



23.10.2024 Recommendation of the German Council
on Sustainable Development

Energy transition at risk: The raw materials squeeze and its impact on climate action

Recommendations for an EU raw materials pact to secure the
climate transition in economy and society

Executive Summary

As things stand, the development of key technologies for achieving critical climate targets in the energy, industry and transport sectors is not progressing quickly enough. Fundamental reasons for this include European and national governance and financing questions that have yet to be resolved, a severe skills shortage and complex approval procedures, different approaches to planning in Germany's Länder, a lack of social acceptance and, looming ever larger, international dependencies on products and raw materials. In the face of increasing dependence on imported raw materials and products from its global competitors, notably China, the European Union (EU) brought in the Critical Raw Materials Act, in force since May 2024. The EU must act coherently and en bloc, showing a united front to the outside world, if it is to be seen and taken seriously as a strong, reliable partner. Together with other democratically minded states, it should therefore develop a pact for raw material and product security that enables greater independence in raw material supply and at the same time incorporates social and environmental standards. And now seems like an opportune moment: as the new EU Commission takes shape and the new EU Parliament begins its work, everyone should be aware of this critical topic, not least against the backdrop of current geopolitical shifts.

For the implementation of such a pact, the German Council for Sustainable Development (RNE) has developed the following recommendations:

- Introduce an EU raw materials commissioner
- Introduce EU-wide raw materials monitoring
- Implement the supply chain act and sustainability reporting
- Incorporate sustainability criteria in international trade
- Raw material partnerships on equal terms
- Consider and potentially set up an EU raw materials fund
- Accelerate the transition to a circular economy
- Expand raw material extraction within the EU, subject to appropriately high social and environmental standards

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1. Starting Point

For truly effective climate action, a sizeable reduction in greenhouse gas (GHG) emissions is essential. From a present-day perspective – assuming a fundamental openness to technology – there are seven key technologies of note in the energy, industrial and transport sectors that can help bring this about¹: photovoltaics, wind power, lithium-ion batteries for electromobility, permanent magnets for electromobility and wind power, electrolyzers, heat pumps and green steel production plants (DRI shaft furnaces).

Currently, the development of key technologies for achieving critical climate targets in the energy, industry and transport sectors is not progressing quickly enough. Fundamental reasons for this include European and national governance and financing questions that have yet to be resolved, a severe skills shortage and complex approval procedures, different approaches to planning in Germany's Länder, a lack of social acceptance and, looming ever larger, international dependencies on products and raw materials. The development of these technologies should essentially follow the key cornerstones of sustainability that are the reduction of primary raw material consumption, energy efficiency, circularity of products, and raw material extraction in compliance with the prevailing social and environmental standards. Furthermore, it must also take into account the sufficiency approach for developing the use of raw materials with the aim of a categorical reduction in the overall balance, as set out in recommendation no. 7 below. The present recommendation paper focuses primarily on the topic of raw material security for climate technologies.

These key technologies² require different raw materials that are scarcely found in Germany and Europe or have not yet been tapped. On this basis, international value chains and production locations have sprung up, in which Germany and Europe are playing an ever smaller role and in which labour and environmental protection standards, from a global point of view, are often regarded as secondary. If we want to avoid jeopardising fulfilment of the climate and biodiversity targets as well as the sustainability goals in general, the availability of raw materials and products for climate technologies must be more firmly assured than ever before, not to mention secured within a very narrow timeframe. The EU must act coherently and en bloc, showing a united front to the outside world, if

¹ Cf. Prognos, Oeko-Institut, Wuppertal Institute (2023): Securing Germany's Sovereignty – Resilient Supply Chains for the Transformation to Climate Neutrality by 2045, a study commissioned by the Climate Neutrality Foundation. Available at: https://www.stiftung-klima.de/app/uploads/2024/05/CNF_2023-Study-Resilient_Supply_Chains_Sovereignty_long.pdf

² The present paper refers primarily to the key technologies outlined. We should, however, point out that many other industries are facing the same set of problems. In this context, it must be ensured that only climate-friendly technologies benefit from improved provision of raw materials, see recommendation no. 6.

it is to be seen and taken seriously as a strong, reliable partner. Moreover, it should join forces with other democratically-minded states to develop a pact for raw material security.

