

Business report

General conditions

Macroeconomic trends

Economies

Following a severe global recession caused by the impact of the coronavirus pandemic in 2020, there was a strong recovery in 2021. Due to falling rates of infection, especially in the spring and summer of 2021, many countries were able to ease restrictions on economic and social life, which led to a growth in demand. However, the economic recovery differed greatly from country to country and from sector to sector. The economic recovery was also accompanied by interruptions to international supply chains, a sharp increase in the prices of crude oil, energy and raw materials, and a general increase in inflationary pressure.

The Omicron variant of the COVID-19 virus spread across the world at the end of 2021. The pandemic will continue to have an impact on economic growth in 2022 and economic projections are subject to considerable uncertainty. Global economic growth is likely to weaken again in 2022, however individual countries such as Germany or the Czech Republic could deviate from this economic trend. The macroeconomic trends are not expected to have either a particularly positive or negative influence on our business performance in 2022.

Development of gross domestic product (GDP)

in %	2022	2021 ¹	2020 ¹
World	4.4	5.9	-3.1
Eurozone	3.9	5.2	-6.4
Germany	3.8	2.7	-4.6
France	3.5	6.7	-8.0
United Kingdom	4.7	7.2	-9.4
Sweden	3.4	4.0	-2.8
Switzerland	3.0	3.7	-2.5
Czech Republic	4.5	3.8	-5.8
Turkey	3.3	9.0	1.8

¹ The figures for the previous year have been restated.

Development of interest rates

In 2021, the central banks and countries used monetary and fiscal policy measures to an extent that was unprecedented historically. The global economy continued to recover despite high infection rates, new COVID-19 mutations, lockdowns and the resulting problems with supply chains. During the course of the year, rising inflation rates especially in the fourth quarter became a dominant theme on the capital markets, as consumer price inflation in Europe and the USA hit multi-year highs. In this environment, yields on German government bonds rose, for example, 30-year maturities touched 0.5%.

Against this background, the actuarial interest rate, which is used to discount the pension provisions, also increased from 0.75% to 1.15% during the course of 2021. Following years of falling interest rates, this development led to a reduction in the present value of the provisions for the first time. The discount rate for nuclear provisions stood at 0.01% (previous year: 0.00%)

The consensus forecast for the ECB interest rate on the main refinancing operations remains unchanged for 2022 at 0.00%.

Development of the sector and competitive situation

The energy sector is currently experiencing a period of great upheaval. There is particular pressure for change due to the Energiewende. However, digitalization, sector coupling [?] and the desire of local authorities to become self-sufficient are also having a strong influence on the sector.

A significant factor is that the energy sector is highly regulated, which means that political policies strongly influence developments. Traditional energy companies need to re-examine their competitiveness in individual business areas, exploit the potential offered by a changed market environment and align their strategies for the future.

Selection of international, national, regional and new competitors

Established competitors		New competitors			
National and international	Regional	Commodity suppliers, solution suppliers, start-ups	Renewable energies	E-mobility, telecommunications and broadband	Financial investors
ALPIQ, EDF, EDPR, Enel, Engie, E.ON, Equinor, EVN, Fortum, Iberdrola, Ørsted, RWE, Uniper, Vattenfall, Verbund	Badenova, Entega, EWE, Mainova, MVV, NERGIE, SWM, Thüga	Lichtblick, NEXT Kraftwerke, Octopus Energy, ostrom, Sonnen, Thermondo	BayWa r.e., bp, Encavis, ENERTRAG, PNE Wind, Shell, theolia, Total Energies, wpd	1&1, Allego, Aral, Deutsche Glasfaser, Deutsche Telekom, Ecotel, Fastned, Google, Ionity, Shell, Tesla, VW	KGAL, Talanx

EnBW position:

- Further development from an integrated energy supplier to a sustainable and innovative infrastructure partner
- Focus on growth in renewable energies, grids and customer solutions (especially e-mobility, telecommunications and broadband)
- Active in Baden-Württemberg, Germany and selected foreign markets

Challenges:

- Increasing competition due to entry of new market participants in the core business
- New competition due to market entry of EnBW in new business fields
- Optimal positioning with respect to the regulatory environment and highly competitive market

