D-EITI

Extractive Industries Transparency Initiative

Germany

Secretariat of the Extractive Industries Transparency Initiative – Germany

REPORT FOR 2019

(Feb. 2022)

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 15
65760 Eschborn

www.giz.de

GIZ GmbH acts as 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 Goehler-Robus, Head of the D-EITI Secretariat (GIZ)

Last update
February 2022

Greeting and remarks of the D-EITI Special Representative, Elisabeth Winkelmeier-Becker

Ladies and gentlemen,

2021 was also marked by the pandemic, but unlike many EITI member countries, whose engagement was in part quite seriously affected, the D-EITI Multi-Stakeholder Group (MSG) was able to continue their work largely unhindered and submit an interesting and informative 4th D-EITI Report. This is a privilege for which we should all be grateful. I would like to express my gratitude to all those involved in the D-EITI MSG for their great commitment. My special thanks go to the companies in the extractive sector for their comprehensive, voluntary reporting, as well as to all the Federal Government and Federal State authorities that made a significant contribution to the preparation of this report.

In view of the increasing importance of sustainability in the EITI, it is particularly welcome that this year's report addresses the critical issue of recultivation. Germany has extensive experience and expertise in this field, which it is happy to share with other EITI countries through this report.

I would particularly like to emphasise that, for the first time, a whole chapter has been dedicated to the topic of energy transition. To this end, already existing sections on topics such as renewable energies and the coal phase-out were summarised and supplemented by new topics. Against the background of the importance of the energy transition for the extractive sector, this is an important contribution to the understanding of Germany's extractive industry. While the last report showed the need for extracting natural resources for the expansion of renewable energies, this report focuses on the question of what kind of contribution the extraction of domestic natural resources can make. High standards in domestic extraction and short transport routes make an important contribution to a sustainable supply of natural resources.

Finally, I am pleased that the MSG's work on the EITI pilot initiative to implement and evaluate possible alternatives to payment reconciliation has received much praise from the international EITI Board. This shows that the D-EITI is well on the way and can continue its pilot from a strengthened position. The focus of the work will now be to practically test the procedures that can be used to integrate the risk-based approach to quality assurance into the reporting processes of the EITI Standard. I very much welcome the fact that the MSG is taking up this new and exciting challenge and is thus making a significant contribution to the continuous development of the EITI Standard.

Signed, Elisabeth Winkelmeier-Becker

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 Energy

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

Ladies and gentlemen,

With this 4th 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 makes this clearer than ever and shows the growing importance of domestic extraction of natural resources. In Germany, the extraction of natural resources is carried out in accordance with the highest environmental, social and safety standards worldwide. Transparency and sustainability are integral components of the German extractive industry. In this report, it is in particular the new subchapter on recultivation, renaturation and environmental protection that explains the key role these topics have always had for the companies of the extractive sector.

Therefore, my sincere thanks go to all companies for their (renewed) voluntary participation in the D-EITI process. With the new quality assurance procedure, it was also possible to determine for 2018, the last reporting year: Any payment flows in the extractive sector of German industry are correct, plausible and traceable. None of the audits carried out to date has identified any deviations and all audits confirm the high level of transparency of the domestic extractive sector.

Nevertheless, for us as the D-EITI Multi-Stakeholder Group (MSG), this was no reason to be satisfied, but an incentive for further development. We, as the representatives of the private sector within the MSG, have seen the continuation of the pilot project launched in 2020 as an alternative to the previous verification of payment flows through a payment reconciliation procedure as a great opportunity and recognition. With this innovative approach, we hope to encourage even more countries to participate in the EITI and thus contribute to even greater transparency in the extractive sector worldwide.

As representatives of the private sector, we appreciate the constructive and objective exchange with the other stakeholder groups within the MSG. I would like to thank all those involved in the MSG very much for this exchange. This dialogue makes an important contribution to an objective approach to the domestic extraction of natural resources and a better understanding of natural resources. The challenges ahead of us, such as energy transition and digitalisation, can only be successfully addressed with a secure supply of natural resources. Domestic extraction of natural resources can make a decisive contribution in this respect. Therefore, I am all the more pleased that this report is increasingly focusing on the potential of domestic natural resources for future technologies.

Matthias Wachter

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

Greeting and remarks on behalf of the civil society sector by Carola Dittmann and Malte Lückert

Ladies and gentlemen,

This 4th D-EITI report is published in turbulent times. The global COVID-19 pandemic still has a firm grip on us, revealing more than ever the fragility of globalised supply chains. The increase in the consumption of resources, comprehensive digitalisation, the aggravation of climate change as well as geopolitical challenges are further issues that fundamentally challenge our society and economy.

Addressing all these issues requires a comprehensive transformation process. This also poses enormous challenges for the extractive sector. On the one hand, this sector produces important materials and is thus one of the pillars of our national economy. At the same time, the extractive sector uses massive amounts of energy and resources and causes high emissions.

Thus, decarbonisation and corporate sustainability measures are increasingly important tasks that must be negotiated and coordinated by stakeholders from civil society as well as from the private and the public sectors. The multi-stakeholder approach of D-EITI stands for precisely this joint approach and has proven to be one of the key success factors of the initiative.

By bringing together representatives from government, business and civil society in the MSG, D-EITI contributes to a broad discussion of all relevant sectors of society on the extraction of natural resources in Germany, which is crucial for the upcoming transformation processes. After all, natural resources are the basis for industrial value creation.

We are pleased to see that we can make a constructive contribution to the work of the MSG as the "voice of the workers". Thanks to the German extractive sector many people have good industrial jobs with collective bargaining coverage and rights of co-determination. However, the upcoming transformation will affect millions of jobs, entire industries and sectors, as well as the prosperity of various regions – also and especially in the extractive sector.

However, the ecological transformation must also become a just transition, a social-ecological transformation that offers people perspectives – perspectives for decent work, good life, and regional development. It is the responsibility of all of us to create these perspectives.

With its comprehensive contextual report, the 4th D-EITI report aims to make a fact-based contribution to the necessary social debate on the status quo and future of the domestic extractive sector. All chapters of the present report were developed by consensus, which involved many debates but also a willingness to compromise on the part of all stakeholders involved. We would also like to see this in a larger social context within the framework of the necessary socio-ecological transformation.

We would like to take this opportunity to thank all those who have contributed to the success of this report, first and foremost our colleagues in the MSG and the D-EITI Secretariat.

We look forward to continuing this cooperation.

Carola Dittmann

Head of CSR and Co-determination, Foundation for Labour and Environment of the Trade Union IGBCE

Malte Lückert

Head of the Department of Industry Groups and Sectors of the Trade Union IGBCE

TABLE OF CONTENTS

LIST OF ABBREVIATIONS

3TG	Tin, tungsten, tantalum, 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 Association – 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)
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 Regionen 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)

LIST OF TABLES

FIGURES

CHARTS

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, more than 55 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.

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, e.g. about the legal and tax conditions involved in the extraction of natural resources and important data about the sector and the field of *Managing human intervention in nature and landscape*, including the *Provisions, implementation securities and water* sub-themes, which became part of the mandatory requirements with the 2019 update of the EITI standard. The members of the MSG compiled and updated this information for the respective reporting year.

The information 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 topics of *State subsidies and tax concessions, renewable energies, recycling* and *Employment and social affairs* were included as far back as the first two reports. 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". For this 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*. This contains the comments already provided 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.* Relevant regulations on corruption prevention in public administration and private businesses are presented for the first time in the chapter *Legal framework for the extractive industry*.

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 report and developed further in this fourth report. Quality assurance in the first two reports was 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. For the third report a general evaluation was made of the government cash accounting systems instead of reconciling the payments with the receipts of government agencies, i.e. payment reconciliation. Here, in addition to the structure and legal base, the focus was primarily on internal assurance processes and audits. In this report a risk assessment on the quality assurance of payments is added to this process evaluation.

The pilot project has also been conducted in the second year in close cooperation with the international EITI secretariat and will be evaluated after the report has been completed.

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

This fourth D-EITI report for the reporting year 2019 was prepared by the German MSG in cooperation with the Independent Administrator, the auditing company Warth & Klein Grant Thornton AG Wirtschaftsprüfungsgesellschaft of Düsseldorf.

All the information and data here can also be found online on the D-EITI report portal at www.rohstoff-transparenz.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 in which we undertake to:

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 (economic, environmental, and social) sustainability; and
3. Achieve an 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 28 million tonnes as of 1 January 2020. Most of the crude oil reserves are in the North German Basin, primarily in Schleswig-Holstein and Lower Saxony. At the end of 2019, there were 51 oil fields in production.

Economic importance

With a share of around 35% 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 78% generally account for a much larger share than renewable forms of energy. In 2019, current domestic oil production amounted to around 2% of Germany's annual consumption. This rose by 1.4% 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 86 million tonnes, slightly higher than in the previous year. These imports in total were valued at EUR36.8 billion and came from 29 countries,[1] with 55% of the imported crude oil alone coming from Russia (27.1 million tonnes), Great Britain (10.2 million tonnes) and Norway (9.7 million tonnes). Germany produced slightly less than 2 million tonnes of crude oil in 2019. The country's share of global oil production amounted to approx. 0.04% in 2019. The value of crude oil produced in Germany in 2019 is estimated to be EUR823 million, which represents 0.02% of GDP. Crude oil accounted for around 7% of the total value of natural resources produced in Germany in 2019. 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 sixth place out of all natural resources mined nationwide. In a 2019 international comparison of crude oil-producing countries, Germany was in 58th place (1970: 26th place). At the end of 2019, 1,570 persons were employed in oil production in Germany.[2]

Extraction

In 2019, 51 oil fields were in production in Germany. These fields extract oil by means of some 986 production wells in drilling installations (onshore) and production platforms (offshore). In 2019, the oilfields of Schleswig-Holstein and Lower Saxony yielded almost 90% of the total German production. The remaining production was mainly produced in the Rhineland-Palatinate as well as Bavaria, together with very low production levels in Hamburg, Brandenburg and Mecklenburg-Western Pomerania. The largest German crude oil field is the Mittelplate/Dieksand 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 oilfield accounted for more than half of Germany's total crude oil production in 2019.

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. For heating, oil makes up around 24.6%. A particularly heavy user of crude oil is the chemical industry for processes such as the manufacture of plastics, foam, electronics, paints, dyes, washing detergents, medicines and cosmetics.

1 A list of these countries can be viewed here: https://www.bafa.de/SharedDocs/Kurzmeldungen/DE/Energie/Rohoel/2019_12_rohloelinfo.html#:~:text=19.02.2020Roh%C3%B6lINFO%20Dezember%202019,6%2C7%20Millionen%20Tonnen (Accessed on 15 December 2021).

2 [BfA 2019] Federal Employment Agency (2019) Employment by economic sector (WZ2008) – URL: https://statistik.arbeitsagentur.de/Statistikdaten/Detail/201912/iiia6/beschaeftigung-sozbe-monatsheft-wz/monatsheft-wz-d-0-201912-pdf.pdf?__blob=publicationFile (Accessed on 24 November 2021). For detailed source information see final note[i].

Interesting facts

- Germany covered about 2% of its crude oil demand with domestic production in 2019.
- In 2019, the Mittelplate/Dieksand oil field in the Wadden Sea contained approx. 17.5 million tonnes, more than half of Germany's recoverable oil reserves.
- Crude oil is created by 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 oilfields 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 m^3 (Vn) 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 46.6 billion m^3 (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 25% of primary energy consumption. In 2019, natural gas production in Germany amounted to around 6.7 billion m^3 (Vn) of raw gas, covering only about 6% of domestic natural gas consumption which increased by approx. 3.3% in 2019. In 2019, 1,702 TWh of natural gas valued at EUR24.56 billion were imported. The imported gas originated in Russia/CIS (1,149 TWh), Norway (300 TWh), the Netherlands (242 TWh) and Belgium and Denmark (together 11.7 TWh). There was a very slight reduction in imports (−3.3%) compared to the previous year. However, a considerable proportion of the natural gas imported was reexported to neighbouring European countries (701 TWh). In the context of the economic significance of domestically produced natural gas, Germany ranked number 47 in the comparison of all natural-gas-producing countries in 2019. The country's share of global natural gas production amounted to just under 0.2% in 2019. Natural gas is of relatively significant economic importance in relation to other extracted natural resources such as lignite. The value of the natural gas extracted in 2019 amounted to an estimated EUR1.01 billion. That is equivalent to about 0.03% of GDP. Natural gas accounted for around 9% of the total value of natural resources produced in Germany in 2019. At the end of 2019, 1,338 persons were employed in natural gas production in Germany.[3]

3 [BfA 2019] (Federal Employment Agency), for detailed sources see the final note[i].

Extraction

Around 94% of German natural gas was extracted in Lower Saxony in 2019. Other federal states (Saxony-Anhalt, Schleswig-Holstein, Thuringia and Bavaria) contributed only marginally to the total production. 419 production wells extracted the natural gas on 72 gas fields. The A6/B4 gas field in the 'Entenschnabel' (duckbill) – an economic zone in the German Bight (North Sea) – is the only German offshore 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.

Uses

As a fossil energy source, natural gas is mainly used to heat residential households (share 43%) and businesses in the commercial, retail and service sectors (share 48%). Natural gas also plays an important role in supplying heat for thermal processes in trade and industry (e.g. in large bakeries, brick factories, cement works, foundries and smelters (share 46%), to generate electricity (share of 12.4% of electricity supplied in Germany and to the grid) and also as a fuel for ships and motor vehicles (0.2% share). Natural gas also has many other significant 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.
- Germany has an active offshore gas field in the German Bight. Natural gas is extracted on this one-hectare operating facility and supplied to some 15,000 households.
- Natural gas has been extracted from domestic gas fields for the past 100 years.
- 6% of the demand for natural gas in Germany was covered by domestic production in 2019. Approx. 94% of natural gas was extracted in Lower Saxony.

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 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.

Outlook

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 2019 compared with 2018 and reduced by more than one fifth to around 38.7 million tonnes SKE (SKE: hard coal unit, a unit that is mainly used in central Europe). In 2019, hard coal in Germany therefore still covered 8.5% of primary energy consumption and contributed 9.4% 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 19.4 million tonnes (45.8%) Russia was again the largest supplier, followed by the USA (19.2%) and Australia (11.3%). Imports from Poland, the only remaining significant coal exporting country in the EU-28, fell to 1.4 million tonnes. Of this, around 1.2 million tonnes was coke. Overall, in 2019 Germany imported 42.24 million tonnes of hard coal and hard coal products (primarily coke).

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 1400 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 are a large number of smaller hard coal mining areas in Germany.

Uses

In 2019, power stations accounted for roughly 51% 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 3%.

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, Colombia, 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 9.1% of primary energy consumption. This is behind oil and natural gas but ahead of hard coal. The amount mined annually was around 131.3 million tonnes in 2019, which represents a reduction of 21% 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 2019 amounted to EUR1.9 billion. Lignite accounted for around 16% of the total value of natural resources mined in Germany in 2019. This means that lignite is the most important natural resource in Germany, in terms of the value of production. In 2019, Germany's share of global lignite production was 12.6%. Germany is the largest producer of lignite in Europe but is reducing its lignite production substantially in the context of the European climate targets. A comparison of global lignite production is currently not possible because of differences in the databases used for comparisons, particularly in the USA, Russia and China. Germany has the third largest reserves after Russia and Australia. In 2019, exports of lignite fell by –10.8% to 1.32 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 8,581 in 2019.

Extraction

Lignite is extracted in three areas (the Rhenish, Lausitz and Central German regions), where today mining is only carried out in opencast mines. Lignite is currently mined in ten active opencast 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. 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. The economic advantages in using lignite result from the combination of the opencast 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 18.7% (2019) of power generation in Germany. The domestic production of lignite covers the country's annual consumption.

Interesting facts

- With production at around 131.3 million tonnes in 2019, lignite accounted for almost 9.1% of primary energy production in Germany.
- Lignite accounted for around 18.7% of gross electricity generation in 2019.
- The coalfield in the Rhineland is the largest lignite coalfield in Europe and Germany is Europe's largest producer of lignite.
- 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 rocks 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 2019, the amount produced in Germany was approximately 15.6 million tonnes of rock salt (including industrial brine) and some 5.7 million tonnes of potash and potash salt products. This is roughly equivalent to a value of EUR2.0 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 2019. This puts salts in top position of all natural resources mined in Germany in terms of its economic importance. Domestic production covered 100% of German requirements for salts (2019). With a total production of approx. 5%, Germany was the fourth largest producer of salt in the world in 2019, after China, the USA and India, and also the fifth largest potash producer with around 7% of the world's total production. In 2019, a total of 7,876 persons were directly employed in potash mining in Germany and a further 2,402 in salt mining.[4]

Extraction

Extraction takes place in Germany in five potash mines (in Hesse, Saxony-Anhalt and Thuringia), seven salt mines (in Baden-Wuerttemberg, Bavaria, Lower Saxony, North Rhine-Westphalia, Saxony-Anhalt and Thuringia), seven salt works (in Baden-Wuerttemberg, Bavaria, Mecklenburg-Western-Pomerania, Lower Saxony and North Rhine-Westphalia) and ten solubilisation facilities (in North Rhine-Westphalia, Schleswig-Holstein, Lower Saxony, Saxony-Anhalt and Thuringia). Salt mining is carried out in the mines by means of drilling, blasting or cutting techniques or by brining out underground deposits. 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, where it eventually becomes salt (and other by-products).

4 Südwestdeutsche Salzwerke AG (2020): Annual report 2019. URL: https://www.salzwerke.de/fileadmin/user_upload/salzwerke/dokumente/downloads/Investor_Relations/Geschaeftsberichte/Geschaeftsbericht_2019.pdf (Accessed on 24 November 2021), for detailed source information see final note[i].

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 5000 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 to 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.
- 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 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. 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 raw materials 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 540 million tonnes of primary raw materials (excluding quartz sand and gravel, kaolin and fine ceramic clay; these raw materials are covered in section vii. (Industrial minerals)) or uses these materials in production. In 2019, gravel and sands with 259 million tonnes and broken natural stone with 217 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 EUR4.4 billion in 2019. Thus in 2019 around 39% 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 2019, imports in terms of volume were approx. 20.3 million tonnes (value: EUR1,180 million). Exports in terms of volume were 35.2 million tonnes (value: EUR1.4 billion).

In 2019, the quarried natural resources sector (incl. Other mining) employed 37,941 people in Germany who are subject to social insurance contributions.[5]

Extraction

Quarried natural resources are mined decentrally and, with just a few exceptions, are extracted in opencast operations. In 2019, the industry operated around 2,700 extraction sites in Germany[6]. 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 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, primary earth and stone quarried, 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. 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 540 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 natural resources include a variety of mineral deposits; gravel, sand and natural stone account for the largest proportion of the extracted materials in terms of volume.
- 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.

5 [BfA 2019] (Federal Employment Agency), for detailed sources see the final note [i].
6 Bundesverband Mineralische Rohstoffe e.V. (Federal Association of Mineral Resources) (2020): Report of the Management Board 2019/2020. (Bericht der Geschäftsführung 2019/2020) URL: https://www.bv-miro.org/service/geschaeftsberichte/ (Accessed on 15 December 2021).

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 kaolin or 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 10.9 million tonnes and about 3.1 million tonnes respectively in 2019. In 2019, the total value of the industrial minerals extracted in Germany was around EUR375 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 2014, Germany boasted a total of 627 active production sites, of which one part was dedicated solely to the extraction of quartz and quartz sands.

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 2019, it was around 39 million tonnes and thus 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 2019.

Table 1: Extraction of natural resources in Germany in 2019 (quantities)

Natural resource	Quantity (2019)
Hard coal*	0 million tonnes[I]
Lignite	131.3 million tonnes[I]
Crude oil	1.9 million tonnes[II]
Natural gas**	6.7 billion m^3 [II]
Potash salt	33.0 million tonnes[III]
Potash and potash salt products	5.7 million tonnes[III]
Clay (fine and coarse ceramic clay)	14.5 million tonnes[III]
Rock salt and industrial brine	15.6 million tonnes NaCl content[III]
Kaolin	1.0 million tonnes[III]
Quartz gravel and sand	10.9 million tonnes[III]
Gravel and sand	259.0 million tonnes[III]
Broken natural stone	217.0 million tonnes[II]
Ashlar	0.4 million tonnes[III]
Limestone/marlstone/dolomite	55.0 million tonnes[III]

* Useable extracted output
** incl. petroleum gas

I [SDK 2020] (Statistics of the coal industry), for detailed source reference, see final note [ii].
II [LBEG 2020] (State Office for Mining, Energy and Geology), for detailed source reference see final note [ii].
III [BGR 2020] (State Office for Mining, Energy and Geology), for detailed source reference see final note [ii].

Table 2: Extraction of natural resources in Germany in 2019 (value)

Natural resource	Value (2019) in EUR millions
Hard coal*	0[IV]
Lignite	1,853[IV]
Crude oil	823[IV]
Natural gas**	1,013[IV]
Potash salt	No information available[V]
Potash and potash salt products	1,655[IV]
Clay (fine and coarse ceramic clay)	142[IV]
Rock salt and industrial brine	387[IV]
Kaolin	65[IV]
Quartz gravel and sand	207[IV]
Gravel and sand	1,825[I]
Broken natural stone	1,621[IV]
Ashlar	53[IV]
Limestone/marlstone/dolomite	812[IV]

* Useable extracted output
** Including associated gas

IV [BGR 2020] (State Office for Mining, Energy and Geology), for 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 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 Figure 1)* implement the Act 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 of their own mining regulations in order to meet the specific requirements and characteristics of their own regions.