At the same time, environmental and social standards governing the extraction, processing and supply of raw materials and products are essential for sustainable practice. They guarantee the protection of ecosystems, minimise environmental damage and ensure fair working conditions as well as the rights of the local population – all of which presents opportunities for sustainable economic development.

To significantly reduce dependencies and risks, Germany and the EU, especially in essential economic sectors like the climate transition, must dilute and dismantle old disproportionate dependencies by diversifying their supplier countries, as well as promote a new basis of cooperative partnership. Despite growing global demand and a highly variable distribution of raw materials – and value creation as a whole – the agreed climate targets must not be put at The Raw Materials Ordinance is designed to ensure the supply of 34 critical (e.g. helium, scandium) and 17 strategic raw materials (e.g. cobalt, copper). risk, either in the EU and Germany or worldwide.

2. EU raw materials pact to secure the climate transition

The EU's competitiveness vis-à-vis other actors, China first and foremost, is being put to the test; which is why the EU passed its Critical Raw Materials Act, in force since May 2024. Together with the Global Gateway Initiative³, they represent two notable instruments worth supporting that, on the one hand, aim to secure the availability of critical raw materials and, on the other, encourage partnerships with different countries.

The Critical Raw Materials Act is designed to ensure the supply of 34 critical (e.g. helium, scandium) and 17 strategic raw materials (e.g. cobalt, copper).⁴ The regulation essentially focuses on returning to exploration of raw materials within the EU, processing and recycling raw materials, as well as the categorical reduction of raw material consumption.

As part of the Global Gateway initiative, the EU offers a fair strategy of partnership with non-EU countries which, factoring in mutual interests, evaluates the

³ European Commission (2024): Global Gateway. Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/stronger-europe-world/global-gateway_en. Last accessed: 3 September 2024.

⁴ Regulation (EU) 2024/1252 of the European Parliament and of the Council of 11 April 2024 establishing a framework for ensuring a secure and sustainable supply of critical raw materials and amending Regulations (EU) No. 168/2013, (EU) 2018/858, (EU) 2018/1724 and (EU) 2019/1020 (Text with EEA (European Economic Area) relevance).

building of infrastructure in the energy, transport, health, education and research systems as well as the politically targeted issue of climate neutrality.

From an economic perspective in the democratic world, there exists welcome clarity and consensus on the critical dependencies on raw materials and the downstream value chains as well as on fundamental strategies for action. No individual company nor individual EU member state can fight or reduce these dependencies alone. As such, the RNE advocates a European pact which, on the one hand, would create between the EU, its member states, the economy and NGOs a shared basis for objectives, strategy and controls to secure raw material availability as well as supply chains for the climate transition. On the other hand, such a pact should, on this basis and in consultation with other democratically-inclined states, also gain influence and help shape opportunities globally. To implement this pact, the RNE has developed the following recommendations.

Recommendation no. 1: Introduce an EU raw materials commissioner

So far, the directorates-general, in particular the Directorate-General for the Internal Market and Trade, have not been working closely enough together on this important issue of securing raw materials. Furthermore, the European Commission does not yet make systematic enough use of Europe's market power in the context of trade agreements to effectively support trade and the purchase of raw materials and initial processing stages alongside companies. There is a lack of clear objectives, strategies and control instruments, as well as effective raw materials partnerships. The capacities of the EU Commission are currently insufficient for their implementation.⁵ Furthermore, the instruments of the EU's Common Foreign and Security Policy (CFSP) are not yet being used strategically enough to strengthen the influence and organisational capabilities of other democratically legitimate countries.

Recommendations: The European Commission should systematically integrate raw materials issues into its trade and climate policies in order to identify potential conflicts at an early stage. In the future, the European Commission directorates-general dealing with raw material issues should work very closely together to provide concrete support for companies in the raw materials supply chain, based on clear objectives. An EU raw materials commissioner should be appointed to provide support. This commissioner should also be able to propose the use of CFSP instruments.

