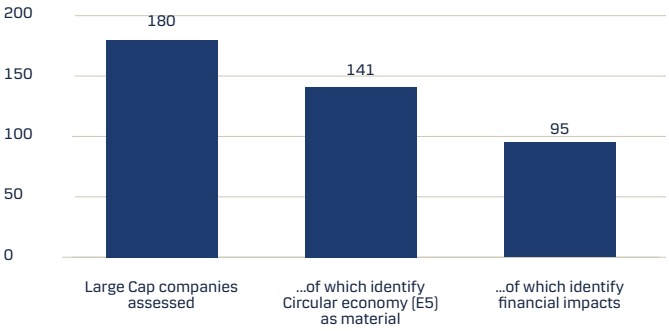
Regulation can create stronger foundations for commercially viable circular business models. For companies, the opportunity is to translate these improvements into lower costs, new revenue and greater resource security, rather than simply meeting new requirements. To capture this potential, businesses may benefit from preparing in three areas:

- **Material visibility:** developing better data on material composition, resource flows and recovery potential across products and operations.
- **Circular product design:** integrating durability, repairability, reuse and recyclability considerations earlier in product development.
- **Value-chain collaboration:** securing collection, refurbishment and recycling partnerships capable of creating reliable secondary material streams at scale.

A Nordic deep-dive

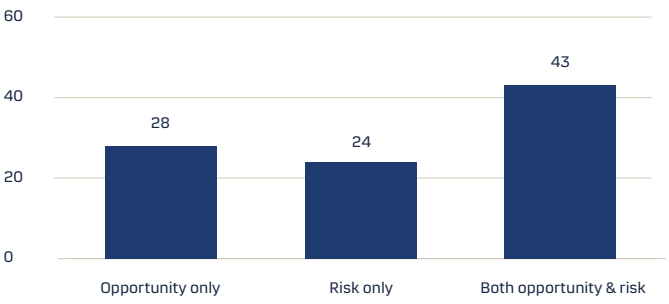
What Nordic companies already identify through CSRD
The paper began by asking whether circularity can reduce Europe's material vulnerability while creating financially viable opportunities for Nordic companies and capital providers. CSRD provides a practical starting point for examining that question. Through the double-materiality assessment, companies must consider both their impacts on resource use and circularity and whether these issues could affect financial performance.

Figure 8: Double materiality reporting



Source: Danske Bank analysis

Figure 9: Financial impact reporting split



Source: Danske Bank analysis

We reviewed the latest annual sustainability disclosures for 180 Nordic companies to examine whether companies identify the E5 Resource Use & Circular Economy topic as material in their ESRS double materiality analysis.[6]

Of the 180 companies reviewed, 141 identified circular economy under ESRS E5 as material. Of these 141 companies, 38% are from the industrials sector and 14% from materials. Among the same group, 95 also described a related financial risk or opportunity. Industrials and materials are also strongly represented among companies identifying financial risks or opportunities, reflecting the greater relevance of circularity in sectors with significant material use and resource exposure. However, the depth and financial specificity of the disclosures vary considerably.

Having identified the companies that associate circularity with a financial risk and/or opportunity, we then conducted a deeper analysis to better understand the underlying business rationale. Rather than focusing solely on which E5 topics were linked to financial impacts, we also examined the drivers that companies cite as the source of those impacts.

Given the significant variation in the breadth and granularity of CSRD disclosures, the results are presented as heat maps rather than absolute counts. The objective is not to compare disclosure frequencies, but to identify where circularity appears most strategically relevant across the sample and what factors are driving that relevance.