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, the granting of a mining license (public-law concession) and secondly, 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. However, 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: Competent public authorities in Germany

Bundesministerium
für Wirtschaft
und Klimaschutz

Baden-Wuerttemberg Ministry for the Environment, Climate Protection and the Energy Sector	**Bavaria** Ministry of Economic Affairs, Regional Development and Energy	**Berlin** Senate Administration 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; District 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 for Economic Affairs, Labour and Europe	**Hamburg** Department of Environment, Climate, Energy and Agriculture
State Office for Mining, Geology and Natural Resources, Brandenburg	State Office for Mining, Energy and Geology	State Geological Department
Hesse Ministry for Environment, Climate Protection, Agriculture and Consumer Protection		**Mecklenburg-Western-Pomerania** Ministry of Energy, Infrastructure and Digitalization
Regional Council of Darmstadt Department of Occupational Health and the Environment, Wiesbaden		Stralsund Mining Office
Lower Saxony Ministry for Economic Affairs, Labour, Transport and Digitalisation		**North Rhine-Westphalia** Ministry for Economic Affairs, Innovation, and Energy
State Office for Mining, Energy and Geology		Regional Government Arnsberg; Department of Mining and Energy in North-Rhine Westphalia, Dortmund
Rhineland-Palatinate Ministry of Economic Affairs, Transport, Agriculture and Viticulture	**Saarland** Ministry for Economic Affairs, Labour, Energy and Transport	**Saxony** State Ministry for Economic Affairs, Labour and Transport
State Office for Geology and Mining	Upper Mining Office	Saxon Mining Office
Saxony-Anhalt Ministry of Economic Affairs, Tourism, Agriculture and Forestry	**Schleswig-Holstein** Ministry of Energy, Agriculture, the Environment, Nature and Digitalization	**Thuringia** Min. of Environment, Energy and Nature Conservation
State Office for Geology and Mining	State Office for Mining, Energy and Geology	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)	*Industrial minerals:* bentonite and other montmorillonite clays, feldspar, mica, kaolin, diatomaceous earth (diatomite), 'pegmatite sand', quartz (quartz sand and gravel) & 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 opencast 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.	
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 10 December 2021).

b. How are mining projects approved?

The regulation procedures for the approval and supervision of mining 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 mining projects according to the type of natural resources

<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 (approval of the main operating plans, as a rule every two years)
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 State's Excavation Laws, Building Laws or the Water Resources Legislation (in wet extraction) are required for quarrying these natural resources. The materials 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 mines, 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). If extraction work has not started within three years, as a rule, the licence must be revoked (§ 18 BBergG). The grounds for refusal are fully itemised in § 12 BBergG.

Proprietary mining rights
Mining may be carried out under these rights. They include the licence with the possibility to use them as collateral with the relevant easements and mortgages. The licence expires when proprietary mining rights become valid. 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 the natural resources is interrupted for more than 10 years, as a rule, 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. of the BBergG, mining authorisations and mining maps are created to document the mining rights. Information about licences, permits, proprietary mining rights and on 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: Unique features in the "new" German Federal States

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 "new" Federal States does not only extend until 1980, but also applies to deposits explored up to and including 1990. These rights also apply to both free-to-mine and privately-owned natural resources. Exploration and extraction rights for privately-owned natural resources were also governed by GDR laws on state-awarded mining rights.

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	Decisions made at Federal state level
Time-limited	No	No, confirmed old rights with the licence status 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 prospective 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. 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. 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 state 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.[7] 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 opencast 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 9 on disclosed payment flows and quality assurance.

7 Federal Mining Act (BbergG): https://www.gesetze-im-internet.de/bbergg/

iii. Water-rights permits

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)[8]). 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. Removal of solids from surface waters, where this has an effect on water characteristics,
4. The introduction and discharge of substances into water,
5. The removal, extraction, channelling and abstraction of groundwater.

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

1. The 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 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 the procedure here 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 Annex 1 of the Law on Environmental Impact Assessments (UVPG).

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. The authorities concerned then address the objections and a public hearing is held, with the participation of all official bodies and persons who have expressed 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 planning considerations and discretion. In addition, it not only binds the decisions of other authorities at the horizontal level, it also applies to the following operating plans (vertical concentration) as per § 57a (5) BBergG. All publicly available information on environmental impact assessments of mining

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

Figure 5: Overview of mining projects subject to EIAs or a preliminary EIA (not an exhaustive enumeration)

	Compulsory EIA	Compulsory preliminary EIA
Civil engineering		
• Operating parts of a mine that are above ground, from 10 ha upwards	X	
• Surface subsidence from 3 m	X	
• Surface subsidence from 1 m to 3 m		X
Opencast mining		
• Extraction site from 25 ha	X	
• Extraction site from 10 ha to 25 ha		X
• in nature protection and Natura 2000 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	X	
Crude oil and natural gas		
• Production volume from 500 t/d crude oil or from 500,000 m^3/d natural gas	X	
• smaller production volumes		X
• with crushing of rock under hydraulic pressure	X	
• in coastal waters and the continental shelf	X	
Waste dumps		
• More than 10 ha	X	

projects can be accessed on the environmental portals of Federal and State governments.[9]

In contrast, 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, permits and licenses must be obtained from the relevant authority in each case. These may be water-rights permits[10], construction permits, forest conversion authorisations, legal immission control approval procedures[11], permits under explosives legislation or the granting of exemptions from nature and landscape prohibition regulations.

9 Federal government's EIA portal (https://www.uvp-portal.de/), EIA network – environmental impact assessments of the Federal States (https://www.uvp-verbund.de/portal/), as an example the EIA portal of Lower Saxony (https://uvp.niedersachsen.de/startseite).
10 Cf. also a glossary for the Water Resources Act (WHG); on the legal framework for abstracting water also Chapter 7.1 d.
11 Cf. glossary for Federal Immission Control Act (BImSchG).

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. The general Freedom of Information Act (IFG) applies in respect of other official information held by federal authorities.

Environmental information (cf. § 2 III UIG) includes both data on the state of the air, atmosphere, water, soil, landscape and natural habitats and information on noise, energy, substances and radiation. 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. Processing is generally free of charge (§ 12 UIG).

The right to access information may be limited to protect certain interests, a definitive list of which is 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.[12]

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).[13] Some Federal States use extensive "Environmental portals" to publish authorisation decisions and general environmental information.[14] 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).[15] The provision of these authorisation decisions is also generally free of charge.

Example of an authorisation decision

Citizens can find out specific information on effects on the environment authorised by the authorities from 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.[16] The company breaks down 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

12 The origin of the information and text passages is the German Federal Ministry for the Environment. These and further information can be accessed at: https://www.bmu.de/themen/bildung-beteiligung/umweltinformation/umweltinformationsgesetz/ (Accessed on 15 December 2021).
13 Information on where such information can be accessed or found is sufficient here.
14 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 existing environmental portals can be accessed via https://rohstofftransparenz.de/download/#umweltinformationen.
15 The central internet protal can be found at: https://www.uvp-portal.de/.
16 The complete decision can be downloaded and viewed at https://rohstofftransparenz.de/download/#umweltinformationen oder https://www.uvp-verbund.de/documents/ingrid-group_ige-iplug-he/EEBA0F02-E468-4AE8-A148-D11193D8D737/Erlaubnisbescheid_2021_final.pdf.

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.[17]”

17 Quotation p. 12 of the authorisation 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 of the BBergG (German Federal Mining Act), 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, and this 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 registration). Other Federal States are also 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).

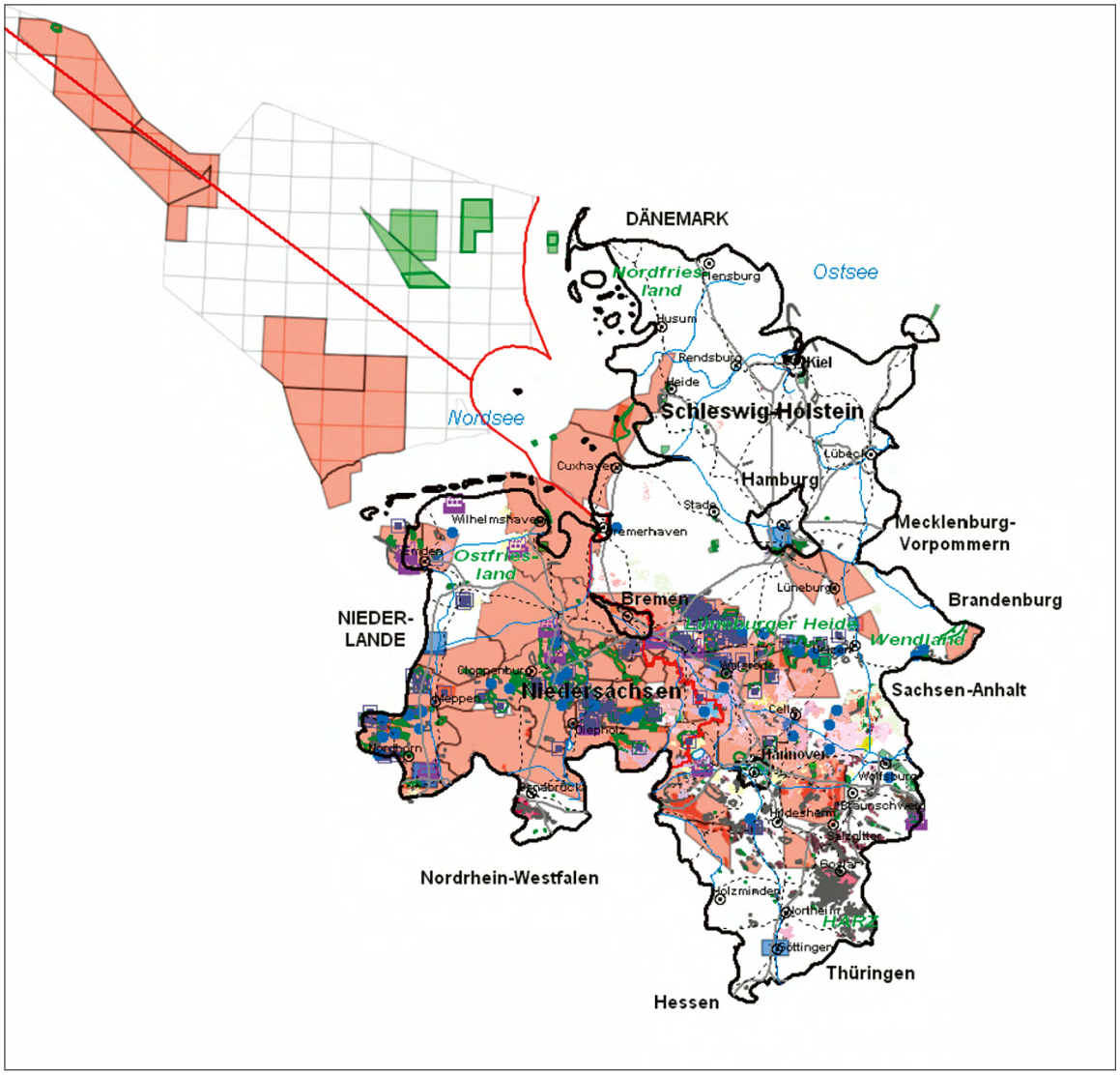
You can find an overview of all mining rights at https://rohstofftransparenz.de/download/#bergbau-berechtigung.

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

One 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 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 here are Baden-Wuerttemberg at https://maps.lgrb-bw.de/, Berlin and Brandenburg at http://www.geo.brandenburg.de/lbgr/bergbau, North-Rhine Westphalia at https://www.geoportal.nrw/ and 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[18] 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 **Fourth Money Laundering Directive (EU) 2015/849** of 20 May 2015. The register contains beneficial owner data in the form of an Internet portal. In concrete terms, this means that the transparency register contains information on beneficial owners from already-existing, publicly-accessible electronic registers (see above). It also means that information can be accessed in the cases in which the beneficial owners cannot be determined from other registers and therefore the beneficial owners had to be notified immediately to the transparency register. The transparency register thus expands and completes the information on beneficial owners. This also applies to trusts and similar legal forms which have hitherto remained unidentified.

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 of for entry. From this time a positive 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.

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

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 sense check of the data notified when making the entry, § 18 (3) GwG. The content of the data notified is not checked.

Incorrect, incomplete or missing entries are punishable by fines as set out in § 56 (1) para. 1 number 55 GwG. The Federal Office of Administration (BVA) is the regulatory authority responsible for imposing fines. Furthermore, any body 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 duty to report anomalies was introduced (1 January 2020) and July 2020 (pro rata), entities subject to these legal requirements have reported a total of 18,408 anomalies. Authorities who are allowed to inspect the transparency register as part of fulfilling their duties have not reported any anomalies during the corresponding period.

Where the fine exceeds an amount of EUR200, legally binding and indisputable decisions on fines are published on the BVA website.[19]

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 legally obligated 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).

Data in the transparency register is not available in the format of open data. If interested parties wish to obtain information from the transparency register, they need to complete a one-time registration 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).

19 Federal Office of Administration (2021): Decisions on fines (transparency register) URL: https://www.bva.bund.de/DE/Das-BVA/Aufgaben/T/Transparenzregister/Bussgeldentscheidungen/bussgeldentscheidungen_node.html (Accessed on 10 December 2021).

To cover the administrative cost, a fee of EUR1.65 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)). If the transparency register provides a cross-reference to one of the other electronic registers (such as the commercial register or the company register), because the beneficial owner is possibly from these registers, only the fees for inspecting the other relevant register are incurred.

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 ff. 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.[20] 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.

20 Apart from the penal code, crimes of corruption are also penalised by e.g. disciplinary and labour legislation.

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.[21] 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.[22]

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[23], 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.[24]

Separate regulations apply to government administrations at Federal State level. They are essentially based on the German Federal Government guidelines.

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.[25]

21 Anti-corruption Code of Conduct and guidelines for managers and the management of authorities.
22 The German government regularly reports on the situation in its "Annual report on preventing corruption in Germany".
23 United Nations Convention against Corruption, ratifiziert von Deutschland 2014.
24 Das Strafrechtsübereinkommen hat die Bundesrepublik im Jahr 2017 ratifiziert. Das Zivilrechtsübereinkommen wurde bisher nicht ratifiziert, da die Bundesrepublik bisher nicht alle Anforderungen erfüllt hat, insbesondere zum Hinweisgeberschutz. Zudem bedürfte es zur Ratifikation einer Ermächtigung der EU, da das Übereinkommen unionsrechtliche Zuständigkeiten berührt.
25 Municipalities provide information on their websites about preventing corruption and give the names of contact persons – for example, see the example of Wiesbaden, the capital of the Federal State of Hesse: https://www.wiesbaden.de/vv/oe/beauftragte/141010100000066754.php.

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 corruption (e.g. "buying votes") 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 for third parties (whistleblowers) to report corruption to line managers or a special office and to give the whistleblower legal protection against reprisals. 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. No statutory regulations for protection against reprisals such as transfers and termination of employment exist for the public sector. However, such regulations contain the European Union Directive 2019/1937 to protect people who report breaches of union rights. Germany has an obligation to implement these rights by 17 December 2021.

The Federal Criminal Police Office provides information on the annual development and corruption statistics in its Bundeslagebild Korruption (Federal Criminal Police Office's Corruption National Situation Report). 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.

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 17,500 companies and organisations from civil society, politics and science. In Germany there are more than 700 participants, covering approx. 660 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.

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.

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 are indispensable as an instrument for prevention and the core element of an effective Compliance Management System.

Accordingly, in their Code of Conduct the companies generally formulate a zero tolerance policy regarding corruption[26], 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 for insurance companies under the Insurance Supervision Act, for companies in the field of financial management in the Securities Trading Act (WpHG), 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.

26 Wintershall Dea e.g. publishes this Code of Conduct on the company website: https://wintershalldea.com/sites/default/files/media/files/Code_of_Conduct-DE.pdf.

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.). In this case, however, the owners of the still-valid old production rights or the former mining rights may be entitled to payment of a so-called production interest (e.g. in the case of so-called old oil or natural gas contracts) by the companies. 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 (which extracts natural resources) with the legal form of a limited company (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. Limited companies which do not have their head offices and management in Germany are subject to corporate tax on the income generated in Germany. In 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. This is payable to the Federal Government and it 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 generally amounts to EUR5 per square kilometre of a mine site in the first year after the permit has been granted; the amount increases by EUR5 per year to a maximum of EUR25 per year, whereby the legislation of individual States may provide for differing royalty amounts and even exemptions under certain conditions (see § 32 (2) BBergG and the table on page 50 – 58). 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 page 50 – 58).

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. There special aspects required new licenses to be applied for in accordance with the BBergG within the framework of the Unification Treaty and these 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).[27]

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 interstate financial equalisation. Mine site and extraction royalties are levied by the mining authorities of the Federal States.

27 Parliamentary advisory service of the State parliament of Brandenburg (2008): Exemption from royalties of lignite production in Brandenburg. URL: https://www.parlamentsdokumentation.brandenburg.de/starweb/LBB/ELVIS/parladoku/w4/gu/15.pdf (Accessed on 26 November 2021).

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

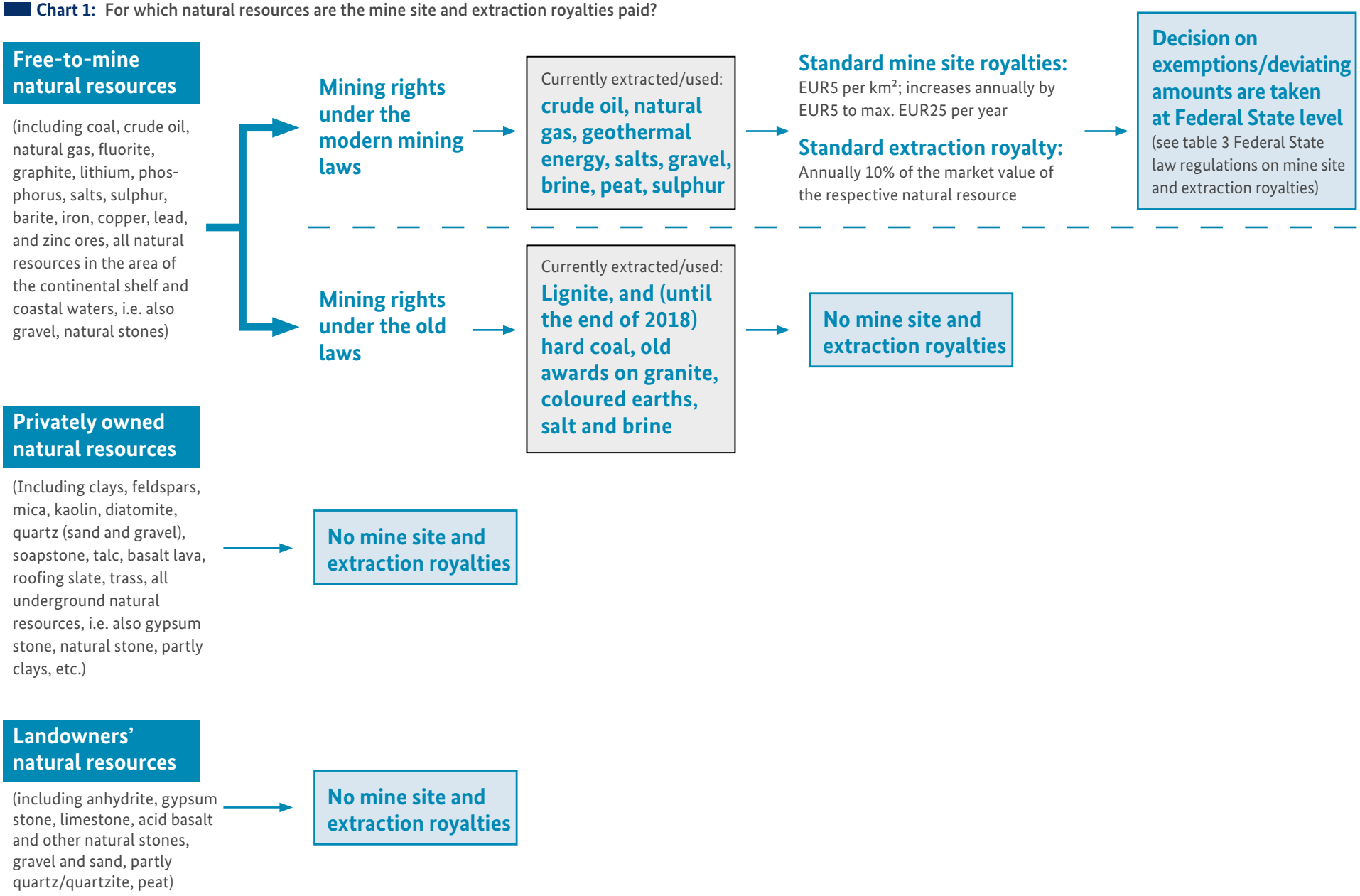


Table 3: Federal State law regulations on mine site and extraction royalties*

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 (Official Gazette, p. 395), last amended by the ordinance of 19 November 2020 (Official Gazette, p. 1059)	• Crude oil, natural gas, rock salt and brine EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate crude oil, natural gas: EUR80 • Maximum rate rock salt and brine: EUR60	• Assessed at market value – Crude oil: 15% – Rock salt: 5% or 2.5%[5] • Natural gas: 27% of the price obtained[7]	• 100% exempt – Geothermal energy – Brine • Crude oil and natural gas: Site conditioning costs[14] at the levy rate[2] • 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. (Law and Ordinance Gazette) p. 1050, BayRS 750-10-W), amended most recently by § 1 (321) of the Ordinance dated 26 March 2019 (GVBl. p. 98).	• Crude oil, natural gas EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR60	• 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 Increases by EUR20 for each subsequent year up to the specified maximum rate.
2 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
7 In EUR/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 EUR0.002045/m³.
14 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.