⁵ Cf. Schulze, Meike (2024, p. 7): Security of Supply in Times of Geo-economic Fragmentation. Enhancing the External Dimension of the EU's Raw Materials Policy, SWP Comment no. 22, Berlin, SWP. Available at: <https://www.swp-berlin.org/publikation/security-of-supply-in-times-of-geo-economic-fragmentation>.

Recommendation no. 2: Introduce EU-wide raw materials monitoring

In Germany, the German Mineral Resources Agency (DERA) is tasked with monitoring critical raw materials and regularly reporting on the availability of these, which are crucial for the German economy. The monitoring of raw materials includes continuous monitoring of price developments as well as supply and demand trends for primary mineral raw materials and selected intermediate goods from the initial value-creation levels. The aim is to alert German companies early on to potential price and supply risks as well as critical developments on the raw material markets and help them develop suitable workaround strategies. To date, this type of monitoring is lacking at the EU level and the RNE believes it should be introduced.

Recommendations: Set up and develop a European raw materials monitoring system that regularly maps changes or developments affecting German and European dependencies across all value chains.

Recommendation no. 3: Implement the supply chain act and sustainability reporting

The conflicting goals between avoiding environmental pollution, protecting human rights, and the exploration and subsequent processing of raw materials represent a complex challenge that must be resolved both within the EU member states and in the context of global partnerships. The aim must be the kind of sustainable development that integrates and balances all of these aspects. Important instruments for managing these conflicting goals are the European Corporate Sustainability Due Diligence Directive (CSDDD), the Corporate Sustainability Reporting Directive (CSRD) and the EU taxonomy.

The European supply chain act aims to hold companies to account and ensure that they comply with environmental and human rights due diligence in their global supply chains. This should minimise or even reverse human rights and environmental risks and the resulting negative impacts.

Over and above this, the CSRD and the EU taxonomy create significant leverage for sustainable corporate governance. The CSRD obligates companies to produce detailed sustainability reports containing information about their environmental and social impacts as well as their governance practices. This promotes transparency and enables investors to make informed decisions. The EU taxonomy, for its part, provides a classification system for sustainable business activities, which helps companies to evaluate and communicate their activities with regard to environmental goals.

When implementing these regulations, care must be taken to ensure that the costs of the various reporting requirements do not jeopardise the

competitiveness of the European economy and, in particular, the objective of sustainably securing raw materials for climate technologies.

Recommendations: Conflicting goals between environmental protection and human rights protection and the raw materials exploration and processing, should be resolved in both the member states and in global partnerships through integrated approaches based on the principle of sustainable development. Transparency is to be created through the Corporate Sustainability Due Diligence Directive (CSDDD) and sustainability management and reporting in accordance with CSRD and the EU taxonomy. This should create the basis for sustainable corporate governance. In order to reduce the effort involved, greater coherence and, where appropriate, integration of the various reporting requirements are recommended. In addition, such transparency standards for sustainable business practices should be made more effective in the global market in cooperation with other democratically-minded countries.

Recommendation no. 4: Incorporate sustainability criteria in international trade

China, meanwhile, at times holds a dominant market position in the exploration of raw materials right through to their further processing into intermediate and, in some cases, finished goods. In the case of the seven key technologies identified for significantly reducing greenhouse gas emissions – PV, wind power, lithium batteries, permanent magnets, electrolyzers, heat pumps and green steel – between 50 and 100 per cent are in Chinese hands, from raw material extraction and processing to component production.⁶

Europe's dependence on these materials is also threatened by China's ban on the export of rare earth mining and processing technologies, which came into force at the end of December 2023. China has also announced plans to restrict the export of certain rare earths elements.

In general, state subsidies are still frequently used in the exploration and processing of raw materials worldwide, and environmental and human rights standards are not sufficiently observed. This leads to significant ecological and social consequences.

