D-EITI

Extractive Industries Transparency Initiative

Germany

Extractive Industries Transparency Initiative – Germany

REPORT FOR 2020

(May 2023)

Editor
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
on behalf of the Federal Ministry for Economic Affairs and Climate Action (BMWK)

Company headquarters
Bonn and Eschborn

Friedrich-Ebert-Allee 32 + 36
53113 Bonn

Dag-Hammarskjöld-Weg 1–5
65760 Eschborn

www.giz.de

GIZ GmbH acts as the secretariat of
the Multi-Stakeholder Group of the German Extractive Industries Transparency Initiative (D-EITI)

Reichpietschufer 20
10785 Berlin

T +49 30 72614-207
F +49 30 72614-22-207

sekretariat@d-eiti.de
www.d-eiti.de

Responsible
Mareike Göhler-Robus, Head of the D-EITI Secretariat (GIZ)

Last update
May 2023

Greeting and remarks of the D-EITI Special Representative, Dr Franziska Brantner

Ladies and Gentlemen,
Dear readers,

Issues related to the secure and sustainable supply of natural resources have gained significantly in political importance along with the recent changes of the geopolitical situation. In this context, the extraction of domestic natural resources is key, and a sound basis of information is needed to ensure broad social acceptance of the related activities. The annual report drafted in accordance with the EITI Standard compiles all important information and thus increases transparency in the German extractive sector.

With this fifth report, the Multi-Stakeholder Group (MSG) of the D-EITI has once again prepared specific information of the extractive sector that promotes a factual debate on current extractive policies and the use of natural resources. The development of this report required a lot of commitment from the participants. I would like to express my sincere thanks to all those involved. Special thanks go to the companies in the extractive sector for their comprehensive, voluntary reporting as well as to their associations. Federal and Federal State authorities, cities and municipalities as well as their representative bodies and many civil society organisations have actively supported the German implementation of the EITI through their suggestions and cooperation. I am very grateful for this support.

In line with the D-EITI's claim, it was also possible to integrate into this fifth D-EITI report topics that go beyond the EITI standard and are relevant to the social debate. I would like to emphasise that, for the first time, a whole chapter of this D-EITI report has been dedicated to the topic of securing the supply of natural resources. The new chapter documents the current significance of the extraction of domestic natural resources. In addition, the chapter provides a good overview of the challenges as well as the current approaches to solutions for a secure supply of natural resources.

Another success to be highlighted is the alternative quality assurance of payment flows, which was further developed in the third year of the pilot phase. This innovative approach can contribute to the further development of the EITI Standard and also adds value to our reporting.

Transparency in the extractive sector is a benefit for society as a whole. The multi-stakeholder approach of D-EITI provides a unique platform for an open exchange between all relevant stakeholders and thus contributes to the implementation of D-EITI.

I am convinced that the fifth D-EITI report will provide an excellent basis for the upcoming second validation of D-EITI this year and wish all stakeholders continued success.

Signed, Dr Franziska Brantner

Special Representative of the Federal Government for the Implementation of the EITI in Germany
Parliamentary State Secretary to the Federal Minister for Economic Affairs and Climate Action

Greeting and remarks on behalf of the private sector by Matthias Wachter

Ladies and Gentlemen,

With this 5th report, we are pleased to make the extraction of natural resources in Germany in all its facets once again a little more transparent and understandable. Everyone needs and uses natural resources since they form the basis of our daily lives and our economy. The current situation of supply and delivery bottlenecks caused by the Covid 19 pandemic and Russia's war of aggression against Ukraine, which violates international law, make this clearer than ever and show the growing importance of domestic extraction of natural resources.

Therefore, I am pleased that this report contains a new subchapter on the "Contribution of domestic natural resources extraction to security of supply and Germany's role in the international natural resources market". Because in the course of the energy transition, the global demand for critical resources will increase strongly. However, the extraction of natural resources is concentrated in a few countries. As a result, there is a danger that dependence on imports will be misused to enforce geopolitical interests.

Against this background, the importance of domestic extraction of natural resources is growing. The extraction of natural resources in Germany is carried out in accordance with the highest environmental, social and safety standards worldwide. Transparency and sustainability are integral parts of the German extractive industry. In many cases, domestic production not only causes lower CO_2 emissions than many imports, but it also makes us politically more independent of third parties.

Therefore, my sincere thanks go to all companies for their (once again) voluntary participation in the D-EITI process. Even with the new quality assurance procedure, the following conclusion could be drawn for the last reporting year 2020: All payment flows in the extractive sector of German industry are correct, plausible and traceable. All tests to date have not detected any deviations and confirm the high standards of the domestic extractive sector. Likewise, the pilot project launched in 2020 has proven to be a viable alternative to the previous verification of payment flows through a payment reconciliation. Against the backdrop of the Paris Climate Agreement and the resulting sharp increase in demand for natural resources, the EITI can make an important contribution to further increasing transparency in the extractive sector worldwide.

As the private sector, we greatly appreciate the constructive and objective exchange with the other stakeholder groups in the MSG as well as with the D-EITI Special Representative, Dr Franziska Brantner, Member of the German Parliament and Parliamentary State Secretary in the Federal Ministry for Economic Affairs and Climate Action (BMWK). I would like to thank all those involved very much for this. This dialogue makes an important contribution to an objective approach to the extraction of domestic natural resources and a better understanding of the natural resources situation. The issues ahead of us, such as the energy transition and digitalisation, can only be successful with a secure supply of natural resources. The extraction of domestic natural resources can make a decisive contribution to overcoming these challenges. Therefore, I am all the more pleased that in this report we are focusing more strongly on both security of supply and the importance of domestic production.

Matthias Wachter

Head of the Department of International Cooperation, Security, Natural Resources and Space of the Federation of German Industries (BDI e.V.)

Greeting and remarks on behalf of the civil society by Prof Dr Edda Müller

Ladies and Gentlemen,

The 5th EITI Report on the situation of extractive industries in Germany is the consensual result of an intensive, and not always easy, discussion process with our partners from government and the private sector in the Multi-Stakeholder Group (MSG). This time, too, the MSG has taken up new topics. It has not succumbed to the temptation to merely update and routinely perpetuate the previous reports.

One example is the pilot project on payment flows, which we have been testing since the 3rd report. Payment reconciliation has been replaced by a description of the legal and institutional procedures and structures designed to prevent illegal and corrupt practices in Germany. Other examples concern topics that are currently not yet part of the mandatory EITI reporting standards. Thus, not only payments made by companies to the government agencies are recorded, but also state subsidies and tax benefits to companies. A chapter on the sustainability of the extraction of natural resources outlines the legal obligations and practices of companies with regard to the impact of their activities on the environment and nature, describes the social regulations for the protection of employees, and deals with the efficient use of natural resources through measures designed to develop a circular economy, including recycling.

This report focuses, amongst others, on Germany's way towards energy transition. The measures designed to make energy transition a reality contribute to global climate action and to the necessary changes of economic and social structures on a regional and macroeconomic level. This topic took on a new dimension in 2022. With the Russian war of aggression on Ukraine and the loss of gas and oil imports from Russia, Germany was faced with the problem of being able to cover its needs for gas and oil, especially for the heat supply of private households and the gas requirements of industry. The MSG took up the topic and the 5th report deals with the contribution of domestic natural resources to future supply security as well as Germany's role in the international natural resources market. This shows the international integration and dependency of the extractive industries as well as the importance of EITI for a peaceful, corruption-free, climate-friendly and sustainable extraction and use of natural resources.

The civil society representatives in the MSG will continue to advocate for reporting that can be used to identify problems and ambitious goals of resource extraction, both nationally and internationally, and mitigate them through adequate further development of standards. We thank our partners in the MSG for the good cooperation.

Prof Dr Edda Müller

Transparency International Germany

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LIST OF ABBREVIATIONS

3TG	Tin, tantalum, tungsten, their ores and gold
AGG	Allgemeines Gleichbehandlungsgesetz (Equal Treatment Act)
AO	Abgabenordnung (Fiscal Code)
APG	Anpassungsgeld (adaptation payment)
BBergG	Bundesberggesetz (Federal Mining Act)
bbs	German Building Materials – Quarried natural resources
BilRUG	Bilanzrichtlinie-Umsetzungsgesetz (German Accounting Directive Implementation Act)
BImSchG	Bundes-Immissionsschutzgesetz (Federal Immission Control Act)
BMWK	Bundesministerium für Wirtschaft und Klimaschutz (German Federal Ministry for Economic Affairs and Climate Action)
BNatSchG	Bundesnaturschutzgesetz (Federal Nature Conservation Act)
CSR	Corporate Social Responsibility
D-EITI	Deutschland Extractive Industries Transparency Initiative (German Extractive Industries Transparency Initiative)
Destatis	Statistisches Bundesamt (Federal Office of Statistics)
DrittelbG	Drittelbeteiligungs-Gesetz von 2004 (One-Third Participation Act of 2004)
EIA	environmental impact assessment
EITI	Extractive Industries Transparency Initiative
ElektroG	Elektro- und Elektronikgerätegesetz (Electrical and Electronic Equipment Act)
EnergieStG	Energiesteuergesetz (Energy Tax Act)
EnSTransV	Verordnung zur Umsetzung unionsrechtlicher Veröffentlichungs-, Informations- und Transparenzpflichten im Energiesteuer- und Stromsteuergesetz (Ordinance for the implementation of transparency obligations in the Energy Tax and Electricity Tax Acts pursuant to the requirements of the European Union)
EnWG	Energiewirtschaftsgesetz (Energy Act)
FVG	Finanzverwaltungsgesetz (Tax Administration Act)
GDP	Gross Domestic Product
GDR	German Democratic Republic
HGB	Handelsgesetzbuch (Commercial Code)
IG BCE	Industriegewerkschaft Bergbau, Chemie, Energie (Mining, Chemical and Energy Industrial Trade Union)
KrWG	Kreislaufwirtschaftsgesetz (Recycling Management Act)
KTF	Klima- und Transformationsfonds (Climate and Transformation Fund)
LBP	Landschaftspflegerischer Begleitplan (landscape management plan)
LNatSchG	Landesnaturschutzgesetz (State-level Nature Conservation Law)
MSG	Multi-Stakeholder-Group
MontanMitbestG	Montanmitbestimmungsgesetz von 1951 (Coal and Steel Co-Determination Act of 1951)
MontanMitbestGErgG	Mitbestimmungsergänzungsgesetz von 1956 (Supplementary Co-Determination Act of 1956)
NABU	Naturschutzbund Deutschland (German Nature and Biodiversity Conservation Union)

NAP	National Action Plan
PublG	Gesetz über die Rechnungslegung von bestimmten Unternehmen und Konzernen (Publizitätsgesetz) (Publicity Act – Act on the Accounting of Certain Companies and Groups)
RAG AG	RAG Aktiengesellschaft
STARK	Stärkung der Transformationsdynamik und Aufbruch in den Revieren und an den Kohlekraftwerkstandorten (Strengthing the transformation dynamics and start in the regions and sites with coal-fired power plants)
StromStG	Stromsteuergesetz (Electricity Taxation Act)
UVP-Bergbau	Umweltverträglichkeitsprüfung bergbaulicher Vorhaben (environmental impact assessment of mining projects)
WRRL	Wasserrahmenrichtlinie (Water Framework Directive)

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1

INTRODUCTION

The “Extractive Industries Transparency Initiative – EITI” is a global standard the aim of which is to achieve more financial transparency and accountability in the recording and disclosure of revenue generated by the extractive industry. Through the implementation of the voluntary initiative of the EITI standard, 57 countries around the world are meanwhile contributing to the fight against corruption and mismanagement, and to the promotion of good governance in this important economic sector.

Implementation and reporting topics

In order to implement the EITI standard in Germany (D-EITI), a national Multi-Stakeholder Group (MSG) consisting of representatives from the government, companies and civil society was established at the beginning of 2015. The MSG is responsible for implementing the initiative and preparing the EITI reports, which are published annually in accordance with the EITI standard.

The German EITI reports are intended to give citizens the opportunity to obtain comprehensive information about the extractive industry in Germany. The reports contain extensive contextual information about the German natural resources extractive sector. Since the fourth report, relevant regulations on the prevention of corruption in public administration and in the private sector have also been included in the chapter *Legal framework for the extractive industry.* The chapter *Managing human intervention in nature and landscape*, including the sub-themes *Provisions*, *implementation securities and water* became part of the mandatory requirements with the 2019 update of the EITI standard. All information was compiled by the members of the MSG and is updated for the respective reporting year. The information mandatory according to the EITI standard is supplemented by various D-EITI special topics. Special topics are those which go beyond the mandatory requirements of the international EITI standard and which were included on the basis of a decision made by the MSG. The first two reports already included the topics of *state subsidies and tax concessions, renewable energies, recycling as well as employment and social affairs.* Since the third report the chapters on *managing human intervention in nature and landscape, employment and social affairs* and *recycling* are together summarised in one chapter entitled *Sustainability in the extraction of natural resources.* Since the fourth report, the chapters on *renewable energies* and further information on the *legal base of the energy transition in Germany, domestic natural resources, environmental protection, renaturation, recultivation* and *social factors in relation to the structural change in lignite regions* have been combined in a single chapter on the *effects of the energy transition and the structural change on the extraction of natural resources in Germany*. For this fifth report, in view of the geopolitical situation and the economic challenges, the MSG has prepared another chapter on the *contribution of the extraction of domestic natural resources to security of supply and Germany’s role in the international natural resources market* which will be published in 2023.

Financial transparency pilot project

The quality assurance process for the area of financial transparency in which payments of extractive companies to government agencies are disclosed has been modified as part of a pilot project in the third and the fourth report and will be developed further in this fifth report. Quality assurance in the first two reports was done according to the EITI standard procedure and involved reconciling the reported payments of companies with the corresponding receipts by government agencies. Disclosure of payments made by extractive companies involved in D-EITI to government agencies is still retained. Since the third report the reconciliation of these payments with the receipts of government agencies (so-called payment reconciliation) has been replaced by a general evaluation of the government processes. Here, in addition to the

structure and legal base, the focus was primarily on internal assurance processes and audits. Since the fourth report a risk assessment on the quality assurance of payments is added to this process evaluation. This process evaluation has been deepened in this fifth report for the income from trade tax. The quality assurance procedure has also been conducted in the third year in close cooperation with the international EITI secretariat and will be evaluated after the report has been completed.

Quality assurance of payment data

Payment collection, the quality assurance process and risk assessments have again been carried out and supported by an Independent Administrator engaged by the MSG, as provided for in the EITI standard. The companies' participation was voluntary.

This fifth D-EITI report for the reporting year 2020 was prepared by the German MSG in cooperation with the Independent Administrator, the auditing company Grant Thornton AG Wirtschaftsprüfungsgesellschaft, Düsseldorf.

All the information and data here can also be found online on the D-EITI report portal at www.rohstofftransparenz.de.

Information about the D-EITI process and the Multi-Stakeholder Group of the D-EITI can be found at www.d-eiti.de.

MSG objectives for D-EITI:

We, the Multi-Stakeholder Group (MSG), commit to the principles set forth in the 2019 EITI Standard by setting ourselves the following objectives with respect to EITI implementation in Germany:

1. Produce timely reports that are understandable and accessible to the general public and based on a transparent, open and innovative EITI process in Germany; and
2. Process contextual information concerning the German extractive sector, with a view to promoting a broad debate on resource policy that includes aspects of sustainability (economic, environmental, and social); and
3. Engage in understandable, commensurate and increasingly comprehensive reporting to the general public in compliance with the EITI Standard and in harmony with the EU Accounting and Transparency Directives. Concomitantly, additional value shall be generated; and
4. Contribute to the further development of the EITI Standard and its implementation and acceptance as a de-facto global standard, to support the global striving for transparency and accountability as well as the fight against corruption in the extractive sector; and
5. Share experiences from the multi-stakeholder process, in particular with respect to participatory democracy, citizen engagement and knowledge transfer, and also with regard to EITI implementation in a state with a federal structure; and
6. Substantially enhance Germany's credibility as regards its political and financial support for EITI; and
7. Ensure the ongoing implementation of the D-EITI with the intended multi-stakeholder model while building capacity for broad-scale public debate.

2

THE EXTRACTIVE INDUSTRY IN GERMANY

a. The sectors of the extractive industry in Germany

i. Crude oil

History

Crude oil has been industrially extracted in Germany for more than 150 years. The successful oil well in Wietze near Celle in 1858/59 is generally recognised as being one of the first in the world. Crude oil production in Germany peaked in 1968 with an annual production of around 8 million tonnes. Proven and potential crude oil reserves in Germany were estimated to be around 27 million tonnes as of 1 January 2021. Most of the crude oil reserves are in the North German Basin, primarily in Schleswig-Holstein and Lower Saxony. At the end of 2020, there were 49 oil fields in production.

Economic importance

With a share of around 34% of primary energy consumption, crude oil is by far the most important energy source in Germany. In this context, fossil fuels with a share of 76% generally account for a much larger share than renewable forms of energy. In 2020, domestic oil production amounted to around 2% of Germany's annual consumption and thus remained the same compared to the previous year. Germany is one of the world's largest users of mineral oil, making it almost entirely dependent on importing crude oil and crude oil products. Imports of crude oil are, at around 83 million tonnes, slightly lower than in the previous year. These imports in total were valued at €23.1 billion and came from 32 countries[1], with 56% of the imported crude oil alone coming from Russia (28.2 million tonnes), Great Britain (9.6 million tonnes) and the US (9.4 million tonnes). Germany produced slightly less than 2 million tonnes of crude oil in 2020. The country's share of global oil production amounted to approx. 0.04% in 2020. The value of crude oil produced in Germany in 2020 is estimated to be €528 million, which represents 0.01% of GDP. Crude oil accounted for around 4.5% of the total value of natural resources produced in Germany in 2020. In terms of economic significance, crude oil thus ranked third behind lignite and natural gas in the list of fossil energy resources produced in Germany and in seventh place out of all natural resources extracted nationwide.
In a 2020 international comparison of crude oil-producing countries, Germany was in 58th place (1970: 26th place). At the end of 2020, 2,008 persons were employed in oil production in Germany.[2]

Extraction

In 2020, 49 oil fields were in production in Germany. These fields extract oil by means of some 743 production wells in drilling installations (onshore) and production platforms (offshore). In 2020, the oilfields of Schleswig-Holstein and Lower Saxony yielded almost 90% of the total German production.
The remaining quantity was mainly produced in the Federal States of Rhineland-Palatinate and Bavaria, together with very low production levels in Hamburg, Brandenburg and Mecklenburg-Western Pomerania. The largest German crude oil field is the Heide-Mittelplate I field in the Schleswig-Holstein Wadden Sea (Wattenmeer) National Park. It has been developed since 1987 by a drilling and production island and by oil well facilities on the mainland. This oil field accounted for more than half of Germany's total crude oil production in 2020.

Uses

Crude oil is a fossil energy source. It is primarily used as a fuel for vehicular transportation and to heat buildings. Over the last few years, oil has accounted for 94% of energy consumption in the transport sector. Besides, oil makes up around 23.4 % of the energy used for heating buildings. A particularly heavy user of crude oil is the chemical industry for processes

1 A list of oil-producing countries can be found here: https://www.bafa.de/SharedDocs/Kurzmeldungen/DE/Energie/Rohoel/2020_12_rohloelinfo.html (Accessed on 12 August 2022).
2 [BfA 2020]: Federal Employment Agency. URL: https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular.html?gtp=15084_ list%3D5&topic_f=employment-sozbe-wz-heft (Accessed on 14 November 2022).

such as the manufacture of plastics, paints, foam, washing detergents, medicines, lubricants and cosmetics.

Interesting facts

- Germany covered about 2% of its crude oil demand with domestic production in 2020.
- 57% of the total German production in 2020 came from the Heide-Mittelplate I oil field located in the Wadden Sea
- Crude oil is created by the transformation of huge deposits of plankton.
- On average, crude oil deposits are found at a depth of around 1.5 km. Technical progress, however, has made it possible to open up oil fields at a depth of 5,000 m and more.
- More than 22,000 drilling operations have been carried out since crude oil and natural gas production began in Germany.

ii. Natural gas

History

In 1910, natural gas was found in Neuengamme (which is a district of Hamburg today) when drilling for water. The industrial production of natural gas started in 1913. However, natural gas production in Germany remained minimal until the end of the 1960s, with only a 1% share of the primary energy consumption in Germany (West). The oil crises of the 1970s focused increased attention on the consumption of energy and the need for the development of energy sources.

Domestic production grew with the discovery of large gas deposits on the German-Dutch border and the increasing conversion of town and coke-oven gas to natural gas. This was accompanied by a steady expansion of the gas infrastructure (from 12 to approx. 20 billion m³ (Vn)[3] of raw gas between 1970 and 2005).

In 2005, domestic natural gas production covered around 25% of German natural gas consumption. Since then, however, production has declined. The safe and probable reserves of natural gas are also declining. These amounted to around 43 billion m³ (Vn) as of 1 January 2020. The decline in natural gas reserves and production is mainly due to the increasing depletion of the deposits and the resulting natural decline in extraction. There have been no significant new discoveries in recent years. A legislative process lasting several years was also responsible for the decline in reserves; during this process, the topics discussed included future requirements for the use of fracking technology, which led to new legislation in 2016.

Economic importance

Natural gas is still the second most important source of energy in Germany with a share of around 26% of primary energy consumption. In 2020, natural gas production in Germany amounted to around 5.7 billion m³ (Vn) of raw gas, covering only about 5% of domestic natural gas consumption which decreased by approx. 1.3% in 2020. In 2020, 1,674 TWh of natural gas valued at €18 billion were imported. The imported gas originated in Russia/CIS (1,121 TWh), Norway (349 TWh), the Netherlands (194 TWh) and Belgium (9.6 TWh). There was a very slight reduction in imports (−1.7%) compared to the previous year. However, a considerable proportion of the natural gas imported was reexported to neighbouring European countries (814 TWh). In terms of the economic significance of domestically produced natural gas, Germany ranked number 48 in the comparison of all natural-gas-producing countries in 2020. The country's share of global natural gas production amounted to just under 0.15% in 2020. The value of the natural gas extracted in 2020 amounted to an estimated €0.75 billion. That is equivalent to about 0.02% of GDP. Natural gas accounted for around 7% of the total value of natural resources produced in Germany in 2020. At the end of 2020, 1,275 persons were employed in the German production of natural gas.[4]

3 Standard volume (Vn)
4 [BfA 2020], for a detailed source reference, see final note [i].

Extraction

Around 94% of German natural gas was extracted in Lower Saxony in 2020. Other Federal States (Saxony-Anhalt, Schleswig-Holstein, Thuringia and Bavaria) contributed only marginally to the total production. 406 production wells extracted natural gas on 73 gas fields. The A6/B4 natural gas field in the "Entenschnabel" (duckbill) – an economic zone in the German Bight (North Sea) – is the only German offshore gas field. 2020 was the last time natural gas production was reported from this field and the natural gas field is now considered depleted. Since 1974, 9.5 billion m^3 of raw gas and 813,000 tonnes of natural gas condensate have been produced from this gas field. Like crude oil, natural gas occurs in underground deposits. Similar to the exploration of crude oil, the exploration of natural gas takes place primarily through seismic surveys and exploration drilling. Gas extraction takes place through a borehole stabilised with cement and steel and a riser pipe is then inserted through the hole.

In addition to the development of conventional deposits, the development of non-conventional natural gas deposits is conceivable. Unconventional deposits include natural gas deposits in shale, clay, marl and coal seam rock, the development of which requires the use of "hydraulic fracturing" or "fracking" for short. "Fracking" involves injecting a suspension (water, proppants and additives) and the resulting increase in pressure to create small cracks in the rock containing the natural gas in a controlled manner. This process releases the gas so that it can be brought to the surface through the drilling pipes.

"Fracking" in Germany has been used for many decades in the development of conventional deposits, especially in dense sandstones (mostly at greater depths) and has been tried and tested for many years. However, the use of fracking for the commercial development of shale, clay, marl and coal seam rock (i.e. unconventional deposits) is not permitted in Germany until further notice.[5] The German parliament has not yet made use of the opportunity to review the ban on the basis of the report of the Fracking Expert Commission presented in 2021. The topic of fracking continues to be discussed very controversially in Germany.

Uses

As a fossil fuel, natural gas is mainly used in industry (36%) and in private households (31%, mainly for heating). In addition, it is used to generate electricity (14%) in the trade, commerce and services sectors (12%) and in district heating/cooling (including combined heat and power plants; 7%). In transport, natural gas plays a very minor role as a fuel at 0.2%. Natural gas also other uses – as a reactant in chemical processes (e.g. for ammonia synthesis in the Haber-Bosch process (nitrogen fertiliser)), for iron ore reduction in the blast furnace process but particularly in the production of hydrogen through steam reforming.

Interesting facts

- In contrast to coal and oil, natural gas has only been used as an energy source relatively recently.
- Natural gas has been extracted from domestic gas fields for the past 100 years.
- 5% of the demand for natural gas in Germany was covered by domestic production in 2020. Approximately 94% of the German natural gas was extracted in Lower Saxony.

5 German Federal Ministry for Economic Affairs and Climate Action (2022). URL: https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/fracking.html (Accessed on 3 November 2022).

iii. Hard coal

History

The hard coal industry in Germany gained in economic importance during the industrial revolution of the 19th and 20th centuries. Production increased steadily, reaching an annual peak of more than 200 million tonnes at the beginning of the Second World War. After WW2, German hard coal was used in the electricity, steel and heat supply industries. In the mid-1950s, more than 600,000 employees in 170 mines extracted 150 million tonnes of hard coal every year. This situation changed at the end of the 1950s. German hard coal could no longer compete efficiently in the world market since its extraction was carried out exclusively through underground mining. It still needed subsidies from public authorities right up until 2018. In recent decades, imported coal and, above all, cheaper crude oil have replaced domestic hard coal.

The current situation of the German hard coal industry is the result of a continuous adaptation process which started with the founding of the Ruhrkohle AG – a merger of 51 Ruhr area mines – in 1969.

Review

On 7 February 2007, the German Federal Government, the Federal States of North Rhine-Westphalia and Saarland, the RAG AG and the Mining, Chemical and Energy Industrial Union (IG BCE) agreed to end the subsidised production of hard coal in Germany at the end of 2018 in a socially-acceptable manner. The phase-out process is governed by the "socially acceptable phasing-out of subsidised hard coal mining in Germany" framework agreement of 14 August 2007 and by the German Hard Coal Financing Act, which came into force in December 2007. For more on this, please refer to chapter 6 on state subsidies and tax concessions. See chapter 8 on the energy transition for more information on the end of hard coal power generation.

Economic importance

Consumption of hard coal in Germany was significantly lower in 2020 compared with 2019 and reduced by more than one sixth to around 30.6 million tonnes SKE (SKE: hard coal unit, a unit that is mainly used in central Europe). In 2020, hard coal in Germany therefore still covered 7.5% of primary energy consumption and contributed 7.5% to German gross electricity generation. The last two German hard coal mines closed at the end of 2018. Germany now had to meet all its hard coal requirements through imports because German hard coal mining had been phased out. With around 14.6 million tonnes (46.6%) Russia was again the largest supplier, followed by the US (18.2%) and Australia (12.3%). Imports from Poland, the only remaining significant coal exporting country in the EU-27, fell to 1.2 million tonnes. Of this, around 1.2 million tonnes was coke. Overall, Germany imported 31.35 million tonnes of hard coal and hard coal products (primarily coke) in 2020.

Extraction

Internationally, hard coal is mined both in underground and open-cast mines. In Europe, coal is mined almost exclusively underground and that was the case in Germany until the end of 2018. Coal was mined underground in Germany down to a depth of up to 1,400 m, exclusively using the "longwall mining" technique. Longwall mining involves removing the coal along a coal face up to 450 m long with a coal plough or cutting it with a longwall shearer between two extraction lines. Several thousand tonnes of coal can be mined from a longwall every day. Today this method is widely used, with around 50% of hard coal production worldwide being mined using this method. The most important German deposits were in North Rhine-Westphalia in the Aachen coalfield, the Ruhr and the Saarland. In addition to these, there were a large number of smaller hard coal mining areas in Germany.

Uses

In 2020, power stations accounted for roughly 48% of the total consumption of hard coal, the steel industry accounted for 46%, while other producing industries, the domestic heating sector and small consumers accounted for some 6%.

Interesting facts

- The subsidised hard coal mining industry in Germany ended on 31 December 2018 with the closure of the last remaining mines in Bottrop and Ibbenbüren.
- The termination has been carried out in a socially acceptable manner and on a legal basis.
- 100% of the required hard coal is imported, mainly from Russia, the USA and Australia.

iv. Lignite

History

As early as the 17th century in Germany, lignite was being produced as a replacement fuel for wood, which was becoming increasingly scarce. With increasing industrialisation and the development of new deposits, the 19th century saw an increase in lignite production from 170,000 tonnes in 1840 to 40 million tonnes in 1900. This trend continued unabated in the 20th century until production reached an all-time peak in 1985 with 433 million tonnes produced that year. Much of this increase in overall German lignite production was attributable to the East German lignite coalfields. Following German reunification production of lignite in the East German lignite coalfields fell by 67% between 1989 and 1994. Total German production fell from 410 million tonnes to 207 million tonnes during this period. Reserves of lignite totalling 3.7 billion tonnes are accessible via developed and definitely planned open-cast mines. Further reserves total around 32 billion tonnes.

Economic importance

Lignite is still one of the most important sources of energy in Germany, accounting for a share of around 8.1% of primary energy consumption. This is behind oil, natural gas and renewable energies but ahead of hard coal. The amount mined annually was around 107.4 million tonnes in 2020, which represents a reduction of 18% over the previous year. Germany covers nearly 100% of its lignite requirements from its domestic reserves. The value of the lignite extracted in Germany in 2020 amounted to €1.9 billion. Lignite accounted for around 15% of the total value of natural resources mined in Germany in 2020. This means that lignite was the fourth most important natural resource in Germany, in terms of the value of production. In 2020, Germany's share of global lignite production was 11.1%. Germany is Europe's largest producer of lignite and the world's second-largest producer of soft lignite after China, but it is continuing to reduce lignite production in the context of the European climate targets, the compromise found by German society on the coal phase-out as a result of the Commission on "Growth, Structural Change and Employment" KWSB 2019 and the entry into force of the Act to Reduce and End Coal-Fired Power Generation (Kohleverstromungsbeendigungsgesetz – KVBG) in 2021. Germany has the third largest reserves after Russia and Australia. In 2020, exports of lignite fell by –19% to 1.07 million tonnes of lignite (incl. products). With the decline in lignite production in the wake of German reunification, the number of persons directly employed in lignite mining fell from 130,000 in 1990 to 8,284 in 2020[6] (exclusive of persons employed in coal-fired power stations).

Extraction

Lignite is extracted in three areas (the Rhenish, Lausitz and Central German regions), where today mining is only carried out in open-cast mines. Lignite is currently mined in ten active open-cast mines in Germany. The lignite deposits in the Rhenish coalfield are in the Lower Rhine Basin in the triangle between the cities of Aachen, Mönchengladbach and Cologne.

6 [BfA 2020], for a detailed source reference, see final note[i].

The Lausitz lignite coalfield, which also used to be called the east Elbe lignite coalfield, is a coalfield in south-east Brandenburg and north-east Saxony. Since German reunification, the Central German lignite coalfield is generally assigned to Saxony-Anhalt as well as the north-western part of Saxony and the extreme eastern part of Thuringia.

Uses

Around 90% of the lignite Germany produces is used to generate electricity and district heating. Due to the lower energy and higher water content of soft lignite as compared to hard coal, the economic benefits of lignite result from the combination of the open-cast mine and power plant being near the location of the lignite deposits. Around 10% of lignite produced is refined into solid or pulverised fuels for commercial use and private households (e.g. brown coal briquettes, pulverised lignite, fluidised bed lignite and lignite coke). Lignite contributes 16.0% (2020) of power generation in Germany. The domestic production of lignite covers the country's annual consumption.

Interesting facts

- With production at around 107.4 million tonnes in 2020, lignite accounted for almost 8.1% of primary energy production in Germany.
- Lignite accounted for around 16.0% of gross electricity generation in 2020.
- The coalfield in the Rhineland is the largest lignite coalfield in Europe and Germany is Europe's largest producer of lignite.
- Germany is the world's second-largest producer of soft lignite after China and uses its production entirely for its own consumption.
- Germany covers nearly 100% of its lignite requirements from its domestic reserves.
- Recultivation and compensation for land required for mining are important issues for the German lignite mining industry.
- Germany will gradually reduce its use of coal to produce electricity and end the practice entirely by the end of 2038 at the latest.

v. Salts

History

In addition to the mineral natural resources described in the following section (vii. Other natural resources), salts are industrial minerals. Industrial minerals are mineral resources that can be immediately used in industry due to their special chemical and physical properties, i.e. without any substance conversion. A distinction is made between rock salt, potash salts and magnesium salts.

Germany has large salt deposits, which are mainly concentrated in northern Germany. Over millions of years, deposits of salts resulted in several 100 m-thick layers. Bavarian and Austrian Alps salt is of a similar age and has been extracted for thousands of years.

The commissioning of the first potash plant in the world in Staßfurt in 1861 founded the almost 150-year tradition of German potash mining. The extraction of salt by solubilisation, i.e. by making it soluble using water injected via boreholes, or by mining in salt mines, has a long history. People were digging for salt in the Berchtesgaden area as early as the 12th century. In the 16th century a salt mine was built there which is still in operation today.

Economic importance

In 2020, the amount produced in Germany was approximately 14.2 million tonnes of rock salt (including industrial brine) and some 6.2 million tonnes of potash and potash salt products. This is roughly equivalent to a value of €2.0 billion and it accounts for a 0.5% share of GDP. Salts accounted for around 19% of the total value of natural resources mined in Germany in 2020. This means that salts ranked 2nd among all natural resources mined in Germany in terms of economic importance. Domestic production covered 100% of German requirements for salts (2020). With a total production of approx. 5%, Germany was the fourth largest producer of salt in the world in 2020, after China, the USA and India, and also the fifth largest potash producer with around 5% of the world's total production.

In 2020, a total of 7,879 persons were directly employed in potash mining in Germany and a further 2,388 in salt mining.[7]

Extraction

Extraction takes place in Germany in five potash mines (in Hesse, and Thuringia), seven salt mines (e.g. in Baden-Wuerttemberg, Bavaria, Lower Saxony, North Rhine-Westphalia and Thuringia), six salt works (e.g. in Baden-Wuerttemberg, Bavaria, Lower Saxony and North Rhine-Westphalia) and ten solubilisation facilities (amongst others those in North Rhine-Westphalia, Schleswig-Holstein, Lower Saxony and Thuringia).[8] Salt mining is carried out in the mines by means of drilling, blasting or cutting techniques or by brining out underground deposits (solubilisation). Brining out is done by introducing freshwater or half-brine into the salt deposits through borehole probes, after which the salts dissolve. The brine is then pumped through a probe and processed above ground in salt works or specialized facilities, where it eventually becomes salt, potash salt and other products.

Uses

Rock salt and evaporated salt is used for commercial and industrial purposes as well as for food and de-icing. Salt is an indispensable natural resource for the chemical industry, e.g. in the production of soda, chlorine and caustic soda. Glass, plastic and aluminium could not be produced without salt. It is used as regenerating salt in water softening plants, in the feed industry, in road services, for snow clearing and in the food industry. Sodium chloride meets particularly high purity requirements as an active pharmaceutical ingredient.

Interesting facts

- Salt has been actively extracted by humans for over 5,000 years.
- The importance of salt for many cities is often reflected in their names.
- If saline springs were discovered in a town, the epithet 'Bad' (spa) was generally added to the town's name. This ushered in the birth of today's spas.
- In the mid-19th century, Justus von Liebig discovered the importance of potassium as an essential plant nutrient.
- When miners coincidentally discovered the world's first known potash deposit while searching for rock salt near Staßfurt in 1856, the first potash mines and works were subsequently established in Germany around 1860.
- As early as in the high-medieval period, the brine pipeline from the Reichenhall mine to Traunstein was one of the first pipelines for natural resources in the world.
- The Werra potash mine is the largest active underground mining area in Germany.

Potash crude salts are largely mined but, to a lesser extent, they are also extracted using other methods. The salts are mainly used in agriculture as fertilisers. However, they are also used as industrial salts in electrolysis and other industrial processes – and there is a demand for these salts in highly-purified form for the food and feed industries and for pharmaceutical purposes.

vi. Quarried natural resources

Quarried natural resources comprise a great number of mineral deposits, in particular gravel and sands, broken natural stone, natural stone, lime, marl and dolomite stones, gypsum and anhydrite stones, as well as coarse ceramic clays and loams.

7 Südwestdeutsche Salzwerke AG (2021): Annual Report 2020. URL: https://www.salzwerke.de/de/investor-relations/finanzberichte/geschaeftsberichte.html (Accessed on 14 November 2022), for a detailed source reference see endnote[i].

8 Current information on mines and salt works in Germany for potash and salt extraction can be found at: https://vks-kalisalz.de/bergbau/bergwerke/ (Accessed on 6 October 2022).

Quarried natural resources are bulk raw materials; due to geological conditions, they are site-bound and not distributed evenly across the country.

History

Quarrying has been handed down since the beginning of human history. According to scientific findings, the oldest known "stones from human hands" originate from the 9th to the 8th millennium B.C., taken from ground fortifications in the Middle East. The extraction of quarried natural resources also has a very long tradition in Germany. In the past, these natural resources were mainly extracted by hand, but companies today use modern technology. Geophysics, GPS, intelligent machine and plant control and largely automated processes control the extraction of these natural resources.

Economic importance

Every year, the building materials and quarrying industry extracts roughly 560 million tonnes of primary raw materials (excluding quartz sand and gravel, kaolin and fine ceramic clay; these materials are covered in the section on vii industrial minerals) or uses these materials in production. In 2020, gravel and sands with 262 million tonnes and broken natural stone with 223 million tonnes represented the largest share of natural resources in terms of quantity in the German extractive industry. The total value of quarried natural resources was around €4.9 billion in 2020. Thus in 2020 around 46% of the total value of natural resources mined in Germany was attributed to quarried natural resources.

Germany meets its own requirements for quarried natural resources largely from reserves within the country.

Quarried products are generally mined on a regional basis and are transported over short distances to the consumers. The reason for this is that the transport costs are relatively high compared to the value of the material. Accordingly, foreign trade plays mainly a role in areas adjacent to the border. The main customers are the countries which are Germany's direct neighbours, e.g. the Netherlands, Switzerland and Belgium. In 2020, imports in terms of volume were approx. 17.2 million tonnes (value: €1,01 billion). Exports in terms of volume were 26.3 million tonnes (value: €0.7 billion).

In 2020, the quarried natural resources sector (incl. Other mining) employed 38,237[9] people in Germany who are subject to social insurance contributions.

Extraction

Quarried natural resources are mined decentrally and, with just a few exceptions, are extracted in open-cast operations. In 2020, the industry operated around 2,700 extraction sites in Germany[10]. When extracting sand and gravel, a distinction is made between dry and wet extraction, depending on the groundwater situation, and these two scenarios require different production techniques. Nearly all quarried natural resources require processing and refinement before they are sent on for their intended use. As non-renewable natural resources, they are also site-bound because of their volumes.

Uses

Around 80% of the quarried materials are supplied directly to the building industry (e.g. civil engineering to build roadbases and wearing courses, track ballast) or are initially processed by the building products sector into basic and building materials (e.g. cement, concrete, quick lime, mortar, insulation materials, tiles, bricks) and then supplied to the construction industry. The remaining approx. 20% are used in the chemical, steel or glass industries. In addition to the quarried quantities of primary earth and stone, approx. 100 million tonnes of secondary raw materials (mineral construction waste and by-products from industrial processes) are used in the building industry every year.

9 [BfA 2020], for a detailed source reference, see final note [i].
10 Bundesverband Mineralische Rohstoffe e.V. (2021): Management Report 2020/2021. URL: https://www.bv-miro.org/service/geschaeftsberichte/ (Accessed on 14 November 2022).

These result from e.g. the demolition of buildings, the production of pig iron (blast furnace slag) or from electricity generation in conventional power stations (FGD gypsum, fly ash). The use of secondary raw materials contributes to the substitution of primary natural sources. The substitution rate is around 15%.

Interesting facts

- Every year, the building materials and quarrying industry extracts roughly 560 million tonnes of primary raw materials (excluding quartz sand, kaolin and fine ceramic clay) or uses these materials in production. In addition, approx. 100 million tonnes of secondary raw materials are used every year in the production of building materials to conserve resources.
- Quarried materials comprise a variety of mineral resources; gravel, sand and natural stone account for the largest share of the total volume extracted.
- Around 80% of the quarried materials are supplied to the building industry, while around 20% is used in the chemical, steel or glass industries.
- Quarried natural resources are needed for the manufacture of many products that we use in our daily lives. Stone powder, for example, is the basic ingredient of toothpaste.
- Statistically, each one of us needs over 1 kg of plaster, stone dust, sand, gravel or natural stones per hour.

vii. Other natural resources

Industrial minerals

History

Industrial minerals are mineral rocks that can be immediately used in industry due to their special chemical and physical properties, i.e. without any substance conversion. In addition to the salts already mentioned in section v., this group includes kaolin (also called porcelain earth), quartz sand (clay), special clay (fine ceramic clay), quartzite, feldspar, sticky sand, bentonite, silicas, fluorite and barite.

Industrial minerals have been extracted in Germany for hundreds of years in very diverse quantities.

Economic importance

Apart from salts, the two most important industrial minerals in Germany in terms of volume are quartz sand/gravel and fine ceramic clay with production volumes of around 9.8 million tonnes and about 2.3 million tonnes respectively in 2020. In 2020, the total value of these two industrial minerals extracted in Germany was around €258 million.

Extraction

The extraction of industrial minerals in Germany is extremely regional in structure, due to natural conditions. While, for example, kaolin is produced in Bavaria and Saxony and silica in Bavaria, the extraction of special clay is mainly concentrated in Rhineland-Palatinate and Hesse.

Apart from salts, industrial minerals in Germany are mainly mined above ground by small and medium-sized enterprises. In contrast, fluorite and barite are also mined underground. In Germany, industrial minerals are extracted at around 200 extraction sites, although this number varies slightly each year.

Uses

Due to their chemical and physical properties, industrial minerals are mainly used in the paper, chemical, glass, ceramic, refractory, foundry and steel industries. However, the pharmaceutical industry, environmental management (exhaust gas purification, wastewater treatment plants, solar panel and wind turbine plants) and the automotive industry also use industrial minerals.

Iron ore

In Germany, iron ore is mined in North Rhine-Westphalia and Saxony-Anhalt. The iron ore extracted here is not smelted into iron, however; it is used mostly in the form of crushed stone, chippings and brittle sands as a coloured and iron-rich aggregate for the concrete or cement industry. Germany's requirement for iron ore to produce pig iron is covered entirely through imports. In 2020, around 39 million tonnes of iron ore were needed, 5.4% less than in the previous year. The ore came primarily from Brazil, followed by Canada, the Republic of South Africa, Sweden and Russia.

b. Natural resources extraction totals

A wide range of different mineral resources and energy resources is mined in Germany. The following tables list the natural resources extracted in Germany by quantities and estimated value in 2020.

Table 1: Extraction of natural resources in Germany in 2020 (quantities)

Natural resource	Quantity (2020)
Lignite	107.4 million tonnes[I]
Crude oil	1.9 million tonnes[II]
Natural gas**	5.7 billion m^3 [II]
Potash salt	35.8 million tonnes[III]
Potash and potash salt products	6.2 million tonnes[III]
Clay (fine and coarse ceramic clay)	13.8 million tonnes[III]
Rock salt and industrial brine	14.2 million tonnes NaCl content[III]
Kaolin	0.8 million tonnes[III]
Quartz gravel and sand	9.8 million tonnes[III]
Gravel and sand	262.0 million tonnes[III]
Broken natural stone	223.0 million tonnes[II]
Ashlar	0.4 million tonnes[III]
Limestone/marlstone/dolomite	55.2 million tonnes[III]
Hard coal*	0 million tonnes[I]

* Useable extracted output
** Incl. petroleum gas

I [SDK 2021] (Statistics of the coal industry), for a detailed source reference, see final note [ii].
II [LBEG 2021] (State Office for Mining, Energy and Geology), for a detailed source reference see final note [ii].
III [BGR 2021] (Statistics of the coal industry), for a detailed source reference, see final note [ii].

Tabelle 2: Extraction of natural resources in Germany in 2020 (value)

Natural resource	Value (2020) in millions of €
Lignite	1,545[IV]
Crude oil	528[IV]
Natural gas**	610[IV]
Potash salt	No information available[V]
Potash and potash salt products	1,598[IV]
Clay (fine and coarse ceramic clay)	161[IV]
Rock salt and industrial brine	399[IV]
Kaolin	58[IV]
Quartz gravel and sand	195[IV]
Gravel and sand	1,956[IV]
Broken natural stone	1,720[IV]
Ashlar	37[IV]
Limestone/marlstone/dolomite	813[IV]
Hard coal*	0[IV]

* Useable extracted output
** Incl. associated gas

IV [BGR 2021] (Statistics of the coal industry), for a detailed source reference, see final note[ii].
V These values can only be reported for potash and potash salt products.

3

LEGAL FRAMEWORK FOR THE EXTRACTIVE INDUSTRY

a. Who is responsible? Laws and the responsibilities of public authorities

The extraction of raw materials is regulated in Germany by regulations such as the German Federal Mining Act (BBergG). In 1982, it replaced the old mining laws of the Federal States and the numerous ancillary mining laws of the Federal and Federal State governments. The BBergG is supplemented by various ordinances on mining law issues. The overall control of the mining law within the Federal Government is the responsibility of the Federal Ministry for Economic Affairs and Climate action. The mining authorities of the Federal States (*see Fig. 1*) implement the BBergG and also bear the responsibility for the authorisation and supervision of mining activities (depending on the natural resources in question). The Federal States have passed some mining regulations of their own in order to meet the specific requirements and characteristics for areas not covered by the BBergG. The coalition agreement provides for the modernisation of mining law. However, a draft bill for the modernisation of mining law is not yet available.

Germany differentiates between three groups of natural resources in terms of their legal regulation (also *see Fig. 2*):

- **Free-to-mine natural resources** are not the property of the landowner. The exploration and extraction of these natural resources are subject to the BBergG and must be approved by the mining authorities of the respective Federal State in a two-stage procedure: firstly, by granting a mining license (public-law concession) and secondly, by granting the site-specific approval of the operating plan procedure.

- **Privately-owned natural resources** are the property of the landowner and are subject to mining law (see § 2(1), no. 1 BBergG). The prospecting and extraction of these mineral resources does not require any mining authorisation, but is subject to approval by the mining authorities of the Federal States.

- **Landowners' natural resources** are natural resources that are neither free-to-mine nor privately owned. They are the property of the landowner. They are not subject to mining law and the supervision of the mining authorities. The approval procedure for landowners' natural resources is carried out in accordance with the regulations of the Federal Immission Control Act (BImSchG) or in accordance with regulations of the respective Federal State (e.g. excavation, water and construction laws).

Depending on the Federal State, the natural resource and the type of extraction involved, middle and lower-management levels of governmental bodies are responsible for the landowners' natural resources category.

Figure 1: Overview of the mining authorities of the Federal States

Federal Ministry
for Economic Affairs
and Climate Action

Baden-Wuerttemberg Ministry of the Environment Climate Protection and the Energy Sector	**Bavaria** Ministry of Economic Affairs, Regional Development and Energy	**Berlin** Senate Department for Economics, Energy and Public Enterprises
Freiburg Regional Council, State Office for Geology, Raw Materials and Mining	Government of Upper Bavaria, Mining Office of Southern Bavaria Government of Upper Franconia, Mining Office of Northern Bavaria	State Office for Mining, Geology and Natural Resources, Brandenburg
Brandenburg Ministry for Economic Affairs, Labour and Energy	**Bremen** The Senator of Economic Affairs, Labour and Europe	**Hamburg** Authority for Economic Affairs and Innovation
State Office for Mining, Geology and Natural Resources, Brandenburg	State Office for Mining, Energy and Geology	State Office for Mining, Energy and Geology
Hesse Ministry for Environment, Climate Protection, Agriculture and Consumer Protection		**Mecklenburg-Western-Pomerania** Ministry for Economy, Infrastructure, Tourism and Labour
Regional Council of Darmstadt Department of Occupational Health and the Environment, Wiesbaden Regional Council of Gießen, Department IV "Environment", Gießen Regional Council of Kassel, Department III "Environmental Protection"		Mining Office
Lower Saxony Ministry for Economic Affairs, Labour, Transport and Digitalisation		**North Rhine-Westphalia** Ministry for Economic Affairs, Industry, Climate Action and Energy
State Office for Mining, Energy and Geology		Ansberg District Government Department of Mining and Energy in North-Rhine Westphalia
Rhineland-Palatinate Ministry of Economic Affairs, Transport, Agriculture and Viticulture	**Saarland** Ministry for Economic Affairs, Innovation, Digital Affairs and Energy	**Saxony** State Ministry for Economic Affairs, Labour and Transport
State Office for Geology and Mining	Upper Mining Office of the Saarland Mining Office	Saxon Mining Office
Saxony-Anhalt Ministry for Economic Affairs, Sciences and Digitalisation of the Federal State of Saxony-Anhalt	**Schleswig-Holstein** Ministry for Energy Transition, Climate Protection, Environment and Nature	**Thuringia** Ministry of Environment, Energy and Nature Conservation
State Office for Geology and Mining of Saxony-Anhalt	State Office for Mining, Energy and Geology Clausthal-Zellerfeld	Thuringian State Office for the Environment, Mining and Nature Conservation

Figure 2: Legal division of natural resources in Germany

Legal division	Free-to-mine natural resources (subject to mining law)	Privately-owned natural resources (subject to mining law)	Landowners' natural resources (not under mining law)
Subject-specific division	*Energy resources:* coals, hydrocarbons (including oil and natural gas), geothermal energy *Industrial minerals:* fluorite, graphite, lithium, phosphorus, all salts that are readily soluble in water, sulphur, barite, strontium, zirconium *Metal ores:* e.g. iron, copper, lead, zinc ores, etc. *Also:* All natural resources in the area of the continental shelf and coastal waters (including gravel and natural *stones*)[11]	*Industrial minerals:* bentonite and other montmorillonite clays, feldspar, mica, kaolin, diatomaceous earth (diatomite), "pegmatite sand", quartz (quartz sand and gravel) and quartzite (if suitable for refractory products and ferrosilicon production), soapstone, talk and clay (if fireproof and acid-proof). *Quarried natural resources:* basaltic lava (except columnar basalt), roofing slate, trass. *Also:* all privately-owned natural resources, which have been extracted underground (incl. gypsum, natural stone, brick clays etc.).	*Quarried natural resources (in open-cast mining):* anhydrite, gypsum, limestone, basalt columns and other natural stones, gravel and sand, quartz and quartzite (if unsuitable for the manufacture of refractory products and ferrosilicon) and other natural resources not listed in this table *Also:* peat
Right of disposal over natural resources	These natural resources are "free", i.e. they do not belong to the landowner. Their exploitation requires mining rights and the permission of the mining authorities.	These mineral resources belong to the landowner. The landowner is entitled to use them, but they require the approval of the mining authority to do so.	These mineral resources belong to the landowner. The landowner is entitled to use them. Permits may be required under other legislation.
Type of legal regulation	Regulated pursuant to the BBergG § 3(3) § 3(4)		Governed by other legal jurisdictions, e.g., construction law (Excavation Law), Water Resources Act or State Water Act, Federal Immission Control Act, Federal or State Nature Conservation Act.

Own presentation. Based on the following source: State geological service of the Federal Republic of Germany, Securing of natural resources (2008): Securing of natural resources in the Federal Republic of Germany. URL: https://www.infogeo.de/Infogeo/DE/Downloads/rohstoffsicherung_2008.pdf?__blob=publicationFile&v=2 (Accessed on 5 December 2022).

11 In the territory of the former GDR, special requirements may exist for free-to-mine natural resources under the Unification Treaty

b. How are resource extraction projects approved?

The regulation procedures for the approval and supervision of resource extraction projects are not the same for all natural resources in Germany. They vary depending on the type of natural resource and the laws and regulation they are subject to at the Federal and the Federal State level.

Figure 3: Steps for the approval of resource extraction projects according to the type of natural resource

<table>
<tr><th>Free-to-mine natural resources</th><th>Privately-owned natural resources</th><th>Landowners' natural resources</th></tr>
<tr><td>Right to mine must be granted by the responsible mining authority.</td><td>Proof of ownership of the land, e.g. land leasing contract must be submitted to the mining authority.</td><td>Proof of ownership of the land e.g. land leasing contract must be available.</td></tr>
<tr><td colspan="2">Approval of the operating plan by the mining authority
An operation-relevant approval specifies the technical and environmental law conditions under which natural resources can be explored and extracted.</td><td rowspan="2">Approval procedures as per the Federal Immission Control Act, the Federal State's excavation laws as well as the building, nature conservation or water resources legislation (in wet extraction) are required for extracting these natural resources.

The resources in question are mostly "bulk materials" from the quarried natural resources sector.</td></tr>
<tr><td colspan="2">Supervision by the mining authorities of the Federal States
The extraction of free-to-mine and privately-owned natural resources is subject to supervision by the relevant mining authority (mining inspection authorities; § 69(1) BBergG). In addition to awarding mining rights and granting operating plan approvals, the third core competence of the mining authorities is the supervision of mining operations.

According to the Federal Mining Act (BBergG), mine inspectors may enter the mining operations, demand information, visit facilities and carry out tests – and they may also impose requirements in individual cases. The mining companies also have obligations, e.g. to report incidents and accidents, to accept the actions of the mining inspection authorities and to accompany the mine inspectors on tours of the mines and mine buildings (inspections).</td></tr>
</table>

i. Mining licenses

Mining rights are the basis for the exploration and extraction of free-to-mine natural resources. Applications are made in the form of a permit, a license or proprietary mining rights.

There are three different types of mining rights:

Permit
The permit is a mining right which grants the right to carry out explorations for free-to-mine natural resources on a specific, permitted mine site. The permit is time-limited to a maximum of five years and may be extended for a further three years (see § 16(4) BBergG). A legal entitlement to the granting of a permit exists, unless there are grounds for refusal. The permit may be refused if, for example, no work programme exists or the fixed time period is not taken into account in the planning. The grounds for refusal are fully itemised in § 11 BBergG. If explorations have not started within one year, for reasons for which the permit holder is responsible, the permit will be revoked (§ 18 BBergG).

Licence
The licence is a mining right which grants the right to carry out exploration operations for free-to-mine natural resources on a specific, licensed mine site. The licence defines "a reasonable period of time for the implementation of extraction in individual cases". Fifty years may only be exceeded if this is necessary in view of the investment normally required for the extraction. A time extension is possible (see § 16(5) BBergG). A legal entitlement to the granting of a license exists, unless there are grounds for refusal.

The licence may be refused if, for example, it cannot be proven that the resources can be extracted, due to their location and nature (see § 12 BBergG). A licence shall be revoked after three years in cases where extraction has not commenced or has been interrupted, unless there are impediments pursuant to § 18(3) sentence 2 BBergG. The grounds for refusal are fully itemised in § 12 BBergG.

Proprietary mining rights
Proprietary mining rights are a special mining rights for the extraction of free-to-mine natural resources. They comprise the rights and obligations associated with a license, but also enable mortgaging of and the registration of easements for the mine site. The details of the proprietary mining rights are entered in the land register with the name and address of the applicant and details of the mine site. Proprietary mining rights define "a reasonable period of time for the implementation of extraction in individual cases". Fifty years may only be exceeded if this is necessary in view of the investment normally required for the extraction. A time extension is possible (see § 16(5) BBergG). If regular extraction of natural resources is interrupted for more than 10 years, the proprietary mining rights must be revoked (see § 18 BBergG). To apply for proprietary mining rights, the applicant must already be in possession of a licence for the mine site in question. Proprietary mining rights may also be refused if, for example, evidence cannot be furnished that an economic extraction of the natural resources is to be expected (see § 13 BBergG).

In compliance with § 75 et seq. BBergG, mining authorisations and mining maps are created to document the mining rights. Information about permits, licenses, proprietary mining rights and the mine sites in question is available in these documents.

Special case: mining rights under the old laws

The various forms of mining rights described above (permit, licence and proprietary mining rights) are also supplemented by older legal mining rights, which are described as "rights under the old laws" or "old rights". These are mining rights that were granted before the current Federal Mining Act of 1982 came into force, e.g. the lignite opencast mines in the Rhenish mining region. Under current law, these rights are still valid (see § 149(1), sentence 1 BBergG) if they were shown to the relevant mining authority during a phase-out period of three years after the Mining Law of 1982 came into force and if they were confirmed by mining inspection authorities. In contrast to mining rights under the new BBergG, rights under the old laws are not time-limited and neither extraction nor mine site royalties have to be paid. In practice, these old rights mainly apply to hard coal and lignite. An operating plan must be approved before these natural resources can be extracted under the old laws.

Special case: special requirements on the territory of the former GDR

The mining rights system of the GDR only applied to the (communist) state-owned and other mineral resources. The state-owned natural resources mainly comprised free-to-mine and privately-owned resources and were the property of the communist state. Other natural resources primarily comprised landowners' natural resources and were allocated to the land ownership category. The Bestowal Regulation of 15 August 1990 created the foundation for the conversion of mining rights for state-owned natural resources into free-to-mine resources, which were subsequently recognised by the legal system of the reunited Germany. The transferred mining rights are deemed to be proprietary mining rights. Old rights based on § 153 BBergG with the status of a licence (pursuant to § 8 BBergG) are excluded from this. Mining licenses that are deemed to be proprietary mining rights are, like the mining rights under old law, not time-restricted and are also exempt from mine site and extraction royalties (see § 149 and § 151 BBergG). In contrast to the Federal States of the former West Germany, the validity of the old rights (see section on mining rights under the old laws) in the Federal States on the territory of the former GDR does not only extend until 1980, but, due to the adaptation of the laws and regulations after reunification, also applies to deposits explored up to and including 1990. These rights also apply to both free-to-mine and privately-owned natural resources.

Figure 4: Overview of old mining laws, mining laws in the GDR and modern mining laws

	Rights under the old mining laws (West Germany)	Rights under GDR mining laws	Rights under the modern mining laws
Description of natural resource	Free-to-mine natural resources	State-owned natural resources	Free-to-mine natural resources
Payment of mine site and extraction royalties	No	No, unless the right to mine has been granted before the Unification Treaty entered into force	Decisions made at federal state level
Time-limited	No	No, confirmed old rights having the status of a license are however time limited.	Yes (see notes on mining rights)

ii. Approval of an operating plan

Exploration, extraction and processing operations that are covered by the BBergG are usually only set up, managed and discontinued if they are based on operating plans. These plans are drawn up by the mine operator and approved by the responsible authority. The approval of such operating plans is tied to conditions (conditions of approval). These conditions address operational and work safety, the protection of the surface area, the prevention of harmful impacts, the protection of the deposits and the preventive measures regarding the proper restoration of the areas affected by the extraction of the natural resources. The BBergG defines various types of operating plans, such as general operating plans, main operating plans, final operating plans and special operating plans. For further information see chapter 7.1 *Managing human intervention in nature and landscape*.