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: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR80	• 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%[5] • Natural gas: 10% of the assessed rate[8]	• 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[2]
Bremen	• Bremen Ordinance (VO) 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: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR80	• Natural gas: 36% of the price obtained[7] • 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[6]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes – Sulphur • Crude oil and natural gas: site conditioning costs at the levy rate[2], and • 75% in the year extraction was started, and in the following 5 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).

1 Increases by EUR20 for each subsequent year up to the specified maximum rate.
2 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
6 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.
7 In EUR/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 EUR0.002045/m³.
8 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in EUR/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. (Hamburg Law and Ordinance Gazette) p. 389), as last amended by regulation of 22 April 2014 (HmbGVBl. p. 142)	• Crude oil and natural gas: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR80	• Assessed at market value: – Crude oil: 7% – Brine: 1 or 0.5%[5] • Natural gas: 37% of the assessed rate7 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[2]
Hesse	• Ordinance of 6 October 2014, amending the Hessian ordinance on mine site and extraction royalties (GVBl. I p. 232) (for a limited period until 31 December 2019	• Crude oil and natural gas: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR60	• Assessed at market value: – Non-ferrous metals and barite: 1% – Rock salt and brine: 1% or 0.5%[5] • Potash, magnesium and boron salts: 1% of the assessed rate[10]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes • 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).

1 Increases by EUR20 for each subsequent year up to the specified maximum rate.
2 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
7 In EUR/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 EUR0.002045/m³.
10 Sum of the products of (1) the average content of potassium oxide (K_2O) and magnesium sulphate ($MgSO_4$) extracted from the crude salts on the licensed site and (2) the amount of EUR0.75 for potassium oxide (K_2O) and EUR0.25 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: EUR5 or each km² or fraction thereof for the first year[1] • Maximum rate: EUR25	• 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%[5] of the assessed rate[8]	• 100% exempt: – Geothermal energy – Marine pebbles and sands, collected for coastal protection 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).

1 Increases by EUR20 for each subsequent year up to the specified maximum rate.
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
8 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in EUR/kWh.

Federal State	Legal basis	Mine site royalties	Extraction royalties**	
			Levy rates	Special regulations
Lower Saxony	• Nds Ordinance on mine site and extraction royalties of 10 December 2010 (Nds GVBl. p. 564), as last amended by ordinance of 18 December 2018 (Nds. GVBl. p. 331)	• Crude oil and natural gas: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR80	• Crude oil: 18% of the market value for crude oil extracted from the Bramberge, Emlichheim, Georgsdorf, Ringe and Rühlermoor Valendis deposits • Natural gas: 29% of the assessed rate[8] multiplied by the taxable volume • Brine: 1% or 0.5%[5]	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes – Sulphur – Petroleum gas not extracted from the Bramberge, Emlichheim, Georgsdorf, Ringe and Rühlermoor Valendis deposits • Crude oil: Site conditioning costs at the levy rate for the taxable areas[2], and – 50% in the case of extraction using tertiary procedures • Natural gas: site conditioning costs at the levy rate[2], and – 50% in the case of extraction from a deposit (1.) in the area of the continental shelf or (2.) in coastal waters using production platforms – 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).

1 Increases by EUR20 for each subsequent year up to the specified maximum rate.
2 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
8 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in EUR/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: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR60	• Mine gas: EUR0.15 per m³ of methane[12] • Natural gas: 10% of the assessed rate[9, 12, 13] • Rock salt and brine: 1% or 0.5%[5] of the market value	• 100% exempt: – Geothermal energy – Natural brine, extracted for balneological purposes • Natural and mine gas: Site conditioning costs at the levy rate[3], as well as – 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.

** 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 Increases by EUR20 for each subsequent year up to the specified maximum rate.
3 Upper limit: The value of the natural gas extracted in the natural gas field, assessed pursuant to the Federal State ordinance (LVO).
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
9 The quotient of the cross-border value and the amount of natural gas imported during the levy period in EUR cents/m³.
12 A reduction of the assessed rate by a flat rate for further transport costs is possible.
13 A reduction of the assessed rate by 0.205 EURcents/m³ for natural gas found in refining plants is possible.

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 (Law and Ordinance Gazette), p. 271), as last amended by 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%[5] • Petroleum gas: 10% of the price obtained[7, 12]	• 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[4]
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[7]	• Natural gas: Site conditioning costs at the levy rate[3]

** 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).

3 Upper limit: The value of the natural gas extracted in the natural gas field, assessed pursuant to the Federal State ordinance (LVO).
4 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.
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
7 In EUR/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 EUR0.002045/m³.
12 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
Saxony	• 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 – – > EUR280 tonne: 1% – – > EUR320 tonne: 2% – – > EUR360 tonne: 4% – – > EUR400 tonne: 10% – Gravels and gravel sands: 8% – Natural stone: 4% – Marble: 4%	• 100% exempt: – Lignite – Geothermal energy – Fluorite < EUR280 tonne – Marble – Barite – Brine – Free-to-mine natural resources extracted together with fluorite
Saxony-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)	• EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR100 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%[5] • Stone for the production of ashlar and decorative stones from sandstone: 4% of the assessed rate[11]	• 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).

1 Increases by EUR20 for each subsequent year up to the specified maximum rate.
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
11 20% of the quotients of the production value and the production volume of the production achieved during the levy period in EUR/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 (Law and Ordinance Gazette Schl.-H. S. 776), amended by State VO of 3 December 2014, Law and Ordinance Gazette (GVOBl.) Schl.-H. S. 496)	• Crude oil and natural gas: EUR20 for each km² or fraction thereof for the first year[1] • Maximum rate: EUR80	• 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%[5] • Natural gas: 40% of the assessed rate[8] 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: Natural gas: site conditioning costs at the levy rate[2]
Thuringia	• Thuringia Ordinance (Ordinance) on mine site and extraction royalties, 23 August 2005, last amended by the VO 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[11]	• 100% exempt: – Geothermal energy: Prospecting and extraction – Rock salt: Extraction – Peat/organic silt and rock salt/brine 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).

1 Increases by EUR20 for each subsequent year up to the specified maximum rate.
2 Upper limit: The total extraction royalties levied on the deposits/fields in question, as per the Federal State ordinance (LVO).
5 Applies to rock salt extracted during the construction of an underground store, but which is not economically exploited.
8 The weighted average of the cross-border prices for natural gas as published monthly by Destatis during the levy period in EUR/kWh.
11 20% of the quotients of the production value and the production volume of the production achieved during the levy period in EUR/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[28] 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 opencast 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 contractual arrangements may include fixed payments or payments that depend on the quantity extracted,

28 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 29 November 2021).

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 EUR6.9 billion in 2019. 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 EUR20.50 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 2019, energy tax revenues amounted to approx. EUR41.2 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.[29]

29 In the MSG, there was no consensus on the extent to which energy and electricity tax payments were among the most important payment flows. Therefore they do not form part of the payment flows reported by companies.

The financial scale can be estimated on the basis of data from the Federal Office of Statistics concerning the use of energy in manufacturing companies and information in the EU's state aid transparency database (see chapter 6d).

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 (DSGVO/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 second time applying an alternative procedure for assuring the quality of the payments disclosed by the reporting companies (see chapter 9). With this procedure it is not necessary to obtain a release from tax secrecy and thus the considerable extra work that this involves[30] 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 EUR20 million.
2. Turnover of EUR40 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

30 The release from tax secrecy required as part of the payment reconciliation is not an established standard procedure. Firstly, implementation always required coordination work between companies, the authorities and the Independent Administrator to ensure that the procedure was legally compliant. As a legally compliant procedure required an individual release by the company for every authority involved and for every reporting year, it also entailed considerable ongoing effort to implement it.

obligation, irrespective of their size. Besides reporting 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 EUR100,000 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 9). 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 9). The EITI standard does not provide for a distinction between payments above or below the limit of at least EUR100,000 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 is taking part in a pilot project as part of 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 then 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 (cf. the Independent Administrator's report in chapter 9 for this).

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. The level which has the authority for the revenues, i.e. how they are distributed between the Federal Government, the Federal States and the municipalities is regulated by Article 106 of the Basic Law (GG). 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 IN GERMANY

a. Contribution to the GDP

In 2019, the gross value added in Germany amounted to EUR3,106.2 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.[31] The gross value added of the "mining and quarrying" economic sector amounted in 2019 to EUR3.4 billion, which is equivalent to 0.11% 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 EUR426 million in 2019. This corresponds to a share of 0.03% of the total income of the Federal German government. The coverage of this revenue by reporting is explained in more detail in chapter 9. 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 2019 amounted to around EUR207 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.

31 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 29 November 2021).

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

Type of tax	Year						
	2013	2014	2015	2016	2017	2018	2019
Corporate tax	153	98	135	49	52	53	42
Trade tax	160	201	133	123	130	131	105
Income tax	54	61	62	65	68	69	55
Solidarity surcharge	11	9	11	6	7	7	5
Totals	**378**	**369**	**341**	**243**	**257**	**260**	**207**
Total income of the State	1,264,668	1,313,906	1,364,857	1,426,748	1,485,155	1,553,846	1,610,560
Proportion of the above-mentioned taxes compared to total revenue	**0.03%**	**0.03%**	**0.02%**	**0.02%**	**0.02%**	**0.02%**	**0.01%**
for information only:							
Updating factor					5.84%	1.10%	−20.15%

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 2016 and 2019

Extraction royalties in EUR thousands	2016	2017	2018	2019
Federal State				
Baden-Wuerttemberg	128	211	379	518
Bavaria	1,480	503	602	728
Berlin	0	0	0	0
Brandenburg	537	704	777	608
Bremen	0	0	0	0
Hamburg	87	90	108	168
Hesse	463	398	399	260
Mecklenburg-Western-Pomerania	248	636	633	947
Lower Saxony	172,076	180,737	153,652	135,393
North Rhine-Westphalia	667	683	560	1,024
Rhineland-Palatinate	5,192	4,639	6,945	6,766
Saarland	33	74	62	0
Saxony	524	1,728	1,380	1,639
Saxony-Anhalt	1,478	1,547	2,375	2,142
Schleswig-Holstein	48,140	62,102	72,836	66,772
Thuringia	1,454	1,851	1,484	1,557
Total extraction royalties	**232,505**	**255,902**	**242,192**	**218,523**
Total income of the Federal State in EUR millions	1,426,748	1,485,155	1,553,846	1,610,560
Proportion	**0.02%**	**0.02%**	**0.02%**	**0.01%**

For detailed source information see final note[v].

A total of EUR218.52 million in extractive sector revenues was levied in Germany in 2019. The front runner was by far the Federal State of Lower Saxony, with EUR135.39 million. Schleswig-Holstein was ranked second with around EUR67 million, followed by the Rhineland-Palatinate with around EUR6.8 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 notev). The revenues from mine site royalties of the Federal States are not systematically compiled or published on a nationwide basis. Their amount is significantly lower than the amount of extractive sector revenues and they are only applicable in some federal States (see Table 6):

Table 6: Mine site royalties in 2016 and 2019

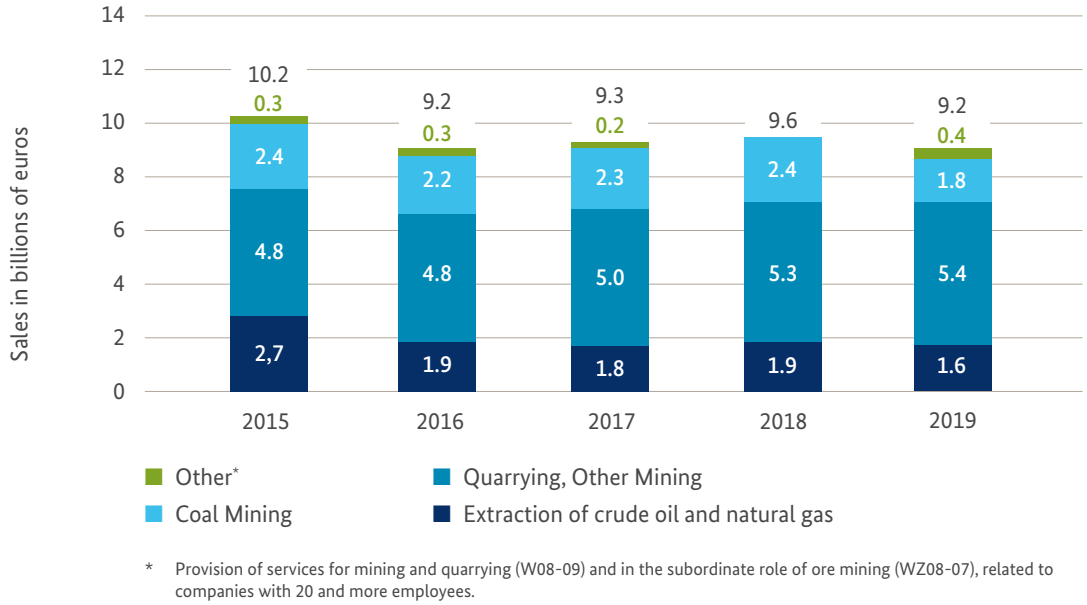
Mine site royalties in EUR thousands	2016	2017	2018	2019
Federal State				
Bavaria	17.5	28.2	31.9	30.0
Brandenburg	14.5	7.9	60.1	21.6
Lower Saxony	501.0	560.0	476.7	296.7

For detailed source information see final note[v].

c. Turnover

"Mining and Quarrying" sector companies generated a total turnover of around EUR9.2 billion in 2019. Around EUR7.8 billion (around 85%) of this sum was attributable to domestic sales and EUR1.4 billion (about 15%) to foreign sales.

Chart 2: Sales in the mining and quarrying sector, 2015 – 2019



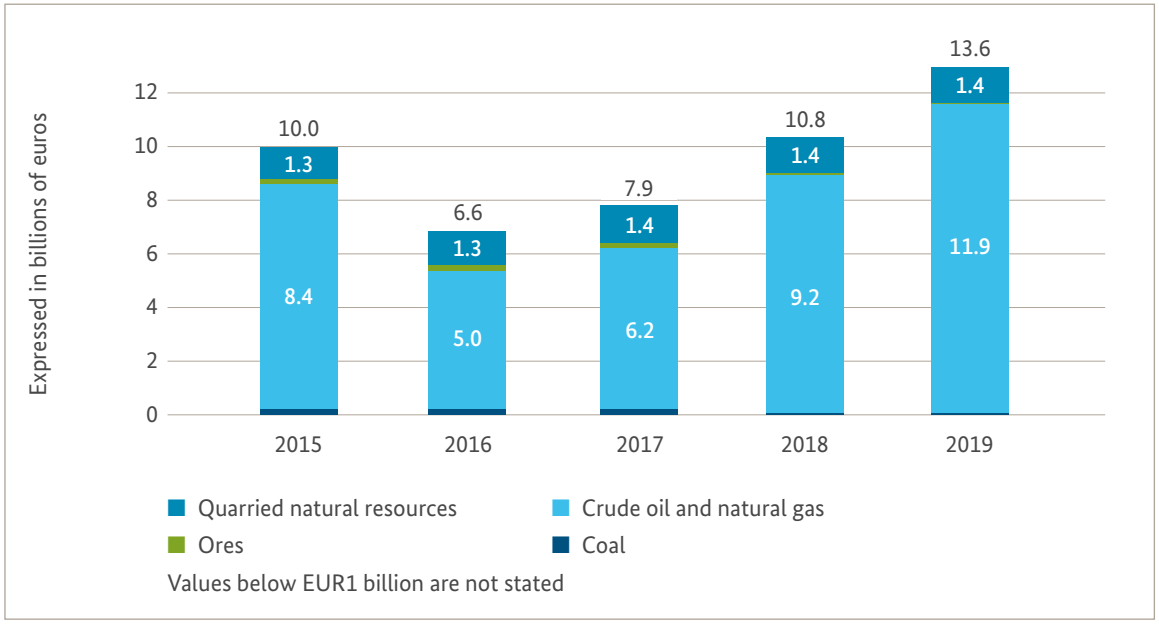
* Provision of services for mining and quarrying (W08-09) and in the subordinate role of ore mining (WZ08-07), related to companies with 20 and more employees.

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

d. Contribution to export

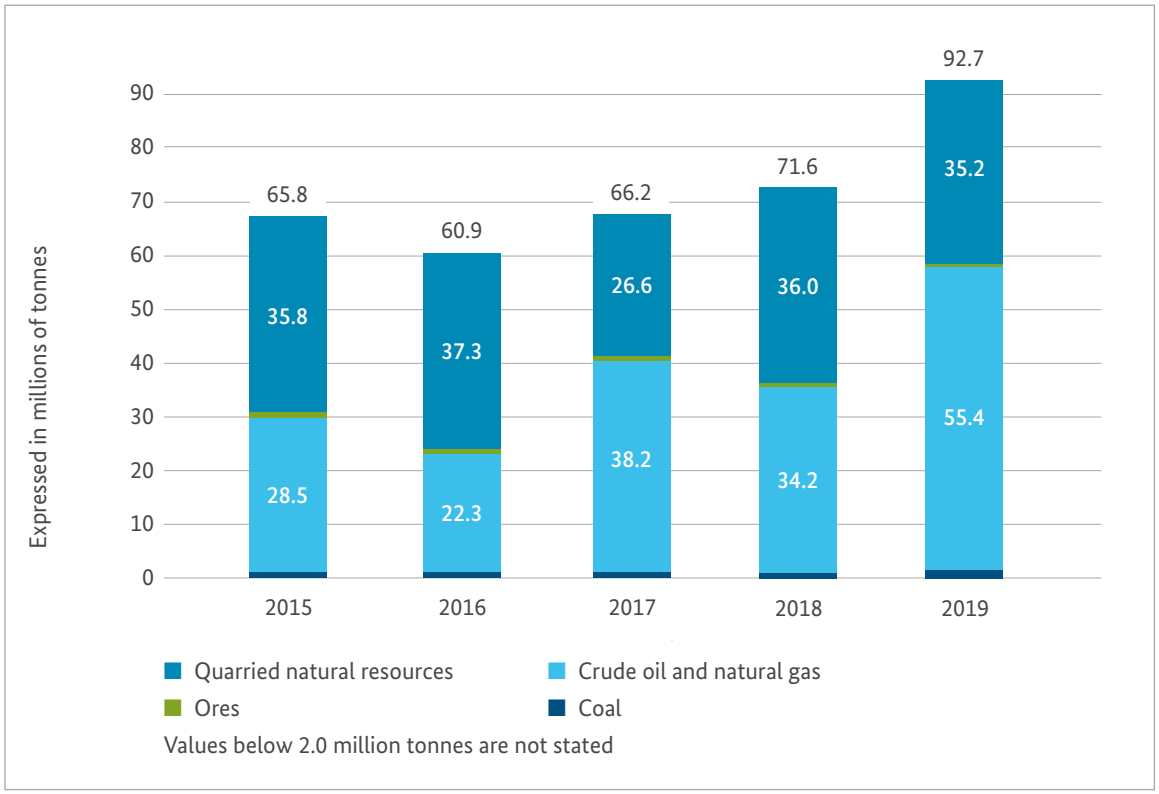
Germany is characterised by a strongly export-oriented and diversified economic structure. In 2019, the country exported goods worth a total of EUR1.3 trillion. Products of the extractive industries accounted for some EUR13.6 billion of this amount, equivalent 0.83% of total exports. The "Crude oil and natural gas" sectors accounted for the largest share of exports at approx. EUR11.9 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. EUR1.4 billion. Exports also included ores (around EUR181 million) and coals valued at about EUR139 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, 2015 – 2019 (value)



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

Chart 4: Exports in the mining & quarrying sector, 2015 – 2019 (volume)



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

6

STATE SUBSIDIES AND TAX CONCESSIONS

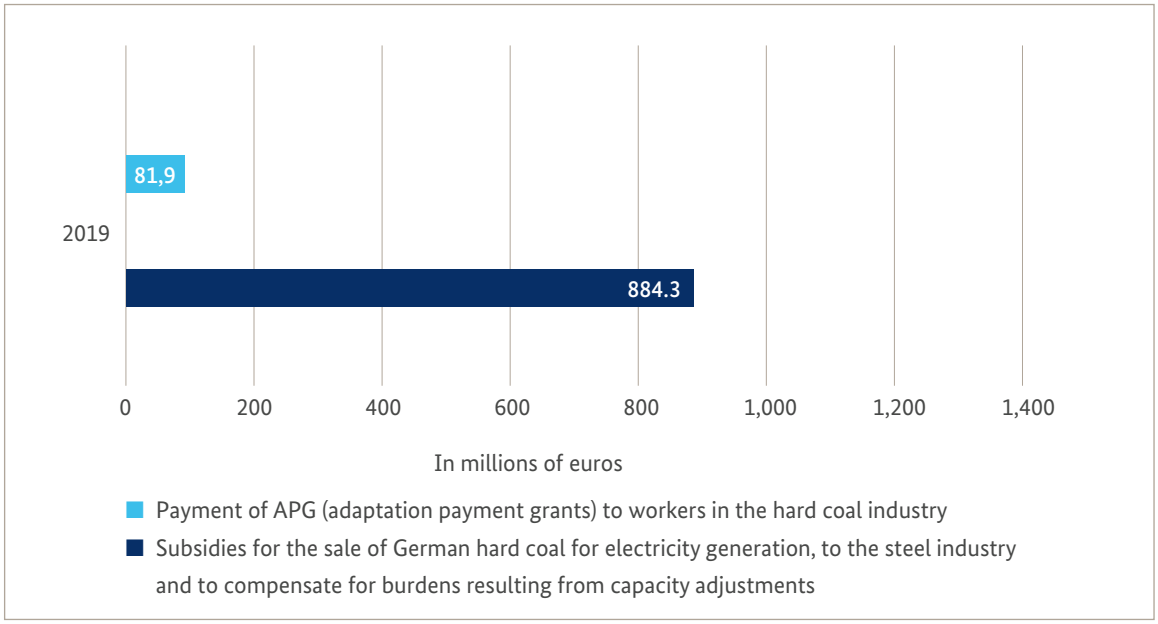
The payments made by extractive companies to government agencies (see chapter 4) must be seen in the context of the subsidies and tax concessions with which the state supports companies. Here the financial help provided to hard coal mining (see chapter 6.a. and b.) is the only subsidy that specifically 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 2019



Federal Ministry of Finance (BMF) (2021): 28. Subsidy Report URL: https://www.bundesfinanzministerium.de/Content/DE/Downloads/Broschueren_Bestellservice/28-subventionsbericht.pdf?__blob=publicationFile&v=4 (Accessed on 29 November 2021). 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 2019, the amount of Federal aid for the sales of hard coal and mine closures amounted to EUR884.3 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).