Circularity risks are increasingly linked to regulation and resource security

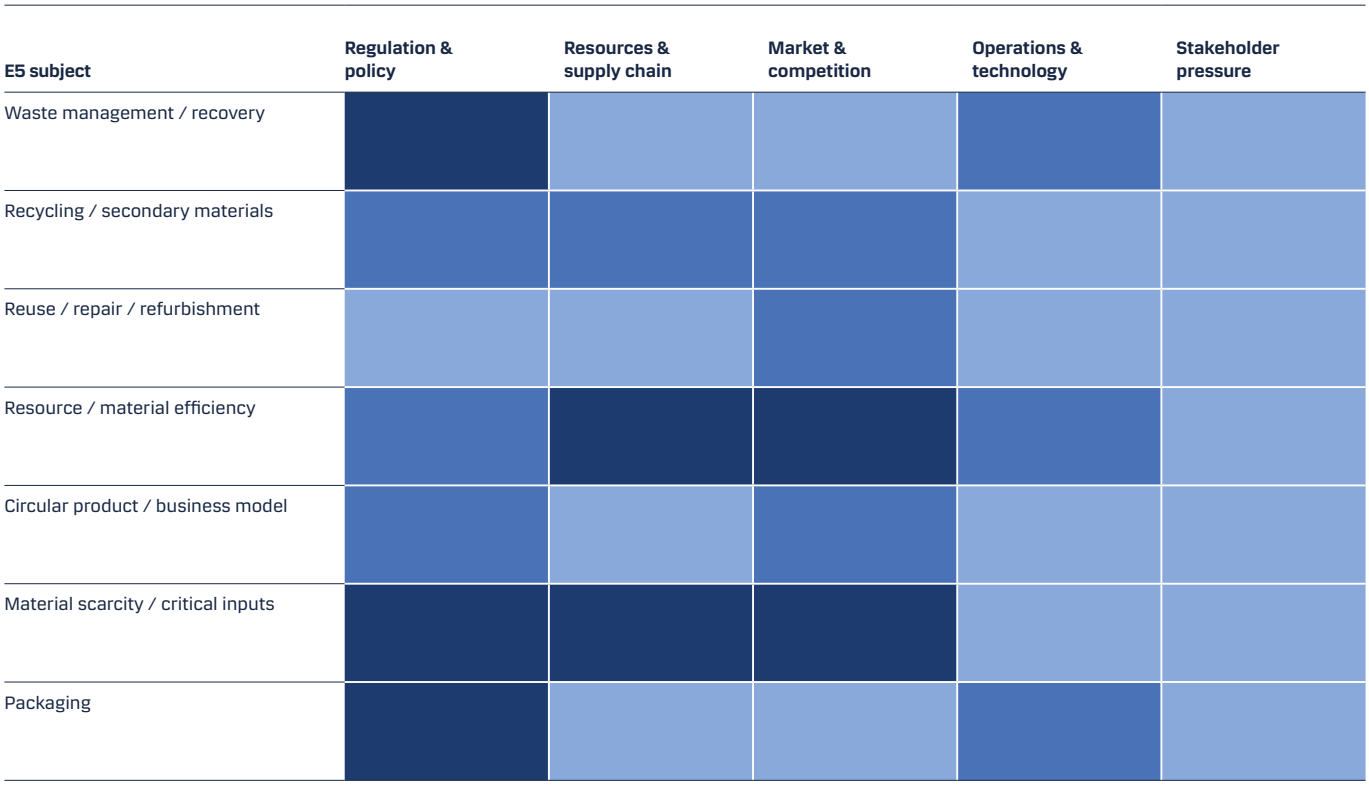
The risk heat map below supports two arguments developed earlier in the paper. First, Nordic companies[7] describe circularity regulation not as a stand-alone reporting issue, but as a growing operational and investment challenge. The strongest regulatory links reflect recurring references to packaging requirements, recycling rules and access to materials that meet tighter circularity requirements.

Companies point to higher operating and capital expenditure, greater administrative complexity and the need for new systems and capabilities. Several also note that progress depends on recycling infrastructure and secondary-material markets that are still developing. Regulation can therefore strengthen circular markets over time while creating material transition costs in the near term.