Operating plans basically include the following:

- A presentation of the scope of the project
- A presentation of the technical implementation of the project
- The duration of the project
- Evidence that the conditions of approval have been met

The operation of a mine is dynamic in nature due to the mine's continuous adaptation to the deposit's characteristics, since, for example, as the mining of lignite or salt progresses, the specific characteristics of the mine site change and extraction is extended to those areas of the deposit that have not yet been mined (however, this does not apply, for example, to deep geothermal energy). This mode of operation also entails specific risks for employees and third parties. Due to these conditions, continuous monitoring of the operation is necessary, at specified intervals. The main operating plan should generally not exceed a period of two years and should be approved by the responsible authority. Constant coordination between the company and the responsible authority is required to ensure both intensive public control of the mining operations and planning flexibility.

In the context of the phasing out electricity generation using lignite (see chapter 8) the BBergG was amended to extend the normal period for main operating plans for lignite opencast mining, cf. § 52(1) BBergG.[12] This extends the time frame for making changes to plans that have become necessary because of the phasing out of coal and the planning certainty of opencast lignite mining, the end of which is foreseeable because of the early phasing out of lignite. The arrangement also applies to other mining sectors if adequate monitoring is possible, including with a longer inspection period. The competent court for legal action before an administrative court in the first instance was moved to the Higher Administrative Courts (§ 48(1) No. 14 of the Rules of the Administrative Courts [VwGO]). The purpose of this measure was to speed up and streamline the approval process for general operating plans and all additional permissions associated with this for open-cast lignite mining affected by the phasing-out of coal.

In principle, the conditions under which natural resources are extracted in Germany are not directly negotiated between the extractive companies and the government agencies. The conditions for the exploration and extraction of natural resources are generally validated by law and implemented by the respective competent authorities.

In addition to the approval procedures, contractual agreements between companies and government agencies are occasionally concluded. However, as explained above, such cases do not represent the rule but the exception. Where private-law agreements are relevant for extractive companies in Germany, they are listed and explained in chapter 10 on disclosed payment flows and quality assurance.

12 Federal Mining Law (BBergG): https://www.gesetze-im-internet.de/bbergg/

iii. Water-rights permit

If a mining project involves the use of water, a water rights permit is required in addition to approvals under mining law (see § 8 in conjunction with § 9 WHG [Water Resources Act][13]). Water usage of this kind includes but is not limited to:

1. Abstracting and withdrawing water from surface waters,
2. Damming up and releasing surface waters,
3. Removing solids from surface waters, where this has an effect on water characteristics,
4. Introducing and discharging substances into water,
5. Removing, extracting, channelling and abstracting groundwater.

Unless one of the aforementioned activities applies, the following activities shall also be considered to be usage:

1. Damming up, releasing and re-routing of groundwater through plants that are intended or suitable for this purpose,
2. Measures that have the potential to bring about disadvantageous changes to the quality of the water, permanently or to a significant extent,
3. The application of hydraulic pressure to fracture rock to prospect for or extract natural gas, crude oil or geothermal energy, including the associated deep boreholes,
4. The underground storage of water from deposits that has accumulated during activities set out in number 3 or other activities to prospect for or extract natural gas or crude oil.

If the operating plan under mining law includes the use of water, the mining authority shall decide on granting the permit. The same shall apply to revoking a permit. Decisions made by the mining authority must be agreed with the responsible water authority.

Water-rights permits must be entered in a Water Register (§ 87 WHG), which can be accessed by the public. The rules for this procedure are governed by Federal State Law.

iv. Environmental impact assessment

As with other projects with environmental impacts, environmental impact assessments are also required for projects under mining law. Under the conditions laid down in the Ordinance on the Environmental Impact Assessment of Mining Projects (UVP-V Bergbau), an environmental impact assessment (EIA) or a preliminary examination of the individual mining law case is necessary. As a rule, the EIA obligation for mining projects depends on the size of the project, measured by extracted volumes or the required excavation area. An example of this can be seen in the following table. In addition, all mining projects are subject to EIAs if they appear on the list of projects subject to EIAs in accordance with § 1 of the Ordinance on Environmental Impact Assessments of Mining Projects (UVPG-V Bergbau), which was issued on the basis of § 57c BBergG.

If an EIA is necessary, a planning approval procedure must be carried out in accordance with mining law. The general public are involved in this procedure, as the plans for the extraction of mineral resources can be accessed by the public and members of the public affected can submit objections. A hearing of the authorities concerned will take place in parallel to the engagement of the general public. Objections are discussed with the participation of all bodies and persons who have raised objections. A decision on the objections is made by the competent authority (in this case the mining authorities of the Federal States) and adopted in the planning approval resolution. The planning approval procedure under mining law is also a bound decision, one which is not characterised by

13 Water Resources Act, available online at: https://www.gesetze-im-internet.de/whg_2009/

Figure 5: Overview of mining projects subject to an EIA or a preliminary EIA (examples only, this is not an exhaustive enumeration)

	Compulsory EIA	Compulsory preliminary EIA
Underground mining for the extraction of hard coal, lignite, bituminous rocks, ores and other non-energy mineral resources		
• Operating parts of a mine that are above ground, from 10 ha upwards	X	
• Surface subsidence from 3 m upwards	X	
• Surface subsidence from 1 m to 3 m		X
Open-cast mining		
• Extraction site from 25 ha upwards	X	
• Extraction site from 10 ha to 25 ha		X
• In nature protection and Natura 2,000 areas	X	
• With watercourse development (creation, disposal or substantial redesigning)	X	X
• Large-scale groundwater lowering with abstraction or replenishment from 5 million m^3/a upwards	X	
Crude oil and natural gas		
• Production volume from 500 t/d crude oil upwards or from 500,000 m^3/d natural gas upwards	X	
• Smaller extraction volumes based on a general preliminary assessment pursuant to Part 2, Section 1 UVPG		X
• With crushing of rock under hydraulic pressure	X	
• In coastal waters and the continental shelf	X	
Waste dumps		
• From 10 ha upwards	X	

planning considerations and discretion. In addition, it not only binds the decisions of other authorities, it also applies to the following operating plans as per § 57a(5) BBergG. All publicly available information on environmental impact assessments of mining projects can be accessed on the environmental portals of Federal and State governments.[14]

However, as a matter of principle, no planning approval procedure is carried out for operating plan procedures without EIAs. Accordingly, in these cases the responsibility of other authorities to decide on authorisations, permits, licenses, etc. remains unaffected. Where necessary for the actual implementation of an extractive sector project, further authorisations,

14 Federal EIA portal (https://www.uvp-portal.de/), Common Portal of the Federal States – Environmental Impact Assessments (https://www.uvp-verbund.de/ portal/), example portal: EIAs in Lower Saxony (https://uvp.niedersachsen.de/startseite) .

permits and licenses must be obtained from the relevant authority in each case. These may be construction permits, forest conversion authorisations, legal immission control approval procedures[15], permits under explosives legislation or the granting of exemptions from nature and landscape prohibition regulations.[16]

v. Public access to environmental information and "authorisation decisions"

The right to environmental information gives everyone free access to environmental information held by agencies that have a duty to disclose information. To achieve this, the Federal Government and Federal States have issued regulations that implement the regulations under international law (the "first pillar" of the Aarhus Convention) and the Access to Environmental Information Directive 2003/4/EC of the European Union. A distinction needs to be made between the German Federal Freedom of Information Act (UIG), which governs access to environmental information at federal level, and the environmental information laws of the Federal States, which apply to agencies in the Federal States that have a duty to disclose information. At the federal level, the Freedom of Information Act (IFG) applies in respect of other official information held by federal authorities.

Environmental information (cf. § 2 III UIG) includes data on the state of the air, atmosphere, water, soil, landscape and natural habitats (no 1), information on noise, energy, substances and radiation (no 2), and information on measures or activities having an impact on elements or factors of the environment or aiming at protecting the environment. According to § 3 I UIG, "agencies that are required to provide information", i.e. all offices involved in public administration and not only the "environmental authorities" (cf. § 2 I UIG), must provide access to environmental information.

Anyone who wants access to environmental information must first make an application (§ 4 UIG) to an agency that is required to provide information. It should be clear from the application which information the applicant wishes to access. In some cases, fees may apply (§ 12 I UIG).

The right to access information may be limited to protect certain interests, a definitive list of which can be found in the UIG (§ 8 I UIG). These include the protection of personal data, copyright or business and company secrets. It is possible to appeal against the refusal of an application to access information.[17]

Environmental information on the emissions from individual plants for natural resources extraction (and other industries) is made available to the public upon application. This information includes authorisations granted to companies, permits and licenses for the effects on the environment. Decisions on authorisations that have considerable effects on the environment must be independently published by the relevant authorities (cf. § 10 II).[18] Some Federal States use extensive "Environmental portals" to publish authorisation decisions and general environmental information.[19] There is a central internet portal at the federal level, which provides information on environmental impact assessments described above in 3.b iii. Since 2021 this portal can also be used to disseminate general environmental information (cf. § 10 III UIG).[20]

Example of an authorisation decision
Citizens can find out specific information on effects on the environment approved by the authorities from

15 Further information on the Federal Immission Control Act (BImSchG) can be found in the glossary.
16 A separate water-rights permit may be included in the administrative act of the mining authority under certain circumstances.
17 The above information and text passages come from the Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection. This and other information is available at: https://www.bmuv.de/themen/bildung-beteiligung/umweltinformation/umweltinformationsgesetz/ (Accessed on 5 December 2022).
18 It is sufficient to indicate where such information is accessible or can be found.
19 Example: Environmental portal of North Rhine-Westphalia (https://www.umweltportal.nrw.de/); Lower Saxony (https://numis.niedersachsen.de/portal); Thuringia (https://www.umweltportal.thueringen.de/) An overview of the existing environmental portals can be found at https://rohstofftransparenz.de/ download/#umweltinformationen.
20 The central Internet portal can be found at: https://www.uvp-portal.de/

the authorisation decisions. As an example, excerpts are quoted from the decision "Water-rights permit (...) to discharge salty waste water from the Neuhof-Ellers and Werra plants into the River Werra" for the company K+S Minerals and Agriculture GmbH in Philippsthal.[21] The company mines potassium-based salts in the works and discharges salty waste water into the River Werra during this process. The authorisation decision of the Regional Council in Kassel specifies the volume of salty waste water that it is permissible to discharge. In addition to this, aspects are addressed extensively such as the involvement of the public and associations/organisations or the effects on protected resources such as "water", "human health", "animals, plants and biological diversity" and "landscape".

[Extract]

"[...] I. Reasons for the decision

1. Permission

The applicant is [...] granted the water-rights permit to discharge salty waste water from the Werra and Neuhof-Ellers works into the River Werra via the discharge points at the Hattorf site at plot 46/2 (Werra) [...] and the discharge point at the Wintershall site at plot 379/3 (Werra) [...] and via ditch 3 (waste water from the compensation and safeguarding measures), time limited until 31 December 2021 with the following content:

1.1 Discharge quantity
A total of max. 6.7 million m^3/a of salty waste water is allowed to be discharged into the Werra from the production and operations of salt dumps and salty waters from the Neuhof-Ellers and Werra mines, the Hattorf/Wintershall mine, the diffuse inflows/springs of the Neuhof-Ellers works and the salty surface water of the factory site of the Neuhof-Ellers works.

There are no limits on the quantity for discharging salty groundwater from the safeguarding and compensation measures, which are or become necessary because of solid residues in the piles, but instead the following load limits apply.

1.2 Loads
The annual load of discharged mineralisation (K, Mg, Na, Cl, SO_4) from groundwater from the safeguarding and compensation measures, which are or become necessary because of the piles of solid residues, is not allowed to exceed an annual limit of 28,500 tonnes."[22]

21 The complete decision can downloaded and accessed at https://rohstofftransparenz.de/download/#umweltinformationen.
22 Quote from page 12 of the decision.

c. Where can information about granted licences be found?

i. Register of licences

Legal base
In Germany, the Federal State in question only grants the right to explore and extract free-to-mine natural resources. The right of disposal over a free-to-mine natural resource is designated as the right to mine, which can be requested from the mining authorities of the Federal States (see chapter 3.b.).

Pursuant to § 75 BBergG, the mining authorities keep mining authorisation books and mining maps, in which newly-granted mining rights are entered (pursuant to the BBergG) or "Old Rights and Contracts" are maintained pursuant to § 149 of the BBergG.

Public inspection of these mining authorisation books and mining maps was initiated within the framework of the implementation of the D-EITI. Since 21 July 2017 and pursuant to §76(3) of the BBergG, the following information on granted and maintained mining rights can be viewed upon application to the mining authorities (without evidence of a legitimate interest):

- Owner
- Extraction sites to which the mining right refers
- Date of the application and granting of the right
- Term
- Natural resource(s) to which the mining right refers

Permits and authorisations for mining exploration can also be inspected as a result of the legal amendment (see also explanation of mining rights in chapter 3.b.).

The competent authorities may also make this information directly accessible to the public, which has already been taking place for some time now in many Federal States. In this way, several Federal States publish a transparent online licence cadastre (i.e. land register). Further Federal States are planning to set up similar systems.

All hydrocarbon-segment mining licences in Germany can also be viewed in the annual publication "Erdöl und Erdgas in der Bundesrepublik Deutschland" (Crude oil and natural gas in the Federal Republic of Germany).

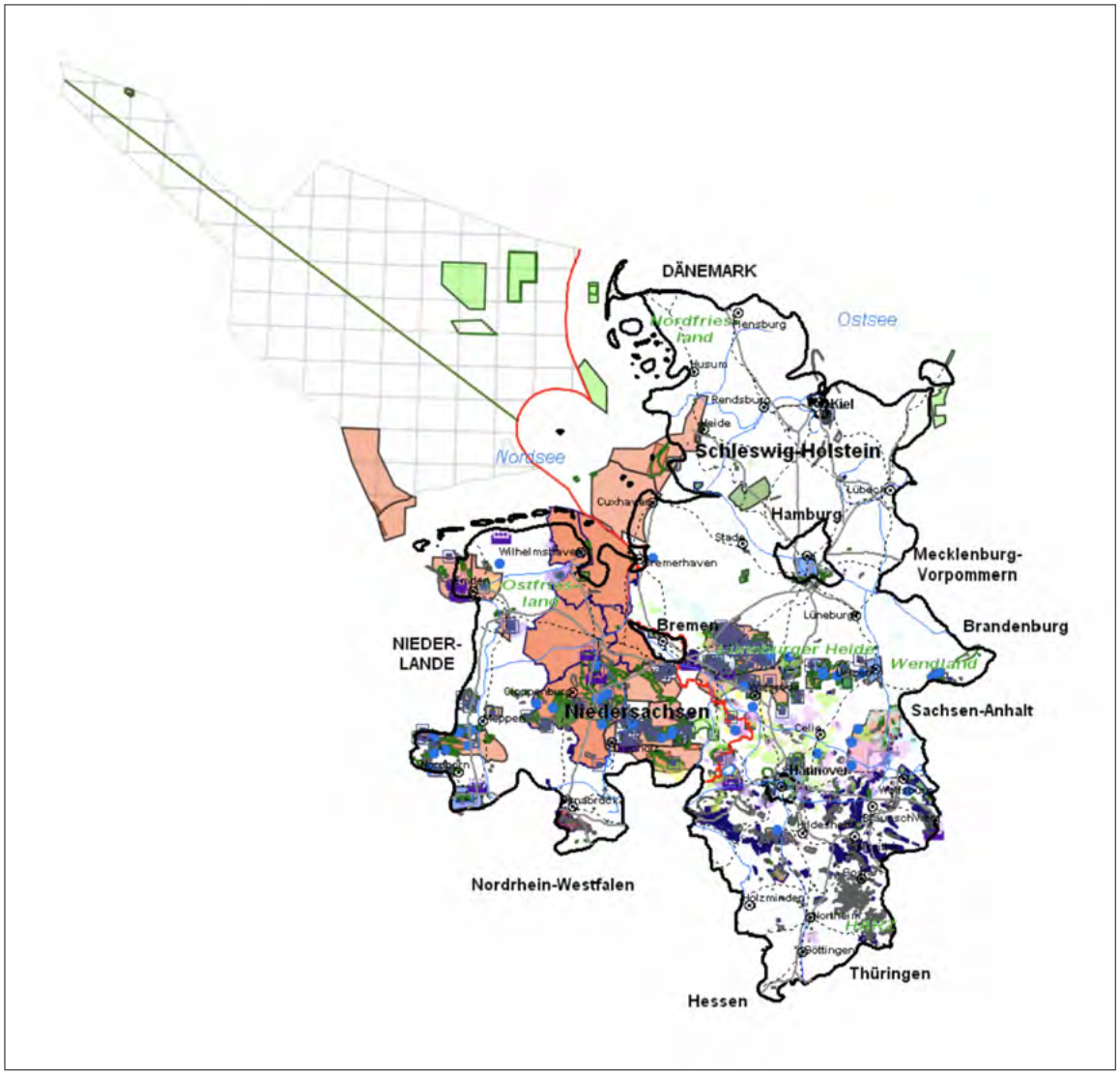
You can find an overview of all mining rights at https://rohstofftransparenz.de/en/download/#sectionMenu_7

Example of an online system: the NIBIS map server (Lower Saxony Educational Server)

A good example of the publication of information on mining rights on the Internet is the NIBIS map server of the Lower Saxony State Office for Mining, Energy and Geology (LBEG). On this website, citizens can obtain information about 400 specialist maps on topics such as contaminated sites, mining, soil science, erosion, geology, geothermal energy, geophysics, hydrogeology, geologic engineering, climate and natural resources. With regard to mining rights, the NIBIS regularly makes the following data (including some of the first decisions) available for viewing by the public on the map server for the Federal States of Lower Saxony, Bremen, Hamburg and Schleswig-Holstein:

- Information about the licence holder
- Coordinates of the licensed area
- Date the licence was granted and term of the licence.
- Type of natural resource

Figure 6: Mining rights in the NIBIS map server



Implementation in other Federal States

Other Federal States have also created online sites for inspecting the mining authorisation book and mining map. Examples of online sites include the site of Baden-Wuerttemberg at https://maps. lgrb-bw.de/, the site of Berlin und Brandenburg at http:// www.geo.brandenburg.de, the site of North Rhine-Westphalia at https://www.geoportal.nrw/ or the site of the Saarland at www.geoportal.saarland.de.

ii. Beneficial ownership

The question of who is behind a company and who is the "beneficial owner" has become increasingly important in recent years for combating terrorist financing and eradicating money laundering together with their predicate offences, such as tax law violations. The European Union is setting the framework with their Money Laundering Directive and, most recently, with

the amending Directive to the 4th EU Money Laundering Directive (Directive [EU] 2018/843), which is being implemented by the member states.

The beneficial owners of companies are natural persons who ultimately own a company or control it, and/or natural persons on whose initiative a transaction[23] is ultimately carried out or a business relationship is ultimately founded (cf. § 3(1) GwG (Money Laundering Act)). Improved accessibility to this information is intended to facilitate the fight against money laundering and terrorist financing.

An additional duty of care applies when the beneficial owner is what is termed a politically exposed person (PeP). § 1(12) of the GwG defines a PeP as any person who holds or has held a high-ranking public office at international, European or national level. It also includes persons who hold or have held a public office position at sub-national level which is comparable in terms of political importance. PePs include but are not limited to ministers, secretaries of state, members of parliament, members of administrative, management or supervisory bodies of state-owned enterprises (where the Federal Government or Federal States own more than 50% and more than 2,000 people are employed) and members of the management bodies of audit offices.

To make it easier to identify PePs, each EU member state and the European Commission update a list in accordance with Article 1 No. 13 of the amending Directive to the 4th EU Money Laundering Directive (Directive [EU] 2018/843) in which the precise functions are stated that are to be considered as important public offices as defined by the Directive. In Germany, the Federal Ministry of Finance is responsible for drawing up and updating the list and sending it to the European Commission. The European Commission combines the EU member states' lists and their own list and publishes a joint list.

German transparency register

In Germany, the beneficial owner can be found in the information contained in publicly-accessible registers, such as the trade, cooperative, partnership, association or enterprise registers. A transparency register was established on 26 June 2017 within the framework of the implementation of the 4th Money Laundering Directive (EU) 2015/849 of 20 May 2015. The register contains beneficial owner data in the form of an Internet portal. By now, information on beneficial owners from already-existing, publicly-accessible electronic registers (see above) could be retrieved from the transparency register. Besides, the register also provides information in those cases where the beneficial owners cannot be determined from other registers so that they have to be notified immediately to the transparency register.

The Law on Networking transparency registers in Europe promulgated on 30 June 2021 and the implementation of Directive (EU) 2019/1153 of the European Parliament and the Council dated 20 June 2019 on the use of financial information for combating money laundering, financing terrorism and other serious crimes (transparency register and Financial Information Act) transforms the transparency register into the full register. This means that after the law comes into force on 1 August 2021 all legal entities are required to notify their beneficial owners to the registry office of the transparency register for entry. This obligation is subject to a transitional period, which shall expire by 31 December 2022 at the latest, depending on the form of legal entity. From 1 January 2023 an entry on beneficial owners will be available in digital form in the transparency register for all German companies and other legal entities. The accuracy of the data and compliance with the registration obligations is checked by means of the discrepancy reports. Accordingly, the parties subject to § 23a of the German Money Laundering Act (GwG) are to report without delay any discrepancies they may discover between

23 The term transaction here means all acts which have the purpose or the effect of a monetary movement or other asset movement.

the information on the beneficial owners reflected in the transparency register and the information and knowledge they have on the beneficial owners. In the future, an entry on beneficial owners will be available in digital form in the transparency register for all German companies and other legal entities. Notifications must be filed by December 2022 at the latest, depending on the company form.

Information on beneficial owners in the transparency register

The first name and surname of the beneficial owner, his or her date of birth, place of residence, country of residence, extent of the economic interest and all nationalities are recorded.

Management of the transparency register

The transparency register is operated by the Bundesanzeiger Verlag GmbH as an appointed authority. In principle, the associations and legal entities in Germany mentioned in § 20 and § 21 GwG are required to report the current information on the beneficial owner in electronic form to the transparency register. The registry office carries out a conclusiveness check of the data notified when making the entry (§ 18(3) GwG). The content of the reported data is checked if a discrepancy report has been submitted.

Incorrect, incomplete or missing entries are punishable by fines as set out in § 56(1) sentence 1 number 55 GwG. The Federal Office of Administration (BVA) is the regulatory authority responsible for imposing fines. Furthermore, any party subject to money laundering laws (e.g. banks, financial service providers, insurance institutes, real estate agents, lawyers and notaries to the extent that they buy or sell property for their clients) and authorities must report any anomalies they notice in the transparency register as set out in § 23a GwG. The failure to report an anomaly as required is also punishable by a fine (§ 56(1) para. 1 No. 66 GwG). Since the introduction of the obligation to report discrepancies under § 23a GWG (1 January 2020), the parties under the reporting obligation have made a total of 8,858 discrepancy reports in 2020 (in 2021: 18,055). Authorities who are allowed to inspect the transparency register as part of fulfilling their duties have not reported any anomalies in 2020 and 2021.

Where the fine exceeds an amount of €200, legally binding and indisputable decisions on fines are published on the BVA website.[24]

Obtaining information from the transparency register

Information about beneficial owners in the transparency register can be accessed by government authorities within the scope of their statutory tasks, persons and bodies that are under the legal obligation to combat money laundering in the performance of their due diligence obligations and, since 1 January 2020, in accordance with the requirements of the amending Directive to the 4th EU Money Laundering Directive (Directive [EU] 2018/843), the general public also have access (§ 23(1) GwG). In this context, a judgment of the European Court of Justice of 22 November 2022 in the joined cases C-37/20 and C-601/20 provides that the rule of the EU Money Laundering Directive, which requires in the whole EU that information on the beneficial owners of companies or other legal persons entered in the transparency register be accessible to all members of the public in all cases, is invalid.

The Independent Administrator shall determine for the companies invited to report whether they have an entry in the transparency register and whether this entry is plausible on the basis of the information available to it and to be obtained.[25]

Data in the transparency register is not available in the format of open data. If interested parties wish to

24 Federal Office of Administration (2022): Decisions on fines (transparency register). URL: https://www.bva.bund.de/DE/Das-BVA/Aufgaben/T/Transparenz-register/Bussgeldentscheidungen/bussgeldentscheidungen_node.html (Accessed on 29 November 2022).
25 This is done in accordance with the terms of reference for the Independent Administrator adopted by the D-EITI MSG.

obtain information from the transparency register, they need to complete a one-time registration form on the website www.transparenzregister.de. The individual registration steps are explained in greater detail in the brief guide "Einsichtnahme in das Transparenzregister für Mitglieder der Öffentlichkeit" (How members of the public obtain information from the transparency register).

Where the beneficial owner has legitimate interests that require protection, the office that operates the register can still restrict inspection of the transparency register. The beneficial owners must support this with facts to substantiate why obtaining information from the register would put them at risk of becoming victims of certain crimes (e.g. blackmail) (§ 23(2) GwG). As of 9 July 2021, restrictions were set for 2,278. From 2021 onwards, the registry office will produce annual statistics on the number of limitations granted and the reasons for the limitations, publish these on its website under downloads (direct link to the statistics in PDF format) and send it to the European Commission (see § 23(2) last sentence GwG latest version).

To cover the administrative cost, a fee of €1.65 is due for each document that is inspected (see list of fees in the special fees scale for the transparency register of the Federal Ministry of Finance dated 8 January 2020, Transparenzregistergebührenverordnung [TrGebV] (transparency register fees scale)). The fees charged depend on the respective register but they are approximately the same as the fees incurred for inspecting the transparency register.

From 1 January 2021 the law enforcement authorities and the central unit for investigating financial transactions (Financial Intelligence Unit, FIU) has been given automated access to all data in the transparency register within the context of fulfilling their duties (cf. § 26a GwG). In future, this option will be extended to the supervisory authorities, the Federal Central Tax Office, the local tax authorities and the Office for the Protection of the Constitution at federal and State level as a result of the Transparency Register and Financial Information Act.

EU member states are currently working with the EU Commission to network European transparency registers pursuant to Art. 30 et seq. of the amending Directive to the 4th EU Money Laundering Directive (Directive [EU] 2018/843). The result of this networking will be access to the transparency registers of all member states via a shared European platform ("BORIS").

d. Rules for preventing corruption in Germany

Rules for preventing corruption in public administration and the private sector

Corrupt behaviour may occur in many different forms and in different areas of society. Whether it is bribery or corruption in international business transactions or domestically and whether corruptibility can be found in politics or in the administration, corruption undermines the foundation of a society by damaging the citizens' trust in the state and business and it can also cause material damage.

In Germany, different rules and instruments for the prevention and prosecution of corruption in administration, politics and business apply. These include laws, administrative regulations and measures to raise awareness. As corruption often takes place covertly, transparency is a key to preventing and recognising illegitimate practice.

i. Public administration

Authorities make decisions and set rules, in particular for activities in the private sector. Office holders are exposed to certain risks of corruption in the course of performing their duties. The German Penal Code (StGB), in particular, governs the relevant actions and

penalties under criminal law.[26] Accepting and granting undue advantage, corruption and bribery are punishable by law. The sentence ranges from three years (§§ 331, 333 StGB) to 15 years (§ 335(1) No. 2 StGB). Corruption on the part of judges (§ 332(2) 2 StGB) and corruption and bribery of elected representatives (§ 108e StGB) are indictable offences and risk a prison sentence of between one and ten years.

Civil servants employed by the federal government are not allowed to ask for, be promised or accept any rewards, gifts or other advantages in relation to their office/their professional duties for themselves or for a third party (§ 71 of the German Federal Civil Service Act (BBG)). The equivalent law for civil servants employed by Federal States or municipalities is § 42 of the Civil Service Status Act (BeamtStG). The prohibition applies to all advantages of an economic and non-economic kind.

A similar regulation applies to employees paid under the collective agreement (salaried employees and workers) as set out in § 3(2) of the Collective Agreement for the Public Service (TVöD): It is not permitted to accept or request rewards, gifts, commissions or other benefits that relate to their professional duties.

Civil servants are subject to separate obligations in Germany such as the duty to maintain confidentiality and the obligation to work through official channels. In connection with corrupt activities, they are however entitled according to § 67(2) sentence 1 No. 3 BBG and § 37(2) sentence 1 No. 3 BeamtStG to report a suspicion of a corruption offence according to §§ 331 to 337 StGB to the highest administrative authority, a law enforcement authority or other agencies without following official channels.

Besides the statutory regulations the prevention strategy in the area of the federal administration is essentially based on the **German Federal Government Directive concerning the prevention of corruption in the Federal administration** from 2004 and the annexes thereto.[27] The administrative regulation states concrete measures to avoid corruption, e.g. the regular identification of areas of work that are particularly susceptible to corruption, the cross-check principle, the appointment of a contact person for corruption prevention, raising awareness and further training for employees and guiding principles for awarding public contracts.[28]

At EU level there is the following important requirements: Directive 2017/1371 dated 5 July 2017 of the European Parliament and the Council on applying criminal law to combat fraud directed against the financial interests of the Union and the agreement based on Article K.3(2) (c) of the European Union's treaty on combating bribery in which officials of the European Union and the EU's member states are involved.

In terms of international law, German obligations on combating corruption are primarily based on the United Nations Convention against Corruption (UNCAC) from 2003[29], the **Convention on Combating Bribery of Foreign Public Officials in International Business Transactions of the Organisation for International Co-operation and Development (OECD)** from 1997 and the **Criminal Law Convention on Corruption of the Council of Europe from 1999**[30]. Separate regulations apply to government administrations at Federal State level. They are essentially based on the German Federal Government guidelines.

26 In addition to the Criminal Code, corruption offences are also punished, for example, by disciplinary and labour law.
27 Code of Conduct and guidelines for managers and the management of authorities.
28 The Federal Ministry of the Interior and Community (BMI) submits an annual report on integrity in the federal administration (integrity report) to the committees of the German parliament by 30 September of each year. After having been discussed by the members of the committees the integrity report is published on the BMI website. URL: https://www.bmi. bund.de/DE/themen/moderne-verwaltung/integritaet-der-verwaltung/integritaets-berichte/integritaetsberichte-node.html (Accessed on 5 December 2022).
29 United Nations Convention against Corruption, ratified by Germany in 2014.
30 The Criminal Law Convention was ratified by the Federal Republic of Germany in 2017. The Civil Law Convention has not yet been ratified because the Federal Republic of Germany has not yet fulfilled all the requirements, especially those that refer to the protection of whistleblowers. In addition, ratification would require an authorisation of the EU, as the Convention affects competences under Union law.

Municipal administration
At municipal level, too, there are numerous regulations and measures to prevent corruption such as official procedures, codes of conduct and contact persons. In view of municipal self-government guaranteed in Art 28(2) of the German Basic Law, municipalities are granted the right to regulate all local matters in their own responsibility within the framework of the law. As a rule, local administrations take detailed anti-corruption precautions.[31]

Bribery and corruption of elected representatives
Anyone who has a political mandate bears particular responsibility for the integrity of the political system in Germany. Corruption in the form of bribery and venality (e.g. "vote buying") damages this integrity and thus democracy. In order to counter this risk, in 1994 it became a criminal offence to bribe a member of parliament. Following the implementation of the United Nations Convention against Corruption, the offence was broadened in 2014 and **§ 108e StGB** was rewritten under the title of bribery and corruption of elected representatives. As of 19 October 2021, the penalty was made considerably tougher. As a result of this, bribery and corruption involving elected representatives is punished by a custodial sentence of between one and ten years, with less serious cases being subject to sentences of between six months and five years.

Prevention and control through transparency
Corruption is a crime that is committed covertly and those involved have no interest in it being discovered. In addition to this, the concrete losses for individuals and the general public can generally not be ascertained or only at a later date. Important instruments in the fight against corruption are therefore measures to create transparency. Relevant measures here are regulations to combat money laundering through disclosing "beneficial owners" via the transparency register (see chapter 3 c.ii). In addition, the transparency rights permitted in the environmental information law allow the disclosure of contents of authorisation decisions, which the companies extracting natural resources require for their practical work, including to avoid environmental pollutants that would break the law (see chapter 3.b.v).

Another instrument is the reporting of corruption by employees in companies and authorities (whistleblowers). They are often the first to notice abuses and, through their tips, can ensure that violations of the law are uncovered, investigated, prosecuted and stopped. At government level, offices exist to report corruption, for example the German Federal Financial Supervisory Authority (BaFin) and the Criminal Investigation Authorities of Federal States or in the form of ombudsmen in different Federal States and municipalities. The contact persons for corruption prevention (at the federal level according to section 5 of the guideline for corruption prevention) also receive reports on suspected cases of corruption.

In December 2019, **Directive (EU) 2019/1937 on the Protection of Persons Reporting Breaches of Union Law** came into force. The draft law for better protection of whistleblowers and for the implementation of the Directive on the Protection of Persons Reporting Breaches of Union Law, adopted by the Federal Cabinet on 27 July 2022, is currently being debated in the German Bundestag. The law will also apply to the reporting of criminal offences, so that the reporting of corruption offences under § 321 et seq StGB is covered.

The Federal Criminal Police Office provides information on the annual development and corruption statistics in its Corruption National Situation Report (**Bundeslagebild Korruption**). Each year the Federal Ministry of the Interior publishes an **Annual report on corruption prevention in the Federal administration** ("Integrity report" from the 2020 reporting year), with accountability to the German Bundestag as regards the implementation of the corruption prevention directive.

31 The municipalities provide information on the Internet about corruption prevention and contact persons, see for example Wiesbaden, capital of Hesse: https://www.wiesbaden.de/vv/oe/beauftragte/141010100000066754.php

ii. Private sector

Corruption is damaging for business and society and, furthermore, it is prohibited. Corruption in the form of bribery and corruption in business transactions is punishable (§ 299/§ 300 StGB) and can result in a fine or custodial sentence of up to three years or a custodial sentence of between three and five years.

Many companies support the 17 goals for sustainable development (Sustainable Development Goals, SDGs), which emphasise, for example, **Goal 16 "Peace, justice and strong institutions"** and, more especially, target 16.5 "Substantially reduce corruption and bribery in all their forms".

Based on ten universal principles and the Sustainable Development Goals, the **UN Global Compact (UNGC)** pursues the vision of a more inclusive and sustainable economy to the benefit of all people, communities and markets, today and in the future. There are currently signatories in more than 170 countries, representing over 19,000 companies and organisations from civil society, politics and science. In Germany there are more than 800 participants, covering approx. 740 companies ranging from those in the DAX to mid-sized companies and SMEs. In Principle 10 of the UNGC to combat corruption, companies are urged to "work against corruption in all its forms, including extortion and bribery".

Other sustainability frameworks also include principles or requirements in the field of anti-corruption. Thus the German Sustainability Code (GSC) lists in its criterion twenty behaviours that are compliant with legislation and guidelines. The user group includes large and small companies, in the public and private sectors and with and without sustainability reporting, companies with mandatory reporting obligations and all those companies and organisations that want to inform their stakeholders about their sustainability performances. Selected indicators of the Global Reporting Initiative (GRI) and the European Federation of Financial Analysts Societies (EFFAS) must be reported.

Compliance is generally understood to mean ensuring that a company, its bodies and employees and, if applicable, third parties act in compliance with the rules in respect of all statutory, internal company and external regulations that relate to the company by taking suitable measures. This does not only include observing the rules per se but it also involves implementing appropriate measures to organise compliance with the rules through formal and informal means. Compliance Management Systems in a company build on a risk-based approach which, in addition to avoiding types of behaviour that will bring penalties under criminal law and punishments in the form of fines, pays attention to the long-term interests of the company, ethically justifiable actions, reputational risks and special liability risks. Compliance rules and a Code of Conduct play a central role as an instrument for prevention and are the core element of an effective Compliance Management System.

In their Codes of Conduct[32] the companies generally formulate a zero tolerance policy regarding corruption, which is generally binding for all employees.

Although an explicit and generally applicable legal regulation on compliance does not exist, some requirements (some of which are specific to a legal form) come close to compliance. One can mention here, for instance, the legislation on administrative offences, company law (§ 43 GmbHG or § 93 AktG) and the German Corporate Governance Code (DCGK). Furthermore, there is a series of special legal regulations such as the Insurance Supervision Act for insurance companies, the Securities Trading Act (WpHG) for companies in the field of financial management, the Commission Delegated Regulation (EU) 2017/565

32 Wintershall Dea, Heidelberg Materials and K+S Minerals and Agriculture GmbH, for example, publish their codes of conduct on their respective company websites: https://wintershalldea.com/sites/default/files/media/files/Code_of_Conduct-DE.pdf, https://www.heidelbergmaterials.com/sites/default/files/assets/document/db/5d/hc-code-of-conduct-2020-en.pdf, https://www.kpluss.com/de-de/ueber-ks/wofuer-wir-stehen/code-of-conduct/

of 25 April 2016 supplementing the MiFID II Directive as regards the organic requirements for investment firms, the German Investment Services, Conduct of Business and Organisation Regulation (WpDVerOV), the German Banking Act (KWG) and the circulars of the Federal Financial Supervisory Authority (BaFin), which include the minimum requirements for risk management and the minimum requirements for the compliance function and additional requirements governing rules of conduct, organisation and transparency.

If a company fails to implement appropriate compliance measures and if, as a result, a corruption offence occurs, a regulatory fine against an association of persons pursuant to §§ 130, 30 of the German Act on Regulatory Offences (OWiG) can be imposed on a company. The respective compliance requirements are not specifically regulated by law in relation to this.

4

REVENUES GENERATED BY THE EXTRACTIVE INDUSTRY

Companies, which extract natural resources in Germany, pay various fees, duties and taxes on their activities. A company that extracts free-to-mine natural resources in a Federal State pays specific mine site and extraction royalties to that Federal State as per the Federal Mining Act. Excluded from this are natural resources that are extracted on the basis of "old rights" (see chapter 3.b.). Regardless of the activity involved, all companies in the natural resources sector – and most other companies – are subject to trade and corporate tax.

a. Who is responsible for revenue collection?

Due to the federal structure of the Federal Republic of Germany, tax administration is split between the Federal Government and the Federal States. Depending on the type of tax, it is levied by the financial authorities of the Federal Government, the Federal States or the local authorities. One exception to this rule is mine site and extraction royalties, which are levied by the mining authorities of the Federal States.

b. Which payments are made by the extractive industry?

i. Corporate tax and solidarity surcharge

A company extracting natural resources with the legal form of a corporation (in particular a limited liability company or public limited company) which has its head office or management in Germany is subject to unlimited corporate tax. Corporations which do not have their head offices and management in Germany are subject to corporate tax on the income generated in Germany. In Germany, corporate tax amounts to 15% of the taxable income. The revenue is shared by the Federal Government and the Federal States. Corporate tax is levied by the tax authorities of the Federal States. A solidarity surcharge set at 5.5% of the corporate tax determined is levied as a supplementary tax to corporate tax. The solidarity surcharge is payable to the Federal Government and is collected by the tax offices of the Federal States.

ii. Mine site and extraction royalties

Companies and persons require a permit to prospect for "free-to-mine" natural resources (§ 7 BBergG). Owners of this type of permit are required to pay an annual mine site royalty as per § 30 BBergG. Pursuant to § 30(3) sentence 1 of the BBergG a mine site royalty generally amounts to €5 per square kilometre of a mine site in the first year after the permit has been granted; the amount increases by €5 per year to a maximum of €25 per year, whereby the legislation of individual Federal States may provide for differing royalty amounts and even exemptions under certain conditions (see § 32(2) BBergG and the table on pages 53 to 62). The expenses incurred for prospecting are set off against the mine site royalties. Mine site royalties must be paid to the Federal State in which the licensed mine site is located.

If natural resources are found, a permit is required for their extraction. However, extraction is only possible if the necessary operating plan permit and any other permits such as water rights permits have already been granted. If the extracted natural resources can be used for financial gain, the permit holder must pay extraction royalties for the extracted free-to-mine natural resources as per § 31 BBergG. The standard rate for extraction royalties is 10% of the market value of the natural resources in question (§ 31(2) sentence 1 BBergG). Here too, individual Federal States may stipulate different regulations in their legislation for the calculation of mine site and extraction royalties under certain conditions (see § 32 BBergG and the table on pages 53 to 62).

Owners of old rights are exempt from extraction royalties in accordance with § 151(2) no. 2 BBergG (see chapter 3). In practice, this primarily affects lignite and (until the end of 2018) hard coal extraction and old grants for granite, coloured earths, salt and brine. Even before BBergG 1982 came into force, the operators of

these sites had received unlimited-term, irrevocable extraction rights free from royalties or had acquired old rights in the "new" Federal States in eastern Germany in the course of privatising proprietary mining rights. For this reason, they are not recorded in the State ordinances on extraction royalties. This excludes Saxony and Saxony-Anhalt. In these Federal States, special aspects required new licenses to be applied for in accordance with the BBergG within the framework of the Unification Treaty. These licenses are always subject to royalties. Therefore, exemptions were created in the Extraction Royalties Ordinances of both States (Parliamentary advisory service of the State parliament of Brandenburg 2008).[33]

Mine site and extraction royalties only apply to free-to-mine natural resources. While mine site royalties are appropriated into the respective Federal State's budget, the revenue from extraction royalties is used for inter-state financial equalisation. Mine site and extraction royalties are levied by the mining authorities of the Federal States.

33 Parliamentary advisory service of the State parliament of Brandenburg (2008): Exemption from royalties and fees of lignite extraction sites in Brandenburg. URL: https://www.parlamentsdokumentation.brandenburg.de/starweb/LBB/ELVIS/parladoku/w4/gu/15.pdf (Accessed on 1 December 2022).

Chart 1: For which natural resources are the mine site and extraction royalties paid?

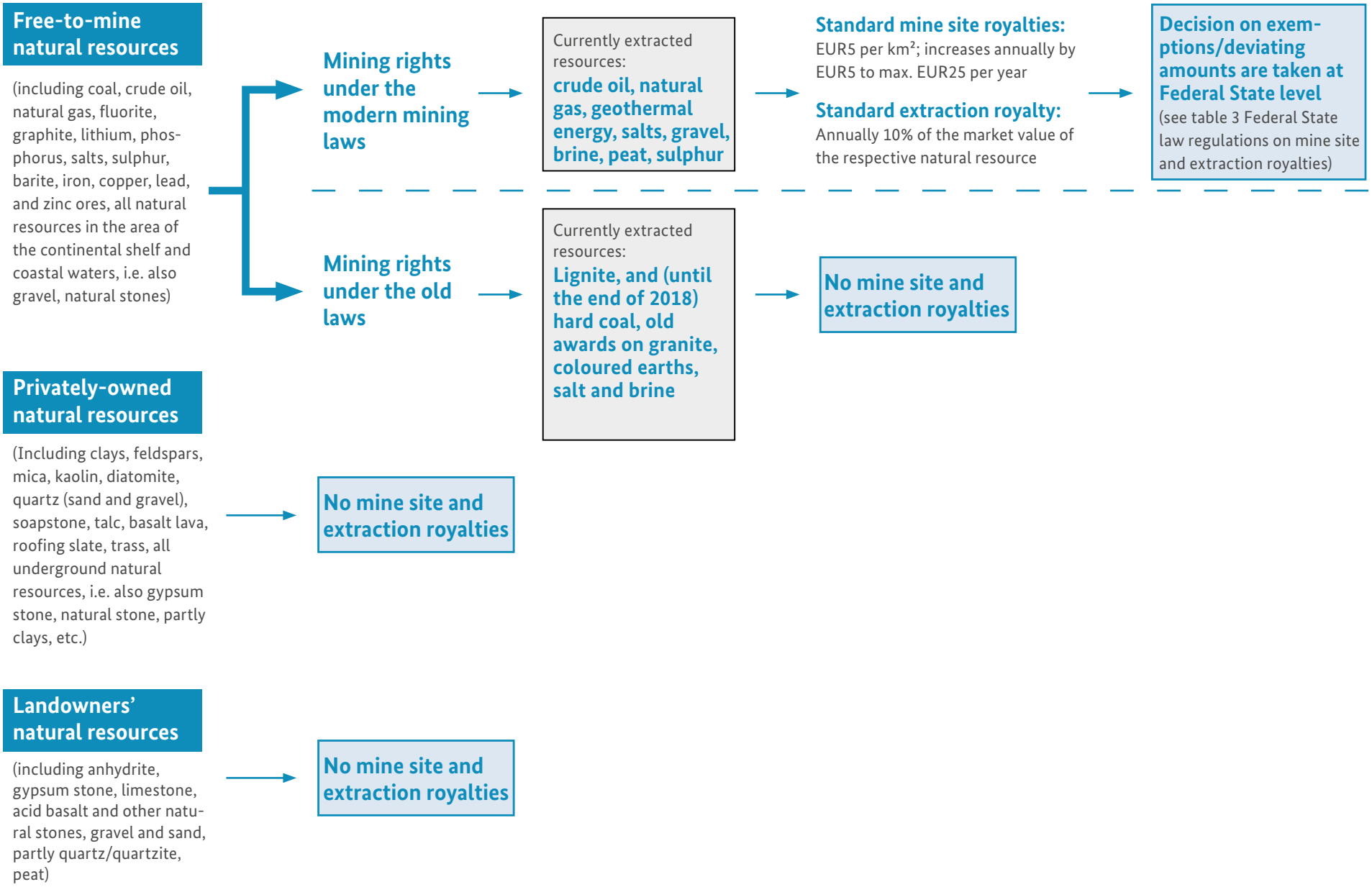


Table 3: Federal State law regulations on mine site and extraction royalties*

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Baden-Wuerttemberg	• Ordinance of the Ministry of the Environment on mine site and extraction royalties dated 11 December 2006 (GBl., p. 395), last amended by the ordinance of 19 November 2020 (GBl., p. 1059)	• Crude oil, natural gas, rock salt and brine €20 for each km² or fraction thereof for the first year[1] • Maximum rate crude oil, natural gas: €80 • Maximum rate rock salt and brine: €60	• Assessed at market value – Crude oil: 15% – Rock salt: 5% or 2,5%[6] • Natural gas: 27% of the price obtained.[8]	• 100% exempt – Geothermal energy – Brine • Crude oil and natural gas: site conditioning costs[1] at the levy rate[3] • In the case of rock salt, the costs of processing it up to the quality level of industrial salt are credited to extraction royalties at the levy rate.
Bavaria	• Ordinance on mine site and extraction royalties of 22 December 1998 (GVBl. p. 1050, BayRS 750-10-W), amended most recently by § 1 (321) of the Ordinance dated 26 March 2019 (GVBl. p. 98)	• Crude oil and natural gas: €5 for each km² or fraction thereof for the first year[2] • Maximum rate: €25	• 5% of the market value for oil extracted in the Aitingen area	• 100% exempt – Crude oil with the exception of the Aitingen area – Natural gas with the exception of the Breitbrunn-Eggstätt area
Berlin	• No State ordinance issued for setting the mine site and extraction royalties.			

* The specified state-specific levy rates are based on the German federal guidance for mine site and extraction royalties pursuant to the BBergG.

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

1 Site conditioning costs are specific costs incurred in the extraction of the natural resources, e.g. transport, processing and storage.
The costs that are deductible site conditioning costs are exhaustively listed in the regulations of the Federal States on mine site and extraction royalties.
2 Increases by €20 for each subsequent year up to the specified maximum rate.
3 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
8 In €/kWh including the further transport costs. In the Federal State of Bremen, a reduction in the assessed rate by the actual further transport costs is possible. It applies to natural gas used in purification plants to the amount of €0.002045/m³.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Brandenburg	• Ordinance of 11 December 2015 on mine site and extraction royalties in the Federal State of Brandenburg (Brandenburg Extraction Royalties Ordinance – BbgFördAV) (GVBl. II/15 no. 69)	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[2] • Maximum rate: €80	• Assessed at market value: – Crude oil, argillaceous (clayey) rocks: 10% – Gravels and sands: 7% – Peat, including available organic silt and natural stone: 5% – Rock salt and brine: 1% or 0.5%[6] • Natural gas: 10% of the assessed rate[9]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes or as a carrier for geothermal energy • Crude oil and natural gas: Site conditioning costs at the levy rate[3]
Bremen	• Bremen Ordinance of 10 May 2012 on mine site and extraction royalties (Legal Gazette of the Free Hanseatic City of Bremen, p. 180)	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[2] • Maximum rate: €80	• Natural gas: 36% of the price obtained[8] • Crude oil: 9% of the market value multiplied by the taxable quantity[6] • Sands and gravel sands: 10% of the market value for extraction in coastal waters and continental shelf zones. • Brine: 1% or 0.5% of the market value[7]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes – Sulphur • Crude oil and natural gas: site conditioning costs at the levy rate[3], and • 75% in the year extraction was started, and in the following five calendar years (in the case of extraction from deposit areas with an average effective permeability below 0.6 millidarcy) – 40% in the case of extraction from almost depleted deposits with an average extraction rate of less than 4,500 m³/h

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each subsequent year up to the specified maximum rate.
3 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
7 Applies to crude oil, which is extracted (1) from abandoned deposits which have been re-developed, (2) from drill holes with a depth of more than 4,000 m or (3) (additionally) by means of tertiary processes.
8 In €/kWh including the further transport costs. In the Federal State of Bremen, a reduction in the assessed rate by the actual further transport costs is possible. It applies to natural gas used in purification plants to the amount of €0.002045/m³.
9 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in €/kWh.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Hamburg	• Ordinance on mine site and extraction royalties of 24 December 1985 (HmbGVBl. p. 389), as last amended by regulation of 22 April 2014 (HmbGVBl. p. 142)	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[1] • Maximum rate: €80	• Assessed at market value: – Crude oil** 7% – Brine 1 or 0,5%[6] • Natural gas: 37% of the assessed rate[8] multiplied by the taxable volume. Currently exempted from all duties under an annual renewal clause.	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes – Sulphur • Crude oil and natural gas: site conditioning costs at the levy rate[3]
Hesse	• Third ordinance of 18 October 2019, amending the Hessian ordinance on mine site and extraction royalties (GVBl. p. 306) (for a limited period until 31 December 2026)	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[1] • Maximum rate: €60	• Assessed at market value: – Non-ferrous metals and barite: 1% – Rock salt and brine: 1% or 0,5%[6] • Potash, magnesium and boron salts: 1% of the assessed rate[11]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes • Non-ferrous metals and barite: 1% Non-ferrous metals and barite: Royalties in the amount of the guaranteed percentage of the processing costs (incurred during the levying period) that are necessary in order to produce the commercial product.

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each subsequent year up to the specified maximum rate.
3 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
8 In €/kWh including the further transport costs. In the Federal State of Bremen, a reduction in the assessed rate by the actual further transport costs is possible. It applies to natural gas used in purification plants to the amount of €0.002045/m³.
11 Sum of the products of (1) the average content of potassium oxide (K2O) and magnesium sulphate ($MgSO_4$) extracted from the crude salts on the licensed site and (2) the amount of €0.75 for potassium oxide (K_2O) and €0.25 for magnesium sulphate ($MgSO_4$) per tonne and percentage point thereof.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Mecklenburg-Western-Pomerania	• Ordinance of 8 April 2014 on mine site and extraction royalties (FeFördAVO MV) (GVOBl. M-V p. 140), Higher Administrative Court of Mecklenburg-Western-Pomerania, judgment of 25 October 2017, 2K121/15	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[1] • Maximum rate: €25	• Assessed at market value: – Crude oil, natural gas, petroleum gas, gravels, chalk, limestone, gravel, quartz and special sands and clayey rocks: 10% – Peat/Organic Silt: 5% – Brine 1% or 0.5%[6] of the assessed rate[9]	• 100% exempt: – Geothermal energy – Marine pebbles and sands, collected for coastal protection purposes

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each subsequent year up to the specified maximum rate.
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
9 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in €/kWh.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Lower Saxony	• Ordinance on mine site and extraction royalties of 10 December 2010 (Nds. GVBl. p. 564), as last amended by regulation of 11 February 2021 (Nds. GVBl. p. 52)	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[2] • Maximum rate: €80	• Crude oil: Retroactive exemption for 2020 • Natural gas: Retroactive exemption for 2020 • Brine: 1% or 0,5%[6]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes – Sulphur

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each subsequent year up to the specified maximum rate.
3 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
9 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in €/kWh.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
North Rhine-Westphalia	• Ordinance of 16 May, 2018, on mine site and extraction royalties (FFVO)	• Natural gas: €20 for each km² or fraction thereof for the first year[2] • Maximum rate: €60	• Mine gas: €0.15 cents per m³ of methane • Natural gas: 10% of the assessed rate • Rock salt and brine: 1% or 0.5%[6] of the assessed rate	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes • Natural gas: Until 31 December 2025, the extraction royalties per deposit shall be reduced by the proportion of the site conditioning costs incurred in the reporting period corresponding to the percentage pursuant to § 10 FFVO NRW, as long as these costs are not taken into account in the collection of the extraction royalties for another mineral resource. Any reduction is only applied up to the amount of the extraction royalties determined pursuant to § 10 FFVO NRW for the natural gas extracted from the respective mine site.

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each subsequent year up to the specified maximum rate.
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
North Rhine-Westphalia				– 50% on gas, which (1.) is additionally extracted by means of processes for opening up low-permeability deposits or (2.) is extracted from hard coal seams at the surface – 50% for a period of five years from the start of extraction in the case of extraction in areas in which development operations were started during the before 31 December 2025 – Exemption in whole or in part upon application in individual cases, insofar as any threat to public safety or order caused by the extraction operation is averted or, in the case of mine gas, at least evidence is provided of escapes of mine gas to the pit surface.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Rhineland-Palatinate	• State ordinance (LVO) on mine site and extraction royalties of 23 September 1986 (GVBl. 1986, p. 271), last amended by the ordinance of 13 December 2016 (GVBl. p. 602)	In accordance with the Federal State ordinance, no different rules for setting the mine site royalties have been defined.	• Assessed at market value: – Crude oil: 12%; for the Römerberg-Speyer und Rülzheim deposits 15% and 7% respectively – 10% for crude oil, which is extracted from (1.) dead oil deposits, (2.) abandoned deposits which have been re-developed, (3) depths of more than 4,000 metres, or extracted additionally by means of (4.) tertiary processes or (5.) processes for opening up low-permeability deposits. – Brine: 1% or 0,5%[6] • Petroleum gas: 10% of the price obtained[8, 13]	• 100% exempt: – Natural brine, extracted for balneological purposes – Geothermal energy – Natural gas extracted for direct conversion into electricity • Crude oil and natural gas: site conditioning costs at the levy rate[5]
Saarland	• Ordinance of 5 March 1987 on mine site and extraction royalties (Official Gazette, p. 250), last amended by the law of 7 November 2001 (Official Gazette, p. 2158)	In accordance with the Federal State ordinance, no different rules for setting the mine site royalties have been defined.	• Natural gas: 10% of the price obtained[8]	• Natural gas: site conditioning costs at the levy rate[4]

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

4 Upper limit: The value of the natural gas extracted in the natural gas field.
5 Upper limit: Market value or the value of the crude oil and petroleum gas extracted in the oil field, assessed pursuant to § 31(2), 2nd sentence of the BBergG.
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
8 In €/kWh including the further transport costs. In the Federal State of Bremen, a reduction in the assessed rate by the actual further transport costs is possible. It applies to natural gas used in purification plants to the amount of €0.002045/m³.
13 A reduction of the assessed rate by a flat rate for further transport costs is possible.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Saxonia	• Saxon State Ministry of Economy, Labour and Transport ordinance of 21 July 1997 on mine site and extraction royalties (FFAVO); legally amended as of 1 January 2009; last amended by VO (ordinance) of 23 June 2021 (Saxon GVBl. p. 752)	In accordance with the Federal State ordinance, no different rules for setting the mine site royalties have been defined.	• Assessed at market value: – Fluorite < €280 tonne 1% > €320 tonne: 2% > €360 tonne: 4% > €400 tonne: 10% – Gravels and gravel sands: 8% – Natural stone: 4% – Marble: 4%	• 100% exempt: – Lignite – Geothermal energy – Fluorite < €280 tonne – Marble – Barite – Brine – Free-to-mine natural resources extracted together with fluorite
Saxonia-Anhalt	• Ordinance on mine site and extraction royalties of 15 July 2019 (GVBl. LSA p. 192), last amended by the ordinance of 29 March 2021 (GVBl. LSA p. 151)	• €20 for each km² or fraction thereof for the first year[1] • Maximum rate: Maximum rate: €100 for each km² or part thereof	• Assessed at market value: – Gravels, sands, quartz and special sands: 8% – Natural stone: 5% – Rock salt and brine: 1% or 0,5%[6] • Stone for the production of ashlar and decorative stones from sandstone: 4% of the assessed rate[12]	• 100% exempt: – Lignite – naturally occurring brine used for balneological and tourist purposes

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each year up to the specified maximum rate.
6 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
12 20% of the quotients of the production value and the production volume of the production achieved during the levy period in €/tonne, assessed from the data collected by Destatis.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Schleswig-Holstein	• Ordinance on mine site and extraction royalties of 11 December 2012 (Schleswig-Holstein GVOBl. p. 776), amended by the state ordinance of 3 December 2014, Schleswig-Holstein GVOBl. p. 496)	• Crude oil and natural gas: €20 for each km² or fraction thereof for the first year[1] • Maximum rate: €80	• Assessed at market value: – Crude oil: 40% multiplied by the taxable amount. In the case of extractions from the Deutsche Nordsee A6/B4 and Heide-Mittelplate I licensed extraction sites, the calculation of the extraction interest is carried out as follows: Z = 0.0076 * ÖP2 – 1.15 * ÖP + 64.5 (Z = interest, ÖP is one thousandth of the market value multiplied by 135), where the minimum extraction interest rate is 21%, with a maximum of 40%. – Brine: 1% or 0,5%[6] • Natural gas: 40% of the assessed rate[9] multiplied by the taxable amount. 18% in the case of extractions from the Deutsche Nordsee A6/B4 and Heide-Mittelplate I authorised deposits.	• 100% exempt: – Natural brine, extracted for balneological purposes – Geothermal energy • Crude oil and natural gas: site conditioning costs at the levy rate[3]
Thuringia	• Thuringia Ordinance on mine site and extraction royalties, 23 August 2005, last amended by the ordinance of 4 December 2020 (GVBl. p. 601)	In accordance with the Federal State ordinance, no different rules for setting the mine site royalties have been defined.	• Assessed at market value: – Gypsum and anhydrite: 5% – Gravels and gravel sands: 8% – Natural stone: 5% – Peat/Organic silt: 3% – Ashlar and decorative stones: 4% of the assessed rate[12]	• 100% exempt: – Geothermal energy: Prospecting and extraction – Rock salt: Extraction – Peat/organic silt and rock salt/brine for use in spa operations

** All regulations on the amount of the levy rates and all special regulations are time-limited. They are regularly checked and adjusted by updating the Federal State regulations on mine site and extraction royalties (where required).

2 Increases by €5 for each subsequent year up to the specified maximum rate.
3 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
6 Applies to rock salt and brine extracted during the construction of an underground store, but which cannot be economically exploited.
9 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in €/kWh.
12 20% of the quotients of the production value and the production volume of the production achieved during the levy period in €/tonne, assessed from the data collected by Destatis.

iii. Trade tax

Trade tax is levied on real estate or property. Assessment of trade tax involves several stages: The municipalities due to receive the trade tax are routinely responsible for levying the tax. It is levied by the municipality in which the enterprise is located. The purpose of the trade tax is to tax the objective earning potential of a commercial enterprise. However, unlike corporate tax, trade tax is not linked to economic performance. Additions and deductions correct the income of the commercial enterprise (§§ 8 and 9 GewStG (Trade tax)). To calculate trade tax, the responsible tax office determines the taxable amount, which is 3.5% of the objective earning potential. For all the companies in its area of jurisdiction, the responsible municipality sets a uniform tax factor, which must be at least 200% (§ 16(4) sentence 2 GewStG) and calculates the trade tax based on the taxable amount determined by the tax office and the individual tax factor.