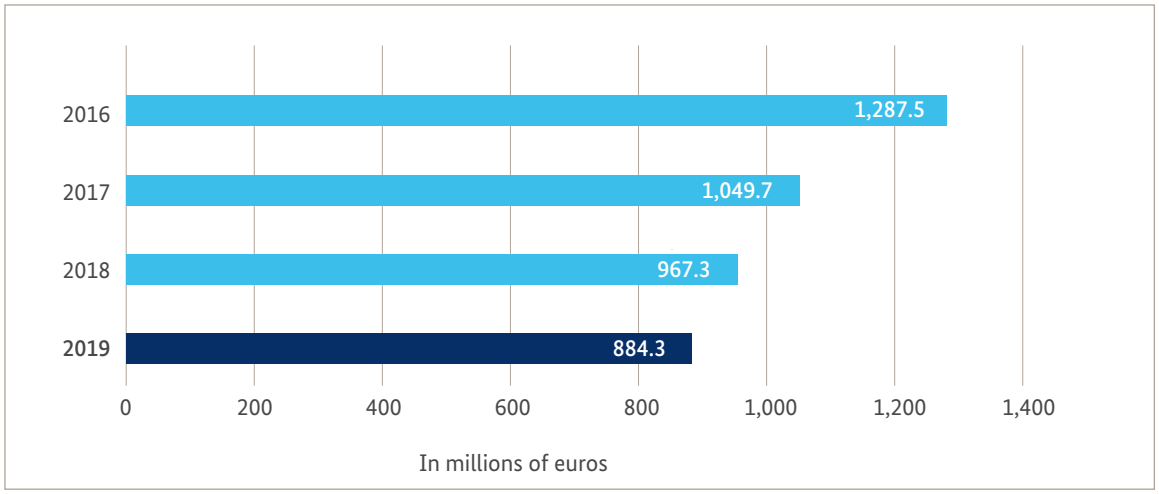
Control measures

The subsidisation of the German hard coal industry is subject to approval by the EU 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.

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, permanent land subsidence and groundwater purification). 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.

Chart 6: Subsidies for the sale and closure of German hard coal from 2016 – 2019 (Federal Government amounts)



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

b. Adaptation payment

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.[32] The adaptation payment reflects the social responsibility of the Federal Government and the hard coal-producing Federal States. In 2019, the Federal Government guaranteed adaptation payments totalling EUR81.9 million.

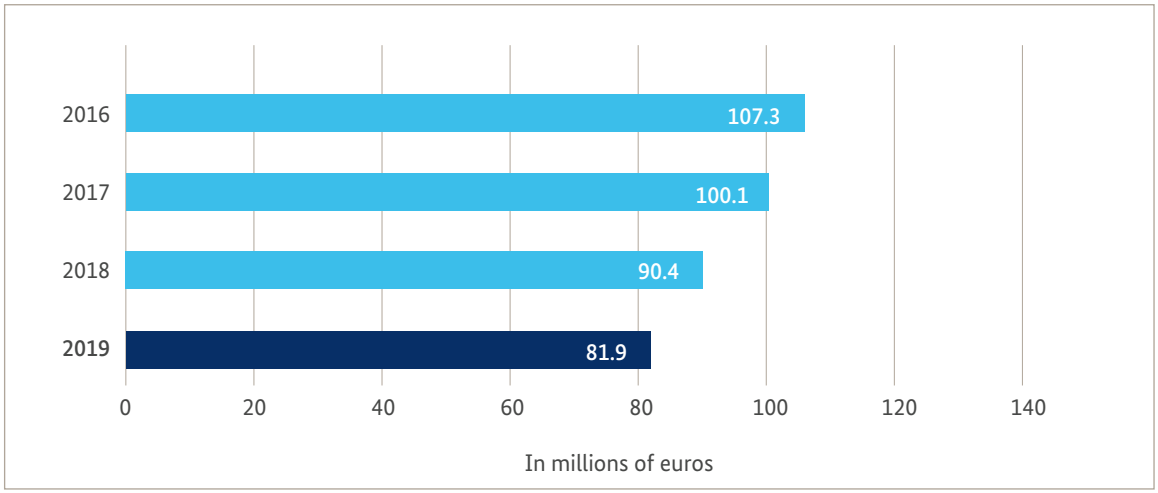
Employees

The number of employees is declining. At the beginning of 2008, 32,803 persons were employed in hard coal mining. By the end of 2018 the number of employees had been reduced to 3,349 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, 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.

Chart 7: Adaptation payment 2016 – 2019 (Federal Government amounts)



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

32 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.

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 different legal definition from the term subsidy.[33] 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 and goods, or services at special conditions. The member states have imposed EU rules to guarantee fair competition in Europe. These determine the conditions under which such state aid is permissible and when not. Furthermore, from 1 July 2016 the member states of the European Union are required each year to disclose information on any government support granted. This obligation applies above a threshold of EUR500,000 per company, per benefit and per year on a detailed financial aid website (see chapter 6. d.).

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'

33 European Commission (2021): Competition Policy. URL: https://ec.europa.eu/competition-policy/state-aid_en. Accessed on 29 November 2021).

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 come 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.[34]

According to data from the Federal Office of Statistics concerning the use of energy in manufacturing companies[35] the electricity consumption of the "Mining and quarrying sector" (WZ 08-B) was 6,564,054 MWh. In total in 2019. Multiplied by the electricity tax tariff without taking account of possible concessions produces electricity tax revenue of EUR135 million.

The extent of the concessions[36] granted to natural resources sector companies reporting under EnSTransV is between EUR9.5 and EUR20 million[37] for the general tax concessions pursuant to § 9b StromStG, EUR27 to EUR76 million for peak compensation pursuant to § 10 StromStG and between EUR6.5 and EUR13 million for plants eligible for tax concessions pursuant to § 3 EnergieStG.

This estimate indicates electricity tax payments from the natural resources sector of between EUR39 and EUR98 million.[38]

34 https://webgate.ec.europa.eu/competition/transparency/public/search
35 Destatis (2021): Tables 43531-0001 and 43531-0002. URL https://www-genesis.destatis.de/genesis/online (Accessed on 29 November 2021).
36 Only benefits exceeding EUR500,000 per year, company and reason for the benefit; information given for 2019, accessed on 18 June 2019.
37 Classification in the European Union State Aid Register is based on the following increments (EUR0.5-EUR1 million; EUR1-EUR2 million; EUR2-EUR5 million; EUR5-EUR10 million; EUR10-EUR30 million; > EUR30 million), the lower and upper limits are therefore shown.
38 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 § 9a (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 EUR500,000 are not listed in the EU state aid register. The actual electricity tax payments therefore turn out to be 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.[39] 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.[40, 41] This objective has again been confirmed for the natural resources sector in the strategy for natural resources passed by the Federal Government in January 2020.[42] 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.[43]

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"[44] 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. A few important contributions are discussed in this chapter; to complement this, various sustainability reports from public, civil society and private sector stakeholders can be consulted.

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 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.

39 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, S. 15 (Accessed on 25 November 2021).
40 Ibid. p. 14 f.
41 Ibid. p. 225
42 Federal Government (2020): Natural resources strategy of the Federal Government Securing non-energy mineral natural resources for Germany as part of a sustainable supply of natural resources. URL: https://www.bmwi.de/Redaktion/DE/Publikationen/Industrie/rohstoffstrategie-der-bundesregierung.pdf?__blob=publicationFile&v=4 (Accessed on 25 November 2021).
43 Ibid. p. 2
44 Federal Ministry for Economic Cooperation and Development (BMZ). Natural Resources and Development Sector Programme (2021): Agenda 2030 – Sustainable Development Goals. URL: https://rue.bmz.de/de/international/SDG/index.html (Accessed on 25 November 2021).

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 key date of 31 December 2019, according to the Federal Office of Statistics approx. 1,506 km², i.e. approx. 0.421% of the area of Germany is used as mining land. The equivalent in area for the volume of natural resources used in 2019 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 2019.[45] This corresponds to daily area utilisation of an average of 8 ha. 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

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 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

45 Federal Institute for Geosciences and Natural Resources (BGR) (2020): Germany – Natural Resources Situation 2019. (Deutschland – Rohstoffsituation 2019) URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2019.pdf;jsessionid=DCB2CC38DD5BC60 (Accessed on 1 December 2021).

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.[46]

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).[47]

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. Depending on the respective type of natural resource, these are either the mining authorities of the German Federal States (in the case of free-to-mine and privately-owned natural resources) or the Federal State authorities responsible for the execution of the State-based excavation laws, the building and water resources management laws and the Federal Immission Control Act (in the case of so-called landowners' natural resources). 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.

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,

46 The conversion keys are published here: Federal Agency for Nature Conservation (2021): Eingriffsregelung. URL: https://www.bfn.de/themen/planung/eingriffe/eingriffsregelung.html (Accessed on 25 November 2021).
47 Currently Baden-Wuerttemberg (§ 15 (5) sentence 3 NatSchG BW) and Bavaria (Art. 8 (3) sentence 2 BayNatSchG) made use of this possibility.

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/kompensationsverzeichnis	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	http://fbinter.stadt-berlin.de/fb/index.jsp	Lists of compensatory payments can be requested from regional-level administrative authorities.
Brandenburg	No	Yes	No	Under development	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/geoportal/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	http://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/Hauptseite https://www.umweltkarten.mv-regierung.de/atlas/script/index.php	Compensatory payments cannot be viewed by the public.
Lower Saxony	To some extent	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/	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).
Rhineland-Palatinate	Yes	Yes	Yes	http://www.naturschutz.rlp.de/?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.saarland.de/).

* 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*
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, compensation directory: No)	Yes	No	http://ekis.geolock.de/	Compensatory payments cannot be viewed by the public.
Schleswig-Holstein	Yes	No	No	https://www.lksh.de/landwirtschaft/umwelt-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 nature conservation foundation, SNT). The corresponding overview lists cannot be accessed by the public. To date, there have not been any compensatory payments from mining projects.

Own presentation (as of: September 2021)

* 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/oeffentlich-einsehbares-verzeichnis-eingriffskompensation) 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)[48]

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 paid 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 EUR265,767.90 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 EUR21,900 it received to implement another equivalent compensatory measure.

In the period between 2011 and 2015, only a total of around EUR300,000 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 EUR100,000.

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.

48 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. The companies are also obliged to create and maintain long-term accounting provisions ('financing provisions'). 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 between the opencast 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. 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) is currently being renegotiated because of changed underlying conditions (exit from lignite mining).

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.[49] An overview is shown in Chart 7.

The "mining and quarrying" sector abstracted a total of 1,466 million m^3 of water in 2016 (mainly groundwater). Coal mining accounted for around 75% of this volume. This corresponds to around 5% of the total water abstracted in Germany by industry and private

49 Federal Office of Statistics (2021): Environmental economic accounting URL: https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/UGR/_inhalt.html (Accessed on 25 November 2021).

households.[50] 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.

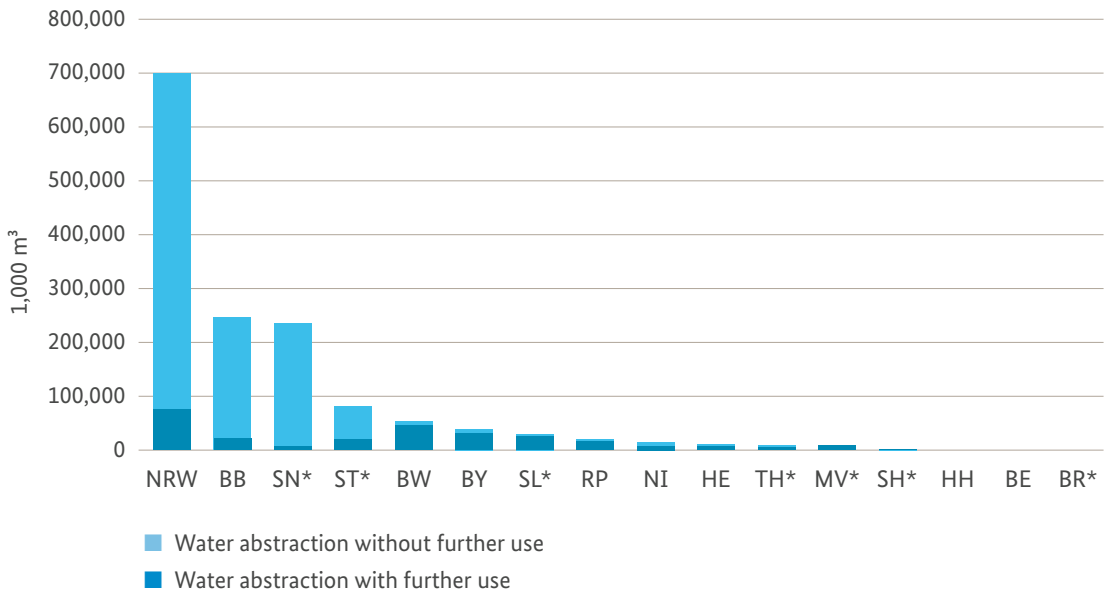
Use of water

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.

50 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 unused amount of water: No information 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 date 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.[51] 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.

51 In its ruling of 11 September 2014 (docket ref. C-525/12), the European Court of Justice (ECJ) confirmed that with these federal and state regulations, 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.

Structuring of water abstraction fees

The structuring of fees for water abstraction is carried out by the Federal States that receive these fees. This 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 EUR414 million. These revenues are partly used for water management tasks, or they flow into the general budget of the respective Federal State.[52]

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).[53]

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 5 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.[54]

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.[55] 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 EUR100,000, these can be found in the BilRUG payment reports.[56]

52 Association of municipal enterprises e.V. (VKU) (2020): Comparison of water abstraction charges in the Federal States (Wasserentnahmeentgelte der Bundesländer im Vergleich). URL: https://www.vku.de/fileadmin/user_upload/Verbandsseite/Presse/Grafiken_und_Statistiken/Wasser_Abwasser/201006_VKU-Grafik_Wasserentnahmeentgelte_2020.jpg (Accessed on 25 November 2021).

53 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 25 November 2021).

54 German Federal Environment Agency (2017): Table of water abstraction fees in the natural resources sector in the Federal States. URL: https://www.umweltbundesamt.de/sites/default/files/medien/2466/dokumente/tabelle_wasserentnahmeentgelte_im_rohstoffsektor_uba_neu.docx (Accessed on 25 November 2021).

55 German Federal Environment Agency (2021): Economic questions. URL: https://www.umweltbundesamt.de/themen/wasser/wasser-bewirtschaften/oekonomische-fragen#textpart-1 (Accessed on 25 November 2021).

56 According to § 341v HGB for example, payments of water usage fees were reported by the following companies for 2019: Holcim (Deutschland) GmbH: EUR 394,000; LEAG Lausitzer Energie Bergbau AG: EUR1,116,539.24; RWE Group/RWE Power AG and RWE Rheinische Baustoffwerke GmbH: EUR12,908,328; source: Annual payment reports – https://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 involves ensuring that the surface affected by mining will be property contoured taking account of public interest (§ 4 (4) 4 BBergG). 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.[57]

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.

For example, during mining the landscape that will follow extraction is drained of groundwater; the structural integrity is ensured for the period after the groundwater is allowed to rise again through areas of infill on the basis of precise planning and appraisals by experts. A prerequisite for successful rehabilitation is compliance with soil-related/geotechnical requirements. The principles of rehabilitation are also anchored in 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

57 See chapter 7.1 for more information on how nature is affected by extracting natural resources.

is complete, the areas are made available for their subsequent use and released from supervision by the mining inspection authorities.

b. **Rehabilitation through 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.

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 raw materials 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.[58]

58 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 10 December 2021).

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 criteria and also the plant. 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 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.

Nature conservation dominates in the afteruse of extraction sites. Although the companies in the sector temporarily intervene in nature and the landscape because of economic imperatives, they do at the same time create a wide range of very different valuable habitats as a result of recultivation and renaturation. Former but also operating extraction facilities are important hideaways for rare animals and plants. Valuable biotopes become established here after a short time.

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) and the construction agri-environmental (IG BAU) and mining, chemicals and energy trade unions (IG BCE) industrial trade unions. In addition to this, companies in the quarried natural resources industry are involved in the “Biodiversity in Good Company” corporate network; 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 good industrial jobs, with a variety of different professions and activities. At the end of 2019 over 64,000 persons[59] were employed in the extractive industry. This corresponds to around 0.2% of all employees in Germany who are subject to social insurance contributions. At around 59%, most of the employees worked in the quarried natural resources and other mining products sector, followed by coal mining (lignite and hard coal) at around 19%.

Compared to the 2016 reporting period (1st D-EITI report), the sector employed about 7,007 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 2019			No. of apprentices among these employees		
	Total	Men	Women	Total	Men	Women
Mining and quarrying in total; including:	**64,067**	**55,429**	**8,638**	*		
Coal mining (lignite and hard coal)	10,862	9,418	1,444	558	473	85
Extraction of crude oil and natural gas	2,908	2,271	637	108	88	20
Ore mining	791	717	74	*	*	*
Quarried natural resources, other mining products	37,941	32,956	4,985	1,363	1,182	181
Services for mining and quarrying	11,565	10,067	1,498	269	222	47

Source: Federal Employment Agency 2019. For detailed source information see footnote 44

* 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.

59 Federal Employment Agency (2019): Employment by economic sector (WZ 2008) – Germany, West/East and States (quarterly figures) – December 2019. URL: https://statistik.arbeitsagentur.de/SiteGlobals/Forms/Suche/Einzelheftsuche_Formular.html?nn=627730&topic_f=monatsbericht-monatsbericht (Accessed on 26 November 2021).

Each direct job in the extractive industry is linked to 2 to 2.5[60] further jobs in upstream and downstream economic sectors. The employment effect of natural resources extraction in Germany thus totals around 155,000[61] persons.

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.). 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. Persons employed under the mandatory social security scheme are covered by social insurance; the self-employed are partially covered by 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[62] (Montan Co-Determination; Montan-MitbestG [Coal and Steel Co-Determination Act][63] Montan-MitbestGErgG [Supplementary Co-Determination Act][64]): 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

60 The employment impact varies between 1.94 and 2.66 in the individual sectors. Hillebrand, Elmar; Hans-Böckler Foundation (publisher) (2016): Sectoral analysis of the raw materials industry (Branchenanalyse Rohstoffindustrie). Study No. 315, Berlin, p. 71. URL: https://www.boeckler.de/pdf/p_study_hbs_315.pdf (Accessed on 26 November 2021).
61 Ibid. p. 62
62 as well as in the 'iron and steel-producing industry'
63 Coal and Steel Co-Determination Act (MontanMitbestG). URL: https://www.gesetze-im-internet.de/montanmitbestg/MontanMitbestG.pdf (Accessed on 26 November 2021).
64 Supplementary Co-Determination Act (MontanMitbestGErgG). URL: https://www.gesetze-im-internet.de/montanmitbestgergg/MontanMitbestGErgG.pdf (Accessed on 26 November 2021).

