ZMR



Responsibility for Germany

Framework for Raw Material Security

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Associations

BDSV

VDA | Verband der Automobilindustrie

VDMA

zvei electrifying ideas

Project team

RHEINMETALL

BMW GROUP

JOEST

VAC VACUUMSCHMELZE

Knowledge Partner

McKinsey & Company

AMT Advanced Mining Technologies | RWTH AACHEN UNIVERSITY

Foreword

Dear ladies and gentlemen,

The security and defence industry, the automotive industry, machinery and equipment industry, and the electro and digital industry all depend heavily on a reliable supply of raw materials. This is why critical raw material supply chains must be secured strategically. A competitive industrial base continues to depend on open markets, international partnerships, and free trade. Companies have begun to diversify their supply chains. However, export restrictions and disrupted trade routes show that measures taken by individual companies reach their limits in the face of geopolitical and systemic risks. Industry and government must therefore align their activities more closely and complement each other in a targeted manner. This is not about turning away from international trade, but about navigating it strategically and creating additional capacity to act where market mechanisms no longer ensure sufficient security of supply.

With the Framework for Raw Material Security (ZMR), the German industry associations named here are taking an important step toward greater security of supply for Germany as an industrial location. The ZMR outlines potential approaches for how industry and government can jointly contribute to reducing risks in raw material supply chains and strengthening raw material supply over the long term.

Our gratitude goes to the participating companies and the German Federal Government for the open, constructive, and trust-based dialogue. We would also like to thank McKinsey & Company, in particular Roland Rechtsteiner, Marlene Heimer, and Christian Horend, as well as the Institute for Advanced Mining Technologies at RWTH Aachen University, particularly Elisabeth Zoëga (formerly Clausen), Sebastian Wiele, and Alexandra Eberst, for their expert support.

The framework provides a foundation for the next step: translating the concept into implementation through close collaboration between industry and government and further developing it as a basis for resilient value chains.

Armin Papperger
President, BDSV

Hildegard Müller
President, VDA

Bertram Kawlath
President, VDMA

Daniel Hager
President, ZVEI

Executive Summary

Germany's industrial value creation is heavily dependent on a reliable supply of critical raw materials. At the same time, the extraction, processing and refining of numerous raw materials are concentrated in just a few countries. Geopolitical tensions, export restrictions, and market-distorting interventions can therefore lead to supply disruptions, significant price increases, and production outages in the short term. **Ensuring access to critical raw materials is therefore a key prerequisite for supply security, competitiveness, technological sovereignty, and resilience of Germany as an industrial location.**

The industry-led **project "Framework for Raw Material Security (ZMR)"** has, in dialogue with the Federal Government, examined why existing activities and measures undertaken by industry, the Federal Government, and the European Union have so far failed to achieve a systematic reduction of critical dependencies. The analysis shows that the central challenge is not the lack of individual instruments, but their insufficient alignment. Government programs, financing mechanisms, international partnerships, and European initiatives are still not systematically prioritized and integrated into a coherent operational approach.

On the **industry** side, complex and multi-tier supply chains make it difficult to achieve end-to-end transparency and effective oversight of upstream stages of the value chain. While companies are aware of their key dependencies, the large number of actors and supply chain tiers involved limits their ability to influence them directly. At the same time, long-term offtake commitments, project equity, and strategic stockpiles often exceed the risk-bearing and capital capacity of individual firms, particularly small and medium-sized enterprises. In addition, resilient sourcing may entail additional costs, while the availability of suitable mechanisms for price hedging and risk-sharing remain insufficient.

On the side of the **Federal Government**, responsibilities, competencies, and programmes are distributed across numerous ministries and institutions. There is a lack of central operational accountability, binding priorities, and coordinated decision-making processes for different supply scenarios. As a result, existing instruments such as the Raw Materials Fund, UFK guarantees, and raw material partnerships have only a limited overall impact. At the **European level**, the reduction of systemic dependencies is further hindered by a fragmented financing architecture, overlapping regulatory requirements, and lengthy administrative procedures.

International benchmark models, particularly the Japanese raw material security model, highlight key success factors for effective raw material security. These include a clear division of responsibilities between industry and government: industry provides the economic foundation for investment through aggregated demand, capital, and binding offtake commitments. Operational market actors, such as trading houses, develop projects, organize trading and stockpiling activities, and enter long-term offtake agreements. In doing so, trading houses act as intermediaries within the supply chain. The government sets strategic priorities, facilitates market access, and mitigates financial risks.

Building on these insights, the ZMR project adapted international success factors to the German context and developed the Framework for Raw Material Security as an integrated model consisting of three pillars.

1. A new industry-led **German Raw Material Trading House (DRH)** will aggregate demand, procure and trade raw materials, organize strategic stockpiling, and structure long-term investments and offtake agreements along the raw material supply chain. In doing so, the DRH is designed to provide German industry, including small and medium-sized enterprises, with low-threshold access to raw materials.
2. A new **German Agency for Raw Materials and Energy Security (DARE)** is to be established by expanding the mandate of the Federal Institute for Geosciences and Natural Resources (BGR). The agency would consolidate government capabilities, identify risks at an early stage, support strategic projects, coordinate financing instruments, and organize cooperation between the Federal Government, industry, and international partners.
3. The model also proposes **enhancements to existing risk-mitigation instruments** and introduces two new instruments: Contracts for Difference and a tax-based Resilience Premium.

The three pillars can only achieve their full impact when implemented together. The DRH re-quires public support to mitigate financing, price, and project risks. Conversely, public instruments depend on reliable industrial

demand, private investment, and binding offtake commitments. Operational responsibility for procurement remains with industry, while government provides the strategic and institutional framework.

The key challenge now is the transition from design to implementation. Industry and the Federal Government must establish a joint implementation task force, initiate the establishment of the DRH, define the mandate and resources of DARE, and operationalize the proposed risk-mitigation instruments. Rapid and coordinated implementation can reduce critical dependencies, mobilize investment in alternative supply chains, and strengthen Germany's ability to respond to supply disruptions and crises.

Recommendations for industry

1. **Launch the DRH founding process:** Interested companies should jointly create the corporate, financial and operational prerequisites for establishing the industry-led DRH.
2. **Increase supply chain transparency:** Companies should further enhance reliable transparency regarding critical raw material requirements, dependencies, and supply risks across up- and midstream stages of the value chain.
3. **Prepare strategic raw material projects:** Industry and the Federal Government should jointly identify suitable raw material projects and assess their contribution to security of supply, diversification, and economic viability.

Recommendations for policymakers

1. **Consolidate political responsibility and decision-making processes:** Responsibility for raw materials policy should be concentrated in four ministries. The Federal Ministry for Economic Affairs and Energy retains the lead and overall strategic steering; the Federal Ministry of Finance is responsible for the budgetary and risk framework; the Federal Foreign Office for country analyses, international development cooperation and foreign policy support; and the Federal Ministry of Defence for security policy assessment and defence-related requirements.
2. **Pool expertise in the BGR and develop it into DARE:** The Federal Government should gradually consolidate existing capabilities and resources of the BGR, as well as those of other publicly funded institutions and programmes, within the BGR. Building on this foundation, the BGR should be transformed into DARE, supported by a clear mandate and a sustainably funded resource base.
3. **Strengthen existing risk-mitigation instruments:** The Raw Materials Fund should be given more capital and greater flexibility, opened to exploration and recycling, and its procedures accelerated. In future, part of the roughly EUR 12 bn spent annually on international development cooperation should be used specifically to finance the risk-mitigation instruments.
4. **Introduce new risk-mitigation instruments:** Contracts for Difference should make raw material projects economically viable by mitigating price risks. In addition, a Resilience Premium should make it possible to claim tax relief for investments and verifiable additional costs incurred for resilient raw material supply chains.
5. **Steer ZMR implementation in a binding manner:** The Federal Government and industry should set up a joint, time-limited implementation task force with clear responsibilities, prioritised work packages, milestones and measurable targets.

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List of Abbreviations

AA	Federal Foreign Office
BDSV	Federation of German Security and Defence Industries
BMF	Federal Ministry of Finance
BMFTR	Federal Ministry of Research, Technology and Space
BMW	Bayerische Motoren Werke
BMWE	Federal Ministry for Economic Affairs and Energy
BMVg	Federal Ministry of Defence
DARE	German Agency for Raw Materials and Energy Security
DRH	German Raw Material Trading House
EIB	European Investment Bank
GRMN	German Resource and Mining Network
IDC	International development cooperation
JOGMEC	Japan Organization for Metals and Energy Security
VAC	Vacuumschmelze
VDA	German Association of the Automotive Industry
VDMA	Machinery and Equipment Manufacturers Association
ZMR	Framework for Raw Material Security
ZVEI	Association of the Electro and Digital Industry

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1 Background

Germany's supply of critical raw materials is at serious risk due to high market concentration and structural dependencies. Particularly in the refining stage, the dominance of a small number of countries creates significant risks for industrial value chains across a wide range of critical raw materials (see **Figure 1**).

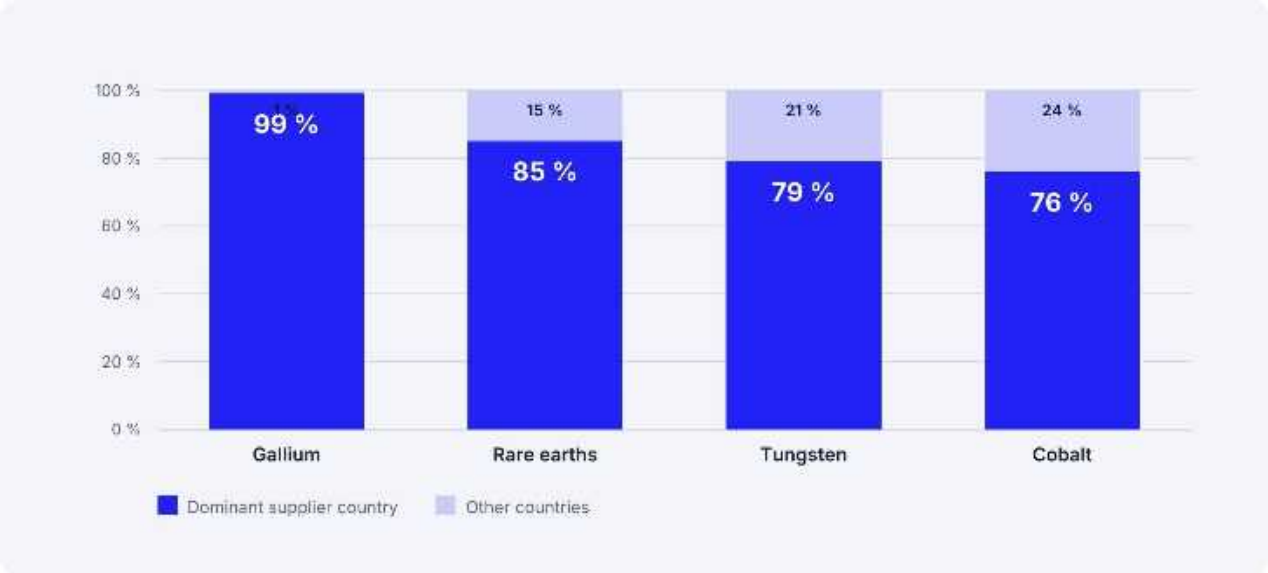


Figure 1: Market concentration in the refining of selected raw materials (2025)
Source: Own illustration adapted from IEA, 2025

These vulnerabilities can be exacerbated by **geopolitical tensions, export restrictions and market-distorting interventions** and can **have serious repercussions for industrial value chains**. The figures shown in **Figure 2** illustrate these structural dependencies and quantify the associated economic risks.

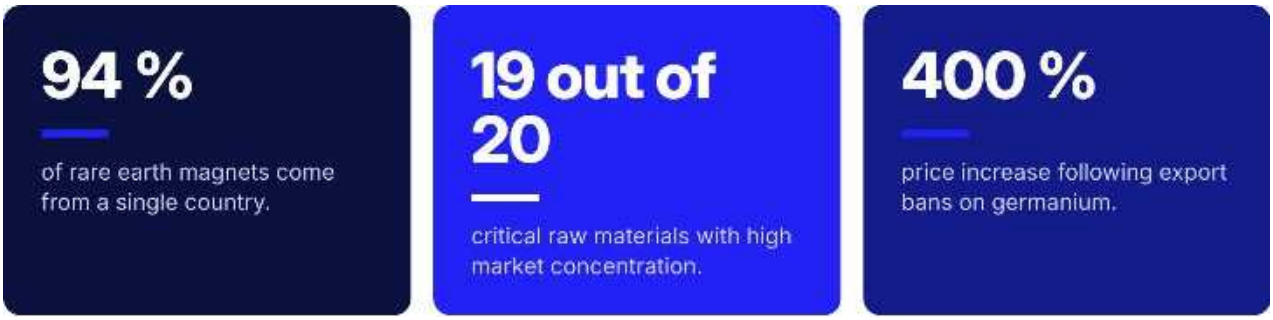


Figure 2: Supply chain vulnerability in numbers
Source: IEA, 2024; SNCC, 2025

Potential export restrictions on critical raw materials put around USD 6.5 trillion of global downstream production at risk (IEA, 2024). At the same time, 6 out of 10 German companies fear production stoppages as a result of export restrictions (IW, 2026), which could directly or indirectly **jeopardise four million jobs** and around **EUR 370 billion in value added** (McKinsey, 2025).

This makes clear that existing approaches by industry and policymakers – including risk-mitigation measures by individual companies and the Federal Government's Raw Materials Strategies pursued since 2010 – have not yet led to a measurable reduction in systemic dependencies. Instruments such as the Raw Materials Fund and raw material partnerships have created approaches for reducing dependencies. However, these remain fragmented, are only loosely coordinated and **lack a shared strategic objective**. As a result, **on their own**, they **do not have sufficient impact** to strengthen the resilience of industrial value chains in the long term.

International comparison shows that Germany has so far taken a less ambitious and less systematic approach than countries such as the USA or Japan, which have implemented institutional, financial and industrial policy measures to reduce dependencies. **What is needed, therefore, is an integrated approach** that effectively connects existing instruments and initiatives, enabling industry and policymakers to strengthen the resilience of raw material supply and secure industrial value chains in a coordinated manner.

2 Objectives and Project Organisation

In the absence of an integrated approach, the four industry associations (BDSV, VDA, VDMA, ZVEI), with 45 member companies – represented in the project team by Rheinmetall AG, BMW Group, Jöst GmbH & Co. KG and VACUUMSCHMELZE GmbH & Co. KG – joined forces in the "Framework for Raw Material Security" (ZMR) project. The aim of the project was to develop a new raw material security framework designed to strengthen the resilience of industrial value chains effectively and systematically (see **Figure 3**).

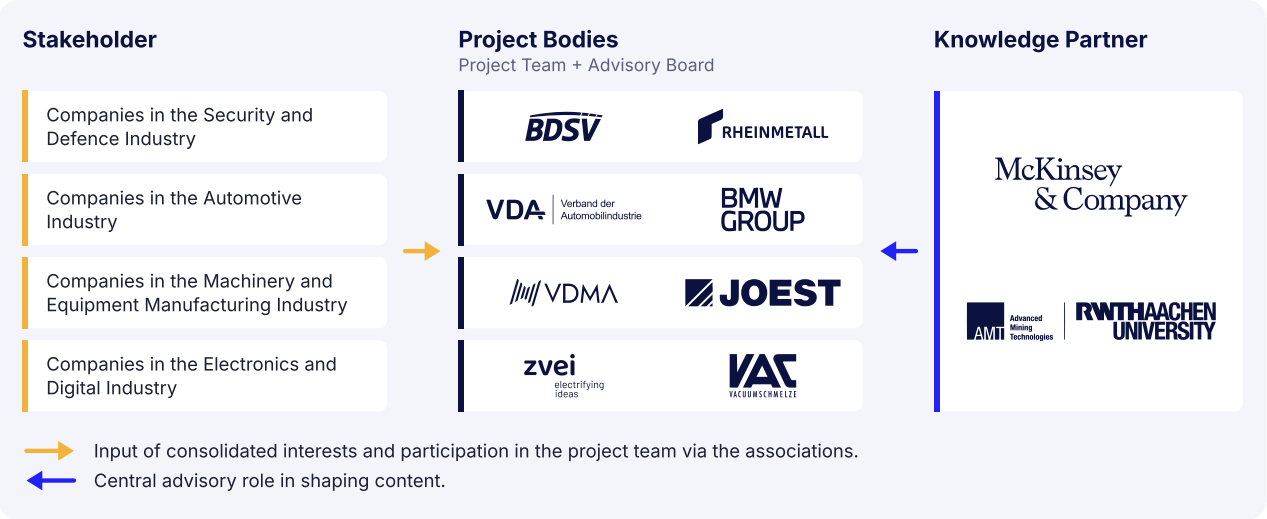


Figure 3: ZMR project organisation in the conception phase

Throughout the project, continuous dialogue was maintained with various federal ministries, which contributed their expertise and advice.

2.1 Analytical Approach

The raw material security framework was developed along clear guardrails:

1. **Firmly embed industrial responsibility:** The framework must ensure robust and long-term cooperation between industry and policymakers.
2. **Integrate political coordination and operational implementation:** The framework must demonstrate how political coordination, public instruments, and market-based activities can work together effectively.
3. **Reflect geopolitical and economic realities:** The framework must account for the changing geopolitical and economic environment and support a resilient long-term raw material supply.
4. **Draw on international benchmark models:** The framework should build on successful international models and systematically assess their strengths, weaknesses, and implications for the design of the German approach.

The raw material security model was developed in four steps (see **Figure 4**):



Figure 4: Development steps of the raw material security framework

The raw material security framework is to be presented to relevant decision-makers in industry and politics as an impetus for a forward-looking raw materials policy that consistently considers supply security, competitiveness and industrial resilience together.

2.2 Scope of the Analysis

The project examines raw material supply along industrial value chains. The analytical focus is on the value chain stages closest to the raw materials – extraction, processing, recycling and refining (see **Figure 5**). Upstream and downstream stages are also considered where they relate to the resilience of industrial value creation or specific risk-mitigation instruments.



Figure 5: Value chain stages within the scope of the raw material supply chain

The value chain stages identified here serve as the foundation for the further development of the framework. In particular, they provide the basis for defining the target vision of a resilient raw material supply that the raw material security framework seeks to achieve.

3 Target Vision for a Resilient Raw Material Supply

The target vision describes a state in which raw material supply remains transparent, robust, and effectively manageable despite changing geopolitical and economic conditions. **Resilience in this context means that security of supply is maintained even during periods of heightened geopolitical or market disruption.**

The target vision combines three dimensions (see **Figure 6**) into a coherent guiding vision, recognizing them as mutually reinforcing objectives:



Figure 6: Target vision for a resilient raw material supply

Supply Security

Supply security describes a state in which critical raw materials are reliably available to German industry and their provision remains assured without structural interruptions, even under changed or strained conditions.

Competitiveness

Competitiveness describes a state in which access to critical raw materials is available on economically viable terms and the international performance of German industry is maintained over the long term.