A company (which extracts natural resources) with the legal form of a partnership or limited company is subject to trade tax. If operating facilities are located in an area belonging to several municipalities or are operated in a number of municipalities, the tax assessment basis (assessment basis for trade tax) is distributed among these individual municipalities (so-called "reallocation"). As a general rule, the wages in the individual operating facilities are used as a yardstick for the calculations. This means that each municipality involved can levy its share of the trade tax.

An overview of the trade tax assessment rates (2020) of the municipalities in Germany is available via the Federal Office of Statistics[34]. Commercial taxation is the main source of tax for municipalities, followed by land tax. The Federal Government and the States' share in the revenues of the trade tax through an allocation and redistribution mechanism for trade tax. The remainder of the trade tax for the municipalities flows into their general budgets, thus helping to finance the local infrastructure and to provide education and social services among other things.

iv. Lease payments

In Germany, the extraction of natural resources is governed by the BBergG, if the resources concerned are free-to-mine or privately-owned natural resources. As per § 3(3) BBergG, free-to-mine natural resources include metals, salts and fossil fuels such as hydrocarbons, lignite and hard coal. The ownership of a property does not extend to free-to-mine natural resources, so in this respect the property rights of the landowner are limited. In contrast, privately owned natural resources are the property of the landowner. The landowner may carry out prospecting and extract the resources if found, without the need for any additional special legal title in addition to the operating permit and other required public-law permits. Its inclusion in the scope of validity of the BBergG aims to make their extraction subject to a uniform legal framework throughout Germany and (in particular) to uniformly regulate natural resource extraction in underground mining and ensure uniformity in the management of mine inspection authorities.

In addition to privately owned natural resources, there are the so-called "landowner's natural resources". These are bulk raw materials, such as gravel and sands, which are predominantly used as building materials and are extracted through open-cast mining. Like the privately owned natural resources, these are also the property of the landowner, but they are neither subject to mining law nor to mining inspection.

A company does not have to own the land to extract privately owned natural resources and landowners' natural resources. If the owner of the land simply makes it available to the company on the basis of a legal private contract (e.g. through a lease agreement) – and this is often the case – that alone suffices. Such

34 Destatis (2020): Changes to real estate tax assessment rates – first six months 2020. URL: https://www.destatis.de/DE/Themen/Staat/Steuern/Steuereinnahmen/Publikationen/Downloads-Realsteuern/aenderung-realsteuerhebesatz-5712301207004.html (Accessed on 1 December 2022).

contractual arrangements may include fixed payments or payments that depend on the quantity extracted, or a combination of both variants. On the Federal State side, official bodies including local authorities (e.g. counties or municipalities) and forestry offices may have the roles of landowners and landlords. The revenues from the leaseholds are therefore transferred to municipal budgets or Federal State budgets, thus making it possible to finance statutory tasks (et alia).

v. Excise duties

Energy and electricity taxes are particularly relevant for companies in the natural resources sector, within the framework of excise duties. Like the other excise duties, energy and electricity taxes are explicitly excluded from the reporting obligation within the framework of the legal commercial (corporation) payment report, as per the EU Accounting Directive and its implementation in § 341r, no. 3 b) HGB (German Commercial Code).

The Energy and Electricity Tax Act is based on the harmonised provisions of the EU Energy Tax Directive 2003/96/EC of 27 October 2003. On 1 April 1999, the electricity tax was introduced in Germany within the framework of the law covering entry into the ecological tax reform, and the tax rates of the energy tax (at that time still called mineral oil tax) were gradually increased. This created incentives to reduce energy consumption and to develop resource-conserving products and production processes.

The Electricity Tax Act and the Electricity Tax Implementing Ordinance constitute the legal basis for levying electricity tax. The Federal Government is entitled to electricity tax revenues, which amounted to €6.5 billion in 2020. The revenue from the electricity tax and the higher taxation of fuels and heating materials obtained in connection with the ecological tax reform contribute to keeping social insurance contributions at a manageable level. Administration and collection tasks are carried out by customs administration.

The electricity tax is levied for consumption, but it is usually levied as an indirect tax on the supplier and passed on to consumers via the electricity price for practical reasons. This means that companies in the extractive sector must also pay electricity tax. The statutory tax rate is €20.50 per megawatt hour. Reduced tax rates can be considered for various purposes, e.g. railway electricity, whereas the production industry can particularly benefit from tax relief (see chapter 6).

The energy tax is an excise duty on energy products. It is governed by Federal legislation, and levied to tax the use of energy products as fuels or heating fuels within the German tax territory. The Energy Tax Act defines energy products as being (in particular), petrol, diesel fuel, light and heavy fuel oil, liquefied petroleum gas, natural gas, natural gas and coal as well as biodiesel, vegetable oil and energy products of a similar nature that are used as motor or heating fuels. The amount of the tax varies according to the energy product and its intended use and is regulated in the Energy Tax Act. Tax concessions are standardised in the Energy Tax Act for certain energy products and intended uses (see chapter 6). Like the electricity tax, energy tax is levied by the customs administration, and the revenues flow to the Federal Government. In 2020, energy tax revenues amounted to approx. €38.7 billion. The revenue from energy and electricity taxes is the third-largest source of income for the Federal Government, after income tax and VAT.

The sheer financial volume of electricity and energy tax payments by companies in the natural resources extractive sector, and the financial scale of electricity and energy tax concessions (see chapter 6) cannot be feasibly presented without a disproportionate amount of bureaucratic effort. No statistics showing the electricity and energy tax payments for individual economic sectors exist as yet.[35]

The financial scale can be estimated on the basis of data from the Federal Office of Statistics concerning

35 There was no consensus in the MSG on the extent to which the energy and electricity tax payments are part of the essential payment flows. Therefore, they are not part of the payment flows reported by the companies.

the use of energy in manufacturing companies and information in the EU's state aid transparency database (see chapter 6.d.).

c. How important is tax secrecy in Germany?

Tax secrecy has a high priority in Germany. Since taxpayers must fully disclose their tax details to the financial authorities within the framework of their cooperation obligations, the privacy of their information must be ensured. This is ensured by the General Data Protection Regulation (GDPR) and tax secrecy provisions (§§ 30 et seq. of the German Tax Code (AO)). The provisions of the §§ 30 et seq. AO regulate who must protect tax secrecy and under what conditions the disclosure or utilisation of data (which is subject to tax secrecy) is permitted. Tax secrecy thus serves to protect the taxpayer.

A breach of tax secrecy can only be permitted under very strict conditions. Any disclosure of information which is subject to tax secrecy is normally only permitted if expressly authorised by law, if the person concerned agrees to the disclosure, or if there is a compelling public interest in the tax data in question.

This is why the disclosure by the tax authorities of data for voluntary reporting initiatives – like the Extractive Industries Transparency Initiative – requires the explicit consent of the companies concerned. Because reconciliation regarding tax payments within the framework of the EITI process was carried out with the tax authorities for the first and second D-EITI report, the permission of the taxpayer in the form of a power of attorney for the Independent Administrator was required in each case for each of the finance authorities involved to query the relevant tax data. For this year's reporting the D-EITI is for the third time applying an alternative procedure for assuring the quality of the payments disclosed by the reporting companies (see chapter 10). With this procedure it is not necessary to obtain a release from tax secrecy and thus the considerable extra work[36] that this involves for companies and the tax authorities, as the data is only collected from the company and not from the tax authorities.

d. Public reports

i. Statutory reporting obligation for extractive companies (§§ 341q et seq. HGB)

The Accounting Directive Implementation Law (BilRUG) of 23 July 2015 implemented the requirements of the EU Accounting Directive 2013/34/EU of 26 June 2013 into German legislation. Many provisions embedded in the German Commercial Code (HGB) (§§ 341q et seq. HGB) largely correspond to the requirements of the EITI. All the "large" limited companies and limited liability commercial partnerships involved in the extractive sector or in the logging sector in primary forests are subject to these reporting requirements under commercial law (cf. § 341q HGB). The term "large" in the legal sense refers to companies that exceed at least two of the following three criteria on two successive reporting dates (§ 267(3) sentence 1 HGB):

1. Balance sheet total of €20 million.
2. Turnover of €40 million.
3. An annual average of 250 employees.

Within the meaning of § 264d HGB capital market-oriented limited companies, as well as credit institutions and insurance companies in the legal form of limited companies (including limited liability commercial partnerships) are also subject to the reporting obligation, irrespective of their size. Besides reporting

36 The release from tax secrecy required in the context of payment reconciliation is not an established standard procedure. Accordingly, the implementation initially involved a fundamental coordination effort between companies, authorities and the Independent Administrator in order to ensure a legally secure process. Since the legally secure process required that an individual exemption be prepared by the companies for each authority concerned in each reporting year, there was also a considerable and permanent implementation effort.

at the level of an individual company, the HGB also provides for an obligation to report at corporate level. Here it is not a prerequisite that the parent company itself is involved in the extractive sector or in the logging sector in primary forests. It is sufficient if this applies at least to a subsidiary.

The companies subject to the legal provisions are required to disclose payments made to government agencies above a "materiality threshold" of €100,000 per government agency, if these payments fall under one of the reasons for payment specified in § 341r no. 3 HGB. In addition to tax payments, this includes e.g. licenses, concessions (for both it applies to mining licenses as such) and other contractual relationships related to the extraction of natural resources. The data must be allocated to individual projects, if more than one project has been carried out in the year under review.

ii. Similarities and differences in the reporting obligation as per EITI

In addition to the reporting obligations pursuant to §§ 341q et seq. HGB, certain financial flows of the extractive industries are also disclosed via the EITI (see chapter 10). The reporting requirements under commercial law largely correspond to those of the EITI. However, there are also differences.

One fundamental difference between the reporting obligations stipulated by the HGB and the EITI lies in the extent of the reporting. EITI stipulates that the participating companies from the natural resources extractive sector publish all material payments they make to government agencies. In contrast to the HGB, the material payments are not exhaustively listed by the EITI and must be clarified in the course of the EITI process (see chapter 10). The EITI standard does not provide for a distinction between payments above or below the limit of at least €100,000 annually. The stakeholders of the German EITI have agreed to adopt the materiality threshold of § 341t(4) HGB.

In contrast to the HGB provisions, EITI relies on the mutual disclosure of the payment flows for quality assurance as standard. The Federal State previously also had to grant an insight into its income from the natural resources sector in the form of payment reconciliation.

At the request of the EITI Board and the international EITI secretariat, D-EITI took part in a pilot project as part of the 3rd and the 4th D-EITI report involving the alternative method of quality assurance for the disclosed payments that dispenses with disclosure from both parties. As has been the case to date, the data is collected in addition from publicly available information on payments by extractive companies for presentation in the D-EITI report. This makes provision for one of EITI's main concerns, which is to make the payment flows available in the form of open data, thereby supporting the public debate. Quality assurance is applied to this data instead of the payment reconciliation through systematic analysis of the state processes and systems on which royalties and tax collection is based and a subsequent risk assessment. This methodology from the pilot project was retained for the present report (cf. on this the report of the Independent Administrator in chapter 10).

e. How are the revenues of the natural resources sector allocated?

The Federal State structure of the Federal Republic of Germany is reflected in the distribution of tax revenues. Article 106 of the Basic Law (GG) defines which state level has the authority for the revenues, i.e. how the revenues are distributed between the Federal Government, the Federal States and the municipalities. Here a distinction is made between so-called "community taxes" and taxes which flow in their entirety to the municipalities, Federal States or Federal Government. In the case of community taxes, the revenues are shared between the Federal Government and the Federal States.

With regard to the extraction of natural resources, corporate tax and income tax are relevant examples of community taxes. The Federal Government and the Federal States are each allocated 50% of corporate tax revenues.

Trade tax, on the other hand, is purely a municipal tax. As the most important source of income of the communities, it is allocated to the individual municipalities in which the relevant operating facilities are situated. The Federal Government and the Federal States' share in the revenues of the trade tax through a specific allocation and redistribution mechanism.

With regard to the revenues from extraction royalties, redistribution between the Federal Government and the Federal States also takes place. The revenues flow into inter-state financial equalisation. The Federal Government is entitled to the revenues from electricity and energy taxes.

As per § 3 of the Tax Code, the tax revenues from the extraction of natural resources are not earmarked for a specific purpose; the persons responsible for the Federal Budget, the Federal State budget and the municipal budgets decide how they will be used. The amount and use of revenues and expenditure are disclosed in detail every year. To this end, the Federal Government and the Federal States adopt budget laws (the municipalities adopt budget statutes) that include their own budgets. When the budgets are published, all citizens then have free access to the information.

To facilitate public access to information on the use of tax revenues, the BMF publishes information about the Federal Budget on https://www.bundeshaushalt.de/. You can also visit the https://offenerhaushalt.de/ website for information on other budgets.

5

THE ECONOMIC IMPORTANCE OF THE EXTRACTIVE INDUSTRY

a. Contribution to the GDP

In 2020, the gross value added in Germany amounted to €3,088 billion at current prices. According to the World Bank, Germany is thus the largest national economy in Europe and the fourth largest in the world.[37] The gross value added of the "mining and quarrying" economic sector amounted in 2020 to €3 billion, which is equivalent to 0.10% of Germany's gross value added (for detailed sources see the final note iii).

b. Contribution to government revenue

The natural resources sector generates revenue for the State at different Federal levels. The most important revenues are the taxes from general company taxation (corporation tax, income tax, trade tax and the solidarity surcharge), as well as natural resource-specific mine site and extraction royalties. Added together, these revenues from the extractive industry amounted to around €368 million in 2020. This corresponds to a share of 0.02% of the total income of the Federal German government. The coverage of this revenue by reporting is explained in more detail in chapter 10. Other payments are also made by the extractive sector to the state, such as leaseholds, energy and electricity taxes (see chapter 4), as well as payments relating to interventions in nature conservation legislation and water use (see chapter 7.1), which are not shown in this chapter.

i. Taxes

The sum of the above-mentioned taxes paid by the extractive industry in 2020 amounted to around €258 million. This corresponds to a proportion of around 0.01% of the State's total income. The largest amount of tax revenues is generated by trade and corporate taxes. However, tax revenues from the extractive industry have considerably declined in recent years.

The following table shows the estimated revenues from the above taxes of the extractive industry and their share of the total tax revenue (for detailed source information see final note iv). Other payment flows not addressed in the following table are described in chapters 4 and 6.

37 World Bank (2020): GDP All Countries and Economies. URL: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?most_recent_value_ desc=true&year_high_desc=true (Accessed on 1 December 2022).

Table 4: Tax revenues from the natural resources sector (corporate tax, trade tax, income tax and the solidarity surcharge)

Type of tax in million €	2014	2015	2016	2017	2018	2019	2020
Corporate tax	98	135	49	53	54	57	55
Trade tax	201	133	123	126	128	135	130
Income tax	61	62	65	64	65	69	66
Solidarity surcharge	9	11	6	6	7	7	7
Totals	**369**	**341**	**243**	**249**	**254**	**267**	**258**
Total income of the State	1,313,906	1,364,857	1,426,748	1,486,925	1,557,251	1,613,797	1,566,885
Proportion of the above-mentioned taxes compared to total revenue	**0.03%**	**0.02%**	**0.02%**	**0.02%**	**0.02%**	**0.02%**	**0.02%**
For information only:							
Updating factor				5.84%	2.09%	4.99%	−3.57%

For detailed source information see final note iv.

ii. Extraction and mine site royalties

Extraction royalties are levied by the mining authorities of the Federal States. They vary greatly, depending on the local mining activity and the fixed tax rates in the individual Federal States.

Table 5: Revenue from royalties paid by the extractive sector in 2017 and 2020

Extraction royalties in thousands of €	2017	2018	2019	2020
Federal State				
Baden-Wuerttemberg	211	379	518	142
Bavaria	503	602	728	521
Berlin	0	0	0	0
Brandenburg	704	777	608	553
Bremen	0	0	0	0
Hamburg	90	108	168	100
Hesse	398	399	260	281
Mecklenburg-Western-Pomerania	636	633	947	284
Lower Saxony	180,737	153,652	135,393	52,383
North Rhine-Westphalia	683	560	1,024	739
Rhineland-Palatinate	4,639	6,945	6,766	4,764
Saarland	74	62	86	0
Saxony	1,728	1,380	1,639	1,352
Saxony-Anhalt	1,547	2,375	2,142	2,198
Schleswig-Holstein	62,102	72,836	66,772	43,451
Thuringia	1,851	1,484	1,557	2,067
Total extraction royalties	**255,902**	**242,192**	**218,523**	**108,835**
Total income of the Federal State in millions of €	1,486,925	1,557,251	1,613,797	1,566,885
Proportion	**0.02%**	**0.02%**	**0.01%**	**0.01%**

For detailed source information see final note v.

A total of €108.8 million in extractive sector revenues was levied in Germany in 2020. Lower Saxony recorded the highest revenues, at €52.4 million. Schleswig-Holstein was ranked second with around €43.5 million, followed by Rhineland-Palatinate with around €4.8 million. In the case of some Federal States, the amount of revenue has been subject to significant fluctuations in the past few years. This may have different reasons, e.g. falling world market prices for natural resources or changes in production quantities (for detailed source information see final note v).

Only a few Federal States publish their revenues from mine site royalties in their budgets. A summarised overview of the mine site royalties is not available. Most Federal States publish accumulated mine site and extraction revenues in their individual budgets. Their amount is significantly lower than the amount of extractive sector revenues. The revenue from the 2020 mine site royalties is only available for four Federal States: Bavaria, Brandenburg, Lower Saxony and Saarland (see Table 6):

Table 6: Revenues from mine site royalties earned from 2017 to 2020

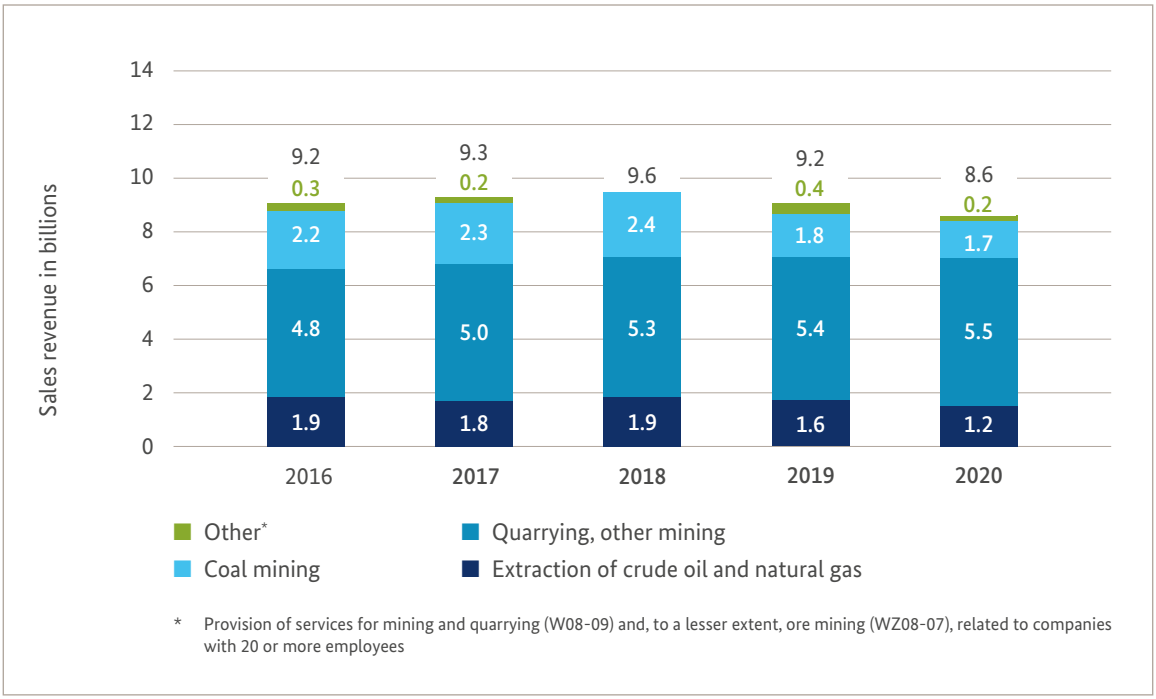
Mine site royalties in thousands of €	2017	2018	2019	2020
Federal State				
Bavaria	28.2	31.9	30.0	47.8
Brandenburg	7.9	60.1	21.6	0.0
Lower Saxony	559.8	476.7	296.7	708.3
Saarland	0	0	0	14.7

For detailed source information see final note v

c. Turnover

"Mining and Quarrying" sector companies generated a total turnover of around €8.6 billion in 2020. Around €7.3 billion (around 85%) of this sum was attributable to domestic sales and €1.3billion (about 15%) to foreign sales.

Chart 2: Sales in the mining and quarrying sector from 2016 to 2020



* Provision of services for mining and quarrying (W08-09) and, to a lesser extent, ore mining (WZ08-07), related to companies with 20 or more employees

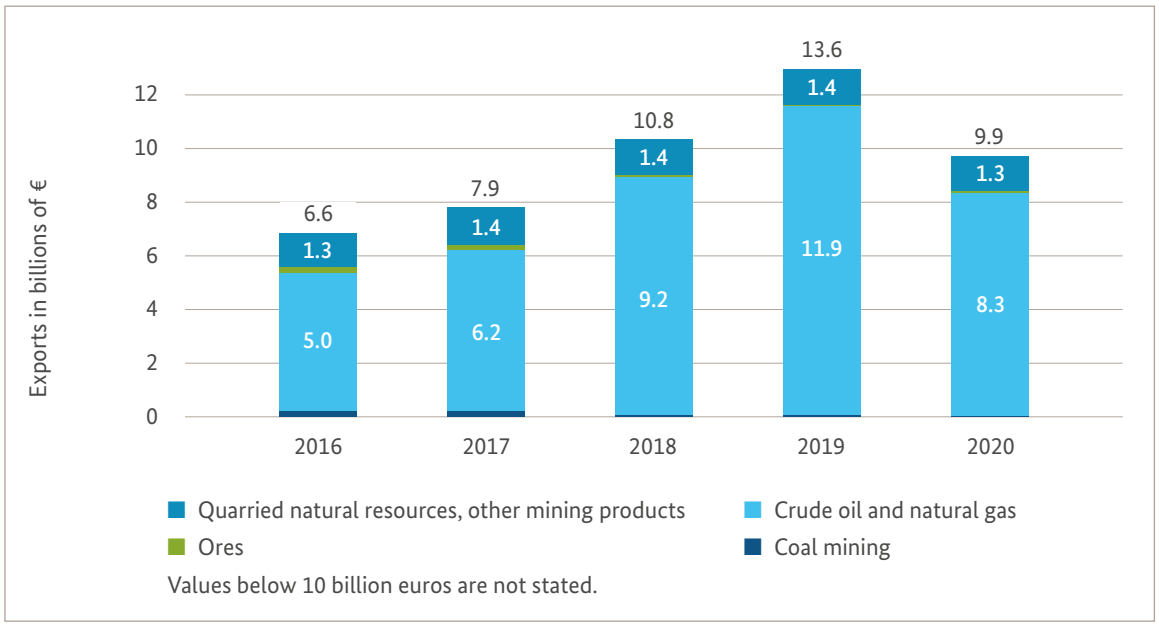
For detailed source information see final note vi. Own presentation.

d. Contribution to export

Germany is characterised by a strongly export-oriented and diversified economic structure. In 2020, the country exported goods worth a total of €1.2 trillion. Products of the extractive industries accounted for some €9.9 billion of this amount, equivalent 0.82% of total exports. The "Crude oil and natural gas" sectors accounted for the largest share of exports at approx. €8.3 billion.

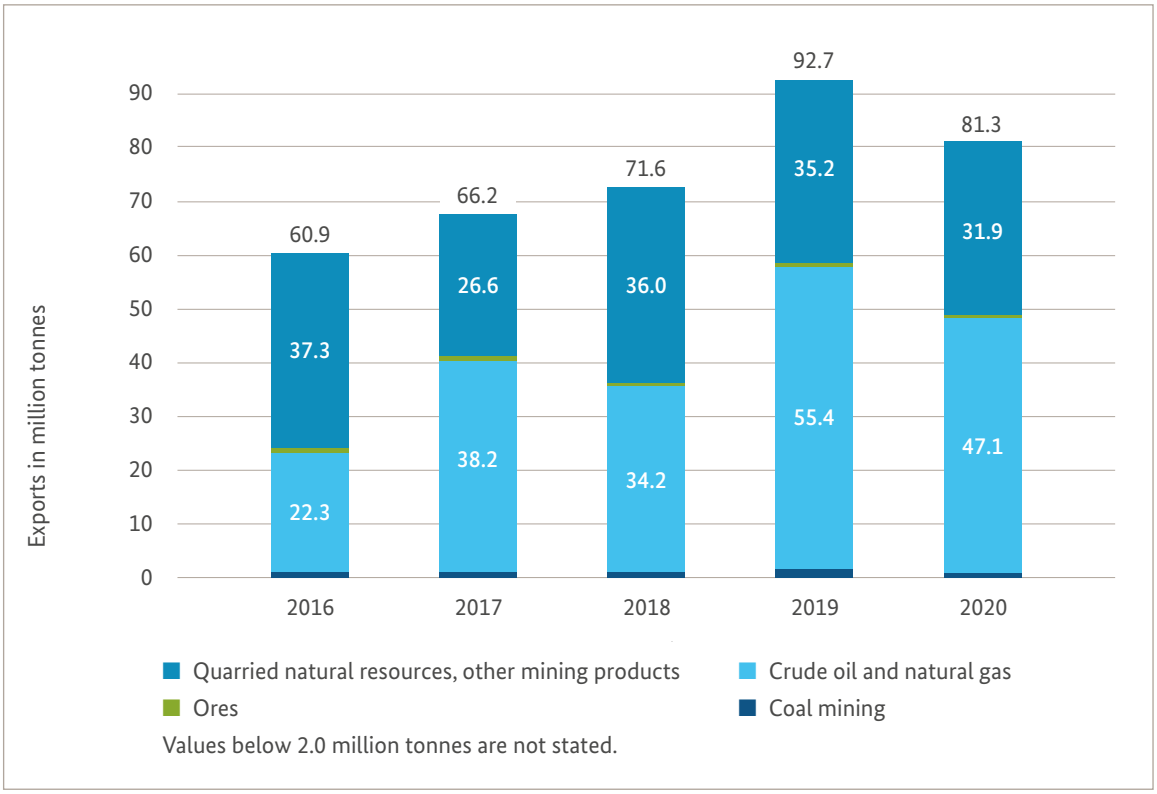
However, this mainly involved re-exports of natural gas. Domestically-extracted natural gas is almost completely consumed in Germany. This sector is followed by "Quarried natural resources, other mining products" with approx. €1.3 billion. Exports also included ores (around €161 million) and coals valued at about €118 million. Here too, the figures include re-exports, but to a much lesser extent compared to natural gas.

Chart 3: Exports in the mining & quarrying sector from 2016 to 2020 (value)



For detailed source information see final note vii. Own presentation.

Chart 4: Exports in the mining & quarrying sector from 2016 to 2020 (volume)



For detailed source information see final note vii. Own presentation.

6

STATE SUBSIDIES AND TAX CONCESSIONS

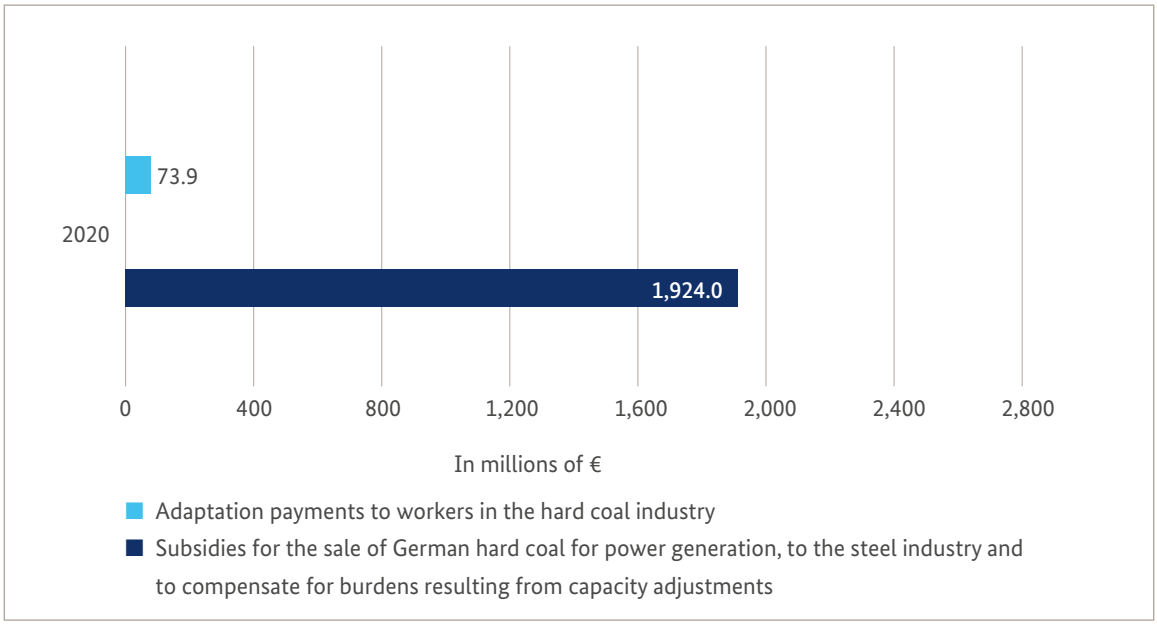
The payments made by extractive companies to government agencies (see chapter 4) must be seen in the context of the subsidies and tax concessions with which the state supports companies. Here the financial help provided to hard coal mining (see chapter 6.a. and b.) is the only subsidy that specifically relates to natural resources sector. This financial help provides subsidies for the sales of hard coal, compensation for bottlenecks resulting from capacity adjustments and adaptation payments (APG) for socially-acceptable personnel reductions in the sector.

Companies in the natural resources sector outside of hard coal can benefit from additional financial help without a specific link to the natural resources sector (see chapter 6.c.).

An example is concessions granted by the State in respect of energy and electricity taxes for manufacturing companies (see chapter 6.d.).

There are different definitions of the term subsidies at both national and international level, and several methodological approaches are used to tackle the topic. The term used here is based on the definition of the subsidy report of the Federal Government. According to this report, only directly budget-relevant subsidies (financial aid) of the Federal Government and tax relief for private companies and economic sectors are recorded. Financial help at Federal State level can be seen in the subsidy reports of individual Federal States (see Annex 5 of the Subsidy Report of the Federal Government).

Chart 5: Subsidies in the German hard coal industry 2020



Federal Ministry of Finance (BMF) (2021): 28th Subsidy Report. URL: https://www.bundesfinanzministerium.de/Content/DE/Downloads/Broschueren_Bestellservice/28-subventionsbericht.pdf?_blob=publicationFile&v=4 (Accessed on 29 November 2022).
Own presentation.

a. Subsidies for the sale and closure of hard coal

The German hard coal industry is not competitive, mainly because of geologically-related high production costs. An agreement was therefore reached in 2007 between the Federal Government, the hard coal-producing Federal States of North Rhine-Westphalia and Saarland, the RAG AG (the largest German coal mining corporation based in the Ruhr region) and the Mining, Chemical and Energy Industrial Trade Union (IG BCE) that the subsidised hard coal industry would be terminated in a socially-responsible manner by the year 2018.

The agreement was based on the Hard Coal Mining Financing Law of 20 December 2007 and on a framework agreement between the Federal Government, the hard coal-producing Federal States, the RAG AG and the IG BCE. The public sector granted temporary aid to promote sales (balancing the difference between domestic production costs and the world market price) and to cope with the necessary decommissioning measures. The subsidies were gradually reduced and ultimately cycled out, a move that also addresses climate protection and resource conservation.

Development

In 2020, the amount of Federal aid for the sales of hard coal and mine closures amounted to €1,924.0 million. The Federal State of North Rhine-Westphalia provided more financial aid. The subsidies pledged to the hard coal mining industry for the sales of hard coal and mine closures were reduced over time. Between 1998 and 2005, Federal subsidies were cut by approximately 50% – and they were again reduced by 25% between 2006 and 2014. Deviations from the declining trend of subsidisation are based on the fluctuating world market prices for hard coal (inter alia). Furthermore, one-off subsidies amounting to €1,658.4 million were paid in 2020. These payments are intended to ensure that after the permanent cessation of mining, any existing obligations (contaminated sites, in particular shaft safety and monitoring, settlement of mining damage, demolition obligations and land rehabilitation as well as personnel settlement costs) that are not borne by the RAG Foundation are fulfilled.

State aid procedure and control measures

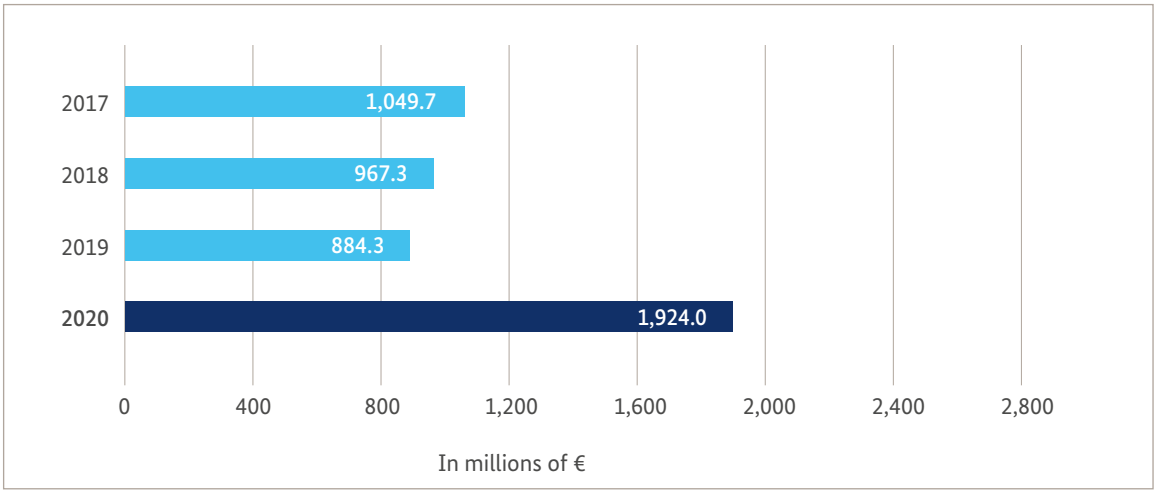
The subsidisation of the German hard coal industry is subject to approval by the EU on the basis of the European law on state aid and has been reviewed and approved by the EU Commission. The German Federal Office of Economics and Export Control (in cooperation with auditors) also monitors how these financial subsidies are being used on an annual basis and finally determines the aid.

Prevention

To cope with the necessary decommissioning activities, the private-law RAG Foundation is making the former investment assets of the RAG AG available to finance the remaining perpetual burdens following the closure of the mines (burdens such as mine water drainage[38], permanent land subsidence[39] and groundwater purification[40]). If these assets are not sufficient to cover the perpetual burdens, the Federal Government and the hard coal-producing Federal States will provide subsidies at a ratio of one-third to two-thirds respectively.

38 Pumping out/purifying and regulating the mine water that rises even after mining has ceased, in order to avoid contact with higher, drinking water-bearing layers.
39 Pumping off surface water in the terrain depressions created by mining to prevent flooding and waterlogging
40 Purification and monitoring of groundwater in the area of former mining operations, especially coking plants

Chart 6: Subsidies for the sale and closure of German hard coal from 2017 to 2020 (Federal Government amounts)



BMF (2021): 28th Subsidy Report. Own presentation.

b. Adaptation payments

Employees, who are at least 50 and 57 years old (underground workers and surface employees respectively) and who will lose their jobs before 1 January 2023 due to the closing-down of mines or rationalisation measures, will receive an adaptation payment (APG) as an interim benefit for a maximum of five years until their entitlement to pension insurance becomes valid.[41] The adaptation payment reflects the social responsibility of the Federal Government and the hard coal-producing Federal States. In 2020, the Federal Government guaranteed adaptation payments totalling €73.9 million.

Employees

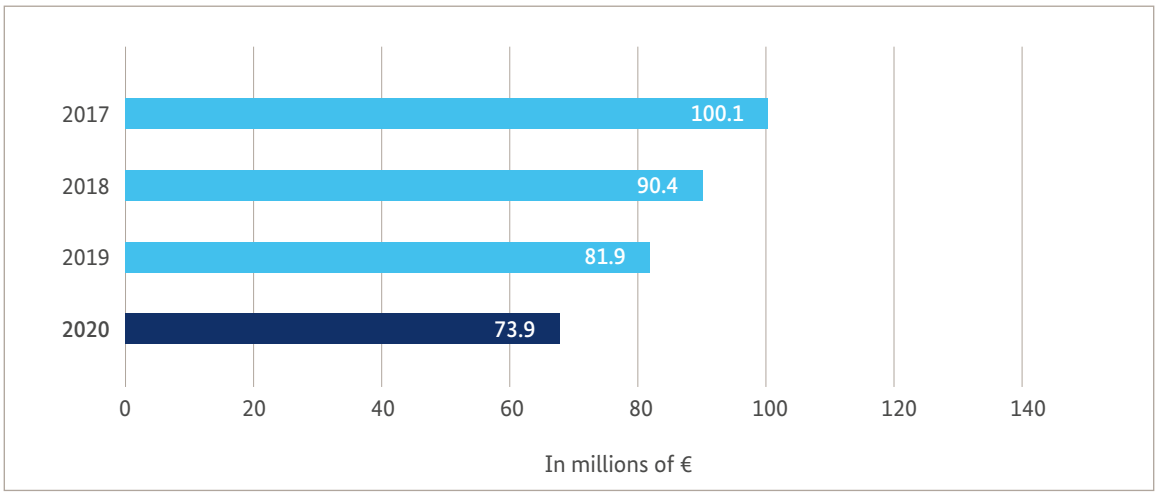
The number of employees subject to compulsory social security contributions is declining. At the beginning of 2008, 32,803 persons were employed in hard coal mining. By the end of 2020 the number of employees had been reduced to 1,520 employees. The number of persons entitled to adaptation payments is following this reduction trend, albeit with a time lag. Since more employees will be retiring after the last mine closures at the end of 2018 and a declining number of employees will still be needed after 2018 to complete the closure of mines and deal with contamination caused by mining the current adaptation payment guidelines will still apply until 2027.

Control measures

In addition to the monitoring of the intended use of funds by the German Federal Office of Economics and Export Control in cooperation with external auditors, the German Federal Audit Office also randomly reviews individual adaptation payment cases within the framework of the Federal Office's annual budget review.

41 A comparable model for paying an adaptation payment is also planned to cushion the social consequences of phasing out coal. See chapter 8 for more information on phasing out coal.

Chart 7: Adaptation payments from 2017 to 2020 (Federal Government amounts)



BMF 2021 28th Subsidy Report. Own presentation.

c. Transparency of state financial aid and support

Extractive companies can also receive non-specific financial help from the state that is not related to the natural resources sector, if they meet the appropriate criteria for the support programme. Financial aid can be granted as a subsidy, loan or help servicing debt, although nowadays the majority of financial help is in the form of subsidies. For a long time now loans granted directly from the Federal budget have played a secondary role. The reason for this is that the Federal Government uses banks to award the loans and they generally receive an interest subsidy for implementing the programme. The Federal Government's subsidy report provides information about this financial aid, the extent of the aid and the support objectives. There is no information in the report about the amount of financial aid paid out to the individual recipients.

State subsidies for companies are also the subject of the Treaty on the Functioning of the European Union, as this may reduce competition in the common internal market. The EU uses the term state aid instead of the term subsidy and thus a legal definition that is different from the definition of the term subsidy.[42] In this context, state aid is not only considered to mean direct financial grants to companies, debt relief or reduced-rate loans: it may also mean guarantees, tax reliefs or the provision of plots of land, goods, or services at special conditions which constitute an advantage for the respective company. In order to guarantee fair competition in Europe, the Treaties and corresponding secondary legislation determine the conditions under which such state aid is permissible. From 1 July 2016 the member states of the European Union are required each year to disclose information on any government support granted. Depending on the legal basis under state aid law, this obligation applies to each individual aid above a threshold of €500,000 or €100,000 per company, per benefit and per year, and the respective member state has to disclose this information on a detailed state aid website (see chapter 6.d.).

42 European Commission (2022): Competition Policy. URL: https://competition-policy.ec.europa.eu/state-aid_en (Accessed on 27 September 2022).

The name of the recipient, the amount and the purpose of the state aid together with the legal basis must be published. Where companies in the natural resources sector receive state aid, e.g. In the form of reduced-rate loans above the threshold, these can be viewed by the public.

d. Concessions for electricity and energy taxes

There are various tax concessions for both electricity and energy taxes, including tax exemptions, tax reductions and tax relief. The Electricity Taxation Act (StromStG) provides concessions for certain types of use, or electricity generation. The Energy Taxation Act (EnergieStG) also covers uses in which energy products are tax-favoured. A part of these concessions is mandatory under the Energy Tax Directive (EU) 2003/96/EC of 27 October 2003.

As manufacturing companies, extractive sector enterprises can particularly profit from the different tax relief possibilities provided by energy and electricity tax legislation.

Three regulations are particularly relevant here:

- Tax relief for companies (§ 54 Energy Tax Act (EnergieStG, § 9 b Electricity Tax Act (StromStG)): If a manufacturing company applies for electricity and energy tax concessions and its application is approved, it is granted a reduction of 25% of the tax rates on electricity, heating and the fuels used in its production facilities eligible for tax concession.

- Tax relief in the form of so-called peak compensation (§ 55 EnergieStG, § 10 StromStG): The additional burden of the "ecological tax reform" on manufacturing companies is lightened by a reduction in their energy and electricity taxes. Since the increase in revenues generated by the ecological tax reform also served to reduce the factor of "work" and contributed to companies paying less for employers' contributions to pension insurance schemes in comparison to 1999, a comparative peak compensation calculation is carried out for companies in question. In order to avoid double relief for the employers' pension insurance as well as for the energy used, saved pension contributions are taken into account in the calculation of the tax relief. The amount of relief is therefore calculated individually depending on the company, and is also capped at a maximum of 90% of the electricity tax paid and 90% of the tax share pursuant to § 55(3) of the EnergieStG. Prerequisites for claiming peak compensation are, among other things, evidence of a certified energy management system and an annual energy intensity reduction (by a statutory value) achieved by all the plants of the manufacturing company. The comparative value is the average energy intensity value for manufacturing industry companies between 2007 – 2012.

- Certain processes and procedures/manufacturer privilege (§ 9a StromStG, § 51 EnergieStG, §§ 26, 37, 44 and 47 EnergieStG): Companies in the manufacturing industry can use electricity or energy products for specific, energy-intensive purposes (such as electrolysis, metal production, manufacture of glassware, etc.). and reduce their tax bills by 100%. In addition, companies that produce energy products on their own premises (refineries, gas extraction and coal mining companies) can use these self-produced energy products tax-free (or obtain tax relief) for the purposes of maintaining operations within their own companies.

The subsidy report of the Federal Government contains the total subsidies for the entire manufacturing industry; they are not shown separately for each sector such as the natural resources sector. Where the concessions in the field of electricity and energy constitute state aid, these fall under the reporting and transparency obligations of the European Union for state aid (see chapter 6.c.).

In Germany, tax concessions are published in accordance with the regulation on the implementation of publication, information and transparency obligations under EU law in the Energy Tax and Electricity Tax Ordinance (EnSTransV). Under this regulation, the customs administration may collect, process, store, transmit and delete data relating to energy and electricity tax concessions. The corresponding data can be accessed on the European Commission's website on state aid[43].

According to data from the Federal Office of Statistics concerning the use of energy in manufacturing companies[44] the electricity consumption of the "Mining and quarrying sector" (WZ 08-B) was 6,067,221 MWh in total in 2020. Multiplied by the electricity tax tariff without taking account of possible concessions this results in electricity tax revenue of €124 million.

The extent of the concessions[45] granted to natural resources sector companies reporting under EnSTransV is between €7 and €14 million[46] for the general tax concessions pursuant to § 9b StromStG, €15 to €42 million for peak compensation pursuant to § 10 StromStG and between €5.5 and €11 million for plants eligible for tax concessions pursuant to § 3 EnergieStG.

This estimate indicates electricity tax payments from the natural resources sector of between €68 and €122 million[47].

43 https://webgate.ec.europa.eu/competition/transparency/public/search
44 Destatis (2022): Tables 43531-0001 and 43531-0002. URL: https://www-genesis.destatis.de/genesis/online (Accessed on 20 December 2022).
45 Only benefits exceeding €500,000 per year, company and reason for the benefit; information given for 2020 (Accessed on 27 July 2022)
46 The classification in the European Union State Aid Register is based on the following brackets €0.5–€1 million; €1–€2 million; €2–€5 million; €5–€10 million; €10–€30 million; and > €30 million. The amounts stated here, are the lower and upper limits of each bracket.
47 It should be noted here that, under certain conditions (generation of renewable energy/highly efficient combined heat and power (CHP) systems under 2 megawatts), producers of their own energy are exempt from electricity tax and exemptions in accordance with § 9 a (processes and methods using high amounts of electricity) or § 51 EnergieStG are not included in the EU state aid database. Furthermore, companies benefiting from concessions below the threshold of €500,000 are not listed in the EU State Aid Register. Therefore, the actual electricity tax payments are lower.

7

SUSTAINABILITY IN THE EXTRACTION OF NATURAL RESOURCES

As far back as 2002 the German Government presented the first national strategy for sustainability and has developed this further every four years since 2004.[48] When updating its sustainability strategy in 2021 the Federal Government underlines the guiding principle of following sustainable development and "meeting the needs of both the present and future generations – in Germany and in all parts of the world – and making it possible for them to live life to its full and with dignity". The aim is to achieve a progressive, innovative and open Germany in which it is worth living, in a country that is characterised by high quality of life, effective environmental protection, inclusive and integrative policymaking and fulfilment of its international responsibilities.[49, 50] This objective has again been confirmed for the natural resources sector in the strategy for natural resources[51] passed by the Federal Government in January 2020. This is seen in the context that Germany is one of the world's leading locations for technology and, as an exporting nation, depends on a reliable supply of natural resources.

With this is the responsibility to advocate for a sustainable and socially and ecologically responsible use of natural resources. Therefore, the Federal Government has set itself the goal of reducing the consumption of primary natural resources and closing material cycles. To achieve these goals, the circular economy is to be significantly strengthened as a pillar of the natural resources strategy and a national circular economy strategy is to be developed by the beginning of 2024. Both strategies should be closely interlinked for this purpose (see chapter 7.4 on the circular economy).

The 2030 Agenda, which was adopted by the United Nations in 2015 and on which the German sustainability strategy is based, sets out 17 objectives for sustainable development in the areas of the environment, social affairs and the economy. Germany uses it as a "compass (...) for all policy areas"[52] and thus also for the extraction of natural resources.

"Sustainable development" means balancing out as far as possible environmental, social and economic challenges throughout all the different value chains in the extractive sectors. In this chapter, some important contributions are discussed in this regard. Besides reference is made to various sustainability reports by public, civil society and private sector stakeholders.

Chapter 7.1 explains the legal framework in Germany with regards to human intervention in nature and landscape. It also contains information on compensatory measures and payments, provisions and implementation securities from extractive companies for the restoration/rehabilitation of former mining areas and water abstraction fees.

Chapter 7.2 also describes in specific terms for the various extractive sectors which aspects are important for the rehabilitation of former extractive regions and areas in Germany and what legal principles apply in this respect.

Chapter 7.3 covers the area in relation to employment and the statutory regulations for the social protection of those employed in the extractive industries in Germany. The diversity and equal opportunities

48 Federal Government (2021): German sustainability strategy. Update 2021. URL: https://www.bundesregierung.de/resource/blob/998194/1875176/3d3b15cd92d0261e7a0bcdc8f43b7839/deutsche-nachhaltigkeitsstrategie-2021-langfassung-download-bpa-data.pdf, p. 15 (Accessed on 14 December 2022).
49 Ibid. p. 14 et seq
50 Ibid. p. 225
51 Federal Government (2020): Natural resources strategy of the Federal Government. Securing non-energy natural resources for Germany as part of a sustainable supply of natural resources. URL: https://www.bmwk.de/Redaktion/DE/Publikationen/Industrie/rohstoffstrategie-der-bundesregierung.pdf?blob=publicationFile&v=4 (Accessed on 14 December 2022).
52 Federal Ministry for Economic Cooperation and Development. Natural Resources and Development Sector Programme (2021): Agenda 2030 – Sustainable Development Goals. URL: https://rue.bmz.de/ (Accessed on 25 November 2021).

section deals with the subject of gender equality. The importance of co-determination and cooperation between employee representation bodies and employers as part of German social partnership is covered. Information is also provided on measures to mitigate the loss of jobs which will occur because fossil energy resources will no longer be extracted and used for electricity generation. The “Corporate responsibility” section contains references to areas such as initiatives from the private sector for greater sustainability and appropriate cooperation agreements with civil society.

Chapter 7.4 on the circular economy, in particular recycling, examines the status of Germany’s efforts to use resources efficiently and economically. As Germany is highly dependent on imports of natural resources, it is an area with great potential for innovation.

7.1

MANAGING HUMAN INTERVENTION IN NATURE AND LANDSCAPE

a. Rules of intervention under nature conservation law

Every mining activity is associated with interventions in nature and landscape and can result in serious environmental impacts. Compensatory actions, such as compensatory or substitution measures and compensatory payments are intended to compensate for interventions in nature and landscape and to restore their natural function.

Overall it is estimated that just over 1% of Germany's entire area will be necessary to ensure the country's natural resources in the medium and long term. On the last reporting date of 31 December 2020, according to the Federal Office of Statistics approx. 1,978 km², i.e. approx. 0.419% of the area of Germany were used as mining land (i.e. for mining operations, opencast mining sites, quarrying etc.). In the last 30 years or so, the amount of land required for mining in Germany has thus decreased by more than 20% (381 km²). The equivalent in area for the volume of natural resources used in 2020 was just over 28 km². Taking the total area of Germany as a reference (357,582 km²), this requires a total area requirement of approx. 0.008% of its surface area in 2020.[53] However, the areas used for the extraction of natural resources differ in their concentrations in the various regions, as a result of which the associated interventions in nature and landscape also evince great regional differences and concentrations.

Legal framework

Rehabilitation involves ensuring that the surface affected by mining will be properly contoured taking account of public interest (§ 4(4) 4 BBergG). Thus, all activities necessary for recultivation fall under this term, without, however, having to achieve the *quo ante* status. Within the scope of the obligation under mining law to rehabilitate the area, the obligation that simultaneously exists under nature conservation law to compensate for interventions in nature (§ 13 BNatSchG) may have already been met.[54]

The Federal Nature Conservation Act (BNatSchG) establishes the general principle that major interventions in nature and landscape are to be primarily avoided and minimised by the polluter (avoidance obligation). Unavoidable interventions are to be compensated by means of compensatory or substitution measures (hereinafter "compensatory measures") or, if this is not possible, by a compensatory payment in money (§ 13 BNatSchG). It is not possible to deviate from this general principle and the ensuing legal consequences (first the avoidance, then compensatory measures and, as a last resort, a compensatory payment). In the case of mining measures, the avoidance rule primarily targets a variant that is as environmentally-friendly as possible, since site alternatives due to the type of natural resource and technical considerations cannot be possible, and zero variances can be eliminated due to the economic priority of natural resources extraction. Unavoidable interventions in nature and landscape must therefore be offset or mitigated, particularly through the promotion of natural succession, renaturation, near-natural design, rehabilitation or recultivation (§ 1(5) p. 4 BNatSchG (Federal Nature Conservation Act).

Compensatory measures must be maintained and legally secured during the required period of time. The period of maintenance is determined by the approval authority in the certificate of approval. The perpetrator of the intervention (the polluter) or its legal successor is responsible for the execution, maintenance and safeguarding of the compensatory measures.

In accordance with German federal and European regulations, the possible effects of a project on particularly-protected species of animals and plants (special species protection legislation) and on the

53 Federal Institute for Geosciences and Natural Resources (BGR) 1): Germany – Natural Resources Situation 2020 (date: November 2021), p. 23. URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2020.pdf?blob=publicationFile&v=4 (Accessed on 12 September 2022).
54 For more information on compensation for interventions in nature due to the extraction of natural resources, see chapter 7.1.

European protected area network NATURA 2000 is one of the aspects that must be examined in the approval procedures for nature conservation law interventions.

The BNatSchG contains a full regulation, viz. that the laws and norms of the Federal States on the instrumental design of the intervention regulation may not contradict it. In order to make the regulation more applicable, some Federal States have made supplementary regulations, whereby the practice differs from Federal State to Federal State. For example, the concrete assessment of the amount and the use of compensatory payments differ from Federal State to Federal State. As different biotope type lists are used at Federal State level, the Federal Government produces conversion keys that allow the respective biotope types to be counted.[55]

The Federal Compensation Ordinance (BKompV) provides specific details of the rules of intervention intended under nature conservation law for projects in the area for which the Federal Administration is responsible. In particular, it covers public infrastructure projects (e.g. power lines and pipelines, offshore wind farms, waterway projects and, in the future, Federal autobahns). The objective of BKompV is to standardise the rules of intervention under nature conservation law across all Federal States and make them both more transparent and more effective. Opinions diverge as to whether the Federal States are allowed to make rules that differ from BKompV (Art. 72 (3) sentence 3 GG).[56]

Approval practices in the extraction of natural resources

If a company plans to intervene in nature and landscape by extracting natural resources, the rules of intervention under nature conservation law are examined at the level of the responsible approval authority. Which laws and regulations are applicable may depend on the type of natural resource. And which authorities are responsible in a Federal State depends on the applicable laws and regulations. In the case of extraction of mineral resources that are neither subject to mining law nor to water law, a nature conservation authority may be responsible (e.g. in Saxony-Anhalt[57]). Besides, the mining authorities of the Federal States (in the case of free-to-mine and privately-owned mineral resources or in the case of underground extraction) or the state authorities responsible for the enforcement of the state excavation laws, the building and water conservation laws or the Federal Immission Control Act (in the case of so-called landowners' natural resources) may be the competent authorities. This procedure corresponds to the "piggyback procedure". The rules of intervention are always examined within the framework of the notification and approval procedure under the specific legislation, without separate administration proceedings. The nature conservation authorities must be involved and they will give their opinion as nature conservation experts. The responsible approval authority then grants the authorisation taking account of the opinion in "consultation" with the responsible nature conservation authorities (§ 17(1) BNatSchG). The responsible approval authority, which makes the decision on the legal consequences of the intervention, is not bound by the recommendation of the nature conservation authorities. It is allowed to differ from these on objective grounds. However, it is compulsory to comply with the provisions of the specific species protection independently of the rules of intervention. Designations of protected areas must also be observed.

55 The conversion keys are published here: Federal Agency for Nature Conservation (2021): Nature intervention rules. URL: https://www.bfn.de/themen/planung/ eingriffe/eingriffsregelung.html (Accessed on 9 December 2022).

56 Currently Baden-Wuerttemberg (§ 15(5) sentence 3 NatSchG BW) and Bavaria (Art. 8(3) sentence 2 BayNatSchG) make use of this possibility.

57 In Saxony-Anhalt, according to § 11 of the Nature Conservation Act of Saxony-Anhalt (NatSchG LSA), the extraction of natural resources that are not subject to mining law or water law, such as sand, gravel, marl, clay, limestone and other rock, gypsum as well as peat and mud, requires the approval of the nature conservation authority (usually the lower nature conservation authority) if the area of extraction is larger than 100 square metres. The content and procedure, including the avoidance, compensation or replacement measures to be provided, as well as compensation payments and securities, shall be governed by the provisions of §§ 13 to 18 of the Federal Nature Conservation Act and §§ 6 to 10 of the NatSchG LSA, unless otherwise provided for in §§ 12 to 14 NatSchG LSA.

As part of the approval procedure, the entrepreneur shall also provide the competent authority with a Landscape Management Plan (LBP), which shall provide information on the location, nature, extent and timing of the intervention, as well as the intended avoidance and compensatory measures and, where required, the amount of the compensatory payment. In this case, the major part of the necessary compensation is to be regularly provided for renaturation or recultivation (see target definition in § 1(5) sentence 4 BNatSchG). Compensatory measures on external surfaces are necessary, for example, if certain landscape or biotope structures cannot be restored in the same way, if the time that has elapsed between the damage and renaturation is too long or if specific measures are necessary for reasons of species protection.

In the case of the extraction of the so-called "free-to-mine" (e.g. coal, salts, oil and natural gas) and privately-owned natural resources (e.g. stone, earths and industrial minerals) governed by the German Federal Mining Act (BBergG), the intervention regulation is processed as per the BNatSchG in accordance with the operating plan procedure under mining law, whereby the obligations as per the BNatSchG apply in full. Compensation for interventions can already take place within the scope of the obligation under mining law to rehabilitate the area (§ 55(1) no. 7 BBergG, § 1(5) sentence 4 BNatSchG). If this is not possible, compensatory and/or substitution measures or subordinated compensatory payments pursuant to BNatSchG are necessary (see North Rhine-Westphalia (NRW) example below). In the case of procedures which are subject to the Federal Mining Act (BBergG), the legal instruments of the Federal Mining Act are applied, such as (and in particular) regular monitoring based on the main operating plans, which must generally be submitted and re-approved every two years.

Documentation of compensatory measures for interventions in nature and landscape

Since the amendment of the BNatschG in 2010, German Federal States are obliged to create compensation directories for all interventions in nature. However, these take various forms and are not publicly available in all Federal States.

Figure 7: Overview of compensation directories in the Federal States

Federal State	Publicly available directory	Central for the Federal State	Comprehensive information on the intervention area and the compensation type	Weblink	Information on compensatory payments*
Baden-Wuerttemberg	Yes	No	Yes	https://www.lubw.baden-wuerttemberg.de/natur-und-landschaft/oeffentliches-verzeichnis-abteilung-naturschutzrechtliche-kompensation	A list of compensatory payments can be obtained on request from the Stiftung Naturschutzfonds (Nature Conservation Trust Fund).
Bavaria	Yes	Yes	Yes	https://www.lfu.bayern.de/natur/oefka_oeko/oekoflaechenkataster/index.htm	The compensatory payments are managed by the Nature Conservation Trust Fund. Lists of compensatory payments can be requested from district-level administrative authorities.
Berlin	Yes	Yes	No	https://fbinter.stadt-berlin.de/fb/index.jsp	Lists of compensatory payments can be requested from regional-level administrative authorities.
Brandenburg	Yes	Yes	Yes	https://geoportal.brandenburg.de/detailansichtdienst/render?view=gdibb&url=https%3A%2F%2Fgeoportal.brandenburg.de%2Fgs-json%2Fxml%3Ffileid%3DDB938B67-403B-4F23-B2A4-015C7B16FDB9	Lists of compensatory payments can be requested from the Ministry of Agriculture, Environment and Climate Protection.
Bremen	Yes	Yes	Yes	https://www.bauumwelt.bremen.de/umwelt/natur/gis-dienste-geodaten-48536	A list of compensatory payments can be requested from the Senator for Climate Protection, Environment, Mobility, Urban Development and Housing.

* Information on compensatory payments is kept at the level of the nature conservation sub-authorities, i.e. in all urban and rural districts but it is not collected centrally for the relevant Federal State. Furthermore, the data is not broken down according to sectors so it is not possible to report on the amount of compensatory payments per Federal State and specifically per natural resources sector as part of the D-EITI report.