Recommendations: In order to successfully counteract subsidies that distort competition and are often harmful to the environment, the EU should work closely with democratically oriented countries to approach other groups of countries and nations with the aim of strengthening the World Trade Organisation

⁶ Cf. Prognos, Oeko-Institut, Wuppertal Institute (2023, p. 7): Securing Germany's Sovereignty – Resilient Supply Chains for the Transformation to Climate Neutrality by 2045, a study commissioned by the Climate Neutrality Foundation. Taking the mineral graphite as an example: 73% is extracted in China, up to 100% is processed there, and up to 91% is used in anode material. Because of its conductivity and thermal properties, graphite is an important material not only in electromobility but also for the energy transition as a whole. As such, the availability of this mineral is especially significant for the German automotive industry and its transition to electromobility.

(WTO) in the interests of fair and sustainable competition. In doing so, it could, on the one hand, press for the introduction of effective sanctions in the event of threatened export restrictions. On the other hand, the EU should work within the WTO to ensure that sustainability criteria are introduced in rules-based trade. This would promote more environmentally friendly and fairer trade practices worldwide.

Recommendation no. 5: Raw material partnerships on equal terms

Today's supplier countries of raw materials should be involved and supported in setting up processing steps and thus further value-creation steps in their own country. This can expand their economy and create jobs, income and therefore a better social basis for their citizens, which in turn contributes to essential sustainable development. But plans must also pay heed to compliance with internationally applicable environmental and social standards, inclusion of civil society, the creation of a favourable business environment and the necessary investments in infrastructure.

Recommendations: The German federal government and the EU should develop attractive, bespoke offerings for partner countries, naturally in accordance with recognised social and environmental standards such as the IFC (International Finance Corporation) Performance Standards and the ILO (International Labour Organization) core labour standards. The raw material partnerships that already exist must be backed up by tangible measures that fairly consider the interests of the partner countries. As part of the Global Europe instrument on international cooperation, the EU should support projects in partner countries that redress environmental damage, qualify workers and improve health and safety in mines, for instance. Plus, the Global Gateway funding should be significantly increased as part of the Multiannual Financial Framework (MFF) from 2028 on.

Recommendation no. 6: Consider and potentially set up an EU raw materials fund

The German federal government has announced its intention to set up a partly state-run raw materials fund, with the aim to improve domestic companies' access to raw materials and reduce entrepreneurial risks. This should enable raw material projects to be identified along the entire value chain, including recovery, and the requisite financing to be better secured than before. Here too, the financing will be conditional on existing sustainability reporting. A good example here is the project for lithium mining in Freiberg/Zinnwald supported by the federal government and the federal state of Saxony.⁷ Alternatively, a raw materials fund could also serve as an umbrella for various measures, such as holdings in projects abroad or the application of existing tools like untied loan guarantees.

⁷ Cf. The Federal Government (2024): Europe's biggest lithium project. Available at: <https://www.bundesregierung.de/breg-en/news/press-statement-chancellor-mining-authority-2306486>. Last accessed: 3 September 2024.

This instrument could also be useful at the European level and could strengthen the competitiveness of the European economy through secure supply chains.

Recommendations: The EU should explore setting up an EU raw materials fund, which could reside with the European Investment Bank (EIB).

Recommendation no. 7: Accelerate the transition to a circular economy

The EU has set itself ambitious goals for accelerating the transition to a circular economy and reduce overall primary raw material consumption. In 2020 the European Commission adopted the Circular Economy Action Plan, comprising measures to promote sustainable product design, minimise waste and facilitate recycling. However, there are still considerable challenges to be overcome in the development of a circular economy. The efficiency of the raw materials varies widely between the member states, and many sectors are still heavily dependent on linear economic models. And the recycling rates for certain materials, for example electronic scrap, have thus far been relatively low. Overcoming these challenges requires enhanced collaboration between the member states, not to mention investment in research and development. Indeed, the transition to a circular economy needs to be fast-tracked throughout the EU, with all hands on deck. Against this backdrop, the RNE welcomes and supports outright the national strategy on a circular economy that is currently in discussion.

In the context of securing the supply of raw materials for the energy transition, the recycling of rare earths elements is of particular importance. There is great potential here for reducing dependencies. In addition, the recycling of rare earths elements is generally more environmentally friendly than the extraction of primary raw materials, as less toxic waste and CO₂ are produced.