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 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[65]).

Company Co-Determination is regulated in the **Works Constitution Act**, which states that an elected works council has participation rights in economic, personnel and social matters. In principle, a works council can be set up in every company in Germany with at least five employees. 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.

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[66] 49% of the natural resources sector companies[67] were bound by collective agreements; 41% by a regional collective agreement and 8% by a company collective agreement. However, the collective agreements only apply to 45% of the employees in the sector, with 39% being subject to the conditions of a regional collective agreement and 6% 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[68], another 11% have an academic qualification[69], 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 professions, including e.g. mechatronics technicians, electronics technicians, industrial and process mechanics, processing mechanics, mining and machine operators, mining technologists and industrial clerks.

65 One-Third Participation Act (DrittelbG). URL: https://www.gesetze-im-internet.de/drittelbg/BJNR097410004.html (Accessed on 26 November 2021).
66 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 26 November 2021).
67 Federal Employment Agency (2019): Employment by economic sector (WZ 2008). Phase B.
68 Recognised vocational qualification' is the sum of 'with recognised vocational training' and 'master craftsman/technician/equivalent technical college degree'.
69 Academic degree' is the sum of 'Bachelor', 'Diploma/Magister/Master/State Examination' and 'Doctorate'.

On the reporting date,[70] there were 2,300 trainees among the employees of the extractive industry, which equates with a training rate of 3.6%, which was below the German average of 4.9%. 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 1% to 6.1% (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 EUR4,159 per month, and an additional EUR471 was paid monthly in special payments.[71] The average monthly income in the extractive industry is thus a good 1% higher than the average in the manufacturing industry and a good 5% higher than the average income of full-time employees[72] 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 40.2 hours, which was relatively high compared to the manufacturing industry as a whole.

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 has been in force since 2017 (Act on the Promotion of Pay Transparency). 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 EUR4,315, which amounts to 92.6% of the male employees' earnings (EUR4,662) and is thus above the average ratio of 83% 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 2019, the proportion of women among employees in the sector who are subject to social insurance contributions was 13.5%. The proportion of foreign employees was 6.3% of the total staff.[73]

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 women. Compared to other sectors, the extractive industry must act to increase the proportion of

70 Federal Employment Agency (2019): Employment by economic sector (WZ 2008).
71 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/Themen/Arbeit/Verdienste/Verdienste-Verdienstunterschiede/Publikationen/Downloads-Verdienste-und-Verdienstunterschiede/arbeitnehmerverdienste-jahr-2160230207004.pdf?__blob=publicationFile (Accessed on 26 November 2021).
72 Ibid.
73 Federal Employment Agency (2019): Employment by economic sector (WZ 2008).

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.[74]

At 62% 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 29.7%. 7.2% of the employees were in the under 25 group, while 11% 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"*[75] 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[76]. 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.[77] 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"[78], 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 service sector.

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 pays applies regarding the influence and use of infrastructures. The mining companies must organise and pay

74 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 1 December 2021).
75 § 1 AGG. URL: https://www.gesetze-im-internet.de/agg/ (Accessed on 1 December 2021).
76 Paris climate change agreement URL: https://www.bmu.de/fileadmin/Daten_BMU/Download_PDF/Klimaschutz/paris_abkommen_bf.pdf (Accessed on 1 December 2021).
77 Hauke Hermann, Katja Schumacher, Hannah Förster (Öko-Institut Berlin (Institute of Applied Ecology)) on behalf of the German 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 1 December 2021).
78 Ministry of Economic Affairs and Energy (2019): Final Report of the Commission for Growth, Structural Change and Employment. URL: https://www.bmwi.de/Redaktion/DE/Publikationen/Wirtschaft/abschlussbericht-kommission-wachstum-strukturwandel-und-beschaeftigung.html (Accessed on 1 December 2021).

for compensation and also relocation and resettlement. Since the start of German lignite production in the early 1920s, 120,000 people have been relocated.[79] 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[80] 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[81] are being supported by the Structural Strengthening of Coal Regions Act[82] 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). Furthermore, the agreement between the government and the Federal States, which defined the details of the procedure for implementation, was signed in August 2020. The law plans up to EUR40 billion until 2038. This is made up, firstly, of funding for additional investments on the part of Federal States and municipalities, with EUR14 billion being earmarked for this ("Pillar 1"). Secondly, EUR26 billion is intended for measures in areas for which the Federal Government is responsible ("Pillar 2"). This includes, for example, funding for transport and broadband infrastructure (projects to improve an environmentally friendly local public transport system can be supported in Pillar 1, living labs or the development of research facilities. The Federal Government has also set itself the goal of creating up to 5,000 jobs in federal authorities and other federal institutions in the coal regions. To date, a total of 72 Pillar 2 projects have been agreed.[83]

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 EUR1 billion is planned by 2038. In addition, up to EUR90 million is being earmarked for the Helmstedt site. The Altenburger Land district is receiving up to EUR90 million from the budget for the central German coalfield.

The new "STARK"[84] funding programme, 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. For example, with the programme personnel and operating costs can be subsidised. Applicants from both the public and private sector can receive funding. It is therefore possible, for example, for municipalities to create a post to manage structural change or ecological transformation and to finance this via STARK.

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. This makes it easier for older employees to take early retirement.

79 Ibid. p. 4
80 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."
81 Lusatian territory (Federal States: Brandenburg/Saxony), Central German territory (Saxony/Saxony-Anhalt/Thuringia), Rhenish territory (North Rhine-Westphalia), Helmstedt territory (Lower Saxony).
82 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%5D__1601384039076 (Accessed on 1 December 2021).
83 An overview is available here by way of an example: https://www.bmwi.de/Redaktion/DE/Textsammlungen/Wirtschaft/strukturstaerkungsgesetz-kohleregionen.html
84 STARK stands for "Stärkung der Transformationsdynamik und Aufbruch in den Regionen und an den Kohlekraftwerkstandorten" (Strengthing 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.

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 1 January 2021. The national implementing law that came into force on 7 May 2020 will ensure the effective application of the Conflict Minerals Regulation in Germany.

The reporting requirements for companies in connection with their corporate responsibility (often referred to as Corporate Social Responsibility (CSR)) have been increased. The CSR Directive Implementation Act, which implements the EU CSR Directive (2014/95/EU) into national legislation, obliges companies – and especially large capital-market-oriented companies with more than 500 employees – to report on key environmental, labour and social issues, respect of human rights and on anti-corruption measures. In April 2021 the EU Commission published a proposal to revise these reporting obligations – the "Corporate Sustainability Reporting Directive (CSRD)" – which makes provision, among other things, to extend reporting obligations to all large capital-market oriented companies under balance sheet law (exclusion: microenterprises).

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 raw materials together with the German Building Materials Association and the German Nature and Biodiversity Conservation Union (NABU) in 2004.[85] The high priority given to employee training is addressed in addition to the most environmentally-friendly mining of raw materials and the strengthening of biodiversity and resource efficiency. Employees and employers are also jointly committed to more sustainability in the industrial processing of

85 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 1 December 2021).

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 dialogue between politics and society, as well as trade unions and employers.[86]

86 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[87] 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. In Germany, a landfill ban for untreated municipal waste has been in force since 2005.

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 m^2 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. In addition, the law contained greater detail in respect of the aims to extract pollution, in other words the targeted removal of pollutants and products containing pollution from waste, conservation of resources, careful use, full avoidance of unnecessary use and replacement of resources. In order to prevent the illegal export of old electrical equipment and the hazards for man and the environment of incorrect handling of old equipment, the ElektroG now contains strong criteria for separating used equipment and old electrical devices. According to this principle, only checked

87 DNR: Glossary. URL: https://www.dnr.de/rohstoffpolitik-20/glossar/grundbegriffe/primaer-und-sekundaerrohstoffe/ (Accessed on 22 November 2021).

and functional used equipment which is adequately protected against damage during transport and which has been properly documented may be exported as non-waste. The burden of proof lies with the exporter.

With the current re-adoption of the **packaging law**[88], 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. With the implementation of the amendment to the **ordinance prohibiting single-use plastics (EWKVerbotV)**[89] 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. 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. 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 new **substitute building materials ordinance**[90], 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 volume in Germany in 2019 was 416.5 million tonnes; the net volume amounted to 360.3 million tonnes (without double counting) and continues at a high level following its highest level to date in 2018 (417.2 and 362.3 million tonnes respectively). Construction and demolition waste accounted for EUR230.9 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 50.6 million tonnes and other waste, which comes mainly from production and industry, was considerably lower at around 50.7 million tonnes. Around 28.1 million tonnes of waste was generated from the extraction and processing of natural resources.

Around 339.9 million tonnes of waste were recycled in 2019, of which 292.0 million tonnes were material and 47.8 million tonnes energy-related waste.[91] 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% (2019).[92] The recycling rate measures the proportion (input)

88 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.
89 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.
90 Ordinance on requirements to include mineral substitute building materials in technical structures (ErsatzbaustoffV) dated 9 July 2021.
91 Material recovery as defined by the law means all recovery processes with the exception of energy recovery and processing into materials intended to be used as a fuel or another means of energy generation. Material recovery particularly includes preparation for reuse, recycling and backfilling (§ 3 (23a) KrWG). Energy-related recovery, on the other hand, means the preparation of waste for thermal recycling by means of incineration. However, a portion of the waste is also incinerated to dispose of it.
92 Destatis (2021): Waste Balance 2019. URL: **https://www.destatis.de/DE/Themen/Gesellschaft-Umwelt/Umwelt/Abfallwirtschaft/Publikationen/Downloads-Abfallwirtschaft/abfallbilanz-pdf-5321001.html** (Accessed on 22 November 2021).

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%.[93]

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 be available after June 2022.

Recycling involves processing waste so that the raw materials 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[94] 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[95]

The recycling rate for steel in 2016 was about 95%.[96] Around 17.7 million tonnes of steel scrap were used in steel production. This corresponds to a usage rate of 44.6%.[97] In 2019 around 2.39 million tonnes of non-ferrous metals (such as copper, aluminium, zinc, bronze, lead, brass) were produced. Of this, around 1.23 million tonnes were secondary metals, corresponding to a share of around 51.5%.[98]

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.[99] In 2019, the usage rate was approx. 58%.[100] The recycling rate for copper is about 45%. In copper production around 41% of recycled copper[101] is used.

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

- Paper/paperboard/cardboard, which is mainly collected separately, achieves a recycling rate of almost 100%.[102] The usage rate of recovered paper is 76%.[103] Recycling saves primary natural resources

93 Destatis (2021): Waste Balance 2019.
94 Federal Association of the German Waste Disposal, Water and Raw Materials Industry (BDE) (2020): Status report of the German recycling industry 2020 (Statusbericht der deutschen Kreislaufwirtschaft 2018). URL: https://www.bde.de/themen/statusbericht-kreislaufwirtschaft/ (Accessed on 22 November 2021).
95 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).
96 Fraunhofer Institute for Environmental, Safety and Energy Technologies UMSICHT (2016): Technical, economic, ecological and social factors of steel scrap. URL: https://www.bdsv.org/fileadmin/service/publikationen/Studie_Fraunhofer_Umsicht.pdf (Accessed on 22 November 2021). More recent figures are currently not available.
97 Bundesvereinigung Deutscher Stahlrecycling Unternehmen e.V. (Federal Association of German Steel Recycling Companies), Bundesverband Sekundärrohstoffe und Entsorgung e.V. (Federal Association for Secondary Raw Materials and Waste Disposal) (2019): German steel scrap balance. Annual scrap market report. URL: https://www.bvse.de/dateien2020/2-PDF/02-Presse/04-Schrott-ES-Kfz/2020/200424_060_Jahresrueckblick_Schrottmarkt_2019.pdf (Accessed on 22 November 2021).
98 Metal Trade Association (Wirtschaftsvereinigung Metalle) (2019): Metal Statistics 2019. URL: https://www.wvmetalle.de/presse/alle-publikationen/artikeldetail/?tx_artikel_feartikel%5Bfile%5D=fe3ca3c3ae5745332eb47663dcab29fbad7c0799&tx_artikel_feartikel%5Bsrc%5D=7990&tx_artikel_feartikel%5Baction%5D=download&cHash=aee391c88ffc19125fb9c4e68a5ea217 (Accessed on 22 November 2021).
99 General Association of the Aluminium Industry: Recycling from the outset. URL: http://www.aluinfo.de/kreislaufwirtschaft.html (Accessed on 22 November 2021).
100 Metal Trade Association (Wirtschaftsvereinigung Metalle) (2019): Metal Statistics 2019.
101 BDE (2020): Status report of the German recycling industry 2020 (Statusbericht der deutschen Kreislaufwirtschaft 2018).
102 Destatis (2021): Waste Balance 2019.
103 BDE (2020): Status report of the German recycling industry 2020 (Statusbericht der deutschen Kreislaufwirtschaft 2018).

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.

- In the case of glass collection, the recycling rate also amounts to almost 100%.[104] However, this only applies to appropriately-sorted glass. Today, every glass packaging unit consists of up to 60% recycled glass, and for green glass the usage rate is as high as 95%.[105] The recovery of the glass reduces the demand for the primary raw material quartz sand.

- 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.[106]

- In 2019 the recycling rate for old electric devices was 85.4% and the utilisation rate was 97.3%. However, in 2019 only 44.3% 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 2019,[107] 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.

As far as the building sector is concerned, it is more a question of recovery rates than of recycling rates, because not all building and demolition waste has to be prepared for recycling. Of the 218.8 million tonnes (2018) of construction and demolition waste, 196.3 million tonnes (89.7%) were recycled. 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.[108]

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 of the natural resources needed in Germany.[109] 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 EUR85 billion. The gross value added amounts to EUR28 billion.[110] The substitution of primary raw materials with secondary raw materials is also associated with significant savings in energy consumption, for example.[111]

104 Destatis (2021): Waste Balance 2019.
105 Ministry of Economic Affairs and Energy (2020): Energy transition in industry. Potential and interactions with the energy sector. Glass industry's fact sheet. URL: https://www.bmwi.de/Redaktion/DE/Downloads/E/energiewende-in-der-industrie-ap2a-branchensteckbrief-glas.pdf?__blob=publicationFile&v=4 (Accessed on 22 November 2021).
106 German Environment Agency: Plastic waste. URL: https://www.umweltbundesamt.de/daten/ressourcen-abfall/verwertung-entsorgung-ausgewaehlter-abfallarten/kunststoffabfaelle#kunststoffe-produktion-verwendung-und-verwertung (Accessed on 22 November 2021).
107 German Environment Agency Electrical waste: Germany fell just below the EU collection rate of 45 percent. URL: https://www.umweltbundesamt.de/presse/pressemitteilungen/elektroschrott-deutschland-verfehlt-eu-sammelquote (Accessed in November 2021).
108 The circular economy for construction (2021): Mineral construction waste – Monitoring 2018. URL: https://kreislaufwirtschaft-bau.de/Arge/Bericht-12.pdf (Accessed on 22 November 2021).
109 German Building Materials Association – Quarried natural resources (2016): Study "The demand for primary and secondary raw materials of the quarried natural resources industry in Germany until 2035" URL: https://www.baustoffindustrie.de/fileadmin/user_upload/bbs/Dateien/2016-04-07_BBS_Rohstoffstudie.pdf (Accessed on 22 November 2021).
110 BDE (2020): Status report of the German recycling industry 2020 (Statusbericht der deutschen Kreislaufwirtschaft 2018).
111 German Federal Environment Agency (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 22 November 2021).

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 cost, 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 raw materials that are needed for new developments, the extraction of which can be problematic from ecological and human rights standpoints.[112] 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.

Germany has not achieved the collection rate of 65% for old electrical appliances set by the EU since 2019. The aim of the amendment to ElektroG 2021 is to ensure that considerably more valuable raw materials are recovered in the future from old electrical and electronic devices in Germany and that the EU specifications are complied with. This is to be achieved through specified requirements for the management of these old devices, the obligation of sellers to take back old equipment and a more comprehensive network for collection.

One particular problem in this context is the illegal export of old electrical and electronic equipment to places such as Africa or Asia. since extremely high-risk situations for both humans and the environment can arise, especially if the old devices are improperly handled. The ElektroG is intended to put a stop to this, since it provides for strict criteria for the differentiation of used and old electrical equipment. In 2019, Germany exported more plastic waste than any other EU country with just under 1.1 million tonnes. The export of unsorted plastic waste presents a particular problem. According to the agreements within the framework of the Basel Convention on Waste[113], free export should in future only be allowed for plastic waste that is contaminant-free and is easily recyclable. An export and import permit from the countries involved is required for compounds. The export of hazardous or non-recyclable waste from the EU to developing countries is prohibited from 2021 onwards.

The EU's 2018 recycling management package commits the member states to a number of further steps to strengthen the waste hierarchy. 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.

112 These include the 17 metals of the rare earths group such as neodymium, but also conflict natural resources such as tin, tantalum (coltan), tungsten and even platinum and lithium.

113 Amendment of the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal on 5 May 2019 (Änderung des Basler Übereinkommens über die Kontrolle der grenzüberschreitenden Verbringung gefährlicher Abfälle und ihrer Entsorgung am 5. Mai 2019).

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[114] sets specific annual reduction targets for greenhouse gas emissions and has set the objective of being climate neutral[115] by 2045. The "German Coal Phase-Out Act"[116] 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 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

114 German Federal Climate Protection Act. URL: https://www.bmu.de/pressemitteilung/novelle-des-klimaschutzgesetzes-beschreibt-verbindlichen-pfad-zur-klimaneutralitaet-2045/ (Accessed on 10 December 2021).

115 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).

116 German Coal Phase-Out Act. URL: https://www.bmwi.de/Redaktion/DE/Artikel/Service/kohleausstiegsgesetz.html (Accessed on 10 December 2021).

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 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 exceeded the annual emission level permitted in the Federal Climate Protection Act by 2 million tonnes CO_2 equivalents in 2020. In accordance with the requirements of the Federal Climate Protection Act, in July 2021 the departments responsible for the building sector, the Federal Ministry of the Interior (building) and the Federal Ministry for Economic Affairs and Climate Action (energy), submitted a "2020 emergency programme in the building sector". Based on this, on 22 September 2021 the Federal Cabinet decided on additional measures for the building sector, the aim of which was to help to close the gap in targets that arose in 2020.

The respective annual emission levels for 2020 in all other sectors fell below the threshold.

To reach the climate targets, in autumn 2019 the 2030 climate protection programme and other measures relating to greenhouse gases were adopted as part of the Federal Government's economic stimulus package of 3 June 2020. In order to achieve the more stringent climate targets specified in the amended Federal German Climate Protection Act, the Cabinet passed the 2022 climate protection emergency programme in addition on 23 June 2021, which contained EUR8 billion for concrete measures.

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 EUR25 in 2021, companies will have to pay EUR55 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 EUR55 to EUR65 per emissions certificate is planned for 2026.

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.

In addition, part of the receipts from national emissions trading is used to lower the EEG levy. This results in a lower electricity price for both citizens and industry.

In 2024, it is intended that some of the receipts will be used to increase the long-distance commuter allowance. 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 came into force on 14 August 2020 (KVBG).[117] Parallel to this, further energy regulations were amended such as the German Energy Act, the Greenhouse Gas Emissions Trading Act, the Renewable Energy Act and the Combined Heat and Power Plant Act. 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 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.[118]

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 EUR165,000/MW (2020) to EUR89,000/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.[119] 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 EUR2.6 billion and LEAG receives EUR1.75 billion.[120] The statutory regulations are supported by a contract under public law[121] 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

117 Act to End Coal-Fired Power Generation. 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%5D__1601384424365 (Accessed on 10 December 2021).
118 Federal Ministry of Economic Affairs and Energy (2020): Key components of the German Coal Phase-Out Act. URL: https://www.bmwi.de/Redaktion/DE/Downloads/J-L/kerninhalte-kohleausstiegsgesetz-strukturstaerkungsgesetz.pdf?__blob=publicationFile&v=8 (Accessed on 10 December 2021).
119 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.
120 There is no publicly accessible information to calculate the compensation sum.
121 Federal Ministry of Economic Affairs and Energy (2020): Contract under public law to reduce and end electricity generation in Germany from lignite. URL: https://www.bmwi.de/Redaktion/DE/Downloads/M-O/oeffentlich-rechtlicher-vertrag-zur-reduzierung-und-beendigung-der-braunkohlerverstromung-entwurf.pdf?__blob=publicationFile&v=4 (Accessed on 10 December 2021).

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).

The European Commission checks the appropriateness of the compensation payments to the operators 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) and "Lausitz Energie Vorsorge- und Entwicklungsgesellschaft Sachsen mbH" (LEVES).