[6] *The analysis is based exclusively on publicly available sustainability reports prepared according to the European Sustainability Reporting Standard for an industry representable sample of 180 listed Nordic based companies with >EUR 1bn in market capitalisation. In the full 180-company sample, Industrials (34%), Materials (11%), Financials (10%) and Consumer Discretionary (9%) are the most represented sectors. The sample includes companies whose reports were suitable for AI-assisted screening. The analysis assesses how companies describe circularity-related impacts, risks and opportunities in their disclosures and does not independently verify the underlying activities, performance or financial effects.*

[7] *For example, Orkla, Fiskars and Hexagon highlight effects on sourcing, product development, waste management and end-of-life processes.*

Figure 10: Risk heat map



Note: The heatmap reflects the frequency of references to each E5 subject. Dark blue indicates high relevance (≥10 mentions), medium blue indicates medium relevance (>3 mentions), and light blue indicates low relevance (≤3 mentions).
Source: Danske Bank analysis and illustration

Second, the corporate disclosures support the argument that material dependence has become a strategic and financial issue[8]. The strongest links connect resources and supply chains with material scarcity and critical inputs, reflecting recurring references to supply security, recycled-material availability and resilient sourcing.

These risks extend beyond raw-material scarcity to supply disruption, supplier concentration and competition for recycled materials. The disclosures show that circularity risks increasingly affect financial performance through supply-chain resilience, access to critical and recycled inputs, and the need to secure material availability in a more constrained and uncertain operating environment.

Circularity opportunities are primarily driven by markets and value creation

Alongside these risks, circularity also offers opportunities to strengthen competitiveness and create value. The opportunity heat map provides empirical support for two arguments developed earlier in the paper. First, Nordic companies[9] primarily frame circularity as a market opportunity. Across waste recovery, secondary materials, life extension and circular business models, firms describe circularity as a way to meet customer requirements and strengthen competitiveness. Second, the corporate disclosures[10] support the value-retention logic discussed earlier. Maintenance, upgrades, refurbishment, take-back programmes and lifecycle services allow firms to create value beyond the original sale. This can generate recurring revenue and strengthen customer relationships.

Overall, the disclosures suggest that circularity opportunities are most often linked to stronger market positioning, recurring revenue streams and greater value creation from products, materials and services over a longer lifecycle.

From company-level opportunities to Nordic value chains

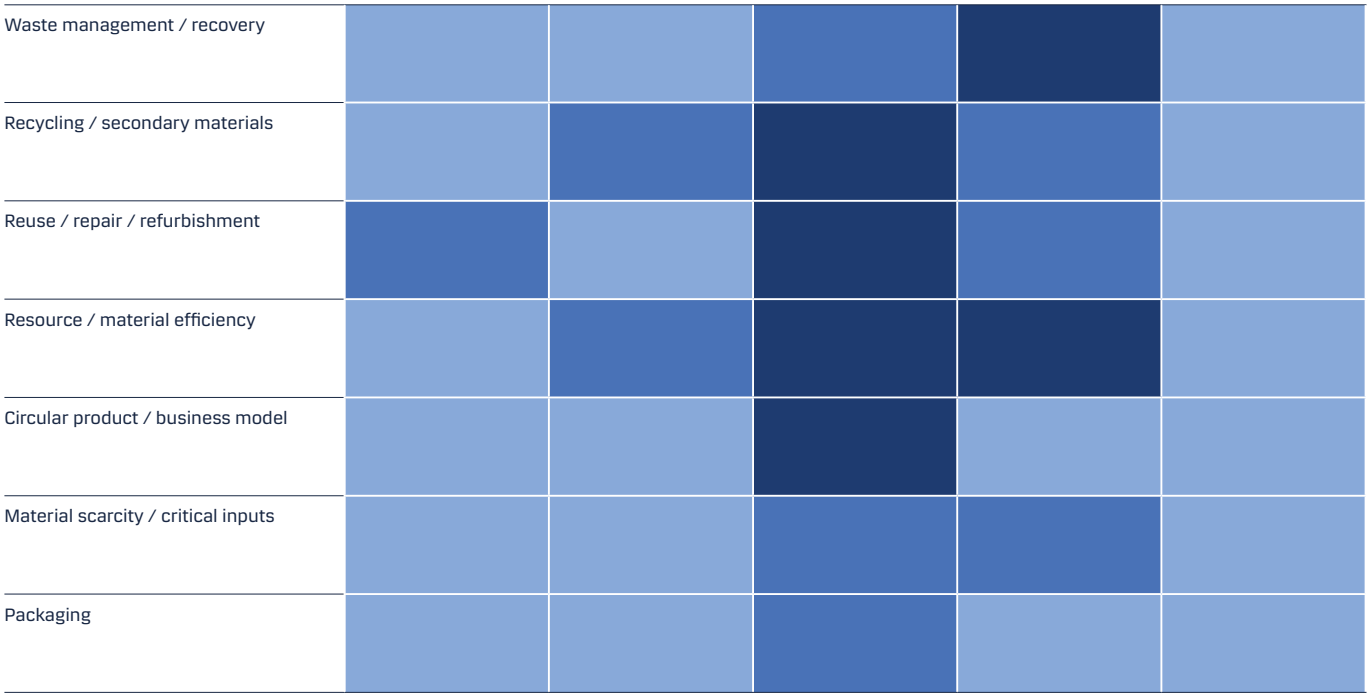
While many Nordic companies identify business opportunities linked to circularity, the region's overall circular performance suggests that substantially more value remains to be captured. The Nordic countries continue to exhibit some of Europe's lowest circular material use rates and among its highest material footprints (see figures 12 & 13). The high footprints partly reflect substantial demand for buildings, infrastructure and other material-intensive consumption. Low population density increases infrastructure needs per capita, while the material mix,