Cross-segment framework conditions

Coronavirus pandemic

As in the previous year, the coronavirus pandemic also dominated the political agenda in 2021. Following renewed lockdowns due to high incidence rates at the beginning of the year, it was possible to reduce the seven-day incidence rate to under ten cases per 100,000 inhabitants in June and reopen again thanks to the observance of safety measures, the increasing vaccination rate and seasonal effects. Due to the subsequent stagnation in the vaccination rate and seasonal effects, there was a sharp increase in the seven-day incidence rate to over 450 by the end of the year. This led to the imposition of new restrictions on public, private and economic life. In contrast to other sectors, such as the retail trade, hospitality and the hotel industry, the energy sector was less affected by the new restrictions. Following relatively low electricity consumption levels at the beginning of the year, electricity consumption once again returned to a normal level. At the same time, government aid programs and stimulus measures to combat the threat of an economic crisis were linked at a European and national level with the goal of supporting investment in the green transformation of the economy and of accelerating structural change. One example is the “environmental bonus” offered by the German government for the purchase of electric cars and plug-in hybrids.

Climate protection

The decision issued by the German Federal Constitutional Court (BVG) on climate change on 24 March 2021 meant that climate protection was once again pushed to the top of the political agenda, with politicians now under even greater pressure to take action. The court found that the annual emission levels allowed until 2030 are incompatible with fundamental rights insofar as they lack sufficient specifications for further emission reductions from 2031 onwards. To prevent any unfair burden being placed on future generations in violation of the German constitution, additional reductions will be required by 2030 on top of the existing climate budget. We announced at an early stage that we actively support the Paris Agreement and defined a residual emissions budget together with a reduction path that conforms to the Paris Agreement according to the definition published by the German Advisory Council on the Environment. In response to public pressure following the decision issued by the BVG, the German government has quickly announced a revision of the Federal Climate Change Act, which was agreed in parliament before the summer break. The revised act tightens the national reduction target for 2030 to –65%, sets a new reduction target of –88% for 2040 and pulls forward the target for net greenhouse gas neutrality to 2045. The aim is to achieve negative emissions

by 2050. The stricter target for 2030 will require a corresponding tightening of the annual allowable residual sector emissions up to 2030. The targets for the energy industry sector have been tightened by the greatest amount: the energy industry must now reduce its CO₂eq emissions based on the reference year of 1990 by 77% (previously: 62%). The fact that the energy industry would have to deliver by far the highest reductions up to 2030 was to be expected as it has lower CO₂ avoidance costs. This will generate huge challenges, but also opportunities, for the energy sector and EnBW. In particular, there is the phaseout of coal power, which will need to be accelerated due to these resolutions and will make a significantly faster expansion of renewable energies necessary. Although the targets have been tightened considerably in some cases, the German government has still not defined emissions budgets as the key metrics in the amendment to the law.

EU Green Deal

Measures were introduced at an EU level to push forward the new ambitions associated with the EU Green Deal [?](#) and the Climate Law 2050. The goal of climate neutrality by 2050 and above all tightening the climate emissions target for 2030 to -55% will make it necessary to amend and in some cases completely revise numerous pieces of legislation. In its initial comprehensive "Fit for 55" [?](#) legislative package, the EU Commission presented extremely ambitious, interlinked proposals in the middle of July 2021, which will now pass through the legislative process that is likely to last beyond the end of 2022.

In particular, the revision of the Emissions Trading Directive and Effort Sharing Regulation, the proposals to introduce comparable trading schemes for transport and heating at an EU level and the revision of the directive to promote renewable energies are of central importance for our company. The revision of the Energy Efficiency Directive, the directive on the deployment of alternative fuel infrastructure, the Energy Taxation Directive and the introduction of a carbon border adjustment mechanism [?](#) are also important to highlight. In our view, the proposed reforms to the Emissions Trading Directive are largely positive. We also broadly support the amendments to the targets and the general principles behind the Renewable Energy Directive. However, we believe that some further adjustments are required, above all, to the criteria for determining whether the production of green hydrogen can be deemed renewable, as well as to the guarantees of origin system and the sustainability requirements for the use of biomass. In our view, it is important overall to set the right targets and ensure the coherency of the proposals.

The gas package presented in the middle of December 2021 that includes the creation of a new regulatory framework for the establishment of a hydrogen market was a crucial step towards a quick and efficient Energiewende. The plan to integrate hydrogen into the existing regulations for the gas market is positive. At the same time, the restrictive approach – such as stricter unbundling rules with respect to the future hydrogen infrastructure – could hinder the successful ramp-up of the hydrogen market. Changes to the funding instruments and capital market rules are also still being discussed, with generally positive signals for the switch to a sustainable economy. We believe that transitional activities also need to be taken into account in this area. The revision of the state aid regulations is a further important building block in developing the future investment framework.