Federal State	Publicly available directory	Central for the Federal State	Comprehensive information on the intervention area and the compensation type	Weblink	Information on compensatory payments*
Hamburg	Yes	Yes	Yes	https://geoportal-hamburg.de/geo-online/	The total amount of the compensatory payments is publicly accessible via the annual balance sheet of the Special Fund for nature conservation and landscape management.
Hesse	Yes	Yes	Yes	https://natureg.hessen.de/mapapps/resources/apps/natureg/index.html?lang=de	Compensatory payments cannot be viewed by the public.
Mecklenburg-Western-Pomerania	Yes	Yes	Yes	https://www.kompensationsflaechen-mv.de/wiki/index.php/Hauptseitehttps:/www.umweltkarten.mv-regierung.de/atlas/script/index.php	Compensatory payments cannot be viewed by the public.
Lower Saxony	To some extent; a nationwide directory is being planned (online database)	No	To some extent (e.g. Cuxhaven District)	e.g. Cuxhaven district https://cuxland-gis.landkreis-cuxhaven.de/internet/kompensationsflaechen	Compensatory payments cannot be viewed by the public.
North Rhine-Westphalia	Yes	No	Yes	e.g. https://www.duesseldorf.de/stadtgruen/landschaft-naturschutz/eingriffsregelung	The nature conservation sub-authorities (districts and urban districts) keep directories of compensatory payments that are published via the internet and contain information (including on the use of the compensatory payments).

* Information on compensatory payments is kept at the level of the nature conservation sub-authorities, i.e. in all urban and rural districts but it is not collected centrally for the relevant Federal State. Furthermore, the data is not broken down according to sectors so it is not possible to report on the amount of compensatory payments per Federal State and specifically per natural resources sector as part of the D-EITI report.

Federal State	Publicly available directory	Central for the Federal State	Comprehensive information on the intervention area and the compensation type	Weblink	Information on compensatory payments*
Rhineland-Palatinate	Yes	Yes	Yes	https://naturschutz.rlp.de/de/ start-seite/?q=kartendienst	A list of compensatory payments can be requested from the Foundation for Nature and Environment.
Saarland	No	No	No	–	Eco-account measures can be viewed on the Saarland Geoportal (https://geoportal.saar-land.de/).
Saxony	No	Yes	No	https://www.natur.sachsen.de/okokonto-kompensationsflachenkataster-8111.html	Lists of compensatory payments can be requested from district-level administrative authorities.
Saxony-Anhalt	To some extent (eco-accounts: yes, compen-sation direc-tory: no)	Yes	No	https://ekis.geolock.de	Compensatory payments cannot be viewed by the public.
Schleswig-Holstein	Yes	No	No	https://www.lksh.de/landwirtschaft/um-welt-und-gewaesserschutz/oekokonto/	A list of compensatory payments can be requested from the Ministry of Energy, Agriculture, the Environment, Nature and Digitalization.
Thuringia	No	Yes	Yes	–	Compensatory payments must be made to Stiftung Naturschutz Thüringen (Thuringia na-ture conservation foundation, SNT). The corre-sponding overview lists cannot be accessed by the public. To date, there have not been any compensatory payments from mining projects.

Own representation (as of: December 2022).

* Information on compensatory payments is kept at the level of the nature conservation sub-authorities, i.e. in all urban and rural districts but it is not collected centrally for the relevant Federal State. Furthermore, the data is not broken down according to sectors so it is not possible to report on the amount of compensatory payments per Federal State and specifically per natural resources sector as part of the D-EITI report.

Example of the transparency of compensation directories in Baden-Wuerttemberg

The basis for the compensation directory in Baden-Wuerttemberg is formed by § 17(6) of the BNatSchG and § 18 of NatSchG BW, the compensation directory regulation (KompVzVO) and the eco-account regulation (ÖKVO) of the State, which provide for the obligation to make documentation available for the public. The latter two regulations can be downloaded from the website of the Baden-Wuerttemberg State Institute for the Environment. The Baden-Wuerttemberg compensation directory is divided into "eco-account" and the "intervention compensation" sections.

An eco-account is an instrument for the perpetrators of interventions (polluters). It enables them to temporally and spatially decouple compensation measures from the mining area, making the measures more flexible to manage. Compensatory measures can be stockpiled via so-called "eco-points", which are accumulated by means of the targeted enhancement of external areas through nature conservation. The corresponding eco-points can be used for later interventions to compensate for the interventions either in whole or in part. Polluters such as natural resource companies and local authorities are involved here as producers, consumers and traders of eco-points.

A central overview of the total number of all interventions in Baden-Wuerttemberg, including their compensatory measures, is not available; however, the legal environmental protection eco-account measures and the compensatory measures already assigned to an intervention under nature conservation law can be accessed via the Internet sites of the responsible nature conservation sub-authorities at city and county levels (https://www.lubw.baden-wuerttemberg.de/natur-und-landschaft/oeffentliches-verzeichnis-abteilung-oekokonto) where the following information on the nature conservation compensatory measures of the counties is available:

- description of the approval authority and the compensatory measure (short description),
- file number and date of the approval certificate,
- type of project causing the intervention,
- project developer,
- location of the compensation area,
- measures for the timely implementation of the compensatory measure and the fixed period of maintenance,
- state of the implementation.

The following information on eco-account measures can also be accessed:

- complex of measures,
- status,
- natural area,
- location of the measure,
- eco-points.

Compensatory measures on intervention areas and substitute areas are documented in the compensation directory of the Federal State of Baden-Wuerttemberg. Measures taken since April 2011 have been listed. At present work is proceeding with updating KompVzVO. The aim is to include in the compensation directory in future compensatory measures under planning law, species protection measures, coherence safeguarding measures, and entries on summation effects where the negative effects on Natura 2000 areas are significant, etc. (cf. § 18(3) NatSchG BW). It is intended that this will provide greater transparency and make it easier to verify these measures.

Example of the assessment of compensatory payments in North-Rhine-Westphalia (NRW)[58]

According to § 15(6) BNatSchG, in the case of an authorised intervention the polluter can make a payment as an Ultima Ratio if negative impacts on nature are unavoidable, or if they cannot be compensated or replaced within a reasonable period. The compensatory payment is based on the average costs of the non-feasible compensation measures, including the necessary average costs for their planning and maintenance, as well as the provision of the area, which encompasses personnel and other administrative costs. If these cannot be ascertained, the compensatory payment is based on the duration and severity of the intervention, taking into account the advantages accruing to the polluter (§ 15(6) sentence 1 ff. BNatSchG).

The assessment of the amounts of compensatory payment is the exception rather than the rule in the approval of the activities of the extractive industry in North-Rhine-Westphalia. Nevertheless, there are cases in which, for example, the major part of the compensation takes place in recultivation, but a small computational, compensation deficit still must be implemented on an external area, or the assessment of the compensation through rehabilitation will not be appropriate. If the area in question or the required measure is unavailable, or can neither be implemented nor is expedient at a reasonable cost, a relevant compensatory payment is assessed. In North-Rhine-Westphalia, this assessment is made in accordance with the provisions of the State-level Nature Conservation Law (LNatSchG NRW) in consultation with the nature conservation authorities of the same administrative level (§ 33(1), LNatSchG NRW).

The beneficiary of the compensatory payment is the district or urban district in which the intervention is carried out; the compensatory money must be used for measures involving nature conservation and landscape management (§ 31(4) LNatSchG NRW).

If the compensatory payment is to be made for an intervention in forested areas or to be used for the afforestation of land, the payment will be made available to the forestry administration and earmarked for that purpose (§ 31(4) LNatSchG NRW).

Examples of the assessments of compensatory payments are the opencast gravel mines in the opencast mining zones in front of the lignite mining projects. In three of the opencast mines, rehabilitation that is valuable in nature conservation terms was not indicated because opencast lignite mining would use the area directly after the gravel or sand extraction operations. In these cases, the local sub-authority for nature conservation developed a simplified procedure by means of which an appropriate compensatory payment could be assessed. A total of €265,767.90 in compensatory payments was assessed for the three projects mentioned above.

For another opencast gravel mining project, a small-scale expansion was planned for which a compensatory payment was assessed, if the intended recultivation could not be implemented. The county sub-authority for nature conservation, however, would have to use the compensatory payment of €21,900 it received to implement another equivalent compensatory measure.

In the period between 2011 and 2015, only a total of around €300,000 in compensatory payments were assessed for the North-Rhine Westphalia mining. authorities. The significance of compensatory payments in the procedures carried out under mining law has fallen considerably between 2015 and 2019. During this period the total amount was less than €100,000.

So far, there have been no compensatory payments for the opencast lignite mining industry in North-Rhine Westphalia; intervention compensation is mainly carried out in the form of rehabilitation. The ratio of the many opencast mining projects in NRW (especially lignite mining projects, some of which are on a very large scale) to the few small projects mentioned above shows that the assessment of compensatory payments plays a subordinate role in the procedures carried out under mining law.

58 The procedure described applies on a nationwide basis

Cooperation between stakeholders

Since each extraction of natural resources represents a significant intervention in nature and landscape, an environmentally-friendly extraction development and technology approach must be standard for companies in this sector. Timely renaturation and recultivation can contribute to the promotion of biological diversity; but operating extraction sites are also habitats for rare animals and plants. Cooperation between the extractive companies, the employees there and nature conservationists who are familiar with the area has proven to be useful. This means that operational management can be adapted to local and specific biodiversity requirements. This usually succeeds if the company management and employees are continually involved in dialogue with specialist nature conservation institutions and persons. In the case of expansions or new extraction projects, an early dialogue between the stakeholders can also avoid conflicts before they arise. Information and training materials on the subject help to broaden the impact of initiatives like this, which are supported by strong memberships in the environmental and nature conservation associations, the mining, chemicals, energy and construction-agri-environment industrial trade unions, and economic associations at Federal Government and Federal State levels.

b. Provisions

In Germany, federal legislation stipulates that companies which extract natural resources must carry out recultivation measures. These usually include measures which are still necessary after closure of the mine concerned, such as measures for the rehabilitation of the mine area and recultivation measures.

Provisions are set aside for these financial obligations under accounting rules. The amount of the provisions to be set aside is based on the requisite amount calculated according to reasonable and prudent business judgement to meet financial obligations. When assessing provisions, future cost increases must be taken into consideration. The expected dates of fulfilment are essentially dependent on the remaining economic useful life of the extraction sites in question. The obligations of some companies extend far beyond the year 2050. Long-term provisions with a residual maturity of more than one year are discounted according to the average market interest rate appropriate for the residual maturity and calculated by the German Bundesbank in accordance with a legislative decree and announced each month. Provisions are shown on the liabilities side of the balance sheet in the annual financial statements of the extractive sector companies. They are examined by auditors as part of the audit review. The appropriateness of provisions is audited by the tax authorities with regard to tax issues.

Provisions made by companies which must publish their annual financial statements are shown transparently at http://www.bundesanzeiger.de. The duty of disclosure pursuant to § 325 HGB always applies to all limited companies and all commercial partnerships without a natural person as a personally liable shareholder (e.g. GmbH & Co. KG).

c. Implementation securities

Implementation securities are an instrument provided in Germany to implement the renaturation, safeguarding and rehabilitation measures to be carried out by extractive sector companies. If a company should fail or refuse to carry out the above measures, the authorities ensure that no additional costs will have to paid by the general public by means of so-called “substitute performances”.

Implementation securities are expressly provided for under the Federal Mining Act (BBergG) as an official instrument for natural resources extraction projects which are subject to the BBergG. Individual Federal States have introduced similar legislation in their excavation laws (or other subordinate excavation regulations) for the extraction of natural resources which is outside the legal scope of the BBergG. Implementation securities can also be established to ensure

the implementation of compensatory and substitution measures for interventions in nature and landscape, pursuant to § 17(5) of the Federal Nature Conservation Act (BNatSchG).

Within the scope of its discretion pursuant to § 56(2) BBergG the mining authority may make the granting of operating plan permits dependent on an implementation security, if this is necessary to guarantee (in particular) the implementation of measures for risk prevention and rehabilitation in the areas affected by the extraction of the natural resources. This applies to follow-up measures of mining activities such as water drainage, for example, but also to the dismantling of equipment, the removal of water-endangering substances and the securing of former extraction sites by backfilling them or blocking them off completely.

In principle, the mining authority may permit any suitable form of implementation security if it considers that such a security is necessary and if there are no restrictions arising from the relevant statutory provisions. Forms of implementation security include the deposit of cash and bonds, mortgages, special default insurances, operational provisions, bank or group guarantees and so-called strict letters of comfort.

Operating provisions, bank guarantees or insurance guarantees and, particularly in the case of large companies, corporate guarantees and letters of comfort are customary in the natural resources extractive sector. Cash and bonds are not usually accepted as securities, since the management of these is too complex for the authorities. Implementation securities are therefore not payments from companies to state agencies.

The amount of the implementation security to be set is oriented on the estimated cost of a (possibly necessary) substitute performance. If a project is to be carried out in stages, the implementation security is set up in stages on the basis of the actual intervention and is approved on a pro rata basis after successful partial rehabilitation.

The special purpose vehicles planned for the Lausitz lignite coalfield are a special case. These were set up in the course of the 2018/2019 precautionary agreements (which have been adapted in 2021)[59] between the open-cast mine operator LEAG and the Federal States of Brandenburg and Saxony to ensure compliance with the obligations to rehabilitate and provide any aftercare for the mining areas.[60] The company provides these special purpose vehicles with a special fund earmarked for the purpose. A basic amount is planned for this purpose and it is intended that this will be increased every year, depending on the company's current profits. If the company becomes insolvent or if it relocates abroad, the special fund is to be pledged to the respective Federal States. Compensation payments connected with the phasing out of coal (see chapter 8) will be paid directly into the special purpose vehicles. The precautionary agreement in the central German coalfield (Saxony-Anhalt) will continue unchanged.

d. Abstraction of water for the extraction of natural resources

The abstraction of ground and surface water may be necessary during the course of the extraction and further processing of natural resources. The volumes of water abstracted for the activities of the natural resources extractive sector are published by the relevant statistical authorities of the individual Federal States.[61] An overview is shown in Chart 8.

The "mining and quarrying" sector abstracted a total of 1,466 million m³ of water in 2016 (mainly groundwater). Coal mining accounted for around 75% of this

59 Cf. https://www.leag.de/de/news/details/vorsorgevereinbarung-mit-brandenburg-aktualisiert/, https://www.leag.de/de/news/details/ vorsorgevereinbarung-mit-sachsen-aktualisiert/ (Accessed on 14 December 2022).
60 cf: https://lbgr.brandenburg.de/lbgr/de/aktuell/buergerinformationen/vorsorgevereinbarung/ and https://www.oba.sachsen.de/coal-exit-4084.html (Accessed on 14 December 2022).
61 Federal Office of Statistics (2022): Environmental economic accounting. URL: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/UGR/_inhalt.html (Accessed on 9 December 2022).

volume. This corresponds to around 5% of the total water abstracted in Germany by industry and private households.[62] Depending on the regional importance of the natural resources sector – particularly coal mining – the proportion is higher in some Federal States than in others (up to 30% in individual cases).

Example:
Use of water in potash and rock salt mining

In potash and rock salt mining, water from different origins and of different quality levels including river water, groundwater and drinking water is used in many processes.

Raw salt is generally mined by means of drilling and blasting in the underground mining of potash and rock salt. However, salt can also be extracted in a brine plant, where fresh water is introduced into soluble (salt) rock by means of a borehole, resulting in the creation of chambers filled with salt water. The salt-saturated water (so-called brine) is then conveyed to the surface via another pipeline. The salt is ultimately extracted when the brine evaporates.

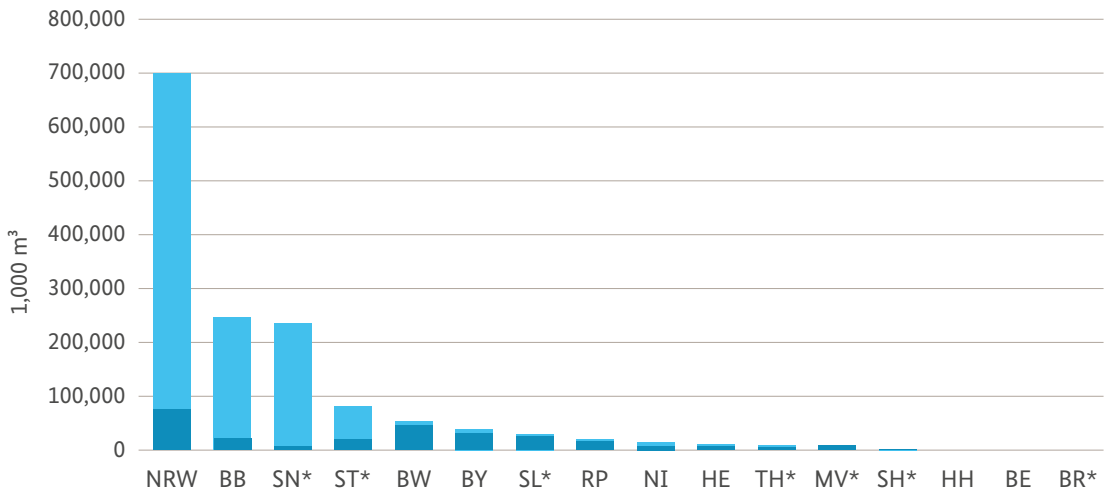
Use of water

During the initial development of a deposit of natural resources, the pumping out of groundwater can lead to a lowering of the groundwater level. Water abstractions during extraction of the natural resources may also be necessary e.g. to keep shafts or excavation pits dry. This so-called drainage and mine water is, if necessary, treated, purified, seeps away or, if applicable, reused, e.g. to maintain moist biotopes or introduced into surface water without being used further.

The use of water by the mining industry is associated with consequences for the water balance. Environmental impacts can result from, among other causes, the change in the groundwater level, the flow rate of water bodies and the introduction of drainage and mine water into surface waters.

62 In some Federal States, a distinction is made between the following two sectors: 1. ores, quarried natural resources, other mining products and 2. coal, peat, oil and natural gas; e.g. Saxony State Office of Statistics (2013): Water supply and waste water disposal in the operations of the non-public sector in the Free State of Saxony. https://www.statistischebibliothek.de/mir/servlets/MCRFileNodeServlet/SNHeft_derivate_00006220/Q_I_2_3j_13_SN.pdf;jsessionid=26B6141659185B4E5052687F0D471F70. In 2016 the water abstraction by business and private households was around 29.6 billion m^3, see https://www.destatis.de/DE/Themen/Querschnitt/Jahrbuch/jb-umwelt.pdf? blob=publicationFile

Chart 8: Water extraction in the natural resources sector by Federal State in 2016 (in thousands of m^3)



Source: Statistical offices of the Federal States, own representation.

* Notes: Saxony-Anhalt, Mecklenburg-Western Pomerania and Schleswig-Holstein: no data on unused water: "Numerical value unknown or to be kept secret"; Saxony: no information on total use, only 2 of 3 partial values of water use are known: "Total single use" (5,534) & "Total multiple use" (364). There is no information on the third sub-value "total cycle use". The same applies to the information on the amount of unused water: no indication on "Delivery of unused water to third parties", there is only information on "Unused discharged water" (234,385). No data for 2016 for Bavaria, Thuringia, Saarland and Bremen. Therefore, the 2013 data is reflected here.

Legal framework for water abstraction

The Water Resources Act that came into force in 1960 dictates that water can only be abstracted from the groundwater and surface water, if a permit has been granted in which this usage has been regulated in terms of the nature and quantity of usage. An EU-wide legal framework for the protection of water and groundwater was created in 2000 with the Water Framework Directive (2000/60/EC of 23 October 2000 (WRRL). The WRRL stipulates (inter alia) that the costs of water services (including certain water abstractions) and environmental and resource-related costs are covered by the polluter-pays principle.[63] Water abstractions must also be checked for compliance with the general environment targets of the WRRL. If the volume of ground or surface water abstracted exceeds certain thresholds, environmental impact assessments must be carried out for the projects concerned.

The implementation of the WRRL into national law took place in Germany through the Water Resources Act, which regulates the protection and use of surface and groundwater at national level. Water abstraction procedures are subject to the reservation on the granting of permission by the water authorities. The water laws of the Federal States supplement and concretise the federal water laws. Overall, the Federal States are left to regulate the water abstraction fees.

Structuring of water abstraction fees

The structuring of fees for water abstraction is carried out by the Federal States that receive these fees. This

63 In its ruling of 11 September 2014 (docket ref. C-525/12), the European Court of Justice (ECJ) confirmed that with these regulations of the Federal Government and the Federal States, Germany had sufficiently implemented the principle of cost recovery from the EU Water Framework Directive. The ECJ also expressly points out that in accordance with the provisions of Article 9(4) of this directive, the EU Member States are in any case empowered not to apply the cost-covering principle to certain water uses, while addressing the purposes and objectives of the directive.

is why water abstraction fees levied in Germany differ widely in 13 of the 16 Federal States, the three exceptions being Hesse, Bavaria and Thuringia. The total revenue in the 2020 budgetary plans of the Federal States was estimated at around €414 million. These revenues are partly used for water management tasks, or they flow into the general budget of the respective Federal State.[64]

Most Federal States levy consumption-related fees for the abstraction of ground and surface water. Depending on the individual structure, these fees are also intended to reflect the "value of the public services" for the utilisation of resources and can therefore act as incentive taxes for a sustainable water management programme and for the allocation of environmental and resource costs (§ 1 and § 6a of the Water Resources Act).[65]

In most Federal States, levy rates differ according to the type of abstraction, volume, origin of the water (surface water or groundwater) and the purpose for which the water is to be used. There are also various state-specific deviations from the relevant rules through exemptions or discounts, and these may also apply to the natural resources sector.

Water abstraction fees in the natural resources sector

Very different rates are levied nationwide for the abstraction of water in the natural resources sector. For example, fees of between 0.3 and 6 cents/litre for surface water are applied in some Federal States for certain types of mining operations (e.g. in Baden-Wuerttemberg, Lower Saxony, Mecklenburg-Western Pomerania), while in other Federal States, the fees for groundwater abstraction can range from 5 to 31 cents/m.[66]

In Rhineland-Palatinate and Schleswig-Holstein, on the other hand, groundwater excavation is exempt from water abstraction charges. In some Federal States, there are explicit regulations for dewatering operations in mines, or for water that is reintroduced into surface waters without being subsequently used.

The various fee levy rates, exemptions and discount rules are published in the individual water laws or ordinances of the Federal States. The German Federal Environment Agency provides an overview of the relevant fee levy rates in the natural resources sector.[67] However, a publicly-accessible source of information on the amount of revenue from water abstraction fees paid by the natural resources sector does not exist in all Federal States. Reports on this are regularly given to the State Parliament in North Rhine-Westphalia.

Water abstraction fees represent a flow of cash between companies that extract natural resources and the German State. Due to the different levy rates (inter alia) in individual Federal States, most payments lie below the materiality threshold agreed in the D-EITI, which is why they are not disclosed as a payment flow in the D-EITI report. Where companies in the extractive sector have reported water abstraction charges above the materiality threshold of €100,000, these can be found in the BilRUG payment reports.[68]

64 Association of municipal enterprises e. V. (VKU) (2020): Comparison of water abstraction charges in the Federal States. URL: https://www.vku.de/fileadmin/user_upload/Verbandsseite/Presse/Grafiken_und_Statistiken/Wasser_Abwasser/201006_VKU-Grafik_Wasserentnahmeentgelte_2020.jpg (Accessed on 9 December 2022).

65 Gawel/Bretschneider (2016): Water abstraction fees in Baden-Wuerttemberg Inventory and Evaluation. Helmholtz Centre for Environmental Research, URL: https://www.ufz.de/index.php?de=40917 (Accessed on 9 December 2022).

66 German Federal Environment Agency (2017): Table of water abstraction fees in the natural resources sector in the Federal States. URL: https://www.umweltbundesamt.de/themen/wasser/recht-oekonomie-digitalisierung/wasseroekonomik#textpart-1 (Accessed on 9 December 2022).

67 German Federal Environment Agency (2021): Economic questions. URL: https://www.umweltbundesamt.de/themen/wasser/wasser-bewirtschaften/oekonomische-fragen#textpart-1 (Accessed on 9 December 2022).

68 According to § 341v HGB for example, payments of water usage fees were reported by the following companies for 2019: Holcim (Deutschland) GmbH: €394,000; LEAG Lausitzer Energie Bergbau AG: €1,116,539.24; RWE Group/RWE Power AG and RWE Rheinische Baustoffwerke GmbH: €12,908,328; source: Annual payment reports – www.bundesanzeiger.de

7.2

ENVIRONMENTAL PROTECTION, RENATURATION, RECULTIVATION

The extraction of natural resources is responsible for lasting interventions in nature and the landscape in Germany, e.g. because overburden has to be removed and heaped up in piles or areas are temporarily used to erect conveyors or other operating plant. The statutory requirements of the Federal Mining Act guarantee that rehabilitation will be planned at an early stage and taken into account. A balance is achieved between the interests of the extractive sector and the environment in the approval procedure reflecting the Federal State's plans and mining law. Citizens, the elected political representatives of mining regions together with sectoral authorities, environmental associations and other public interest parties have various opportunities to exercise influence and be involved in co-determination. In general, the principle that the burden on the environment must be kept to the minimum applies to both the planning and operation of mines. In addition to this, the mining operator has an obligation to rehabilitate the areas affected by the extraction of natural resources (§ 55 BBergG). The measures on how the surface will be structured in an individual case is part of the planning and approval process and depends on the original condition of the area used for mining and what the plans are for its future use.

When the mining authorities approve the respective operating plans, one of the aspects they also check is whether the company can finance the costs that will be incurred at the time as a result of future rehabilitation obligations. If there are any doubts, the mining authorities can make approval of an operating plan dependent on implementation securities (§ 56(2) 2 BBergG).

As a rule, the companies make provisions to meet their future mining-related obligations. The purpose of these provisions is to provide financial security for the rehabilitation and the amount must be assessed accordingly.

The principles of provisions are the rules on setting up provisions for future obligations that are binding for all businesses under commercial law.

a. Coal and mining

i. Rehabilitation during the operational and closing-down phase

Rehabilitation during the operating phase

Where rehabilitation is carried out during extraction and processing operations, the areas taken for extraction are generally rehabilitated in parallel to the continuing extraction. In the course of extracting natural resources, the material on the site is piled up and the shape of the land changed whilst adhering to safety requirements. The land is rehabilitated by means of geotechnical, landscaping, hydraulic engineering, agricultural and forestry measures to restore the land usage or biotopes.

One example of this is groundwater lowering required for operation in opencast mines. In these cases, backfilled areas must be designed in such a way that no unwanted waterlogging occurs preventing the intended public interest use (including agriculture, forestry or construction). In addition, the final slopes of opencast mines that are not backfilled and in which a lake is to be created after the end of coal extraction must be laid out and designed in such a way that permanent stability is ensured during and after the rise of groundwater and the filling of the former opencast mine with water. To this end, appropriate technical guidelines are applied and expert assessments are used.

A prerequisite for successful reclamation of minesites is the targeted, selective extraction of soil and the refilling of mining holes using soil material that meets

the requirements relevant for the intended subsequent use of the minesite. This requires a correctly coordinated management of soil material. In slope areas, for example, this soil material must primarily fulfil the requirements relevant for ensuring stability. If, for example, a subsequent agricultural use of backfilled areas is planned, the primary reclamation and thus recultivation objective is to restore soil fertility and soil functions as a habitat for plants and cultivation.

The objectives of reclamation and the measures to be taken and requirements to be met for this purpose are defined in lignite plans or the operating plans approved under mining law. Depending on the type of use, the topsoil used for restoration must be "cultivated" and the areas must be gradually looked after and developed.

a. **Agricultural rehabilitation** includes scientifically tested crop rotation with which the rehabilitation of the soil can be achieved. Once successful rehabilitation is complete, the areas are made available for their subsequent use and released from supervision by the mining inspection authorities.

b. **Rehabilitation through and for forestry** aims to establish mixed woodland with a variety of uses. Depending on site conditions, native species of trees dominate an effective mix of broad-leaved trees and conifers.

Elements to benefit nature are incorporated to support integrated and widespread nature conservation, e.g. planting native trees, including dead wood and other small structures, hedge planting, planting solitary trees, including wild fruit, creating dry biotopes and wet scrapes, retention of small unplanned areas and small areas of succession sites. This work is undertaken according to locally recognised methods and in close cooperation with the specialist nature conservation authorities. It will still be necessary to dewater the surface, build paths and contour the surface for optimum site restoration in order to facilitate functional use after extraction has finished.

Rehabilitation during the closing-down phase

Once the natural resources have been extracted, renaturation will be undertaken in accordance with the specification in the final operating plan. In the large majority of cases, a remaining lake exists at the end once opencast lignite mining has finished. The needs of future use after mining will be taken into account in the completion work, providing it has been agreed with future users before the mine was authorised. Underground coal mining has finally ceased in Germany since the end of 2018. After the cessation of hard coal extraction, a targeted withdrawal from the operating buildings takes place. Mechanical equipment, operating materials, pipelines and other operating equipment have to be dismantled and removed from the minesite. In addition, the isolation of mine fields and the backfilling of extraction holes may be necessary. Besides, waste must be disposed of properly. As a rule, the withdrawal from an underground minesite is followed by a rise in mine water. The mine water level must often be limited by removing excess water to avoid any risk to aquifers used to extract drinking water. This usually requires conversion work in mining shafts to be able to resume mine water extraction in due course to limit the rise in mine water.

Land used up for mining activities above ground shall also be properly reclaimed with due regard to the public interest. Here, too, operational facilities and equipment must be dismantled, provided that no other subsequent use is envisaged for them. If the result of a risk assessment indicates a need for remediation, any necessary remediation or safeguarding measures are planned and then implemented. Waste rock piles must also be made usable again so that they do no longer pose a danger even after filling of further material has stopped to enable a duly planned subsequent use.

Any temporary storage or outside heaps created during mining operations are removed or recultivated. Once checks have been carried out to ensure that the soil is safe, waste that had accumulated in heaps

since the start of mining is recultivated to form features such as landmarks and also to meet regional planning criteria.

b. Mining potash and salts

Potash and salts are natural resources mined in underground mines at depths of up to 1,500 metres. In contrast to above-ground extraction of natural resources in opencast mining, apart from the areas required for processing plant the mining of potash and salts does not take up large areas of the surface that would then require extensive rehabilitation of the surface used. For areas used for heaps of residues in potash mining, compensatory and substitution measures are implemented (e.g. reforestation, species protection measures). The heaps are established, operated and shut down (including possible rehabilitation) in line with the relevant requirements under mining and environmental law and taking the relevant site conditions into account.

c. Drilling boreholes for crude oil and natural gas

i. Restoration and recultivation of operating sites after drilling and extraction

Once the drilling phase that lasts between two and five months depending on the depth has been completed, the operating site is reduced in size. As only the borehole seal and a few items of plant to separate, collect and transport the extracted crude oil/natural gas remain there, the production equipment is barely visible or audible any more during the entire period of usage.

The deposit is depleted after 20 to 30 years on average. The plant is then removed, and the whole borehole filled up and sealed. The production and processing plant as well as the operating site including the seal are completely removed and the area used recultivated. Aquifers therefore remain protected in the long term and the area can be used again.[69]

d. Quarrying

Quarrying can be authorised both under mining law and outside mining law (as described here (cf. chapter 3.b). The regulations in the Federal Immission Control Act (BImSchG), Water Resources Act (WHG) and the Federal Nature Conservation Act (BNatSchG) are important for the extraction of natural resources which, as what are termed free-to-mine and privately-owned natural resources, do not come under mining law as defined by § 3 BBergG.

The provisions of these laws guarantee that the impact of the mining will be balanced out (see chapter 7.1). This means the operating licence is granted on the basis of planning and rehabilitation considerations or, expressed in other terms, authorisation to operate will not be granted unless provision has been made for the needs of nature conservation. A balance is achieved in the approval process between the interests of the extractive sector and the environment, both in respect of regional planning and plant approval. The groups that are to be consulted (citizens, elected representatives, sectoral authorities, environmental associations and chambers) are given various options to participate.

In general, the principle that the burden on the environment must be kept to the minimum and both land and soil must be carefully conserved applies to both

69 Bundesverband Erdgas, Erdöl und Geoenergie e.V. (German association for natural gas, petroleum and geothermal energy) (2021): Removal and recultivation of operating sites. URL: https://www.bveg.de/Erdgas/Umwelt-und-Sicherheit/Rueckbau-und-Rekultivierung (Accessed on 9 December 2022).

the planning and the operation of plants that require a licence. In addition to this the plant operator has an obligation to compensate for significant unavoidable impacts to nature and the environment through compensatory and substitution measures. In addition to the condition of the surfaces, the measures to take for shaping the surface in an individual case and also during the extraction phase depend on the future use of the site.

The companies in the sector temporarily intervene in nature and the landscape because of economic imperatives. A wide variety of habitats is already created during the active extraction phase, which we hardly ever find in our cultural landscape. Even after the end of extraction, these former extraction sites can still represent important refuges for rare animals and plants. Valuable biotopes may develop here after a short time.

For this reason, nature conservation concerns often dominate the subsequent use of quarrying areas. In general, the areas on which natural resources were extracted are upgraded through recultivation and renaturation and returned to society.

The companies encourage biodiversity as a result of cooperation with nature conservationists and targeted management measures. In 2004, the building materials industry affirmed its commitment at national level with a declaration together with the German Nature and Biodiversity Conservation Union (NABU), the industrial trade union for construction, agriculture and environment (IG BAU) and the industrial trade union for mining, chemicals and the energy trade (IG BCE). In addition to this, companies in the quarried natural resources industry are involved in the "Biodiversity in Good Company" corporate network; the German Building Materials Association – Quarried natural resources (bbs) is involved as the sector's umbrella organisation in the corresponding "Enterprise biological diversity" association network.

The bbs, in cooperation with its members in the extractive sector, are establishing a nationwide biodiversity database to document the contributions that the quarried natural resources sector is making to protect and conserve biodiversity.

7.3

EMPLOYMENT AND SOCIAL AFFAIRS

a. Employment in the natural resources sector

The extractive industry offers industrial jobs, with a variety of different professions and activities. At the end of 2020 over 63,000 persons[70] were employed in the extractive industry. This corresponds to around 0.19% of all employees in Germany who are subject to social insurance contributions. At around 61%, most of the employees worked in the quarried natural resources and other mining products sector, followed by services for mining and quarrying at around 17%.

Compared to the 2016 reporting period (1st D-EITI report), the sector employed about 5,600 fewer workers, mainly due to the phasing out of hard coal mining by the end of 2018.

Table 7: Employment under the mandatory social security scheme by economic sector

	Persons employed under the mandatory social security scheme as of the reporting date on 31 December 2020			No. of apprentices among these employees		
	Total	Men	Women	Total	Men	Women
Mining and quarrying in total, including:	**62,687**	**54,117**	**8,570**	*	*	*
Coal mining	9,804	8,423	1,381	553	473	80
Extraction of crude oil and natural gas	3,283	2,555	728	98	78	20
Ore mining	759	690	69	*	*	*
Quarried natural resources, other mining products	38,237	33,195	5,042	1,357	1,168	189
Services for mining and quarrying	10,604	9,254	1,350	267	229	38

Source: Federal Employment Agency (2022), reporting date: 31 December 2020.

* For reasons of data protection and statistical confidentiality, numerical values of 1 or 2 and data from which such numerical values can be mathematically deduced are made anonymous.

70 Federal Employment Agency 2020. Employment by economic sector (WZ 2008) – Germany, West/East and Federal States (quarterly figures) – December 2020. URL: https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular.html?nn=15024&r_f=ur_Deutschland&topic_f=beschaeftigung-sozbe-wz-heft&dateOfRevision=202012-202012 (Accessed on 15 June 2022).

Each direct job in the extractive industry is linked to further jobs in upstream and downstream economic sectors.[71]

b. The role of legislation

The German economic system is characterised by the interaction of free market activity and State social policy. However, a pronounced social partnership also exists – especially in the natural resources sector – and it can be used to balance existing differences of interest between employers and employees.

In principle, German legislation regulates a uniform (minimum) level of protection for employees (e.g., working hours, holidays, protection against dismissal, protective rights for young people, pregnant women and severely disabled persons, as well as safety and health at work, etc.,etc.). Above this level of protection and within the framework of their collective bargaining autonomy guaranteed by Article 9(3) of the German Constitution, the social partners are free to regulate working conditions independently for the particular company or the respective sector.

The statutory social security system provides protection against life risks such as unemployment, illness, the need for care, accidents, occupational disease and support in old age. Employees subject to social security contributions are covered by social insurance; self-employed workers are partially included in this protection. Social insurance benefits are mainly financed by equal contributions from employees and employers. One exception to this, however, is statutory accident insurance, which is financed exclusively by the employer. Tax revenue is also used for financing in some segments of social insurance. The insurance companies are self-governing and guarantee the participation of the social partners.

c. The role and cooperation of the social partners

i. Co-Determination

One of the main pillars of the social market economy in Germany is co-determination, i.e. the right of employees and their representatives to participate in operational or business decisions. The scope and form of co-determination differ according to the company's size, legal form and industry.

Corporate Co-Determination is most extensive in mining (Montan Co-Determination; Montan-MitbestG[72] [Coal and Steel Co-Determination Act] Montan-MitbestGErgG[73] [Supplementary Co-Determination Act]): In this case the supervisory boards are composed equally of shareholder and employee representatives. A labour director responsible for personnel and social matters is also appointed as an equal member of the management. Pursuant to the MontanMitbestG, his or her appointment is dependent on the approval of the majority of the employee representatives on the supervisory board.

For other companies which are managed in the legal form of a corporation and have more than 2,000 employees, the equal representation of employees and shareholders in the supervisory bodies also applies pursuant to the German Co-Determination Act (MitbestG). However, there are two important differences compared to Coal and Steel Co-Determination. If votes result in a tie, the vote of the Chair of the Supervisory Board, which is generally assigned to the shareholder, has the casting vote. This double vote held by the Chairman of the Supervisory Board effectively overrides the parity between employees and the employer that formally exists. In addition to this, the labour director can also be appointed to the

71 See, for example, DIW Econ (2022): Economic importance of the building materials, and quarrying industry including indirect and induced effects. A report by DIW Econ on behalf of the German Building Materials Association – Quarried Natural Resources, URL: https://www.baustoffindustrie.de/fileadmin/user_upload/bbs/Dateien/Studie_Volkswirtschaftliche_Bedeutung.pdf (Accessed on 23 November 2022).

72 Coal and Steel Co-Determination Act (MontanMitbestG). URL: https://www.gesetze-im-internet.de/montanmitbestg/MontanMitbestG.pdf (Accessed on 9 December 2022).

73 Supplementary Co-Determination Act (MontanMitbestGErgG). URL: https://www.gesetze-im-internet.de/montanmitbestgergg/MontanMitbestGErgG.pdf (Accessed on 9 December 2022).

Supervisory Board against the votes of the employee representatives. For companies with 500 to 2,000 employees, the 1/3 participation of employee representatives on the supervisory board applies (DrittelbG[74]).

Company Co-Determination is regulated in the Works Constitution Act. In every company in Germany with at least five employees, workers have the right to elect a works council. The works council represents the interests of all employees vis-à-vis the employer. It has different participation rights, especially in social, personnel and economic matters. A central instrument in works council work is company agreements, which – like collective agreements – are legally-binding agreements between the employer and the works council and regulate the employment relationship of the employees. Frequent topics are company regulations on working hours, data protection, health promotion, work safety and further training, all of which are tailored to the conditions prevailing in the company. However, the works council must also be involved in the introduction of new technical equipment and working procedures or the development of social plans in the case of planned changes in operations.

ii. Tariff commitment

Freedom of association and the right to collective bargaining are guaranteed in Germany by the German Basic Law in Art. 9 GG. Collective agreements are concluded by one or more employers or employers' associations with one or more trade unions. They are solely binding for their members (tariff commitment). However, it is common practice for employers bound by collective agreements to allow non-unionised employees to participate in the appropriate collective agreement by referring to individual collective agreements. Many companies that are not bound by collective bargaining agreements also orient themselves on existing collective agreements. In 2018[75] 28% of the natural resources sector companies[76] were bound by collective agreements; 26% by a regional collective agreement and 2% by a company collective agreement. However, the collective agreements only apply to 49% of the employees in the sector, with 41% being subject to the conditions of a regional collective agreement and 2% to those of a company collective agreement.

d. Training

The demanding activities of the extractive industry require well-trained specialist personnel. Approx. 72% of the employees have a recognised vocational qualification[77], another 11% have an academic qualification[78], e.g. in engineering.

Vocational training in Germany is essentially provided through the dual vocational training system, in which training takes place in parallel at two places of learning. The trainee concludes a training contract with the company and learns the necessary practical skills and competences on the job. The second pillar of the system is the vocational school, which provides general and job-related theoretical knowledge. The duration of the training depends on the profession involved and varies between 2 and 3.5 years. During this time, the trainee receives a training allowance from the company. The successful completion of the course qualifies the candidate to directly exercise his or her profession as a qualified specialist.

The industry trains personnel in a number of different trades, including mechatronics technicians, electronics technicians, industrial and process mechanics, processing mechanics, mining and machine operators,

74 One-Third Participation Act (DrittelbG). URL: https://www.gesetze-im-internet.de/drittelbg/BJNR097410004.html (Accessed on 9 December 2022).
75 Federal Office of Statistics (2018): Negotiated wages, tariff commitment. URL: https://www.destatis.de/DE/Themen/Arbeit/Verdienste/Tarifverdienste-Tarifbindung/_inhalt.html#sprg262570 (Accessed on 9 December 2022).
76 Federal Employment Agency (2020): Employees by economic sector (WZ 2008). Phase B.
77 The term "recognised vocational qualification" is the sum of "with recognised vocational training" and "master craftsman/technician/equivalent technical college degree".
78 The term "academic qualification" is the sum of "Bachelor", "Diploma/Magister/Master/State Examination" and "Doctorate".

mining technologists and industrial clerks. On the reporting date,[79] there were 2,300 trainees among the employees of the extractive industry. This is a training rate of 3.6%, which was below the German average of 4.8%. A look at the individual sectors reveals a relatively differentiated picture for the extractive industry. For example, training rates in the quarried natural resources industry vary from less than 2.5% to 6.3% (2020), because the importance of training occupations varies and the proportion of semi-skilled workers varies accordingly.

e. Earnings level

Gainful employment plays a central role both in social and individual terms. There is no doubt that work is seen as the main source of livelihood, and that earnings are the most important component of personal income for employees. The average gross monthly earnings of full-time employees in the sector in 2019 amounted to €4,159 per month, and an additional €471 was paid monthly in special payments.[80] The average monthly income in the extractive industry is thus a good 3.42% higher than the average in the manufacturing industry and a good 3.75% higher than the average income of full-time employees[81] in Germany as a whole. Due to the deductible income tax and the proportionate social insurance contributions to be paid, the individual net wages of employees are significantly lower than the gross wages.

The average paid weekly working time was 39.7 hours, which was relatively high compared to the manufacturing industry as a whole (37.2 hours).

The principle of equality between men and women applies in Germany. This principle also applies to wage determination and it means that gender pay gaps in particular must be further reduced. The Act on the Promotion of Pay Transparency between Women and Men (EntgTranspG) has been in force since 2017. This continues the principle of equal pay (equal pay for women and men for equal work and work of equal value) which is already standardised in the General Equal Treatment Act (AGG) and includes an individual right to information for employees, reporting obligations for large companies and the request to large private employers to carry out company audits of the pay structure. The average gross monthly earnings of women in the extractive industry was €4,187, which amounts to 91.6% of the male employees' earnings (€4,573) and is thus above the average ratio of 84.3% in the manufacturing industry as a whole.

f. Diversity and equal opportunities

Different life experiences and work horizons of employees make a significant contribution to the economic success of companies. By consciously promoting diversity, companies can tap into an important success and competitive factor that has a positive impact on both companies and their workforces.

Diversity can be measured by a number of quantitative indicators, such as the proportion of women in all workforces and management, the proportion of foreign workers and the age structure of the workforce.

In 2020, the proportion of women among employees in the sector who are subject to social insurance contributions was 13.7%. The proportion of foreign employees was 6.3% of the total staff.[82]

The proportion of female supervisory board members in the industry is very low at 10.7%. Only 4.4% of the board members of German extractive companies are

79 Federal Employment Agency (2020): Employees by economic sector (WZ 2008), reporting date: 31 December 2020.
80 Federal Office of Statistics (2020): Specialised publication 16, series 2.3. Earnings and labour costs. Employees' earnings 2020, p.6. URL: https://www.destatis.de/DE/Service/Bibliothek/_publikationen-fachserienliste-16.html (Accessed on 9 December 2022).
81 Ibid.
82 Federal Employment Agency (2020): Employees by economic sector (WZ 2008), reporting date: 31 December 2020

women. Compared to other sectors, the extractive industry must act to increase the proportion of women in the workforce and in management positions. It should be noted here that the employment structure in the extractive industry has traditionally been characterised by male-dominated technical training occupations and courses of study.[83]

At 60.8% the 25 to under 55 age group represented by far the largest proportion of the workforce, followed by the 55 to under 65 group at 30.7%. 7.4% of the employees were in the under 25 group, while 1.1% were over 65.

Equal opportunities are promoted in Germany by legal instruments such as the General Equal Treatment Act (AGG), which states that *"Discrimination on the grounds of race or ethnic origin, gender, religion, beliefs, disability, age or sexual identity must be prevented or [...] eliminated"*[84] both in working life and in civil law.

g. Climate policy and structural change

The Federal Government has committed itself to implement the climate goals of the Paris Agreement[85]. In support of this commitment, lignite production and coal-fired power generation in Germany will be phased out by 2038 at the latest, in addition to the cessation of hard coal production in 2018. The fall of the Berlin Wall brought profound changes to lignite mining in Germany's eastern regions; the workforce in the lignite coalfields in the east was drastically reduced at the start of the 1990s.[86] In order to find a socially just way to organise the decision to phase out coal and the associated structural change, one of the methods adopted by the Federal Government was to establish the Commission for "Growth, Structural Change and Employment"[87], which examined proposals on the organisation of the structural change in Germany from the point of view of energy and climate policy. The objective of the commission was to maintain and create new, good jobs in the regions concerned that were covered by collective agreements, to ensure a secure and affordable supply of electricity and heat at all times, and to maintain and further develop the coal-mining areas into regions that would remain habitable and attractive.

The subjects covered in the Commission's comprehensive dialogue were the requirements of climate policy, security of energy supply and competitiveness. This social consensus on the use of coal was confirmed in July 2020 by the German Bundestag and Bundesrat and was subsumed in the Act to Reduce and End Coal-Fired Power Generation (Kohleverstromungsbeendigungsgesetz – KVBG). A societal compromise was thus achieved. Coal mining and coal-fired electricity generation are usually located in structurally-weaker regions and account for a considerable proportion of industrial value added in these areas. One industrial job creates around two more jobs in the regional industry-related or services sector.[88]

The extraction of lignite through opencast mining influences the economic, ecological and social structure of the municipalities it directly affects as well as the municipalities in the coalfield adjacent to the opencast mine. The principle of the polluter

83 Federal Government (2019): Report of the Federal Government on the representation of men and women at management levels and in the supervisory bodies of the private sector and civil service. URL: http://dipbt.bundestag.de/doc/btd/18/133/1813333.pdf (Accessed on 9 December 2022).
84 §1 AGG. URL: https://www.gesetze-im-internet.de/agg/ (Accessed on 9 December 2022).
85 Paris climate change agreement. URL: https://www.bmuv.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/paris_abkommen_bf.pdf (Accessed on 9 December 2022).
86 Hauke Hermann, Katja Schumacher, Hannah Förster (Öko-Institut Berlin/Institute of Applied Ecology) on behalf of the German Federal Environment Agency (2018): Changes in employment of the lignite industry. URL: https://www.umweltbundesamt.de/sites/default/files/medien/3521/publikationen/2018-07-25_climate-change_18-2018_beschaeftigte-braunkohleindustrie.pdf. p.13 (Accessed on 9 December 2022).
87 Federal Ministry for Economic Affairs and Energy (2019): Final Report of the Commission for Growth, Structural Change and Employment. URL: https://www.bmwk.de/Redaktion/DE/Publikationen/Wirtschaft/abschlussbericht-kommission-wachstum-strukturwandel-und-beschaeftigung.html (Accessed on 9 December 2022).
88 See, for example, DIW Econ (2022): Economic importance of the building materials, and quarrying industry including indirect and induced effects. A report by DIW Econ on behalf of the German Building Materials Association – Quarried Natural Resources, URL: https://www.baustoffindustrie.de/fileadmin/user_upload/bbs/Dateien/Studie_Volkswirtschaftliche_Bedeutung.pdf (Accessed on 23 November 2022).

pays applies regarding the influence and use of infrastructures. The mining companies must organise and pay for compensation and also relocation and resettlement. Since the start of German lignite production in the early 1920s, 120,000 people have been relocated.[89]

Villages are still affected by resettlement. The owners of the affected areas are compensated by the companies for the resettlement. The same applies to property owned by the municipality. New municipal facilities are built in agreement with the municipalities affected. Rare cases of compensation for expropriation under mining law[90] are set out in law (Art. 14(3)3 GG in conjunction with § 84 ff. BBergG).

The amount of compensation payments are determined directly by the parties affected in the case of an agreement under private law; it is only in rare cases when expropriation/a surface lease is required that it is undertaken by the authorities after valuation by an expert. It can be examined by a court. The agreement on the path to phase out lignite influences the extension and adaptation of opencast mines. New buildings envisaged for infrastructure purposes can be dispensed with, if applicable.

The lignite coalfields[91] are being supported by the Structural Strengthening of Coal Regions Act[92] that came into force on 14 August 2020 so that the coalfields can still exist as successful economic areas and compensation is provided for the loss of employment (see chapter 8). The Federal Government has also made a legal commitment to create 5,000 jobs in federal authorities and other federal institutions in the coal regions until 2028.

The sites of the former hard coal power plants receive funding within the scope of the Structural Strengthening of Coal Regions Act. Here up to €1 billion is planned by 2038. In addition, the former lignite mining regions of Helmstedt and Altenburger Land will each receive €90 million.

The new "STARK" funding programme[93], which is not directed towards investments, is intended to support the objective of transforming the coal regions in an economically, ecologically and socially sustainable way and to make the coal regions model regions with an international profile for greenhouse-gas-neutral, resource-efficient and sustainable development (see also chapter 8).

In order to cushion the social impact of phasing out coal, the Federal Government followed the recommendations of the Commission for "Structural Change, Growth and Employment" and also introduced an adaptation payment for employees aged 58 years and older. The adaptation payment is paid for a maximum of five years and makes it easier for older employees to take early retirement. Details of the adaptation payment under the Act to Reduce and End Coal-Fired Power Generation (KVBG) were set out in separate adaptation payment guidelines of 3 September 2020 issued by the then Federal Ministry for Economic Affairs in agreement with the Federal Ministry of Labour and Social Affairs and the Federal Ministry of Finance.

89 Ministry of Economic Affairs and Energy (2019): Final Report of the Commission for Growth, Structural Change and Employment. URL: https://www.bmwk.de/Redaktion/DE/Publikationen/Wirtschaft/abschlussbericht-kommission-wachstum-strukturwandel-und-beschaeftigung.html (Accessed on 9 December 2022).

90 This is covered in the German Basic Law (Art. 14(3)): "Expropriation shall only be permissible for the public good. It may only be ordered by or pursuant to a law that determines the nature and extent of compensation. Such compensation shall be determined by establishing an equitable balance between the public interest and the interests of those affected. In case of dispute concerning the amount of compensation, recourse may be had to the ordinary courts."

91 Lusatian territory (Federal States: Brandenburg/Saxony), Central German territory (Saxony/Saxony-Anhalt/Thuringia), Rhenish territory (North Rhine-Westphalia), Helmstedt territory (Lower Saxony).

92 Structural Strengthening of Coal Regions Act (2020). URL: https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl120s1795.pdf#bgbl-%2F%2F*%5B%40attr_id%3D%27bgbl120s1795.pdf%27%5D1601384039076 (Accessed on 9 December 2022).

93 STARK means in German "Strengthening the transformation dynamics and start in the regions and sites with coal-fired power plants".

h. Corporate responsibility

German companies are closely integrated into global supply and value chains. As a result, they bear a special responsibility to address the conditions under which natural resources are mined and to combine economic success with social justice and ecological compatibility, not only on a national level but also internationally. This is particularly true in international mining, which can be associated with high human rights, social and environmental risks. Legislation, the Federal Government and companies are meeting these challenges at several levels.

The National Action Plan (NAP) of the Federal Government for the implementation of the UN Guiding Principles on Business and Human Rights contains a broad catalogue of measures for the protection of human rights. For the first time, the German government has also anchored the responsibility of German companies to respect human rights in the action plan.

On 11 June 2021 the Supply Chain Due Diligence Law (LkSG) was passed by the German Bundestag. The LkSG is closely aligned with the regulations in NAP and the core elements of corporate due diligence it contains. The LkSG is intended to protect human rights and improve certain environmental concerns in supply chains. From 2023 the law will apply to companies with 3,000 employees or more and from 2024 it will apply to companies with more than 1,000 employees with their registered office or branch office in Germany. In February 2022, the European Commission also presented the proposal for an EU directive on corporate due diligence with regard to sustainability.

For the first time, binding due diligence obligations for EU importers above certain thresholds of tin, tantalum, tungsten, their ores and gold (3TG) from conflict and high risk areas have now been introduced with the so-called Conflict Minerals Regulation (EU) 2017/821). The Regulation is aimed at preventing that the proceeds from the sale of these minerals are used to finance armed conflicts. It provides for numerous due diligence obligations with which importers of 3TG must comply from January 1, 2021. The national implementing law[94] that came into force on 7 May 2020 will ensure the effective application of the Conflict Minerals Regulation in Germany.

At the EU level, a directive on CSR reporting has existed since 2014, which is intended to increase transparency with regard to the environmental and social aspects of companies (Directive 2014/95/EU, Non Financial Reporting Directive). Accordingly, since the 2017 financial year, large public interest enterprises with more than 500 employees in Germany have been reporting, among other things, on their concepts for respecting human rights. In June 2022, the Commission's directive proposal for a Corporate Sustainability Reporting Directive was backed by those responsible. This means that the group of companies required to report on sustainability will be gradually expanded to include all large or capital market-oriented companies from the 2024 financial year onwards. Furthermore, for the first time, binding EU standards as well as mandatory auditing of the information to be reported have been defined. The directive is expected to enter into force in 2022.The EU Member States must transpose the Directive into their national laws within 18 months of its publication in the Official Journal of the EU.

An increasing number of initiatives for greater sustainability are also being introduced at industry level. For example, the Mining, Chemical and Energy industrial union and the Construction, Agriculture, Environment industrial union compiled a joint declaration on the sustainable use of natural resources

94 Act implementing Regulation (EU) 2017/821 of the European Parliament and of the Council of 17 May 2017 establishing supply chain due diligence obligations for Union importers of tin, tantalum, tungsten, their ores and gold from conflict and high risk areas (Mineral Resources Due Diligence Act - MinRohSorgG) (Accessed on 23 September 2022).

together with the German Building Materials Association and the German Nature and Biodiversity Conservation Union (NABU) in 2004.[95] The high priority given to employee training is addressed in addition to the most environmentally-friendly mining of natural resources and the strengthening of biodiversity and resource efficiency. Employees and employers are also jointly committed to more sustainability in the industrial processing of natural resources. For example, the social partners (trade unions and associations) in the German cement industry founded the "Zement verbindet nachhaltig" (Cement bonds sustainably) initiative as early as 2002. In addition to nature conservation and environmental protection measures, the main topics here include the safeguarding of domestic production, the economic interests of the companies and the social interests of the employees. The main objective of the sustainability initiative is to foster the dialogue between politics and society, as well as trade unions and employers.[96]

95 Naturschutzbund Deutschland e. V. (German Nature and Biodiversity Conservation Union), German Building Materials Association – Quarried natural resources e. V., Mining, Chemical and Energy (IG BCE) and the Construction, Agriculture, Environment (IG BAU) Industrial Trade Unions (2004): Joint declaration on the use of natural resources in Germany. URL: https://www.baustoffindustrie.de/fileadmin/user_upload/bbs/Dateien/gem-rohstoff-erklaerung.pdf (Accessed on 9 December 2022).

96 https://www.zement-verbindet-nachhaltig.de/

7.4

CIRCULAR ECONOMY, IN PARTICULAR RECYCLING

a. Significance

As an industrial nation, Germany is particularly dependent on the reliable availability of natural resources. The protection of natural resources, their economical use and the extraction of secondary natural resources[97] from waste or residues are highly important, not only for man and the environment, but also for German industry, which is dependent on imports for a number of natural resources it needs.

Particularly against the background of the increasing global demand for natural resources, but also the challenges posed by climate change, the focus is increasingly shifting to a circular economy in which the aim is to achieve closed natural resource cycles with as little material loss as possible as early as the product development stage.

The first legal foundations for waste disposal were already developed in some parts of the country at the beginning of the 19th century. The first uniform federal regulation was created in 1972 with the enactment of the Waste Disposal Act (AbfG).

b. Legal base

Environmental pollution, the scarcity of landfill sites in the 1980s and the growing realisation that materials and energy sources derived from nature are valuable resources have triggered the development of a modern recycling economy. This is largely shaped by the Recycling Management Act (KrWG), which is based on the EU Waste Framework Directive 2008/98/EC. An essential element of the KrWG is the so-called five-level waste hierarchy to be applied by waste owners and producers in the following order of priority: 1. Avoidance, 2. Preparation for reutilisation, 3. Recycling, 4. Other form of recovery – particularly energy recovery and backfilling, 5. Disposal.

One component of German waste legislation is the transfer of product responsibility to producers and distributors, who must ensure that the generation of waste is reduced from product development and production through to use and that environmentally-sound recycling or disposal procedures are in place.

The goal of a modern recycling economy is a sustainable use of recyclable materials and the decoupling of waste volumes from economic performance, preferably a reduction in waste volumes with increasing economic growth. This goes hand-in-hand with the protection of water, soil and the climate by avoiding e.g. climate-damaging gases from landfills and a reduction in greenhouse gas emissions and energy consumption through the use of recycled natural resources. In Germany, a ban on landfilling untreated municipal waste has been in place since 2005 in order to noticeably reduce the generation of climate-damaging gases from landfills.

The product responsibility for electric equipment will be developed further with the amendment of the Electrical and Electronic Equipment Act (ElektroG) and the re-adoption of the ordinance on requirements for processing old electric and electronic equipment, which comes into force on 1 January 2022. The Federal Government has now extended the existing obligation of retailers of electrical equipment to include the large discounters, supermarkets and other grocery retailers with a shop area of 800 m² or more. The collection network is going to be expanded, enabling consumers to dispose of old electrical and electronic equipment more easily and separating them from unsorted municipal waste at an early stage. The processing ordinance extended the existing requirements, which were essentially geared towards the targeted removal of pollutants and contaminated products from waste, to include the goal of resource conservation and thus the increased recovery of resource-relevant substances.

97 DNR (2022): glossary. URL: https://www.dnr.de/rohstoffpolitik-20/glossar/grundbegriffe/primaer-und-sekundaerrohstoffe/ (Accessed on 9 December 2022).