All the shares in LEVEB were pledged to the State of Brandenburg on 12 December 2019. Parallel to this, LEAG has paid the company an initial tranche of the basic amount totalling EUR10 million (out of a total of EUR102.9 million).[122]

The initial tranche of EUR10 million was also paid to the Saxon company LEVES in 2019. The shares in the company were pledged to the Federal State of Saxony in January 2020.

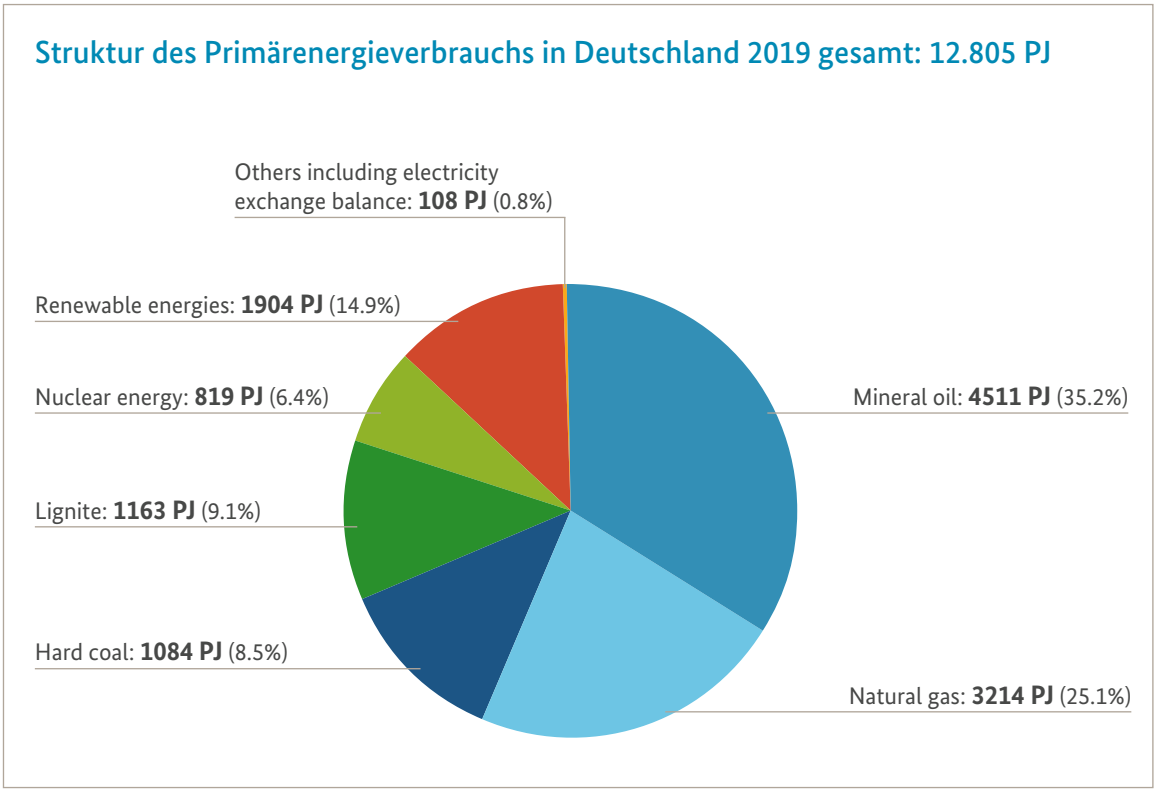
iv. Structural Strengthening Act

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).[123] 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 EUR14 billion for especially significant investments by the Federal States and municipalities. In addition to this, the Federal Government supports the regions through other measures which come within the government's scope of responsibility, such as through extending research and development programmes, developing transport infrastructure projects or relocating government institutions.

Furthermore, structurally weak locations of power plants operated with hard coal where hard coal has a great economic significance receive up to EUR1 billion of additional support.

122 https://lbgr.brandenburg.de/sixcms/media.php/9/Vorsorgevereinbarung.4166576.pdf
123 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%5D__1601384039076 (Accessed on 10 December 2021).

Chart 9: Structure of the primary energy consumption in Germany in 2019



Quelle: Working Group on Energy Balances April 2021 and AGEE-Stat. February 2021. For detailed source information see final note[viii].

b. Renewable energies

i. Renewable Energies in Germany

Renewable energies[124] make a large and growing contribution to Germany's energy supply. In 2019, the share of renewable energies amounted to 14.98% of total primary energy.

The proportion in the electricity sector is especially high. 42.0% of gross electricity consumption is covered by renewable sources (242,434 GWh). The Federal Government has set itself the goal of increasing the share of electricity produced by renewable energy at 65% in 2030 and to almost completely decarbonise the energy supply by 2050 and thus to reduce greenhouse gas emissions. In 2019 around 82.8% of greenhouse gas emissions (670.2 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 t of petrochemical products.

124 Source of the figures stated in section 7.2: BMWi (2018) (Federal Ministry for Economic Affairs and Energy): Renewable energies in figures, national and international development in 2018. https://www.erneuerbare-energien.de/EE/Redaktion/DE/Downloads/Berichte/erneuerbare-energien-in-zahlen-2018.html (Accessed on 10 December 2021).

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 2019, investments in renewable energies amounted to EUR10.7 billion, while the operation of the existing plants generated EUR17.2 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 2019, the renewable energy sector overall produced employment for more than 299,700 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 EUR11 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 2019, more than half (51.9%) 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 2019, the use of wind energy accounted for 21.7% 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 2019 alone, wind energy turbines were installed with a capacity of around 8,000 MW on land and roughly 3,300 MW at sea. Wind turbines with a total capacity of around 60,721 MW were operating in Germany in 2019; they produced around 126,000 GWh of electricity in 2019, one fifth of which was generated by wind turbines at sea. The Federal Government is planning to have an offshore wind power of 20,000 MW on the grid by the year 2030 and between 67,000–71,000 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 9,988 MW, electricity generation in 2019 amounted to more than 50,200 GWh (8.8% of the total electricity consumption, 20.7% 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% (2019) of the entire biomass.

Another renewable energy source with great potential is solar electricity generation. More than 1.9 million photovoltaic plants convert the sun's radiation energy directly into electricity – these plants represented a total of around 49,000 MW of installed capacity in Germany at the end of 2019, and around 3,800 MW of power were added in the same year. Electricity generation from photovoltaics continues to rise steadily as a result, attaining approximately 46,400 GWh in 2019. Photovoltaics thus accounted for 8.0% of total electricity consumption and contributed 19.1% of renewable electricity. German mining companies are also increasingly opting for the use of photovoltaic systems at various mining sites in Germany.

In addition to wind, biomass and photovoltaics, hydropower also contributed to electricity generation with around 19,700 GWh in 2019.

Renewable energy sources are also increasingly being used in the heating sector. In 2019, 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 114,300 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 GWh in 2019. Solar thermal energy also contributed to the supply of heat with around 8,500 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.[125] 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.[126]

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 2019, renewable energies accounted for 5.6% 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 2019, 52% of total final energy from renewable energy sources was provided by the various types of biomass used for energy purposes.

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.

125 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 10 December 2021).
126 Bundesverband Geothermie e.V. (Federal Association of Geothermal power) (2020): Status of research and need for research in geothermal power: URL: https://www.geothermie.de/fileadmin/user_upload/Forschung_Papier_2020_A4_20201217_Final_interaktiv.pdf (Accessed on 10 December 2021).

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 [127]

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 (2019): "Germany – Raw Materials Situation 2018" (Deutschland – Rohstoffsituation 2018)[128]
BGR (2017): "Domestic mineral resources – indispensable for Germany!" (Heimische mineralische Rohstoffe – unverzichtbar für Deutschland!)[129]
Marscheider-Weidemann, F.; et al. (2021): "Natural resources for future technologies" (Rohstoffe für Zukunftstechnologien) 2021[130]

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.

127 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
128 Federal Institute for Geosciences and Natural Resources (2019): Germany – Natural Resources Situation 2019. (Deutschland – Rohstoffsituation 2019) URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2018.html?nn=1542132 (Accessed on 10 December 2021).
129 Federal Institute for Geosciences and Natural Resources (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 10 December 2021).
130 The German Mineral Resources Agency (DERA) (2021): DERA Rohstoffinformation (Mineral Resources Information) 50. URL: https://www.deutsche-rohstoffagentur.de/DE/Gemeinsames/Produkte/Downloads/DERA_Rohstoffinformationen/rohstoffinformationen-50.pdf?__blob=publicationFile&v=3, (Accessed on 10 December 2021).

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 raw materials, while the demand for fossil raw materials 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.[131] 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. A ramp-up

131 https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2018.html?nn=1542132

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 1 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	3750	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 levy is used to finance the feed-in tariffs for renewable power generation. The EEG levy for 2019 is 6.4 ct/kWh. The expected levy for 2019 amounts to EUR23 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 EUR5 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 EUR4.5 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 EUR11 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: Prognosis (2019) Raw materials requirements in the field of renewable energies, on behalf of the Federal Ministry of 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"[132] in accordance with the highest environmental and social standards can make a certain contribution to sustainable, integrated European value chains.

132 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.[133]

In its current publication "Rohstoffrisikobewertung Lithium" (Natural resources risk assessment for lithium)[134], 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.[135] Since October 2021 the BGR is coordinating a project with a research network involving different players to examine the potential for lithium in Germany.[136] 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.[137]

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.

133 Federal Institute for Geosciences and Natural Resources (2020): Germany – Natural Resources Situation 2019. (Deutschland – Rohstoffsituation 2019) p. 61. URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2019.pdf?__blob=publicationFile&v=5 (Accessed on 10 December 2021).

134 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 10 December 2021).

135 There is still no information from the responsible authorities on the planned start of production, possible reserves and resources for both projects. Information on this can be found in information provided by the company itself.

136 Federal Institute for Geosciences and Natural Resources (2021): Press release: BRG 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-potenziale-deutschland.html?nn=1544712 (Accessed on 10 December 2021).

137 Saxon State Ministry of Economy, Labour and Transport (2017): Natural resources strategy for Saxony. URL: https://www.bergbau.sachsen.de/download/2017_12_06_SMWA_BR_Rohstoffstrategie_dt_WEB.pdf (Accessed on 10 December 2021).

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. The necessary measures involve extra outlay and require more capital, which can no longer be covered by provisions from mining operations and may stay as a material demand on public funds.

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 Federal Government alone is responsible for a first group of these measures for which up to EUR26 billion have been earmarked. These measures will cover areas such as improving transport routes to the mining regions, different research projects and centres, and relocation of government institutions.

The second pillar is financial help from the Federal Government for projects of the Federal States. A total of EUR14 billion are available for this, and the Federal Government can provide support for up to ninety percent of the costs of the Federal States' projects in the lignite coalfields. 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.

These investments are supplemented by the STARK German Federal programme, which supports non-investment projects of Federal States and municipalities. Here, too, possibilities cover a large number of areas; for example, STARK can finance the operation of structural development companies and also technology transfer projects.

9

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 fourth DEITI report. The following individual sectors were addressed:

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

The mining of hard coal was terminated in Germany at the end of 2018. As for the previous reports, the sector is not included (see 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. Rather, 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 material 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 26 June 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 EU Accounting Directive even explicitly state that

- the new 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 has been implemented into German law by the BilRUG. Pursuant to §§ 341 q 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 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 balance sheet dates:

- Balance sheet total of EUR20 million
- Revenue of more than EUR40 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, not specified elsewhere	
	08.91	Mining of chemical and fertiliser minerals	0891
	08.92	Peat extraction	0892
	08.93	Extraction of salt	0893
	08.99	Quarrying, not specified elsewhere	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) payment reports if at least one subsidiary is active in the extractive sector. The size of this 'active' subsidiary is not relevant here (so-called '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 used for the purpose of identifying extractive industry companies so that the number of such companies increased accordingly. As a result, the selection was made using a combination of size and activity criteria (see the explanations in Chapter 9.b.iii.).

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 the 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 9.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 2019 annual report, the town of Heilbronn and the State of Baden-Württemberg together hold 93.06% of the voting rights of this company (see Annual Report 2019, p. 126 and 127). The dividend paid in 2019 for the previous financial year amounted to EUR16,812,000.00, equivalent to EUR1.60 per share (see Annual Report 2019, p. 90). The share capital stands at EUR27 million and is divided into 10,507,500 individual shares.

The annual report for 2019 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 material for a complete presentation of the company payments and state revenues. The following payment flows are recorded within the framework of the fourth German EITI report (see 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 (see 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 municipalities in which the company in question has its operating facilities are entitled to levy trade tax; an operating facility may also extend across 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.).

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 constellation of a subsidiary business partnership and 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 viewpoint 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 taxes. 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 § 341 r 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 (see 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.

Minesite and extraction royalties pursuant to the BBergG

Minesite 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 minesite and extraction royalties in the EITI report as a payment flow.

Lease payments

Minesite 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 conclude private-law contracts as landowners with the extractive industry for the extraction of natural resources. 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). As an example of this, in the 2019 reporting year payments to quarry gravel were made by a company in the quarried natural resources sectors to the town of Kerpen.

The content and the number of contracts are not centrally documented (see Chapter 4.b.iv.). In addition, the individual government agencies which have concluded lease contracts – unlike the individual tax offices in the case of corporate tax – cannot be centrally addressed via an organisational unit. As in the case of trade tax, this leads to particular difficulties in respect of quality assurance.

It is impossible to know in advance which government agencies and how many of them receive lease payments. This information can only be provided by the participating companies themselves within the framework of the data collection process.

Therefore, lease payments by companies to government agencies are recorded as part of the data collection process without any change as compared to the third German EITI report. However, these lease payments 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 2019 reporting year when compared to the overall amount of the reported payments, which was also the case for the most recent

D-EITI reports. The rise in the reported lease payments by 1.5 million euros to a total of 3.5 million euros compared to the third D-EITI report can essentially be attributed to the fact that it is the first time a company active in the quarried natural resources sector is participating in D-EITI.

Payments for the improvement of the infrastructure

The payment flow corresponds to the legal regulation of the (consolidated) payment report of § 341 r No. 3 g HGB. The data on these payments were collected for the first time for the second German EITI report and the data reports to the participating companies were supplemented in this respect. The payments reported 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 2019 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 the request of the MSG. The results were then presented to the MSG. They 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 and purpose of payments can, in part, be found in the companies' payment reports.

iv. Project level reporting

The EITI standard generally requires reporting at the project level (EITI Requirement 4.7). The MSG has decided to implement the content and scope of the project concept by the analogous application of the legal regulation provided for in § 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 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 EUR100,000 and upwards made to individual government agencies per reporting year (see § 341 t(4) HGB). A government agency to which less than EUR100,000 has been paid during the reporting period does not have to be included.

The MSG has decided to adopt these rules for the fourth D-EITI report. If payments made during reporting year 2019 amounted to less than EUR100,000 per government agency, the data

collection templates require relevant information about the existence of payments, but without mentioning any specific amounts.

In a similar way to the MSG decision on the initial quality assurance for payments via the payment reconciliation procedure, all trade tax payments reported by the companies which exceed EUR2 million per government agency are subject to a quality assurance procedure.

b. Procedure for quality assurance

i. Description of the concept for undertaking quality assurance for published information

MSG must ensure both the quality of the information of payments made 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 provides 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 by companies and the corresponding amounts received by 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"). This work is being continued by the MSG and the IA as part of this fourth German EITI report.[138]

In terms of the system, the previous standard procedure represents a test of details of the payment flows reported by the participating companies. The processes and controls associated with the payment flows are neither included nor analysed, meaning that the knowledge gained from the standard procedure is always limited to the payment flows that are actually examined. 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 that receive payments. The aim is to put the MSGs 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

138 You can find the concept for the pilot on the payment reconciliation, the work report of the Independent Administrator and the statement by the MSG on the implementation of the payment reconciliation pilot here: https://d-eiti.de/en/dokumente/

reported by the companies in accordance with the professional standards accepted in Germany or recognised internationally. Therefore, the Independent Administrator did not submit an overall judgement (neither with reasonable nor with limited assurance) 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 fourth D-EITI report. To this end, the Independent Administrator used a database analysis[139] 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 (see Chapter 9.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 this provisional list of companies by including groups of companies in which a potential 'consolidated tax group infection' caused by 'active' subsidiaries existed (for details, see Chapter 9.a.ii.). The following aspects are unchanged from the first and second D-EITI report and must be taken into account:

- Companies whose main activities focus on the storage of natural resources underground (e.g. construction and operation of cavern storage facilities for the storage of natural gas) are not considered, since the extraction of natural resources is not their primary activity, despite their being allocated to sub-sections 05 to 08;
- 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 (see §§ 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 fourth D-EITI report. Nevertheless, on the basis of the payment reports for 2019 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 (see Chapter 9.c.). These are solely free-to-mine natural resources. These sectors contain comparatively few, but relatively large business units. 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 1.6% of the total number of companies in the industry and around 22% of the total number of the industry's extraction sites. It must therefore also 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 9.a.ii. and are therefore not identified by the selection criteria

139 Orbis Europe database of the provider Bureau van Dijk. URL: https://bvdinfo.com/en-gb/ (Accessed on 25 October 2021).

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 fourth 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 government agencies receive revenues from the extractive industry:

- Corporate tax: the responsible tax offices at the respective company site
- Mine site 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, including payment flows relating to corporate tax and trade tax, which are subject to tax secrecy pursuant to §§ 30 ff. AO (German Tax Code, see the comments in Chapter 4.c.). In the course of the preparation of the EITI report, the payment flows to government agencies as reported by the companies 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 e-mail 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). Once uploaded, the 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, legal

- 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.[140] 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 meet the obligations entered into by the subsidiary up to the balance sheet date in the following financial year and other prerequisites exist. However, these cases are also made transparent via the electronic Federal Gazette.

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. However, within the scope of their obligation to report pursuant to § 321 (1) or (2) sentence 3 HGB, auditors have to report in the audit report, if they establish that, despite a legal obligation for companies to do so, no (consolidated group) payment report has been prepared or disclosed in the course of their audit work. 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 legal 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 the **German Government's Public Corporate Governance Code**). 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.

140 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

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 payments received by government agencies and an immediate (payment) reconciliation were 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). Based on these findings, and in contrast to the previous course of action, the processes and controls or control mechanisms were analysed for the third and this fourth German EITI report. These processes and controls were 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 is to be understood 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).

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 schematic overviews 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.

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 were compared, amongst others, to the requirements defined in 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 are reflected, for instance, in the Standards for Internal Control in the Federal Government of the United States Government Accountability Office, which means that they can also be applied to government agencies. At the same time, this framework concept forms, among other things, the basis for the German 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 is routinely applied in legal audits.

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 and this fourth 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 of the pilot 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 previous 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 tax and
- Trade tax.

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 nature and extent of the work of the Independent Administrator within the context of the pilot on payment reconciliation for the fourth D-EITI report are set out in a comprehensive work report. The following sub-sections summarise the most important work and findings for payment flows relating to corporate tax and mine site and extraction royalties.

Trade tax payments are not considered separately below, as the processes for assessing trade tax are very largely the responsibility of tax offices and thus findings from analysing the corporate tax payment flow can be transferred to the assessment of trade tax here. 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 factors of German towns and municipalities for the 2019 reporting year can be found in places such as the DIHK website.[141]

The respective municipality is routinely responsible for collecting all the trade tax. The basis of this is the right of municipal self-government, protected by the German Grundgesetz, that applies to well over 10,000 municipalities in Germany. As a result, the relevant processes and controls may differ from each other, including on account of the size and structure of the respective administration.

The individual local bylaws, being a fundamental element of local governance law, guarantee a legal framework with comparable contents for organisation at the level of the local authorities. Local bylaws form the basis for work of everyone employed in local

141 See Tax factors of German towns and communities 2019

government and local politics and comprise, among other things, fundamental regulations for the organisation of financial accounting and the processing of payments at the municipalities (see, for example, Section 93 of the NRW local bylaws or Section 126 of the Lower Saxony local governance law). Nevertheless, depending on the size of the respective municipalities, the organisation and design of payment processes in the municipalities may differ from each other in detail. The processes for auditing accounts explained in greater detail below ensure that the requirements regarding correctness and legal compliance of administrative actions are followed.

The following overview indicates the companies from the group of companies participating in the D-EITI which, according to data reports, have paid more than EUR2,000,000 in trade taxes in the 2019 reporting year and states the number of municipalities which have received these trade taxes:

Table 9: Number of municipalities receiving trade tax per company (trade tax payments over EUR2 million)

Company	Number of municipalities receiving trade tax payments
BEB Erdgas und Erdöl GmbH & Co. KG, Hannover	26
Dyckerhoff-Gruppe, Wiesbaden	7
ExxonMobil Production Deutschland GmbH, Hannover	46
Hülskens Holding GmbH & Co. KG, Wesel	4
JTSD/MIBRAG	8
K+S Minerals and Agriculture GmbH	4
Quarzwerke GmbH, Frechen	9
Südwestdeutsche Salzwerke AG, Heilbronn	4

In addition to this, the government agencies to which – according to data reporting – trade tax payments of at least EUR2,000,000 were made in the year under review (2019) are shown below:

Table 10: Municipalities that have received trade tax payments of more than EUR2 million from D-EITI companies

Company	Receipient of trade tax payments (> kEUR2,000)	Amount (kEUR)
BEB Erdgas und Erdöl GmbH & Co. KG	Großenkneten local auhtority	2,556
ExxonMobil Production Deutschland GmbH	City of Hamburg	30,134
	City of Hanover	16,900
	City of Cologne	6,759
	Flecken Steyerberg local authority	4,432
	Town of Sulingen	2,924
	Großenkneten local authority	2,295
Quarzwerke GmbH	Town of Frechen	4,406
Südwestdeutsche Salzwerke AG	City of Heilbronn	4,124

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 office 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 office 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 independent 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.