On 22 December 2021, the first delegated act for the climate objectives of the EU taxonomy [?](#) came into force. The EU Taxonomy Regulation creates a framework for the classification of "green" or "sustainable" economic activities in the EU. At the turn of the year, the EU Commission presented its Complementary Climate Delegated Act that includes criteria for electricity and heat generation from natural gas and nuclear energy. According to the proposals, investment in gas power plants and nuclear power plants will be classified as sustainable for a transitional period. We believe that the requirements placed on gas power plants (according to the version of the delegated act of 2 February 2022) are very ambitious, and in some cases too ambitious from a technological and economic perspective to enable a swift transition to a hydrogen economy. Gas and nuclear activities will not be taken into account in this year's report.

Further information on the implementation of the EU Taxonomy Regulation in the EnBW Group can be found on [p. 110 ff.](#)⁷. Full information on the taxonomy-eligible and taxonomy-aligned figures according to Annex II of the delegated act for the EU taxonomy can be found on [p. 146](#)⁷.

Further information on our **experiences with applying the EU sustainable finance taxonomy** can be found [here](#).

[Online](#) [↗](#)

Germany's parliamentary election

The election for the 20th German parliament was held on 26 September 2021. The subsequent coalition negotiations between the so-called traffic light parties (SPD, Greens and FDP) ended on 24 November 2021. The resulting coalition agreement includes a number of reforms with one of its focal points being climate protection. In this context, the phaseout of coal-fired generation will be accelerated and will "ideally" be completed by 2030. The previous target for the phaseout of coal was 2038. The coalition government also remains committed to the phaseout of nuclear power as expected. The government plans to introduce an emergency climate protection program from 2022 and every legislative proposal will be subject to a "climate check" to examine whether it conforms to the climate goals. The installation of rooftop solar power will become mandatory on new commercial buildings and photovoltaics should also be installed "as a general rule" on new private buildings. At the same time, the German states should allocate 2% of their land area to the generation of wind energy. Finally, funding of the EEG cost allocations via electricity prices will cease from 2023 to ease the burden on private households and businesses, and EEG funding will be ended once the coal phaseout is complete. In addition, the government has acknowledged the need to construct hydrogen-ready gas power plants. This means that the momentum generated by the new German government could thus have a positive boost on the future activities of EnBW.

Smart Infrastructure for Customers segment

Electricity and gas prices for retail and industrial customers

According to an analysis of electricity prices by the German Association of Energy and Water Industries (BDEW) published in January 2022, the average monthly electricity bill for a household with an annual consumption of 3,500 kWh in 2021 came to €93.80 compared to €92.78 in the previous year. Taxes and levies account for more than half of this amount. EnBW lowered the price for the basic supply of electricity by around €18 per year on 1 April 2021. This was due to a decrease in costs, both for the procurement of electricity and also for cost allocations, which was offset to some extent by the increase in network user charges. For industrial customers receiving a medium-voltage supply, the average electricity price including electricity taxes increased according to calculations made by BDEW by more than 20%, from 17.76 ct/kWh in the previous year to 21.38 ct/kWh in 2021.

According to calculations by the German Federal Statistical Office, natural gas prices for private households in 2021 were 12% higher than the prices in the previous year. As of December 2021, gas prices for industry had increased by 235% in comparison to the previous year; the average price for the year also more than doubled in 2021.

Average electricity price for a 3-person household¹

in ct/kWh	2021	2020
Grid fees ²	7.80	7.75
EEG cost allocations	6.50	6.76
Procurement, sales	7.93	7.51
VAT	5.13	5.03
Electricity tax	2.05	2.05
Concession fees	1.66	1.66
Other allocations	1.09	1.05
Total	32.16	31.81

¹ Annual consumption of 3,500 kWh.

² Including metering and metering station operation.

Source: BDEW | As of January 2022.

+1.1%

increase in **electricity costs** for a household with an annual consumption of 3,500 kWh in comparison to the previous year.