[8] *For example, Epiroc, Gränges and Munters highlight the need to secure critical materials & components and continued collaboration with key suppliers.*

[9] *For example, Outokumpu and SSAB identify these solutions as supporting customers in achieving their sustainability goals and lowering exposure to virgin-material prices.*

[10] *For example, Rockwool's Rockcycle take-back programme offers a concrete example, while Valmet and Alfa Laval illustrate a related route to growth through solutions and services to help customers extend asset life.*

Figure 11: Opportunities heat map



Note: The heatmap reflects the frequency of references to each E5 subject. Dark blue indicates high relevance (≥10 mentions), medium blue indicates medium relevance (>3 mentions), and light blue indicates low relevance (≤3 mentions).
Source: Danske Bank analysis and illustration

including construction minerals and biomass, contributes to overall material use[11]. At the same time, relatively low circular material use means that recycled materials currently substitute only a limited share of primary material demand.

A high material footprint is therefore not in itself evidence of poor circularity. However, combined with low circular material use, it indicates significant potential to reduce primary material demand and capture more value from materials already in use.

The Circularity Gap Report[12] estimates that Sweden loses approximately SEK 600 billion annually due to products being discarded prematurely, underutilised resources and other linear practices, illustrating the significant economic potential of more circular business models.

The next phase of circular value creation may therefore lie not only in recovering materials at end-of-life, but in building integrated Nordic value chains that keep materials in productive use for longer and at higher value. For investors and lenders, the key question is no longer whether materials can be recycled, but whether circularity can become a source of competitive advantage and long-term value creation.

The capital perspective

From circular ambition to financially relevant evidence
Companies that improve resource efficiency, increase the use of secondary materials, extend product lifetimes or recover materials through reuse and recycling may reduce their exposure to volatile commodity markets and concentrated supply chains.

However, circularity should not automatically be interpreted as lower credit or financial risk. Circular business models may require significant upfront investment, depend on reverse logistics systems, or rely on the development of secondary-material markets.