The following overview shows the supra-local audit office (audit agency/State audit office) responsible in each case for government agencies that received trade tax payments for the 2019 reporting year of at least EUR2,000,000:

Table 11: Responsible supra-local audit office for trade tax receipts (of D-EITI companies) of more than EUR2 million

Company	Receipient of trade tax payments (> kEUR2,000)	Responsible supra-local audit office
BEB Erdgas und Erdöl GmbH & Co. KG	Großenkneten local authority	President, State Audit Office for Lower Saxony
ExxonMobil Production Deutschland GmbH	City of Hamburg	Audit Office of the Free Hanseatic City of Hamburg
	City of Hanover	President, State Audit Office for Lower Saxony
	City of Cologne	NRW municipal audit office
	Flecken Steyerberg local authority	Audit Office of Nienburg Weser District
	Town of Sulingen	Audit Office of Diepholz District
	Großenkneten local authority	President, State Audit Office for Lower Saxony
Quarzwerke GmbH	Town of Frechen	NRW municipal audit office
Südwestdeutsche Salzwerke AG	City of Heilbronn	Baden Wuerttemberg municipal audit office

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).

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 and is understood to be the voluntary commitment to integrity and actions according to ethical values.

The control environment of the government agencies relevant here is also characterised by a strict hierarchical structure that is set for the financial authorities by the Tax Administration Act (FVG) (see link in footnote).[142] 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[143] 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, 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

142 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)

143 In some cases, employees who are not subject to civil service law are hired in the responsible agencies. Equally, these 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.

regard to adherence to and/or implementation of legal regulations, and to act in a way that observes the ethical values derived from civil service law, including the requirement to uphold the law and the constitution. This also includes explicit release from the normally 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.

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 (see 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. According to the relevant laws and regulations the party with an obligation to pay first calculates the amount due to be paid and informs the government agency of this amount.

It is possible that the parties due to make the payment may make mistakes in the self-assessment procedure. These mistakes can range from a clerical or input error when entering the data in the self-assessment form or unintended incorrect interpretation of the relevant laws and regulations 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 a more detailed description.

Collection process
A distinction must be made between the risks in the assessment process and risks in connection with the collection of payments (collection process). These risks may arise from a concentration of responsibilities with staff who are part of both the assessment and the collection process. This risk is dealt with by strict segregation of functions within the relevant government agency between the party responsible for assessment and the party responsible for collection (organisational measures) and he fact that the party liable to pay can pay the owed amount only through cashless payment, i.e. via transfer: no cash payment is possible. 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 corporate 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 very much smaller. Instead, reminders are handled by the civil servant in charge on a case-by-case basis.

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 for payment flows of corporate tax and mine site and extraction royalties 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. The responsibility lies with the tax determination office of 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 on the rules of procedure for the tax offices (called FAGO) that have been issued by the highest tax authorities of the Federal States. FAGO governs the principles or organisation at tax office level 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 revenue, 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 inspector for the assessment office, or a quality assurance department based in the same tax determination office. The corporate tax notice is approved electronically. Where a reservation regarding the signing of the corporate tax notice 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 paid correctly, 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, a company is selected for a government tax audit through random selection, because of a suggestion made by the assessment office (event-based) or the company is selected for a government tax audit directly after a period for which it had already been selected (so-called "follow-on audit").

Taxpayers are grouped in four different size classes for the purposes of government tax audits. The 18 companies or consolidated companies participating as part of the fourth 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.

The office that carries out the government tax audits is therefore practically "an extension" of the assessment office 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 approval 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 has been relocated to a payment processing office. Depending on whether the financial administration at Federal State level has a two- or three-stage 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.

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 (see Chapter 4 b ii) in conjunction with the relevant regulations in the German Tax Code (Fiscal Code AO). Where mining licenses date back to the time before the current Federal Mining Act came into force in 1982 ("legacy rights"), no mine site and extraction royalties apply (see 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 (98% for the 2019 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[144] and the self-assessment procedure, the competent sections at the LBEG for fixing the mine site and extraction royalties cannot be compared with the units responsible for tax determination in terms of the available personnel and organisational structure. At the present time, in LBEG there are one 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 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 administrative unit 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 administrative unit 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 company through external audits. According to information received, due to the lack of 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 and extraction royalties is ensured by methods such as the internal audit units.

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

144 The 2019 BVEG annual report contains an overview of the oil- and gas-producing companies that pay royalties in Lower Saxony, Hamburg and Schleswig-Holstein. https://www.bveg.de/Der-BVEG/Publikationen/Jahresberichte (Accessed on 24 February 2022).

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 under 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 information may be published at a later date.

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 assessment and collection. As part of these controls, cases are selected for auditing. Then these cases are audited to ensure that they have been processed correctly.

Besides, normally, a separate internal audit unit is set up at the level of the State Finance Ministries. This unit reports directly to the management of the authority. In the Federal State of Hesse, for instance, 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"). 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 audit units ("Empfehlungen des Bundesministeriums des Innern für Interne Revisionen"). The internal audit unit undertakes independent auditing and control functions by examining the administrative actions for discrepancies and irregularities. They also make suggestions on how to rectify and avoid these irregularities in the future and strengthens 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 unit at the level of the State of Lower Saxony's Ministry of Finance. The internal audit unit 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. According to the information gained by the IA, 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.

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), 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 State levels. The jurisdiction of the German Federal Audit Office is restricted to the sphere of the Federal Government's financial practices[145]; it has no legal supervisory rights or right of direction over the States' audit offices. The Audit Offices are independent, supreme Federal and State authorities. Their tasks, position and powers are derived from the Basic Law (Article 114 GG) or the State constitutions, which are defined in detail by Federal and 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. These audit units are responsible for monitoring the financial practices of the administrations managed by mayors. The local audit is carried out by the municipality's own office 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 office 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).

Supra-local auditing of accounts is carried out by a state or association-based audit office; in relation to the municipalities to be audited it 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.

The following principles apply as a standard for auditing the budgetary and economic administration by the state and the municipalities:

- 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

145 https://www.bundesrechnungshof.de/de/ueber-uns/wer-wir-sind/aufgaben-organisation-rechtsgrundlagen

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.[146] 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 2019 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 Court of Audit has been a member of the Council of Auditors of the United Nations and will remain so until 2022 (a period of six years).[147] Within this framework, Germany is responsible for the auditing of nine international organisations.[148] All audits are performed in accordance with INTOSAI standards.[149]

Besides, the individual State audit offices are involved in international exchange and regular discussions about current standards and audit methods in the context of the European Organisation of Supreme Audit Institutions (EURORAI). Therefore, it can be assumed that high auditing standards at both national and sub-national level are maintained.

c. Data collection

i. Participating companies and coverage of the sectors

Of the 44 companies and/or consolidated group companies identified by the Independent Administrator in accordance with the requirements of the MSG, a total of 18 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 (see Chapter 9.b.iii. for details). Following the expiry of the deadlines for publication of the payment reports for the period from 1 January 2019 to 31 December 2019 and the experience gained from the publication of the payment reports for the periods 2016 to 2018, it has become apparent that the number of payment reports actually published is lagging behind the number of companies or consolidated groups that 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[150]. In the course

146 https://www.bundesrechnungshof.de/de/veroeffentlichungen/produkte/bemerkungen-jahresberichte/jahresberichte
147 https://www.bundesrechnungshof.de/de/zusammenarbeit/un-board-of-auditors
148 https://www.bundesrechnungshof.de/de/veroeffentlichungen/produkte/bemerkungen-jahresberichte/jahresberichte
149 http://www.un.org/en/auditors/panel/
150 https://www.bundesanzeiger.de/; enter the search term 'Payment reports' under 'Search'.

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 fourth D-EITI report, as it did for the previous D-EITI report. 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.

The protected property pursuant to 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, mine site and extraction 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[151] or Scientology[152] 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 fourth D-EITI report:

151 BVerfG ((Federal Constitutional Court), Resolution of the First Senate of 26 June 2002, 1 BvR 558/91 - recital no. (1–79), https://www.bundesverfassungsgericht.de/e/rs20020626_1bvr055891.html (Accessed 24 February 2022).
152 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 (Accessed 24 February 2022).

Figure 8: 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.	DEA Deutsche Erdoel AG, Hamburg (heute: Wintershall DEA International AG)	Crude oil and natural gas
3.	Dyckerhoff-Gruppe, Wiesbaden	Quarried natural resources
4.	ExxonMobil Central Europe Holding GmbH, Hamburg	Crude oil and natural gas
5.	Heidelberger Sand und Kies GmbH, Heidelberg	Quarried natural resources
6.	Holcim (Deutschland) GmbH, Hamburg	Quarried natural resources
7.	Hülskens Holding GmbH & Co. KG	Quarried natural resources
8.	JTSD-Braunkohlebergbau GmbH, Zeitz	Lignite
9.	K+S – Gruppe K+S Minerals and Agriculture GmbH	 Potash and salts
10.	Lausitz Energie Bergbau AG, Cottbus	Lignite
11.	Neptune Energy Deutschland GmbH, Lingen (Ems)	Crude oil and natural gas
12.	Quarzwerke GmbH, Frechen	Quarried natural resources
13.	RWE – Gruppe Rheinische Baustoffwerke GmbH, Bergheim RWE Power AG, Essen	 Quarried natural resources Lignite
14.	Sibelco Deutschland GmbH, Ransbach-Baumbach	Quarried natural resources
15.	Südwestdeutsche Salzwerke AG, Heilbronn	Potash and salts
16.	Vermilion Energy Germany GmbH & Co. KG, Schönefeld	Crude oil and natural gas
17.	Wacker Chemie AG, München	Potash and salts
18.	Wintershall Holding GmbH (heute: Wintershall DEA 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 (see Chapter 9.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 26 June 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 12: Coverage of sectors

Sectors*	Estimated coverage of all identified companies	Estimated coverage of all participating companies	Reference value – Determination – Coverage
Lignite	100.0%	99.6%	Production volume 2019
Crude oil**	96.0%	96.0%	Production volume 2019
Natural gas	99.0%	99.0%	Production volume 2019
Potash and potash salt products	97.8%	97.8%	usable quantity in 2019
Rock salt:	95.5%	No information available***	usable quantity in 2019
Boiled salt	99.7%	99.7%	usable quantity in 2019

* 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 (see Chapter 9.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 2019 payments made by the participating companies to government agencies for corporate tax, trade tax, lease payments and payments to improve the infrastructure:

Table 13: Overall overview of reported company data

		Corporate tax EUR	Trade tax EUR	Mine site and extraction royalties EUR	Lease payments EUR	Payments into the infrastructure EUR	Totals EUR
1.	BEB Erdgas und Erdöl GmbH & Co. KG	– [1]	10,784,930.75	49,452,979.56	–	–	60,237,910.31
2.	DEA Deutsche Erdöl AG (today: Wintershall DEA International AG; Wintershall DEA Deutschland GmbH)	–	–	72,634,802.89	–	–	72,634,802.89
3.	Dyckerhoff-Gruppe	2,512,514.49	2,057,015.16	–	–	–	4,569,529.65
4.	ExxonMobil Central Europe Holding GmbH	92,661,782.00 [2]	88,503,712.00	30,223,246.00	–	–	211,388,740.00
5.	Heidelberger Sand und Kies GmbH	–	–	–	585,372.00	–	585,372.00
6.	Holcim (Deutschland) GmbH	248,625.50	310,134.00	–	557,457.62	–	1,116,217.12
7.	Hülskens Holding GmbH & Co. KG	–	2,470,534.12	–	965,224.40	–	3,435,758.52
8.	JTSD-Braunkohlebergbau GmbH / MIBRAG	6,206,595.45	3,682,007.54	–	136,762.18	–	10,025,365.17
9.	K+S-Minerals and Agriculture GmbH	–	3,465,989.04	938,514.96	–	–	4,404,504.00
10.	LEAG Lausitzer Energie Bergbau AG	–	–	–	1,116,539.24	6,513,267.61	7,629,806.85
11.	Neptune Energy Deutschland GmbH (formerly: Engie E&P Holding Germany GmbH)	– [2]	– [2]	11,571,186.90	–	–	11,571,186.90

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 EUR	Trade tax EUR	Mine site and extraction royalties EUR	Lease payments EUR	Payments into the infrastructure EUR	Totals EUR
12.	Quarzwerke GmbH	5,622,000.00	6,714,000.00	–	–	–	12,336,000.00
13.	RWE-Gruppe / RWE Power AG	– [2]	– [2]	–	–	24,689,479.00	24,689,479.00
14.	RWE-Gruppe / Rheinische Baustoffwerke GmbH	– [2]	– [2]	–	172,631.68	443,982.00	616,613.68
15.	Sibelco Gruppe	889,564.00	811,765.00	–	–	–	1,701,329.00
16.	Südwestdeutsche Salzwerke AG	9,363,309.79	6,702,169.23	–	–	–	16,065,479.02
17.	Vermilion Energy Germany GmbH & Co. KG	– [1]	–	3,077,628.58	–	–	3,077,628.58
18.	Wacker Chemie AG	– [3]	143,658.11	529,085.15	–	–	672,743.26
19.	Wintershall GmbH (today: Wintershall DEA Deutschland GmbH; vormals Wintershall DEA GmbH)	3,213,727.00	– [2]	49,574,477.88	–	–	52,788,204.88
	Total amount of reported payments from all companies	**120,718,118.23**	**125,645,914.95**	**218,001,921.92**	**3,533,987.12**	**31,646,728.61**	**499,546,670.83**

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.

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 (see footnote 3 table 10). 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 (see footnote 2 in table 10, see also Chapter 9.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 2019 pursuant to §§341q et seq. HGB also show payments of water abstraction fees.

Table 14: Data reported for mine site and extraction royalties according to the government agency

Mine site and extraction royalties	Amount according to the company EUR
State Office for Mining, Energy and Geology, Hanover (LBEG)	144,213,825.84
LBEG for: Tax authority, Schleswig-Holstein, Kiel	68,359,539.98
LBEG for: Free Hanseatic City of Hamburg	168,462.17
Government of Upper Bavaria, Southern Bavarian Mining Authority, Munich	713,409.73
State Office for Geology and Mining, Mainz-Hechtenheim	3,079,084.09
State Office for Geology and Mining, Saxony-Anhalt, Halle	120,536.96
Arnsberg district government, Arnsberg	0.00
Regional Council Darmstadt, Wiesbaden	817,978.00
Freiburg State Office for Geology, Raw Materials and Mining	529,085.15
Total	**218,001,921.92**

10

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 important payment flows from the national extractive sector to government agencies. This information on payment flows must satisfy requirements in terms of reliability, understandability and public availability (see EITI requirements 4.1 and 4.9). In the first and second German EITI report, 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.

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" or "pilot"). This work is being continued by the Multi-Stakeholder Group ("MSG") and the Independent Administrator ("IA") as part of the current fourth German EITI report.

The pilot procedure will systematically replace the test of details for payment flows from participating companies 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 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 natural resources 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 IA by the MSG, the responses to questions and his own research in combination with the positive results from the payment reconciliations already carried out, the IA considers that the systems set up by government agencies for correct collection of payment flows relevant for D-EITI are suitable to ensure reliable disclosure of the relevant payment flows. The risk of breaches in the correct processing of the relevant payment flows for mine site and extraction royalties, corporate tax and trade tax could, in the opinion of the IA, be assessed as being minimal for the 2019 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.

Knowledge gained from conducting the pilot provide an in-depth insight into the existing systems for ensuring that the assessment and collection of relevant payment flows are correct and, according to the evaluation by the IA, clearly represent added value in this respect, both for the MSG and for interested members of the public when compared with the previous "standard procedure". By checking the plausibility of the reported payment flows using key indicators and trends it is possible to obtain additional information about the backgrounds and development of relevant payment flows. The risk-based approach of the pilot procedure also corresponds to the methodical procedure of the process-independent inspection agencies considered (internal audit units, audit offices and offices for auditing accounts) and

therefore, as perceived by the IA, gains greater acceptance on the part of companies and government agencies when compared to the payment reconciliation procedure.

With the implementation of the pilot procedure, the tasks of members of the MSG and of the IA will change, 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 seems sensible to involve an IA 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 providers the MSG considers as relevant and the MSG. This also applies as appropriate to the sources of information the MSG considers as relevant. Furthermore, the MSG members are asked to consider critically information from their professional environment as regards possible relevance for the risk assessment and, where relevant, to make this information available to all other MSG members.

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 49 companies 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 2020 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% 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 bylaws 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.

1 Südwestdeutsche Salzwerke AG's annual report for 2020, p. 181
2 Voting notification of 2 January 2020
3 Voting notification of 26 August 2020
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

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.

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)

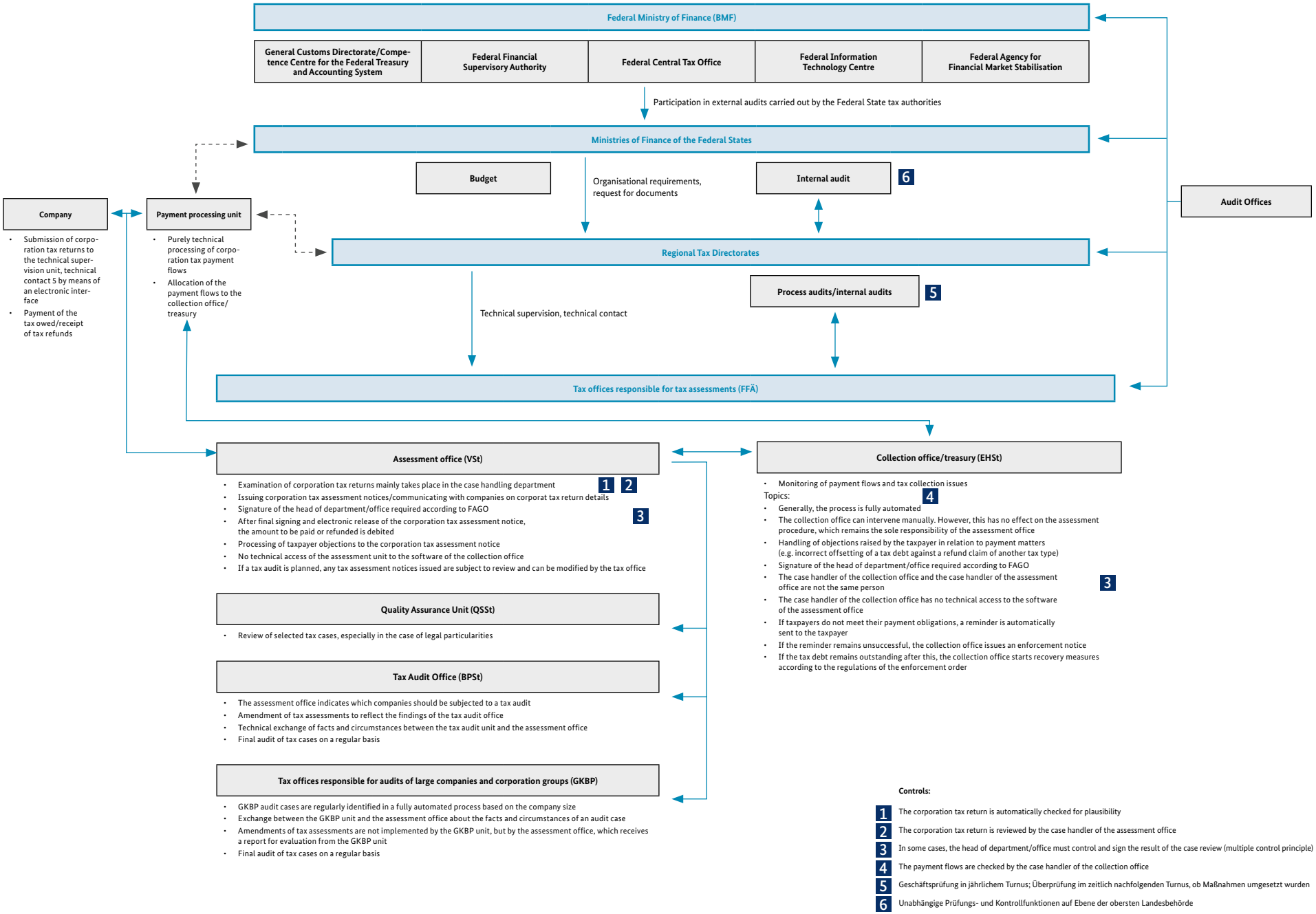
Payments for trade tax (and, where applicable, for leases) go directly to government agencies at the municipal level in the sense of a 'subnational level' (for further explanations regarding trade tax and lease payments, cf. chapter 4.b.). There are no other significant cash flows from the extractive 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. Schematic overviews

c. i. Schematic overview of the organisational structure with relevant processes and controls for corporation tax