Structural changes

Following relatively low **electricity consumption levels** at the beginning of the year – due to renewed restrictions caused by the coronavirus pandemic – electricity consumption rose to higher than the level in the previous year between March and September (increase of up to 12.3%). Despite the broader restrictions that were reimposed at the end of the year, electricity consumption in the fourth quarter was once again slightly above the level in 2020.

The high wholesale market prices for electricity and gas placed smaller suppliers, in particular, under pressure. Consequently, some companies canceled their supply contracts with their customers or were forced to declare themselves insolvent. As a result of our long-term procurement strategy, we were less affected by the rising prices and were able to demonstrate our reliability, also guaranteeing that those customers in our **basic supply area** who had lost their suppliers were still supplied with energy as usual.

Despite the coronavirus pandemic, the **home electricity storage market** already grew by 63% in 2020 compared to the previous year. Further growth was also seen in 2021. In the first half of 2021, around 73,000 battery systems were installed in privately owned homes, which was an increase of 59% in comparison to the same period of the previous year. Due to the supply difficulties caused by the coronavirus pandemic, EUPD Research estimates that a total of 135,000 new home storage systems were installed in 2021. Around 15% of the storage systems installed were retrofitted to existing PV systems. Via our subsidiary SENEK, we are one of the leading providers of home photovoltaics storage systems and are thus participating in this growth.

There was even stronger dynamism in the **new registration of electric vehicles**. According to the Federal Motor Transport Authority, around 267,000 electric cars were registered between January and October 2021, which was approximately 120% more battery electric vehicles than in the same period of the previous year. The share of the total number of new registrations accounted for by purely electric vehicles increased to 12%. A similarly high proportion of the overall market was accounted for by plug-in hybrid vehicles. There were around 265,000 newly registered hybrid vehicles, which was an increase of 103%. These growth rates were mainly due to the higher environmental bonus for car purchases that has been available over the last year and the wider selection of electric vehicle models. This growth will also be supported by the target of 15 million electric cars by 2030 that is defined in the coalition agreement concluded by the German government. To ensure there is sufficient charging infrastructure to handle this growth, EnBW mobility+ already operates the largest quick-charging network in Germany, is investing in further expansion, and also makes it possible for drivers to charge their vehicles across large areas of Europe using the mobility+ app.

The coronavirus pandemic has increased awareness for the huge importance the Internet has for the economy and for social life. However, a comprehensive expansion of the **broadband infrastructure** ⁸ is currently not economically viable in many regions. For this reason, the subsidies that had so far only been available to fund “white areas” (bandwidth \leq 30 Mbit/s) have been expanded: Funding will now also focus on “gray areas” in the future. This means that funding will be provided between 2021 and 2023 for areas with a bandwidth of \leq 100 Mbit/s (download) and from 1 January 2023 for areas with a bandwidth \leq 200 Mbit/s (symmetrical), and thus effectively for all private customer connections that are not gigabit-ready. Alongside the existing funding programs from the federal and state governments, additional funds totaling €12 billion will be made available in future for the expansion of the fiber-optic infrastructure. In order to benefit from this transformation to a gigabit-ready infrastructure, Plusnet is now participating in the expansion of broadband across Germany. NetCom BW will continue to focus on Baden-Württemberg.

System Critical Infrastructure segment

The consultation process for the second draft of the **Network Development Plan (NDP) Electricity 2021–2035** ⁹ was concluded by the four transmission grid operators in October and NDP 2035 was confirmed and finalized by the Federal Network Agency in January 2022. The expected increase in net electricity consumption in Germany of between 15% and 25% in the scenarios will be driven by the progressive electrification of the industrial, heating and transport sectors. The phaseout of nuclear power and the planned phaseout of coal-fired generation will require the doubling of the installed output of renewable energies, mainly through the expansion of wind energy and PV, to between 233 and 261 GW. To also guarantee the stability of a system in 2035 in which between 70% and 74% of the gross electricity consumption will be accounted for by renewable energies, it will be necessary to expand the output of gas power plants by up to 17 GW. These power plants must then be operated with climate-neutral gases in the future.

Our transmission grid operator TransnetBW is participating in two major projects to push forward the development of high-voltage DC transmission lines ¹⁰ to transport wind energy in the future from the north of Germany to the centers of consumption in the south. The plans and documentation for planning permission for the most southern section of the **ULTRANET** project between North Rhine-Westphalia and Philippsburg were submitted in October 2021. In the **SuedLink** project, two high-voltage DC transmission lines from Schleswig-Holstein to Bavaria and Baden-Württemberg are being realized in cooperation with TenneT. In September 2021, the Federal Network Agency defined the scope of the planning approval procedures for all sections of the power line. Following on from this, the transmission system operators are developing the specific plans for the routes of the transmission lines. Besides the major north-south transmission lines, in which EnBW is already involved via TransnetBW, new gas power plants will also be required, particularly in the south of Germany.