With the current re-adoption of the packaging law[98], which primarily came into force on 3 July 2021, further regulations will apply in addition to the existing system of extended manufacturer responsibility that already exists in relation to packaging. For instance, from 1 January 2023 the final distributor must offer multi-use packaging alternatives when placing on the market single-use food packaging and single-use beverage cups. In addition, a mandatory minimum proportion of recycled material is planned for certain single-use plastic drink bottles and an obligation to segregate collection of certain single-use plastic bottles, which it is intended will be achieved in particular by extending deposit schemes.

With the implementation of the amendment to the ordinance prohibiting single-use plastics (EWKVerbotV)[99] the distribution of certain single-use plastic products (e.g. cutlery, plates, drinking straws, takeaway packaging and polystyrene cups) is prohibited. The aim of the prohibitions is to help to manage plastics more sustainably along the value chain, to reduce throwing away waste carelessly and to combat pollution in the sea. The single-use plastic marking ordinance (EWKKennzV) also services these objectives. It is intended that this will help to further reduce the use of products made of single-use plastic. The EWKKennzV stipulates that single-use plastic products must be marked to indicate that, if the product is not disposed of in the proper way, it will have negative implications for the environment.

The regulations on exporting plastic waste from the EU were tightened as of 1 January 2021 through amendments to the European Waste Shipment Regulation. The changes stem from amendments to the Basel Convention adopted in May 2019 and amendments to an OECD decision adopted in September 2020. According to these amendments and decisions, the export of hazardous plastic waste and non-hazardous plastic waste that is more difficult to recycle from the EU to non-OECD countries is prohibited. Further restrictions apply to the export of non-hazardous plastic waste that is easily recyclable from the EU to non-OECD countries in accordance with Regulation (EC) No 1418/2007.

The new substitute building materials ordinance[100], as part of umbrella ordinance, stipulates requirements that apply nationwide and are legally binding regarding the production, quality assurance and the inclusion of mineral replacement substances in certain technical structures. Mineral substitute building materials within the scope of the ordinance include recycling building materials from construction and demolition waste, slag from metal production and ashes from thermal processes. The substitute building materials ordinance assists the aims of the circular economy. The aim is also to improve acceptance for using substitute building materials. This umbrella ordinance will enter into force on 1 August 2023.

c. Waste volume and recycling

The total gross waste generation in Germany was 414.0 million tonnes in 2020, slightly down from the previous peak in 2018 (417.2 million tonnes). Construction and demolition waste accounted for 229.3 million tonnes, slightly more than half of the total gross volume (approx. 55%). The volume of municipal waste, secondary waste (from waste treatment plants) at around 51.0 million tonnes and other waste, which comes mainly from production and industry, was considerably lower at around 47.3 million tonnes. Around 28.6 million tonnes of waste was generated from the extraction and processing of natural resources.

98 Law on implementing the requirements of the Single-Use Plastics Directive and the Waste Framework Directive in the packaging and other laws (dated 9 June 2021).
99 Ordinance prohibiting the placing on the market of certain single-use plastic products and products made from oxo-degradable plastic (EWKVerbotV) (dated 24 June 2021).
100 Ordinance on requirements to include mineral substitute building materials in technical structures (ErsatzbaustoffV) (dated 9 July 2021).

Around 338.5 million tonnes of waste were recycled in 2020, of which 290.2 million tonnes were material and 48.3 million tonnes energy-related waste.[101] In the last ten years the recycling rate for all waste has continuously increased, with a simultaneous increase of the waste quantity from 74.3% (2006) to 82% (2020).[102] The recycling rate measures the proportion (input) of the collected waste that is fed into a material or energy-related recycling process. The recycling rate, in other words, the proportion of waste recycled or prepared for reuse has remained constant over the last three years at around 70%.[103]

A new calculation method has been introduced with the amendment of the EU Waste Framework Directive. The recycling rate is no longer based on the quantity of waste sent to the recycling plants (input quantity) but instead how much material is actually recycled (output quantity, after screening out material that cannot be recycled). The recycling figures achieved according to the new procedure will only become gradually available.

Recycling involves processing waste so that the natural resources obtained can be used to produce new products, whereas products prepared for reuse by means of repairs and other methods are returned to be used for their original purpose. A comprehensive network of approx. 14,600[104] pre-treatment, treatment, sorting and processing plants has been established in Germany for the recycling and, in particular, material recovery of waste. The network includes soil treatment plants, building rubble processing plants, sorting and dismantling plants (inter alia) in addition to chemical-physical, biological and mechanical treatment plants.

d. Examples of recycling and usage rates[105]

In 2020, 91.4 per cent of tinplate from private final consumption was recycled in Germany. The recycling rate for total tinplate consumption has also been stable around 90% since 2006.[106] Around 15.8 million tonnes of steel scrap were used in steel production in 2020. This corresponds to a usage rate of 44.3%.[107] In 2020, around 2.25 million tonnes of non-ferrous metals (such as copper, aluminium, zinc, bronze, lead, brass) were produced. Of this, around 1.04 million tonnes were secondary metals, corresponding to a share of around 46.3%.[108]

Aluminium recycling rates range from 90% to 95% depending on the sector. The energy usage for the recycling of aluminium is up to 95% lower compared to primary production.[109] In 2020, the usage rate was approx. 51%.[110] The recycling rate for copper is about 45%. In copper production around 44% of recycled copper[111] is used.

101 For the purposes of this Act, material recovery shall mean any recovery operation other than energy recovery and processing into materials intended for use as fuel or other means of energy production. Material recovery includes, in particular, preparation for reuse, recycling and backfilling (§ 3(23a) KrWG). Energy-related recovery, on the other hand, means the preparation of waste for thermal recovery by means of incineration. However, a portion of the waste is also incinerated to dispose of it.

102 Destatis (2022): Waste Balance 2020. URL: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/Abfallwirtschaft/Publikationen/Downloads-Abfallwirtschaft/abfallbilanz-pdf-5321001.pdf?blob=publicationFile (Accessed on 9 December 2022).

103 Destatis (2022): Waste Balance 2020.

104 Federal Association of the German Waste Disposal, Water and natural resources Industry (BDE) (2020): Status report of the German recycling industry 2020 (Statusbericht der deutschen Kreislaufwirtschaft 2020). URL: https://www.bde.de/themen/statusbericht-kreislaufwirtschaft/ (Accesssd on 9 December 2022).

105 The recycling rate (calculated on the basis of the weight of waste sent to recycling facilities) differs from the usage rate (which is the percentage of materials actually recycled and their actual use in production).

106 Trade association for scrap, e-scrap and vehicle recycling (bvse) (2022): Recycling News. URL: https://www.bvse.de/schrott-elektronikgeraete-recycling/nachrichten-schrott-eschrott-kfz/8234-weissblechverpackungen-aus-privatem-endverbrauch-zu-91-4-prozent-stofflich-recycelt.html (Accessed on 9 December 2022).

107 Steel and steel scrap foreign trade association: Statistical Report 2021. URL: https://www.stahl-online.de/wp-content/uploads/2111-Statistischer-Bericht-Stahlschrott.pdf (Accessed on 23 September.2022)

108 Metal Trade Association (Wirtschaftsvereinigung Metalle) (2020): Metal Statistics 2020. URL: https://www.wvmetalle.de/presse/alle-publikationen/artikeldetail/?tx_artikel_feartikel%5Bfile%5D=e4ce262942322d1d9c622a02d74ca25da153e069&tx_artikel_feartikel%5Bsrc%5D=7990&tx_artikel_feartikel%5Baction%5D=download& (Accessed on 9 December 2022).

109 General Association of the Aluminium Industry: Recycling from the outset. URL: https://www.aluminiumdeutschland.de/themen/nachhaltigkeit-und-recycling/ (Accessed on 9 December 2022).

110 Metal Trade Association (Wirtschaftsvereinigung Metalle) (2020): Metal Statistics 2020.

111 Federal Institute for Geosciences and Natural Resources (BGR) (2021): Natural Resources Situation 2020. URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2020.pdf?blob=publicationFile&v=4%20/ (Accessed on 9 December 2022).

Paper and glass also have high recycling and usage rates while the recycling of plastics still requires additional efforts:

- Paper/paperboard/cardboard, which is mainly collected separately, achieves a recycling rate of almost 100%.[112] The usage rate of recovered paper is 79%.[113] Recycling saves primary natural resources such as wood, kaolin and lime, but also water and energy. However, paper is not infinitely recyclable, since the fibres become progressively shorter during recycling so that every time this happens new fibres have to be added to the process.

- In the case of glass collection, the recycling rate also amounts to almost 100%1[14].Today, every glass packaging unit consists of up to 60 % recycled glass, and for green glass the usage rate is as high as 95%.[115] The recovery of the glass reduces the demand for the primary natural resource which is quartz sand.

- In 2020, a total of 60.6% of the packaging plastics collected via the dual systems were recycled[116]. Around 46.6% of the plastic waste (2.93 million tonnes out of 6.28 million tonnes) went into the material recycling process in 2019, the remainder was either recycled for energy purposes or dumped.[117]

- In 2020 the recycling rate for old electric devices was 86.7% and the utilisation rate was 100%. [118]

However, in 2020 only 44.1% of old electric devices that had been marketed were actually collected. In order to increase this quantity and to achieve the collection rate of 65% set by the EU from 2020[119], the Federal Government extended with the amendment to the Electrical and Electronic Equipment Act the existing obligation of retailers of electrical equipment to include the large discounters, supermarkets and other grocery retailers with a shop area of 800 m² or more. As a result, the collection network is going to be expanded, enabling consumers to dispose of old electrical and electronic equipment more easily and separate them from unsorted municipal waste at an early stage.

In the building sector, around 90% of the non-hazardous mineral construction and demolition waste generated is recycled in an environmentally sound manner. The processing of mineral building waste enabled the manufacture of 73.3 million tonnes of recycled building materials. Of these 51.3% were used in road construction, 22.2% in earthworks, 4.9% in other applications (mainly landfill construction) and 21.6% as aggregates in asphalt and concrete production.

The building and waste disposal industry thus makes an important contribution to a sustainable and resource-efficient society. Thanks to the collection, sorting and material-based and energy-related recycling of waste, this industry not only fulfils an important ecological function, it also supplies our economy with natural resources. Overall, it now supplies a sixth

112 Destatis (2022): Waste Balance 2020.
113 German Federal Environment Agency (UBA) (2022): https://www.umweltbundesamt.de/daten/ressourcen-abfall/verwertung-entsorgung-ausgewaehlter-abfallarten/altpapier#vom-papier-zum-altpapier (Accessed on 23 September 2022).
114 Destatis (2022): Waste Balance 2020.
115 Ministry for Economic Affairs and Energy (2020): Energy transition in industry. Potential and interactions with the energy sector. Glass industry fact sheet. URL: https://www.bmwk.de/Redaktion/DE/Downloads/E/energiewende-in-der-industrie-ap2a-branchensteckbrief-glas.pdf?blob=publicationFile&v=4 (Accessed on 9 December 2022).
116 Stiftung Zentrale Stelle Verpackungsregister: Recycling Rate Analysis 2018-2020. URL: https://www.verpackungsregister.org/fileadmin/Auswertungen/ZSVR_Auswertungen_Recyclingquoten_2018_-_2020.pdf (Accessed on 23 September 2022).
117 German Federal Environment Agency (UBA) (2022): Plastic waste. URL: https://www.umweltbundesamt.de/daten/ressourcen-abfall/verwertung-entsorgung-ausgewaehlter-abfallarten/kunststoffabfaelle (Accessed on 9 December 2022).
118 Destatis (2022): 11.2% more WEEE recycled in 2020. URL: https://www.destatis.de/DE/Presse/Pressemitteilungen/2022/02/ PD22_058_321.html#:~:text=Die%20Recyclingquote%2C%20also%20der%20Anteil,%2C2%20%25%20mehr%20als%202019 (Accessed on 23 September 2022).
119 German Federal Environment Agency (UBA): Electrical waste: Germany fell just below the EU collection rate of 45%. URL: https://www.umweltbundesamt.de/presse/pressemitteilungen/elektroschrott-deutschland-verfehlt-eu-sammelquote (Accessed on 9 December 2022).

of the natural resources needed in Germany.[120] The recycling industry also contributes significantly to Germany's economic performance. It provides jobs for around 310,000 employees in nearly 11,000 municipal and private companies and has a turnover of around €85 billion. The gross value added amounts to €28 billion.[121] The substitution of primary raw materials with secondary raw materials is also associated with significant savings in energy consumption, for example.[122]

e. Future challenges/Outlook

Germany has made a number of efforts to better close material cycles and to manage resources more sparingly. Nevertheless, there are several areas where there is potential for improvement.

For example, it is mainly the heavy, easily-recoverable natural resources and bulk metals such as iron, steel, copper, aluminium and very valuable precious metals that are recycled. In addition to the economic benefits, this is also due to the systematic nature of the existing recycling rates, which contribute to neglecting the recovery of low-concentration special elements. There is a need for action and catching up, particularly with regard to the strategically-important natural resources that are needed for new developments, the extraction of which can be problematic from ecological and human rights standpoints.[123] They are partially used in very small quantities in e.g. electrical appliances, mobile phones, computers, solar panels and circuit boards. Recovery is often not yet economically feasible, even if it is sometimes technically possible and in some cases ecologically sensible. The aim must be to continue to foster research and development and, above all, to ensure that new processes and technologies come onto the market.

A very resource-intensive sector of the economy is the building and construction sector. In terms of quantity, not only is the consumption of natural resources very high here, but the largest and most relevant waste streams can be found in this sector. Although more than 90% of these quantities are already recycled today, this type of recycling is usually not a high-grade recycling, but a use in landfill construction, for backfilling excavations or as a substructure in road construction. Gypsum-based construction waste is even predominantly dumped in landfills, although gypsum is particularly well suited for use in a closed material cycle. Overall, the opportunities for higher-value use of construction waste, e.g. as an aggregate material for concrete in building construction, are thus hardly used; there is still potential for development here.

In the coalition agreement, the coalition partners have undertaken to promote the circular economy as an effective climate and resource protection, opportunity for sustainable economic development and jobs. In this context, the goal of reducing primary raw material consumption and creating closed material cycles was agreed. To this end, the existing legal framework is to be adapted, clear goals must be defined and waste legislation reviewed. Furthermore, existing natural resources policies are to be bundled in a "National Circular Economy Strategy". The National Circular Economy Strategy (NKWS) is to be developed in a broad discussion process within the Federal Government, with social stakeholders and the scientific community. This process is supported by a research project. The dialogue process with broad stakeholder involvement is to start in spring 2023 and the strategy is to be adopted in 2024. The natural resources strategy and the circular economy strategy should be closely interlinked and complement each other. The natural r esources strategy supports companies in ensuring a

120 German Building Materials Association – Quarried natural resources (2016): Study "The demand for primary and secondary natural resources of the quarried natural resources industry until 2035 in Germany" URL: https://www.baustoffindustrie.de/fileadmin/user_upload/bbs/Dateien/2016-04-07_BBS_Rohstoffstudie.pdf (Accessed on 9 December 2022).
121 BDE (2020): Status report of the German recycling industry 2020.
122 German Federal Environment Agency (UBA) (2019): Material flow-oriented determination of the contribution of the secondary raw materials industry to the conservation of primary raw materials and the increase of resource productivity. URL: https://www.umweltbundesamt.de/sites/default/files/medien/1410/publikationen/2019-03-27_ texte_34-2019_sekundaerrohstoffwirtschaft.pdf (Accessed on 9 December 2022).
123 These include the 17 metals of the rare earth group such as neodymium, but also conflict raw materials such as tin, tantalum (coltan), tungsten or even platinum and lithium.

secure, responsible and sustainable supply of natural resources, including the use of secondary resources. Besides, it should be examined whether supporting or supplementary financing instruments can secure demand for recycling natural resources and bring these technologies to the market in a timely manner through suitable investments.

The EU's Circular Economy Package of 2018, as well as the design of the Commission's 2020 Circular Economy Action Plan, oblige the member states to take many other measures to strengthen the waste hierarchy and the circular economy. For example, member states must take measures to promote the re-utilisation of products. The availability of spare parts, operating manuals and technical information is also to be improved.

8

EFFECTS OF ENERGY TRANSITION AND THE STRUCTURAL CHANGE ON THE EXTRACTION OF NATURAL RESOURCES IN GERMANY

Climate change sets tremendous challenges for actors globally in the fields of politics, industry and civil society. In view of international and national plans to reduce emissions of greenhouse gases that are harmful to the climate, the extractive sector must make an important contribution to achieving the target of climate neutrality. The energy transition will have a considerable influence on the demand for and sale of coal, oil and gas and will start or accelerate a structural change in these industries. Parallel to this, natural resources for climate-neutral technologies, renewable energy, electrical mobility and hydrogen are seeing increasing demand.

The Federal Republic of Germany is bound by various international benchmarks to cope with climate change. In the Paris Agreement of 2015 the world community came to a legally binding agreement for the first time to limit global warming as far as possible to 1.5° Celsius compared to temperatures in pre-industrial times. The European Union has also set specific targets with the European Green Deal ("European Climate Law"). The element at the core of all agreements is a massive reduction in greenhouse gases.

In order to meet these obligations, Germany is pursuing a national climate policy that has resulted in a series of laws being passed over recent years. The German Federal Climate Protection Act of 2019 and 2021[124] sets specific annual reduction targets for greenhouse gas emissions and has set the objective of being climate neutral[125] by 2045. The "German Coal Phase-Out Act"[126] of 2020 governs the ending of coal mining and coal-fired generation by 2038. At the start of 2021, Germany set up its own national emissions trading system to put a price on fossil greenhouse gas emissions to run alongside the European emissions trading scheme that has been in existence since 2003.

This chapter takes a closer look at some of the laws that apply in Germany for improving climate protection, the status of renewable energies and the rise in demand for metal and mineral natural resources. Activities and measures are also described that have been undertaken in Germany to tackle the challenges of the energy transition and structural change in relation to the extraction of natural resources.

a. Legal base

i. German Federal Climate Protection Act

The German Federal Climate Protection Act, a new law introduced in 2019, sets the legal framework for climate policy in Germany. It sets out German climate targets in law and includes a mechanism for monitoring and adjustment to meet the climate protection targets.

On 24 June 2021 the German Bundestag passed new and ambitious climate protection targets with the amendment to the German Federal Climate Protection Act (in force since 31 August 2021) with the aim of achieving net greenhouse gas neutrality in Germany by 2045. As interim targets, greenhouse gas emissions are supposed to be reduced by at least 65% by 2030 based on 1990 levels and by a minimum of 88% by 2040. In addition, it is intended that the land use, land use change and forestry (LULUCF) sector will gradually become a reliable carbon sink for 25 million tonnes a year by 2030 and 35 million tonnes of CO_2 equivalents by 2045.On the way to 2030 the German Federal Climate Protection Act specifies permissible annual

124 Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2022): German Federal Climate Protection Act URL: https://www.bmuv.de/pressemitteilung/novelle-des-klimaschutzgesetzes-beschreibt-verbindlichen-pfad-zur-klimaneutralitaet-2045/ (Accessed on 9 December 2022).

125 Climate neutrality or greenhouse gas neutrality (which is a more precise term for what is generally called climate neutrality) means no longer changing the atmosphere and thus the earth's climate system after a certain point as a result of emitting greenhouse gases. To achieve this, either the emission of greenhouse gases is reduced as a result of largely avoiding products and actions that will produce high emissions or greenhouse gases already emitted will be removed from the atmosphere through compensating projects. These include, for example, the selective extension of natural ecosystems that absorb CO_2 (forests or peat bogs).

126 German Coal Phase-Out Act (KohleAusG). URL: https://www.gesetze-im-internet.de/kohleausg/BJNR181800020.html (Accessed on 5 October 2022).

emission levels for the energy, industry, building, transport, agriculture and waste management sectors. In the course of the amendment, the trajectory for reducing emissions in these sectors has been made more stringent. The energy and industry sectors are being required to shoulder most of the additional reductions.

The German Federal Climate Protection Act provides for a checking and adjustment mechanism for complying with the permissible annual emission levels. On 15 March each year, the German Federal Environment Agency publishes the emissions data on the previous year's greenhouse gas emissions. These are checked by the expert council for climate issues. If a sector exceeds the annual emission level, the department largely responsible for the relevant sector must submit an emergency programme to balance out the emission level that has been exceeded and ensure that the emission levels in the subsequent years will be complied with. The Federal Government then decides on the measures to be taken in the relevant sector or in other sectors concerned or on cross-sector measures.

The building sector and the transport sector exceeded the annual emission levels permitted in the Federal Climate Protection Act by 2 million tonnes and 3 million tonnes CO_2 equivalents respectively in 2021. In accordance with the requirements of the Federal Climate Protection Act, the departments responsible for the building sector, the Federal Ministry for Housing, Urban Development and Building and the Federal Ministry for Economic Affairs and Climate Action, submitted an emergency programme in the building sector on 13 July 2022. The Federal Ministry of Digital and Transport also presented an emergency programme for the transport sector on 13 July 2022.

The respective annual emission levels for 2021 in all other sectors fell below the threshold.

In order to achieve the more stringent climate targets set out in the amended Federal Climate Protection Act, additional climate protection measures are required in all sectors. The German government is currently agreeing on a comprehensive emergency climate protection programme that will cover all sectors and will be adopted as soon as possible. The emergency programmes submitted for the transport and buildings sectors pursuant to § 8 of the Federal Climate Protection Act are included in the ongoing consultations.

In July 2022, the German parliament launched a comprehensive package of measures to improve planning and approval procedures for onshore wind energy. For example, the Renewable Energy Act stipulates that the use of renewable energies is in the overriding public interest and serves public safety. Furthermore, the "Act to Increase and Accelerate the Expansion of onshore Wind Turbines" was passed as a central building block in the further acceleration of the expansion of onshore wind energy. This act amends the Wind Energy Area Requirements Act (WindBG) and the Building Code, among other things. The main content of this act is the legal implementation of the coalition agreement that provides for 2-percent of the area of Germany being reserved for onshore wind energy. In addition, the amendments to the Federal Nature Conservation Act standardised and simplified the species protection assessment of onshore wind turbines in the approval procedure.

ii. National Allowance Trading for Fuel Emissions

Europe-wide CO_2 pricing has already existed for the energy sector, energy-intensive industries and internal European air transport since 2005 with the European emissions trading system. The areas of heating and transport have not been covered to date. This changed on 1 January 2021 with the introduction of

national fuel emissions trading in accordance with the Fuel Emission Trading Act (BEHG). BEHG requires companies that distribute fuels (heating and fuels) to acquire emissions allowances and to submit these by 30 September of the following year. The costs are passed on in the usual way along the supply chain. The CO_2 price has the effect of steering the choices of end users, as the rising prices make climate-friendly alternatives increasingly attractive.

The legislator has planned a fixed-price system for the introductory phase. The aim is that citizens and business can gradually adjust to the CO_2 price when provided with a rising but reliable price trajectory. Parallel to this, a trading platform is being established which allows certificates to be auctioned and trading. Whereas one emissions certificate cost €25 in 2021, companies will have to pay €55 per certificate as early as 2025. From 2026 it is intended that the certificate price will always be formed by the market, although a price corridor of €55 to €65 per emissions certificate is planned for 2026. On 3 September 2022, as part of the Federal Government's package of measures to secure an affordable energy supply and strengthen incomes, the coalition committee decided on a CO_2 price relief from 1 January 2023, for the purpose of which the CO_2 path under the BEHG is to be adjusted before the end of 2022.

The intention is as far as possible to balance out situations where national fuel emissions trading results in competitive disadvantages for German companies (called carbon leakage). The BECV (ordinance on measures to avoid carbon leakage through national fuel emissions trading) adopted by the Federal Government provides relief for companies affected and entitled to state aid in the form of financial compensation but in exchange it requires them to invest in climate change mitigation measures.

From 1 January 2023, the financing of renewable energies will be completely changed. The EEG levy will be permanently abolished with the Energy Financing Act and the financing needs of renewable energies will be covered by payments from the Federal Government from the Climate and Transformation Fund (KTF). This results in a lower electricity price for both citizens and industry. The long-distance commuter allowance will be raised from part of the revenue (initially planned from 2024, brought forward to the period 2022 to 2026 by the Tax Relief Act 2022 (Federal Official Gazette I p.749). The aim is to design fuel emissions trading to include social responsibility as a result of this and further measures such as increasing housing benefit.

iii. German Coal Phase-out Act

The Act to Reduce and End Coal-Fired Power Generation and Amend further Laws (Coal Phase-Out Act) came into force on 14 August 2020.[127] The Coal Phase-Out Act is a so-called article or shell law, i.e. a law that enacts or amends several laws at the same time, including sometimes different areas of law. The key regulations for the German coal phase-out can be found in the Act to Reduce and End Coal-Fired Power Generation (KVBG) as part of the Coal Phase-out Act. The adoption of the Coal Phase-out Act was complemented by amendments to further energy industry regulations – such as the Energy Industry Act, the Energy Act, the Greenhouse Gas Emissions Trading Act, the Renewable Energy Act, the Combined Heat and Power Act, etc. The KVBG aims to gradually reduce coal-fired electricity generation in Germany as steadily as possible and in a socially responsible way, ending it by 2038 at the latest. This will result in reduced emissions. The aim is to continue to provide a reliable, cost-effective, efficient, low-carbon supply of electricity to the general public. The legislative

127 Act to Reduce and End Coal-Fired Power Generation (KVBG). URL: https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl120s1795.pdf#bgbl%2F%2F*%5B%40attr_id%3D%27bgbl120s1818.pdf%27%5D1601384424365 (Accesed on 9 December 2022).

package contains regulations to reduce and end electricity generation using hard coal and lignite, to continuously check security of supply, to cancel any CO_2 certificates that become free, authorisation to provide compensation for electricity users in the event that the electricity price increases as a result of phasing out coal and adaptation payments for older employees in the coal sector (see chapter 6). In order to compensate for the falling coal-fired power generation, the target is to expand renewable energy to 65% in 2030. In addition to this, support for combined heat and power is being extended to promote the changeover to flexible and greener electricity supplies.[128]

Electricity generation using hard coal will be reduced between 2020 and 2026, initially in stages through competitive tendering for hard coal plants involved in the electricity market. In the tender procedure the plant operators state a bid price at which they are willing to cease using coal to power their plant. By participating in the competitive process, plant operators receive appropriate financial compensation for phasing out hard coal. Small lignite plants up to 150 megawatts (MW) can take part in the tender procedures as well. The target data in 2022 (in each case 15 Gigawatt (GW) of hard coal and lignite), 2030 (8 GW hard coal, 9 GW lignite) and 2038 (zero GW) is to be achieved through this. Through this process the possible maximum price per reduced MW falls from €165,000/MW (2020) to €89,000/MW (2026). Should the reduction targets set by law for hard coal capacities not be achieved, the tender from 2024 onwards will be backed up by regulatory frameworks. From 2027 closures of hard coal workings will be exclusively on the basis of regulatory frameworks.

On 25 November 2020 the European Union gave its approval under state aid rules with regard to the legal arrangements to reduce and end electricity generation using hard coal.[129] To reduce and end electricity generation in Germany from lignite, the KVBG specifies a binding plan to shut down lignite workings. It includes, among other things, binding data on shutting down the mines and arrangements for compensating the operators of the closed lignite mines. According to this, RWE receives €2.6 billion and LEAG receives €1.75 billion[130]. The statutory regulations are supported by a contract under public law[131] in that lignite operators undertake – among other rules – to close all power plants and also to do so in a socially responsible way. The time when the individual lignite power plants will close is spread out between 2020 and 2038 as set out in Annex 2 of the Act to End Coal-Fired Power Generation, (KVBG). The contract also contains arrangements stipulating how to use the compensation payments to cover the follow-on costs of opencast mining and to safeguard these as well as comprehensive waiving of legal remedies by operators of lignite plants. In the Lausitz coalfield, the compensation payments are paid to special purpose vehicles that were set up in the course of precautionary agreements between the lignite operator and the Federal State of Brandenburg and Saxony (see chapter 7.1). From 2025 onwards, the annual compensation instalments attributable to the respective special purpose entity are to be paid into the special purpose entities by the Federal Government. LEAG's payments in the years 2021 to 2024 can already be partially reimbursed by the Federal Government.

The European Commission checks the appropriateness of the compensation payments to the operators

128 Federal Ministry for Economic Affairs and Energy (2020): Key components of the German Coal Phase-Out Act. URL: https://www.bmwk.de/Redaktion/DE/Downloads/J-L/kerninhalte-kohleausstiegsgesetz-strukturstaerkungsgesetz.pdf?blob=publicationFile&v=8%20((Accessed on 9 December 2022).
129 After the authorisation under state aid legislation, the tendering system will be adapted in future which relates to 2027. It is planned that the last tendering round will not take place in 2027 in order to ensure that there is a consistently high level of competition for the tenders.
130 There is no publicly accessible information to calculate the compensation sum.
131 Federal Ministry for Economic Affairs and Energy (2020): Contract under public law to reduce and end electricity generation in Germany from lignite. URL: https://www.bmwk.de/Redaktion/DE/Downloads/M-O/oeffentlich-rechtlicher-vertrag-zur-reduzierung-und-beendigung-der-braunkohlever-stromung-entwurf.pdf?blob=publicationFile&v=4 (Accessed on 9 December 2022).

of lignite power plants and their special purpose vehicles in a main examination proceeding under state aid legislation. These proceedings were opened on 7 May 2021. The purpose of the proceeding is to obtain greater legal certainty for all those involved. Examination by the European Commission does not suspend in any way the implementation of the agreed trajectory for shutting down the power plants. The European Commission has jurisdiction over the proceedings.

In 2019, Lausitz Energie Bergbau AG established the special purpose vehicles named above in Brandenburg and Saxony – "Lausitz Energie Vorsorge- und Entwicklungsgesellschaft Brandenburg mbH" (LEVEB)[132] and "Lausitz Energie Vorsorge- und Entwicklungsgesellschaft Sachsen mbH" (LEVES)[133].

All the shares in LEVEB were pledged to the State of Brandenburg on 12 December 2019. According to its own information, Lausitz Energie Bergbau AG (LEAG) contributed the full base amount of €102.9 million to LEVEB as of 30 June 2021.[134]

The payments to the Saxon company LEVES planned for the years 2019 to 2021 have been made as scheduled. According to its own information, Lausitz Energie Bergbau AG (LEAG) contributed the full base amount of €110.7 million to LEVES as of 30 June 2021.[135] The pledge of company shares to the Free State of Saxony made in January 2020 remains in place.

iv. Structural Strengthening Act

The end of coal-fired power generation also means the end of coal mining in Germany. Whereas hard coal mining finished in Germany on 31 December 2018 (see chapter 6) and the power plants using hard coal that still exist operate with imported coal, lignite power plants are exclusively operated using domestically mined lignite. According to the plan to shut down mines set out in the Coal Phase-Out Act, this mining will be reduced and will have finished by 2038. In order to mitigate the consequences of phasing out coal-fired electricity generation and to encourage economic growth in the regions affected by the phasing out of coal, the Structural Strengthening of Coal Regions Act (Structural Strengthening Act) came into force at the same time as the Coal Phase-Out Act was passed. To support structural change, until 2038 the lignite regions are receiving financial help of up to €14 billion for especially significant investments by the Federal States and municipalities. In addition, the Federal Government supports the regions through further measures under its own responsibility with up to €26 billion until 2038.

Furthermore, structurally weak regions with hard coal-fired power plants where hard coal has a great economic significance receive up to €1 billion of additional support.

b. Renewable energies

i. Renewable Energies in Germany

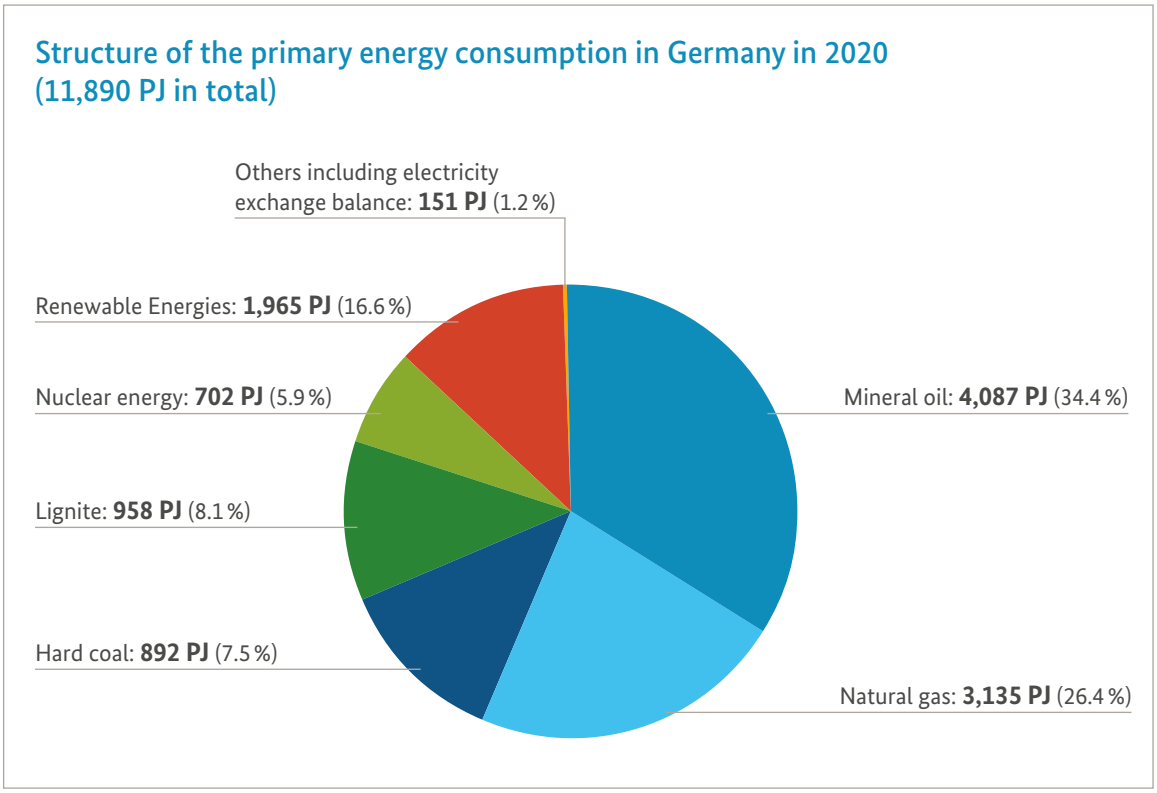
Renewable energies[137] make a large and growing contribution to Germany's energy supply. In 2020, the share of renewable energies amounted to 16.6% of total primary energy.

132 State Office for Mining, Geology and Natural Resources, Brandenburg (2022): Precautionary agreement. URL: https://lbgr.brandenburg.de/lbgr/de/aktuell/buergerinfor- mationen/vorsorgevereinbarung/# (Accessed on 9 December 2022).
133 Precautionary agreement between LEAG and the Free State of Saxony. URL: https://www.oba.sachsen.de/kohleausstieg-4084.html (Accessed on 9 December 2022).
134 Cf: https://www.leag.de/de/news/details/vorsorgevereinbarung-mit-brandenburg-aktualisiert/ (Accessed on 12 December 2022).
135 Cf: https://www.leag.de/de/news/details/vorsorgevereinbarung-mit-sachsen-aktualisiert (Accessed on 12 December 2022).
136 Structural Strengthening of Coal Regions Act. URL: https://www.bgbl.de/xaver/bgbl/start.xav?startbk=Bundesanzeiger_BGBl&jumpTo=bgbl120s1795.pdf#bgbl%2F%2F*%5B%40attr_id%3D%27bgbl120s1795.pdf%27%5D1601384039076 (Accessed on 9 December 2022).
137 Source for the figures mentioned in section 8b: BMWK (2020): Renewable energies in figures, national and international development in 2020. URL: https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/Berichte/erneuerbare-energien-in-zahlen-2020.html (Accessed on 20 June 2022).

The proportion in the electricity sector is especially high. 45.3% of gross electricity consumption is covered by renewable sources (250,157 GWh). The Federal Government has set itself the goal of increasing the share of electricity produced by renewable energy at 80 % in 2030 and to almost completely decarbonise the energy supply by 2050 and thus to reduce greenhouse gas emissions. In 2020 around 83.9% of greenhouse gas emissions (601.7 Mt CO_2 equivalents) could be attributed to the combustion of fossil energies.

Fossil-fuelled power plants are currently needed (in addition to renewable energies) to meet energy requirements in Germany. The technologies of renewable energy plants require steel, cement or petrochemical raw materials as the following example shows: The components of a wind turbine consist of roughly 45% crude oil and petrochemical industry products. One wind turbine blade can be 30 to 50 metres long in large wind turbines and it contains up to 12 tonnes of petrochemical products.

Chart 9: Structure of the primary energy consumption in Germany in 2020



Source: Working Group on Energy Balances April 2022 and AGEE-Stat. of February 2022. For detailed source information see final note [viii].

Some of the metals required for the energy transition (e.g. indium, germanium and gallium) are additional natural resources, i.e. they are obtained as by-products during the extraction of a different metal. In the case of these metals, the regulatory mechanisms for the supply of natural resources only function to a limited extent. In Germany and Europe, potential deposits like this do exist, with the result that import dependencies could be reduced through the targeted development of these deposits, corresponding investments and the extraction of their natural resources.

In 2020, investments in renewable energies amounted to €11 billion, while the operation of the existing plants generated €18.3 billion in sales. The expansion of renewable energies can create a large number of new jobs due to the increasing demand for electricity and heat and the goods and services produced with renewable energy. In 2020, the renewable energy sector overall produced employment for more than 338,000 people. Here the focus was on renewable energy in electricity generation. The expansion of renewable energies is financed by feed-in tariffs which are higher than the stock exchange electricity price. The difference in costs between the stock exchange electricity price and remuneration for the electricity from renewable energy plants (EEG) are paid for by electricity consumers as part of the price they pay for electricity via the EEG levy. In 2020, the EEG levy amounted to 6.756 ct/kWh for consumers who are not exempt in part or even in full from the levy, such as some major industrial consumers.

Since 2021 the EEG levy is reduced by a subsidy from the Federal Government. In addition to revenue from the new national CO_2 pricing for heating and motor fuels for transport and heating, a further €11 billion was given to the EEG levy from the economic stimulus package.

As a result, a sharp increase in the EEG levy following the corona pandemic was avoided. The levy will receive increasing income from the CO_2 pricing and possible remaining funds from the economic stimulus package and the intention is to reduce the levy further in the future. This will give relief to electricity users and at the same time provide incentives for an energy transition across sectors. If renewable energies are to expand further, industrial energy projects must be suitably combined with the development of the renewable energies. This also applies to the German natural resources industry, which has already established a series of wind, biomass, geothermal, solar and hydroelectric power projects in Germany.

Renewable energy sources are used in electricity and heat generation and in the transport sector. The most important renewable energy source in the electricity sector is wind power: In 2020, more than half (52.8%) of electricity was generated from wind energy. Wind energy plays a vital role in the expansion of renewable energies, an expansion which will ultimately result in an economically-viable and climate-friendly energy supply at reasonable prices and with a high level of general prosperity. In 2020, the use of wind energy accounted for 23.9% of German electricity consumption. Wind turbines have been built on various closed mine sites, mainly on now-green colliery slag heaps on which favourable wind conditions exist. In addition to the further development of suitable land sites and the replacement of older, smaller wind turbines by modern and more powerful models – so-called "repowering" – the expansion of wind energy at sea is also becoming increasingly important. During the period 2017 to 2020 alone, wind energy turbines were installed with a capacity of around 1,200 MW on land and roughly 220 MW at sea. Wind turbines with a total capacity of around 62,188 MW were operating in Germany in 2020; they produced around 132,000 G GWh of electricity in 2020, one fifth of which was generated by wind turbines at sea. The Federal Government is planning to have an offshore wind power of 30,000 MW on the grid by the year 2030 and 115,000 MW of wind energy on land. In view of this expansion and the ever-larger power units (more than 10 MW per offshore wind turbine), the need for mineral natural resources will also increase. Concrete, for example, is required for the construction of wind

turbine foundations. This also means a correspondingly higher demand for limestone for cement production and for aggregates such as gravel and sand.

Biomass has become a very relevant energy source for electricity generation. Bioenergy for producing electricity is supposed to remain at the current level in view of the competition to use the land to grow food and fodder or generate energy. The total capacity of biomass electricity generation plants is around 10,433 MW, electricity generation in 2020 amounted to more than 50,900 GWh (9.2% of the total electricity consumption, 20.3% of the renewable electricity generation). In addition to biogas (including biomethane and landfill and sewage gas), solid and liquid biomasses and biogenic waste are also used to generate electricity, but biogas is the most important single biogenic energy source for electricity generation with 57% (2020) of the entire biomass.

Another renewable energy source with great potential is solar electricity generation. More than 2 million photovoltaic plants convert the sun's radiation energy directly into electricity – these plants represented a total of around 53,700 MW of installed capacity in Germany at the end of 2020, and around 4,800 MW of power were added in the same year. Electricity generation from photovoltaics continues to rise steadily as a result, attaining approximately 48,500 GWh in 2020. Photovoltaics thus accounted for 8.98% of total electricity consumption and contributed 19.7% of renewable electricity. German mining companies are also increasingly opting for the use of photovoltaic systems at various mining sites in Germany. By 2030, the total installed capacity for the use of solar radiation energy in Germany is expected to be 215,000 MW.

In addition to wind, biomass and photovoltaics, hydropower also contributed to electricity generation with around 18,300 GWh in 2020.

Renewable energy sources are also increasingly being used in the heating sector. In 2020, a total of 181,700 GWh was produced by renewable heat sources. The most important renewable energy sources for heat generation are biogenic solids with around 117,100 GWh, produced mainly by wood in the form of e.g. wood pellets. Biogas, biogenic waste and geothermal energy and heat harnessed by heat pumps are also relevant renewable heat sources, each of which generated heat of approx. 14,000 to 16,000 GWh in 2020. Solar thermal energy also contributed to the supply of heat with around 8,900 GWh. Deep geothermal energy is a base-load-capable form of energy, which makes up a very small but fixed element of electricity and heat generation. In general, the great potential of geothermal energy is not exploited in Germany.[138] Apart from producing energy, deep geothermal reserves potentially have a material use such as for the extraction of lithium from the extracted brine. With this in mind, the use of brine can improve the cost effectiveness of geothermal projects, in particular in the Upper Rhine Plain and in the North German Basin. Here there is considerable need for research, even though pilot projects already exist.[139]

In the transport sector, biomass can reduce CO_2 emissions, especially in the form of biofuels such as bioethanol, biodiesel and biogas for cars, trucks, trains, ships and aircraft. Electric vehicles are another option for reducing CO_2 emissions. In 2020, renewable energies accounted for 7.6% of fuel consumption in Germany.

Thanks to its flexible use in the electricity, heating and transport sectors, biomass is the most important renewable energy source. In 2020, 51% of total final energy from renewable energy sources was provided by the various types of biomass used for energy purposes.

138 Federal Institute for Geosciences and Natural Resources (2020): BGR energy study 2019. URL: https://www.bgr.bund.de/DE/Themen/Energie/Downloads/energiestudie_2019.pdf?blob=publicationFile&v=6 (Accessed on 9 December 2022).
139 German Geothermal Energy Association (2020): State of research and research needs in geothermal energy. URL: https://www.geothermie.de/fileadmin/user_up- load/Forschung_Papier_2020_A4_20201217_Final_interaktiv.pdf (Accessed on 9 December 2022).

The expansion and use of renewable energies helps to avoid greenhouse gas emissions and reduces the use of fossil energy sources. The savings also reduce the proportion of imports of mineral oil, natural gas and hard coal required. Despite the expansion of renewable energies, conventional power plants are still needed to meet energy requirements.

ii. Study of the demand for natural resources in the field of renewable energies

In the course of producing the second D-EITI report the MSG commissioned a study on the effects of renewable energies on future natural resource requirements and the associated socio-economic implications. The Prognos Institute, commissioned to produce this report as an external service provider, prepared the study entitled "Raw material requirements in the field of renewable energies" (2019) and submitted it to the MSG. The complete study is available at https://d-eiti.de/wp-content/uploads/2020/02/Rohstoffbedarf-im-Bereich-der-erneuerbaren-Energien.Langfassung.pdf.[140]

However, the study did not deal with the extent to which the future demand for base and technology metals for renewable energy plants can be met by the mining of natural resources in Germany. Information on the deposits, extraction and requirement for these natural resources in Germany can be found in the reports of the Federal Institute for Geosciences and Natural Resources (BGR) and The German Mineral Resources Agency (DERA):

BGR (2017): "Domestic mineral resources – indispensable for Germany!" (Heimische mineralische Rohstoffe – unverzichtbar für Deutschland!)[141]

BGR (2021): Germany – Natural Resources Situation 2020[142]

Marscheider-Weidemann, F.; et al. (2021): Natural resources for future technologies 2021[143]

140 On 3 September 2020 the European Commission published a study that posed similar questions and looked at the requirement for critical natural resources for the European Union as a whole. Among other issues this also looks at the status of the renewable energy sector. See here: https:// ec.europa.eu/docsroom/documents/42881 (Accessed on 9 December 2022).

141 BGR (2017): Domestic mineral resources – indispensable for Germany! URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/studie_mineralische_rohstoffe_2017.pdf?-blob=publicationFile&v= (Accessed on 9 December 2022).

142 BGR (2021): Germany - Natural Resources Situation 2020. URL https://www.bgr.bund.de/DE/Themen/Min_raw_materials/downloads/rohsit-2020.html (Access on 22 September 2022).

143 The German Mineral Resources Agency (DERA) (2021): Mineral Resources Information 50. URL: https://www.deutsche-rohstoffagentur.de/DE/Gemeinsames/Produkte/Downloads/DERA_Rohstoffinformationen/rohstoffinformationen-50.pdf?blob=publicationFile&v=4 (Accessed on 9 December 2022).

The following sections are taken from the summary of the study. The MSG is neither responsible for the content of the study nor for the contents reproduced here and does not adopt them as its own.

Classification of the renewable energies in Germany's energy supply and presentation of the natural resources requirements for EE plants

"[...] The conversion of the energy supply to renewable energy sources creates an additional demand for natural resources, while the demand for fossil resources is declining. The analysis of the natural resource requirements carried out in the report relates both to energy conversion plants (wind power and photovoltaics) and to significant technological changes in the use of energy sources (stationary storage facilities and batteries for electric mobility). The study examined construction raw materials, base metals and technology metals. The estimation of the natural resource requirements is carried out until 2030. The estimations are based on a future development of the energy system in Germany according to scenario B of the German grid development plan 2019 of the German transmission grid operators.[144] This scenario shows a possible development path of the energy system taking into account the political objectives, i.e. in particular to achieve a share of renewable energies in gross electricity consumption of 65%.

In the case of construction raw materials, raw materials for concrete production play a significant role. In 2018, the demand for concrete used for newly installed wind turbines amounted to 1.8 million tonnes. The average annual demand is expected to remain constant at around this level in the future. However, the demand for construction raw materials caused by the energy transition is rather low compared to the demand in residential and road construction (Germany had a demand for ready-mix concrete of around 115 million tonnes in 2018).

Important base metals for the energy transition are steel and aluminium as well as copper and nickel. Steel is used in many plants as a building material. The demand for steel caused by the energy transition is of secondary importance compared to the overall demand for steel in Germany. Aluminium is widely used in wind turbines and car components. The expansion of electromobility is expected to result in an additional annual demand for aluminium of around 162,000 tonnes in 2030. In addition to wind power and PV systems, copper is also used in electric mobility. Copper is likely to experience significant demand impulses as a result of the energy transition. While the copper demand for wind power and PV plants was 11,200 tonnes in 2013, the annual copper demand will increase by an additional 73,500 tonnes for batteries, electric motors and power electronics by 2030. The demand for nickel for electromobility is estimated to be around 1,050 tonnes in 2016.

144 For more on this, see: https://www.netzentwicklungsplan.de/de/netzentwicklungsplaene/netzentwicklungsplan-2030-2019

A ramp-up to around 1 million newly registered electric vehicles in 2030 would result in a nickel requirement of around 56,000 tonnes.

In connection with the energy transition, the technology metals gallium, indium, selenium and silicon are of relevance due to their use in PV modules. The same applies to cobalt and lithium due to their use in lithium-ion batteries and to neodymium and dysprosium due to their use in wind turbines and electric motors. The future annual demand for technology metals for the production of PV modules will remain more or less constant. The annual demand for cobalt and lithium is rising significantly due to increasing battery sales. The same applies to the demand for the rare earth metals neodymium and dysprosium. This is in particular due to the increase in electromobility and to a lesser share due to the construction of wind turbines. Table I provides an overview of the future demand for technology metals for key technologies of the energy transition.

The primary extraction of some of the raw materials required, e.g. cobalt, can be associated with high human rights, social and ecological risks, especially in countries with weak governance structures. In artisanal mining, child labour and a lack of social and safety standards can go hand in hand, which can also lead to health problems for the local population. Environmental pollution from the extraction of primary raw materials is also caused, for example, by deforestation (e.g. bauxite extraction), water evaporation (e.g. lithium extraction from salt lakes) and dam fractures (risk at mining sites).

Table I: Demand for technology metals for key technologies of the energy transition according to scenario B 2030

Technology metals	Technologies considered	Cumulated demand, 2018 – 2030 in tonnes	Calculated average in tonnes per year
Gallium (Ga)	Thin-film PV	12	0,92
Indium (In)	Thin-film PV, thick-film PV	165	13
Cobalt (Co)	Lithium-ion batteries (e-mobility and stationary storage)	74,000	5,700
Lithium (Li)	Lithium-ion batteries (e-mobility and stationary storage)	50,000	3,800
Neodymium (Nd)	Permanent magnet generators for wind turbines, electric engines for HEV, PHEV, BEV, Pedelecs	3,750	290
Dysprosium (Dy)	Permanent magnet generators for wind turbines, electric engines for HEV, PHEV, BEV, Pedelecs	660	50
Selenium (Se)	Thin-film PV	64	5
Silicon (Si)	Thick-film PV (Thin-film PV)	132,000	10,150

Source: own calculations according to (OEKO 2019) and (OEKO/IZT 2019)

Socio-economic significance of renewable energies

In 1990, the Electricity Feed-in Act (Stromeinspeisungsgesetz) introduced a subsidy mechanism to initiate the transformation of the energy system. For the first time, energy supply companies in Germany were obliged to purchase electrical energy from renewable generation processes (wind- and hydropower as well as solar energy and biomass). Today, the use of renewable energies in Germany is largely promoted financially by the Renewable Energy Act (EEG). The EEG introduced a levy on electricity consumption (with the exception of energy-intensive commercial consumers) in addition to the electricity price. The EEG levy for 2019 is 6.4 ct/kWh. The expected levy for 2019 amounts to €23 billion.

Employment in the lead market "environmentally friendly energy generation, transport and storage" amounted to 284,000 full person equivalents in 2018. The number of direct and induced jobs is subject to fluctuations and stood at 338,500 in 2016. Fluctuations in employment can be attributed among other things to fluctuations in the production of renewable energy plants and fluctuations in the number of plants installed in Germany.

A declared goal of the federal government is to increase the share of gross electricity consumption from renewable energy sources to 65%. Currently, the share of renewable energies in gross electricity consumption is approx. 38%. In order to achieve the targeted share, the installed capacity must be increased accordingly from 2018 to 2030. These expansion targets face numerous challenges in the development of renewable resources. Challenges exist with regard to the designation of suitable areas and securing social acceptance.

The report then illustrates the socio-economic significance of renewable energies based on a regional analysis taking into account the different potential for use of of each energy source or technology used. The following three German regions will be presented: A North German wind region (consisting of the Federal States of Schleswig-Holstein, Mecklenburg-Western Pomerania and Lower Saxony) with a focus on wind energy, a Central German region (Hesse, Saxony-Anhalt and Thuringia) with bioenergy use, and a South-East German solar region (Baden-Wuerttemberg, Bavaria and Brandenburg), where solar energy plays a major role.

In 2017, 8,100 companies and 50,000 employees were active in the field of renewable energies in the wind region of Northern Germany. The gross value added in 2018 was about €5 billion. In the wind energy sector, around 4,000 companies and around 17,900 people were employed in 2018, which is roughly double the figure for 2010. Despite the strong growth to date, fluctuations are to be expected regarding future developments. For example, if the expansion of wind power plants stagnates, employment is expected to fall.

In 2017, 5,900 companies and around 37,000 employees were active in the renewable energy sector in the central German bioenergy region. The gross value added in 2018 was about €4.5 billion. In the field of bioenergy, around 2,000 companies with around 7,600 employees were active in 2018, which corresponds to a slight increase from 5,100 employees in the industry in 2010. The largest increase took place in the area of operation and maintenance.

In 2017, 16,700 companies and almost 100,000 employees were active in the field of renewable energies in the South-East German solar region. The gross value added in 2018 was about €11 billion. In the field of solar energy, around 5,500 companies with around 20,100 employees were active in 2018, which corresponds to less than half of the 2010 active workforce in the sector. The reasons for the decline in employment and value added include the relocation of plant production abroad and a decline in the installation of new plants compared with the high installation figures during the years 2010 to 2012.

The expansion of renewable energies also faces challenges. These include issues of volatility and security of supply as well as social acceptance of capacity expansion. While the majority are generally in favour of expansion, this support varies depending on the type of technology and appears to be decreasing depending on the degree of direct impact. Questions of nature and species conservation as well as noise and odour emissions also lead to acceptance problems."

Source: Prognos (2019): Natural Resources requirements in the field of renewable energies, on behalf of the Federal Ministry for Economic Affairs and Energy **Download pdf Version**

c. Domestic natural resources for future technologies

The extraction of domestic natural resources plays a key role in the reliable and sustainable supply of natural resources in Germany and it can reduce dependence on imports. Technologies to mitigate climate change and projects such as the energy transition, electromobility and digitalisation will change the need for raw materials and in particular the need for natural resources such as lithium, rare earths, cobalt, nickel and copper.This is a good reason to take a closer look at promoting domestic natural resources for future technologies in Germany. For instance, it is possible in principle to extract lithium from deposits in Germany. The European Commission has put lithium as well as tungsten, gallium, indium and cobalt among others on the list of "critical natural resources". These include natural resources that have crucial economic importance but, because only small quantities if any are extracted in the EU, largely have to be imported. The extraction of individual critical natural resource involves potential environmental risks in some third countries. Domestic extraction of these natural resources classed as "critical"[145] in accordance with the highest environmental and social standards can make a certain contribution to sustainable, integrated European value chains.

145 For information of natural resources as defined in the EU critical raw materials list, see: https://ec.europa.eu/growth/sectors/raw-materials/specific-interest/critical_en

Projects to extract lithium in Germany

Lithium-ion batteries are very light but deliver a high performance and thus make them useful for a wide range of applications such as in smartphones, tablets and electric vehicles. To date, all the lithium required for this has been imported. However, deposits of lithium are also available in Germany, e.g. in the Ore Mountains near Zinnwald (Saxony), Falkenhain and Sadisdorf, and in the Upper Rhine Plain (Baden-Wuerttemberg, Rhineland-Palatinate and Hesse), dissolved in thermal waters. Projects to extract lithium are currently being implemented in these areas.

On the subject of reducing dependence on imports, apart from recycling the Federal Government is advocating a natural resources strategy that involves local extraction of natural resources for future technologies, which also includes lithium.[146]

In its current publication "Rohstoffrisikobewertung Lithium" ("Natural resources risk assessment for lithium"),[147] The German Mineral Resources Agency (DERA) in the BGR cites two planned projects to extract lithium in Germany. One project in Zinnwald (Saxony) is operated by the company Deutsche Lithium and another is in Sadisdorf (Sachsen) with the company Tin International.[148] Since October 2021 the BGR is coordinating a project with a research network involving different players to examine the potential for lithium in Germany.[149] Initial results for the project are expected in 2022. An overview of the proven geological reserves of lithium and further metals and minerals in Saxony compared to worldwide reserves and global production can be found in the natural resources strategy for Saxony.[150]

The deposits of lithium in the thermal water of the Upper Rhine Plain could be extracted in an environmentally friendly way from deep water in geothermal plants using new, cost-efficient processes. Appropriate processes are currently being trialled.

It could be possible to cover a significant part of Germany's lithium needs from domestic extraction. Apart from sustainable extraction, domestic production can also create integrated value chains in Germany and jobs.

146 Overview of lithium projects and deposits: BGR (2021): Germany – Natural Resources Situation 2020, p. 55 et seq URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2020.html (Access on 9 December 2022).
147 Schmidt, M. (2017): Natural resources risk assessment – Lithium. – DERA natural resources information. URL: https://www.bgr.bund.de/DE/Gemeinsames/Produkte/Downloads/DERA_Rohstoffinformationen/rohstoffinformationen-33.pdf?blob=publicationFile&v=2 (Accessed on 9 December 2022).
148 For both projects, the responsible authorities have not yet provided any information on the planned start of production, possible deposits and resources. Details on this can be found in the information offered by the companies themselves.
149 BGR (2021): Press release: BGR coordinates project: Research network studies lithium potential in Germany. URL: https://www.bgr.bund.de/DE/Gemeinsames/Oeffentlichkeitsarbeit/Pressemitteilungen/BGR/bgr-2021-10-26_lithium-potentiale-germany.html?nn=1544712 (Accessed on 20 September 2022).
150 Saxon State Ministry of Economy, Labour and Transport (2017): Natural resources strategy for Saxony. URL: https://publikationen.sachsen.de/bdb/artikel/16194 (Accessed on 9 December 2022).

d. Environmental protection, renaturation and recultivation

Energy transition involving the phasing out of coal-fired generation requires the end of lignite mining by 2038 at the latest according to the current legal position. As a result of this, mine operators in the coalfields of the Rhineland, central Germany and Lausitz have to comply with more stringent requirements to satisfy renaturation and recultivation obligations because of the extensive adaptations caused by bringing forward the end of mining lignite.

You will find more detailed information on general measures for environmental protection, renaturation and recultivation in chapter 7.2 of this report.

e. Social factors in relation to the structural change in lignite regions

One of the aims of the Structural Strengthening Act (StStG, also see section a.iv) is to provide support to achieve the goal of structural change in the lignite regions and to encourage the creation of new economic structures. A large number of measures are planned for the period 2020 to 2038 during which support payments will be made.

The second pillar is financial help from the Federal Government for projects of the Federal States. A total of up to €14 billion is available for this purpose, with which investments in the lignite mining areas can be subsidised by up to 90%. Opportunities for deployment are wide-ranging and cover areas such as development of infrastructure that is relevant to the private sector, tourism projects, digitalisation, urban and regional development and measures for climate and environmental protection.

In the so-called second pillar, measures are funded that fall under the sole responsibility of the Federal Government. An amount of up to €26 billion is earmarked for these measures. They will cover areas such as improving transport routes to the mining regions, different research projects and centres, and relocation of government institutions.

These investments are supplemented by the STARK German Federal programme, which supports non-investment projects of Federal States and municipalities. A wide range of funding areas is covered. For example, STARK can finance the operation of structural development companies or technology transfer projects.