- Submission of corporation tax returns to the technical supervision unit, technical contact 5 by means of an electronic interface
- Payment of the tax owed/receipt of tax refunds

- Purely technical processing of corporation tax payment flows
- Allocation of the payment flows to the collection office/treasury

- Examination of corporation tax returns mainly takes place in the case handling department 1 2
- Issuing corporation tax assessment notices/communicating with companies on corporat tax return details
- Signature of the head of department/office required according to FAGO 3
- After final signing and electronic release of the corporation tax assessment notice, the amount to be paid or refunded is debited
- Processing of taxpayer objections to the corporation tax assessment notice
- No technical access of the assessment unit to the software of the collection office
- If a tax audit is planned, any tax assessment notices issued are subject to review and can be modified by the tax office

- Monitoring of payment flows and tax collection issues

Topics: 4

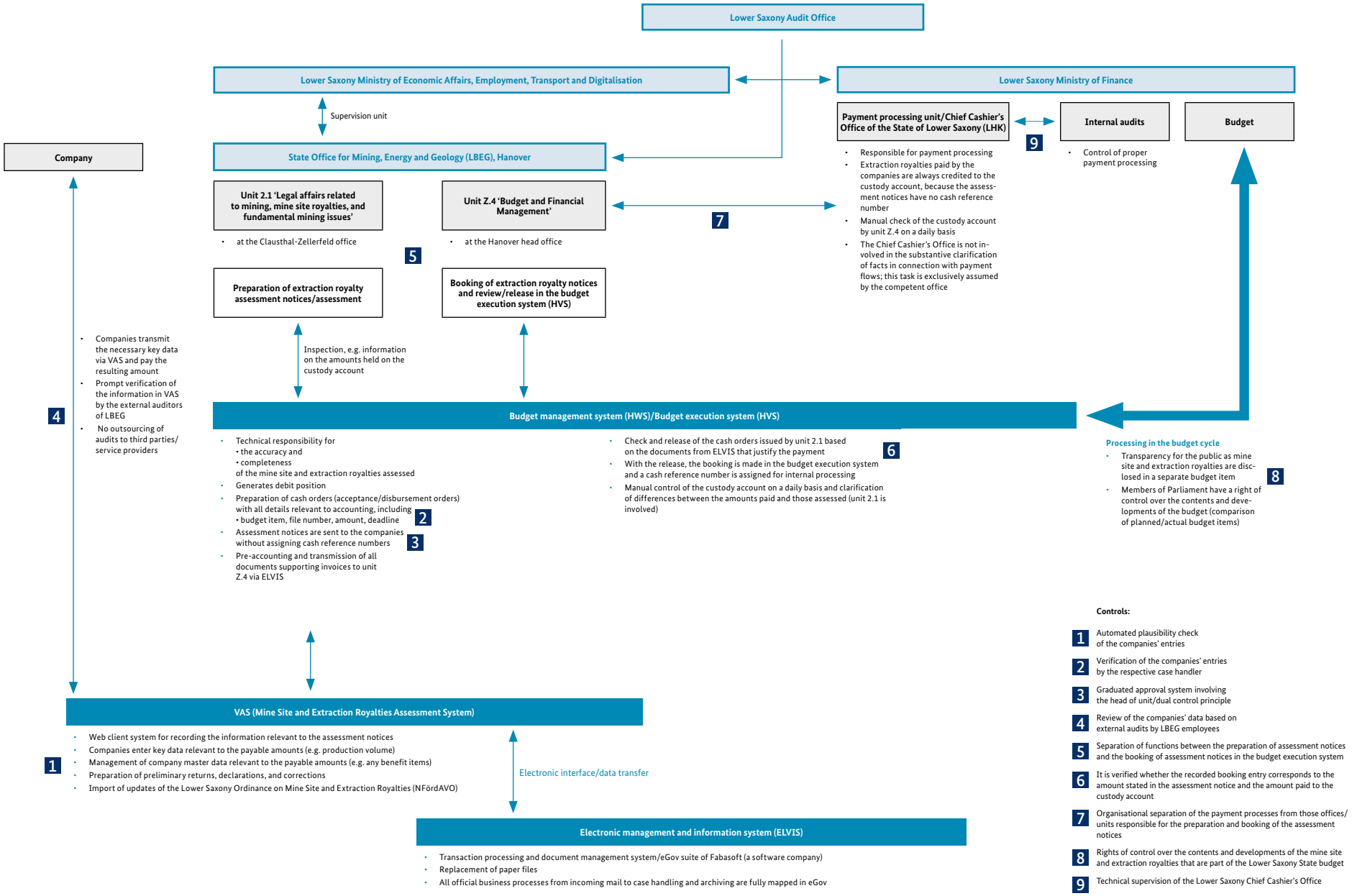
- Generally, the process is fully automated
- The collection office can intervene manually. However, this has no effect on the assessment procedure, which remains the sole responsibility of the assessment office
- Handling of objections raised by the taxpayer in relation to payment matters (e.g. incorrect offsetting of a tax debt against a refund claim of another tax type)
- Signature of the head of department/office required according to FAGO
- The case handler of the collection office and the case handler of the assessment office are not the same person 3
- The case handler of the collection office has no technical access to the software of the assessment office
- If taxpayers do not meet their payment obligations, a reminder is automatically sent to the taxpayer
- If the reminder remains unsuccessful, the collection office issues an enforcement notice
- If the tax debt remains outstanding after this, the collection office starts recovery measures according to the regulations of the enforcement order

- Review of selected tax cases, especially in the case of legal particularities

- The assessment office indicates which companies should be subjected to a tax audit
- Amendment of tax assessments to reflect the findings of the tax audit office
- Technical exchange of facts and circumstances between the tax audit unit and the assessment office
- Final audit of tax cases on a regular basis

- GKBP audit cases are regularly identified in a fully automated process based on the company size
- Exchange between the GKBP unit and the assessment office about the facts and circumstances of an audit case
- Amendments of tax assessments are not implemented by the GKBP unit, but by the assessment office, which receives a report for evaluation from the GKBP unit
- Final audit of tax cases on a regular basis

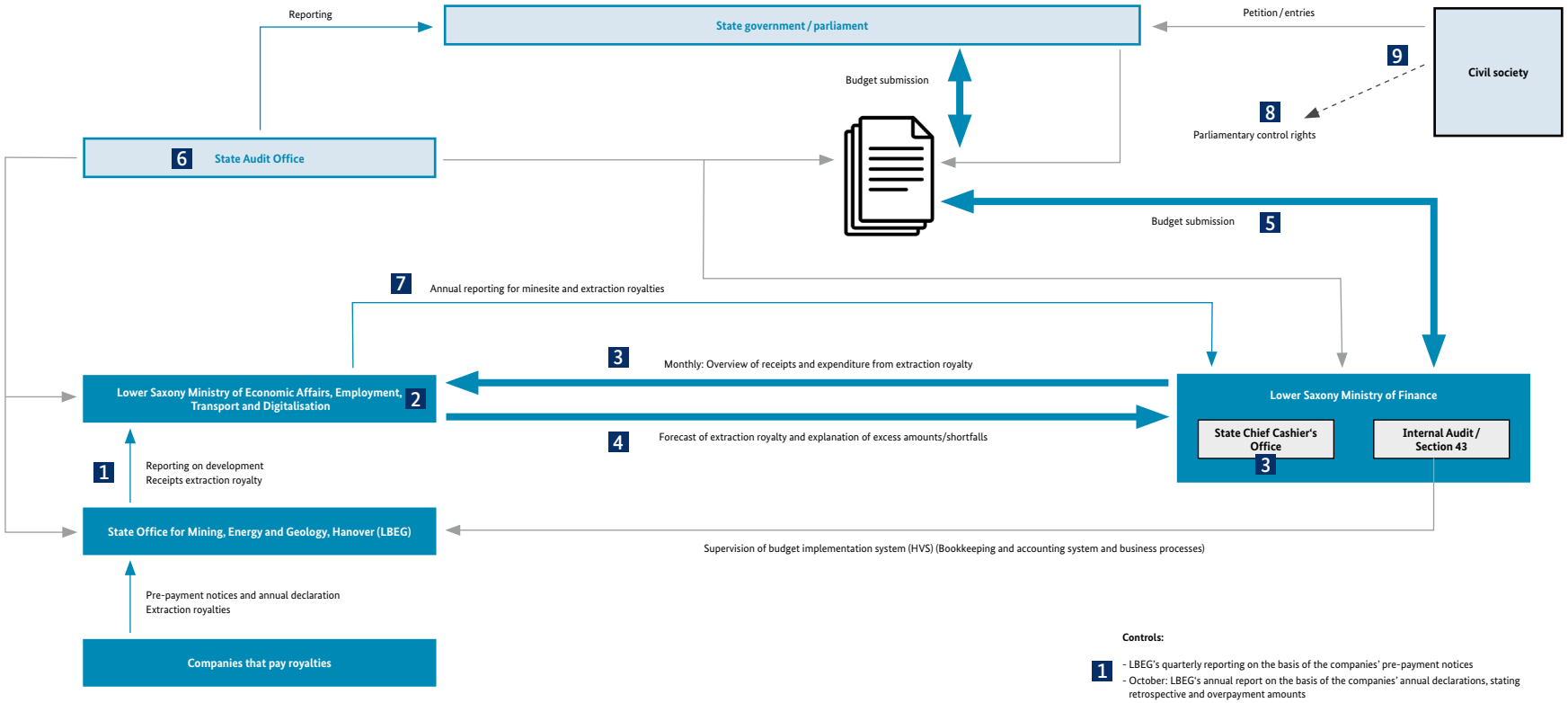
c. ii. Schematic overview of the organisational structure with relevant processes and controls for mine site and extraction royalties



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)

9 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.
Source: BMWK – State aid monitoring policy

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 (Montan-MitbestG) of 1951
Supplementary Co-Determination Act (MontanMitbestGErgG) of 1956
Corporate Co-Determination is most extensive in mining[1] (Montan Co-Determination; Montan-MitbestG [Coal and Steel Co-Determination Act][2] Montan-MitbestGErgG [Supplementary Co-Determination Act][3]): 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 as well as in the 'iron and steel-producing industry'
2 Montan Mitbestimmungsgesetz (MontanMitbestG) of 1951
3 Montan-MitbestGErgG of 1956

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. 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 is being continued and developed further in the fourth D-EITI report (see chapter 9). 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. This contains the comments already provided 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.

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 rate does not only include old equipment from private households (business to customer; b2c devices) but also devices from commercial sources (business to business; b2b devices) such as companies and authorities (termed "other sources 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.
Source: https://www.umweltbundesamt.de/daten/ressourcen-abfall/verwertung-entsorgung-ausgewaehlter-abfallarten/elektro-elektronikaltgeraete#sammlung-und-verwertung-von-elektro-und-elektronikaltgeraten-drei-kennzahlen-zahlen

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[4]
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. 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.

4 Federal Ministry for the Environment, Nature Conservation, Nuclear Safety and Consumer Protection (BMU) (2021): Umweltinformationsgesetz. URL: https://www.bmuv.de/themen/bildung-beteiligung/umweltinformation/umweltinformationsgesetz (Accessed on 2 December 2021).

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 Office of Statistics calculates the GDP as follows: Production value minus intermediate consumption = the gross value added; plus taxes on products minus subsidies = GDP. Source: https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/Methoden/bip.html

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'. Source: https://www.destatis.de/DE/Themen/Wirtschaft/Volkswirtschaftliche-Gesamtrechnungen-Inlandsprodukt/Methoden/bip.html

Independent Administrator
For the annual D-EITI 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.

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 project on payment reconciliation for the first time for the third D-EITI report : this was commissioned by the MSG. The pilot project on payment reconciliation will be continued in this fourth D-EITI report and developed further.

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: Lusatian territory (Federal States: Brandenburg/Saxony), Central

German territory (Saxony/Saxony-Anhalt/Thuringia), Rhenish territory (North Rhine-Westphalia), 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; it includes the processing of organic materials, but not energy-related recovery. 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 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 2019] – Federal Employment Agency (2019): Employment by economic sector (WZ2008). URL: https://statistik.arbeitsagentur.de/Statistikdaten/Detail/201912/iiia6/beschaeftigung-sozbe-monatsheft-wz/monatsheft-wz-d-0-201912-pdf.pdf?__blob=publicationFile (Accessed on 9 December 2021).

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 2019. URL: https://www.bveg.de/Der-BVEG/Publikationen/Jahresberichte (Accessed on 9 December 2021).

Natural gas

[BfA 2019] – Federal Employment Agency (2019): Employment by economic sector (WZ2008). URL: https://statistik.arbeitsagentur.de/Statistikdaten/Detail/201912/iiia6/beschaeftigung-sozbe-monatsheft-wz/monatsheft-wz-d-0-201912-pdf.pdf?__blob=publicationFile (Accessed on 9 December 2021).

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 2019. URL: https://www.bveg.de/Der-BVEG/Publikationen/Jahresberichte (Accessed on 9 December 2021).

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 2019] – Federal Employment Agency (2019): Employment by economic sector (WZ2008). URL: https://statistik.arbeitsagentur.de/Statistikdaten/Detail/201912/iiia6/beschaeftigung-sozbe-monatsheft-wz/monatsheft-wz-d-0-201912-pdf.pdf?__blob=publicationFile (Accessed on 9 December 2021).

According to the explanations given above, an alternative source from the coal mining sector states higher employment figures of 20,336. 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 9 December 2021).

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 (2020): Annual report 2019. URL: https://www.salzwerke.de/fileadmin/user_upload/salzwerke/dokumente/downloads/Investor_Relations/Geschaeftsberichte/Geschaeftsbericht_2019.pdf (Accessed on 24 November 2021).

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 2019 of 22,620 employees in the category of "gravel, sand and natural stone quarries". URL: https://www.bv-miro.org/service/geschaeftsberichte/ (Accessed on 9 December 2021).

[ii] The figures on the **production volumes** (Chapter 2.b.) were taken from the following publications: The figures for lignite are based on SdK (statistics of the coal industry) (2020), 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 2016' (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 2020 (German Federal Institute for Geosciences and Natural Resources)) 'Germany – Raw materials situation 2019'. 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 2020) 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 2020). 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 2020 (MIRO 2017). 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 131.3 million tonnes, lignite extraction remained at around 21% below the previous year's level. According to the estimate of the BGR, this corresponds to a value of EUR1,853 million.

Crude oil
German crude oil production in 2019 was approximately 1.9 million tonnes. As in the case of hard coal, the BGR again used the average 2019 cross-border prices as a basis for estimating the value of crude oil production at EUR823 million.

Natural gas
2019 saw 6.7 billion m^3 of natural gas (incl. petroleum gas) extracted from sites in nine German Federal States. As in the case of crude oil, the BGR again used the average 2019 cross-border prices as a basis for estimating the value of natural gas production at EUR1,013 million.

Potash salt
Two companies in Germany extract potash salt and magnesium salt. The usable extracted output in 2019 amounted to 5.7 million tonnes in the form of potash and potash salt products (BGR 2020). The BGR calculated that the total quantity of these products has a value of roughly EUR1,655 million.

Clay
Around 14.5 million tonnes of usable clay (fine and coarse ceramic clay) was extracted in Germany in 2019. 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 EUR142 million.

Rock salt, industrial brine and boiled salt
In 2019, 15.6 million tonnes of rock salt and industrial brine (NaCl content) were extracted in Germany. The BGR calculated the value of that quantity to be EUR387 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, 1.0 million tonnes of raw kaolin worth EUR65 million was mined from raw kaolin earth in 2019.

Quartz gravel and sand
In 2019, 10.9 million tonnes of quartz gravel and quartz sands were extracted in 2019, valued at EUR207 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 2020], where they are used in e.g. civil engineering and in the manufacture of concrete. In 2019, 259 million tonnes of gravel and sand were extracted, with a value of EUR1,825 million, as well as 217 million tonnes of broken natural stone with a value of EUR1,621 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 2019, 0.4 million tonnes of this natural resource were extracted, with an estimated value of EUR53 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 EUR812 million were extracted in 2019. Limestone is used in many sectors, including home and road construction and in iron, steel, cement, glass and foodstuffs production.

FURTHER SOURCES:

[AGEB 2020] – Energy Balances (AG Energiebilanzen e.V. (2020): Energy consumption in Germany in 2019 (Energieverbrauch in Deutschland im Jahr 2019) URL: https://ag-energiebilanzen.de/index.php?article_id=29&fileName=ageb_jahresbericht 2019_20200325_dt.pdf (Accessed on 9 December 2021).

[BGR 2020] – Bundesanstalt für Geowissenschaften und Rohstoffe (2020) [Federal Institute for Geosciences and Natural Resources): Germany – Natural Resources Situation 2019. (Deutschland – Rohstoffsituation 2019) URL: https://www.bgr.bund.de/DE/Themen/Min_rohstoffe/Downloads/rohsit-2019.pdf?__blob=publicationFile&v=4 (Accessed on 9 December 2021).

[BGR 2020] – Bundesanstalt für Geowissenschaften und Rohstoffe (2020) [Federal Institute for Geosciences and Natural Resources): BGR energy study 2019 – Data and developments of the German and global energy supply (23). – 200S; Hanover. URL: https://www.bgr.bund.de/DE/Themen/Energie/Downloads/energiestudie_2019.pdf?__blob=publicationFile&v=3 (Accessed on 9 December 2021).

[Destatis] – Statistisches Bundesamt (various years): Survey portal. URL: https://erhebungsportal.estatistik.de/Erhebungsportal sowie (versch. Jg. b): Manufacturing industries. URL: https://www.destatis.de/DE/ZahlenFakten/Wirtschaftsbereiche/IndustrieVerarbeitendesGewerbe/IndustrieVerarbeitendesGewerbe.html (Accessed on 9 December 2021).

[IM 2020] – Industrial Materials (2020): IM Price Database

[LBEG 2020] – Landesamt für Bergbau, Energie und Geologie (2020) (State Office for Mining, Energy and Geology): Crude oil and natural gas in the Federal Republic of Germany 2019 (Erdöl und Erdgas in der Bundesrepublik Deutschland 2019). URL: https://www.lbeg.niedersachsen.de/download/155558/Erdoel_und_Erdgas_in_der_Bundesrepublik_Deutschland_2019.pdf (Accessed on 9 December 2021).

[MIRO 2020] – Bundesverband Mineralische Rohstoffe e.V. (Federal Association of Mineral Resources) (2020) The German Stone Quarrying Industry. (Die deutsche Gesteinsindustrie) – Report of the Management Board 2019/2020. (Bericht der Geschäftsführung 2019/2020) URL: https://www.bv-miro.org/service/geschaeftsberichte/ (Accessed on 9 December 2021).

[SDK 2020] Statistics of coal e.V. (2020) (Statistik der Kohlenwirtschaft e.V. (2020): Statistics from the coal industry. URL: https://kohlenstatistik.de/downloads/ (Accessed on 9 December 2021).

[iii] The data (chapter 5.a.) was taken from current national accounts of the Federal Office of Statistics (as of May 2021). 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); crude oil and natural gas extraction (WZ08-06); ore mining (WZ08-07); Quarried natural resources, other mining products (WZ08-08) and the performance 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 2010–2016, the trade tax statistics of 2010 and 2016 and the statistics on the partnerships and communities from 2010–2012 and 2014–2016 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 2019. 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", page 20 et seq.) (Wichtige Zusammenhänge im Überblick)

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 May 2021). 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-personalstatistiken-pdf.pdf?__blob=publicationFile (Accessed on 9 December 2021).

Corporate tax
Statistical data from the years 2010 to 2016 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 2019 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 2010–2016 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 2019 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.

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. The revenue from the 2019 mine site royalties is only available for three Federal States: Bavaria, Brandenburg, and, Lower Saxony.

[vi] The data (chapter 5.c.) was taken from the Jahresbericht für Betriebe 2019 (Annual Report for Business Operations for 2019) 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" (GP09-05), "crude oil and natural gas" (GP09-06), "ores" (GP09-07) and "quarried natural resources, other mining products" (GP09-08). The data on the exports from 2015 – 2019 was taken from the Genesis Online database by Destatis on 18 May 2021.

[viii] The data on primary energy consumption in 2019 (chapter 8.b.) was taken from the publications of the Working Group on Energy Balances: URL: https://ag-energiebilanzen.de/6-0-Primaerenergieverbrauch.html (Accessed on 15 December 2021).

FURTHER SOURCES:
Working Group on Renewable Energies–Statistics (AGEE-Stat) (2018): Renewable Energies in Germany 2019 (Erneuerbare Energien in Deutschland 2019). Centre for Solar Energy and Hydrogen Research Baden-Wuerttemberg and Federal Environment Agency. URL: https://www.umweltbundesamt.de/publikationen/erneuerbare-energien-in-deutschland-2019 (accessed on 9 December 2021).

BMWi (Federal Ministry for Economic Affairs and Energy) (2020): Renewable energies in figures, national and international development in 2019. URL: https://www.bmwi.de/Redaktion/DE/Publikationen/Energie/erneuerbare-energien-in-zahlen-2019.html (accessed on 9 December 2021).