The German gas transmission system operators (FNB) started the consultation process for the framework scenario for the **Network Development Plan (NDP) Gas 2022–2032** ¹¹ at the end of June 2021. Alongside examining how the demand for natural gas will develop, the plan will also consider the integration of climate-neutral gases into the gas infrastructure. In the last version of the NDP Gas 2020–2030, the FNB already demonstrated how a hydrogen infrastructure could be developed using the existing natural gas grid in Germany. The newly proposed scenarios cover a development in total growth by 2032 of between +9% and –14% in comparison to the reference year 2019 with 913 TWh.

Demand for hydrogen of up to 92 TWh is expected by 2032 and could thus account for almost 10% of the total demand. Against the background of the already high utilization of the high-pressure gas grid in Baden-Württemberg, a design variant for Baden-Württemberg has also been included in the framework scenario. The growth in the connected distribution grids will lead to an expected increase in gas capacities for our transmission system operator terranets bw of around 10% over a period of ten years.

In October 2021, the Federal Network Agency made a decision on the future **rate of return on equity for grid investments**. The interest rate for new plants in the gas grid from 2023 and in the electricity grid from 2024 will be reduced from the current rate of 6.91% to 5.07% before taxes, subject to the legal challenges initiated by numerous network operators. In order to continue to operate profitably under these conditions, our grid companies will rely on improvements in efficiency through the implementation of digitalization measures. One example is the field test being carried out in the flexQgrid research project, which started in August under the leadership of Netze BW. This project is investigating how electric vehicles and heat pumps – that are gaining more and more relevance as connected devices – can be aligned with the decentralized, renewable generation that will make up the energy world of tomorrow to ensure the optimal use of existing grid capacities.

Sustainable Generation Infrastructure segment

Installed net output for electricity generation from renewable energies in Germany¹

in GW	2021	2020	2019	2018	2017
Solar	58.98	54.07	49.10	45.31	42.29
Onshore wind	56.27	54.84	53.19	52.45	50.17
Biomass	9.41	8.25	8.46	8.11	7.69
Offshore wind	7.77	7.74	7.53	6.40	5.41
Hydropower ²	5.50	5.50	5.50	5.50	5.50
Gas	31.68	30.50	30.07	30.13	29.76
Hard coal	19.91	23.71	22.67	23.82	24.04
Brown coal	19.96	20.25	20.90	20.90	21.11
Nuclear power	8.11	8.11	9.52	9.52	10.80
Oil	4.68	4.38	4.38	4.38	4.42
Total	222.27	217.35	211.32	206.52	201.19

¹ The figures for the previous year have been restated.

² Correction to the value for hydropower from 4.86 GW to 5.50 GW by EnBW. Source: Fraunhofer ISE (www.energy-charts.de). | As of 31/01/2022.

Renewable Energies

Germany

The proportion of total electricity generation accounted for by renewable energies fell slightly in 2021 to around 43% in comparison to the level in the previous year (45.4%), which was primarily due to poorer wind conditions compared to the previous year.

Onshore wind

In 2021, new onshore wind farms with a total capacity of around 1.7 GW were placed into operation in Germany. In the auctions, the available capacities were only covered by bids for the first time from September, after the first two rounds of auctions were significantly undersubscribed. The German government agreed in 2022 to increase the capacities available in the auctions by 1.1 GW to 4 GW per year.

Offshore wind

There were no new offshore wind farms placed into operation in Germany in 2021. In the first auction for capacities in the so-called “transition model” in September, 958 MW of capacity was awarded and all of the successful bids did not require state funding. In the coalition agreement, the new German government agreed a significant increase in the offshore expansion targets to 30 GW by 2030, 40 GW by 2035 and 70 GW by 2045. This strengthens our belief that offshore wind energy with its huge generation potential will play an important role in the achievement of the climate targets.

Photovoltaics

Photovoltaic power plants with a total output of around 4.9 GW were placed into operation in Germany in 2021. In the five rounds of auctions held during the year, bids for projects with a total capacity of 1.9 GW were accepted, whereby all of the rounds were significantly oversubscribed.