9

CONTRIBUTION OF DOMESTIC NATURAL RESOURCES EXTRACTION TO SECURITY OF SUPPLY AND GERMANY'S ROLE IN THE INTERNATIONAL NATURAL RESOURCES MARKET

a. Natural resource requirements

As an industrial and technology location, Germany is dependent on a secure supply of energy and non-energy (mineral) natural resources. In the future, even more mineral resources will be needed than before for important technologies of the future such as renewable energies (RE) and technologies relevant for digitalisation and electromobility. In addition to high-tech metals, Germany needs selected industrial minerals. The 5th D-EITI report describes the specific natural resource requirements for renewable energies in the context of the overall energy supply as well as for electromobility in Chapter 8.[151]

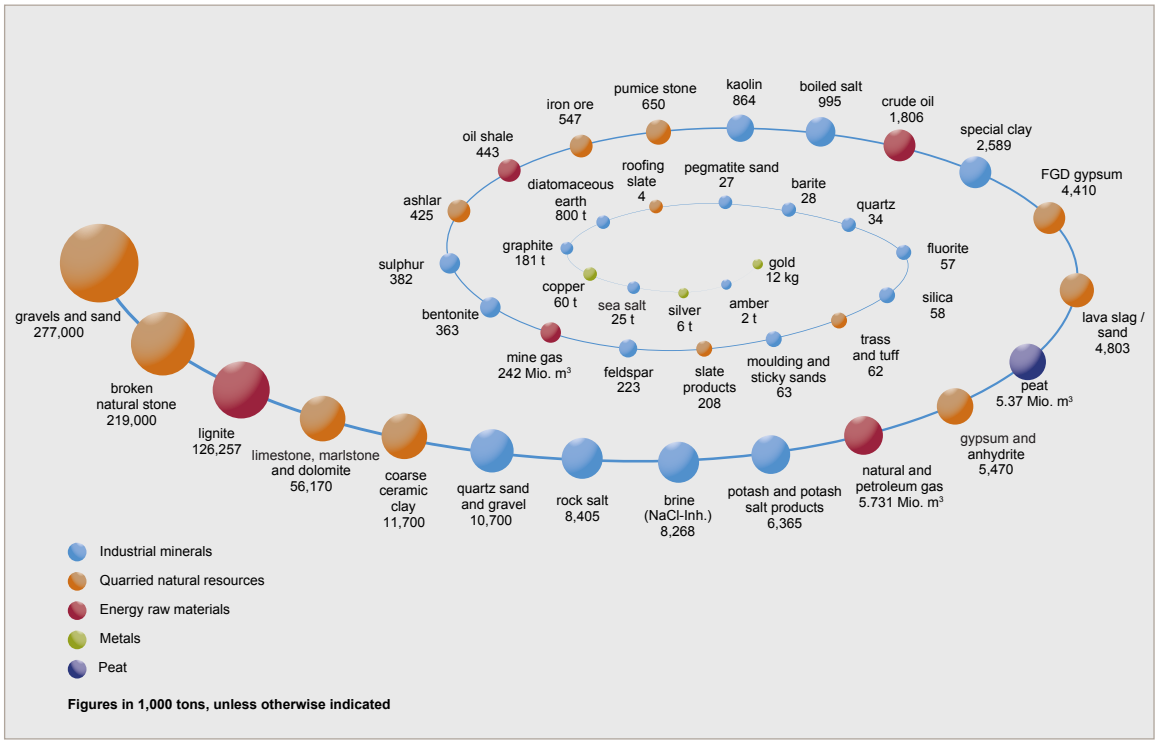
With regard to the security of supply for natural resource requirements in Germany, three pillars must be considered: domestic primary resources, secondary resources and imports of natural resources[152]. For this purpose, the report of the Federal Institute for Geosciences and Natural Resources (BGR) on the natural resource situation in Germany, published in December 2022, provides data on domestic natural resource production, German foreign trade, the use of secondary resources from recycling, the development of resource prices and resource consumption in the context of Germany's supply situation with mineral natural resources and energy resources in 2021.[153]

i. Domestic primary natural resources

Contrary to popular opinion, Germany is certainly rich in natural resources (cf. figure 8). The demand for quarried natural resources (especially for the building materials, glass and ceramics industries), potash products (for agriculture), rock salt (especially for the chemical and pharmaceutical industries and as de-icing salt) and some industrial minerals can be met entirely from domestic sources. Some energy resources such as lignite and natural gas as well as crude oil are also extracted in Germany close to the place of consumption[154] and contribute to the security of supply of natural resources. At the same time, high environmental and social standards are maintained by international comparison. The energy use of domestic lignite covered about 8% of primary energy consumption in Germany in 2020 and about 9% in 2021, with production volumes of 107.4 million tonnes and 126.3 million tonnes, respectively[155, 156]. Domestic production of oil and natural gas covered 2% and about 5% of consumption in Germany in 2020 and 2021 respectively[157]. However, metallic resources are almost no longer mined in Germany and have to be obtained from recycling or imported.

151 Cf. Chapter 8.b *Renewable Energies* (p. 127 et seq.) of the 5th D-EITI Report.
152 Cf. Natural Resources Strategy of the German government: Securing a Sustainable Supply of Germany with Non-energy Mineral Resources (2020), available at (as of August 2022): https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/rohstoffstrategie-bundesregierung.html (Accessed on 19 April 2023).
153 Federal Institute for Geosciences and Natural Resources (2022): Germany Raw materials situation 2021. – 162 pages; Hanover.
154 Cf. Chapter 2 The extractive industry in Germany (p. 14 et seq.).
155 Ibid.
156 Federal Institute for Geosciences and Natural Resources (2022): Germany – Raw materials situation 2021, 162 pages; Hanover (p. 32).
157 State Office for Mining, Energy and Geology (2022): Oil and natural gas in the Federal Republic of Germany 2021, 66 pages; Hanover (p. 23).

Figure 8: Raw material production in Germany in 2021[158]



Source: Federal Institute for Geosciences and Natural Resources (2022) (cf. footnote 158)

ii. Secondary resources from recycling

Metallic resources are often not only used once but several times due to their good recyclability. They can be returned to a product cycle after reprocessing. Many products made from non-metallic resources, on the other hand, are often chemically modified (e.g. cement, concrete) and can therefore not be fed back directly into the product cycle. However, they can be reintroduced into the economic cycle as substitutes (e.g. glass) for primary resources (recycling materials)[159]. Secondary resources contribute to the domestic supply of resources and reduce dependence on imports.

Individual data on recycling and use rates from 2020 are documented in Chapter 7.4d of the 5th D-EITI report.[160]

With an expansion of the circular economy with qualitatively and quantitatively improved recycling, a rising share of the German demand for natural resources can be covered in the future[161]. In the field of rare earths or other special metals, however, circular economy approaches or recycling processes have so far hardly progressed beyond the state of research and development[162]. The necessary further development of the circular economy must aim, on the one

158 Federal Institute for Geosciences and Natural Resources (2022): Germany – Raw materials situation 2021. – 162 pages; Hanover, p. 9, Fig. 2.2: Natural resources production in Germany in 2021; URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2021.html (Accessed on 19 April 2023).
159 Ibid. (p. 20).
160 See Federal Institute for Geosciences and Natural Resources (2022): Germany – Raw materials situation 2021. – 162 pages; Hanover (p. 18 et seq.) for 2021 data.
161 Cf. Chapter 7.4 on the circular economy, in particular recycling (p. 112 et seq.)
162 BMWK (2023): Strategy Paper of the Federal Ministry for Economic Affairs and Climate Action (BMWK): Ways to a Sustainable and Resilient Supply of Natural Resources – 11 pages; Berlin (p. 7).

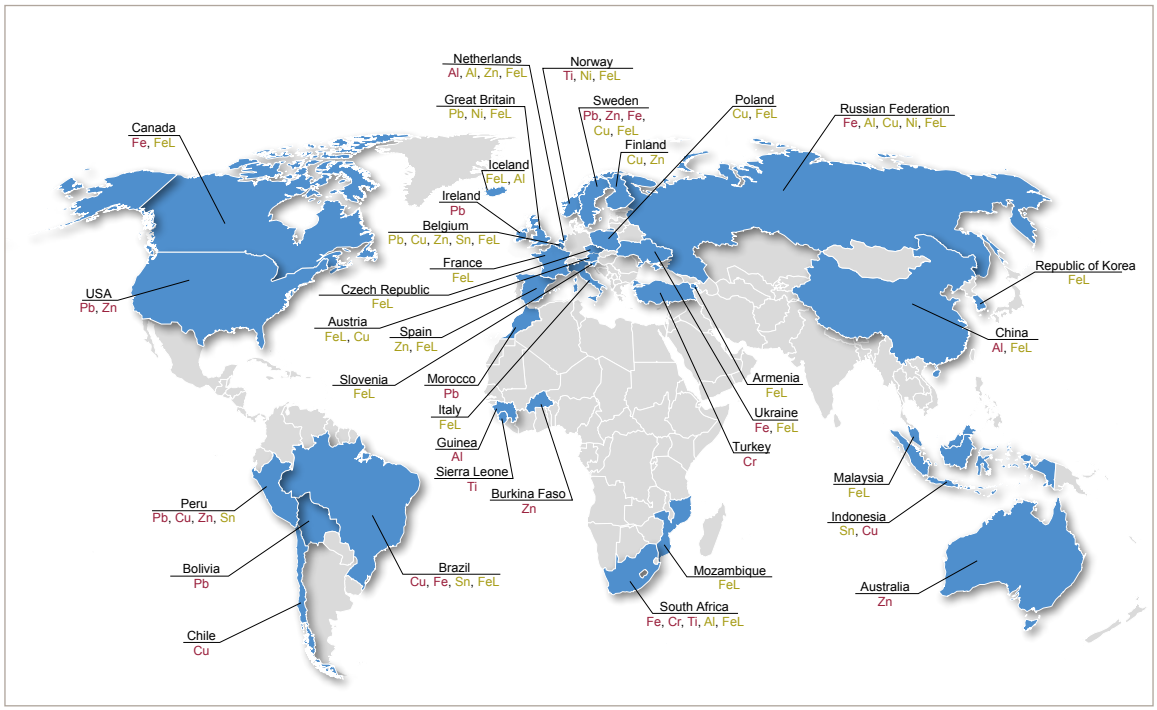
hand, to cover a larger share of Germany's need for natural resources through secondary materials and, on the other hand, to make the greatest possible contribution to greenhouse gas reduction. To this end, it is necessary to establish and expand appropriate recycling channels, also in order to reduce the necessary imports. Nevertheless, the supply of recycled material is not sufficient to fully compensate for the increasing demand for resources for the transformation of the energy supply and for other future technologies. Therefore, additional specific natural resources will have to be extracted and/or procured in the future.

iii. Imports of natural resources

In the case of metals, individual industrial minerals and energy resources (with the exception of lignite), the industry is heavily dependent on non-European imports (cf. metal imports chart 10) and thus heavily dependent on the availability on the international raw materials markets. At 398.8 million tonnes, Germany imported a total of 3.3% more natural resources in 2021 than in the previous year. The import of metals increased significantly with a share of 14.6%. In 2021, energy resources, metals and non-metals (of which about 50% were industrial minerals) worth €211.2 billion were imported into Germany[163]. Further information on import volumes in the German extractive sectors can be found in Chapter 2a.

The German Mineral Resources Agency (DERA), a department of the BGR, published its last monitoring report on the global supply concentration of important natural resources and intermediate products in 2021.

Chart 10: Origin of German imports of important industrial metals in year 2021[164]



Source: Federal Institute for Geosciences and Natural Resources (2022) (cf. footnote 164)

Important countries of origin for German imports of essential industrial metals (ores and concentrates, refined metals) and various metal alloys. In blue: supplier countries with import shares >10% of the respective primary product (ore and concentrate), refined metal or the various ferroalloys; in red: ores and concentrates; in green: refined metals and ferroalloys; Al = aluminium, Cr = chromium, Fe = iron, Cu = copper, Pb = lead, Ni = nickel, Ti = titanium, Zn = zinc, Sn = tin, FeL = various ferroalloys.

163 Federal Institute for Geosciences and Natural Resources (2022): Germany Raw materials situation 2021. – 162 pages; Hanover. import quantities of natural resources relevant for D-EITI in this fifth D-EITI report (p. 14 et seq.).
164 Federal Institute for Geosciences and Natural Resources (2022): Germany – Raw materials situation 2021. – 162 pages; p. 16, Fig. 2.9.

The so-called "DERA Resources List 2021" lists a total of 34 metals, 27 industrial minerals, plus coking coal and 217 commercial products[165]. The survey concludes that almost 45% of all mining, refining and trading products surveyed are subject to elevated supply risks. The European Commission has also published a list of critical natural resources[166], which are of high economic importance and for which there are at the same time high supply risks for the EU and thus also for Germany (see also DERA monitoring of natural resources[167]. China dominates the international market as the most important supplier of a wide range of natural resources[168] and is currently the most important country for the extraction and processing of "critical resources". For example, 80% of the rare earths are mined in China and are gaining in economic importance due to their diverse applications for the energy transition and for other key technologies.

b. Challenges and goals

The phase-out of the use of and dependence on fossil fuels and the transformation in industry towards the use of greenhouse gas-neutral technologies will lead to an increased demand for mineral resources and especially metals.[169] At the same time, the phasing out of fossil fuels causes a strong reduction in the consumption of energy resources.

The German government is pursuing the goal of making comprehensive use of the economic and ecological potential of recycling in order to reduce overall resource consumption[170]. Tasks to strengthen the circular economy are of a regulatory, organisational and technological nature, such as the introduction of digital product passports (data transparency) or the recovery of low-concentration rare precious and special metals from disused ICT devices. The aim is to secure high-quality secondary resources from recycled materials for the economic cycle in order to achieve an increased use of secondary resources compared to primary natural resources. This requires the maintenance and, if necessary, the expansion of processing capacities for metal resources in Germany and Europe. In this respect, a decline in processing capacity in Germany, e.g. in the aluminium industry, which is important for lightweight construction, also comes with the danger of new import dependencies. From the perspective of civil society, the overall consumption of natural resources should be reduced and resource-related dependencies reduced through a limited use of primary resources, ecological product design, product durability and reparability, sharing models, recycling, urban mining and many more.

The transformation of the industry is associated with considerable challenges because the German economy is heavily dependent on the import of natural resources. International competition for natural resources, such as the "critical resources" mentioned above, is subject to increasing market restrictions. This is due to governmental control measures in those countries that extract natural resources and the partly high concentration of companies on the supply side, both in mining and in the processing of resources. The COVID-19 pandemic has led to a decline in the extraction of natural resources and global supply shortages in 2020. In addition, there are increased tendencies of geopolitical escalation including high dependencies. The Russian war against Ukraine and the associated restrictions have further increased the

165 DERA - German Mineral Resources Agency (DERA), a department of the Federal Institute for Geosciences and Natural Resources (2021): DERA Resources List 2021. – DERA Information on Natural Resources 49: 108 pages, Berlin.
166 European Commission (2020), Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52020DC0474 (Accesssed on 19 April 2023)
167 Cf. DERA - German Mineral Resources Agency (DERA). URL: https://www.deutsche-rohstoffagentur.de/DERA/DE/Rohstoffinformationen/Monitoring/monitoring_node.html (Accessed on 19 April 2023).
168 DERA – German Mineral Resources Agency (DERA), a department of the Federal Institute for Geosciences and Natural Resources (2021): DERA Resources List 2021. – DERA Information on Natural Resources 49: 108 pages, Berlin.
169 BMWK (2023): Strategy Paper of the Federal Ministry for Economic Affairs and Climate Action (BMWK): Ways to a Sustainable and Resilient Supply of Natural Resources – 11 pages; Berlin (p. 1).
170 Coalition agreement between SPD, BÜNDNIS 90/DIE GRÜNEN AND FDP (2021–2025): Dare more progress Alliance for freedom, justice and sustainability (p. 34, 42).

risks for raw material procurement due to shortages, price increases and disruptions in the supply chain. In addition to natural gas, crude oil and hard coal, a number of metals such as nickel, titanium, palladium and copper were imported from Russia. Also, metals such as copper, iron and ferroalloys came from Ukraine. The economy is making great efforts to ensure security of supply and at the same time reduce dependence on fossil and mineral resources from Russia as quickly as possible.

In view of the global situation, the German government wants to support the efforts of German companies in the procurement of natural resources. At the same time, the German government is pursuing the goal of ensuring compliance with the highest human rights and environmental standards along the supply chain of primary natural resources and thus contribute to achieving the goals of the 2030 Agenda for Sustainable Development. Companies in the extractive sector have a responsibility to comply with any regulations that apply to them.[171]

Another challenge for companies is to react in time to rapid developments in the transformation process and the international commodity market. Changes in the plant park or in the business model often require considerable investments, complex in-house planning processes and construction phases with simultaneous shortages in natural resources, price fluctuations (in addition to high energy costs) and a shortage of skilled workers. In addition, the private sector in particular complains about the complexity and high time requirements of approval procedures. In addition, the frequent lack of public acceptance makes the exploration and extraction of natural resources in Germany more difficult[172]. To present the ambivalent character of natural resources production[173], it is crucial from the perspective of civil society to show not only the economic gains but also which social and ecological impacts the extraction of primary resources extraction has both at home and abroad.

c. Measures to ensure and increase resilience[174]

Securing the supply of natural resources in Germany is primarily the responsibility of the companies. The task of the public natural resources policy is to support companies with suitable and reliable framework conditions in creating a secure social, economic and ecological basis for the procurement of the natural resources they need. This is particularly necessary when fair competitive conditions in the international market of natural resources are affected.

As part of its strategy for the procurement of natural resources, the German government has already made necessary adjustments in 2020[175]. With a total of 17 measures, the German government has replaced the first natural resources strategy from 2010. The strategy identifies the three main pillars Germany relies on in the procurement of natural resources: domestic primary resources, secondary resources from recycling and imported resources. Each of these pillars is of utmost importance to ensure a secure supply of natural resources in the long term.

The *"Strategy Paper of the Federal Ministry for Economic Affairs and Climate Action (BMWK): Ways to a Sustainable and Resilient Supply of Natural Resources"* published in January 2023 supplements the existing

171 Cf. further explanations: 5. D-EITI report, Ch. 7.3h Corporate Responsibility (p. 109 et seq.).
172 Federal Institute for Geosciences and Natural Resources (2022): Germany – Raw materials situation 2021. – 162 pages; Hanover (p. 70)
173 Mancini L., Vidal Legaz B., Vizzarri M., Wittmer D., Grassi G., Pennington D. *Mapping the Role of Raw Materials in Sustainable Development Goals. A preliminary analysis of links, monitoring indicators, and related policy initiatives.* EUR 29595 EN, Publications Office of the European Union, Luxembourg, 2019. ISBN 978-92-76-08385-6, doi:10.2760/026725, JRC112892 (p. 60).
174 **Resilience** is the ability to maintain the functionality of a system (here the industry processing natural resources) in the event of disruptions (e.g. of supply chains).
175 Natural Resources Strategy of the German government: Securing a Sustainable Supply of Germany with Non-energy Mineral Resources (2020), available at (as of August 2022): https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/rohstoffstrategie-bundesregierung.html (Accessed on 19 April 2023).

strategy for the procurement of natural resources with current focal points of the realigned natural resources policy. These include a close integration of the circular economy and the natural resources strategy, the diversification of the supply chains used to procure natural resources, and the safeguarding of a fair market framework by means of high ESG (Environmental, Social & Governance) standards[176] and international cooperationt[177].

There are established structures of cooperation for the extraction of domestic natural resources and the safeguarding of geological data referring to natural resources in Germany. The State Geological Services (SGD) of the Federal States collect the geological and economic data required for securing natural resources, publish geological maps indicating the places where natural resources can be found as well as sectoral planning maps and prepare concepts to secure natural resources. To this end they are in close contact with the BGR. Furthermore, the BGR participates in various European projects and committees (e.g. GeoERA[178]) and cooperates with European geological services. In this way, the authorities as a whole make an important contribution to securing the supply of natural resources in Germany.

Domestic extraction of natural resources continues to need a reliable legal framework. The German government intends to modernise the existing one. To this end, the Federal Mining Act is to be amended in this legislative period. The German government intends to make the extraction of natural resources more ecological and, at the same time, facilitate the extraction of domestic natural resources.[179]

Compliance with the highest environmental and social standards can contribute to the acceptance of extraction. Appropriate and constructive stakeholder participation[180] is particularly important in the extractive sector, as its activities are associated with significant impacts on society, the economy and the environment. Therefore, from German government believes that constant, constructive dialogue with the population is essential. As part of its natural resources strategy, the German government is working to increase awareness and social understanding of the importance of the extraction of domestic resources. The domestic extractive industry is already implementing numerous measures to promote an informed, critical discussion, including through the teaching of knowledge[181] in schools, active, early communication and public participation in new projects, and voluntary commitments to transparent disclosure of data along the entire value chain[182]. Offering extracurricular learning sites for environmental education, e.g. in certified geoparks and geotopes[183], can also contribute to the understanding of domestic natural resources extraction.

Furthermore, the implementation of largely closed natural resources cycles and thus the increased use of secondary resources from recycling can increase the resilience of the supply in resources. To promote the circular economy, existing barriers must be identified and removed. A comprehensive dialogue process to be carried out for two years by the "Dialogue Platform for Recycled Resources" at DERA commissioned by the Federal Ministry for Economic Affairs and Climate Action (BMWK), the necessary fields of action for important industrial resources (metals and industrial

176 ESG stands for Environment, Social and Governance.
177 BMWK (2023): Strategy Paper of the Federal Ministry for Economic Affairs and Climate Action (BMWK): Ways to a Sustainable and Resilient Supply of Natural Resources – 11 pages; Berlin (p. 10 et seq.).
178 GeoERA – Establishing the European Geological Surveys https://geoera.eu (Accessed on 19 April 2023).
179 See footnote no. 27 BMWK (2023; p. 8).
180 OECD (2017), OECD Due Diligence Guide for Meaningful Stakeholder Engagement in the Extractive Sector, OECD Publishing, Paris, https://doi.org/10.1787/9789264285026-de.
181 Examples include open house days, sponsorship of sports clubs among others, public participation in the expansion of extraction sites, local citizen dialogues, and educational materials such as books for children on natural stone and sand/gravel or exhibitions on biodiversity and the extraction of natural resources.
182 See also Federal Association for Natural Gas, Petroleum and Geoenergy (BVEG) https://www.bveg.de/umwelt-sicherheit/gutes-foerdern/transparenz-foerdern/ or https://www.bveg.de/der-verband/organisation/selbstverpflichtung/ (Accessed on 19 April 2023).
183 Geoaparks in Germany. URL: https://www.geoparks-in-deutschland.de/de/about.html (Accessed on 19 April 2023).

minerals) are to be identified[184]. This dialogue process will promote the transformation of the procurement of natural resources towards a circular economy that reduces a need for primary resources. With its Circular Economy Action Plan, the EU Commission is pursuing the goal of doubling the use of recycled materials by 2030. Together with the shift to less material-intensive manufacturing processes and products, this can achieve greater resilience in the natural resources sector.

In view of geopolitical developments and the aforementioned challenges in the import of natural resources, the German government also sees the need to work with companies in the medium and long-term to increase diversification in the supply chains of critical and strategic resources[185]. The diversification of the supply chains used for the procurement of natural resources is particularly necessary if there are only very few suppliers or if there is no market on the supply side (see section II). This applies both to the mining and extraction of natural resources and to the further processing of natural resources.

In order to better assess potential risks in connection with the prices of natural resources and supply chains, it is necessary to create a sound and up-to-date knowledge base on how the demand for natural resources might or will probably evolve to cover the needs of new technologies that heavily rely on critical natural resources. DERA (a department of the BGR) continuously carries out analyses and evaluations of the international markets for mineral, fossil energy, and (more recently) recycled resources, so that it is able to offer a comprehensive range of information and advice for the companies, policymakers and society as a whole. Part of the DERA monitoring is the project "Natural Resources for Future Technologies" including the report bearing the same title, which is regularly updated every five years. The report "Natural Resources for Future Technologies 2021", prepared by the Fraunhofer Institute for Systems and Innovation Research ISI and the Fraunhofer Institute for Reliability and Microintegration (IZM) on behalf of DERA, estimates the needs for natural resources for 33 future technologies for the year 2040. Drivers for the selected technologies are megatrends such as decarbonisation and digitalisation[186]. DERA's Price Monitor informs the public monthly about current price developments[187].

In addition, the Federal Ministry for Economic Affairs and Climate Action (BMWK) is working to expand cooperation with international partners in the natural resources sector. This cooperation is intended to promote the diversification of international sources of natural resources and expand cooperation with those countries and regions that share the same values as the German government[188]. This involves both bilateral cooperation in the field of natural resources (with Chile, Australia and Canada, for example) and multilateral formats such as the Minerals Security Partnership (with the US, Japan, Canada, Australia, Korea, France, Norway, Finland, Sweden and the European Commission).

The diversification of procurement contributes to the achievement of the 2030 Agenda for Sustainable Development Goals and must be achieved in compliance with high sustainability standards. The German Government expects all German companies with international operations, regardless of their size, to

184 Dialogue platform recycled raw material. URL: https://www.recyclingrohstoffe-dialog.de/Recyclingrohstoffe/DE/Home/recyclingrohstoffe_node.html (Accessed on 19 April 2023).
185 BMWK (2023): Strategy Paper of the Federal Ministry for Economic Affairs and Climate Action (BMWK): Ways to a Sustainable and Resilient Supply of Natural Resources – 11 pages; Berlin (p. 7).
186 Marscheider-Weidemann, F.; Langkau, S.; Baur, S.-J.; Billaud, M.; Deubzer, O.; Eberling, E.; Erdmann, L.; Haendel, M.; Krail, M.; Loibl, A.; Maisel, F.; Marwede, M.; Neef, C.; Neuwirth, M.; Rostek, L.; Rückschloss, J.; Shirinzadeh, S.; Stijepic, D.; Tercero Espinoza, L.; Tippner, M. (2021): Natural Resources for Future Technologies 2021 - DERA Information on Natural Resources 50: 366 pages, Berlin. URL: https://www.deutsche-rohstoffagentur.de/DERA/DE/Laufende-Projekte/Rohstoffwirtschaft/Zukunftstechnologien/lp-zukunftstechnologien_node.html (Accessed on 19 April 2023).
187 Available at: https://www.deutsche-rohstoffagentur.de/DERA/DE/Produkte/Rohstoffpreise/Preismonitor/preismonitor_node.html (Accessed on 19 April 2023).
188 BMWK (2023): Strategy Paper of the Federal Ministry for Economic Affairs and Climate Action (BMWK): Ways to a Sustainable and Resilient Supply of Natural Resources – 11 pages; Berlin (p. 9).

fulfil their responsibility to respect human rights along their value chains in the field of procurement of natural resources[189]. The benchmarks for this corporate due diligence requirement are the UN Guiding Principles on Business and Human Rights[190], the OECD Guidelines for Multinational Enterprises[191] and the ILO Tripartite Declaration of Principles concerning Multinational Enterprises[192]. There are also OECD guidelines[193] with concrete recommendations in the area of human rights due diligence that have been drafted specifically for minerals from conflict and high-risk areas as well as for the participation of stakeholders.

The obligations under the German Act on Corporate Due Diligence in Supply Chains (LkSG), which have been in force since 1 January 2023, are in principle also applicable to the import of natural resources. This also applies to German subsidiaries of foreign companies. The implementation of the Act is controlled by the Federal Office of Economics and Export Control (BAFA).[194]

In a total of eight countries (Australia, Brazil, Canada, Chile, China, Ghana, Peru, South Africa), competence centres for mining and natural resources have been established at the respective chambers of commerce abroad. They advise companies and conduct local dialogues with government agencies and multipliers in the respective mining and natural resources sector to raise awareness of the requirements for sustainability standards along the entire supply chain.

d. Germany's role in the international natural resources market

Within the framework of the natural resources strategy, the German government supports initiatives of the European Commission aimed at reviving the primary extraction of metallic resources required for electromobility and the energy transition in EU member states.[195]

Initiatives such as the European Battery Alliance have already triggered substantial public and private investments that strengthen technologies, skills and competences in refining and metallurgy as a crucial part of the value chain. The German government participated actively and constructively in the drafting of the EU Regulation (2017/821) on so-called conflict minerals, thereby establishing rules for corporate responsibility (see also 5th D-EITI report Chapter 7.3h on Corporate Responsibility).

Access to resources is of strategic importance to Europe's goal of achieving the Green Deal and ensuring sustainability in resource extraction. The extraction of resources is therefore an integral part of the new European Raw Materials Alliance (ERMA)[196]. The Mineral Security Partnership (MSP) founded in 2022 and supported by the German government is a multilateral initiative to strengthen critical commodity supply chains[197]. The MSP aims to ensure that critical minerals (natural resources) are extracted, processed

189 Cf. further explanations: 5. D-EITI report, Ch. 7.3h Corporate Responsibility (p. 109 et seq.).
190 UN (United Nations) available at: https://www.globalcompact.de/migrated_files/wAssets/docs/Menschenrechte/Publikationen/leitprinzipien_fuer_wirtschaft_und_menschenrechte.pdf (Accessed on 19 April 2023).
191 OECD (Organisation for Economic Co-operation and Development; 2011) available at: http://mneguidelines.oecd.org/48808708.pdf (Accessed on 19 April 2023).
192 ILO (International Labour Organization; 2017) available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_579897.pdf (Accessed on 19 April 2023).
193 OECD Due Diligence Guidance for Responsible Supply Chains for Minerals from Conflict-Affected and High-Risk Areas (2019), available at https://doi.org/10.1787/3d21faa0-de; OECD Due Diligence Guidance for Meaningful Stakeholder Engagement in the Extractive Sector (2017), available at https://doi.org/10.1787/9789264285026-de (Accessed on 19 April 2023).
194 https://www.bafa.de/DE/Lieferketten/Ueberblick/ueberblick_node.html.
195 Natural Resources Strategy of the German government: Securing a Sustainable Supply of Germany with Non-energy Mineral Resources (2020), available at (as of August 2022): https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/rohstoffstrategie-bundesregierung.html(p. 16). (Accessed on 19 April 2023).
196 European Raw Materials Alliance (ERMA) available at https://erma.eu/ (Accessed on 19 April 2023).
197 Minerals Security Partnership (MSP) available at https://www.state.gov/minerals-security-partnership/ (Accessed on 19 April 2023).

and recycled in a way that helps countries realise the full economic development potential of their mineral resources.

The German government supports the Extractive Industries Transparency Initiative (EITI), which aims to increase transparency in the extractive sector so that revenues in the extractive sector flow into the national budgets of the respective countries[198]. Even though China and other EITI non-implementing countries produce the majority of critical resources, the *Mission critical*[199] EITI report from 2022 lists global producers and potential producers of "critical commodities" that are already implementing the EITI Standard. An overview of the production of key resources required for the implementation of greenhouse gas neutral technologies (lithium, cobalt, nickel, copper and rare earths) in countries implementing the EITI is provided in the *Strengthening governance of critical minerals*[200] EITI report of 2022.

The gaps in the EU's capacities for extraction, refining, processing, recycling (e.g. for lithium or rare earths) and in the circular economy clearly show the high (including the sometimes critical) dependencies in the supply of natural resources. The goal must be to reduce the critical dependencies. This requires rethinking the industrial and innovation policies at the various international levels as well as in Germany and includes, in particular, the targeted promotion of material-efficient approaches for the reduction of the absolute amounts of natural resources used in industrial production (e.g. lightweight construction taking into account recyclability). The reorientation of policies also requires eco-design approaches (e.g. improving the durability, reusability and reparability of products) and approaches for the substitution of non-renewable, scarce or critical resources. Where recycling cannot increase security of supply, at least in the short to medium term, imports need to be diversified and domestic production strengthened. It will be necessary to set effective economic and ecological incentives so that the country can control its procurement of natural resources responsibly and securely in the future.

198 Natural Resources Strategy of the German government: Securing a Sustainable Supply of Germany with Non-energy Mineral Resources (2020), available at (as of August 2022): https://www.bundesregierung.de/breg https://www.bmwk.de/Redaktion/DE/Artikel/Industrie/rohstoffstrategie-bundesregierung.html (for an example, please refer to p. 23).

199 Kathryn Sturman, Julia Loginova, Sandy Worden, Joshua Matanzima and Andrea Arratia-Solar (2022): Mission critical Strengthening governance of mineral value chains for the energy transition.

200 EITI (2022), Making the grade: Strengthening the governance of critical minerals. Available at https://eiti.org/documents/strengthening-governance-critical-minerals (Accessed on 19 April 2023).

10

DISCLOSED PAYMENT FLOWS AND QUALITY ASSURANCE

a. Which payment flows are reported?

i. Selection of sectors

The EITI standard requires that all the important payment flows of a country's extractive sector are considered. During various meetings, the MSG discussed which sectors of the natural resources extraction industry should be included in the fifth D-EITI report. The following individual sectors were addressed:

- Lignite
- Crude oil and natural gas
- Potash and salts
- Quarried natural resources

The mining of hard coal in Germany ended in 2018. As for the previous reports, the sector is not included (cf. the general remarks on hard coal mining in Germany and State financial aid for the hard coal sector in Chapter 2.a.iii., and in Chapter 6).

ii. Selection of companies

The EITI standard does not provide direct guidance for the process of selecting companies to be included in reporting – on the contrary, the selection of the companies should be oriented on the objective of the EITI initiative (analogue with the selection of the sectors) to make the revenues of a country's extractive industry transparent and to disclose all the significant payment flows between companies and government agencies in this respect. Pursuant to EITI requirement 4.1b), payments and revenues are deemed to be significant if their non-consideration or misrepresentation could significantly affect the completeness of the EITI report.

With regard to the selection of companies, the MSG has resolved to comply with the requirements of EU Accounting Directive 2013/34 of June 26, 2013. The stated objectives of the EITI initiative and of the payment flows specified by the EITI are also largely congruent with the provisions of the EU Accounting Directive. Recital 44 and 45 of the Directive even explicitly state that

- the regulations are intended to help governments in the implementation of the EITI principles and criteria and
- that payments should be recorded which are comparable to those of the EITI.

The EU Directive was implemented into German law by the BilRUG. Pursuant to §§ 341q et seq. HGB, companies in the extractive industry must submit (consolidated) payment reports under certain conditions (registered office, legal form, size, activity) (see the comments in Chapter 4.d.).

During several meetings, the MSG agreed to carry out the further content-related development formulation of the D-EITI process in accordance with the new provisions of §§ 341 q et seq. HGB. This particularly affects:

- the criteria for the identification of the companies that are eligible for reporting,
- the relevant period of reporting
- and the establishment of materiality thresholds for the payment flows which are to be reported.

The link to the statutory provisions of the HGB is intended to create the prerequisites for the widest possible participation of the companies; possible double burdens (for the participating companies), which could result from differences between the legal requirements for the (consolidated group) payment report and the reporting requirements for the EITI should also be avoided (see also Chapter 4.d.ii.).

Pursuant to § 267(3) of the HGB, the criteria for "large" companies were therefore used as an initial basis for the identification of the companies. In this case, two of the following three criteria for classification as a "large" company must be fulfilled on at least two successive two successive closing dates:

- Balance sheet total of €20 million
- Sales of more than €40 million
- A yearly average of more than 250 employees

With regard to the question whether or not an "activity" exists in the extractive industry, reference was made to Regulation 1893/2006/EC of December 20, 2006, which regulates the details of the statistical classification of economic activities. Section B of Annex I of this Regulation is divided into sub-sections 05 to 08 as follows:

Table 8: Statistical classification of economic activities

Subsection	WZ 2008 Code	Economic sector (WZ) 2008 – description (a. n. g. = not specified elsewhere)	ISIC Rev. 4
	B	SECTION B – MINING AND QUARRYING	
05		Coal mining	
	05.1	Hard coal mining	
	05.10	Hard coal mining	0510
	05.2	Lignite mining	
	05.20	Lignite mining	0520
06		Extraction of crude oil and natural gas	
	06.1	Extraction of crude oil	
	06.10	Extraction of crude oil	0610
	06.2	Extraction of natural gas	
	06.20	Extraction of natural gas	0620
	06.20.0	Extraction of natural gas	
07		Ore mining	
	07.1	Iron ore mining	
	07.10	Iron ore mining	0710
	07.2	Non-ferrous metal ore mining	
	07.21	Mining of uranium and thorium ores	0721

Subsection	WZ 2008 Code	Economic sector (WZ) 2008 – description (a.n.g. = not specified elsewhere)	ISIC Rev. 4
	07.21.0	Mining of uranium and thorium ores	
	07.29	Other non-ferrous metal ore mining	0729
08		**Quarried natural resources, other mining products**	
	08.1	Quarrying of natural stone, gravels, sand, clay and china clay	
	08.11	Quarrying of natural and artificial stone, limestone, gypsum, chalk and slate	0810
	08.12	Extraction of gravel, sand, clay and china clay	0810
	08.9	Other mining; quarrying a.n.g.	
	08.91	Mining of chemical and fertiliser minerals	0891
	08.92	Peat extraction	0892
	08.93	Extraction of salt	0893
	08.99	Quarrying a.n.g.	0899

For the purpose of identifying possible companies, companies assigned to one of the sub-sections 05 to 08 are considered to be primarily "active" in the extractive industry. In addition to the statutory duty to draw up payment reports for "large" companies, there is also an obligation for parent companies to prepare group (consolidated) financial statements if at least one subsidiary is active in the extractive sector. The size of this "active" subsidiary is not relevant here (a "consolidated tax group infection"), so that even companies which are themselves not classified as being "large" can trigger a reporting obligation simply through being combined with a "large" parent company.

The approach to "consolidated tax group infection" was also addressed for the purpose of identifying extractive industry companies; and the number of such companies increased accordingly. As a result, the selection is made using a combination of size and activity criteria (cf. the explanations in Chapter 10.b.ii.).

In addition to the size of the companies and the economic classification, the MSG also used a substantial coverage of the sectors as a criterion for the selection of companies.

Depending on the natural resource in question, there are significant differences in the number of companies and active employees in the various sectors in Germany's extractive industry. The coal mining and crude oil and gas production sectors are dominated by a few, large companies, for instance. The quarried natural resources sector, on the other hand, is characterised by a structural mix of few large suppliers and a high proportion of small and medium-sized enterprises.

The vast majority of the companies in this sector are not subject to any legal obligation to draw up payment reports and cannot consequently be identified through the criteria intended for the identification of the companies for the EITI report (see also the explanations in Chapter 10.b.iii.).

Requirements 2.6, 4.5 and 6.2 of the EITI standard are related to government shareholdings in extractive companies.

In Germany, an extractive company with a majority state participation was identified – Südwestdeutsche Salzwerke AG. According to the 2020 annual report, the town of Heilbronn and the State of Baden-Württemberg together hold 93.11% of the voting rights of this company (cf. Annual Report 2020, p. 132 and 133). The dividend paid in 2020 for the previous financial year amounted to €16,812,000.00, equivalent to €1.60 per share (see Annual Report 2020, p. 157). The share capital stands at €27 million and is divided into 10,507,500 individual shares.

The annual report for 2020 can be viewed at: https://www.salzwerke.de/de/investor-relations/finanzberichte/geschaeftsberichte.html

Virtually fiscal revenues, as queried under requirement 6.2 of the EITI standard, are not known.

In the MSG's view, requirements 2.6, 4.5 and 6.2 of the EITI standard are sufficiently met by the above explanations.

iii. Selection of payment flows

In accordance with the EITI standard, payment flows from the extractive industry must be taken into account if they are regarded as significant for a complete presentation of the company payments and state revenues. The following payment flows are recorded within the framework of the fifth German EITI report (cf. The explanations in Chapter 4.b.).

Taxes

Corporate tax

Corporate tax is the main income tax of limited companies in Germany. It is not a specific tax for extractive industry companies, but is levied on all limited companies that are domiciled in Germany or are active in the country. The assessment basis for corporate tax is the taxable commercial income, which is derived from the annual net profit; any tax modifications that may apply are also considered. If an enterprise is also active in other sectors as well as in the extractive sector, there may be delimitation problems regarding the share of corporate tax attributable to the activities in the extractive sector since the corporate tax is calculated on the basis of the total taxable income (cf. Chapter 4.b.i.).

For this reason, corporate tax is classified as a non-project-related payment in the payment reports to be prepared under commercial law. Allocation of these payments to activities within and outside the extractive sector can be selectively carried out by companies if a proper and reliable coding (based on appropriate allocation criteria) is possible. This commercial practice is pursued for the purposes of EITI reporting.

Trade tax

Commercial enterprises in Germany are subject to trade tax. The trade tax assessment procedure has two stages. Trade tax is levied on the trade income. The municipalities in which the respective company has permanent establishments are entitled to the trade tax. A permanent establishment can also extend over several municipalities. Payment recipients for trade tax payments are the relevant individual municipalities, and not the Federal Government or the Federal States. This reflects the federal structure of the state in Germany (see also Chapter 4.b.iii.).

From an administrative point of view, the tax authorities determine (based on the assessment basis determined for corporate income tax) an amount for tax assessment taking into account the provisions of the Trade Tax Act. The trade tax assessment amount is 3.5% of the trade income for all companies nationwide. The tax administration sends the tax assessment amount to the respective local authority in which the company has its permanent establishment. If the company has several permanent establishments or if a permanent establishment extends over several municipalities, the tax administration also divides the tax assessment amount among the municipalities according to a legally determined distribution key. The statements made in this chapter for the tax administration apply accordingly to trade tax for these sections of the administrative procedure.

Building on the upstream administrative procedure at the level of the tax offices, the respective municipality determines the amount of trade tax to be assessed and paid by the company to the municipality by multiplying the tax assessment amount notified by the tax authorities by the municipality-specific tax factor. The tax factor is determined by the elected members of the municipal council. The assessment process, which is divided between two administrative units as described above, is followed by the collection process (the actual payment process) which takes place exclusively at the level of the municipalities.

For a better understanding of the payments of corporate tax or trade tax reported in the context of data collection, further information on the recording of tax payments in certain parent-subsidiary constellations or on special features of tax payments in the context of fiscal inter-company relationships are provided below. In the course of the evaluation of the data collection, it became apparent that both aspects are of particular relevance for the classification and assessment of the reported tax payments.

Particularities with regard to the recording of tax payments in certain parent-subsidiary constellations
Business partnerships such as the GmbH & Co. KG traditionally play a leading role in Germany's small and medium-sized enterprises, in contrast to many other jurisdictions. They are subject to trade tax, but not to corporate tax. Corporate tax is first levied at shareholder level, but only if the shareholder is a limited company. In this respect, one special feature of the German tax law should be noted, according to which business partnerships are not themselves the subject of taxes in terms of income tax; the income generated by the company is subject to taxation at the level of the shareholders, together with the income they have earned from other sources.

In the subsidiary-partnership constellation of a parent limited company, consequences may arise for the recording of the tax payments (trade tax and corporate tax) within the framework of data collection for the EITI report; examples of such consequences are shown below. In each case, it is assumed that a company has voluntarily participated in the data collection for the EITI report if it is active in the extractive industry.

If both the parent limited company and the subsidiary business partnership are active in the extractive industry, all the relevant tax payments (trade tax of the subsidiary and the parent company as well as corporate tax at the parent company level) are recorded in the EITI report. If, on the other hand, the subsidiary or parent company is not active in the natural resources sector, either not all or too many tax payments to government agencies are recorded. If, for example, the parent limited company is active in the extractive industry, but the subsidiary-business partnership is not, the reported corporate tax payments of the parent company also include the financial results of the subsidiary. From the viewpoint of commercial law, it is possible (but not obligatory) to allocate corporate tax

payments to activities both within the extractive sector and outside of it. If, on the other hand, the subsidiary-business partnership is active in the extractive industry, but the parent limited company is not, trade tax payments are only recorded for the subsidiary through the subsidiary's (sole) participation in the data collection, but not, the corporate tax paid by the parent limited company (on a pro rata basis) for the financial results of the subsidiary.

This handling of corporate tax is due to the German tax system. The MSG has decided to pursue this legal, tax-related standpoint, also for EITI purposes.

Particularities with regard to recording the tax payments of consolidated tax groups

German tax law has specific special arrangements in the case of trade tax and corporate tax for corporate groups. Under certain conditions, a so-called "consolidated tax group" may exist. In constellations like this, the incorporated companies (subsidiary organisations), which are themselves limited companies do not usually pay tax. The payment of taxes levied on the financial result of all the companies incorporated in the consolidated tax group is carried out entirely and exclusively by the parent company. The parent company in turn pays taxes on its own income and on the income of its subsidiaries, which may not exclusively result from activities related to the extraction of natural resources.

For the purposes of the (consolidated group) payment report under German commercial law, the following differentiations are made at the level of the parent company:

- If the consolidated tax group is mainly active in the extractive industry pursuant to § 341r No. 1 HGB, reporting can be carried out for the total amount of the taxes paid by the parent company. There is no obligation to allocate the tax payments to activities within or outside the scope of § 341 r No. 1 HGB.
- If, on the other hand, the consolidated tax group is not mainly active in the extractive industry as set down in § 341 r No. 1 HGB, the tax payments made by the parent company may be allocated on a voluntary basis. Otherwise, details of the tax payments made by the parent company will be omitted.

The results of the collection of payments substantiate the major practical importance of consolidated tax groups in the taxation of groups of companies. In various cases concerning the companies participating in the reporting, details of the taxes paid by the parent company are consequently omitted (cf. the figures on the payments made in Chapter 8.c.).

With regard to the recording of tax payments within the framework of consolidated tax groups, the MSG has also opted to pursue the viewpoint according to German commercial law for EITI purposes.

Mine site and extraction royalties pursuant to the BBergG

Mine site and extraction royalties are levied as a specific tax on extractive companies for free-to-mine natural resources, based on the German Federal Mining Act (BBergG) (§§ 30, 31 BBergG) (for further details see Chapter 4.b.ii.).

The MSG has decided to include mine site and extraction royalties in the EITI report as a payment flow.

Lease payments

Mine site and extraction royalties are the only taxes that are levied for the exploration and extraction of free-to-mine natural resources in Germany. However, lease payments may be paid to public authorities in connection with the extraction of natural resources that are not free-to-mine, particularly in the quarrying sector. This is the case when government agencies as

landowners conclude private-law contracts with the extractive industry for the extraction of raw materials. Such contractual arrangements may include fixed payments or payments that depend on the quantity extracted, or a combination of both variants.

The recipients of the lease payments are the government agencies that have concluded the contractual arrangements with the company (e.g. towns and communities, forestry offices, as well as state property administration and moor management authorities).

The content and the number of contracts are not centrally documented (cf. Chapter 4.b.iv.). In addition, the individual government agencies which have oncluded lease contracts – unlike the individual tax offices in the case of corporate tax – cannot be centrally addressed via an organisational unit. This leads to particular difficulties in respect of quality assurance.

Just which government agencies – and how many of them – receive lease payments cannot be foreseen. This information can only be provided by the participating companies themselves within the framework of the data collection process.

Lease payments by companies to government agencies are therefore recorded as part of the data collection (no change here from the third German EITI report), but are not subject to separate quality assurance. The total amount of the lease payments, which are generally collected via the municipalities' revenue offices, only plays a subordinate role in the 2020 reporting year when compared to the overall amount of the reported payments (this was also the case in the most recent D-EITI reports) and was at the same level as in the 2019 reporting year.

Payments for the improvement of the infrastructure

The payment flow corresponds to the legal regulation of the (consolidated) payment report in in § 341 r No. 3 g HGB. The payments notified generally include measures taken by companies for restoring nature on the one hand and payments to promote municipal investments and educational institutions or for the creation or maintenance of public infrastructure on the other. In a similar way to the previous D-EITI reports, the measures reported for the 2020 reporting year can be attributed exclusively to companies from the lignite mining sector, so it is not a cross-sector payment flow.

In the first two D-EITI reports, the content and the composition of the reported payments were analysed in more detail by the Independent Administrator at MSG's request. The results were then presented to the MSG. The results show a high degree of heterogeneity of the recorded payments. This stems from the variety of measures taken in connection with the compensation of impacts from the respective companies involved in lignite mining. Information on the recipients of payments and the purpose of these can, in part, be found in the companies' payment reports.

iv. Project level reporting

The EITI standard generally requires reporting at project levels (EITI Requirement 4.7). The MSG has decided to implement the content and scope of the project concept by the analogous application of legal regulation § 341 r No. 5 HGB. Payments to government agencies must therefore be detailed for each project if the reporting company has carried out more than one project during the reporting period. The concept of the project is concretised in § 341 r No. 5 HGB in the form of a summary of operational activities which form the foundation for payment obligations to a government agency and which are based on a contract, license, lease agreement, concession or a similar legal agreement or a series of operationally and geographically associated contracts, licences, lease agreements or concessions or associated agreements with a government agency which essentially provide for similar conditions.

As a rule, no project-related reporting is provided for "corporate tax" and "trade tax" payment flows, since these are flows that are based on a legal regulation and not on one of the legal agreements set down in § 341 r No. 5 HGB.

In the case of the "mine site and extraction royalties" payment flow, specifying the relevant approved/licensed site within the scope of the data report ensures the sufficient determinability of the project in question. In the case of lease payments and payments for infrastructure improvements, the data collection templates provide for a breakdown of payments between projects per government agency.

v. Materiality of payments

The commercial regulations for the preparation of (consolidated group) payment reports stipulate that the companies concerned must report payments of €100,000 and upwards made to individual government agencies per reporting year (cf. § 341 t(4) HGB). A government agency to which less than €100,000 has been paid during the reporting period does not have to be included.

The MSG has decided to adopt these rules also for the fifth D-EITI report. If payments made during reporting year 2020 amounted to less than €100,000 per government agency, the data collection templates require relevant proof of the existence of payments, but without mentioning any specific amounts.

With regard to trade tax payments, the information base was expanded compared to the previous D-EITI reports. In this fifth D-EITI report, the 20 municipalities that received the highest trade tax payments from participating companies for the reporting year 2020 are included in the quality assurance process.

b. Procedure for quality assurance

i. Description of the concept for undertaking quality assurance for published information

The MSG must ensure both the quality of the information of payments by companies to the state published in the report and the quality of information on the corresponding government revenues. This is a key requirement of the EITI standard. In the first two D-EITI reports, MSG relied on both sides' disclosure of payment flows for quality assurance. This EITI standard procedure makes provision for an Independent Administrator to reconcile individual payments reported by companies with the corresponding receipts by government agencies. These did not produce any or any noteworthy differences between payments made and payments received between companies and government agencies.

The third German EITI report for the 2018 reporting period agreed with the international EITI secretariat started the development of an alternative quality assurance procedure for the payment flows to the government agencies reported by the extractive industry ("Pilot procedure"). The pilot procedure was further developed by the MSG and the IA in the fourth German EITI report for the 2019 reporting period. In the course of this fifth German EITI Report for the 2020 reporting period, the pilot procedure is applied by the MSG and the IA, whereby a more in-depth examination was carried out with regard to the payment flows from trade tax (cf. the explanations given under item b. Section ix.)[201]

In terms of the system, the previous standard procedure represents a test of details of the payment flows reported by the participating companies. Inclusion

201 You can find the work report of the Independent Administrator here: https://d-eiti.de/en/dokumente/

and assessment of the processes and controls associated with the payment flows are not undertaken, meaning that the knowledge gained from the standard procedure is always limited to the payment flows that are actually examined for the reporting period. The pilot procedure involves replacing the payment reconciliation with a multi-stage system-based approach of obtaining information and the analysis of processes and controls relevant for EITI, in particular on the part of the government agencies in receipt of the payments. The aim is to put the MSG in a position where they can provide a well-founded assessment of whether or not there are sufficient signs of risks to indicate that payment flows to government agencies related to natural resources are not being properly processed during the respective reporting period. Regardless of the result of this risk assessment, a process for making a specific analysis of the companies' reported payments will then be carried out. Where there are no sufficient indications for possible risks in respect of the correctness of the relevant (payment) processes and controls, the quality assurance closes with an assessment of the plausibility of the reported payments, which is based on analyses of key indicators and further analytical considerations.

ii. Explanation of the nature and extent of the work of the Independent Administrator

The work of the Independent Administrator encompasses the performance of investigative measures as per the International Standard on Related Services (ISRS) 4400, "Engagements to Perform Agreed-Upon Procedures".

The investigative measures carried out by the Independent Administrator do not constitute a (final) examination or audit review of the payment flows reported by the companies in accordance with the professional standards for auditors accepted in Germany or recognised internationally. Therefore the Independent Administrator did not submit an overall judgement (neither with sufficient nor with limited judicial certainty) in terms of the subject of the investigation measures. The Independent Administrator did not undertake any specific investigations to verify the correctness, completeness and reliability of the payment data, in particular with regard to the data notifications of the participating companies and/or of the government agencies. In addition, the objectives of the investigative measures carried out were neither to uncover errors nor to detect violations on the part of the participating companies or government agencies.

iii. Identification of companies

The first step was to identify the companies that were relevant for the fifth D-EITI report. Here the Independent Administrator used a database analysis[202] to select all the companies which are mainly active in the extractive industry and which are allocated to the lignite, potash/salts, crude oil/natural gas and quarried natural resources sectors. The classification criterion was the allocation of the companies to sub-sections 05 to 08 pursuant to Regulation 1893/2006/EC of 20 December 2006 (cf. Chapter 10.a.ii.). In the second step, these companies were filtered according to the size criteria stipulated by the HGB for "large" companies.

The Independent Administrator manually expanded the group of these provisionally-identified companies by including groups of companies in which a potential "consolidated tax group infection" caused by "active" subsidiaries existed (for details, see Chapter 10.a.ii.). The following aspects are unchanged from the previous D-EITI report and must be addressed:

- Companies the main activities of which are allocated to the storage (e.g. construction and operation of cavern storage facilities for the storage of natural gas) of natural resources underground are not considered, since the extraction of natural resources is not their primary activity, despite their being allocated to sub-sections 05 to 08;

202 Orbis Europe database of the provider Bureau van Dijk. URL: https://bvdinfo.com/en-gb/ (Accessed on 19 April 2023).

- All the companies identified and allocated to sub-section 07 (ore mining) do not actively engage in extractive mining in Germany and are therefore not considered.

Against the background of the legal requirements (cf. §§ 341 q et seq. HGB) and the resulting interpretation possibilities, a final identification of all the companies obliged to report payments pursuant to HGB is not ensured, even with regard to the fifth D-EITI report. Nevertheless, on the basis of the payment reports for 2020 that have been published in the meantime, it can be stated that the companies identified using the methodology described above are very largely the companies that have actually published a payment report to date.

It is evident that the selection criteria specified by the MSG ensured a prominent level of coverage for the lignite, crude oil and/or natural gas, potash and salts/industrial brine sectors (cf. Chapter 10.c.). These are solely free-to-mine natural resources. They contain comparatively few, but relatively large business operations. On the other hand, quarried natural resources are extracted by a very high number of business operations with many extraction facilities and/or mines.

According to estimates by the German Building Materials Association – Quarried Natural Resources (BBS), the 25 largest quarried natural resources suppliers account for only about 1.9% of the total number of companies in the industry. Besides it must be assumed that a number of companies and/or consolidated companies (which are already among the 25 largest providers in this sector) do not fulfil the size criteria in Chapter 10.a.ii. and are therefore not identified by the selection criteria screen adopted by the MSG. As a result of the high number of non-identified small and medium-sized enterprises in the quarried natural resources sector, the coverage of this sector clearly lags behind that of the other sectors.

iv. Identification of government agencies

The total number of government bodies that generate revenues from the extractive industry in Germany stem directly from the payment flows that were defined for this fifth D-EITI report. However, due to the federal structure of the administration in Germany, no central recording of the relevant payment flows is possible.

The following individual government agencies are responsible for:

- Corporate tax: the responsible tax offices at the respective headquarters of the companies
- Mining and extraction royalties: the responsible mining authorities of the Federal States in which the approved/licensed site is located
- Trade tax: the municipalities in the territory of which the taxable operating facilities are located
- Lease payments and payments to improve the infrastructure: government agencies at State or municipal level, depending on the type of payment

v. Managing tax secrecy

The EITI reporting encompasses tax data, viz. payment flows relating to corporate tax and trade tax, which are subject to tax secrecy pursuant to §§ 30 ff. of the German Tax Code (AO) (cf. the comments in Chapter 4.c.). In the course of the preparation of the EITI report, the payment flows reported by the companies and received by government agencies were prepared and disclosed. This usage of tax-relevant data is only permissible if the taxpayer, i.e. the respective company, expressly agrees (§ 30 (4) No. 3 AO). The data collection templates ensure that this consent is obtained from each company for the purpose of publishing the data in the context of EITI reporting.

vi. Measures for safeguarding confidential data

All project-related communication via email and all other project-related data were stored in an ISO 27001 and ISO 9001-certified data centre in Germany. A platform was specifically made available for the exchange of project-related data, and companies could use this to upload data (several times where required). Uploaded data could not be changed for security reasons. Measures were taken to prevent any company from gaining access to the data of other participants. The administration of the data exchange, storage and e-mail service was the responsibility of the EITI Secretariat in Berlin.

vii. Templates and notes on data collection

In accordance with the decisions made by the MSG regarding the shaping of the contents of the D-EITI reporting process, the Independent Administrator has developed an Excel-based template to collect the relevant data from the companies. In addition to the data collection templates, the Independent Administrator has also created further "Notes on data collection within the framework of the EITI process". These notes will give companies practical tips and help them to understand and use the data collection templates.

viii. Quality of data provided by companies

Companies in Germany are subject to comprehensive, legally-regulated

- accounting,
- disclosure and
- auditing obligations.

These obligations depend on the company's size, legal form and activity. Limited companies and limited liability partnerships within the meaning of § 264 a (1) of the HGB must draw up an annual financial statement with notes and (where required) a management report at the end of each fiscal year. The obligation to carry out the annual audit is regulated in particular in the HGB (§§ 316 et seq. HGB). The HGB stipulates a statutory audit obligation (inter alia) for "medium-sized" and/or "large" companies, whereby two of three criteria for grouping into the size classes must be met within a given period of time, pursuant to § 267(2) and (3) HGB).

The statutory audit must at least include the annual accounts (balance sheet, profit and loss account and notes), plus the management report and the accounting records. The auditor must determine whether or not the accounting is consistent with the underlying accounting principles and with any other legal basis such as the Articles of Association or the deed of partnership (compliance/regularity audit). Furthermore, it must also be determined whether the respective financial statements and the associated management report provide an accurate picture of the company's position as a whole. An assessment of whether or not the opportunities and risks of future development are presented accurately in the management report must also be carried out. The result of the audit is summarised by the auditor in the auditor's report (see § 322 HGB). In the case of statutory audits, the auditor's reports must be disclosed with the annual financial statements and the management report in accordance with § 325 HGB through an electronic filing in the Federal Gazette and these are therefore always available to the public.[203] The shareholders of a subsidiary can refuse to disclose the annual financial statements of the subsidiary, if the parent company's consolidated group financial statement which includes the subsidiary concerned is disclosed, the parent company has already agreed to implement obligations entered into by the subsidiary up to the balance sheet date in the following financial year and other prerequisites exist. However, these cases must be made transparent via the electronic Federal Gazette or the enterprise register.

203 The financial statements of all companies participating in the report are available on the portal of the Federal Gazette. https://www.bundesanzeiger.de/pub/de/start?0

In contrast to the annual financial statements, the (consolidated group) payment reports pursuant to §§ 341 q et seq. HGB, however, are not yet subject to statutory audit obligations. Within the scope of their obligation to report pursuant to § 321 (1) sentence 3 HGB, however, if the auditors establish that a (consolidated group) payment report has neither been prepared nor disclosed in the course of their audit work, despite a statutory obligation for companies to do so, the auditors must include this in their audit report. In contrast to the auditor's report, the audit report is only available to the bodies of the audited company and not the public.

The legal representatives and those responsible for monitoring corporate activity are generally supported by an Internal Audit team as they carry out their respective duties. Even where there is no explicit statutory obligation in Germany to set up such a process-independent function, the fact that such a function is in place corresponds to the principles of good corporate governance (see https://www.dcgk.de/en/code.html). This is particularly true for those companies that are a part of large, complex and/or internationally active corporations. At the same time, these organisational structures also increasingly reflect efforts on the part of legal representatives to set up effective compliance management systems that aim to comply with legal regulations but also to observe the ethical rules of the company or corporate group. As a rule, an integral part of these systems is also formed by external contacts contracted by the company or corporate group to whom whistleblowers can report possible breaches of legal regulations or ethical rules.

ix. Quality of data on government revenues

The basis for showing revenues received by government agencies is the corresponding data on the payments by companies for the current year under review.