Responsible Supply Chains

Responsible supply chains describe a state in which access to critical raw materials is economically viable in the long term and enjoys public acceptance, because environmental, social and legal requirements are systematically met and improved along the supply chain.

The target vision combines supply security, competitiveness and responsible supply chains into a consistent, strategically guiding ambition.

3.1 Trade-Offs

Implementing the target vision involves trade-offs, as supply security, competitiveness and responsible supply chains cannot all be maximised at the same time. Greater resilience can increase costs, regional security can limit global flexibility, and binding commitments can reduce companies' room to manoeuvre. At the same time, ESG requirements must remain compatible with the speed of implementation. The following areas of conflict illustrate these tensions and are used to derive implementation priorities for the target vision.

COSTS vs RESILIENCE

Greater supply security through redundant or local supply chains increases costs and can undermine the international competitiveness of German industry. The key is **a balanced degree of resilience at economically** justifiable **additional cost**.

GLOBAL vs EUROPEAN

European sourcing strengthens stability and resilience, while global sourcing offers more flexibility and cost advantages. The key is a **strategic balance** between **regional security** and **global flexibility**.

COMMITMENT vs NON-COMMITMENT

Binding commitments by companies create planning certainty but reduce flexibility. **A low level of commitment** increases the flexibility of cost-optimised procurement but comes with **higher supply risks**.

SPEED vs ESG REQUIREMENTS

Compliance with legal requirements takes priority so as not to slow down the implementation of the target vision. **Further ESG improvements** can **follow in the medium to long term**, without weakening supply security or competitiveness.

In the short to medium term, supply security and competitiveness take priority. Further ESG improvements will gain importance in the long term, once supply has been stabilised and secured on an economically viable basis. This results in the following implementation priorities (see **Figure 7**):



Figure 7: Prioritisation by time horizon

3.2 Key Performance Indicators

Three key performance indicators were defined to steer the implementation of the target vision. They allow clear targets to be set, target achievement to be assessed transparently and measures to be derived in order of priority:

1. **Secured supply ratio:** The percentage of German industry's worldwide raw material requirements at the global sites to be secured that is actually covered by binding supply commitments from industry stakeholders.
2. **Diversification rate:** The share of raw material supply chains originating from countries[1] whose supply is considered to have a low risk of disruption. Diversified sources of supply reduce the risk of supply interruptions caused by political, economic or logistical disruptions in individual countries of origin.
3. **European diversification rate:** The share of European raw material supply chains. European sources of supply make sense in particular from a security policy perspective, as they reduce susceptibility to disruption. The assessment is based on raw-material-specific technical and economic conditions and their feasibility.

The following **Table 1** assigns the three key performance indicators to the target horizons 2029, 2032 and 2037. It serves as an initial frame of reference for the subsequent implementation and prioritisation of measures.

KPI	Target 2029	Target 2032	Target 2037
Secured supply ratio	50 %	70 %	100 %
Diversification rate	n/a	n/a	n/a
European diversification rate	n/a	n/a	n/a

Legend: n/a = not yet available. Defining specific KPIs must be left to the implementation of the framework, as it requires a sound assessment that would go beyond the technical scope and timeframe of the project.

Table 1: Key performance indicators (KPIs) for target achievement

The key performance indicators presented here are a conceptual approach to operationalising the target vision. The specific design, parameterisation and definition of target values for individual indicators are left to the implementation phase of the raw material security model.

[1] To be defined during the implementation phase of the framework.

3.3 Supply Scenarios

For industrial value chains to be resilient, it is essential that the target vision can be reliably achieved across different supply scenarios. This is the only way to ensure a coordinated approach between industry and policy-makers that allows a flexible and rapid response to different scenarios.

Three scenarios are defined below to enable a standardised approach to securing raw material supply chains that can be activated depending on the scenario:

1. **Baseline Scenario**
2. **Supply Shortage**
3. **Supply Crisis**

Table 2 sets out the scenarios in terms of key characteristics and shows when a transition from the baseline scenario to a supply shortage or supply crisis should be assumed:

		1. Baseline Scenario	2. Supply Shortage	3. Supply Crisis
Definition	Planning certainty	Given in the medium to long term	Temporarily limited	Not given
	Supply Security	Assured at all times	Noticeably limited	Acutely at risk
	Risk situation	Low and stable	Elevated and volatile	High and structural
	Disruption intensity	Minor and locally contained	Recurring with significant impact	Massive with systemic impact
Outcome	Delivery capability	Fully given	Partially limited	Largely not given
	Delivery times	Reliable	Frequently exceeded	Unpredictable
	Sources of supply	Stable and diversified	Of limited reliability	Severely limited / failed
	Reliability	High	Significantly reduced	Not given
	Manufacturer's production capability	Normal operations	Minor production disruptions	Production outage
	Cost calculation	Predictable	Sharp price increases	Sudden, massive price hikes
Trigger	Trigger for initiating the process	–	The process is triggered when **an interruption of supply becomes foreseeable** and reliable signals point to a noticeable restriction of delivery capability (e.g. a geopolitical event, announced significant delivery deviations, announced or emerging restrictive measures, disruption of critical transport routes, visible supply shortages).	The process is triggered when **an interruption of supply is imminent or actually occurs** and the disruption will have a massive, systemic impact (e.g. a geopolitical event, confirmed suspension of essential deliveries, comprehensive export bans or sanctions, longer-term failure of key corridors, broad and systemic scarcity).

Table 2: Supply scenarios

The supply scenarios thus provide a basis for classifying risks at an early stage, activating responsibilities and initiating scenario-specific measures in a structured manner.

DISCUSSION & INTERIM CONCLUSIONS – CHAPTER 3

The target vision for a resilient raw material supply makes clear that supply security, competitiveness and responsible supply chains can only be achieved together. To this end, the Federal Government and industry must develop a shared understanding of which raw materials, supply chains and countries of origin need to be prioritised, and which target values should be achieved for securing supply and for diversification, both worldwide and within Europe.

A key prerequisite for operationalising the KPIs is transparency along industrial value chains. Without reliable data on requirements, value chain stages, dependencies and susceptibility to disruption, actual raw material risks cannot be reliably identified and no effective resilience measures can be derived. The implementation phase therefore requires a mechanism for providing and evaluating relevant supply chain data that is sound from both a legal and a competition law perspective.

At the same time, implementation of the target vision must be designed from the outset to connect with European and international efforts. National measures must not operate in isolation, but must be integrated with EU initiatives, G7 cooperation and international partner structures.

Recommendations for industry.

- **Increase supply chain transparency** and identify dependencies and raw material requirements in order to use risk-mitigation instruments more effectively and target resilience measures more precisely.

Recommendations for policymakers and industry to be developed jointly.

- **Implement shared KPIs with continuous monitoring** to assess target achievement and the need for action reliably.
- **Systematically define low-risk countries** to create a common basis for risk-mitigation measures.
- **Create confidential data and cooperation frameworks** to strengthen information sharing and enable a shared situational picture.

4 Structural Barriers to Achieving the Target Vision

To ensure a resilient raw material supply, industry, the Federal Government and the European Commission are already relying on a **wide range of approaches and instruments**. However, these have not yet led to a systemic reduction in dependencies. The main reason for this is the **insufficient coordination between these approaches and instruments**, which means that their **overall impact remains limited**.

The following analysis identifies key structural shortcomings at the three governance levels – industry, the Federal Government and the European Commission – that make it difficult for the actors involved to implement existing strategic raw material objectives, such as those of the Critical Raw Materials Act (CRMA), in a coordinated and effective manner (see **Figure 8**).

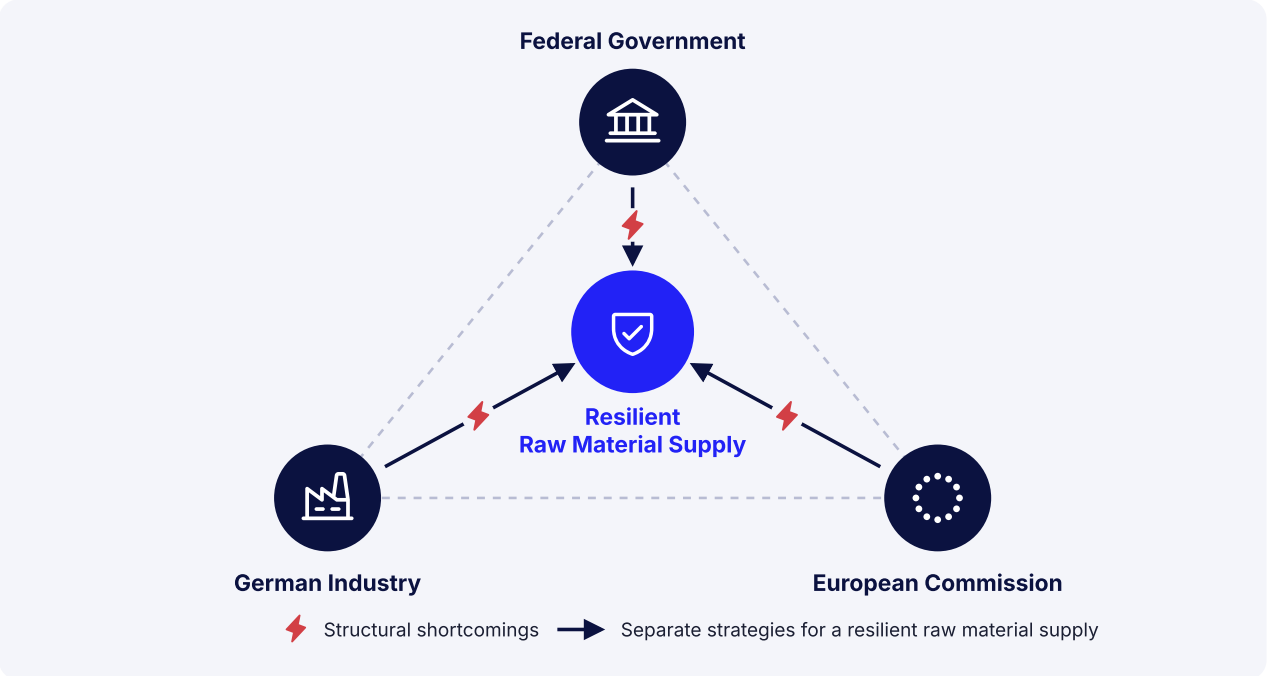


Figure 8: Interaction between German industry, Germany and the EU
Source: Own illustration based on research

INDUSTRY

Achieving the target vision for a resilient raw material supply requires the targeted involvement of industry. As **a central actor in global raw material supply chains**, industry has the deepest understanding of raw material requirements, market mechanisms and existing dependencies. Although **individual companies are already actively** working to secure their supply chains and both the Federal Government and the European Commission provide various raw materials policy instruments and support services, **structural and trade policy challenges** continue to hamper the implementation of effective risk-mitigation measures at company level (see **Figure 9**).

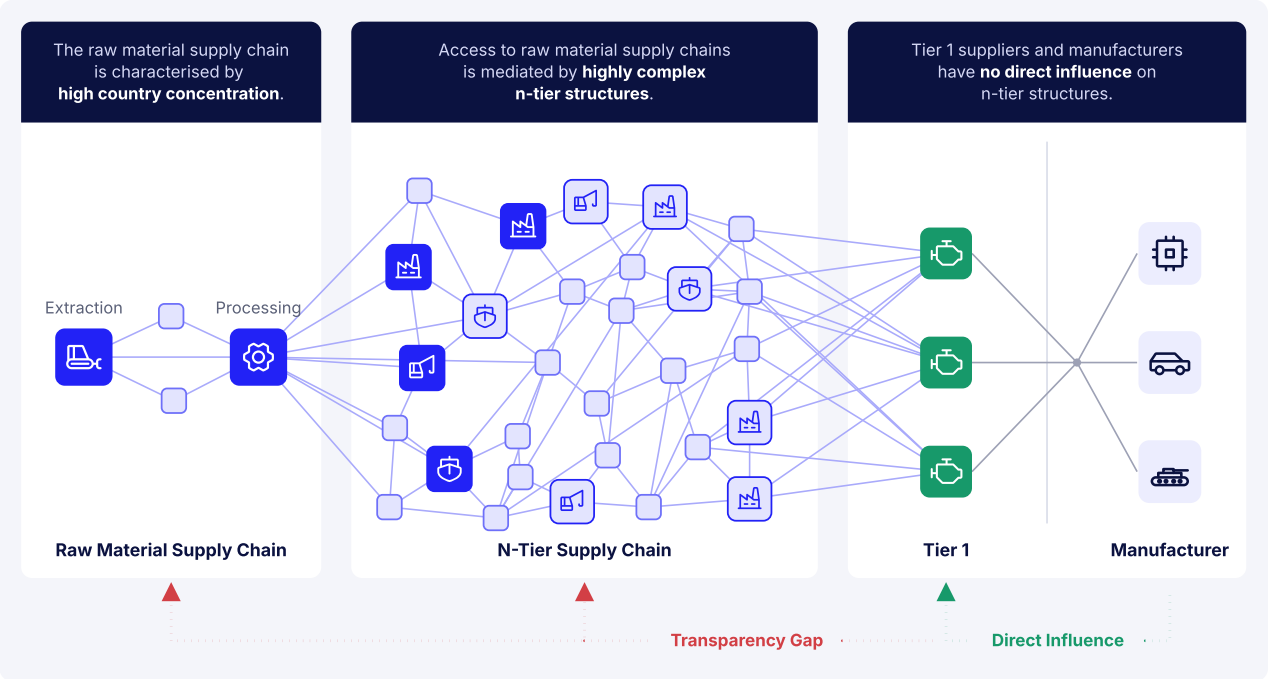


Figure 9: Structural challenges for diversified raw material supply chains
Source: Own illustration based on industry research

In detail, the following structural shortcomings arise at this governance level:

- **Complex, multi-level n-tier supply chains** limit transparency and control across upstream value chain stages. As a result, risks are often identified too late, which makes robust and forward-looking risk management along the supply chain more difficult.
- **The lack of capacity to aggregate raw material demand in a structured way** weakens the negotiating position of individual companies vis-à-vis producers and suppliers. At the same time, it makes it harder to scale up joint risk-mitigation measures and exploit synergies**.**
- **Limited risk-bearing and capital-bearing capacity** restricts the ability of many companies to participate directly in strategically relevant raw material projects. As a result, additional offtake rights, opportunities for influence and long-term risk-mitigation measures often remain untapped. Small and medium-sized enterprises (SMEs), which face high barriers to market entry and investment in the capital-intensive raw materials sector, are particularly affected.
- **The lack of price-hedging and commitment mechanisms** makes it difficult to conclude bankable offtake agreements. This reduces financing options for new raw material projects and can hold back investment in additional mining and processing capacities.

The shortcomings described make it clear that the target vision for a resilient raw material supply cannot be achieved through measures taken by individual companies alone. Rather, what is needed is a **cross-industry approach** that **pools individual activities** and translates them into a shared strategic framework.

FEDERAL GOVERNMENT

With the raw materials strategies of 2010 and 2019, successive Federal Governments sought to establish a strategic framework for the national raw material supply. Despite **ambitious objectives**, however, they did not succeed in building the institutional and operational structures this would have required. At the same time, existing **silo structures** and **insufficient coordination** between individual ministries hamper cooperation not only within the Federal Government, but also with industry and the European Commission (see **Figure 10**).

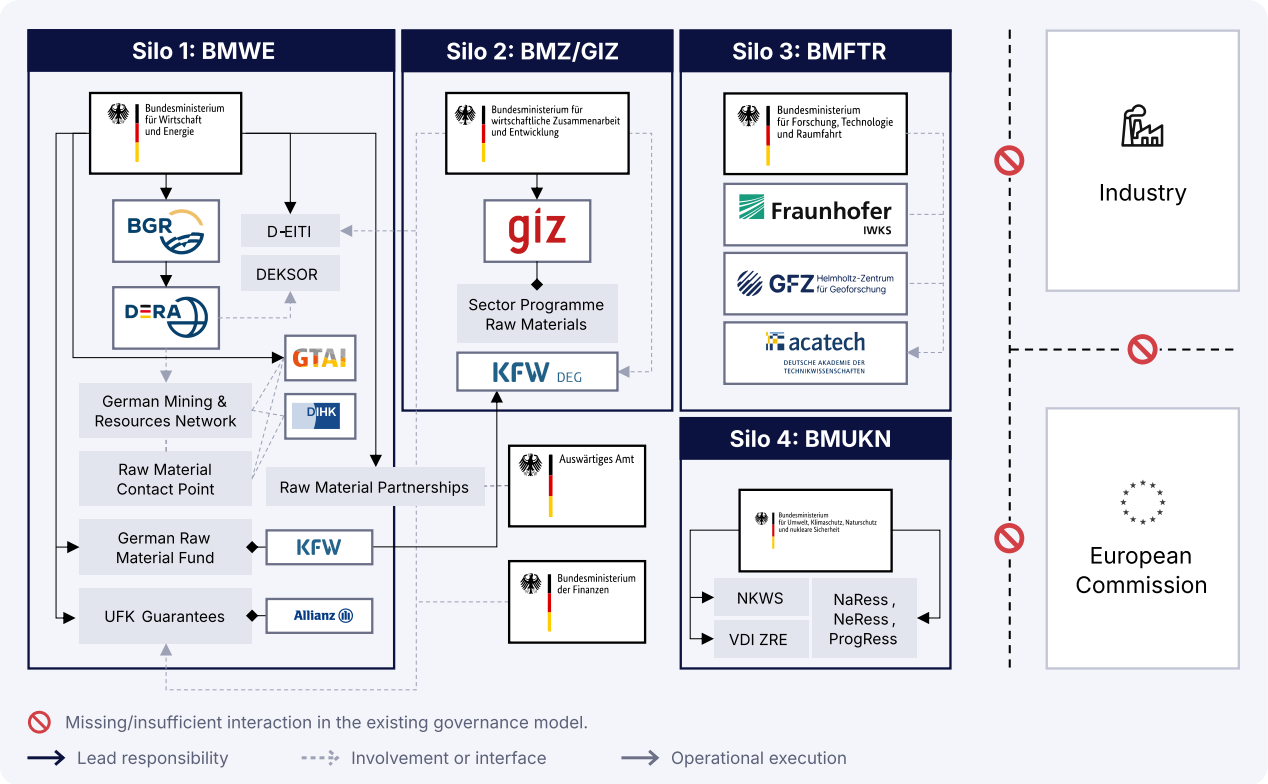


Figure 10: Status quo governance model in Germany
Source: Own illustration based on research

In detail, the following structural shortcomings arise at this governance level:

- **A coherent regulatory framework for German raw materials policy is still lacking**. Instead, policy is guided by individual strategy papers, fragmented initiatives and programmes, and the overlap between various sector-specific laws. This makes it difficult to set consistent long-term priorities and limits the capacity for strategic steering at national level.
- **Responsibilities are currently spread across more than 13 ministries and governemnt-funded institutions**. The resulting fragmentation makes it harder to link existing initiatives, leads to duplicate structures and limits the effectiveness of the instruments deployed. In addition, industry and international partners often lack clear points of contact and clearly assigned responsibilities, which hampers operational cooperation.
- **The operationalisation of existing raw material partnerships remains limited**. Despite a total of nine raw material partnerships, only five raw material projects in partner countries have so far received KfW funding, meaning that the potential of these partnerships for diversifying and securing supply chains has so far only been exploited to a limited extent.
- **There are not yet sufficiently institutionalised links between public and private capital**. Although important public financing instruments have been created in the form of the UFK Guarantees and the Raw Materials Fund, mechanisms for systematically involving private capital markets are still lacking. As a result, the mobilisation of additional private capital for strategically relevant raw material projects remains limited.