The German government increased its expansion target for 2030 to 200 GW in the coalition agreement. It intends to make significant improvements to the conditions for approvals and the terms of the auctions. The coalition agreement also explicitly includes an obligation for the installation of rooftop solar systems on commercial buildings for the first time.

France

We develop and realize wind energy and PV projects on the French market through our subsidiary Valeco – a project developer and operator in the renewable energies sector. We expect continued dynamic growth in France, in both the wind power and photovoltaic sectors, despite the fact that the development time for new wind projects is also increasing in France. The framework conditions in France guarantee continued and reliable funding for renewable energies.

Great Britain

An auction for offshore wind rights was held by the Crown Estate at the turn of the year 2020/2021 in Great Britain. We had our bid for two sites with a total potential capacity of 3 GW – which was submitted together with our project partner bp – accepted in this auction and this project is currently in the development and approval process. In July 2021, EnBW and bp submitted a joint bid for a site in the Scottish North Sea. In January 2022, the equal partners had a bid accepted by the Crown Estate Scotland to develop a 2.9 GW offshore wind farm off the east coast of Scotland.

Sweden

The Swedish market offers favorable conditions and an increasingly competitive environment for renewable energies. In particular, the further expansion of onshore wind plays an important role on the Swedish generation market. Photovoltaics are also becoming a more attractive proposition, especially in Southern Sweden. We have been continuously expanding our wind power portfolio in Sweden over the last year by entering into partnerships in the project development phase.

Turkey

The new funding mechanism for renewable energies came into force on 1 July 2021 and will be valid until the end of 2025. Feed-in remuneration for new projects will no longer be calculated in US dollars, as previously, but rather directly in Turkish Lira. This change will have no impact on the earnings from our existing projects. Turkey continues to have great untapped potential with respect to renewable energies, primarily in the areas of onshore wind and photovoltaics. We still believe that the Turkish market is an attractive proposition for the future, although we are monitoring the current political and economic developments in Turkey very closely.

Conventional generation: market and fuel prices

Development of prices for electricity (EPEX), base load product

in €/MWh	Average 2021	Average 2020
Spot	96.84	30.47
Rolling front year price	89.14	40.20

Development of prices for natural gas on the TTF (Dutch wholesale market)

in €/MWh	Average 2021	Average 2020
Spot	46.87	9.41
Rolling front year price	33.60	13.49

Development of prices on the oil markets

in US\$/bbl	Average 2021	Average 2020
Crude oil (Brent) front month (daily quotes)	70.95	43.21
Crude oil (Brent), rolling front year price (daily quotes)	66.58	45.88

Development of prices on the coal markets

in US\$/t	Average 2021	Average 2020
Coal – API #2 rolling front year price	95.07	57.98
Coal – API #2 spot market price	122.24	50.40

Electricity wholesale market

In 2021, the average spot market price [?] of around €97/MWh was more than €66/MWh higher than in the previous year. The average price on the forward market [?] was also significantly higher than the average price in the previous year. This increase in prices was mainly due to higher prices for gas, coal and CO₂ allowances. In addition, coal power plants were deployed to a much greater extent than normal due to, among other things, lower levels of renewable generation. The future development of electricity prices will depend on the development of fuel and CO₂ prices and trends in the electricity generation mix. As well as the future development of energy and climate policies, the way the war between Russia and Ukraine develops and the sanctions imposed on Russia will have a significant effect on the electricity market.

Gas market

Prices in 2021 were considerably higher than the prices in the previous year, increasing sharply especially from March 2021. The reasons for this were the colder winter 2020/2021 in parts of North Asia and the resulting increase in demand for LNG [?], as well as the significantly colder months of April and May in Europe, which led to further withdrawals from the gas storage facilities. Furthermore, there was more maintenance work in Norway and Great Britain, unexpected demand for gas from the power plant sector from the middle of the year onwards to compensate for below-average energy production from wind power plants and increased demand for gas in China due to the economic recovery in the country. Gazprom – the Russian natural gas supplier – largely suspended any additional supplies to Europe in the summer. Russian exports via Poland also fell significantly from the end of July. Damage to a pipeline and a fire at a Siberian gas plant were the reasons given for this development. The long-term bookings for the transport of gas via Poland by Gazprom expired at the end of September. This meant that significantly lower volumes were booked and transported between October and December in comparison to the previous year.