The business models in Figure 6 also have different financing implications. Retaining ownership or recovering products for resale can increase upfront or working capital requirements and delay when value is realised. They may also shift financial

[11] *Source : Statistics Explained (https://ec.europa.eu/eurostat/statisticsexplained/)- 27/07/2026. Europe's material footprint – European Environment Agency - 2025*

[12] *Circularity Gap Report (CGR) The Value Gap: Sweden*

Figure 12: Material footprint (tonnes per capita)

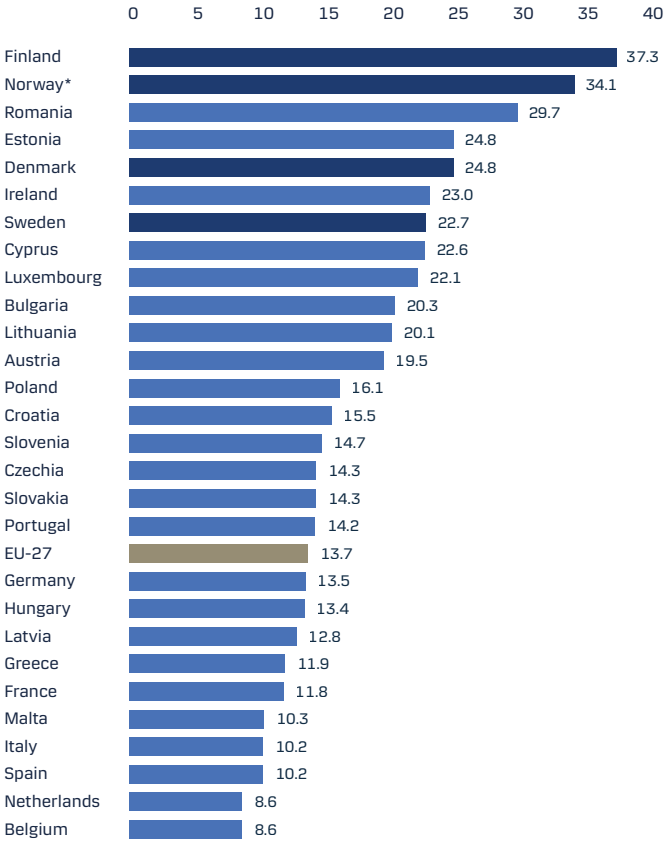
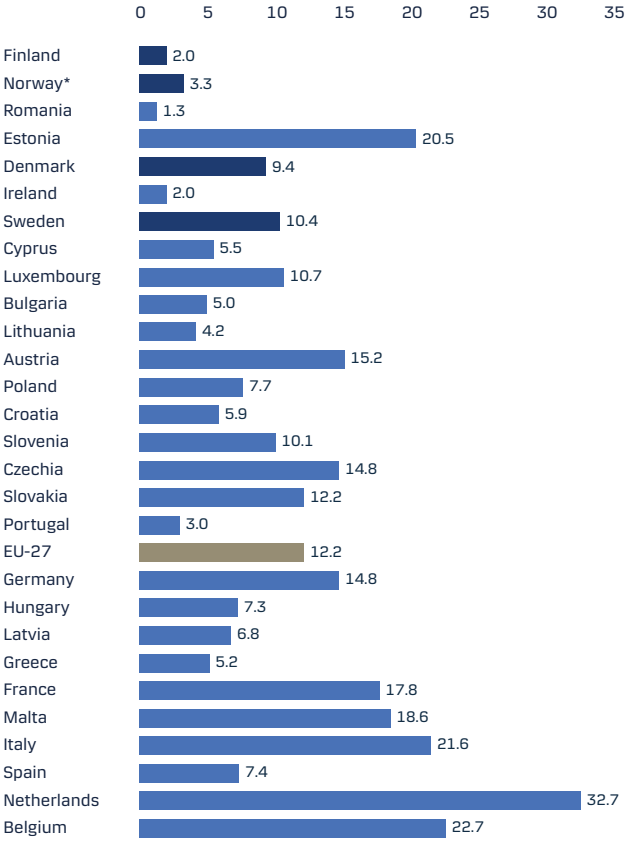


Figure 13: Circular material use (%)



*Source: Source: Eurostat, 2024 data. * Norway: material footprint – Eurostat, 2023; circular material use – Circular Norway, 2022 (Eurostat CMUR method). Different reference years. Footprint: raw materials supporting final demand, incl. imports. Circular use: recycled input / (DMC + recycled input); not waste recycling rate*

risks over time, for example by increasing exposure to asset utilisation, residual values or the efficiency of product recovery. From a financing perspective, the relevant question is therefore not which circular model is inherently more attractive, but how it changes cash-flows, capital needs and the company's overall risk-return profile.