This makes it clear that the **institutional prerequisites** for effectively pursuing strategic raw material objectives are currently **insufficiently developed**. At the same time, there is a lack of robust structures for the close operational cooperation between the government and industry that is essential for building a resilient raw material supply.

EUROPEAN COMISSION

With the CRMA, the European Union has created a strategic framework for a **pan-European raw materials policy**. The **objectives it sets out are ambitious**. For example, by 2030 at least 40% of the EU's annual consumption of critical raw materials is to be met by processing and refining capacities within the European Union. However, achieving these goals is hampered by a **fragmented financing architecture** (see Figure 11), **complex regulatory requirements** and **lengthy permitting procedures**. Even the European Court of Auditors concluded in a recently published analysis[2] that existing initiatives and programmes have so far made no measurable contribution to reducing strategic dependencies and securing raw material supply chains.

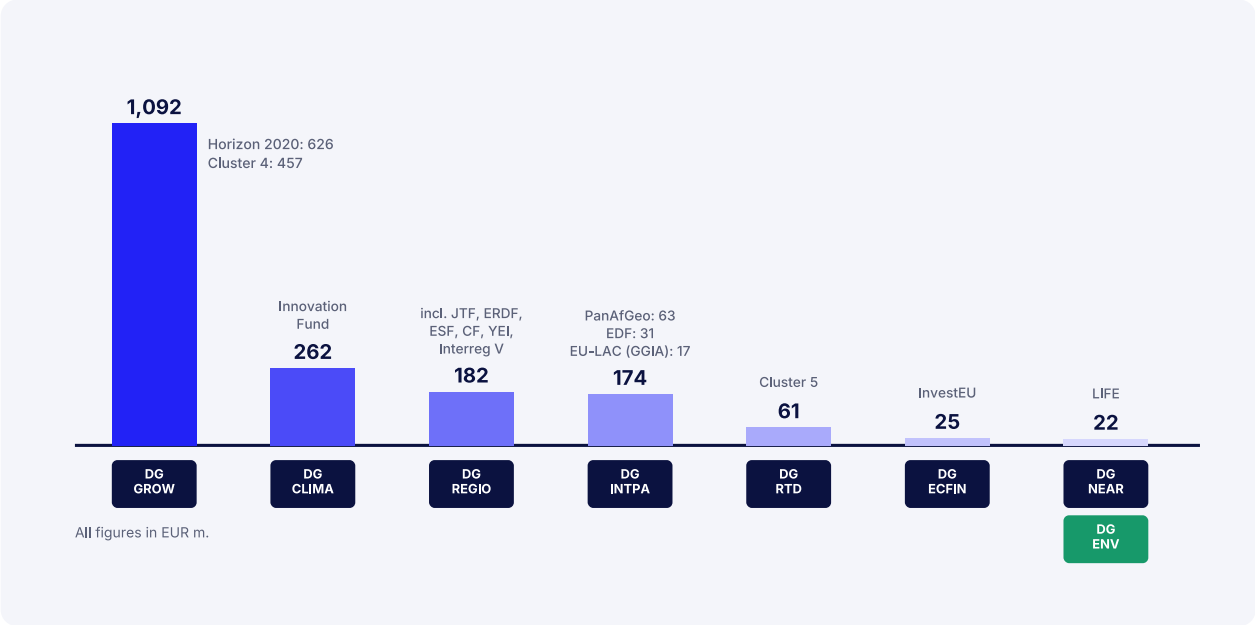


Figure 11: EU own funds for critical raw materials by DG, 2014–2027
Source: Own illustration adapted from European Court of Auditors (2026)

In detail, the following structural shortcomings arise:

- **Regulatory ambiguity and fragmentation** lead to overlapping requirements and extensive multiple reporting obligations. The resulting bureaucratic burden not only causes high compliance costs for companies, but also contributes to lengthy permitting procedures, which in individual cases can stretch over several decades.
- **The European financing architecture for raw material projects is highly fragmented.** Own funds of around EUR 1.8 bn for the period 2014–2027 are spread across more than seven programmes, while both industrial companies and operators of Strategic Projects under the CRMA report difficulties in accessing financing. At the same time, the European Court of Auditors notes that the contribution of many programmes to achieving strategic raw material objectives has so far been neither systematically measured nor evaluated.
- **The contribution of existing raw material partnerships to resilience remains limited.** Although the European Union cooperates with a large number of partner countries, trade data show that raw material

[2] European Court of Auditors (2026): Critical raw materials for the energy transition: No solid strategy in place, available online at: https://www.eca.europa.eu/de/publications/SR-2026-04.

imports from some partner countries have in some cases declined. In other cases, rising import volumes cannot be clearly attributed to measures taken by the European Commission or to the respective partnerships. The actual effectiveness of the raw material partnerships in diversifying and securing supply chains therefore remains unclear.

The shortcomings identified at all three governance levels form the central **basis for developing a new raw material security model for Germany**. This model aims to close existing structural and operational gaps between industry, the Federal Government and the European Commission at an institutional level and to create the conditions for coordinated implementation of the target vision for a resilient raw material supply.

DISCUSSION & INTERIM CONCLUSIONS – CHAPTER 4

Overall, industry, the Federal Government and the European Commission each have relevant strengths, instruments and options for action. However, they have not yet succeeded in combining these into a coherent framework for securing raw material supply chains. The central shortcoming therefore lies less in the absence of individual measures than in the lack of ability to effectively pool and prioritise industrial requirements, public instruments and European approaches, and translate them into joint operational implementation.

Against this background, the question arises of how other countries organise raw material security and which transferable success factors can be derived from this for industry, the Federal Government and the European Commission. Chapter 5 therefore serves as a frame of reference for developing a raw material security framework that can be operationalised nationally, brings together existing strengths and specifically addresses the shortcomings identified.

5 International Benchmarks for Implementation

As part of the analysis, international reference models were examined to derive transferable success factors for a new national raw material security model. China, the USA, Japan and South Korea were examined in depth, as these models represent different forms of national policy, operational implementation, financing, stockpiling and industrial involvement. The following overview presents the key findings for the four reference models examined in depth.



China pursues a strongly state-driven approach to raw material security that integrates raw materials, trade and industrial policy. Its key elements are

- the "Resources for Infrastructure" (RFI) approach and the Belt and Road Initiative (BRI), which are specifically aimed at countries of the Global South,
- financing of strategic activities through state-owned and private banks,
- the targeted development of international trade relations,
- and extensive vertical integration along global value chains.



The USA places greater emphasis on security policy prioritisation and the targeted diversification of strategic supply chains. Its key elements are

- government project grants as well as equity and de-risking instruments,
- support for offtake agreements and market-making measures,
- multilateral partnerships with allies,
- and the build-up and use of strategic raw material reserves.



Japan relies on close integration between the government and the private sector to secure the national raw material supply. Its key elements are

- active government coordination,
- government-backed project financing and risk-sharing instruments,
- trading houses with a global presence along the entire value chain,
- strategic raw material reserves,
- international raw material partnerships,
- and a strong focus on innovation, substitution and recycling.



South Korea's approach is similar to Japan's, although the government does not play a comparably active role. Its key elements are:

- government-backed project financing,
- strategic raw material reserves,
- and support for innovation and recycling.

In addition to the preceding analysis, further selected countries and regions were examined to assess other approaches to diversifying raw material supply chains, responding to crises and building up trading and project development capabilities. These countries show which other **specific capabilities** may be relevant for a national raw material security model. With Khanij Bidesh India Limited (KABIL), India demonstrates the importance of raw materials diplomacy. With Manara, Saudi Arabia shows the leverage of public financial power for international raw material investments. With OQ Trading[3], Oman provides a transferable example of building a trading house together with established partners. Singapore shows how hub structures – serving as a central regional logistics and financial pivot – and knowledge sharing can support the development of raw material trading competencies.

Across all models, one common finding emerges: **resilient raw material security does not result from individual instruments, but from their coordinated interplay.** What matters are clear mandates, consolidated responsibilities, operational implementation capabilities, financial risk mitigation, industrial demand and robust mechanisms for crisis response and long-term diversification.

From these analyses, overarching success factors can be derived that serve as a frame of reference for the new raw material security model for Germany. Figure 12 summarises these success factors and shows which elements have proved particularly effective internationally in making raw material supply chains more resilient:



Figure 12: Transferable success factors of international benchmark models
Source: Own illustration based on industry research

[3] Founded in 2006 as a joint venture between the then Oman Oil Company and a leading independent trading house, and later transferred to full state ownership.

EXISTING APPROACH – JAPANESE RAW MATERIAL SECURITY MODEL | DEEP DIVE.

The Japanese model is regarded internationally as a benchmark for effectively securing raw material supply chains. At its heart is a clear division of labour between government institutions, operational market players and industrial demand, jointly enabling private-sector risk mitigation.

Roles of the Actors.

JOGMEC: The Japan Organization for Metals and Energy Security (JOGMEC) plays a central role as a one-stop-shop agency. It pools raw materials policy instruments, provides technical expertise and reduces investment risks for private actors. In doing so, it creates the conditions for realising strategic raw material projects, as the example of the rare earth producer Lynas Rare Earths demonstrates.

Japanese trading houses: Japan's trading houses take on the operational market role, drive project development and raw material procurement, secure equity stakes and offtake, and act as the interface between the global market and industry.

Japanese industry: Secures demand through offtake and investment decisions, contributes technological requirements and uses the trading houses to secure supply

Mechanism.

The government reduces risks and sets priorities, trading houses develop projects in the market, and industry creates investment certainty through its demand. This enables projects that would not materialise under purely market-based conditions.

Transferable success factors in focus.



Hybrid governance

combines JOGMEC and trading houses for public-private risk-mitigation and operational implementation.



Financing ≈ EUR 12 bn through JOGMEC and government de-risking make strategic raw material projects bankable.



Industrial cooperation

aggregates requirements and offtake as the basis for bankable projects.

DISCUSSION & INTERIM CONCLUSIONS – CHAPTER 5

The success factors form the guiding principles for developing a new raw material security framework for Germany. At the same time, they show that effective raw material security requires action from both German industry and German government alike: The industry must strengthen its operational risk-mitigation capabilities, demand aggregation and value creation prospects. The Federal Government must pool government competencies, establish clear mandates and make financing, risk-mitigation and international cooperation instruments compatible with one another.

For Germany, the aim is not to copy an existing international model, but to make targeted use of transferable elements to remedy the identified structural barriers. Chapter 6 translates these requirements into a raw material security framework that can be operationalised nationally.

6 Framework for Raw Material Security

A raw material security framework is proposed for Germany that is intended to strengthen the capacity to act and effectiveness in five core governance areas (see **Figure 13**). Based on the preceding analysis, these were identified as the essential pillars of a successful raw materials strategy and are comprehensively addressed by the raw material security framework.[4]



Figure 13: The five governance areas of the optimised governance framework
Source: Author's illustration

6.1 Responsibilities and Competencies

As described in Chapter 5, effective governance models are characterised by institutional consolidation as well as clear responsibilities and mandates. For the **division of labour between industry, Federal Government and European Commission**, it is therefore proposed that regulation, strategic direction and scaling be anchored at the European level, while **operational implementation**, both through strategic partnerships and market-oriented activities, is jointly undertaken by the German Federal Government and industry **at the national level**.

Central to the approach is a **clear distinction between sovereign government responsibilities and operational responsibilities of industry**. While the government retains final decision-making authority in crisis situations and in the allocation of public funds; procurement, investment decisions and raw material offtake remain the

[4] A detailed explanation of the individual governance areas can be found in Appendix A.

responsibility of industry. This allocates responsibilities according to competence and makes use of the respective strengths of the government and industry in jointly securing raw material supply chains (see **Table 3**).

	Industry	Federal Government	EU Commission
	+ Provides data for strategy and prioritisation.	Defines national priorities and resolves trade-offs.	Defines regulatory guardrails.
	− Does not replace sovereign decisions.	Does not interfere in corporate procurement.	No substitute for national priorities. No case-by-case decisions.
	+ Builds supplier relationships along the supply chain.	Facilitates market access and protects industrial interests.	Negotiates partnerships and agreements.
	− Does not replace foreign policy.	Does not negotiate supply contracts.	Does not replace bilateral relations.
	+ Trades and invests to secure supply operationally.	Sets national rules and responsibilities.	Sets rules of the game and standards for cooperation.
	− Does not take on sovereign crisis management.	Not a trading or procurement body.	No operational procurement. Not a commercial actor.
	+ Provides capital and offtake.	Sets national financial framework (e.g. UFK etc.).	Scales national financial frameworks.
	− Does not permanently shift risks onto public budgets.	Does not fully assume business risks.	Does not automatically finance individual national projects.
	+ Implements due diligence obligations and data exchange.	Ensures legally and data-secure implementation.	Sets standards for predictability in the single market.
	− Does not replace standards or enforcement.	Does not enforce transparency to the detriment of competition.	Does not replace national enforcement.

Table 3: Labour division between industry, Federal Government and EU Commission

At national level, responsibility for the five governance areas is to be concentrated in four ministries, with lead responsibility anchored in the BMWE (see **Table 4**).

	Bundesministerium für Wirtschaft und Energie	Bundesministerium der Finanzen	Auswärtiges Amt	Bundesministerium der Verteidigung
	National priorities and target vision.	Fiscal guardrails.	Country and risk analysis.	Security-relevant requirements.
	Objectives for economic partnerships.	Assessment of financial risks.	Negotiation of partnerships and agreements.	Assessment of security policy situations.
	Instruments, activation logic and interfaces.	Requirements for risk and governance logic.	Political backing in the event of an incident.	Requirements for robustness and crisis preparedness.
	Prioritisation of instruments.	Budgetary and risk framework.	Input on partner country risks.	Prioritisation of critical requirements in security policy situations.
	Coherent compliance and data systems.	Auditability and reporting obligations.	International compatibility.	Security requirements and resilience.

Table 4: Ministerial responsibility matrix for Germany's raw materials policy

Building on the reorganisation of political and operational responsibilities, the structural barriers identified in Chapter 4 and the international benchmark models analysed in Chapter 5, the following raw material security framework for Germany is proposed. It comprises three core building blocks:

To effectively address structural barriers on the industry side, a national, industry-led **German Raw Material Trading House (DRH)** is to be established, modelled on the Japanese trading houses. Its mission is to develop strategic projects along the supply chain and to secure the supply of German industry through raw material trading.

To complement the DRH, the existing Federal Institute for Geosciences and Natural Resources (BGR) is to be developed into the **German Agency for Raw Materials and Energy Security (DARE)**, modelled on Japan's JOGMEC. DARE is to implement the Federal Government's raw materials strategy operationally and provide targeted backing for risk-mitigation measures.[5]

To support industry-led risk-mitigation measures, **new** and **optimised risk-mitigation instruments** are needed that reduce investment risks, mobilise private capital and enable risk sharing between the government and industry.

The success of the optimised raw material security framework depends to a large extent on the close integration and operational coordination of these three building blocks, as only their interplay ensures coherence across the five governance areas and enables industry-led risk-mitigation measures along the entire raw material supply chain (see **Figure 14**):



Figure 14: Interplay of actors and instruments along the raw material supply chain

[5] Energy is also considered, as raw material and energy supply are often subject to the same geopolitical risks and crisis dynamics and are closely linked to industrial transformation. However, the focus of the project and of the proposed DARE is on the security of supply of mineral raw materials.

6.2 German Raw Material Trading House

To address the shortcomings on the industry side, the Framework for Raw Material Security proposes the establishment of the DRH as an industry-led operational market player. The trading house is not intended to replace companies' own responsibility for procurement, but to provide support where individual companies have only limited capacity to act due to their limited leverage, a lack of demand aggregation or insufficient risk-bearing and capital-bearing capacity.

The objectives of the German Raw Material Trading House distinguish between short-term risk-mitigation and the medium- to long-term development of institutional capacity (see **Table 5**). These objectives result in a phased scope of activities along the raw material supply chain.

	Short term (< 2 years) Focus on securing critical raw material supply chains by creating suitable framework conditions.	**Medium & long term (2–10+ years)** Broadly diversified raw material portfolio to secure supply and ensure sustainable profitability.
Objective	**Securing** the physical availability of raw materials / **preventing** short-term **supply disruptions.** **Pooling purchasing volumes** of German industry.	Structural **reduction of dependencies** in raw material supply chains. Expanding **resilient** (raw material) **supply chains.**
Premise	■ **Commitment by shareholders to take a minimum volume** (aggregating volume demand from n-tier suppliers). ■ Access to existing **trading expertise** (existing trading house).	■ Building **sovereign capabilities** ■ Diversifying the trading portfolio to **reduce risk**

Table 5: DRH objectives by time horizon

In the short term, the DRH should focus on areas where existing market structures, industrial requirements and risk-mitigation instruments can be brought together quickly. The focus is therefore on stockpiling, distribution to customers and securing raw material flows that are available or close to development through aggregated demand and offtake.

In the medium to long term, the scope of activities can be extended to upstream activities such as exploration, extraction, processing and refining. However, these medium-term objectives require longer lead times, tie up more capital and need stronger government backing.

Initially, logistics and port services will not form part of the DRH's own operational infrastructure but will be provided by third parties and managed by the DRH. The resulting scope of the DRH's activities along the raw material supply chain is shown in **Figure 15**.

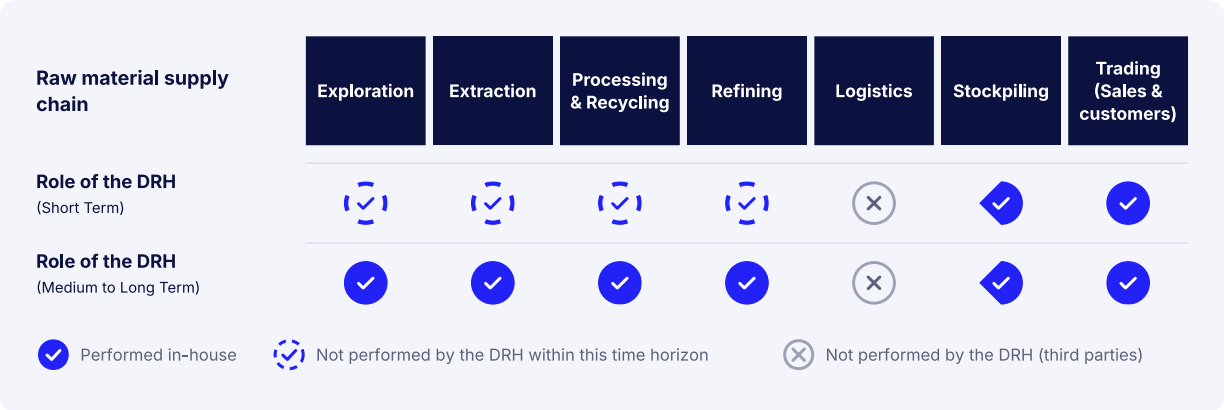


Figure 15: Scope of activities of the German Raw Material Trading House

The focus raw materials shown in **Figure 16** provide initial guidance for the potential raw material portfolio.[6]



Figure 16: Top 10 focus raw materials
Source: Own illustration based on an industry survey

These raw materials are not an exhaustive selection, but an initial starting point for the implementation phase of the raw material security framework.