In the D-EITI reports for the 2016 and 2017 years under review, the corresponding revenues are levied by government agencies and an immediate (payment) reconciliation is made with the payments reported by the companies for which there were no or no noteworthy differences (test of details or case-by-case approach). Building on these findings, in contrast to the original course of action the processes and controls or control mechanisms were analysed for the third, fourth and this current fifth German EITI report. These processes and controls are set up by government agencies to ensure that the respective payment flows are collected properly (debit position) and processed (payment) (system-based approach). The term "correctness" relates to EITI's objective including,

- that sufficient processes or procedures are in place at the relevant government agency to ensure that the debit position of payments is legally compliant and timely,
- that processes and controls are in place which ensure any differences between the debit position of government agencies and payments by companies can be clarified in a timely way,
- that there are adequate controls at the level of superior government agencies and
- that a check of the controls by independent auditors is ensured.

The entirety of the processes, procedures and controls set up must be viewed as an internal control system used to assist the defined objective of proper collection of the relevant payments. In Germany, this system is based in principle on an interaction between the legal basis (e.g. civil service law, budget legislation, criminal law, administrative regulations), the structure and organisation of the authorities (e.g. via rules of procedure, schedules of responsibilities, establishment of segregation of duties, the dual-control principle) and additional monitoring of processes and controls (e.g. via in-house audit offices and other independent auditors). This system-based approach was continued in this present fifth German EITI report.

The wider official environment of these government agencies and the relevant statutory framework are necessarily also considered alongside the analysis of processes and controls set up on the part of government agencies. In sub-section cc the structure of the authorities is considered in more detail. A comprehensive description can be found in the brochure "Die Steuerverwaltung in Deutschland" (Tax administration in Germany), 2018 edition (bundesfinanzministerium.de). Annex c also contains schedules showing the organisational structure and the processes and controls relevant for the investigation in respect of the corporate tax and the mine site and extraction royalties.

As before, the Independent Administrator formed a picture of the processes and controls that have been established, which was gained on the basis of documents linked to the MSG, and discussions with MSG representatives and the responsible authorities. These findings mirror, among other sources, the regulations from the framework concept of the Committee of Sponsoring Organisations of the Treadway Commission (COSO) from the United States of America. This framework concept has gained widespread international acceptance. Its basic principles mirror, for instance, the Standards for Internal Control in the Federal Government of the United States Government Accountability Office, meaning that it can therefore also be applied to government agencies. At the same time, this framework concept forms, among other things, the basis for the Audit Standard 261 – "Determination and assessment of error risks and responses of the auditor to the evaluated error risks" issued by the Institute of Independent Auditors in Germany (IDW) that has been routinely applied for statutory audit reviews in Germany in 2020.

According to COSO, the components of an internal control system include the control environment, risk assessments, control activities, information and communication, and monitoring of the internal control system. The IA has applied these components to the relevant payment flows for corporate tax and mine site and extraction royalties.

In addition to this, the knowledge gained from the previous payment reconciliations as part of the first and second D-EITI report has been included in the IA's analysis and assessment as a case-by-case confirmation of the effectiveness of the processes and controls set up. The system-based approach within the framework of the third, fourth and this fifth German EITI report and the knowledge obtained to date from the payment reconciliations therefore complement each other and together form the basis for the IA's assessment.

In summary, the IA considers that the concept developed in the scope of the pilot project for testing the system-based approach is well suited to satisfy the requirements of the EITI Standard regarding the reliable disclosure of the payments from the extractive industry. Therefore, it can be considered as an alternative procedure when compared to the original procedure of an extensive reconciliation of all material payment flows during a year under review within the context of tests of details. On the basis of the sources of information available to the IA and the information provided by MSG members, the IA has not found any indications of weaknesses in relevant controls to ensure the correctness of payment flows for

- Mine site and extraction royalties
- Corporate taxes and
- Trade taxes.

The work subsequently carried out by the Independent Administrator to make plausibility checks of the data reports of participating companies has led to the assessment that, on the basis of the pilot procedure, the MSG can close the required quality assurance in accordance with Requirement 4.9 of the EITI standard.

The Independent Administrator's work to date under the payment reconciliation pilot has been described, among other things, in a comprehensive work report.[204] In terms of content, the focus of the pilot procedure has so far been on the payment flows resulting from corporate tax as well as mine site and extraction royalties.

Quality assurance process for trade tax payments

For this fifth D-EITI report, the trade tax collection process was analysed in more detail using a questionnaire developed by the IA. This questionnaire was sent to the following 20 municipalities that received the highest trade tax payments from D-EITI participating companies for the reporting year 2020. The responses resulting from the questionnaires provide insight into the processes and controls put in place by municipalities of various sizes to ensure the regularity of the collection of trade tax.

204 You can find the work report of the Independent Administrator here: https://d-eiti.de/en/dokumente/

Table 9: 20 municipalities with the highest trade tax payments from D-EITI companies

Receiving municipality	Trade tax payments in 2020 in thousands of €	Taxpayer company
1. City of Hanover	5,162	ExxonMobil Central Europe Holding GmbH BEB Erdgas und Erdöl GmbH & Co. KG
2. Großkneten (municipality)	3,649	BEB Erdgas und Erdöl GmbH & Co. KG ExxonMobil Central Europe Holding GmbH
3. Meppen (town)	3,133	ExxonMobil Central Europe Holding GmbH BEB Erdgas und Erdöl GmbH & Co. KG
4. Frechen (town)	2,740	Quarzwerke GmbH
5. City of Heilbronn	2,604	Südwestdeutsche Salzwerke AG
6. Dötlingen (municipality)	1,956	ExxonMobil Central Europe Holding GmbH BEB Erdgas und Erdöl GmbH & Co. KG
7. City of Hamburg	1,449	ExxonMobil Central Europe Holding GmbH
8. Rheinberg (town)	1,030	Hülskens Holding GmbH & Co. KG
9. Schöningen (town)	976	JTSD-Braunkohlebergbau GmbH
10. City of Wiesbaden	954	Dyckerhoff-Gruppe
11. Helmstedt (town)	851	JTSD-Braunkohlebergbau GmbH
12. City of Cologne	847	ExxonMobil Central Europe Holding GmbH
13. Elsteraue (town)	792	JTSD-Braunkohlebergbau GmbH
14. Brockel/joint municipality of Bothel	718	BEB Erdgas und Erdöl GmbH & Co. KG ExxonMobil Central Europe Holding GmbH
15. Haltern am See (town)	662	Quarzwerke GmbH
16. Vechta (town)	596	ExxonMobil Central Europe Holding GmbH BEB Erdgas und Erdöl GmbH & Co. KG

Receiving municipality		Trade tax payments in 2020 in thousands of €	Taxpayer company
17.	Lengerich (town)	583	Dyckerhoff-Gruppe
18.	Emstek (municipality)	519	BEB Erdgas und Erdöl GmbH & Co. KG ExxonMobil Central Europe Holding GmbH
19.	Bad Reichenhall	476	Südwestdeutsche Salzwerke AG
20.	Osterwald/ joint municipality of Neuenhaus	462	ExxonMobil Central Europe Holding GmbH BEB Erdgas und Erdöl GmbH & Co. KG

Regarding trade tax payments, one has to bear in mind that the previous trade tax assessment process is very largely the responsibility of tax offices and thus findings from analysing corporate tax payment flows can be transferred to the assessment of trade tax. The decision on the level of trade tax instigated by the tax office is the base decision for the subsequent calculation of the actual level of trade tax by the respective municipality. The municipalities calculate the amount of trade tax owed by applying an individual tax factor to the decision on the level of trade tax. The level of trade tax can therefore vary from municipality to municipality depending on the level of the tax factor that the elected representatives in the respective towns and communities have decided in the parliamentary procedure. An overview of the trade tax rates of German towns and municipalities for the 2020 reporting year can be found in places such as the DIHK website.[205]

The respective municipality is routinely responsible for collecting all the trade tax. The basis of this is the fundamental protected right of municipal self-government that applies to well over 10,000 municipalities in Germany.

As a result of the trade tax levy introduced in the 1970 German Municipal Finance Reform Act (Gemeindefinanzreformgesetz), municipalities must pay a portion of the trade tax they receive to the national government and Federal States, which reduces the revenues that the municipalities receive from trade tax. In exchange, the municipalities were awarded a share of income tax receipts to compensate for this loss of income. A consequence of the levy on trade tax is that a distinction is made between the income from trade tax (gross) and the income from trade tax (net). Income from trade tax (gross) means all the trade tax revenues of the municipalities being reviewed before the share is deducted. The share that remains with the municipalities after the levy has been deducted is described as income from trade tax (net).

The local bylaws as fundamental elements of local governance law provide a comparable legal framework for the organisation at local authority level. Local bylaws form the basis for work of everyone employed in local government and local politics and contain, among other things, fundamental regulations for the organisation of financial accounting and the processing of payments at the municipalities

205 German Chamber of Commerce and Industry (DIHK) Tax factors of German towns and communities 2020. URL: https://www.dihk.de/de/themen-und-positionen/wirtschaftspolitik/steuer-und-finanzpolitik/hebesaetze-56878 (Accessed on 19 April 2023).

(see, for example, Section 93 of the NRW local bylaws or Section 126 of the Lower Saxony local governance law).

For the purposes of this fifth D-EITI report and building on this understanding of the MSG and the IA, the IA (with the support of the German Association of Towns and Municipalities) conducted a survey among the 20 municipalities that were identified as the largest recipients of trade tax payments via the data reports of the companies participating in D-EITI. As already mentioned, one of the purposes of the survey was to gain a better understanding of the design of trade tax processes and controls in the municipalities relevant to the extractive industries. The response rate of the municipalities surveyed was 65% at the time of drafting this D-EITI report.

Due to the different sizes of the municipalities surveyed, the IA divided them into three categories – small municipalities, medium-sized municipalities and large municipalities. Weighting the response rate with the trade tax payments of the participating companies reported for the fifth D-EITI report resulted in a response rate of 81% for the small municipalities, 48% for the medium-sized municipalities and 76% for the large municipalities. From the perspective of the receiving municipalities, the significance of the trade tax payments made by the companies participating in D-EITI varies significantly depending on the size of the municipality. The trade tax revenue per inhabitant amounts to a minimum of only €0.70 per inhabitant and a maximum of €304.70 per inhabitant. The median of the reported trade tax payments per inhabitant of all receiving municipalities amounts to €33.60. The data from the responses of the surveyed municipalities show equal values for the minimum and the maximum and a median of €31.00/inhabitant. Against this background, the IA considers the answers being adequate to derive generalised statements on the processes for securing payment flows on the part of the municipal administrations.

The feedback from the municipalities indicates that the trade tax assessment notices are generally issued by the office or department responsible for finances in the municipality, while the cash office collects the payments. The recording of payments and the reconciliation with the respective receivables due from the companies is mainly automated, although in the case of discrepancies between payments and receivables or incomplete or incorrect information, manual corrections have to be made. The number of employees in the respective municipalities who are responsible for issuing the trade tax assessment notices and collecting the payments varies significantly with the size of the respective municipality. The number of employees in the area of the cash office is always higher than the number of employees responsible for issuing trade tax notices, regardless of the size of the respective municipality. The fact that the assessment processes are closely linked (as described above) has a direct effect on the design of the processes in the municipalities and the issuing of basic notices by the tax offices.

In all cases, the two administrative steps of assessment and collection are strictly separated in terms of personnel so that the basic principle of separation of functions is always guaranteed, regardless of the size of the municipality. Unclear payments are always handled by the cash office. In individual cases, coordination with the office responsible for issuing the trade tax assessment notice is necessary.

With one exception, all municipalities have written regulations to ensure the timely enforcement of trade tax claims by the municipality. In principle, the cash office is responsible for the implementation of these regulations. In the context of taxation, so-called equity measures may exceptionally occur. This is understood to mean both the temporary deferral of payments and the final remission of trade tax claims in compliance with the respective regulations on these equity measures. In principle, decisions on this

are made within the administration of the municipality. Only in individual cases does the municipality follow the corresponding decisions of the tax administration for corporate income tax. The respective decisions are not made by the cash office and, depending on the importance of the equity measure for the municipal budget, require the involvement of higher-level decision-makers up to the mayor or main or administrative committee (a permanent, representative committee of the municipal parliament or municipal council).

Financial control at the level of the Federal Government and States through the institutional guarantee of the audit offices has its equivalent at municipal level in the form of a two-stage control system made up of local and supra-local auditing. On the basis of the democratic legitimacy of the council, the local auditing unit takes control of the financial practices of the administrations led by the mayor within the framework of the right of municipalities to self-government guaranteed under constitutional law. The local audit is carried out by the municipality's own body as a form of in-house control of their own performance so that certain dependencies necessarily exist in the context of regulations governing public services because of the organisational integration of the respective body in the local authorities. Local auditing of accounts is based on regulations in the local bylaws and the tasks are performed by persons/offices who vary in different cases, depending on the relevant municipal regulations (see, as an example, Sections 102–104 of the NRW local bylaws):

- Municipal council
- Audit committee
- Audit office
- Suitable members of staff appointed by the municipality as auditors
- Other municipal auditors

Supra-local auditing of accounts is carried out by a state or association-based audit office and in relation to the municipalities to be audited is an independent, supra-municipal state external audit. Implementation lies with its own municipal audit offices (e.g. NRW's municipal audit office) or the Audit Offices of the Federal States or the offices for auditing accounts at district level.

In all surveyed municipalities, local or supra-local audits of cash management or payment processing are carried out by the government offices for auditing accounts or municipal audit offices or Federal State Audit Offices. The majority of the municipalities reported that the last audits took place in 2022 or 2021. Written reports are submitted by the auditing bodies in each case. However, these audit reports are not always publicly available. Rather, they are only available within the respective administration or are brought to the attention of a committee of the municipal parliament or municipal council.

The current trade tax factors for the surveyed municipalities ranged between 320% and 510% with a median value of 420%. According to DIHK[206], the average trade tax factor for 2020 for municipalities with 20,000 or more inhabitants was 435%. In this context, the question was asked in which calendar year the trade tax factor was last adjusted by resolution of the respective municipal parliament or municipal council. In the longest case, the assessment rate has been unchanged since 1981, while the most recent adjustments were for 2023. The median value resulting from the answers received was the year 2011.

As a result, the IA comes to the conclusion that the organisational processes and established structures or controls are of comparable quality to the processes and controls of the payment flows of the corporate income tax and mine site and extraction royalties. Thus, according to the IA's assessment, the system-based approach to quality assurance of payment flows by the MSG can also be applied to the payment processes in connection with trade tax. Equally, the

206 German Chamber of Commerce and Industry (DIHK) Tax factors of German towns and communities 2020. URL: https://www.dihk.de/de/themen-und-positionen/wirtschaftspolitik/steuer-und-finanzpolitik/hebesaetze-56878 (Accessed on 19 April 2023).

organisation and design of payment processes in the municipalities differ from each other in detail, in particular according to their size.

The following overview shows the number of municipalities that received trade taxes in the reporting year 2020 from the companies participating in D-EITI.

Table 10: Number of municipalities receiving trade tax payments from D-EITI companies

Company	Number of municipalities receiving trade tax payments
BEB Erdgas und Erdöl GmbH & Co. KG	23
Dyckerhoff-Gruppe	6
ExxonMobil Production Deutschland GmbH	28
Heidelberger Sand und Kies GmbH	1
Holcim (Deutschland) GmbH	2
Hülskens Holding GmbH & Co. KG	3
JTSD-Braunkohlebergbau GmbH/MIBRAG	9
Quarzwerke GmbH	5
Sibelco Deutschland GmbH	*)
Südwestdeutsche Salzwerke AG	4
Wacker Chemie AG	1

*) not evident from data report

The overview also shows for the group of companies that take part in D-EITI the 20 government agencies to which the highest trade tax payments in the aggregate were made in the year under review (2020):

Table 11: 20 municipalities to which the highest trade tax payments were made by D-EITI companies in the reporting year 2020

Taxpayer company	Receiving municipality	Trade tax payments in 2020 in thousands of €
ExxonMobil Production Deutschland GmbH	City of Hanover	3,671
	Großkneten (municipality)	1,768
	Meppen (town)	3,010
	Dötlingen (municipality)	998
	City of Hamburg	1,449
	City of Cologne	847
	Brockel/ joint municipality of Bothel	288
	Vechta (town)	432
	Emstek (municipality)	176
	Osterwald/joint municipality of Neuenhaus	296
BEB Erdgas und Erdöl GmbH & Co. KG	City of Hanover	1,491
	Großkneten (municipality)	1,881
	Meppen (town)	123
	Dötlingen (municipality)	958
	Brockel/ joint municipality of Bothel	430
	Vechta (town)	164
	Emstek (municipality)	342
	Osterwald/joint municipality of Neuenhaus	166
Quarzwerke GmbH	Frechen (town)	2,740
	Haltern am See (town)	662

Taxpayer company	Receiving municipality	Trade tax payments in 2020 in thousands of €
Südwestdeutsche Salzwerke AG	City of Heilbronn	2,604
	Bad Reichenhall	476
Hülskens Holding GmbH & Co. KG	Rheinberg (town)	1,030
JTSD-Braunkohlebergbau GmbH	Schöningen (town)	976
	Helmstedt (town)	851
	Elsteraue (town)	792
Dyckerhoff GmbH	City of Wiesbaden	954
	Lengerich (town)	583

The following overview also shows the supra-local audit office (audit agency/State audit office) responsible for each of the 20 government agencies that received the highest trade tax payments for the year under review (2020):

Table 12: Competent supra-local audit institutions for trade tax payments made by D-EITI companies

Responsible supra-local audit office	Receiving municipality
President, State Audit Office for Lower Saxony	City of Hanover
	Großkneten (municipality)
	Dötlingen (municipality)
	Schöningen (town)
	Helmstedt (town)
	Brockel/joint municipality of Bothel
	Vechta (town)
	Emstek (municipality)
	Osterwald/joint municipality of Neuenhaus
	Meppen (town)
NRW municipal audit office	Town of Frechen
	Rheinberg (town)
	City of Cologne
	Haltern am See (town)
	Lengerich (town)

Responsible supra-local audit office	Receiving municipality
Baden-Württemberg municipal audit office	City of Heilbronn
Audit Office of the Free Hanseatic City of Hamburg	City of Hamburg
President of the Hessian audit office	City of Wiesbaden
State Audit Office of Saxony-Anhalt	Elsteraue (town)
Audit Office at the Berchtesgadener Land District Office	Bad Reichenhall

aa. Control environment

According to COSO, the control environment always covers the attitude, awareness and measures of the persons responsible for monitoring and the persons with managerial functions with respect to the internal control system and its significance within the corresponding government agency. The control environment shapes the basic attitude of an organisation by influencing how aware employees are of controls – understood to be the voluntary commitment to integrity and actions according to ethical values.

The control environment of the government agencies relevant here is equally characterised by a strict hierarchical structure that is set for the financial authorities by the Tax Administration Act (FVG) (cf. link in footnote).[207] How the mining authorities are organised is the responsibility of the respective Federal State; the Federal Mining Act (BBerG) does not contain any detailed provisions for this.

The respective organisational structure is clearly governed through rules of procedure (e.g. the rules of procedure for tax offices, see the link in the footnote), schedules of responsibilities, job descriptions and administrative instructions within the relevant government agencies. Whereas the responsibilities of the job holder concerned within the assigned administrative processes result from the internal administrative job descriptions or schedules of responsibilities, the supervision obligations and authority to give instructions of the respective line managers are derived from the rules of procedure and administrative instructions. Within the administrative organisation special attention is paid to strict compliance with the principle of dual control as part of administrative processes, on the one hand, and the organisational segregation of assessment and collection processes, on the other, i.e. the enforcement of payment claims by the relevant government agencies and the receipt of payments due from the parties liable to pay.

Besides this, the control environment of the relevant government agencies is largely shaped by German civil service law[208] and parliamentary budgetary law and the associated control processes.

German civil service law is a separate field of law, which governs the particular rights and obligations of civil servants. On the one hand, civil servants have an obligation to be neutral when carrying out their work,

207 A detailed overview of tax administration in Germany, including the differences between the Federal States, can be found in: Tax Administration in Germany (BMF 2018)

208 In some cases, employees who are not subject to civil service law work in the responsible agencies. They, too, have an obligation to the common good and must also perform their services in an objective and unbiased way in accordance with the law. However, at least one civil servant is always involved in the decision-making process.

they are banned from striking and they are required to uphold the constitution: on the other, they have the right to life-long employment with appropriate pay and retirement benefits. Furthermore, the general principle applies within the relevant government agencies that the criteria according to which civil servants selected to fill vacant positions are exclusively based on their suitability, expertise and professional performance. Civil servants have obligations such as a duty of loyalty, a duty of obedience and a service obligation that arises from these civil service principles.

Breaches by civil servants of the obligations that result from the relevant employment relationship are subject to disciplinary law, a sub-area of civil service law which governs how to proceed in the event of possible breaches of obligations and what the consequences may be for the respective civil servant if they are found to be culpable. Besides breaches of duty in the area for which they are responsible professionally, breaches of duty may also arise from behaviour outside the relevant government agency, if these breaches are likely to have a significant detrimental effect on the trust of citizens in the relevant government agency or the reputation of the civil service as a whole.

Because of their special legal status civil servants have an obligation to act with integrity, in particular with regard to adherence to and/or implementation of legal regulations, and to act in a way that observes values derived from civil service law, including the requirement to uphold the law and the constitution. This also includes explicit release from any other existing obligation to maintain secrecy in accordance with § 37 (2) sentence 1 No. 3 of the German Civil Service Status Act (BeamtStG), if a civil servant reports a suspicion of a corruption offence backed up by facts to the highest administrative authority in accordance with §§ 331 to 337 of the German Penal Code.

Furthermore, the relevant control environment is largely shaped by the current budgetary law and the associated primacy of parliament. Parliament passes a resolution on the budget law and so the budget in question is approved and thus gains its democratic legitimacy. At the same time, the executive is empowered via the budget law and is also under an obligation to implement the budget thus legitimised in the relevant budget year. Depending on the significance of the revenues for the (State) budget, the payment flows relevant for D-EITI are also shown separately in the budget planning and or the budget law. After the end of the budget year, the executive accounts to parliament for the "budget submission". The budget submission is also subject to control by the relevant audit office, which reports to parliament on the results of its audit.

An example of the primacy of the parliament is the fact that the parliament of Lower Saxony has dealt with the proposed amendment to the Lower Saxony ordinance on mine site and extraction royalties (NFördAVO) and a settlement agreement between the State of Lower Saxony and various oil and gas production companies (as reflected in the document Lower Saxony Parliament – 18th legislative period, printed matter 18/8286). The background to this was the planned conclusion of individual agreements between the Federal State of Lower Saxony and said companies to settle a difference of legal opinion, which goes back to a decision of the Federal Administrative Court from December 2018 (BVerwG 7 BN 3.18). In the opinion of the Federal State government the agreement is expedient and economical accordance within the meaning of § 58(1) no. 2 of the State Budget Code (LHO). However, the agreement as well as the amendment of the Lower Saxony ordinance on mine site and extraction royalties required the approval of the State parliament due to their fundamental or considerable financial significance as well as their direct legal effect for third parties (§ 40(2) of the State Budget Code (LHO). An exemption from the extraction royalties was agreed retroactively for the 2020 financial year, as well as an amendment to the Lower Saxony ordinance on mine site and extraction royalties with a new determination of the royalty rates until 2030. The parliament of Lower Saxony was informed that an amount of approx. €30.3 million (58.3% of the €52 million collected in the 2020 financial year) would be refunded in the 2021

calendar year. After the parliamentary committees "Economy, Labour, Transport and Digitalisation" and "Budget and Finance" were informed by the government of the Federal State, they recommended that the parliament adopt the government's motion unchanged. The parliament of the Federal State approved this motion in its 96th session on 27 January 2021.

Since the quality assurance in the context of this fifth D-EITI report refers to the actual payments made and received in the reporting year 2020, it is on the one hand plausible that the payment flows reported by the participating companies for the reporting year 2020 actually accrued in the amount reported to the parliament by the government of the Federal State. On the other hand, this provides the MSG with indications for quality assurance in the upcoming sixth D-EITI report, since for the upcoming 2021 reporting period, in addition to payment flows from the companies to the responsible government agencies, significant repayments from the government agencies to the companies are also to be expected.

In Germany a series of further regulations over and above the stated regulations exist and these ensure the integrity of the actions of public authorities. In respect of corruption prevention, particular reference is made to the Directive on corruption prevention in the Federal administration, which contains important measures for a prevention strategy such as

- Identification of areas of work at particular risk of corruption,
- the cross-check principle and
- the creation of a contact person

and a Code of Conduct for employees and guidelines for managers and the management of authorities. The purpose of the additional recommendations on corruption prevention in the Federal administration is to help to implement these guidelines. Various legal and administrative regulations exist at Federal State level to prevent unlawful and unfair effects on administrative actions (cf. in NRW, for example, see the Anti-corruption Act of 16 December 2004).

bb. Risk assessments

The risk assessment process means the identification and assessment of risks in respect of meeting targets for the respective processes. At the level of the relevant government agencies, a distinction must be made between risks in the assessment process and risks in the collection process.

Assessment process
The mine site and extraction royalties are based on self-assessment by those who have an obligation to pay, in other words the units mining the resource and/or the respective levy payers. The provisions in the relevant statutory arrangements are that the party with an obligation to pay first calculates the amount due to be paid and informs the government agency of this.

It is possible that the parties due to make the payment may make mistakes in the self-assessment procedure. This can range from a clerical or input error when entering the data in the self-assessment form or unintended incorrect interpretation of the relevant legal rules to a deliberate failure to observe the legal regulations. Accordingly, all relevant government agencies have extensive auditing rights to carry out inspections to ascertain whether the information provided by the taxpayers is correct and complete.

In contrast, there is no self-assessment in relation to income taxes (corporate tax/trade tax). The companies liable to pay tax have a statutory obligation to file income tax declarations that must be submitted every year because of period taxation. The information provided is then checked by the tax authorities responsible for the area and the nature of the tax. Once the authorities have approved the income tax declarations submitted, income tax assessment notices and thus the amount to be paid are sent to the companies. It is possible that, at a later point in time,

the tax declarations may be audited as part of company audits. See Section cc for this.

The result of the assessment process forms the basis for the collection process, i.e. the actual payment flow, which was assessed in the original quality assurance procedure (payment reconciliation) as part of a test of details. However, the requirements of the EITI Standard do not extend to the assessment process.

Collection process
A distinction must be made between the risks in the assessment process and risks in connection with the collection of payments, in other words, in the collection process. These could be produced, for instance, from collected expertise of staff who played an integral part in both the assessment and assessment process. The risk is dealt with both organisationally by strict segregation of functions within the relevant government agency between the party responsible for the assessment and the party responsible for collection and also the fact that the party liable to pay can settle what they owe with a cashless payment, i.e. via transfer: it is not possible to make a cash payment. The segregation of duties ensures that

- the civil servants who undertake the assessment do not have access to the relevant government agency's (bank) accounts to which the taxpayers make the calculated and estimated payment via bank transfer and
- that no one person handles the case in its entirety.

Dealing with differences between the payment due and the payment received
Any differences between the estimated payment due (target position) and the actual payment received (actual receipt) are clarified by the relevant collection office.

If payments of corporation tax are too low, automatic reminders are sent in accordance with the statutory regulations or these payments are recovered by the enforcement office (as a special part of the collection office) within the framework of current legal regulations. If payments are too high, they are initially held safely (suspense account) and offset against any possible other open positions owed by the taxpayer from other kinds of tax or other periods. If any difference remains after this, the taxpayer is reimbursed.

Comparable processes are established for the mine site and extraction royalties in the collection process. No automated reminders are sent here because the number of companies that pay royalties is considerably smaller. Instead, reminders are handled by administrators on a case-by-case basis. For trade tax, the concrete design of the processes depends on the respective municipality, whereby the number of employees working in the processes varies with the size of the respective municipality. Basically, the responsibility for clarifying any discrepancies between payments owed and payments received lies with the competent cash offices or the tax offices.

cc. Information and communication

The "Information and communication" component of an internal control system relates to procedures and measures that the relevant government agency uses to generate or obtain the relevant (payment) information in a suitable and timely form, prepare it and forward it to the relevant offices in the internal organisation. These procedures and measures are shown below, both for the assessment process and for the collection process.

Corporate tax
Corporate tax declarations are regularly sent by means of a program interface to the tax determination office that is responsible for the area of business. Responsibility of the tax determination office is guided according to the district where the company management and/or the company headquarters are located.

The organisation of the tax office as a whole and the rights and obligations of the individual work areas are defined by the identical ordinances of the highest tax

authorities in the countries for rules of procedure for the tax offices (called FAGO). FAGO governs the principles or organisation at tax offices following the Tax Administration Act (FVG) and can be accessed by interested members of the public.

In the majority of cases, the administrators in the assessment office are not only responsible for checking the information in the corporate tax declaration but also for the definitive signature on corporate tax assessment notices. In the case of companies which are either larger than a certain size in terms of the business (e.g. annual sales, annual profits) or are classified by the system or manually as legally complex cases, the definitive corporate tax notice is signed by the responsible senior tax inspectors for the assessment office or a quality assurance department based in the same tax determination office. The corporation tax notice is approved electronically. Where a reservation regarding signature exists, the administrators cannot on their own approve the case electronically. Approval is routinely granted by the senior tax inspectors.

In order to ensure that the taxes are correctly deducted and paid over, companies can be subject to a government tax audit in addition to the check of the corporate tax declaration. A team that is segregated from the assessment office in terms of personnel and organisation is responsible for such government tax audits, which are conducted on site on the premises of the company involved in each case. Depending on the size of the business, the reason why a company is selected for a government tax audit is random, based on an event because of a suggestion by the assessment office or seamless (called a follow-on audit).

Taxpayers are grouped in four different size classes for the purposes of government tax audits. The 17 companies or consolidated companies participating as part of the fifth German EITI report are all classed as "large enterprises" and thus are assigned to the highest size class. Companies of this size are always audited seamlessly so that the period of time being audited follows on from the previous audit period, thus achieving a continuous audit of all assessment periods.

As a result, the office that carries out the government tax audits is "an extension" of the assessment unit for auditing the companies on site. The involvement of auditors and their senior inspectors (who are not the same as the senior inspectors in the assessment office) illustrates the cross-check principle in respect of the tax fixing procedure.

As soon as a corporate tax notice has been approved by the assessment office, the payment due or the claim for reimbursement, as appropriate, arising from the corporate tax notice is officially set in the responsible collection department to a target via electronic data processing. The collection department is not included in the overall process until this has been issued. As a consequence of the centralisation of revenue offices, the assessment office and the payment unit are now often not only separated within a tax office but the payment unit is relocated to payment processing offices. Depending on whether the financial administration at Federal State level has a two or three level structure, these can either be assigned to the regional tax directorate or to the State's Ministry of Finance. This means that the administrators from the two units generally do not know each other well.

Trade tax

As already mentioned, the assessment of trade tax is predominantly the responsibility of the tax offices. This means that the findings from the analysis of the corporate income tax payment flow can be transferred to the assessment of trade tax. With regard to trade tax, the municipalities are entitled to participate in external audits conducted by the tax authorities of the Federal State through municipal employees. This right to participate does not represent an outward claim directed against the taxpayer, but is rather to be understood as an internal authority in the relationship of the municipality to the tax administration of the Federal State. If the municipality wishes to claim the

right of participation granted to it (and which is part of its constitutionally protected right of self-government pursuant to Article 28(2) of the Basic Law), it can assert this right against the tax administration.

Mine site and extraction royalties

The calculation, fixing and collection of mine site and extraction royalties are always in accordance with the Federal Mining Act (BBergG) and the Extraction Royalties Ordinance of the Federal States concerned (cf. Chapter 4 b ii) in conjunction with the relevant regulations in the German Tax Code (AO). Where mining licenses date back to the time before the current Federal Mining Act came into force in 1982 ("old rights"), no mine site and extraction royalties apply (cf. the explanations for this in Chapter 3, Section b.).

In Germany, the State Office for Mining, Energy and Geology (LBEG) with its main office in Hanover is responsible for by far the highest proportion of income from mine site and extraction royalties (approx. 96% for the 2020 year under review) and has therefore been involved in analysing the processes and controls. LBEG is supervised by the Lower Saxony Ministry of Economic Affairs, Employment, Transport and Digitalisation.

Even seen against the background of the manageable number of companies that pay the royalties[209] and the self-assessment procedure, the competent sections at the LBEG for fixing the mine site and extraction royalties cannot be compared with the situation in a tax determination in terms of the available personnel and its organisational structure. At the present time, in LBEG there are one full-time administrator, one part-time administrator, two external auditors and one section leader responsible for fixing the mine site and extraction royalties in the Federal States of Lower Saxony, Schleswig-Holstein, Hamburg and Bremen.

Nevertheless, in a similar way as for corporate tax, the organisational precautions taken ensure strict segregation between the administrative function (assessment/setting the target) and processing payments. The Chief Cashier's Office of the State of Lower Saxony, as an organisational unit of the Lower Saxony Ministry of Finance, is responsible for the technical side of the processing of payment flows, using the budget implementation system as an integral part of the budget management system, The Chief Cashier's Office of the Federal State is not responsible for clarifying the facts in relation to mine site and extraction royalties and is not involved in this.

The companies that owe the royalties record the data required for the extraction royalties via self-assessment using a web client system (VAS = Veranlagungssystem Feldes- und Förderabgabe/Assessment system for mine site and extraction royalties). All master data relating to the accounts are managed for each company in the VAS system (e.g. information on tax advantages) and the amount of extraction royalties to be paid is calculated by the system from the information provided by the companies. VAS is not used for the mine site royalties but instead the amount is fixed using LBEG's electronic records system. The administrator role (at the Clausthal-Zellerfeld office has the technical responsibility for the correctness and completeness in respect of fixing the mine site and extraction royalties ("target position"). The cross-check principle is safeguarded as the section leader co-signs any decision. The administrator role issues the royalty notices to companies and creates the cash desk instructions that are transferred via the electronic records system to the main office in Hanover for checking and approval.

Once checking and approval are complete, the cash desk instructions are posted in the budget implementation system and differences between payments received and the target positions are clarified.

In line with the nature of self-assessment, a central element of the process of fixing the royalties by the LBEG is the examination of the royalties paid by the

209 The 2020 BVEG annual report contains an overview of the oil and gas companies that pay royalties in Lower Saxony, Hamburg and Schleswig-Holstein. https://www.bveg.de/Der-BVEG/Publikationen/Jahresberichte (Accessed on 23 February 2023).

company through external audits. According to information received, because of the situation with personnel the external audit is not seamless but is carried out by establishing audit priorities.

dd. Monitoring the internal control systems of relevant government agencies

The monitoring of controls by the (administrative) unit is understood to mean the organisational and process-driven measures that are used to assess the effectiveness of the internal control system over time. It must be ensured that the controls are in place at all times and are actually implemented. Implementation of the monitoring function for both the corporate tax and the mine site/extraction royalties is ensured by methods such as the internal audit units. For trade tax, this monitoring function is implemented through the local audit processes (cf. Section ee. below).

The Internal Audit's planning for audits is based on a systematic and targeted approach for determining risk factors where the scope of possible negative effects of administrative actions and the likelihood that they occur may play a role. The results of internal audits are intended for the audited department itself and the relevant managers. According to the current legal position, the Freedom of Information Act always applies to official information in documents within the internal audits carried out for national and Federal State authorities, assuming the Federal States have adopted the appropriate regulations in the Federal Government's Freedom of Information Act. Access to information can be limited in an individual case, as the advisory role of the internal auditors, in particular, could be disrupted by the publication of the audit report, when the internal auditors can no longer entirely fulfil their role as contacts for employees working in public authorities, if there is a threat that of subsequent publication of information.

Corporate tax

According to information provided, the regional tax directorate or the State Finance Ministries carry out controls for corporate tax in the form of business audits on an annual basis. These audits relate to both the areas of fixing and collection. As part of these controls, cases are selected for auditing and these are then audited to ensure that they have been processed correctly.

In addition, a separate "Internal Audit" unit is set up as a rule at the level of the State Finance Ministries and this unit is reports directly to the management of the authority. The work undertaken by the Internal Audit unit is based on the recommendations on standards for Internal Audits in the administration of the Federal State of Hesse ("Empfehlungen über Standards für Interne Revisionen in der Hessischen Landesverwaltung"), e.g. in the Federal State of Hesse. These standards form a uniform and cross-departmental work and legal basis for the work of the internal audit departments. They are based on the auditing standards of the German Institute of Internal Auditing (Deutsches Institut für Interne Revision e.V., DIIR) and the recommendations of the German Federal Ministry of the Interior for Internal Audits ("Empfehlungen des Bundesministeriums des Innern für Interne Revisionen"). The Internal Audit undertakes independent auditing and control functions by examining the administrative actions for discrepancies and irregularities. It also makes suggestions on how to rectify these as well as how to avoid these in the future and assists the efficiency and effectiveness of administrative actions.

The Internal Audit unit produces an audit report on their work. A copy of this report is always submitted to the management the authority in change of the organisational unit that has been audited for approval. The audited organisational unit is given a copy of this report. The Internal Audit unit submits a written report on their activities to the management of their authority at least once a year. The reports on audits issued in the course of the year are not affected by this.

§ 19 of the Tax Administration Act (FVG) states that the Federal Ministry of Finance can take part in the external tax audits of the Federal States' tax authorities via the Federal Central Tax Office (Federal Tax

Inspection). In this way the Federal Ministry of Finance is made aware of matters such as tax developments that may be significant for legislative measures or administrative regulations.

Mine site and extraction royalties

The processes in the field of collecting the mine site and extraction royalties are monitored via the Internal Audit at the level of the State of Lower Saxony's Ministry of Finance. The Internal Audit is responsible for tasks such as monitoring the procedures and controls within the Chief Cashier's Office of Lower Saxony as the office that processes the mine site and extraction royalties.

In addition, control activities that relate to current budget management at the level of the respective State budgets are significant. The corresponding receipts are, for example, in the State of Lower Saxony, allocated to the corresponding budget item within the budget implementation system and allow the administrative unit responsible for the budget to reconcile the receipts planned in the budget with the amounts actually received. As is appropriate for the significance of the mine site and extraction royalties for the respective budgets, a comparison can be made between the planned receipts from mine site and extraction royalties and the subsequent actual amounts even across periods. Ultimately, this allows interested members of the public to undertake a control function via the usual processes for political participation. After the IA's collection, the mine site and extraction royalties are currently shown separately in the budget plans of the Federal States of Lower Saxony, Schleswig-Holstein, Rhineland Palatinate and Bavaria and can be accessed by members of the public who are interested in this subject.

ee. Monitoring controls by independent auditors

The administrative units relevant for the D-EITI are subject to auditing by municipal audit offices (e.g. NRW municipal audit office), Federal State audit offices or the Federal Audit Office (hereinafter referred to as audit offices).

Due to the Federal State structure in Germany, there are independent, state-owned audit offices to control the budgetary economy at both Federal and Federal State levels. The jurisdiction of the Federal Audit Office is restricted to the sphere of the Federal Government's financial practices[210]; it has no legal supervisory rights or right of direction over the States' audit offices. The audit offices are independent, supreme authorities at the Federal and the Federal State levels. Their tasks, position and powers are derived from the Basic Law (Article 114 GG) or the constitutions of the Federal State, which are defined in detail by Federal and Federal State budgetary regulations.

Financial control at the level of the Federal Government and States through the institutional guarantee of the audit offices has its equivalent at municipal level in the form of a two-stage control system made up of local and supra-local auditing. Those auditing accounts locally monitor the financial practices of the administrations managed by mayors. The local audit is carried out by the municipality's own body as a form of in-house control of their own performance so that certain dependencies necessarily exist in the context of regulations governing public services because of the organisational integration of the respective body in the local authorities. Local auditing of accounts is based on regulations in the local byelaws and the tasks are performed by persons/offices who vary in different cases, depending on the relevant municipal regulations (see, as an example, Sections 102–104 of the NRW local byelaws):

Supra-local auditing of accounts is carried out by a state or association-based audit office and in relation to the municipalities to be audited is an independent, supra-municipal state external audit. Implementation lies with its own municipal audit offices (e.g. NRW's

210 Federal Audit Office. URL: https://www.bundesrechnungshof.de/DE/5_ueber_uns/2_was_wir_tun/was_wir_tun_node.html (Accessed on 19. April 2023).

municipal audit office) or the Audit Offices of the Federal States or the offices for auditing accounts at district level.

The following principles apply as a standard of review for the auditing of state and municipal budgetary and economic administration:

- the regularity of the execution of the law and administrative action, as well as
- economic efficiency and economical practices in budgetary and economic administration

The principle of regularity includes (inter alia) the accounting correctness (proper and legal calculation, justification and booking) of the individual invoice amounts. The respective audit office is solely responsible for the content, scope and frequency of the auditing procedures.

The results of the audit offices' work are made known to the relevant government agencies in the form of audit reports. The audit office may communicate the audit result to agencies other than those reviewed if it considers this action necessary for particular reasons. Selected audit results are nevertheless summarised in annual reports that are accessible to the public.[211] The IA did not ascertain any specific comments on the payment flows in question during the investigation period when inspecting the publicly accessible reports of the Federal Audit Office and the State audit offices in Hesse and Lower Saxony as well as in individual supra-local audit offices for the 2020 reporting period.

The German accounting offices support the implementation of International Standards of Supreme Audit Institutions (ISSAIs) developed by the International Federation of Supreme Audit Institutions (INTOSAI).

Since 1 July 2016, the President of the Federal Audit Office has been a member of the Council of Auditors of the United Nations and will remain so for six years.[212] In this function, the President of the Federal Audit Office is responsible for the auditing of nine international organisations.[213] All audits are performed in accordance with INTOSAI standards.[214]

Also the audit offices of the individual Federal States are involved in international exchange and discuss current standards and applied audit methods regularly in the context of the European Organisation of Supreme Audit Institutions (EURORAI). The maintenance of high auditing standards at both national and sub-national level can therefore be regarded as given.

c. Data collection

i. Participating companies and coverage of the sectors

Of the 43 companies and/or consolidated group companies identified by the Independent Administrator in accordance with the requirements of the MSG, a total of 17 companies or groups of companies participated in the reporting process during the preparation of this EITI report.

It should be noted that the identification of companies or groups of companies was based on an estimate of the companies likely to be subject to the statutory requirements (cf. Chapter 10.b.ii. for details). Following the expiry of the deadlines for publication of the payment reports for the period from 1 January 2020 to 31 December 2020 and the experience gained from the publication of the payment reports for the periods 2016 to 2019, it has become apparent that the number of payment reports actually published is lagging behind the number of companies or consolidated groups that

211 Federal Audit Office. URL: https://www.bundesrechnungshof.de/SiteGlobals/Forms/Suche/Berichtssuche/Berichtssuche_Formular.html (Accessed on 19 April 2023).
212 Federal Audit Office. URL: https://www.bundesrechnungshof.de/SharedDocs/Kurzmeldungen/DE/-2022-Kurzmeldungen/09_2022_unboa.html (Accessed on 19 April 2023).
213 Federal Audit Office. URL: https://www.bundesrechnungshof.de/SiteGlobals/Forms/Suche/Berichtssuche/Berichtssuche_Formular.html (Accessed on 19 April 2023).
214 United Nations. URL: http://www.un.org/en/auditors/panel/ (Accessed on 19 April 2023).

have been identified. An estimation or assessment of the number of companies or groups of companies participating in the EITI reporting process should therefore also be made against the background of the actually-published payment reports. Taking into account the high coverage in the lignite, natural gas, crude oil, potash and salt sectors with regard to the production volume and the reported mining and extraction royalties, the participation can be assessed as positive.

All payment reports submitted by companies pursuant to §§ 341 q et seq. HGB are publicly available and can be inspected in the Federal Gazette[215]. In the course of drawing up the first D-EITI report, the MSG, at the suggestion of the civil society, made a list of the companies identified that did not participate in the reporting for the first report of the D-EITI or in that of the supplementary report. In view of the public availability of the payment reports and the legal objections that the government has raised against naming these companies, the MSG has refrained from naming the non-participating companies for this fifth D-EITI report, as it did for the previous D-EITI reports. The legal concerns which, from the government's point of view, oppose the naming of the companies are set out as follows:

On the one hand, data protection law applies in cases where the company name allows conclusions to be drawn about a specific natural person, such as when a company is named as a sole trader (possibly with further details such as the registered office). This is the case for at least two companies that have not reported under D-EITI, so that they may not be named for reasons of data protection.

On the other hand, it is to be feared that the publication of company names in the D-EITI report without sufficient legal basis could interfere with the fundamental right of companies to freely exercise their profession (Article 12 GG). There is no legal obligation to name the companies.

Protected property in Art. 12 GG includes free entrepreneurial activity serving profit purposes. The publication of the company names in the D-EITI report would intervene in the protected property as an act of state economic control, because the publication of all those company names that did not participate in the reconciliation could result in a certain pillory effect which could lead in turn to the fact that the companies feel compelled to agree to a reconciliation. This problem is exacerbated by the fact that the data to be transmitted by the companies (payment flows such as corporate income tax, extraction and mine site royalties, incl. trade tax) are actually trade, business and tax secrets.

Publishing the names of these companies would also not be legally justifiable with regard to the decisions of the BVerfG (Federal Constitutional Court) in the so-called Glykol[216] or Scientology[217] case. In the cases in question, the Federal Constitutional Court decided that the Federal Government could fulfil its warning and information obligations even without a legal basis, especially if (e.g. as in the case of glycol) there are interests worth protecting on the part of consumers which are in favour of a warning (consumer health). However, there are no comparable interests among the companies, which did not report under the D-EITI.

The following overview shows the distribution of the participating companies and/or consolidated companies throughout the various sectors for the fifth D-EITI report:

215 https://www.bundesanzeiger.de/; enter the search term "Zahlungsberichte" ("Payment reports") in the "Suchen" ("Find") field.
216 VerfG (Federal Constitutional Court), Resolution of the First Senate of 26 June 2002, 1 BvR 558/91 – recital no. (1–79), http://www.bverfg.de/e/rs20020626_1bvr055891.html
217 BVerfG, Resolution of the 2nd chamber of the First Senate of 16 August 2002 – 1 BvR 1241/91 – recital no. (1–25), http://www.bverfg.de/e/rk20020816_1bvr124197.html

Figure 9: Participating companies and/or groups of companies per sector

		Sector
1.	BEB Erdgas und Erdöl GmbH & Co. KG, Hannover	Crude oil and natural gas
2.	Dyckerhoff-Gruppe, Wiesbaden	Quarried natural resources
3.	ExxonMobil Central Europe Holding GmbH, Hamburg	Crude oil and natural gas
4.	Heidelberger Sand und Kies GmbH, Heidelberg	Quarried natural resources
5.	Holcim (Deutschland) GmbH, Hamburg	Quarried natural resources
6.	Hülskens Holding GmbH & Co. KG	Quarried natural resources
7.	JTSD-Braunkohlebergbau GmbH, Zeitz	Lignite
8.	K+S – Gruppe K+S Minerals and Agriculture GmbH	 Potash and salts
9.	Lausitz Energie Bergbau AG, Cottbus	Lignite
10.	Neptune Energy Deutschland GmbH, Lingen (Ems)	Crude oil and natural gas
11.	Quarzwerke GmbH, Frechen	Quarried natural resources
12.	RWE – Gruppe Rheinische Baustoffwerke GmbH, Bergheim RWE Power AG, Essen	 Quarried natural resources Lignite
13.	Sibelco Deutschland GmbH, Ransbach-Baumbach	Quarried natural resources
14.	Südwestdeutsche Salzwerke AG, Heilbronn	Potash and salts
15.	Vermilion Energy Germany GmbH & Co. KG, Schönefeld	Crude oil and natural gas
16.	Wacker Chemie AG, München	Potash and salts
17.	Wintershall DEA AG (formerly: DEA Deutsche Erdöl AG und Wintershall GmbH)	Crude oil and natural gas

The recording of government revenues from the extractive sector is difficult in Germany for various reasons. First of all, it should be noted that in Germany only the mine site and extraction royalties are a specific levy for the extractive sector. Moreover, companies in the extractive sector, like companies in other sectors, contribute to tax revenue, in particular in the form of corporate tax and trade tax or, depending on their legal form, income tax. Statistically, the total payments of corporate income tax and trade tax made by the extractive sector are not promptly recorded – they can only be extrapolated from other data.

Furthermore, German tax law has special features that make it difficult to record the tax revenues of the sector as a whole. The most important of these is the fiscal unity, which results in subsidiaries operating in the extractive sector not being recorded as taxable entities themselves, but instead in income taxes being paid on their earnings by a parent company, although the parent company itself is often not active in the extractive sector. At the level of the parent company, however, it is not possible to allocate the tax payments made to the individual companies included in the scope of consolidation (cf. Chapter 10.a.iii.). Furthermore, recording and allocation of trade tax are also made more difficult by the federal structure of the State system in Germany, as trade tax is levied by the individual municipalities.

A further difficulty lies in the clear classification of the companies that are active in the extractive sector and therefore have to prepare a payment report. This may result in deviations within the scope of recording under commercial law based on the EU Accounting Directive 2013/34/EU of June 26, 2013 and the statistical recording of sector-related government revenues.

Against this background, the production volume, supplemented by the extraction royalties, is the best possible yardstick for the coverage of the sectors.

The following overview shows the coverage of the respective sectors by the group of identified companies and the companies actually participating in the reporting process, with their respective reference values upon which the determination procedure was based:

Table 13: Coverage of sectors

Sectors*	Estimated coverage of all identified companies	Estimated coverage of all participating companies	Reference value – Determination – Coverage
Lignite	100.0%	99.5%	Production volume 2020
Crude oil**	95.6%	95.6%	Production volume 20200
Natural gas	99.4%	99.4%	Production volume 2020
Potash and potash salt products	97.5%	97.5%	usable quantity in 2020
Rock salt	96.5%	k.A.***	usable quantity in 2020
Boiled salt	99.7%	99.7%	usable quantity in 2020

* Against the background of the small-scale nature of the sector, the determination of a degree of coverage of the quarried natural resources sector was dispensed with (cf. Chapter 10 b.iii.).
** The remaining shares of the oil sector have not been included, since it is made up of several smaller companies (see https://www.bveg.de/Der-BVEG/Publikationen/Jahresberichte).
*** Coverage details have been omitted to ensure the protection of competition-relevant data.

The following overview shows the 2020 payments made by the participating companies to government agencies for corporate tax, trade tax, lease payments and payments to improve the infrastructure:

Table 14: Overall overview of reported company data

		Corporate tax €	Trade tax €	Mine site/ extraction royalties €	Lease payments €	Payments into the infrastructure €	Totals €
1.	BEB Erdgas und Erdöl GmbH & Co. KG	– [1]	8,111,338.35	20,023,981.39	–	–	28,135,319.74
2.	Dyckerhoff-Gruppe	3,188,260.23	2,071,128.98	–	–	–	5,259,389.21
3.	ExxonMobil Central Europe Holding GmbH	7,089,209.00 [2]	16,315,776.00 [2]	14,632,202.00	–	–	38,037,187.00
4.	Heidelberger Sand und Kies GmbH	–	123,352.00	199,371.00	474,653.00	–	797,376.00
5.	Holcim (Deutschland) GmbH	248,625.50	405,169.00	–	550,000.00	–	1,203,794.50
6.	Hülskens Holding GmbH & Co. KG	–	1,986,260.91	–	–	–	1.986.260,91
7.	JTSD-Braunkohlebergbau GmbH / MIBRAG	4,045,363.54	4,118,037.36	–	–	–	8,163,400.90
8.	K+S-Minerals and Agriculture GmbH	– [2]	– [2]	1,072,908.90	–	–	1,072,908.90
9.	LEAG Lausitzer Energie Bergbau AG	–	–	–	2,313,431.20	2,589,627.76	4,903,058.96
10.	Neptune Energy Deutschland GmbH (formerly: Engie E&P Holding Germany GmbH)	– [2]	– [2]	6,856,478.46	–	–	6.856.478,46
11.	Quarzwerke GmbH	4,620,000.00	4,367,000.00	–	–	–	8.987.000,00

1 No payments have been made due to the legal form of the company.
2 Payments are made by the parent company.
3 No payment information available due to the existence of a consolidated tax group.

		Corporate tax €	Trade tax €	Mine site/ extraction royalties €	Lease payments €	Payments into the infrastructure €	Totals €
12.	RWE-Gruppe / RWE Power AG	– [2]	– [2]	–	–	20.640.429,00	20,640,429.00
	RWE-Gruppe / Rheinische Baustoffwerke GmbH	– [2]	– [2]	–	109.458,00	–	109,458.00
13.	Sibelco Gruppe	621,688.00	549,869.00	–	–	–	1,171,557.00
14.	Südwestdeutsche Salzwerke AG	2,373,749.99	3,849,082.37	–	–	–	6.222.832,36
15.	Vermilion Energy Germany GmbH & Co. KG	– [1]	–	1,461,161.00	–	–	1,461,161.00
16.	Wacker Chemie AG	– [3]	10,242.00	164,197.58	–	–	174,439.58
17.	Wintershall DEA AG (formerly: DEA Deutsche Erdöl AG und Wintershall GmbH)	6,567,375.00	– [2]	54,887,307.61	–	–	61,454,682.61
	Total amount of reported payments from all companies	**28,754,271.26**	**41,907,255.97**	**99,297,607.94**	**3.447.542,20**	**23.230.056,76**	**196,636,734.13**

The reports on the payment flows of corporate tax and trade tax illustrate the high relevance of consolidated tax groups in Germany. In these cases, if the main activity of the consolidated tax group does not involve the extraction of natural resources, the details of the taxes paid by the parent company can be omitted (cf. footnote 3 table 14). On the other hand, if the consolidated tax group is mainly active in the extractive industry, a report (on a pro rata or complete basis) of the taxes paid by the parent company is required (cf. footnote 2 in table 11, see also Chapter 10.a.iii).

At the request of the MSG, the content and the composition of the reported payments to improve infrastructure were further analysed by the Independent Administrator in cooperation with the reporting companies. Payments are recorded based on statutory regulations (land transfer taxes) and payments based on private legal contracts between companies and public authorities (towns, municipalities and associations). The latter include the reconciliation of additional administrative costs caused by mining activities or services in connection with the construction and maintenance of local public infrastructures. The published payment reports for 2020 pursuant to §§ 341q et seq. HGB also show payments of water abstraction fees.

Table 15: Data reported for mine site and extraction royalties according to the government agency

Mine site/extraction royalties	Amount according to the company €
State Office for Mining, Energy and Geology, Hanover (LBEG)	58,787,121.60
LBEG for: Tax authority, Schleswig-Holstein, Kiel	36,140,095.93
LBEG for: Free Hanseatic City of Hamburg	96,822.53
Government of Upper Bavaria, Southern Bavarian Mining Authority, Munich	372,892.36
State Office for Geology and Mining, Mainz-Hechtenheim	2,345,758.04
State Office for Geology and Mining, Saxony-Anhalt, Halle	82,815.44
Arnsberg district government, Arnsberg	118,440.00
Regional Council Darmstadt, Wiesbaden	990,093.46
Freiburg State Office for Geology, Raw Materials and Mining	164,197.58
Pfalzer Rheinauen Forestry Office, Bellheim	199,371.00
Total	**99,297,507.94**

d. Excursus: No access to the transparency register any more

As explained in Chapter 3, page 42 for the fifth report for the 2020 reporting period, the Independent Administrator has been mandated by the D-EITI MSG to determine for the companies invited to report whether they have an entry in the transparency register and whether this entry is plausible based on the information available to (and to be obtained by) the Independent Administrator.

However, as a result of the European Court of Justice (ECJ) judgment of 22 November 2022 in Joined Cases C-37/20 and C-601/20[218], the Transparency Registry has refused the Independent Administrator the access requested by the IA on 3 February 2023. Therefore, the IA has not had access to the Transparency Register so far[219]. As part of the implementation of the requirement in para. 2.5 lit. c) of the EITI Standard, the Federal Ministry for Economic Affairs and Climate Action is currently working on clarifying in which cases information may be obtained from the transparency register.

218 See Chapter 3, c.ii, p. 41 et seq. for more details.
219 See details in the Independent Administrator's Work Report for the 5th Report, p. 30, https://d-eiti.de/en/dokumente/

11

INFORMATION AND RECOMMENDATIONS OF THE INDEPENDENT ADMINISTRATOR

Information and recommendations from carrying out the pilot on payment reconciliation

The EITI Standard 2019 demands comprehensive publication of all material payment flows from the national extractive sector to government agencies. This information on payment flows must satisfy requirements in respect of reliability, understandability and public availability (cf. EITI requirements 4.1 and 4.9). In the first and second German EITI reports, the reliability of the published payment flows was, among other processes, ensured by the previous "standard procedure" of a direct reconciliation of the payment flows reported by the participating companies with the payments received by the government agencies ("payment reconciliation"). These did not produce any or any noteworthy differences between payments made and payments received between companies and government agencies.

In agreement with the international EITI secretariat, the third German EITI report was the first so start with the development of an alternative quality assurance procedure for the payment flows to the government agencies reported by the extractive industry ("pilot procedure" or "pilot"). This work has been continued by the Multi-Stakeholder Group ("MSG") and the Independent Administrator since the fourth German EITI report and has been referred to as a systems-based approach to distinguish it from the previous "standard procedure".

The pilot procedure is a change of system because it replaces the test of details for payment flows from participating companies with a multi-level system-based approach of obtaining information and analysing the processes and controls relevant for EITI, in particular on the part of government agencies. The aim is to put the MSG in a position where they can provide a well-founded assessment of whether or not there are risks to indicate that payment flows to government agencies related to raw minerals are not being properly processed during the respective reporting period. Depending on the result of this risk assessment, the process used for assessing the participating companies' reported payments will then be carried out. Where risks are identified to indicate that (payment) processes or controls relevant for EITI are not entirely correct, further investigations of the payment flows concerned will initially be carried out and, ultimately, a return to payment reconciliation will also be considered. Where, however, no corresponding risks are identified, the actual assessment of payment flows is made on the basis of plausibility assessments.

On the basis of the information provided to the Independent Administrator by the MSG, the responses to questions and his own research, the Independent Administrator considers that the systems set up by government agencies for correct collection of payment flows relevant for D-EITI are suitable in combination with the positive results from the payment reconciliations already carried out to ensure reliable disclosure of the relevant payment flows. In the opinion of the Independent Administrator, the risk of breaches in the correct processing of the analysed payment flows for mine site and extraction royalties, corporate tax and trade tax continues to be minimal for the 2020 reporting period so that the subsequent analysis of the reported payments for mine site and extraction royalties and income taxes was based on analytical considerations.

With the implementation of the system-based procedure, the tasks of members of the MSG and of the Independent Administrator have changed, when compared to the previous standard procedure of payment reconciliation. The process of risk assessment by the MSG particularly requires a systematic survey and analysis of the existing processes and controls by government agencies. This is intended to ensure that the payment flows are correctly processed and accordingly requires the definition of responsibilities and recruiting of contacts as well as the provision of the necessary information on risk assessment. Here it still seems sensible to involve an Independent Administrator with appropriate experience in recording and assessing processes and controls.