The scale of these opportunities and challenges is increasingly reflected in capital markets. The European Investment Bank (EIB) estimates that Europe faces an annual circular economy investment gap of approximately €82 billion between 2025 and 2040[13]. Closing this gap will require substantial private capital, making the financial viability and scalability of circular investments increasingly important.

Mobilising capital at this scale will require capital providers to distinguish between circular initiatives that can strengthen long-term resilience and competitiveness and those that offer limited economic value. For investors and lenders, three questions are particularly relevant:

- **Evidence of reduced resource-risk exposure:** For investors and lenders, the relevance of circular initiatives extends beyond environmental benefits to their potential to reduce exposure to volatile commodity markets, critical raw materials or concentrated supply chains. An important consideration is whether circularity strengthens resilience relative to the existing business model.
- **Evidence of execution and scalability:** Many circular business models remain dependent on collection systems, reverse logistics, secondary-material markets and customer participation. Financing decisions will therefore depend not only on the strategic rationale, but also on whether companies can demonstrate a credible path to scale and commercial viability.
- **Evidence of financial performance:** Disclosure of recycling rates, waste volumes or circularity targets may be useful indicators, but capital providers ultimately assess financial outcomes. The focus is therefore increasingly shifting towards evidence of margin improvement, revenue generation, reduced input-cost volatility, asset utilisation and long-term cash-flow resilience.

This development is also reflected in the lending market. Recent research from Loan Market Association finds that 51% of loan market participants expect ESG factors to be embedded in credit decisions for most or all loans by 2040, influencing underwriting standards, risk appetite and portfolio allocation.[14] As sustainability factors become more integrated into credit assessment and pricing, demonstrating how circular strategies affect financial performance and resilience may become increasingly relevant to financing decisions.

A focused set of indicators can turn circular ambition into financially relevant evidence, both for internal decision-making and external reporting. Beyond recycling rates and waste volumes, indicators should show whether circular strategies reduce resource dependency, improve economics or create new sources of value. These could include reductions in virgin-material use and input costs, longer product lifetimes, product and component recovery rates, revenue from circular business models and reduced exposure to critical materials. Connecting these indicators to margins, asset utilisation, cash-flow generation and returns on capital can help demonstrate whether circular initiatives create financial value and justify the capital required.

The most useful indicators will vary by sector and business model, but the principle is the same: circularity becomes financially relevant when companies can demonstrate how changes in resource use translate into business and financial outcomes. For investors and lenders, the relevant question is therefore not how circular a company appears to be, but whether circular strategies strengthen long-term cash-flow generation and financial resilience.

Conclusion

Europe's material dependencies are increasingly a question of competitiveness and resilience, not only sustainability. For Nordic companies, this creates an opportunity to rethink how materials and products move through value chains, with the aim of reducing exposure to vulnerable external supply while retaining more economic value.

The analysis in this paper shows that Nordic companies already recognise many of the underlying risks and opportunities. However, disclosure of circularity-related opportunities does not in itself demonstrate realised financial returns. The next step is therefore to translate these opportunities into scalable business models and value chains where circularity can strengthen supply security, resource productivity and commercial competitiveness.

The Nordics are well positioned to contribute to this shift, but capturing the opportunity will require moving beyond isolated initiatives. Greater collaboration across value chains, investment in circular infrastructure and business models, and clearer links between circular strategies and financial outcomes will be important to unlock scale.

Ultimately, the relevance of circularity will depend on its ability to create tangible economic value. If companies can retain more value from products and materials while reducing dependence on vulnerable supply chains, circularity becomes more than an environmental ambition. It becomes a strategic lever for resilience, competitiveness and capital allocation.

[13] *EIB (2026) Transitioning to a circular economy: closing the investment gap in Europe*

[14] *Loan Market Association (2026) "2040: The future for EMEA loan market"*

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