For the governance of the DRH, it is crucial to combine strategic control by industrial shareholders with flexible and independent operations. A possible structure is shown in **Figure 17**.

[6] The focus raw materials were identified in a cross-industry survey conducted by the industry associations BDSV, VDA, VDMA and ZVEI. The focus was on raw materials critical to security of supply.

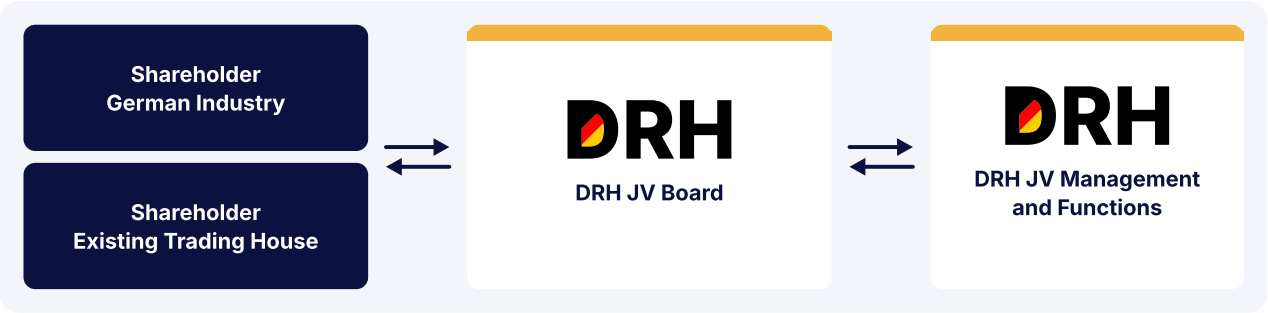


Figure 17: Shareholder structure of the German Raw Material Trading House

The governance of the DRH assigns clear roles to the actors involved. Together with "third parties", the industrial shareholders provide the strategic demand base. Third-party access therefore does not merely serve to scale the trading house economically but also broadens its demand base beyond the circle of shareholders and creates an essential prerequisite for the trading house – in conjunction with government support through risk-mitigation instruments (see Chapter 6.4) – to contribute to the resilience of German industry's raw material supply as a whole. The German industrial shareholders appoint the Board of the DRH together with an existing trading house.

The existing trading house contributes trading expertise, systems, processes and market access. The Board defines the strategy, risk policies and decision-making processes, thereby linking shareholder interests with operational management. Management is appointed by the Board and runs the operational business independently so that trading, stockpiling and offtake decisions can be implemented quickly and close to the market. This keeps the DRH strategically aligned with the requirements of German industry without being blocked in day-to-day business by individual shareholder interests or by politics.

6.3 German Agency for Raw Materials and Energy Security

As the national raw materials agency, DARE is to be given a strategic **mandate to ensure industrial supply security** and, in close **coordination with the Federal Government and industry**, to align all raw material-related capabilities and instruments with this objective. In light of recent geopolitical developments in the Strait of Hormuz, which highlight the close interdependence of raw material and energy supply chains, it is proposed that national energy supply be integrated in the future as an additional strategic field of action – following the example of Japan's JOGMEC – and integrated with raw material security within DARE. Within the ZMR, however, the **focus** is on **securing the supply of mineral raw materials**, to limit the scope of responsibilities and keep operational implementation manageable.

DARE is **not a new institution** but is created through the **targeted development and strategic realignment of the BGR** into a central industry and government partner for questions of raw material security. This process is to take place in two phases (see Figure 18).

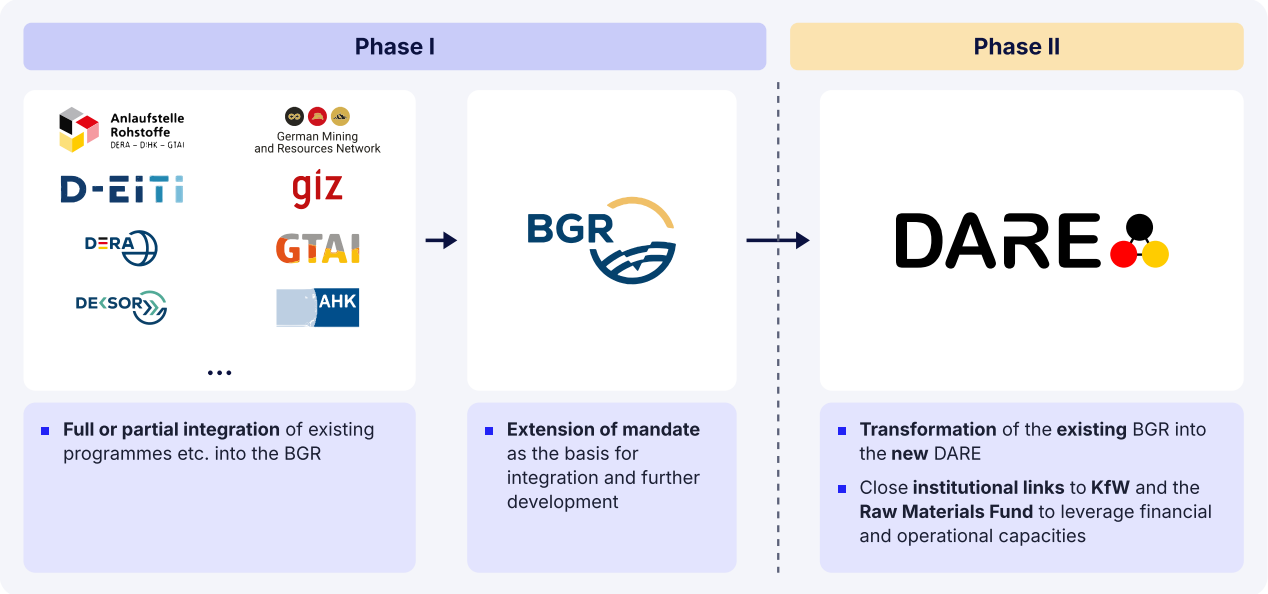


Figure 18: Two-phase model for developing the BGR into DARE

Within these two phases, the BGR's existing raw material-related capabilities are to be expanded step by step. The key is to bring together capabilities and resources that are currently fragmented across various programmes and initiatives (see **Table 6**). This will reduce parallel structures and make more effective use of synergies.

Phase I	1	**Existing capabilities:** Existing capabilities in geological research, raw material monitoring, international development cooperation (IDC) and policy advice will be retained and further strengthened.
	2	**Integrated capabilities:** Capabilities in IDC, international networking and foreign trade will be pooled within DARE. To this end, existing structures and responsibilities currently located at GIZ, the German Mining Network, GTAI and the Competence Centres for Mining and Mineral Resources, among others, will be brought together to reduce duplicate structures and create synergies.
Phase II	3	**New capabilities:** In addition, new capabilities will be built up in the areas of crisis management, intelligence, and project and partner management to identify raw material risks at an early stage, coordinate strategic measures and actively support international projects.

Table 6: Building up competencies at DARE

Integrating capabilities and building them up in a deliberate manner is also intended to create a lean organisational structure that strengthens cross-departmental cooperation and ensures close ties with industry, the Federal Government and the European Commission (see **Figure 19**).

Based on these capabilities, DARE provides a portfolio of services for effective backing of industry-led risk-mitigation measures along the entire raw material supply chain (see

Table 7). A detailed description of the individual portfolio services can be found in Appendix B.



Figure 19: Governance model for DARE

Portfolio service.	Brief description.
Center	One-stop shop and central point of contact for industry and policymakers.
Dashboard	Platform for raw material-related information, analyses and risk assessments.
Crisis Center	Central unit for coordinated crisis management and the operational implementation of measures.
Finance	Platform for pooling financial instruments and backing industrial activities.
Geological Service	Targeted alignment of existing geological expertise with industrial requirements.
DARE-4-Circularity	Platform for the targeted development of circular economy initiatives in the field of critical raw materials.
DARE-4-Cooperation	Platform for linking international development cooperation with industrial projects abroad.
Technology Center	Platform for aligning research and funding programmes with industrial requirements.

Table 7: The eight portfolio services of DARE

Pooling these portfolio services in a single institution reduces duplicate structures, assigns responsibilities more clearly and overcomes existing fragmentation. At the same time, it increases the visibility and reliability of German raw materials policy and enables the coherent use of instruments along the entire raw material supply chain.

INTERACTION BETWEEN GOVERNMENT & INDUSTRY ACROSS SUPPLY SCENARIOS | DEEP DIVE.

The operational integration of industry and policymakers can be illustrated by the assessment of supply scenarios and the implementation of measures. This requires clear responsibilities, defined escalation levels and close coordination between the actors. The following interaction model illustrates this integration (see **Table 8**).

	Process step	Responsible	A Accountable	S Supportive	I Informed	C Consulted
12h	**Signal Detection**	DARE, industry	-	AA	BMWE, BMVg	-
24h	**Validation**	DARE, industry	-		BMWE, BMVg	
36h	**Situation Classification**	BMWE	BMWE	DARE	AA BMVg	industry
48h	**Measure Selection**	DARE, industry	-	BMWE, AA	BMF, BMVg	-
60h	**Measure Implementation**	Depending on measure	-	Depending on measure	All actors	Depending on measure
-	**Termination or Return to Normal**	BMWE	BMWE	-	All actors	industry

Table 8: Interaction model illustrated by the supply scenarios

Roles of the actors

DARE: Central actor for scenario analyses and crisis coordination. Identifies risks at an early stage, coordinates the assessment with industry and develops proposals for measures.

BMWE: Responsible for political steering and for formally declaring supply shortages and supply crises.

Industry: Provides market information and indications of supply risks, validates how companies are affected and supports the operational implementation of measures.

Other federal ministries (AA, BMF, BMVg): Provide scenario-specific support through foreign trade, financial or security policy contributions and are kept informed on an ongoing basis.

Mechanism.

DARE identifies and assesses potential risks at an early stage, industry validates their relevance and impact, and on this basis the BMWE takes binding decisions on the situation classification. This allows coordinated measures to be initiated within a few days and limits the impact of supply shortages or crises.

6.4 Risk-Mitigation Instruments

Risk-mitigation instruments are the third core building block of the new raw material security framework. While the DRH and DARE create the industry-led and government implementation structure, risk-mitigation instruments address the specific economic, operational and international obstacles to raw material security. They provide financial backing for raw material projects, e nable strategic stockpiling, link IDC with project development and make raw material partnerships operationally viable. Their impact does not arise in isolation, but along prioritised raw material projects, industrial demand and clear responsibilities between industry and government. The following **Figure 20** provides an overview of the instrument blocks considered and their function within the ZMR.



Figure 20: Overview of risk-mitigation instruments

Below, existing instruments are analysed for their optimisation potential, and new risk-mitigation instruments are proposed where existing structures do not yet sufficiently cover key risk-mitigation needs.

6.4.1 Financing Instruments

Financing instruments are intended to make it possible to secure raw material supply chains when financial risks need to be shared or when market-distorting behaviour makes it economically difficult to develop new raw material projects. They reduce investment, price and default risks, mobilise private capital and make projects along the value chain viable for industry and government. In this way, they provide support where companies cannot bear risks alone or where market actors do not act according to market principles. The focus is on four instruments (see **Figure 21**). The instruments differ in their starting point and function. The Raw Materials Fund and UFK Guarantees are existing instruments whose impact can be increased through targeted optimisation. Contracts for Difference (CfDs) and the Resilience Premium are new approaches that address market-distorted prices and the additional costs of resilient raw material supply chains.

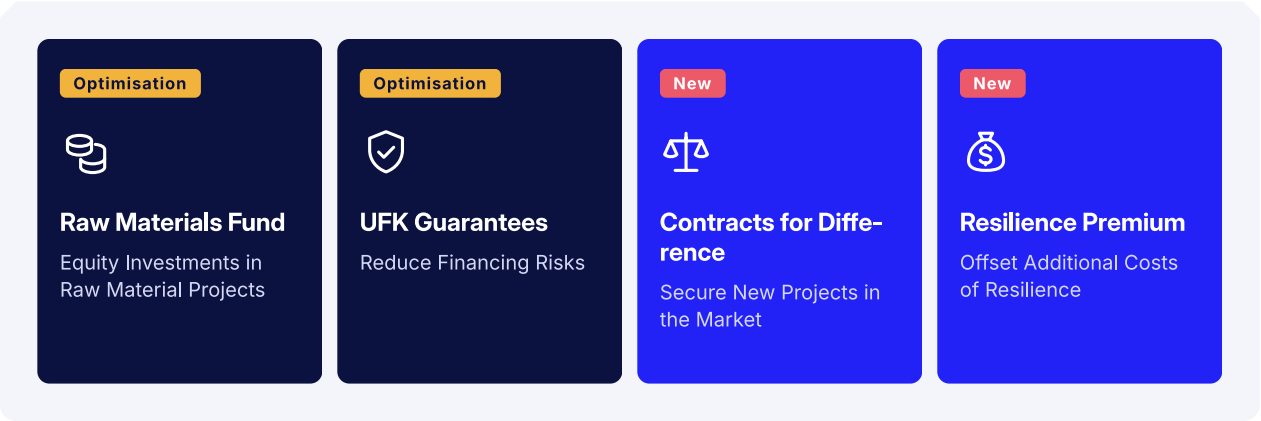


Figure 21: Overview of financial instruments

The **Raw Materials Fund** is an existing instrument for public equity participation in strategic raw material projects, whose impact can be increased above all through a broader and more flexible design (see **Table 9**)

Strengths	**Strategic relevance** thanks to the choice of relevant raw materials.
	Proven feasibility as shown by the first equity announcements.
	Appropriate forms of financing thanks to equity investments.
Weaknesses	**Limited reach** due to a high ticket size of > EUR 50 m.
	Small fund size with a total volume of EUR 1 bn.
	Exclusion of exploration and recycling.
Optimisation potential	**Reduce the ticket size** to < EUR 50 m.
	Include exploration and recycling.
	Faster processes and escalation mechanisms.
	Larger financial scope with binding multi-year budget allocation.

Table 9: Analysis of the Raw Materials Fund as a financial instrument

UFK Guarantees are an established instrument for reducing financing risks, but in their current application can only be used to a limited extent for systematically securing the entire raw material supply chain (see **Table 10**)

Strengths	**Global applicability** with larger investment volumes.
	Proven feasibility as an instrument established for many years.
	Leveraging private funds thanks to risk sharing between government and industry.
Weaknesses	**Narrow focus on value chain stages** limits the instrument.
	Lack of industrial structures prevents effective use.
Optimisation potential	**Piloting financing options** across the entire value chain.
	Linking to new industrial structures such as the DRH.

Table 10: Analysis of UFK Guarantees as a financial instrument

Contracts for Difference (CfDs) complement the existing set of instruments where raw material projects fail despite their strategic importance because of distorted market conditions. The recent past has shown that dominant market players can influence raw material prices through targeted market interventions. CfDs secure a contractually fixed floor price[7] (see **Figure 22**) and thereby create investment and planning certainty.

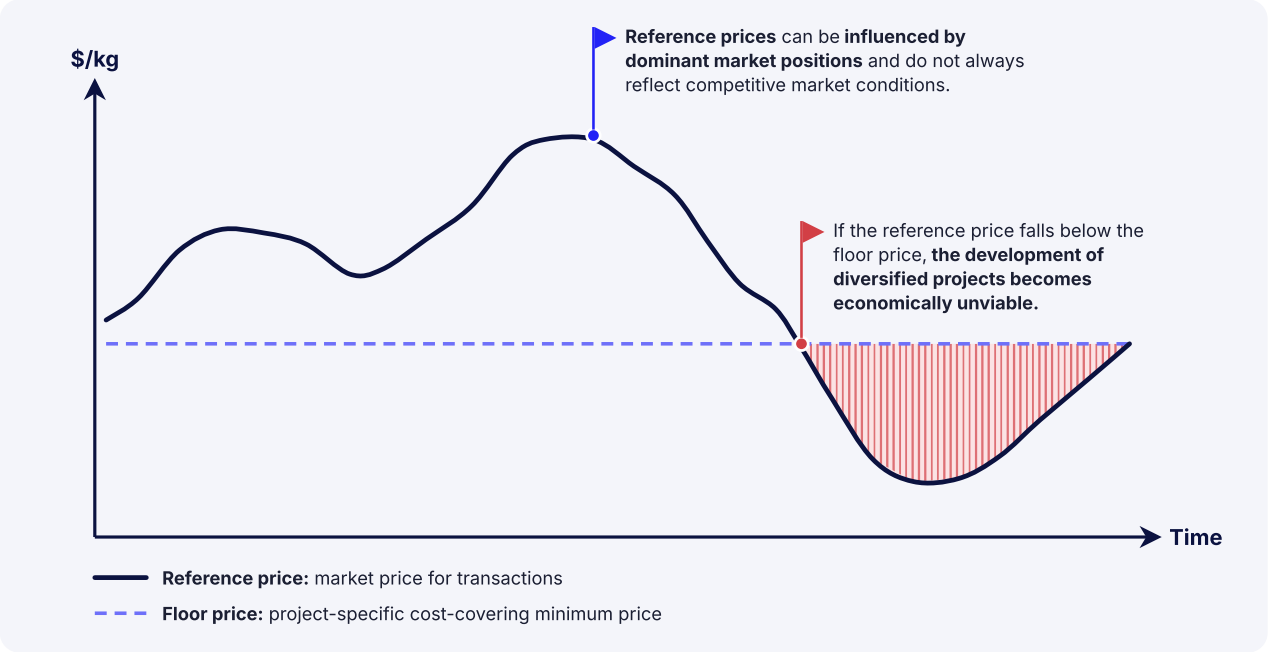


Figure 22: Relationship between market price and floor price

CfDs thus provide three key contributions to a resilient raw material supply:

- **Reduce dependencies:** New suppliers create additional sources of supply outside highly concentrated markets.
- **Protect projects from targeted price manipulation:** CfDs prevent manipulable reference prices from blocking new suppliers' market entry or forcing them out of the market. They guarantee a project a defined cash flow so that it can cover its financing costs and remain able to deliver.
- **Stabilise supply in crises:** Additional suppliers and capacities create alternatives in the event of supply disruptions and geopolitical interventions

However, CfDs are not a permanent way of compensating for a lack of competitiveness, but a targeted instrument of raw materials and industrial policy. For this reason, a two-stage approach is proposed:

1 **Project-based CfDs | Short to medium term.**

Contracts for Difference (CfDs) offset the difference to an economically viable price level and secure the market entry of new projects (equivalent to CfDs for hydrogen).