Risk assessment is also based on the collection, transmission and analysis of information, which may be relevant for assessing whether payments are being correctly processed. Looking to the future, we recommend transferring the work of obtaining information and the risk assessment based on this to a "standard process", i.e. continuous analysis of available information or an ongoing exchange of information between the information sources the MSG considers are relevant and the MSG. This also applies as appropriate to the sources of information the MSG considers are relevant. Furthermore, the MSG members are urged to consider critically information from their professional environment as regards possible relevance for the risk assessment and, where relevant, to make this available to all other MSG members.

With regard to the subsequent reporting year (2021), we recommend that the MSG assess the extent to which the retroactive adjustment of the mine site and extraction royalties made by the parliament of the State of Lower Saxony for the reporting year 2020 in spring 2021 (cf. Chapter 10, page 169) may have had an impact on the quality assurance to find out whether the payments of the relevant payment flows in the reporting year 2021 have been correctly processed. It should be noted that up to now, neither within the framework of the previous "standard procedure" i.e. the direct comparison of the payment flows reported by the participating companies with the payments received by the government agencies – nor within the framework of the alternative, system-based approach, significant payment flows from the government agencies to the participating companies were to be assessed.

Furthermore, we recommend the MSG to deal with the content of the "Corporate Sustainability Reporting Directive – CSRD"(Directive (EU) 2022/2464), i.e. the directive on corporate sustainability reporting. In the future, sustainability-related disclosures will gain significantly in importance in corporate accounting and will be on an equal footing with the traditional financial information of companies.[220] Within the framework of the so-called "double materiality analysis", companies should report on the one hand on the environmental and social aspects affecting them and on the other hand on the effects of their activities on their environment. The contents of this reporting are defined within the framework of reporting standards. In February 2023, the European Financial Reporting Advisory Group (EFRAG), which is responsible for the development of reporting standards, published a working paper in preparation for a European Sustainability Reporting Standard (ESRS) entitled *"Mining, Quarrying and Coal"*. This first working paper on a sector-specific reporting standard makes explicit reference to the quality assurance mechanisms of the EITI and derives reporting obligations for companies in the extractive sector from this. We recommend that the MSG undertake a substantive assessment of whether this could have implications for D-EITI and the MSG's activities. Against the background of the experience gained, the MSG should assess whether it might appear useful to participate in EFRAG's upcoming Due Process in order to influence the content of the ESRS *"Mining, Quarrying and Coal"* in the sense of the D-EITI.

220 German Environment Agency. URL: https://www.umweltbundesamt.de/umweltberichterstattung-csr-richtlinie (Accessed on 5 March 2023)

ANNEX

a. Presentation of further EITI requirements

i. Requirement 4.1 c) (revenue flows to be included)

1. The host government's production entitlement (such as oil profit)
Such claims made by government agencies do not exist in Germany, so this requirement does not have to be taken into consideration.

2. State enterprises' production entitlement
State holdings in extractive companies play only a subordinate role in Germany. Of the 43companies and/or consolidated companies identified, there is only one case in which a government agency is financially involved. It can be seen from Südwestdeutsche Salzwerke AG's annual report for 2021 that the town of Heilbronn and the State of Baden-Wuerttemberg each have a 49% stake in this company. The remaining 2% is widely dispersed.[1]

Direct and indirect state holdings also exist in RWE AG, the parent company of RWE Power AG and Rheinische Baustoffwerke GmbH, which are companies in the extractive sector.

The largest state shareholders of RWE AG are the city of Dortmund with a direct stake of 0.00031% and an indirect stake of 4.79%[2] and the city of Essen with a direct stake of 0.24% and an indirect stake of 2.54%.[3] In addition, individual municipalities hold direct and indirect stakes in RWE AG via different investment companies. These stakes are mainly less than 1%.

Under municipal law, state holdings in companies must be shown in the municipality's consolidated accounts, which must be produced every year, or in investment reports (cf. §§ 116, 117 local byelaws for North Rhine-Westphalia[4]). Furthermore, the Securities Trading Act (WpHG) specifies disclosure obligations in relation to voting notifications vis-à-vis share issuers, if certain shares held exceed or fall below certain thresholds as a result of acquisition, disposal or in any other way, §§ 33 ff. WpHG. Notification obligations are triggered at 3%, 5%, 10%, 15%, 20%, 25%, 30%, 50% and 75%. Share issuers must publish these voting notifications, § 40 WpHG. The information cited is always freely available to consult on the internet and can be found on the websites of the respective municipalities or companies.

3. Dividends
As already mentioned under point 2, state holdings in extractive industries in Germany do not result in any substantial income for the state. Therefore these payment flows need not be considered for D-EITI purposes.

4. Bonuses (such as signature, discovery and production bonuses)
Such payments are not made in Germany, therefore recording them for D EITI purposes is unnecessary.

1 Annual report 2021 of Südwestdeutsche Salzwerke AG, p.195. URL: https://www.salzwerke.de/fileadmin/user_upload/salzwerke/dokumente/downloads/Investor_Relations/Geschaeftsberichte/Geschaeftsbericht_2021.pdf (Accessed on 20 December 2022).
2 Voting notification of 2 January 2020. URL: https://irpages2.eqs.com/websites/rwe_new/German/999993/news-detail.html?iframe=true&newsID=1881607 (Accessed on 20 December 2022).
3 Voting notification of 26 August 2020. URL: https://irpages2.eqs.com/websites/rwe_new/German/999993/news-detail.html?iframe=true&newsID=2022969 (Accessed on 20 December 2022).
4 The regulations on investment reports in all Federal States are essentially comparable, cf. in particular §§ 95a, 105 local bylaws for Baden-Wuerttemberg, Art. 94 local bylaws for the Federal State of Bavaria, § 65 Berlin Budget Code, § 83 Municipal Constitution for the State of Brandenburg, § 123a local bylaws for Hesse, § 73 Municipal Constitution for Mecklenburg-Western Pomerania, §§ 128, 151 Lower Saxony local governance law, § 90 local bylaws for Rhineland-Palatinate, § 115 Municipal Self-Administration Act for Saarland, § 99 local bylaws for Saxony, § 118 local bylaws for the Federal State of Saxony-Anhalt

5. All other material payments and substantial advantages for the government

a) Income tax on wages and salaries

This a form of income tax levied on income from persons who are not self-employed. Payment is made by the company as an employer, but for and on behalf of the employees. As in the case of the legal commercial regulations for the (consolidated company) payment report, this need not be considered for D-EITI purposes.

b) Social security contributions

As in the case of income tax on wages and salaries, social security contributions (= employers' contributions to the social security of the employees) are paid by the employer for the employees. Depending on the type of contribution, however, the employer contributes up to half of this social security payment. In essence, these contributions are for pension, health, unemployment and long-term care insurance. However, social security contributions are not a specific tax for the extractive industry – and they are also expressly excluded from reporting in terms of commercial law. For this reason, these contributions are not included in the German EITI report.

c) VAT

As a rule, VAT does not affect the net income of companies, it is the end user who must pay this tax. In general, this is an indirect tax, since taxpayers (those obliged to pay) and the economically-burdened (end-users) are not identical. The exchange of services performed by an entrepreneur within the framework of his or her company in Germany is taxed. Since VAT is not a corporation tax, it should not be included in the German EITI report.

d) Compensatory payments

Requirements imposed upon an extractive company to compensate for its interventions in nature and the landscape are an expression of the "polluter pays" principle. These requirements can also include compensatory payments to government agencies in the form of an "ultima ratio" if interventions in nature are unavoidable, or if they cannot be compensated or replaced within a reasonable period of time.

For reasons of immateriality, the MSG considers it justifiable to refrain from including compensatory payments for interventions in nature and landscape in the EITI report (cf. also the explanations in chapter 7.1).

e) Implementation securities

Implementation securities are an instrument which (through so-called substitute performance by the authorities) ensures that no additional costs will have to paid by the general public if an extractive sector company should fail or refuse to implement its obligatory renaturation, safeguarding and rehabilitation measures.

The Federal Mining Act (BBergG) expressly provides for optional implementation securities as an official instrument for natural resources extraction projects which are subject to the BBergG. Individual Federal States have introduced similar legislation in their excavation laws (or other subordinate excavation regulations) for the extraction of natural resources which is outside the legal scope of the BBergG. Implementation securities can also be established to ensure the implementation of compensatory and substitution measures for interventions in nature and landscape, pursuant to § 17(5) of the Federal Nature Conservation Act (BNatSchG).

In principle, any suitable form of implementation security is permitted. The depositing of cash, however, is not customary in the industry, because the management of such funds is too complex for the competent authorities. The MSG has therefore resolved not to consider implementation securities as cash flows within the framework of the D-EITI process.

ii. Requirement 4.2
(Revenues from the sale of the state's share of production or other revenues collected in kind)

As already mentioned in section i. (on Requirement 4.1 c), state ownership of companies in the extractive industry plays a subordinate role in Germany. Revenues from the sale of the state's share of production are therefore not considered within the context of the D-EITI.

Revenues in kind paid to government agencies by the extractive industry are not known.

iii. Requirement 4.3
(Infrastructure provisions and barter arrangements)

No knowledge exists of agreements that provide for the direct exchange of goods or services against the granting of oil, gas or mining exploration/extraction licenses.

iv. Requirement 4.4
(Transport revenues)

The EITI standard requires the disclosure of state revenues from the transport of oil, gas and mineral resources, if these revenues are included among the main cash inflows in the extractive sector.

In Germany, highly-developed transmission networks are operated for energy (electricity, crude oil and natural gas) and these networks serve to secure the supply of the economy and of private households. The operation of supply networks for electricity and gas is governed by the Electricity and Gas Supply Act (German Energy Act, EnWG). Pursuant to § 1(1) EnWG, "... the most secure, cost-effective, consumer-friendly, efficient and environmentally-friendly, grid-bound supply to the general public ..." is paramount in this regard. The separation of the activities of transport network operators and companies which actually extract natural gas is ensured in most cases due to relevant unbundling regulations in the EnWG.

In Germany specific revenue streams for grid-bound supply with electricity and gas and for the use of oil pipelines are not levied by government agencies. The operators of these networks are thus subject to general company taxation.

The use of state land may result in payments for line rights and rights of way. However, pursuant to the Ordinance on Concession Fees, these charges may only be levied for the granting of the right to use public transport routes for the laying and operation of lines which supply electricity and gas directly to ultimate consumers in municipal areas. In contrast, long-distance operators do not supply the ultimate consumers; they deliver from extractive companies or electricity-generating companies (or the national transfer stations) to transfer stations for the distribution network operators in Germany.

In addition, transport companies wholly or partly owned by the state, such as the Deutsche Bahn Group, are only subject to general company taxation. There are no special charges for the transport of natural gas and crude oil and/or mineral resources. The same applies to the collection of truck tolls for the use of motorways and selected federal roads.

v. Requirement 4.5
(Transactions related to state-owned enterprises)

We refer to our explanations in section i. Requirement 4.1 c). Due to the subordinate importance of state ownership in extractive companies, a more detailed analysis of transactions relating to state-owned enterprises appears to be unnecessary.

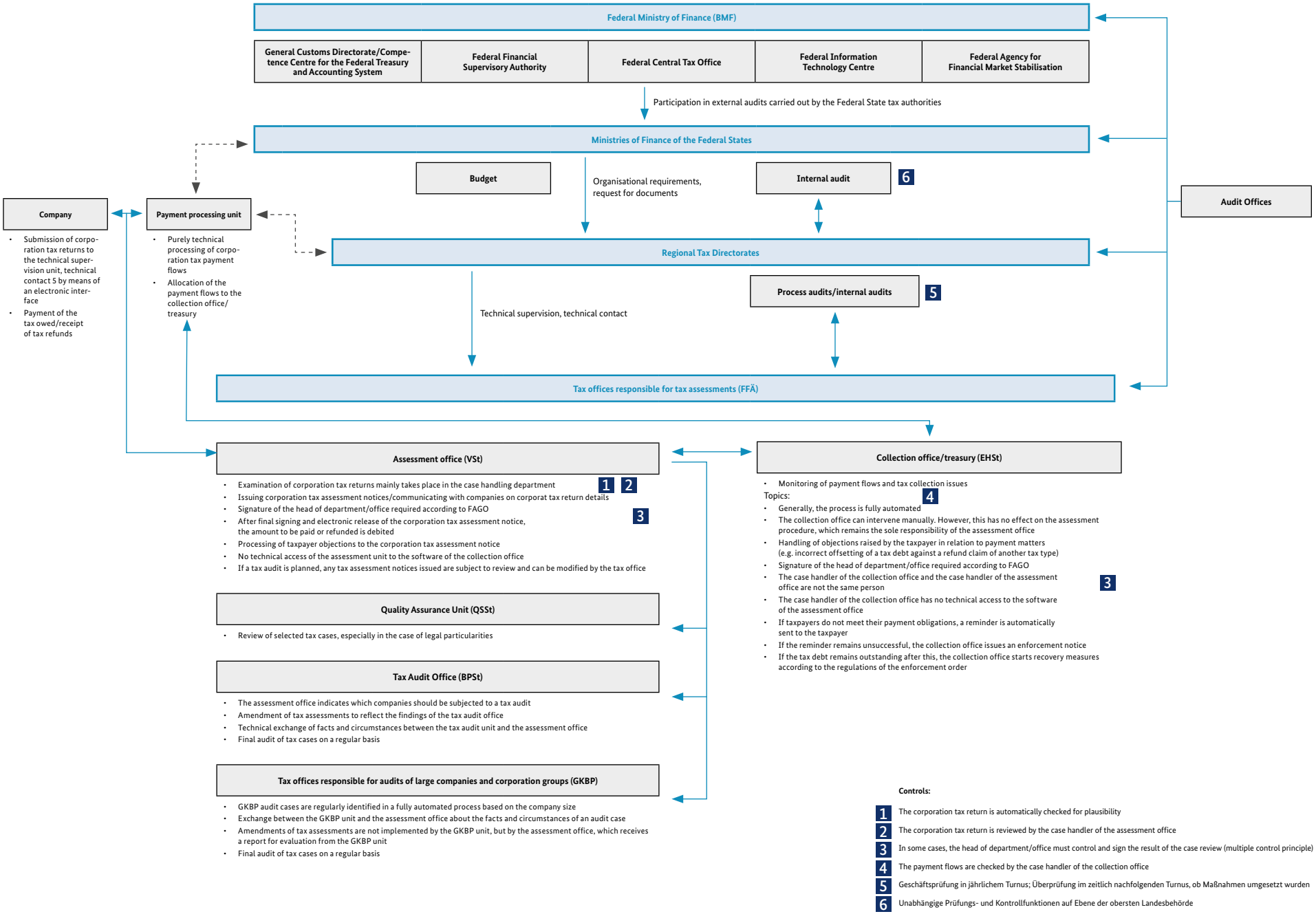
vi. Requirement 4.6
(Payments to sub-national authorities)

Payments for trade tax (and, where applicable, for leases) go directly to government agencies at the municipal level in the sense of a "subnational level" (for further explanations regarding trade tax and lease payments, cf. chapter 4.b.). There are no other significant cash flows from the extractive industry to (in this sense) "sub-national" agencies.

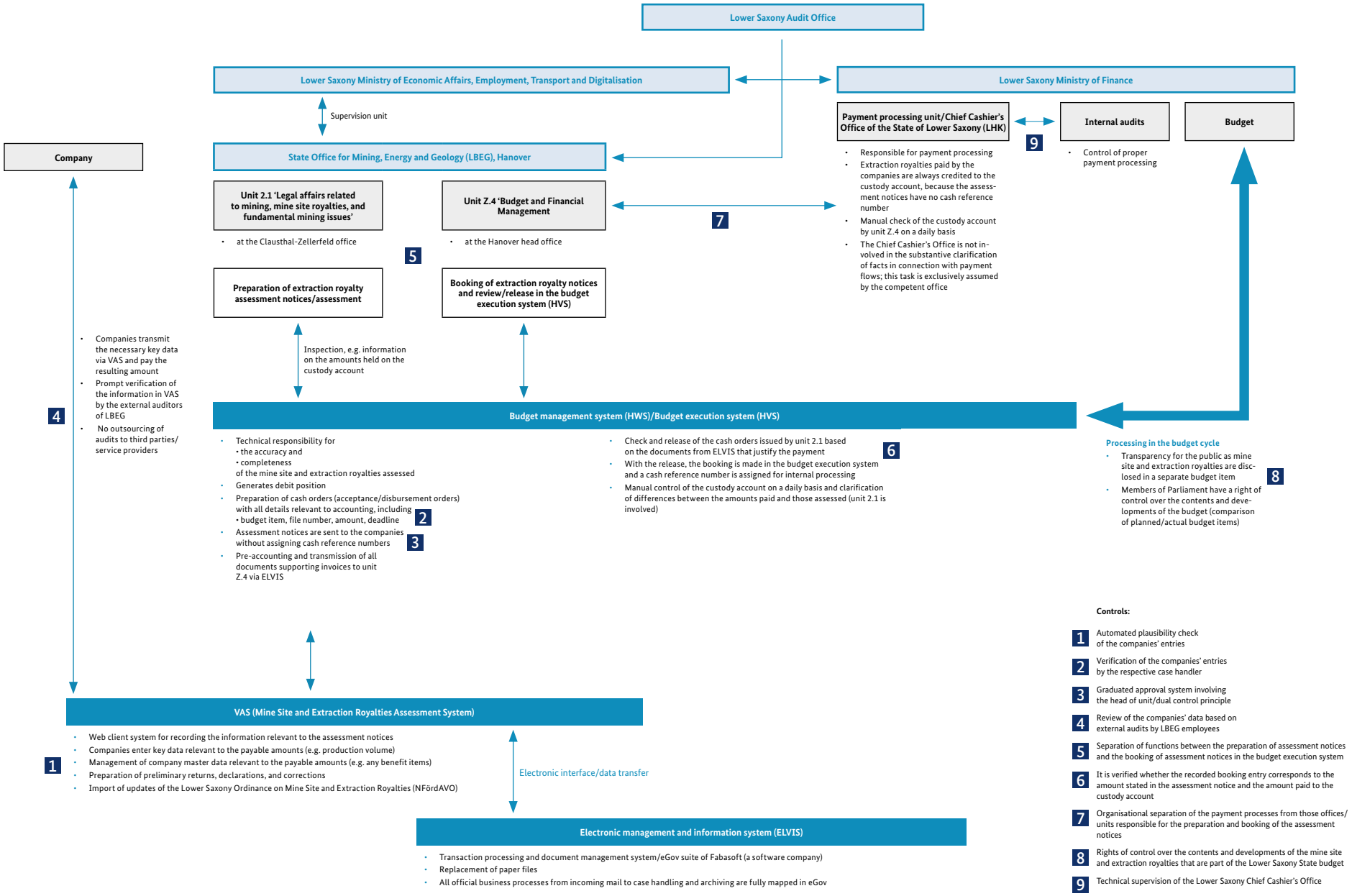
b. Information sheet for the calculation of tax relief pursuant to § 10 Electricity Tax Act and § 55 of the Energy Tax Act

https://www.detmold.ihk.de/hauptnavigation/beraten-und-informieren/energie/energie-und-stromsteuer-4208848

c. i. Schematic overview of the organisational structure with relevant processes and controls for corporation tax



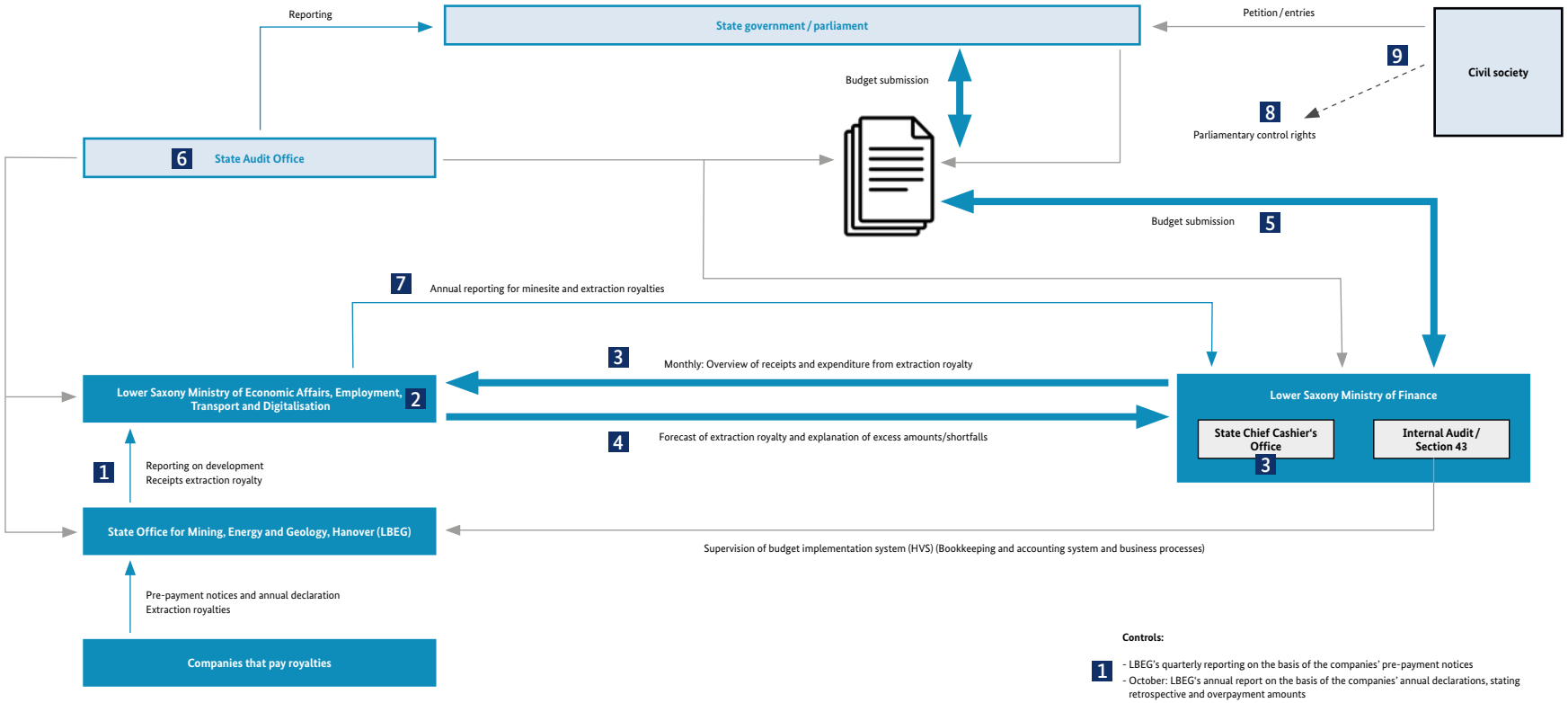
c. ii. Schematic overview of the organisational structure with relevant processes and controls for mine site and extraction royalties



Controls:

1. Automated plausibility check of the companies' entries
2. Verification of the companies' entries by the respective case handler
3. Graduated approval system involving the head of unit/dual control principle
4. Review of the companies' data based on external audits by LBEG employees
5. Separation of functions between the preparation of assessment notices and the booking of assessment notices in the budget execution system
6. It is verified whether the recorded booking entry corresponds to the amount stated in the assessment notice and the amount paid to the custody account
7. Organisational separation of the payment processes from those offices/ units responsible for the preparation and booking of the assessment notices
8. Rights of control over the contents and developments of the mine site and extraction royalties that are part of the Lower Saxony State budget
9. Technical supervision of the Lower Saxony Chief Cashier's Office

c. iii. Schematic overview of the higher-level controls for the collection of mine site and extraction royalties for the State Office for Mining, Energy and Geology, Hanover



Controls:

1 - LBEG's quarterly reporting on the basis of the companies' pre-payment notices
- October: LBEG's annual report on the basis of the companies' annual declarations, stating retrospective and overpayment amounts
- Information for each company that pays royalties:
  - Amount extracted and subject to royalties
  - Current assessment rate
  - Amount of extraction royalty to be paid
- Changes to previous quarter and the same quarter of the previous year

2 Internal controls in Ministry of Economic Affairs (cross-check principle)

3 Monthly transmission of receipts/expenditure from minesite and extraction royalties to the Ministry of Economic Affairs on the basis of data from the State Chief Cashier's Office

4 In May and November: Royalty forecast on amount of extraction royalties for the current budget year by the Ministry of Economic Affairs to the Ministry of Finance;
Explanation of excess amounts/shortfalls by the Ministry of Economic Affairs to the Ministry of Finance

5 Transparency through showing minesite and extraction royalties as separate budget items

6 External financial control of budgetary and financial management and reporting to government and parliament; at the same time, Obligations of the Federal State Authorities to notify the State Audit Office

7 Annual reporting to the State government and Ministry of Finance on details of the minesite and extraction royalties by the Ministry of Water and Irrigation (MWi)

8 Control rights of members of parliament regarding the budget content and developments (development of planned/actual)

Direct exercise of control by the public through petitions to parliament, indirect possibility of exercising control by the public via the control rights of members of parliament

GLOSSARY

Authorisation of the European Commission under state aid law
In principle the Treaty on the Functioning of the European Union (TFEU) prohibits state aid. However, this prohibition of state aid has exceptions. The European Commission can authorise state aid that is consistent with the internal market. For instance, support measures in the field of regional aid, energy and environmental policy or in the field of research, development and innovation can be considered, under certain conditions, to be compatible with the internal market.

The member states have decided that the European Commission alone ("Guardian of the treaties") is responsible for monitoring state aid, which always gives the Commission the right to exercise oversight over competition, even in policy areas in which it does not have administrative jurisdiction (for example in taxation or employment policy). Therefore, all planned measures relevant to state aid must be declared to the European Commission or even formally registered ("notified") and authorised by the Commission.[1]

Building Regulations
In Federal States in which legislation does not include an excavation law and the State-level Nature Conservation Law does not apply to the extraction of non-energy, ground-based natural resources in the context of dry excavations, this type of natural resource extraction falls within the scope of the relevant state building regulations.

Legal limitations also exist: State building regulations apply to the excavation of solid rock (limestone, basalt, etc.), for example, in quarries with an area of up to 10 hectares (ha) in which no blasting is carried out. In the event that this area is exceeded, or if water bodies are formed after completion of the extraction operations, the German Federal Immission Control Act (BImSchG) or the Water Resources Act (WHG) are applicable.

CO_2 certificates
In environmental law, a certificate is a documented right to emit a certain quantity of a pollutant in a certain period. CO_2 certificates are traded on energy exchanges, thus giving the CO_2 emission right a market price. The fact that the numbers of certificates issued are being reduced is supposed to be an incentive for companies to invest in climate friendly technologies. Since 2013 there has been an EU-wide upper limit for certificates (cap) and EU-wide harmonised allocation rules. Also, the vast majority of emissions certificates are no longer distributed free of charge but instead are auctioned.

Until 2020, the cap is reduced by 1.74% but from 2021 it is 2.2% a year. More than 90% of the auction proceeds are used for climate protection.

Coal and Steel Co-Determination Act (MontanMitbestG) of 1951
Supplementary Co-Determination Act (MontanMitbestGErgG) of 1956
Corporate Co-Determination is most extensive in mining[5] (Montan Co-Determination; MontanMitbestG[6], MontanMitbestGErgG[7]): Here the supervisory boards are composed of equal numbers of employer and employee representatives (parity). The appointment of the labour director, who as an equal member of the management board is responsible for personnel and social matters, is subject to the approval of the majority of the employee representatives on the supervisory board.

Collection rate
See "Electrical and Electronic Equipment Act – ElektroG".

1 German Federal Ministry for Economic Affairs and Climate Action (BMWK) (2022): State aid monitoring policy. URL: https://www.bmwk.de/Redaktion/DE/Artikel/Euro-pa/subsidy-control-policy.html (Accessed on 7 December 2022).

Corporate groups
As a corporate group, the whole is designated a legally independent company that belongs together on the basis of certain common features (e.g. because they are subject to the same unified management or they are in a dependency and control relationship).

Companies that cooperate in a contractually bound unit are described as a corporate group.

D- EITI report
The EITI standard specifies an annual reporting obligation for EITI countries. This EITI report has two main parts:

- The context report contains information that gives the general public an overview of how the national extractive sector works. It answers questions such as: Which natural resources are extracted and what quantities? What is the statutory framework like? What revenues does the state receive? How many natural resources are exported? What contribution does the extractive sector make to the national economy?

- In the second part of the report an Independent Administrator reconciles the most important payments from extractive companies with the corresponding payments received by government agencies. To carry out this process, the companies disclose their payments and the responsible financial authorities disclose their receipts.

In 2018, the MSG published the first D-EITI report. In addition to the two main sections, this also covered special topics: Compensatory measures for the intervention in nature, provisions and implementation securities as well as water abstraction for mining natural resources and renewable energy. The special topics go beyond the international EITI standard and thus increase the relevance of the EITI in Germany. The innovative topics were expanded in the second D-EITI report and the areas of employment, social affairs and recycling were added. For the fourth report the German MSG also produced a further chapter on effects of energy transition and the structural change on the extraction of natural resources in Germany. Because of a pilot project carried out by the D-EITI, the third D-EITI report contains a chapter where, instead of reconciling the payments, an alternative form of quality assurance is used that compares them with the payment flows disclosed by the companies. The pilot project was modified in the fourth D-EITI report and will be continued and further developed in this fifth D-EITI report (see chapter 10). For this fifth report, in view of the geopolitical situation and the economic challenges, the MSG has prepared another chapter on the *contribution of the extraction of domestic natural resources to security of supply and Germany's role in the international natural resources market*.

Elektro- und Elektronikgerätegesetz (Electrical and Electronic Equipment Act) – ElektroG
The law on the marketing, return and environmentally acceptable disposal of electrical and electronic devices (Electrical and Electronic Equipment Act – ElektroG), which came into force in October 2015, transposes the European Union's Directive 2012/19/EU on electrical and electronic equipment (WEEE Directive) into national law. The law sets out three objectives to collect and recycle electrical and electronic equipment:

During the period 2016 to 2018 a minimum of 45% of the average total weight of electrical and electronic devices distributed in the previous three years had to be collected (minimum collection rate). This quota includes not only WEEE from private households (business to customer; b2c equipment), but also from commercial sources (business to business; b2b

2 Federal Office of Statistics – DESTATIS (2022): Gross Domestic Product (GDP). URL: https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/Methoden/bip.html (Accessed on 7 December 2022).
3 Federal Office of Statistics – DESTATIS (2022): Gross value added URL: https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/Glossar/bruttowertschoepfung.html (Accessed on 7 December 2022).

equipment) such as companies and public authorities (so-called "sources other than private households"). Since 2019 a minimum collection rate of 65% applies.

- Out of the old devices collected each year 75 to 85% can be recycled, depending on the category of device (recovery rates). Recovery includes preparation for reuse, recycling and, (in particular, energy-related) recovery.

- Depending on the category of device, 55 to 80% of the old devices collected each year are prepared for reuse or recycled (rates for preparing for reuse + recycling).

In accordance with Art. 11(2) of the WEEE Directive (validity 15 August 2015), the reference quantity for recovery and recycling rates is the total collection quantity per device category; in the years before, what used at that time to be called the reuse of whole devices was not included in the reference figure.[4]

Employment impact
Employment impact is the term used to describe influences on employment (i.e. number of jobs) that can be attributed to a sector or investment. Direct (employment) effects (e.g. employees in the extractive sector) are included as well as indirect (employment) effects (e.g. employees in upstream or downstream stages of the value chain, such as manufacturers of upstream products used for extracting natural resources or similar).

Environmental information law[8]
The right to environmental information gives everyone free access to environmental information held by agencies that have a duty to disclose information. To achieve this, the Federal Government and Federal States have issued regulations that implement the regulations under international law (the "first pillar" of the Aarhus Convention) and the Access to Environmental Information Directive 2003/4/EC of the European Union.

A distinction needs to be made between the Environmental Information Act (UIG), which governs access to environmental information at federal level, and the environmental information laws of the Federal States, which apply to agencies in the Federal States that have a duty to disclose information. The general Freedom of Information Act (IFG) applies in respect of other official information held by federal authorities.

Excavation laws
In Bavaria and North Rhine-Westphalia, the above-ground excavation of non-energy, ground-based natural resources in the context of dry excavations is determined at state level by the existing excavation laws (AbgrG). For the excavation of solid rock (limestone, basalt, etc.) in quarries where blasting does not occur, the AbgrG applies to sites with an area of up to 10 ha. In the event that this area is exceeded, or if water bodies are formed after completion of the extraction operations, the German Federal Immission Control Act (BImSchG) and/or Water Resources Act (WHG) are applicable. In the other Federal States, this type of natural resources extraction is regulated by the respective state building regulations or by the state-level nature conservation laws.

In general, the AbgrG applies to those natural resources the excavation of which is not directly subject to mining law or the mining authorities. These natural resources include (in particular) gravel, sand, clay, loam, limestone, dolomite and other rocks, bog mud and clays. However, the jurisdiction between AbgrG and mining law can vary from case to case in the case of certain raw materials, such as quartz gravels. The requested authority must always verify its own jurisdiction in each case. The AbgrG also encompasses surface area usage and the subsequent rehabilitation of the area.

Federal Immission Control Act
The German Federal Immission Control Act (BImSchG) is the most important and practice-relevant law in the field of environmental law. It constitutes the basis for the approval of industrial and commercial

installations. In the natural resources extraction industry, quarrying companies must have approval to extract stones and earth. Every quarrying area of 10 hectares or more must undergo a full approval procedure, including public participation and UVP (environmental impact assessment). A more simplified approval procedure is used for quarrying areas of less than 10 hectares.

The sphere of responsibility for the legal immission control approval procedure is fully specified in the Immission Control Acts of the Federal States. The Federal States are tasked with the administrative enforcement of the approval procedure. Each individual state's Environment Ministry – the highest local immission protection authority – usually bears the responsibility for this procedure. Subordinate authorities include regional councils, district authorities and lower-level administrative authorities. Administrative jurisdiction generally lies with the lower-level administrative authorities.

Five-pillar care system and security net
In Germany, social insurance is a mixture of insurance (financed by contributions), provision (equity according to social aspects) and care (benefits for rehabilitation). Social protection consists of five pillars:
(1.) Health insurance;
(2.) Accident insurance;
(3.) Pension insurance;
(4.) Unemployment insurance;
(5.) Nursing care insurance.

GDP
The GDP measures the value of goods and services produced domestically (creation of value) within a given period (quarter, year). The Federal Statistical Office calculates the GDP as follows: Production value minus intermediate consumption = the gross value added; plus taxes on products minus subsidies = GDP.[2]

Gross value added
The gross value added is calculated by deducting intermediate consumption from the production values, so it only includes the value added created during the production process. The gross value added is valued at manufacturing prices, i.e. without the taxes due (product taxes), but including the product subsidies received.

During the transition from gross value added (at manufacturing prices) to GDP, the net taxes (product taxes less product subsidies) are added globally to arrive at an assessment of the GDP at market prices'.[3]

Independent Administrator
For the annual D-EITI report an Independent Administrator (IA) reconciles the most important payments from extractive companies with the corresponding payments received by government agencies. To carry out this process, the companies disclose their payments and the responsible financial authorities disclose their receipts.

The commission for producing the payment reconciliation is put out to tender in accordance with appropriate procurement law. Thus the Independent Administrator may change every year. He primarily has two main tasks: Firstly, he is responsible for compiling the figures from the relevant companies and government agencies and making a thorough investigation of any differences. The Independent Administrator presents these differences and the reasons for this in the EITI report. Secondly, he assists the MSG to clarify technical issues. The IA conducted the pilot

4 UBA (2022): Waste electrical and electronic equipment. URL: https://www.umweltbundesamt.de/daten/ressourcen-abfall/verwertung-entsorgung-ausgewaehlter-abfallarten/elektro-elektronikaltgeraete#sammlung-und-verwertung-von-elektro-und-elektronikaltgeraten-drei-kennzahlen-zahlen (Accessed on 7 December 2022).
5 likewise in the "iron and steel producing industry"
6 Coal and Steel Co-Determination Act (MontanMitbestG) of 1951
7 Supplementary Co-Determination Act (MontanMitbestGErgG) of 1956

project on payment reconciliation for the first time for the third D-EITI report: this was commissioned by the MSG. The pilot project was modified in the fourth D-EITI report and will be continued and further developed again in this fifth D-EITI report.

Lignite coalfields
Lignite coalfields are certain geographically defined districts, which are under the control of mining authorities. In Germany, the lignite coalfields supported via the Structural Strengthening Act are: the Lusatian coalfield (Federal States: Brandenburg/Saxony), the Central German coalfield (Saxony/Saxony-Anhalt/Thuringia), the Rhenish coalfield (North Rhine-Westphalia), the Helmstedt territory (Lower Saxony).

Material recovery and energy-related recovery
Pursuant to § 3 (25) KrWG, material recovery (recycling) means any recovery process by means of which waste is processed into products, materials or substances, either for the original purpose or for other purposes; Energy-related recovery, on the other hand, means the preparation of waste for thermal recovery by means of incineration. However, a portion of the waste is also incinerated to dispose of it.

Multi-Stakeholder Group (MSG)
The D-EITI's Multi-Stakeholder Group (MSG) are stakeholders representing the government, business and civil society. They are appointed by the Federal Government for a period of at least two years. It is the MSG's task to steer and monitor implementation of the D-EITI. Among other tasks, this includes defining what is contained in reporting, regular drawing up and approval of work plans and progress reports on D-EITI implementation. You can find the members of the German MSG on the D-EITI website.

Planning approval procedure under mining law
The planning approval procedure under mining law is used for the approval procedure of a general operating plan for projects which require an environmental impact assessment (EIA) (§§ 52(2) a in conjunction with 57 a BBergG).

Primary and secondary natural resources
Primary natural resources are unprocessed natural resources (apart from their extraction). Examples of these are fresh wood fibres from fallen trees for making paper. In contrast, secondary natural resources are obtained through recycling, such as wood fibres from waste paper. Because natural resources are limited, reduction in the use of primary natural resources is inevitable. A possible way of achieving this is to substitute secondary natural resources.

The number of times secondary natural resources can be reprocessed depends on their properties, the technical processes used and the effort required. Processing may require large quantities of energy to cut up and separate different components, e.g. in the case of composite materials. Under certain circumstances, it may be more cost effective economically to extract primary natural resources than to recycle. The amount of energy required can be mitigated through new and improved recycling processes and products designed for easy recycling. Tax incentives such as taxation of primary natural resources can be used to increase the proportion of recycled natural resources.

Recovery rate
The recovery rate includes both the energy-related and material recovery of resources. This distinguishes the recovery rate from the recycling rate, which excludes energy-related recovery. Also see "Electrical and Electronic Equipment Act – ElektroG"

Recycling and usage rates
The recycling rate (calculated on the basis of the weight of waste sent to recycling facilities) differs from the usage rate (which is the percentage of materials actually recycled and their actual use in

8 Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMUV) (2022): Environmental information law URL: https://www.bmuv.de/themen/bildung-beteiligung/umweltinformation/umweltinformationsgesetz (Accessed on 7 December 2022).

production). Also see “Electrical and Electronic Equipment Act – ElektroG”.

Social partnership

In Germany social partnership plays a prominent role. At the very different levels the aim of relations between employers and employees and employers’ associations and trade unions is to solve their conflicting interests through consensus politics. An example at company level is where employees are involved in company matters via the works council they have elected. At corporate level, employees are represented in the supervisory bodies of companies over a certain size. Besides this, social partners continuously work together in very different capacities at regional and national level but also in Europe – in the form of shared positions, initiatives, campaigns or social dialogue. They devote themselves to man’s fundamental questions about orientation and become involved in debates about values and systems.

Subsidies

There are different definitions of the subsidies at both national and international levels, and several methodological approaches to the issue of what subsidies are and how they are calculated. According to the definition in the subsidy report by the German government, directly budget-relevant subsidies of the German government are considered for private companies and economic sectors (i.e. financial aid as monetary contributions and tax benefits as special tax exemption rules). Subsidies at Federal State level are available in the subsidy reports of the Federal States (see Annex 5 of the Subsidy Report of the Federal Government).

Water Resources Act

In compliance with § 68(1) Water Resources Act (WHG), the excavation of landowners’ natural resources such as gravel, sand, marl, clay, loam, peat and stone in wet extraction operations requires a planning approval procedure. The reason for this is that groundwater is exposed in wet extraction, resulting in surface water. The planning approval procedure is implemented by lower-level water authorities.

The procedural steps of the planning approval procedure are governed by the general provisions of §§ 72–78 of the Administrative Procedures Act (VwVfG). Within the meaning of § 668(3), nos. 1 and 2 WHG, the plan may only be established or approved if an impairment of the common good is not to be expected and other requirements of the WHG as well as other public-law provisions are fulfilled.

FINAL NOTES

[i] The information on **employment figures** (chapter 2.a.) may vary depending on the source. Differences can generally be attributed to differences in allocating statistical units.

In the employment statistics of the Federal Employment Agency (BfA), the economic activities of enterprises are differentiated based on the classification of the economic sectors 2008 (WZ 2008). The decisive factor for the allocation of an enterprise to an economic sector is the main activity (the activity which makes the greatest contribution to the total value creation of this unit). Enterprises for which an activity in the stated economic sectors is only a secondary activity are therefore not included in the listed date from the BfA, as these are allocated to another economic sector in line with the main activity.

In the case of data which, in contrast to this, is based on a functional consideration of the economic sector, all companies/enterprises that operate in this field are taken into consideration, irrespective of whether it is the main activity of the unit. As a result of this, the statistics for employment figures may vary.

SOURCES per category of natural resources:

Crude oil

[BfA 2020] – Federal Employment Agency (2020): Employees by economic sector (WZ 2008). URL: https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular. html?gtp=15084_list%253D5&topic_ f=beschaeftigung-sozbe-wz-heft (Accessed on 14 November 2022).

In comparison to this, the statistical annual report of the Bundesverband Erdgas, Erdöl und Geoenergie e.V. (German association for natural gas, petroleum and geothermal energy) reports a total figure of 7,281 employees in the natural gas and crude oil sector; BVEG (2020). URL: https://www.bveg.de/Der-BVEG/Publikationen/Annual reports (Accessed on 10 August 2022).

Natural gas

[BfA 2020] - Federal Employment Agency (2020): Employees by economic sector (WZ 2008). URL: https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular. html?gtp=15084_list%253D5&topic_ f=beschaeftigung-sozbe-wz-heft (Accessed on 14 November 2022).

In comparison to this, the statistical annual report of the Bundesverband Erdgas, Erdöl und Geoenergie e.V. reports a total figure of 8,256 employees in the natural gas and crude oil sector; BVEG 7281. BVEG 2020 URL: https://www.bveg.de/Der-BVEG/Publikationes/Annual reports (Accessed on 10 August 2022).

Hard coal

German hard coal production was declining steadily for years and production was terminated in a socially-acceptable manner at the end of 2018.

Lignite

[BfA 2020] - Federal Employment Agency (2020): Employees by economic sector (WZ 2008). URL: https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular. html?gtp=15084_list%253D5&topic_ f=beschaeftigung-sozbe-wz-heft (Accessed on 14 November 2022). In the statistics, employees in electricity generation (power plants) are listed under the item energy supply.

The total number of employees in the lignite industry (mining and associated power plants) can be seen from the source of the coal industry statistics, which, according to the above explanations, gives employment figures of 19,483. These figures include in addition employees working in lignite power plants. URL: https://kohlenstatistik.de/ wp-content/uploads/2020/11/B-12-20.pdf (Accessed on 14 November 2022).

Salts
The figures were provided by the Verband der Kali- und Salzindustrie e.V. (Association of the Potash and Salt Industry, vks).

Südwestdeutsche Salzwerke AG (2021): Annual Report 2020. URL: https://www.salzwerke.de/fileadmin/user_upload/salzwerke/dokumente/downloads/Investor_Relations/Geschaeftsberichte/Geschaeftsbericht_2020_web.pdf
(Accessed on 14 November 2022).

Quarried natural resources
Employment figures given in the literature vary. The employment figures cited by the Federal Employment Agency were selected, because they came closest to the definition of the economic sector for quarried natural resources in the D-EITI report ("natural stones, gravels, sand, clay and kaolin + other mining/ quarrying, n.e.c.").

The statistics from the Bundesverband Mineralische Rohstoffe e.V. (Federal Association of Mineral Resources) produced a different aggregate for 2020 of 22,584 employees in the category of "gravel, sand and natural stone quarries". URL: https://www.bv-miro.org/ service/geschaeftsberichte/
(Accessed on 14 November 2022).

[ii] The figures on the **production volumes** (chapter 2.b.) were taken from the following publications: The figures for lignite are based on the SdK (2021) statistics supplied by the coal industry. The figures for crude oil and natural gas were taken from (LBEG 2020) "Crude oil and natural gas in the Federal Republic of Germany 2019" (Erdöl und Erdgas in der Bundesrepublik Deutschland 2019). The figures for potash and potash salt products, special clay, rock salt, boiled salt, industrial brine, kaolin, quartz gravel and sand, gravel and sand, broken natural stone, artificial stone and lime, marl & dolomite stone are based on (BGR 2021 (German Federal Institute for Geosciences and Natural Resources)) "Germany – Raw materials situation 2020". This is an annual publication, which also includes information about the extraction of natural resources in Germany.

Furthermore, **the data** on the value of the associated production volumes is not included in the official statistics. Data is therefore taken from other publications, such as the annual reports of the associations (with regard to aggregates, especially MIRO 2021) or various publications of the Federal Statistical Office. In detail, the production values of crude oil and natural gas are based on estimates from the 2019 average cross-border prices (BGR 2021). The values for potash and potash salt products, special clays (values according to Destatis), rock salt and industrial brine (values according to Destatis) and kaolin (values according to IM 2020 (Industrial Materials) are also taken from the same publication. The values for the production of quartz sand and gravel, gravel and sand and broken natural stone are taken from BGR 2021. The values for the production of natural stone, limestone, marl and dolomite stone are taken from the data provided by the Federal Office of Statistics.

The data was not subjected to any specific verification procedure.

Hard coal
German hard coal production was declining steadily for years and production was terminated in a socially-acceptable manner at the end of 2018.

Lignite
At 107.4 million tonnes, lignite extraction remained at around 18% below the previous year's level. According to the estimate of the BGR, this corresponds to a value of €1,545 million.

Crude oil
The German crude oil production amounted to approx. 1.9 million tonnes in 2020. As in the case of hard coal, the BGR again used the average 2020 cross-border prices as a basis for estimating the value of crude oil production at €528 million.

Natural gas
2020 saw 5.7 billion m^3 of natural gas (incl. petroleum gas) extracted from sites in five German Federal States. As in the case of crude oil, the BGR again used the average 2020 cross-border prices as a basis for

estimating the value of natural gas production at €610 million.

Potash salt
Two companies in Germany extract potash salt and magnesium salt. The usable extracted output in 2020 amounted to 6.2 million tonnes in the form of potash and potash salt products (BGR 2021). The BGR calculated that the total quantity of these products has a value of roughly €1,598million.

Clay
Around 13.8 million tonnes of usable clay (fine and coarse ceramic clay) was extracted in Germany in 2020. The clay in question is high-quality material for the ceramic industry, clay for refractory use and brick clay. According to the Federal Office of Statistics, the BGR calculated the value of this amount at €161 million.

Rock salt, industrial brine and boiled salt
In 2020, 14.2 million tonnes of rock salt and industrial brine (NaCl content) were extracted in Germany. The BGR calculated the value of that quantity to be €399 million, based on value information from the Federal Office of Statistics.

Kaolin
Kaolin or china clay is used mainly in the paper industry and in the production of fine ceramics. According to the BGR, 0.8 million tonnes of raw kaolin worth €58 million was mined from raw kaolin earth in 2020.

Quartz gravel and sand
In 2020, 9.8 million tonnes of quartz gravel and quartz sands were extracted in 2019, valued at €195 million. Among its other uses, the raw material is used as vitreous sand, foundry sand and as a filler in chemical and building chemical products.

Gravel, sand and broken natural stone
Around 95% of the gravel, sand and broken natural stone extracted today is used in the building and building materials industries [BGR 2021], where they are used in e.g. civil engineering and in the manufacture of concrete. In 2020, 262 million tonnes of gravel and sand were extracted, with a value of €1,956 million, as well as 223 million tonnes of broken natural stone with a value of €1,720 million.

Ashlar
Quarried natural stone is first extracted in raw blocks and then sawn into slabs of various formats. These slabs are used for e.g. façade cladding or as wall and floor covering. They are also used as windowsills, steps and gravestones. In 2020, 0.4 million tonnes of this natural resource were extracted, with an estimated value of €37 million (information from the BGR).

Limestone, marlstone and dolomite
According to information from the BGR, 55 million tonnes of limestone, marlstone and dolomite valued at €813 million were extracted in 2020. Limestone is used in many sectors, including home and road construction and in iron, steel, cement, glass and foodstuffs production.

FURTHER SOURCES:

[AGEB 2021] – Energy Balances (AG Energiebilanzen e.V. (2021): Energy consumption in Germany in 2020 (Energieverbrauch in Deutschland im Jahr 2020). URL: https://ag-energiebilanzen.de/wp-content/uploads/2022/04/bilanz20d.pdf (Access on 10 August 2022).

[BGR 2021] – Bundesanstalt für Geowissenschaften und Rohstoffe (2021) [Federal Institute for Geosciences and Natural Resources): Germany – Natural Resources Situation 2020 (Deutschland – Rohstoffsituation 2020) – 158 pages; Hanover. URL: https://www.bgr. bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2020.pdf?blob=publicationFile&v=4 (Accessed on 14 November 2022).

BGR – Bundesanstalt für Geowissenschaften und Rohstoffe [Federal Institute for Geosciences and Natural Resources] (2022): BGR energy study 2021 – Data and developments of the German and global energy supply (24). – 175 pages; Hannover; doi:10.25928/es-2021. URL: https://www.bgr.bund.de/DE/Themen/Energy/Downloads/energiestudie_2021.pdf;jsessionid=0FE958ED4BC2982CC3796C441BC1AD79.2_cid331?__blob=publicationFile&v=4 (Accessed on 14 November 2022).

Federal Network Agency/Federal Cartel Office (2021): Monitoring Report 2020. – 510 pages; Bonn URL: https:// www.bundesnetzagentur.de/SharedDocs/Mediathek/Monitoringberichte/Monitoringbericht_Energie2020.pdf?__blob=publicationFile&v=8 (Accesed on 14 November 2022).

[Destatis] – Statistisches Bundesamt (various years): Survey portal. URL: https://erhebungsportal.estatistik.de/Erhebungsportal and (various years): Manufacturing industries. URL: https://www.destatis.de/DE/FiguresFacts/EconomicSectors/IndustryManufacturingindustry/industrialprocessingtrade.htmlbe.html (Accessed on 9 December 2022).

[IM 2020] – Industrial Materials (2020): IM Price Database

[LBEG 2021] – Landesamt für Bergbau, Energie und Geologie (2021) (State Office for Mining, Energy and Geology): Crude oil and natural gas in the Federal Republic of Germany 2020 (Erdöl und Erdgas in der Bundesrepublik Deutschland 2020). URL: https://www.google.de/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwiD35Xks-P_AhU6QvEDHZQZA4oQFnoECBoQAQ&url=https%3A%2F%2Fwww.lbeg.niedersachsen.de%2Fdownload%2F169420%2FErdoel_und_Erdgas_in_der_Bundesrepublik_Deutschland_2020.pdf&usg=AOvVaw1lycPq6RJL8LHwd2YpPsSP&opi=89978449 (Accessed on 9 December 2022).

[MIRO 2021] – Bundesverband Mineralische Rohstoffe e.V. (Federal Association of Mineral Resources) (2021): The German Stone Quarrying Industry. (Die deutsche Gesteinsindustrie) – Report of the Management Board 2020/2021 (Bericht der Geschäftsführung 2020/2021) URL: https://www. bv-miro.org/service/geschaefts-berichte/ (Accessed on 14 November 2022).

[SDK 2021] Statistik der Kohlenwirtschaft e.V. (Statistics of the coal sector) (2021): Statistics from the coal industry. URL: https://kohlenstatistik.de/downloads/ (Accessed on 14 November 2022).

[iii] The data (chapter 5.a.) was taken from current national accounts of the Federal Office of Statistics (as of August 2022). The "Mining and Quarrying" economic sector includes the extraction of naturally-occurring solid mineral resources (coal, salt, ores, quarried natural resources), liquid mineral resources (crude oil) and gaseous mineral resources (natural gas).

In the statistical classification of economic activities (WZ 2008), the "Mining and quarrying" sector covers the whole of Section B with the following sub-sectors: coal mining (WZ08-05); quarried natural resources, other mining products (WZ08-08) and the provision of services for mining and for quarrying (WZ08-09). A detailed list of these sub-sectors can be found in the publication "Classification of Economic Activities" (Klassifikation der Wirtschaftszweige) of the Federal Office of Statistics, pages 175 to 185. It should be noted that section B ("Mining and Quarrying") includes the sub-sector "Provision of Services for Mining and Quarrying" (WZ08-09). This, however, does not include classical extraction activities.

In addition, there are other companies which extract natural resources; however, these are allocated to a different economic sector due to their main activities and are therefore not included in the following.

[iv] **Preliminary remarks**

The tax amounts shown in the table (capital 5.b.i.) are based on special evaluations of the corporate tax statistics from 2010–2017, the trade tax statistics of 2010 and 2017 and the statistics on the partnerships and communities from 2010–2012 and 2014–2017 as well as estimates and updates of the Federal Ministry of Finance.

Only the "Mining and Quarrying" economic sector was addressed. The "Mining and Quarrying" sector includes the extraction of the following naturally-occurring mineral resources: solids (such as coal, salt and ores), liquids (crude oil) and gaseous resources (natural gas). A detailed list of these sub-sectors can be found in the publication "Classification of Economic Activities" (Klassifikation der Wirtschaftszweige) of the Federal Office of Statistics, pages 175 to 185.

Since the most recent statistical data relate to 2016, the following years were extrapolated to 2020. The rate of change in gross value added by the economic sector B, "Mining and Quarrying" as stated in the national accounts was used for the purpose of the update (source: "VGR – National Accounts – An Overview of Key Facts" (Wichtige Zusammenhänge im Überblick), page 20 et seq.)

The tax amounts reported for the natural resources sector are amounts that had to be paid by the companies for the respective year (so-called assessment year). The statistical time frame is therefore different from that of the total income of the state which is recorded in the year of the inflow (cash year).

The stated total income was taken from the current national accounts of the Federal Office of Statistics (as of August 2022). The state's total income includes not only income from taxes, but social security contributions, proceeds from the disposal of assets or investments (government bonds) as well as fees, administrative income and profits from state enterprises. Detailed explanations and definitions of the total public budget can be found on the website of the Federal Office of Statistics: https://www.destatis.de/DE/Themen/Staat/Oeffentliche-Finanzen/fachbegriffe-finanz-personalstastatistics-pdf.pdf?blob=-publicationFile (Accessed on 2 December 2022).

Corporate tax

Statistical data from the years 2010 to 2017 was assessed. For the purposes of the assessment, the corporate tax amounts imposed on unlimited and limited corporate taxpayers before the deduction of capital gains tax or the like were taken into account. The update for the years to 2020 was made on the basis of the development of the gross value added of the economic sector B, "Mining and Quarrying."

Trade tax

Trade tax in Germany is collected by more than 11,000 municipalities according to individually-determined and thus differing rates. The basis for the calculation of the trade tax is trade income. This is the profit calculated pursuant to the income tax law or the corporate tax law. The amount of trade tax may be increased or reduced by additions and reductions as per the German Trade Tax Act. On the basis of the business income, a taxable amount is set uniformly throughout Germany. If the business has operating facilities in several municipalities, the taxable amount is divided between the individual municipalities where the operating facilities are based. The trade tax to be paid by the company is set by applying the respective tax factor of the municipality to the taxable amount. Trade tax is levied on corporations, partnerships and natural persons with their commercial income.

Only the taxable amounts determined during the assessment procedure are included in the trade tax statistics. The Federal Office of Statistics used the results of a special evaluation of statistics for the years 2010–2017 to assign the positive taxable amounts of the companies in question to the relevant tax factors charged by the respective municipalities. This enabled the trade tax to be determined in an approximate manner.

Income tax

Natural persons, as individual entrepreneurs or members of a partnership, can also make profits in the natural resources extractive sector – and are therefore subject to trade and income tax. However, income tax statistics do not include breakdowns by economic activity. This effectively means that these statistics will not be used for this study. The statistics on partnerships, however, are broken down into economic sectors, but they are only used to determine the earned income, which is subject either to corporate tax or income tax imposed on the parties involved (co-entrepreneurs).

Due to the above-mentioned problems, the income tax attributable to the natural resources extractive sector was estimated by means of the following procedures, using the trade tax statistics and the statistics on partnerships and communities:

An approximate profit was determined for the individual entrepreneurs, by means of retroactive calculation, using the positive taxable amounts assessed in the trade tax statistics for this group of persons. The sum of the income of partnerships, which, in the relevant industry, is attributable to natural persons as participants, was assessed from the statistics on partnerships and communities.

An average tax rate of 28.6% was applied to this profit or to this sum of earnings. This average tax rate was calculated using a microsimulation model for persons with commercial incomes who pay income tax. With the trade tax offset against the income tax, the results in the table show the approximate income tax amounts.

Solidarity surcharge

A solidarity surcharge is levied as a supplementary tax to income tax and corporate tax. It generally amounts to 5.5% of the established corporate tax and income tax (see previous explanations).

Income tax and the solidarity surcharge are not included in the reporting for the 2020 report.

[v] The Federal States' revenues from extraction royalties (chapter 5.b.ii.) are made available to the Federal Ministry of Finance (BMF) by the Federal States for purposes related to the national financial equalisation mechanism within the framework of monthly reporting on tax revenues. They are published in the settlements of the financial equalisation of the Federal States on the website of the BMF.

[vi] The data (chapter 5.c.) was taken from the "Jahresbericht für Betriebe 2021" (Annual Report for Business Operations for 2021) issued by the Federal Office of Statistics. This report refers to companies with at least 20 employees. As this statistical data is not the same as the statistical data on employees covered by the mandatory social security scheme, the data in the report does not cover all extractive business operations.

[vii] The German natural resources export data (chapter 5.d.) is based on information on the goods divisions of the goods catalogue from the production statistics of the Federal Office of Statistics. These calculations include "coal" (GP09), "crude oil and natural gas" (GP09), "ores" (GP09) and "quarried natural resources, other mining products" (GP09). The data on the exports from 2015–2020 was taken from the Genesis Online database by Destatis on 2 September 2022.

[viii] The data on primary energy consumption in 2020 (chapter 8.b.) was taken from the publications of the Working Group on Energy Balances: URL: https://ag-energiebilanzen.de/daten-und-fakten/primaerenergieverbrauch/ (Accessed on 9 December 2022).

FURTHER SOURCES:

Working Group on Renewable Energies Statistics (AGEE- Stat) (2021): Renewable Energies in Germany 2020 (Erneuerbare Energien in Deutschland 2020) URL: https://www.umweltbundesamt.de/sites/ default/files/medien/5750/publikationen/2021_hgp_erneuerbareenergien_deutsch_bf.pdf (Accessed on 20 December 2022).

BMWi (Federal Ministry for Economic Affairs and Energy) (2021): Renewable energies in figures, national and international development in 2020. URL: https://www.bmwk.de/Redaktion/DE/Publikationen/Energie/erneuerbare-energien-in-zahlen-2020.pdf? blob=publicationFile&v=10 (Accessed on 20 December 2022).