The fill levels at the gas storage facilities in Europe were below the average level in the previous years. When storage levels are low, every cold spell or another shortage in supply could result in significant price increases. It is uncertain how the natural gas market will develop in the future. If further sanctions are imposed on Russia in response to their hostilities in the Ukraine, there is some uncertainty as to the volumes of natural gas that Russian suppliers will be able to deliver or that can be sourced from them. As a result of the suspension of the approval process for Nord Stream 2, there is no expectation that the supply difficulties will ease in the foreseeable future.

Oil market

In 2021, oil prices were significantly higher than in the previous year, rising continuously during the course of the year. From June onwards, prices exceeded pre-coronavirus levels at the beginning of 2020. The main driver of this rise in prices was restrictive production management by the OPEC+ group combined with a growing recovery in the global demand for oil. Following the presidential elections in Iran, any hopes of a quick increase in Iranian oil exports after a revival of the Iran nuclear deal proved to be premature. As a result of the factors mentioned above, the global oil market was persistently undersupplied in 2021. This led to a sharp fall in the global stocks of oil. Despite demands from large oil importers including the USA and India, OPEC+ did not increase their oil production sufficiently from month to month even in the fourth quarter of 2021. The oil market is also subject to a degree of uncertainty due to the geopolitical crisis triggered by Russia.

Coal market

Coal prices generally experienced sideways movement up to the end of March 2021. Prices then started to increase and this upward trend accelerated sharply through August and September before coal prices hit a high at the beginning of October. New all-time highs were seen on the spot and forward markets. Higher gas and LNG [?] prices led to higher demand for coal in the electricity generation sector because coal-fired generation became more attractive economically than gas generation. This was accompanied by a sharp increase in the demand for coal imports in China. Due to various different factors, domestic coal production in China was not able to keep pace with the dynamic growth in demand. This increase in international demand was met on the supply side by production issues in almost all important coal export countries. The result was a bidding war for the available quantities of coal. It was only after a significant decrease in gas prices, followed by a huge political intervention by the Chinese government in its domestic coal market, that coal prices

began to noticeably fall again from October onwards. In the near future, the coal market will be influenced – in the same way as the other raw materials markets – by the uncertainty caused by the war between Russia and Ukraine.

CO₂ allowances [?]

In 2021, prices rose continuously to more than €70/t CO₂ and were significantly higher than those in the previous year. This market trend was caused by higher emissions from the increased use of fossil fuels for the generation of electricity, higher fuel switch [?] costs and the recovery of industrial production. Demand for EUA certificates [?] was also strengthened by speculation that EUA prices will increase further in the medium to long term due to shortfalls from 2022 to 2024 and tighter climate targets for 2030. As a result of the further reductions in supply imposed by the market stability reserve (MSR) [?] and the tightening of the climate targets for 2030, further price increases are expected. The fourth trading phase of the EU Emissions Trading System (EU ETS) started on 1 January 2021 and the use of CERs (Certified Emission Reductions) [?] is no longer permitted. It was still possible to exchange CERs for EUA certificates up to 30 April 2021.

Development of prices for emission allowances/daily quotes

in €/t CO ₂	Average 2021	Average 2020
EUA – rolling front year price	52.76	24.46
CER – rolling front year price	n/a	0.26

Nuclear power

Germany has decided to phase out nuclear power by 2022. The current coalition agreement also reaffirms this decision. We responded to this decision at an early stage with a comprehensive dismantling strategy that is being rigorously implemented by our subsidiary EnBW Kernkraft (EnKK). EnKK is the licensed operator of our five nuclear power plants and is also responsible for their dismantling. The dismantling work has been underway in Obrigheim since 2008, at the blocks Neckarwestheim I and Philippsburg 1 since 2017 and at Philippsburg 2 since 2020. We are still permitted to generate electricity at the fifth power plant – Block II in Neckarwestheim – until the end of 2022 at the latest. EnKK has also already applied for approval to dismantle this power plant so that the work can be started as soon as possible after it is finally shut down.

The government is responsible for the construction of the final storage site for radioactive waste and this lies outside of the control of the operators of the nuclear power plants. However, the power plant operators – including EnBW – have made a significant financial contribution towards these final storage facilities and paid around €24 billion into the state “fund for the financing of nuclear waste management” from their nuclear provisions.