2 **Price indices | Medium to long term.**

Establishment of transparent and market-based reference prices. To this end, G7 and EU initiatives should be brought together in an industry-supported working group and translated into implementation roadmaps.

[7] The floor price ensures the economic viability of the project. Its level is based on production costs plus an appropriate return on capital and is set on a project-specific basis.

CfDs are based on a contractually fixed **floor price**, which is generally based on long-term production costs plus an appropriate return on the capital employed. A basic distinction can be made between one-sided and two-sided CfDs:

- Under a **one-sided CfD**, the project receives compensation for the difference if the reference price falls below the floor price. If the reference price rises above the floor price, the additional revenue remains with the project. One-sided CfDs therefore create a stronger investment incentive.
- Under a **two-sided CfD**, the project also receives compensation if the reference price falls below the floor price. If the reference price exceeds the floor price, however, the additional revenue is returned to the federal budget in full or in part. Alternatively, these funds can be paid into a ring-fenced fund or reserve account from which future compensation payments are financed. In this way, payouts in low-price phases can be at least partly covered by reflows in high-price phases. Two-sided CfDs thus limit fiscal risks and allow the public sector to share in positive price developments.

An analysis carried out as part of the project shows that the fiscal costs of CfDs remain manageable across different raw materials and design variants. According to the modelling, the fiscal cost of ensuring a resilient supply of rare earths, tungsten, gallium and germanium to the German economy would average around **EUR 420 m per year** (for the full analysis, see: Appendix C). The costs therefore remain limited, particularly when compared with the potential economic damage caused by production stoppages and government crisis measures resulting from export restrictions and other supply disruptions.

Several countries already use CfDs or comparable price-hedging instruments to support strategic raw material projects, including the USA, Australia, Japan and Canada. Price-hedging instruments are also to be anchored at G7 level. Overall, there is an international trend towards structuring public support for raw material projects not only through conventional support instruments, but increasingly also by reducing price and revenue risks. Such support is to be targeted, project-specific and limited to strategically relevant raw materials.[8]

While CfDs primarily provide financial support to project operators and thus influence the feasibility of raw material projects, the **Resilience Premium** addresses the additional costs that industry incurs for resilient procurement and stockpiling. These costs have so far been borne by individual companies, even though the benefits extend beyond the individual company.[9] **The main point of reference** is the **US** experience with tax credits under the *Inflation Reduction Act* to mobilise private investment in strategic raw material and technology supply chains.

The resilience premium consists of two complementary building blocks.

A **Building Block A** forms the permanent core of the tax-based Resilience Premium and comprises an **investment premium** that supports additional investments and directly project-related expenditure which open new or more resilient sources of supply along the raw material value chain or verifiably reduce existing concentration risks. Eligible items include capital investments, project-specific financing contributions, and one-off costs for development as well as qualification and certification costs. Support is explicitly targeted at the additional resilience created. General business expansion, regular procurement activities and investments that do not generate additional resilience are excluded.

B **Building Block B** provides for a **diversification premium** as a pilot that is limited in time, scope and budget. This pilot is intended to test whether additional ongoing diversification measures, such as strategic stockpiling (see also: Chapter 6.4.2), can be effectively supported for selected critical raw materials with a reasonable administrative burden. The sole subject of support is an objectively verified improvement in procurement diversification. Support is granted exclusively on the basis of flat rates defined by law. Individual additional costs or actual price premiums are not eligible. Any subsequent extension of the instrument is explicitly tied to a separate evaluation.

[8] For more details on the application and design of CfDs, see Appendix C.

[9] This benefit is reflected, for example, in the fact that stabilising supply chains and ensuring continuous production can reduce or avoid considerable follow-on costs for companies, the federal budget and social security systems, for example in the form of short-time working scheme or bridge financing. A McKinsey analysis estimates that around four million jobs and around EUR 370 bn in value added in Germany depend directly or indirectly on value chains that use rare earths (McKinsey, 2025).

Both building blocks are subject to **uniform basic principles**. These include in particular

- voluntary participation,
- a digitally supported two-stage procedure consisting of a technical resilience review and a tax assessment,
- the **support of exclusively additional measures** with a **verifiable incentive effect**,
- a **direct link to Germany** for the resilience effect supported,
- the **avoidance of overcompensation** and
- full compliance with public aid law.

In addition, the administrative burden is to be limited to what is necessary through standardised evidence, flat rates and central verification bodies. The DRH can act as a central aggregation and service unit and significantly simplify the provision of evidence for companies.

The aim of the Resilience Premium is to trigger **additional resilience measures** where these make sense from a macroeconomic perspective but are not fully viable from a business perspective. It strengthens the development of additional sources of supply, reduces strategic dependencies and supports the resilience of industrial value chains without dictating specific procurement decisions to companies. At the same time, investment decisions, project risks and operational responsibility remain entirely with the companies.

The detailed definitions, eligible subjects of support, eligibility criteria, assessment bases, calculation methods, support rates, maximum amounts, means of verification, cumulation rules, grounds for recovery and public aid requirements are set out in Appendix D.

Crucially, the financing instruments described above should be understood as end-to-end financial backing for the raw material supply chain. The Raw Materials Fund can contribute to supply security through direct public equity stakes, UFK Guarantees can reduce financing risks through broader application, CfDs can address distorted market conditions, and the Resilience Premium can recognise the additional costs of resilient procurement and stockpiling. Together, they form a financing architecture that makes projects viable from early development phases through to strategic stockpiling and enables the DRH to mobilise more private capital for industrial risk-mitigation measures.

6.4.2 Strategic Stockpiling

Strategic stockpiling refers here to the targeted build-up of additional raw material stocks to mitigate acute supply interruptions. It is not intended as a means of permanent market intervention, but rather as a temporary buffer to mitigate supply shortfalls and price spikes until alternative sourcing or substitution becomes available. This instrument is particularly relevant for raw material security because markets for critical raw materials are often characterised by high concentration, low liquidity and long response times. For companies, however, strategic stockpiling remains economically unattractive if additional stocks tie up capital, incur operational holding costs and create tax and liquidity burdens.

In the ZMR, strategic stockpiling is designed to be close to the market and is not organised as fully government-run stockholding. It follows an industry-led process of reporting requirements, building up stocks, central holding and rotating stocks with clear drawdown rules (see **Table 11**).

1 Reporting of Raw Material Requirements	Industry reports strategic requirements in predefined categories and time horizons as the basis for structured stock building.
2 Purchase & Stock Build-Up	Purchased by companies and held centrally by the DRH. 1 2
3 Central Stockpiling	Stockpiling at the DRH under a duty-free/tax-neutral regime. 3
4 Ongoing Operational Costs	The operational stockpiling costs are, in principle, borne by the participating companies. As part of the further implementation, it should be examined whether the diversification premium, as Building Block B of the Resilience Premium, can specifically help to reduce the holding costs associated with strategic stockpiling. 2
5 Rotation & availability	Rotation carried out independently and drawdown based on corporate decisions.
Long-Term Support	Long-term institutionalisation through tax-exempt reserves to ensure continuity across stock-building cycles. 4

Table 11: Positioning of strategic stockpiling measures within the ZMR

This process logic gives rise to three main cost blocks for private-sector stockpiling: capital and interest costs when building up stocks, operational holding costs during storage, and tax and customs burdens when building up and holding strategic stocks. The following measures specifically target these burdens:

1 **Low-interest credit lines from KfW / EIB | Capital and interest costs.**

Low-interest, long-term credit lines can facilitate the build-up and pre-financing of strategic raw material stockpiles. They reduce capital costs without directly interfering in volume or price decisions.

2 **Diversification premium | Capital costs and operational holding costs.**

As explained in Chapter 6.4.1, the diversification premium, as part of the resilience premium, can partially offset interest costs and operating expenses for the storage, security, insurance, handling and administration of additional strategic stocks. The prerequisite is that the stocks are clearly defined and go beyond regular inventory management or are held in addition to regular inventories. This creates incentives to build up strategic stockpiles without distorting the market.

3 **Clarity on bonded warehousing | Tax and customs burden.**

The bonded warehouse regime allows raw materials to be stored on a tax-neutral basis before they are imported into the single market. However, tax and customs uncertainties remain for strategic stockpiling. An administrative clarification can classify strategic stockpiling as a permissible purpose and create legal and liquidity certainty.

4 **Tax-exempt reserves for stock build-up | Tax and customs burden.**

Companies could set aside part of their profits, initially untaxed and earmarked for the later build-up of strategic raw material stockpiles. Taxation would only take place when the reserve is released or used for other purposes. This provides tax relief for stock build-up without subsidising regular procurement.

The proposed measures recognise the provision of strategic stockpiles as a resilience service and create targeted incentives for companies to contribute to supply security.

6.4.3 International Development Cooperation

International development cooperation (IDC) refers here to the public structures through which Germany supports economic development and infrastructure in partner countries. This lever is relevant for raw material security because raw material projects often fail not because of geological availability, but because of a lack of energy supply, transport infrastructure, administrative capacity and local value creation. So far, however, IDC has not been linked to specific raw material projects, industrial requirements, offtake and supply security objectives. The following overview classifies the resulting strengths, weaknesses and optimisation potential (see **Table 12**).

Strengths	**Substantial financial resources** with an average of EUR 12 bn in BMZ funds, of which around EUR 2.5 bn goes to GIZ projects.
	Germany is a strong industrial partner with capital, technical expertise and access to industrial demand.
Weaknesses	**Limited contribution to the supply security of Germany** and its industry, despite extremely high costs.
	Conventional development policy selection criteria for projects shape decision-making on the allocation of funds.
	Limited economic impact beyond individual projects without multiplier effects or sustainable industrial value creation.
Optimisation potential	**Link raw material access with international development cooperation** for a positive effect on German industry and supply security.
	Joint decision-making with DARE and the DRH supports holistic development and increases the efficiency of public funds.
	Holistic infrastructure development beyond individual projects, prioritised by the DRH and DARE.
	Long-term partnerships through offtake contracts, technology partnerships and holistic approaches.

Table 12: Analysis of international development cooperation

In the ZMR, IDC is therefore not understood as an isolated support instrument, but as a supporting lever for investable raw material clusters. Existing support structures are to be targeted where raw material access, industrial demand and local value creation can be brought together. Operational implementation is based on a division of labour:

- **The DRH** aggregates industrial requirements, identifies suitable projects and creates a reliable demand base through offtake.
- **DARE** aligns IDC instruments, infrastructure contributions, training measures and access to financing with these projects.
- **German industry** uses the resulting cluster effect to win orders in plant engineering, technology, energy, logistics and services.

The resulting raw material clusters strengthen supply security, generate new industrial orders and achieve the goals of IDC without additional budget funds.

6.4.4 Raw Material Partnerships

Raw material partnerships refer here to political agreements and dialogue formats through which Germany and the EU gain access to resource-rich partner countries and which provide a format for addressing shared interests along the value chain in a structured way. They are relevant for raw material security because they open diplomatic doors, make partner country interests visible and can create the political framework for projects, investments and offtake agreements. So far, however, these partnerships have delivered only limited tangible improvements in security of supply. The following overview classifies strengths, weaknesses and optimisation potential (see **Table 13**).

Strengths	**Political access to partner countries** through partnerships, political dialogues and diplomatic door-openers.
	Common basis of interests through Germany's raw material requirements and partner countries' development goals.
	Viable project basis through existing partnerships, contacts and initial cooperation structures on the ground.
	Broad government backing from diplomacy, IDC, financing, guarantees and industry.
Weaknesses	**Insufficient integration** of diplomacy, industry and financing between the national and European levels.
	Lack of binding commitments leads to diffusion of responsibility.
	Lack of coordination across time horizons and content areas.
	No measurable contribution to supply security from raw material partnerships, despite their large number (9 at German level; 15 at EU level).
Optimisation potential	**Design of partnerships together with industry** to ensure compatibility, with a focus on EU foreign policy.
	KPI-based targets and public reporting obligations by policymakers, with binding implementation roadmaps and milestones.
	Review mechanisms support continuous optimisation of financial resources and prioritisation of partnerships.
	Operational implementation at national level with DARE, the DRH and industry responsible for implementing projects that contribute to resilience.

Table 13: Analysis of raw material partnerships

The intended contribution lies in a more binding partnership architecture. Future raw material partnerships should be underpinned by implementation roadmaps, milestones, responsibilities, KPI monitoring and regular review mechanisms. Strategically, the EU level can pool greater negotiating power and financing capacity. Germany can contribute operational depth of implementation, links to industry and project structuring. In this way, partnerships evolve from a political framework into a viable instrument for specific raw material clusters.

6.4.5 Financing Proposals

The financing of the risk-mitigation instruments is based primarily on making more effective use of existing funds and therefore does not necessarily require additional budget funds. Three levers can help to align existing budget funds more closely with raw material security, project implementation and resilient supply chains.

1. **Efficiency gains from reorganisation.**

   By consolidating responsibilities, reducing duplicate structures and streamlining procedures, existing budget funds can be used more effectively for risk-mitigation instruments.

2. **Use international development cooperation funds and EU leverage.**

   Existing international development cooperation funds have so far been geared primarily towards conventional development goals and make no contribution to securing critical raw material supply chains. At the same time, comparatively small financing volumes are available for raw materials policy risk-mitigation instruments and for strengthening supply security (see **Figure 23**; see also **Appendix E**).

   In view of increasing geopolitical risks, using existing IDC funds to finance risk-mitigation instruments appears strategically imperative. The aim is not to abandon development policy priorities, but to link them in a targeted way with the resilience goals of German industry. Integrated industrial clusters (see Chapter 6.4.3) can create synergies between securing critical raw material supply chains, local value creation and responsible supply chains. The targeted mobilisation of European financing programmes such as Global Gateway also offers an opportunity to shape raw material partnerships with tangible economic added value.

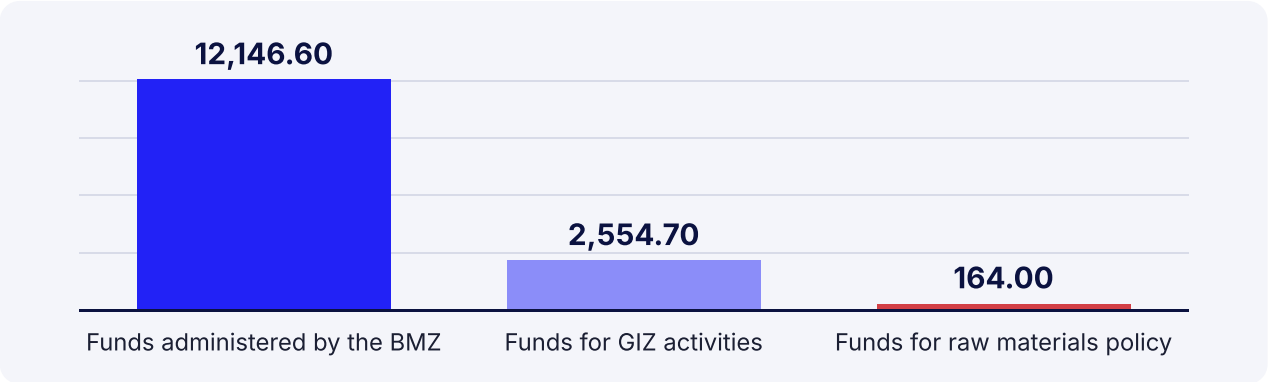


Figure 23: Average expenditure per budget year in EUR m, 2020–2025
Sources: GIZ (2020–2025), BMF (2020–2025) and Federal Government (2026)

3. **Reflows from transfers of equity stakes.**

   Public equity stakes can be transferred to industrial stakeholders. The resulting proceeds create room to finance risk-mitigation instruments.

   What matters is to pool existing sources of financing around specific raw material projects and to make them available in a targeted way for risk-mitigation instruments that contribute to resilience.

6.5 European and International Cooperation

The proposed ZMR does not conflict with European and international initiatives but complements them with the necessary national implementation structures. New governance, coordination and risk-mitigation mechanisms for critical raw materials are currently emerging at EU and G7 level, to which Germany can contribute with these new institutional structures.

At European level, the Critical Raw Materials Act (CRMA) creates the regulatory framework for a more resilient raw material supply. In addition, Germany and France support the swift establishment of the planned European Critical Raw Materials Centre (EU-CRMC), which is intended to support market analysis, strategic stockpiling and the aggregation of demand and offtake agreements, among other things. The European debate is thus taking up key elements of the ZMR such as coordinated demand aggregation and measures to mitigate risks faced by strategic raw material projects.

It is crucial that the **EU-CRMC is designed as a European network** with **clear roles for the EU, Member States and industry**. In this model, DARE as the national agency would take on key functions, for example in the areas of intelligence and technological expertise, and coordinate the use of risk-mitigation instruments. In parallel, the DRH can be integrated into the EU-CRMC as a market-based implementing actor, taking on tasks such as demand aggregation, offtake agreements, stockpiling, and trading and risk management. DARE and the DRH would thus be embedded as central **German pillars** in the European **CRMC architecture** and strengthen the link between European coordination and operational implementation by industry (see **Table 14**).

 **Problem**	**EU-CRMC as a new raw materials authority:** If poorly designed, **it risks creating additional bureaucracy** and **reporting obligations**.
 **Proposal**	**EU-CRMC not as a central operational body:** Central EU guidance with assigned national capabilities = **decentralised operational implementation** by **Member States** and **industry**.
 **Role of the ZMR**	**The ZMR defines national responsibilities:** **Industry**: project development and trading expertise. **Government**: DARE with capabilities in intelligence and technological expertise, as well as management of risk-mitigation instruments.

Table 14: Links between the ZMR and the planned EU-CRMC
Source: Own illustration

At **the G7 level**, the support for critical raw material supply chains is increasingly shifting from a purely supply-side to a demand-oriented approach, as demonstrated by current developments within the *G7 Critical Minerals Resilience and Production Alliance* and the recent cooperation agreement between **Germany** and **France**. At the 2026 G7 summit in Evian, in addition to joint project development and financing, instruments for demand aggregation, long-term offtake mechanisms and price-hedging instruments were explicitly discussed. The aim is to enable investment in new supply chains through more reliable sales prospects and lower commodity price risks.

The proposed raw material security framework is fully compatible with these developments. While DARE acts as the national point of contact for the EU-CRMC and relevant G7 structures and ensures Germany's strategic connection to European and international initiatives, the DRH provides the operational link between German industry and European and international demand aggregation, offtake and financing mechanisms. DARE aligns national risk-mitigation instruments specifically with strategically relevant projects. In this way, national measures are tied to European and international initiatives and their impact is substantially increased.

DISCUSSION & INTERIM CONCLUSIONS – CHAPTER 6

The proposed raw material security framework addresses the structural barriers identified through a clear division of labour between industry, Germany and Europe, and by pooling responsibilities and instruments that have so far been fragmented. With the DRH, DARE and optimised and new risk-mitigation instruments, the conditions are created for securing raw material supply chains more effectively along the entire value chain.