Recommendations: The transition to a circular economy in the EU must be fast-tracked from all sides. Under the Horizon Europe pillar Global Challenges and European Industrial Competitiveness⁸, the European Research Area (ERA) should factor in the transition more heavily and focus on alternative technologies, materials and the categorical reduction of raw material intensity in support of safe climate transformation. To ensure we can meet the resource demand for the transition, it is essential to reduce primary raw material consumption to a sustainable and just amount. Mandatory international and national reduction targets will be needed and considerably more will have to be invested in the research and development of rare earth recycling and corresponding business cases for companies. In its statement Circular Economy: Leveraging a Sustainable Transformation⁹, the RNE has already developed recommendations for a circular

⁸ Federal Ministry of Education and Research (2024): Programme structure of Horizon Europe. Available at: <https://www.horizont-europa.de/de/Themen-1717.html> (in German). Last accessed: 3 September 2024.

⁹ German Council for Sustainable Development (2021): Circular Economy: Leveraging a Sustainable Transformation. Available at: https://www.nachhaltigkeitsrat.de/wp-content/uploads/2022/02/20211005_RNE-Statement_Circular-Economy-1.pdf. Last accessed: 3 September 2024.

economy, but we also recommend that the EU sets up a new IPCEI (Important Project of Common European Interest) for the circular economy. The focus should be on a swift, practical transition that drives unmitigated raw material savings and efficiency as well as recycling for the benefit of climate transformation.

Recommendation no. 8: Expand raw material extraction within the EU, subject to appropriately high social and environmental standards

The expansion of raw material extraction within the EU is also of central importance. This will reduce dependence on imported products, the exploration and processing of which often takes place with little regard for labour and environmental standards and increase security of supply. The European Commission has created initiatives like the European Raw Materials Alliance to promote collaboration between industry, research institutions and governments. The aim is to intensify the mining and processing of critical raw materials in Europe and to develop innovative technologies that are more environmentally friendly and efficient than conventional technologies.

Adherence to high environmental and social standards in the development of raw material extraction within the EU includes protecting biodiversity, reducing the environmental impact and guaranteeing fair working conditions. The EU should use sustainable practices to ensure that the resumption and expansion of raw material extraction is need-based and does not come at the expense of the environment and society.

Investments in research and development are equally crucial for developing new mining technologies and recycling methods. Greater use of “urban mining projects”, which recover valuable raw materials from electronic waste, can likewise play an important part in raw material supply.

Recommendations: The objective must be to swiftly examine which areas within Germany and the EU lend themselves to sustainable raw material exploration and processing. This includes developing exploration strategies that incorporate sustainability criteria from the outset. As set out in the Coalition Agreement of the present federal government, federal mining law needs to be modernised.

The capacities of the relevant authorities should be improved with regard to efficiency and processing quality, also with the assistance of modern digital technologies, to ensure prompt authorisations and implementation as well as to enable flexible response to new topics, such as the extraction of new raw materials.

It is crucial in all interests that framework conditions – i.e. laws, procedures and structures – are designed to permit a quicker approval process for all authorities involved.



Moreover, it is imperative to ascertain the skilled labour needs for exploration and the various value-creation levels and to develop them in good time at all qualification levels and involving recognised German and European educational institutions. Only with a holistic approach can we secure the raw materials and product supply needed for a promising and sustainable climate transition.



About the German Council for Sustainable Development

The German Council for Sustainable Development (RNE) advises the Federal Government on issues of sustainability policy. It acts in this capacity as an independent entity, and since 2001 its members have been appointed every three years by the Federal Government. The Council consists of 15 public figures, comprising individuals from civil society, the business sector, the scientific community and the political arena. It has been chaired since 2023 by Reiner Hoffmann and his deputy, Gunda Röstel. The Council also carries out its own projects aimed at advancing the topic of sustainability in practical terms. In addition, it helps shape topically focused momentum within policy and societal dialogue. The Council is supported in its activities by an administrative office based in Berlin.

Imprint

German Council for Sustainable Development (RNE)
Office c/o Deutsche Gesellschaft für Internationale Zusammenarbeit
(GIZ) GmbH
Potsdamer Platz 10
10785 Berlin
↳ nachhaltigkeitsrat.de