The key lies in the interplay of these three building blocks. A raw material trading house without public backing would continue to run up against financing, risk and coordination limits, while public instruments without an operational market player can only achieve a limited overall impact. Only their close integration makes it possible to combine public financial capacity with market-based implementation.

The success of the model will be measured not by the creation of new structures, but by its contribution to supply security. If it succeeds in mobilising investment in resilient supply chains, reducing dependencies and strengthening the ability to respond in supply crises, the model can make a significant contribution to Germany's industrial resilience and long-term competitiveness.

Recommendations for policymakers

- **Implement DARE:** Institutionally pool existing raw materials policy programmes and initiatives, and build up portfolio services and interfaces with industry.
- **Develop strategic raw material instruments:** Operationalise financing, risk mitigation, project assessment and international cooperation in a targeted way.
- **Develop an assessment methodology for raw material projects:** Make project and investment options comparable in strategic and operational terms in order to prepare prioritisation decisions on a sound basis.
- **Clarify ministerial responsibilities:** Clearly define roles, responsibilities and decision-making processes for operationalisation.

Recommendations for industry

- **Initiate and implement the DRH founding process:** Aggregate industrial requirements and translate them into risk-mitigation measures through market operations. Anchor access for the broad industrial base (third parties) as an independent and defining element of the trading house concept.
- **Professional requirements survey:** Systematically record requirements for prioritised raw materials and intermediate products and make them available as the basis for joint risk-mitigation measures.

7 Implementation of the ZMR

With the development of the ZMR, the conceptual foundations for a new raw material security model have been laid. Building on the analysis of existing shortcomings, the definition of a target vision for a resilient raw material supply and the design of the core organisational and operational building blocks, the focus now shifts to implementing the framework. This chapter describes the project organisation required for this and a roadmap for the step-by-step realisation of the ZMR.

7.1 Project Organisation for ZMR Implementation

For the implementation phase, it is proposed to set up a ZMR Implementation Coordination Group (KUZ). This group will be responsible for the oversight of project implementation and for coordinating work on the work packages. The KUZ will be co-chaired by the BMWE and the VDA. Each work package is represented in the KUZ by a responsible lead. The assignment of work package leads is shown in **Figure 24**.

The work packages, which together make up the implementation of the ZMR, are assigned to three pillars:

- Industry (I),
- Policy (P)
- and Cross-cutting (C).

This structure creates **clear responsibilities**, **accountabilities** and **milestones** and enables transparent steering of implementation by all actors involved. The respective work package leads deliver results on their own responsibility. All interested stakeholders are to be able to contribute to the respective work packages.

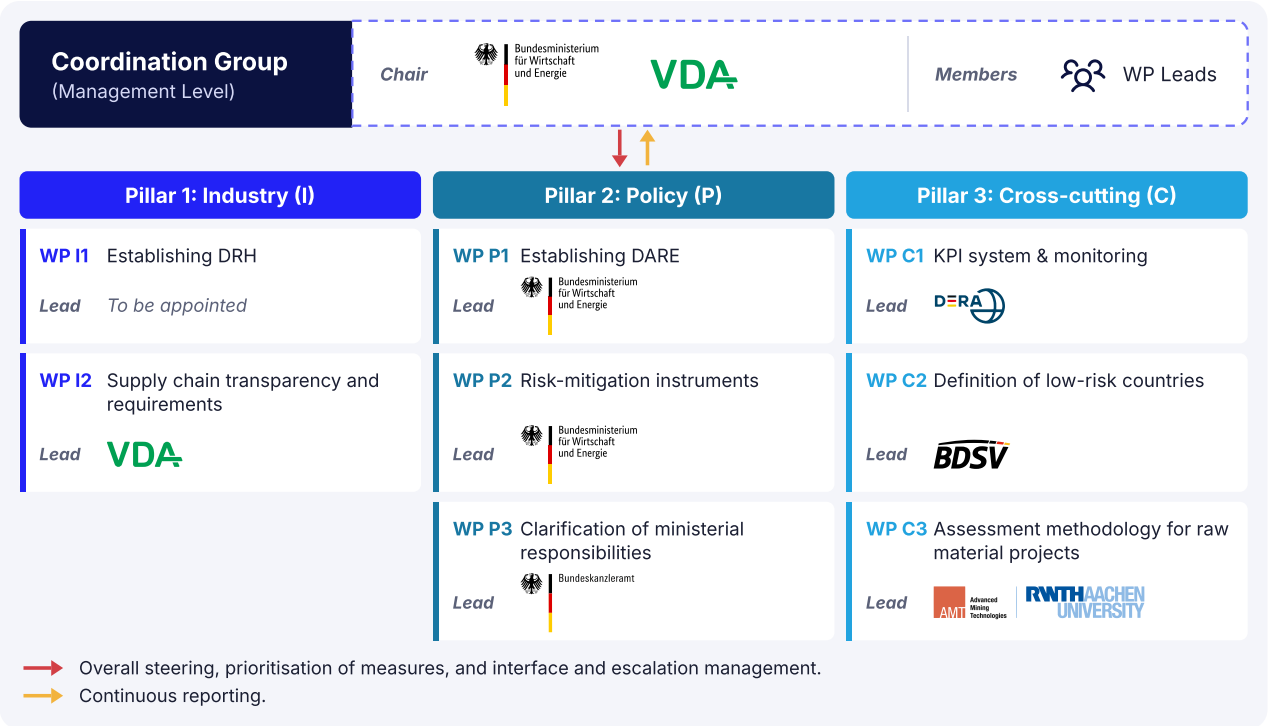


Figure 24: ZMR project organisation, conceptual design phase
Source: Own illustration

7.2 Implementation Roadmap

To ensure swift and coordinated implementation of the ZMR, an ambitious timetable with a **tightly scheduled implementation roadmap** is proposed for the further design work (see **Figure 25**). The roadmap is based on the structure of three pillars and their respective work packages described above and defines a clear framework for action and a clear timeframe for implementation. The roadmap provides an indicative target path and should be reviewed continuously during implementation and adapted to changing conditions.

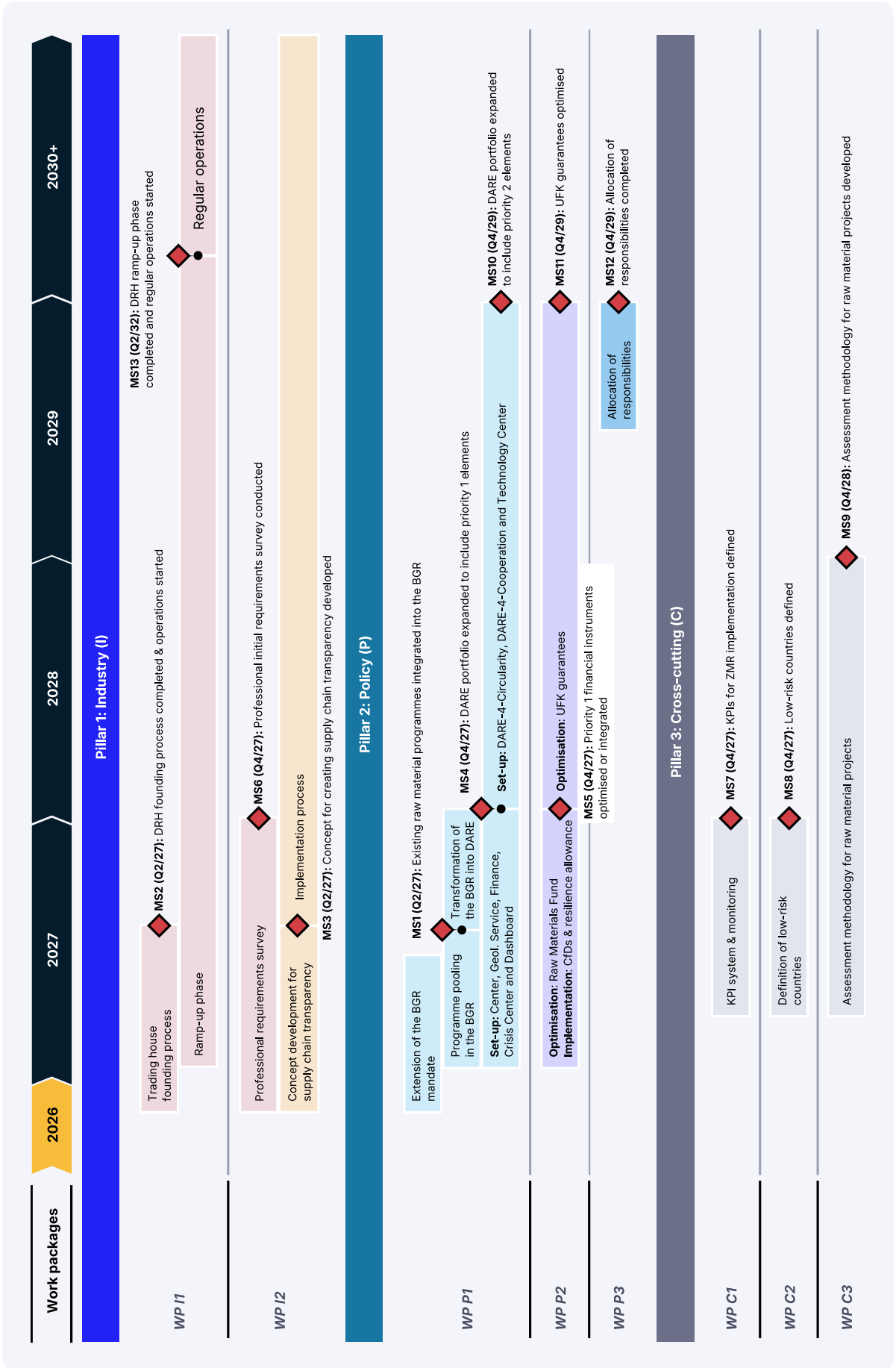


Figure 25: Implementation roadmap

8 Discussion

As the preceding discussion has shown, numerous raw material policy instruments are already in place at national and European level, but they remain insufficiently coordinated. At the same time, given the high risks and vulnerabilities of global raw material supply chains, policymakers and industry increasingly expect a coordinated, coherent and integrated interplay. The ZMR creates the institutional framework for this and develops the existing individual instruments into a high-performing orchestra.

However, developing a target vision is **only the first necessary step**. **The challenge lies in practical implementation**. It will be crucial to set up the proposed governance structures quickly, to reorganise responsibilities – even against ministerial interests – and to place cooperation between policymakers, authorities, financing institutions and industry on a new and lasting institutional footing. Of particular importance is the willingness of all parties involved to develop existing structures further and to establish new forms of cooperation.

The ZMR should therefore not be understood as a finished solution, but as **the starting point for a necessary transformation process**. Its success will be measured by whether it manages to turn a collection of separate instruments into an effective overall system that increases supply security, mobilises investment and strengthens the long-term industrial resilience of Germany as an industrial location.

At the same time, there is no guarantee that this target vision will be fully implemented. In addition to a swift realignment, scenarios are also conceivable in which reforms are delayed or the current fragmentation persists. The impact of different implementation paths on the ZMR and on Germany's supply security is shown in **Table 15**.

If Germany's raw materials governance is to be fundamentally strengthened, **policymakers and industry must use the current momentum and resolutely seize this opportunity for reform**. Particularly against the backdrop of growing geopolitical tensions and intensifying international competition between industrial locations, ambitious reforms are no longer merely desirable from an economic policy perspective, but of **strategic and security policy importance**. The **greatest risk therefore lies not in ambitious implementation, but in failing to make the necessary changes**.

	A Status Quo Continues	B Incomplete or Sluggish Transformation	C Comprehensive Strategic Realignment
Consequences for the ZMR	■ **No institutional pooling** of competences and instruments ■ **Persistent gap** between public and private financing contributions ■ Risk-mitigation instruments have only **limited impact** ■ Trading house concept is not implemented or **remains unable to act**	■ Institutional structures are **only partially established** ■ DARE and the trading house can **only partly realise their potential** ■ Risk-mitigation instruments remain too **fragmented and underfunded** ■ Gap between public and private financing contributions is reduced ■ International competitors further extend their lead	■ DARE, the trading house and risk-mitigation instruments are implemented **swiftly and in a coordinated way** ■ Clear signals increase **planning certainty** and **willingness to invest** in industry ■ Public and private funds are **effectively integrated** ■ Investment risks can be **reduced in a targeted way** along the raw material supply chain ■ The **trading house** develops into an **internationally competitive player**
Consequences for Germany	■ **Hardly any measurable improvement** in supply security ■ Missed investment and equity opportunities ■ **Persistent dependencies** on individual supplier countries ■ Domestic and **industrial competitiveness remain at risk**	■ **Slow and selective improvement** in supply security ■ Investment and **equity opportunities** are **partly missed** ■ In large projects, industry **continues to face high risks** ■ Resilience targets are achieved only partially and with delays	■ **Accelerated diversification** of critical raw material supply chains ■ **Significantly greater participation** of German companies in strategic raw material projects ■ **Supply security improves measurably** and sustainably ■ Germany increases its **strategic** capacity to act and **resilience** against geopolitical shocks

Table 15: Analysis of different implementation scenarios
Source: Scenario analysis

Securing raw material supply chains is only **the first step towards comprehensive resilience of critical value chains**. The approach developed in this project can serve as a **blueprint for the design and implementation of comparable solutions at other critical value chain stages**. Whether the proposed DRH and DARE can also be used as suitable solution components in this context requires further investigation. The aim should be to gradually transfer the insights gained to downstream value chain stages and thus strengthen resilience holistically.

9 References

- BMF (2020–2025): Federal budget, available online at: Link.
- Federal Government (2026): Finanzielle Aufwendungen der Bundesregierung zur Sicherung der Rohstoffversorgung und Förderung der Ressourceneffizienz, available online at: Link.
- European Court of Auditors (2026): Critical raw materials for the energy transition – Not a rock-solid policy, available online at: Link.
- GIZ (2020–2025): Integrated company reports, available online at: Link.
- IEA (2024): Global Critical Minerals Outlook 2024, available online at: Link.
- IEA (2025): Global Critical Minerals Outlook 2025, available online at: Link.
- IEA (2026): Global Critical Minerals Outlook 2026, available online at: Link.
- IW (2026): Kritische Rohstoffe: Unternehmensbetroffenheit, Versorgungsrisiken und Anpassungsstrategien, available online at: Link.
- McKinsey (2025): Fünf Bausteine einer sicheren Versorgung der deutschen Industrie mit kritischen Rohstoffen, available online at: Link.
- SNCC (2025): China's mineral export restrictions: Market impacts and implications, available online at: Link.

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Appendix A. The Five Governance Areas of the ZMR

Strategy & Positioning.	Defines what is **relevant to supply** and in which order action is taken:	■ Priorities by raw material and stage ■ Make trade-offs transparent ■ Sequence measures clearly	**This creates binding orientation.**
Foreign Trade & Partnerships.	Secures **access to raw materials** through **international relations** and robust partnerships:	■ Build partnerships strategically ■ Support foreign trade ■ Manage geopolitical risks	**This actively reduces dependencies.**
Market Design & Operational Risk-Mitigation.	**Translates priorities** into actionable rules, processes and instruments for different situations:	■ Clarify roles and handovers ■ Make instruments ready for activation ■ Scale and standardise implementation	**This establishes the capacity to act.**
Financing & Risk Sharing.	Makes **projects investable** by **limiting risks** and **mobilising capital**:	■ Leverage private capital ■ Share risks transparently ■ Provide criteria-based support	**This makes projects bankable.**
Standards, Transparency & Compliance.	Creates **trust** and **predictability** through uniform requirements and reliable enforcement:	■ Ensure due diligence and evidence ■ Transparency that respects protection interests ■ Legally sound procedures	**This keeps implementation legitimate and robust.**

Appendix B: Deep-Dive for DARE Portfolio Services

Portfolio service.	Brief description.
Center	The **DARE Center** acts as the central point of contact for raw material-related matters at national level and serves as the central contact for industry, the European Union and international partners. Incoming requests are coordinated and forwarded as needed to the responsible bodies, such as the BMWE, internal specialist departments or relevant actors from politics and business. Through consolidated information flows, active coordination and a single point of access, the DARE Center strengthens the capacity to act of all actors involved, improves the networking of existing structures and avoids duplication of work.
Dashboard	The **DARE Dashboard** brings together raw material-related market, project and supply chain information in a central platform, thereby creating a uniform basis for decision-making for industry, associations and public actors. As a central information and analysis platform, it serves as a *single source of truth* and integrates existing services such as ROSYS, raw material and price monitoring, and the project monitoring currently being set up. These will be complemented by new functions such as criticality assessments, supply chain analyses and a central overview of relevant funding programmes and calls for proposals. In this way, the dashboard increases transparency along strategic raw material value chains, supports SMEs in particular in their risk management and strengthens the decision-making ability and capacity to act of all actors involved. In the future, the dashboard could be integrated as a sub-platform of the EU-CRMC.
Crisis Center	**DARE Crisis Center** serves as the central operational platform for the situational picture, risk assessment and crisis coordination, in order to identify supply risks at an early stage and enable government and industry actors to act in critical supply situations. As an institutionalised interface between the BMWE, AA, BMVg, industry, the DRH, European institutions and international partners, it pools relevant information and coordinates the implementation of the necessary measures. Its core tasks include preparing situational pictures and risk assessments, continuous risk monitoring, keeping a register of strategic raw material

stockpiles, coordinating crisis measures and maintaining direct communication channels with national and international partners.

In particular, clear escalation and communication channels and regular crisis exercises strengthen the responsiveness of government and industry and promote a coordinated response to supply disruptions.

Finance

DARE Finance serves as the central platform for access to public risk-mitigation and financing instruments and supports strategic raw material projects throughout the entire project life cycle with tailored solutions. By pooling existing instruments, in particular the Raw Materials Fund and the UFK Guarantees, and through close coordination with financial institutions, DARE Finance facilitates access to financing and risk-mitigation for industry and the DRH.

As a central interface between industry, financial institutions, the BMWE, European institutions and other relevant actors, DARE Finance also identifies financing gaps, further develops existing instruments in a targeted way and supports the development of new financing approaches.

Geological Service

The **DARE Geological Service** translates geoscientific expertise into investment-ready raw material projects, thereby strengthening the development of strategic raw material projects along the entire value chain. Through international geological cooperation, the provision of data and analyses and support for early-stage exploration activities, it reduces investment risks and improves project maturity.

In close coordination with industry, investors and partner countries, the DARE Geological Service also independently drives project-specific development up to the investment decision. In this way, it increases the availability of robust project pipelines and creates the conditions for additional private investment in strategic raw material projects.

DARE-4-Circularity

DARE-4-Circularity serves as the central platform for identifying and tapping recycling and circularity potential for critical raw materials. By pooling relevant information, coordinating existing initiatives and working closely with industry and other actors, the platform helps to make material flows more transparent and to expand circular value chains in a targeted way.

Its key tasks include designing and further developing programmes for critical raw materials with a particular focus on “reduce” and “reuse”, providing a national overview of relevant funding programmes and calls for proposals, and coordinating existing network formats. DARE-4-Circularity also supports the development of suitable circular economy projects and their connection to financing instruments, for example through the pre-selection of suitable projects for the KfW Raw Materials Fund.

In this way, the platform strengthens the circular economy as an important contribution to the resilience of raw material supply.

DARE-4-Cooperation

DARE-4-Cooperation serves as the central platform for developing and supporting raw material clusters in partner countries and backs strategic raw material projects with instruments of international development cooperation. The aim is to work with industry, the DRH and partner countries to create the conditions for resilient and sustainable raw material supply chains.

	Its key tasks include coordinating cluster investments, carrying out capacity-building and training measures, promoting synergies for sustainable production, supporting mine closure and aftercare, and structured stakeholder engagement. By pooling existing international development cooperation activities, DARE-4-Cooperation strengthens the acceptance and sustainability of strategic raw material projects.
Technology Center	The DARE Technology Center serves as the central platform for pooling industrial research needs along the raw material supply chain and translating them into specific research and development activities. Its key tasks include advising project management agencies, including funding recommendations, developing and implementing new research programmes, promoting the transfer of knowledge and technology between research and industry, and supporting education and training measures. In this way, the DARE Technology Center strengthens the innovative capacity of Germany as an industrial location and supports technology development.

Appendix C: Explanation of Contracts for Difference

1 Initial Situation

The recent past has shown that dominant market players can influence raw material prices through targeted market interventions (see **Figure 26**).

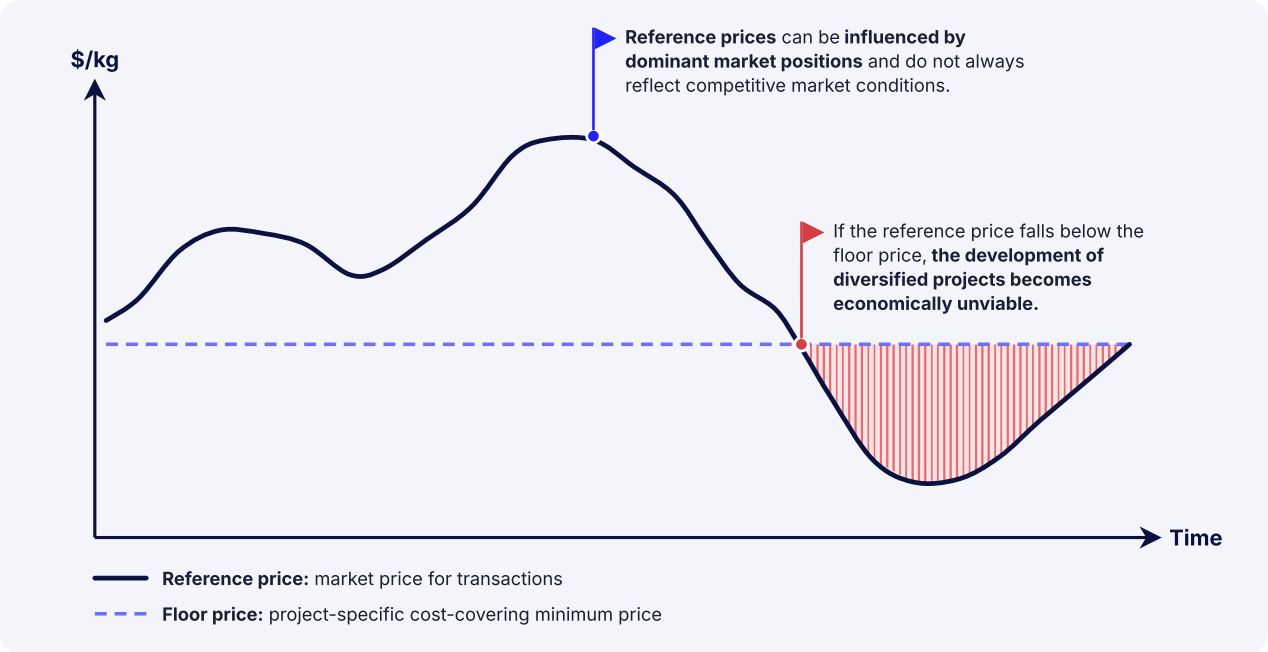


Figure 26: Market interventions can deliberately influence price levels

The situation is particularly problematic in illiquid raw material markets where there are no transparent and reliable reference prices. Yet such prices are a key prerequisite for financing new projects and concluding long-term offtake agreements. This gives rise to a twofold structural problem:

1. **Lack of diversification:** New raw material projects are needed to diversify raw material supply chains. However, these projects often cannot establish themselves on the market if dominant players push reference prices below the floor price.
2. **Entrenchment of dominant market structures:** To limit the scope for manipulating reference prices, dominant market positions must be broken up through additional suppliers and capacities. However, existing price formation mechanisms prevent new projects from entering the market.

As a result, the dominant market structure prevents the development of the new projects that would be needed to diversify raw material supply chains in the long term.

To resolve the structural problem outlined above, a two-stage approach is proposed:

1. In the short to medium term, Contracts for Difference are to protect new raw material projects against price risks.
2. In the medium to long term, transparent and market-based reference prices are to be established.

This paper focuses on the design of Contracts for Difference and the associated fiscal costs.

Why Contracts for Difference?
Contracts for Difference (CfDs) are to be used where strategically important raw material projects fail because of distorted market conditions despite their long-term importance. They secure a contractually fixed floor price and thereby create the necessary investment and planning certainty.

CfDs thus make three specific contributions to a resilient raw material supply:

1. **Reduce dependencies:** New suppliers create additional sources of supply outside highly concentrated markets.
2. **Protect projects from targeted price manipulation**: CfDs prevent manipulable reference prices from blocking new suppliers' market entry or forcing them out of the market. CfDs guarantee a project a defined cash flow so that it remains viable, can cover its financing costs and remains able to deliver.
3. **Stabilise supply in crises:** Additional suppliers and capacities create alternatives in the event of supply disruptions and geopolitical interventions.

CfDs are therefore not a permanent way of compensating for a lack of competitiveness, but a targeted instrument of raw materials and industrial policy.

2 Brief Overview of the Instrument

CfDs are based on a contractually fixed floor price, which is generally based on long-term production costs plus an appropriate return on the capital employed. A basic distinction can be made between two models:

- **One-sided CfD:** If the reference price falls below the floor price, the project receives compensation for the difference. If the reference price rises above the floor price, the additional revenue remains with the project.
- **Two-sided CfD:** If the reference price falls below the floor price, the project also receives compensation. If the reference price exceeds the floor price, the additional revenue is returned to the federal budget in full or in part. Alternatively, these funds can be paid into a ring-fenced fund or reserve account from which future compensation payments are financed. In this way, payouts in low-price phases can be at least partly covered by reflows in high-price phases.

While one-sided CfDs create a stronger investment incentive, two-sided CfDs limit fiscal risks and allow the public sector to share in positive price developments. CfDs are intended to provide targeted support for building resilient raw material supply chains where strategic price risks prevent new suppliers from entering the market and thus prevent greater diversification.

3 Fiscal Impact of CfDs

Below, the fiscal impact of CfDs is modelled using historical raw material price data for the following raw materials:

1. Light rare earths, LREE (neodymium and praseodymium)
2. Heavy rare earths, HREE (terbium and dysprosium)
3. Gallium
4. Germanium
5. Tungsten

The floor prices used are based on current research findings and observable floor price agreements for comparable raw material projects.[10] The aim of the analysis is to quantify the potential fiscal costs and reflows of different CfD models across different market phases.

Three design variants are considered for this purpose:

1. **Model 1 – One-sided CfD**: The government compensates for prices falling below the floor price, but does not share in price increases above the floor price.

2. **Model 2 – Two-sided CfD with partial revenue sharing**: The government compensates for prices falling below the floor price and in return receives 50% of the revenue generated at reference prices above the floor price.

3. **Model 3 – Self-financing CfD fund**: All revenue (100%) above the floor price is credited to a ring-fenced fund. Future compensation payments are financed first from this balance. Only when the account is exhausted does the government incur additional fiscal costs.

Comparing the three models makes it possible to assess the trade-off between investment incentives, fiscal risk and the potential for long-term self-financing of CfDs.

[10] The modelling is based on the data available at the time of the analysis and therefore uses simplifying assumptions about the relevant cost structures. For specific application of the instrument, it is recommended that the project-specific production costs of the respective projects be taken into account in order to ensure that the design and assessment are as realistic as possible.

3.1 Floor Prices

The following floor prices were assumed for the raw materials listed for the purposes of the modelling:

Raw material	Floor price	Rationale	Source
LREE	$77.96/kg	S&P Global has determined floor prices for selected critical raw materials that could make new mining and processing projects economically viable. The calculations distinguish between a floor price that covers operating costs (OpEx) only and a floor price that also considers capital expenditure (CapEx). As a simplifying assumption, the average of the two figures is used below. This approach approximates both the short-term profitability and the long-term capital requirements of the projects. To ensure a conservative estimate and to consider an appropriate return on capital, a mark-up of 5% was applied to the average floor price.	Link
HREE	$1,365/kg	The modelling is based on a floor price derived from the floor prices agreed for the Serra Verde rare earths project. There, prices of $575/kg for dysprosium and $2,050/kg for terbium were set. For the present analysis, an average floor price was calculated from the two values for simplicity. To ensure a conservative estimate and to consider an appropriate return on capital, a mark-up of 5% was applied to the average floor price.	Link
Gallium	$577.5/kg	See: LREE	Link
Germanium	$1,611.75/kg	See: LREE	Link
Tungsten	$36/kg	See: LREE	Link

Table 16: Assumed floor prices for the raw materials analysed

3.2 Volumes

The offtake volumes used in the model are the requirements identified in a survey of German industry:

Raw material	Volume per year
LREE	11,900 t
HREE	400 t
Gallium	30 t
Germanium	11 t
Tungsten	4,900 t

Table 17: Identified critical raw material requirements of German industry
Source: Association survey

The legal and regulatory framework for the use of CfDs is not the subject of this paper. Depending on how this framework is designed, the underlying requirements may change.

3.3 Modelling Assumptions

The cost estimate is based on several simplifying assumptions and should therefore be understood as an indicative order of magnitude.

1. **Historical backtest rather than forecast**: The model makes no statement about future market prices. Instead, the defined floor prices are applied to historical price series.[11] The analysis thus answers the counterfactual question of what payouts would have been incurred if a CfD had already been in place during the period under review.
2. **Constant production profiles**: The model assumes even production throughout the year and grants CfD payments on the entire volume produced, regardless of actual sales.
3. **Simplified raw material baskets**: Prices are determined on the basis of unweighted raw material baskets, which do not necessarily correspond to a project's actual revenues.
4. **Different market regimes**: Some of the price data come from different market phases and market regimes. Due to the limited availability of publicly accessible data, they were nevertheless included in the analysis.
5. **Nominal prices**: All prices, costs and payouts are shown in nominal terms.
6. **No payout caps**: The model does not provide for any caps on payouts, so the amounts shown represent uncapped gross costs.
7. **Modelling period**: A review period of twelve years (2015–2026) was chosen for modelling the fiscal costs.

[11] The historical price data were provided by the German Resource Agency (DERA).

3.4 Results

The analysis shows that a CfD is required for most of the raw materials analysed in order to offset the difference between floor prices and reference prices and ensure the economic viability of the projects. Accordingly, the CfD is activated for large parts of the review period in most scenarios (see **Figure 27**).

In the case of tungsten, the floor price assumed by S&P is close to the historical reference price level. It can therefore be assumed that a higher floor price for tungsten would lead to correspondingly higher fiscal costs.

Raw material	Months with reference price < floor price (2015–2026)	Cost Model 1	Cost Model 2	Cost Model 1	Fund balance
LREE	96 of 139	2,306.6	1,661.3	1,869.5	853.6
HREE	137 of 139	3,670.6	3,670.1	3,669.6	0.0
Ga	139 of 139	110.0	110.0	110.0	0.0
Ge	129 of 137	84.6	83.1	83.7	2.1
W	123 of 137	520.9	185.5	520.9	671.0
Total cost in USD m[12]		6,692.7	5,709.9	6,253.8 4,727.1	-1,526.7
Ø per year in USD m		577.8	492.9	408.2	
Ø per year in EUR m[13]		**479.62**	**424.51**	**351.06**	

Table 18: Results of modelling the fiscal cost of floor prices
Figures in USD m unless otherwise stated

The analysis shows that two-sided CfDs can significantly reduce the government's fiscal costs, as high market prices lead to reflows to the federal budget. This effect is particularly pronounced in Model 3, in which additional revenue is first used to finance later compensation payments and any remaining surplus is paid out to the government (see **Figure 28**). Against this background, two-sided CfDs should generally be preferred when designing such support instruments.

Overall, the modelled fiscal costs remain manageable at an average of around EUR 420 m per year, particularly when compared with the potential economic costs of production stoppages or government crisis measures resulting from export restrictions and other supply disruptions.

[12] All calculations were made in USD, as the market prices are quoted in USD per unit of weight.
[13] For the conversion from USD to EUR, an exchange rate of 0.86 EUR/USD was used.

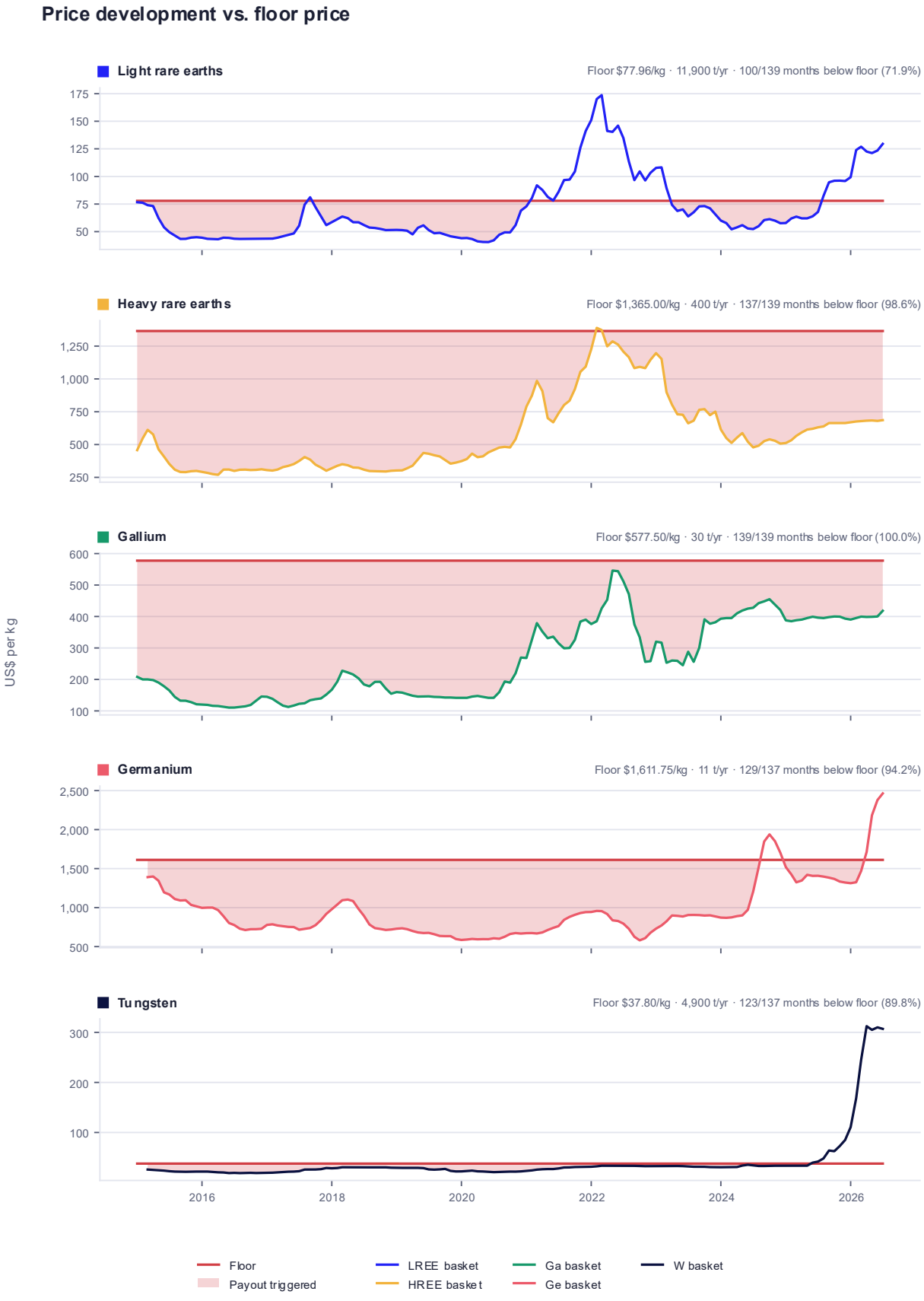


Figure 27: Comparison of market prices and floor prices for the raw materials analysed



Figure 28: Net cost to the federal budget by CfD design

4 Application of the CfD

The CfD is applied to a specific raw material project and a contractually defined offtake volume. In principle, the parties involved are the **producer, the offtaker and the government**. The producer supplies the raw material, the offtaker secures sales through a long-term offtake contract, and the government compensates for the difference between the agreed floor price and the reference price in accordance with the CfD.

- **Producer:** Concludes a long-term supply or offtake contract and receives the revenue from the sale of the raw material plus, where applicable, the CfD compensation payment.
- **Offtaker:** Takes on the long-term offtake. This can be an industrial company, a consortium of offtakers or, for example, a trading house that aggregates volumes and sells them on to industrial end customers.
- **Government:** Concludes a support or difference contract with the beneficiary contracting party and ensures compensation in accordance with the agreed price formula.

Depending on the chosen structure, the government contract may be concluded directly with the producer or with an intermediary buyer. The physical trading of raw materials and the government compensation for price differentials remain legally separate, but are linked through identical volume, price, and maturity parameters.

4.1 Contract Design

The reference price and floor price are to be negotiated on a project-specific basis and set out bindingly in the CfD. The floor price reflects the revenue level required for the project to be economically viable. The reference price reflects the market value relevant to the specific product and the agreed delivery point.

Where a reliable market index exists, it can be used as the reference. In illiquid or non-transparent markets, the reference price can be derived from several price quotations, a contractually defined comparative price or the verified selling price. The calculation method and any indexation and adjustments are finalised when the contract is concluded.

If the reference price falls below the floor price, a compensation claim arises for the contractually covered volume in the amount of the price difference. Whether and to what extent revenue above the floor price is returned to the government depends on the CfD model agreed in each case. No specific model is defined at this point. It should also be examined whether the floor price can be kept confidential in order to prevent competition-distorting market interventions by third parties.

5 Results and Discussion

The analysis indicates that CfDs are a comparatively cost-efficient instrument for industry to promote more resilient and more diversified raw material supply chains, particularly when compared with the potentially considerable economic costs of inaction. By hedging price risks, they facilitate investment in alternative raw material projects and reduce vulnerability to market monopolies and external shocks.

Overall, the results support examining CfDs as a targeted raw materials and industrial policy instrument for strategically relevant raw material projects. This requires careful design with clear resilience criteria, a time limit on support and mechanisms to limit fiscal risks. In this way, CfDs can help reduce critical dependencies and strengthen supply security.

Several aspects should be considered when interpreting the results:

1. First, CfD models with fixed floor prices create only limited efficiency incentives for raw material producers. Because remuneration is secured for a defined period, incentives to cut costs, optimise processes and increase productivity may be reduced. When designing a specific CfD system, complementary mechanisms should therefore be examined that also create incentives for efficiency gains and cost reductions after the start of the project.
2. Second, the model assumptions can only partially capture possible market reactions. Successfully supporting additional production capacity at a time of weaker demand could lead to oversupply, falling market prices and

thus rising fiscal burdens. Fiscal burdens also increase as floor prices rise. The choice of floor price is therefore a key lever in CfD design.

3. Third, it should be noted that the backtest analysis is based on historical price developments. Had additional European production capacity been created earlier through the introduction of CfDs, the price increases observed for some raw materials might have been lower. This would have affected the fund balance and fiscal burdens, particularly for Model 3.

These aspects do not detract from the fundamental results of the analysis but should be considered in further discussions and in the design of a possible CfD system.

Appendix D: Explanation of the Resilience Premium

1 Initial Situation

A resilient raw material supply for German industry must in particular combine two objectives: **supply security under different supply situations** and **access to raw materials at internationally competitive prices**. Only if both conditions are met can industrial value creation and employment be secured in the short and medium term.

The situation becomes more acute along the raw material supply chain. In what follows, this consistently comprises the four stages of **extraction, processing, refining and recycling**:

- **High dependencies:** German industry depends on imported raw materials and upstream input materials. At the same time, the extraction, processing and refining of many critical raw materials are concentrated in a few countries and suppliers.
- **Intensified geopolitical competition:** Export restrictions, prices shaped by state intervention, subsidies and other market distortions mean that not all market participants operate under comparable market-based and WTO-based conditions.
- **High cost of resilience:** Additional sources of supply along the raw material supply chain require considerable investment, the qualification of alternative suppliers and the permanent integration of additional procurement channels. The International Energy Agency puts the global investment required for mining and refining critical minerals alone at more than **USD 750 bn**[14] by 2040.

Using additional sources of supply that already exist is also often more expensive. This is due to differences in wages and non-wage labour costs, energy prices, regulatory requirements, bureaucratic burdens and lower economies of scale. Established large suppliers are therefore often able to offer the lowest prices in the short term. While additional sources of supply and investment along the raw material supply chain strengthen supply security, they also increase costs.

This creates a structural trade-off: diversification strengthens supply security but increases production costs and decreases competitiveness in the short term. The additional costs can only be passed on to a limited extent, because supply security is not fully remunerated in purchasing or in the sales market.

Companies thus bear the costs, while a substantial part of the benefits accrues to the entire supply chain and the economy as a whole[15]. Resilience therefore remains underfunded from a business perspective, even though it is necessary from a macroeconomic perspective.

Industry is already living up to its responsibility: companies are diversifying their raw material procurement, qualifying additional suppliers and investing along the raw material supply chain. These resilience measures

- reduce strategic dependencies,
- secure production in the event of supply interruptions and

[14] The amount refers to the global investment in mining and refining of critical minerals required by 2040 under the *Stated Policies Scenario* (IEA, 2026).

[15] This benefit is reflected, for example, in the fact that stabilising supply chains and ensuring continuous production can reduce or avoid considerable follow-on costs for companies, public budgets and social security systems, for example in the form of short-time work premiums or bridge financing.

- strengthen the stability of industrial value chains.

However, due to higher investment and procurement costs, corporate measures reach their limits where additional resilience permanently impairs international competitiveness.

To cushion the trade-off between supply security and international competitiveness, a tax-based resilience premium is proposed. It does not replace corporate responsibility but creates a reliable incentive for additional and verified resilience measures.

2 Brief Overview of the Instrument

The tax-based resilience premium should be designed as a voluntary statutory entitlement that is paid out when the conditions are met. It rewards only additional, clearly defined and verified resilience measures. Companies are free to decide whether to use Building Block A, Building Block B, both building blocks or neither. The instrument does not create any procurement, diversification or disclosure obligations for companies that do not participate.

- **Building Block A – Investment premium:** Supports additional, clearly definable investments and directly project-related expenditure that open up new or more resilient sources of supply along the raw material value chain or verifiably reduce existing concentration risks.
- **Building Block B – Diversification premium (as a pilot):** Supports selected statutory diversification measures for critical raw materials for a limited period. Support is based on flat rates specific to each raw material and processing stage.

The following principles apply to both building blocks:

1. **Voluntary, with no obligation:** Companies decide for themselves on participation, building block and scope. Non-participation does not trigger any additional procurement, diversification, reporting or disclosure obligations.
2. **Access:** A digitally supported two-stage procedure is envisaged. A technically competent resilience certification body reviews the subject of support, the additionality of the measure and its resilience effect. The tax authorities review the assessment basis and the tax law requirements and set the premium. Standardised evidence, flat rates and multi-year evidence limit the administrative burden to what is necessary.
3. **Central means of verification:** Companies can submit evidence themselves or voluntarily have it pooled by a qualified central verification body. Trading or procurement vehicles can serve as a single data source for origin, processing stage, volume, period and allocation, provided that statutory standards, data access rights, independent auditability and confidentiality are ensured. The tax authorities remain responsible for setting the premium.
4. **Additionality and incentive effect:** Only measures are eligible that go beyond regular business operations, would not be implemented without the premium, or would be implemented later or on a smaller scale, and for which an application or binding notification was submitted before the start of the project.
5. **Link to Germany:** The measure must directly and verifiably serve the supply of an industrial activity that is taxable in Germany. The raw material does not need to originate in Germany, nor does the source of supply need to be located there.
6. **Tax effectiveness and predictability:** The premium is set separately, credited against income or corporation tax and paid out where it exceeds the tax due. If the statutory requirements are met, there is an entitlement without competitive application procedures or case-by-case discretion.
7. **No overcompensation:** The same costs or procurement volumes may not be counted more than once, whether within the supply chain, between the building blocks or in combination with other public support.
8. **Compliance with EU law:** The premium may only be applied once it has been exempted under state aid law or approved by the European Commission. The requirements of necessity, incentive effect, proportionality, transparency and cumulation must be enshrined in law. For each support category, it must be

examined separately whether an exemption, approval under a relevant state aid framework or individual notification is required.

3 Building Block A: Investment Premium

Building Block A forms the permanent core of the investment premium. It supports additional investments and directly project-related expenditure that open new or more resilient sources of supply along the raw material value chain, reduce concentration risks or make alternative raw material flows available for an industrial activity that is taxable in Germany.

The subject of support is the additional resilience effect. General business expansion, replacement investments without an additional resilience effect and regular procurement measures are excluded. Use of the premium is voluntary. The investment decision, project risk and operational responsibility remain entirely with the company.

3.1 Eligibility Criteria

An investment is eligible if it:

a) can be assigned to an eligible area under Section 3.2,

b) opens up an additional, economically relevant source of supply or reduces an existing concentration by a specified minimum amount based on statutory country, supplier or processing stage indicators,

c) is applied for or bindingly notified before the start of the measure,[16]

d) serves the supply of an industrial activity that is taxable in Germany for a statutory minimum period and with a specified minimum volume, and

e) is documented in an auditable manner with regard to costs, use of funds, term, supply link and resilience effect, and the statutory retention and earmarking periods are observed.

3.2 Eligible Investments and Expenditures

The investment premium comprises, in particular, the following three clearly distinct support categories:

- **A1 – Capital investments:** Investments in tangible and intangible assets for the extraction, processing, refining and recycling of critical raw materials defined by law. With regard to input materials and components, these may include, in particular, anode and cathode materials, permanent magnets and semiconductors and their precursors. The prerequisite is a legally unambiguous positive list and a close link to the raw material supply chain. Downstream components and end products as a separate product category remain excluded.
- **A2 – Project-related financing contributions:** Equity stakes, project-related loans, prepayments and economically comparable risk-bearing contributions, provided that the funds are bindingly allocated to a beneficiary project. Proof of use of funds, minimum holding periods, pass-through rules and grounds for recovery are required.
- **A3 – One-off development and qualification costs:** Directly project-related testing, audit, certification, approval and supplier qualification costs, provided that they are incurred for the first time and can be clearly allocated to the development of an additional source of supply.

Trading and procurement structures are only eligible insofar as specific investments or project-related contributions can be assigned to one of the categories A1 to A3. General capital injections, ongoing sourcing costs and non-project-related platform costs are excluded.

[16] The start of a project is generally deemed to be the conclusion of a legally binding supply, service, financing or investment contract attributable to its execution.

Monitoring and transparency: Investments in traceability, early warning and material flow analysis are eligible insofar as they are required for a supported resilience measure and go beyond regular business operations.

The following are not eligible: the regular value of the raw material, general operating, overhead and financing costs, the acquisition of existing assets without an additional resilience effect, downstream component or end-product manufacturing, and costs already supported elsewhere.

3.3 Assessment Basis, Amount and Procedure

Assessment basis. For A1, the acquisition or production costs that can be capitalised for tax purposes are decisive. For A2, only the verified, actually paid and project-related financing contribution is to be taken into account. For A3, the directly attributable actual expenditure is taken into account. Price discounts, insurance benefits, revenues, non-repayable public grants and costs supported elsewhere reduce the assessment basis. VAT is only included insofar as it cannot be deducted as input tax.

Support rate and maximum amount. An investment premium of 20% of eligible costs is proposed. For small and medium-sized enterprises, the rate can be 30%. The assessment basis should generally be capped at EUR 100 m per company and financial year. This results in a maximum premium of EUR 20 m, or EUR 30 m for small and medium-sized enterprises. If lower aid intensities or amounts are permitted under the relevant EU state aid framework, these lower limits apply. Higher amounts for large strategic projects require a separate state aid basis and, where necessary, individual approval.

Calculation. The premium is calculated using the formula: eligible costs × support rate = investment premium. For eligible costs of EUR 40 m, the premium at 20% amounts to EUR 8 m. A mere reduction in taxable profit is not envisaged.

Tax treatment and payout. The premium is set separately after the end of the financial year, credited against the assessed income or corporation tax, and any excess amount is paid out. It therefore takes effect regardless of the company's profit and tax position.

Procedure. In a first stage, technical eligibility is reviewed by a resilience certification body designated by law. The certificate covers at least the support category, the raw material concerned, the critical processing stage, the reference state, the additional resilience effect, the support period and, where applicable, the minimum volume. In a second stage, the tax authorities set the premium. In particular, they review the amount of costs, tax allocation, affiliated companies, cumulation and payout.

4 Building Block B: Diversification Premium

Building Block B complements the core investment premium model with a flat-rate diversification premium in the form of a pilot. Criteria for extending it following an evaluation include, in particular, the existence of a significant and objectively verified supply or dependency risk, the ability to identify the critical production or processing stage, the measurability of the additional resilience effect and the absence of equivalent support from other sources. Participation is voluntary. The premium does not prescribe sources of supply or minimum quotas.

Building Block B will initially be designed as a pilot limited in time, scope and budget. It is intended to test whether additional ongoing diversification measures for selected raw materials can be effectively supported with a reasonable administrative burden. The sole subject of support is an objectively verified improvement in procurement diversification. The regular value of the raw material, individual actual price premiums and general operating costs remain excluded. The assessment is made exclusively on the basis of flat rates defined by law. It should also be examined to what extent the build-up of strategic stockpiles can be supported through a diversification premium.

4.1 Eligibility Criteria

A diversification measure is initially to be recognised for a critical raw material defined by law if the company:

- structurally integrates an additional, economically relevant source of supply into its procurement portfolio,
- measurably reduces its concentration on individual countries, suppliers or critical processing stages compared with a statutory reference period,
- actually uses the alternative source for a statutory minimum period or a minimum volume, and
- documents the raw material, origin, critical processing stage, supplier, volume and period in an auditable manner.

Recognition is given for reaching a statutory diversification level for the first time or for a verifiable improvement compared with the reference period. Spot purchases without a structural effect remain excluded.

Building Block B initially applies exclusively to the direct procurement of critical raw materials defined by law. Upstream input materials, components and indirect procurement via upstream suppliers can only be included once the raw material or material volume, origin and critical processing stage can be reliably allocated and double support can be ruled out.

4.2 Assessment Basis

Assessment basis is exclusively a flat rate per tonne, kilogram or other appropriate unit of the qualifying alternative procurement volume, specific to the raw material and, where applicable, the processing stage. Individual proof of actual additional costs and any combination of flat rate and individual proof are excluded.

The flat rates are set by statutory ordinance on the basis of transparent, regularly updated market and cost data. They are to be set in such a way as to avoid overcompensation of typical additional diversification costs. The data source, update frequency and methodological principles are to be published.

The following are not eligible: the regular value of the raw material, individual price premiums, general overhead and financing costs, costs of regular inventories and costs already covered under Building Block A or by other public support.

Support rate and maximum amount. A statutory support rate is applied to the flat rate. The support rate, annual maximum amount and total volume of the pilot are to be set taking into account state aid requirements and the available budget funds. Support should taper off over the pilot period in order to avoid permanently compensating for structurally higher procurement costs.

Calculation. The diversification premium is calculated as the product of the qualifying alternative procurement volume, the flat rate and the support rate. A calculation example is to be provided for each pilot raw material in the statutory ordinance or in official application guidelines.

4.3 Procedure, Time Limit and Evaluation

The technically competent resilience certification body reviews the classification as a pilot raw material, the critical processing stage, the reference state, the diversification threshold, the minimum volume, the minimum duration and the qualifying procurement volume. The tax authorities set the diversification premium on the basis of the certificate and standardised volume data.

Time limit and evaluation. The pilot is to be limited in time by law. Any extension or transfer into a permanent support model requires a published evaluation. This evaluation assesses, in particular, the additional diversification effect, deadweight effects, administrative costs, budgetary impact, market distortions, over- or undercompensation and compatibility with state aid law.

Tax treatment and payout. The diversification premium is set separately after the end of the financial year, credited against the assessed income or corporation tax, and any excess amounts are paid out. The tax treatment of the expenses covered by the flat rates is to be designed by law in such a way as to rule out double relief.

Procedure. A trading or procurement vehicle can provide standardised data, but does not decide on eligibility or on the amount of the diversification premium. Data access rights, independent auditability, confidentiality and clear allocation to the economic cost bearer must be ensured.

4.4 Cumulation and Recovery

Only flat-rate support is permitted for the same procurement volume. Costs or volumes already taken into account under Building Block A or by other public support programmes are excluded from support. For affiliated companies, maximum amounts and cumulation limits are to be reviewed at the level of the single undertaking relevant under state aid law.

The premium is to be recovered in full or in part if the minimum duration or minimum volume is not met, evidence is incorrect or incomplete, volumes are counted more than once, or other support is subsequently granted for the same subject of support. Amounts recovered are to bear interest in accordance with the statutory provisions.

4.5 Additional Guardrails for Building Block B

- The decisive factor is the actual critical processing stage of the raw material supply chain. Customs origin alone is not sufficient. The relevant country, supplier and processing risks and the diversification thresholds are to be determined on the basis of objective and verifiable criteria.
- The relevant country, supplier and processing risks and the diversification thresholds are to be determined on the basis of objective and verifiable criteria. Upstream input materials, components and indirect procurement are initially excluded from the pilot. Their subsequent inclusion requires a separate evaluation and a statutory extension.
- Flat-rate support, individual proof and other support cannot be combined for the same procurement volume.

5 Reference Case: USA

The USA shows that tax credits can mobilise private investment in critical raw material and strategic technology supply chains. What is relevant for Germany is not the territorial design, but the combination of a statutorily defined subject of support, a refundable credit, clear evidence requirements and protection against cumulation.

- **Section 45X:** This production-related credit covers, among other things, electrode active materials, battery components and applicable critical minerals. Subject to statutory conditions, it can be treated as a tax payment or transferred.
- **Section 48C:** This investment programme provided a total of USD 10 bn for qualifying projects. Allocations were made in two rounds, with around USD 4 bn in 2024 and around USD 6 bn in 2025.

For Germany, this does not mean copying the US model, but rather points to a clear design mandate:

1. **Payable entitlement:** Building Block A works as the core model even where tax liability is low or zero. Building Block B is designed exclusively as a time-limited, flat-rate pilot.
2. **Statutory definition:** Eligible investment categories, pilot raw materials, objective resilience criteria, flat rates, maximum amounts, time limits, recovery and exclusions must be clearly defined in advance.
3. **Functional link to Germany:** The decisive factor is the direct benefit for an industrial activity that is taxable in Germany, not the origin of the raw material.
4. **Two-stage verification:** A technical resilience certification body reviews the subject of support and resilience effect; the tax authorities review the assessment basis, cumulation and tax requirements and set the premium.
5. **Compliance with state aid law:** Application only after exemption or approval. Incentive effect, proportionality, transparency and protection against cumulation must be bindingly regulated.

A territorial copy of the US rules is neither necessary nor advisable under EU law. For Germany, Building Block A should first be implemented as a focused (resilience) investment premium. Building Block B should only be introduced as a time-limited, flat-rate pilot for selected critical raw materials. Any subsequent extension requires a positive evaluation, assured budgetary and administrative effectiveness and a sound basis under state aid law.

Appendix E: Costs of German Raw Materials Policy

Institution/Initiative/Programme	Total 2020–2025	Average 2020–2025
Federal Institute for Geosciences and Natural Resources (incl. DERA)	638,359,000	106,393,166.67
Mining/Raw Materials Competence Centres of the AHKs	5,195,730	865,954.96
Federal funding for the German Mining Network		
Raw material-related activities of GTAI		
D-EITI	494,161	82,360.23
Support for the German-Mongolian Business Council	3,188,312	531,385.41
VDI ZRE	5,255,565	875,927.45
acatech (aw material-related research)	643,982	107,330.35
FONA (raw material-related research funding)	22,396,774	3,732,795.61
BMUKN programmes (raw material-related, circular economy and efficiency)	2,327,000	387,833.33
Fraunhofer IWKS (incl. raw material-related projects and institutional funding)	185,140,000	30,856,666.67
Research funding at the GFZ	27,193,511	4,532,251.88
KfW administrative costs (in particular due diligence reviews for the Raw Materials Fund)	31,110,000	5,185,000.00
Raw Materials Fund expenditure	9,780,000	1,630,000.00
Total cost	**985,167,230**	**164,194,538.42**

Source: Own illustration based on Federal Government (2026)

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www.bdsv.eu

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Behrenstraße 35, 10117 Berlin
www.vda.de

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Lyoner Straße 18, 60528 Frankfurt am Main
www.vdma.eu

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Amelia-Mary-Earhart-Str. 12, 60549 Frankfurt am Main
www.zvei.org

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Project lead

Simon Weimer, BMW AG
Ole Lee, BMW AG

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