Environment

In the area of the environment, Vossloh identified five topics as relevant in 2024 as part of the double materiality analysis (see page 71 et seqq.):
– Climate change mitigation (by reducing CO_2e emissions)
– Energy
– Water
– Resource outflows related to products and services
– Waste

The company has a group-wide sustainability guideline and an EcoDesign guideline that cover various ecological aspects. However, a detailed analysis has shown that there are still no specific guidelines in the areas of environment, water management and waste management. To close these gaps and ensure a comprehensive approach in these areas, the company plans to develop and implement corresponding guidelines by 2025.

The main impacts, risks and opportunities are presented in more detail below. The group-wide sustainability target defined in this area since 2021 is:
– Climate neutrality in own business operations by 2030 (Scope 1 and Scope 2)

The following table summarizes the most important measures taken in 2024 to achieve this goal:

Measures	Description
Budgeting and tracking CO_2 reduction against the 2030 climate neutrality target (Scope 1 and Scope 2)	Budgeting of CO_2 emissions to ensure alignment with the goal of climate neutrality by 2030 and quarterly review of CO_2e-reduction performance of the business units against the target with the Executive Board of the Vossloh Group.
Switch to purchasing electricity from renewable energies	75 % of the electricity purchased for all units worldwide comes from renewable energy sources (since 2024 and ongoing).
Solar park in India	Solar park that covers 50 % of the electricity consumption of the Indian foundry for manganese crossings and reduces Scope 2 emissions by 50 % (since 2024 and ongoing).
Solar park in Poland	Construction of a solar park in cooperation with an energy specialist, which covers half of the electricity requirements of the turnout plant in Poland and is expected to avoid 2,000 metric tons of CO_2e annually (since 2024 and ongoing).
Solar panels on the roofs of Vossloh plants in China, Germany, Sweden, the Netherlands, Malaysia, Mexico and Serbia	Installation of solar cells on the roofs of Vossloh plants in China, Germany, Sweden, the Netherlands, Malaysia, Mexico and Serbia (since 2024 and ongoing).
Measurement of Scope 3	Measurement of the Vossloh Group's Scope 3 emissions. With the exception of category 14 (Franchise), which is not relevant for Vossloh, all other categories of the GHG Protocol are applicable.

Climate change mitigation (by reducing CO_2e emissions)

On this topic, the materiality analysis revealed:
– the following significant negative impacts: Greenhouse gas emissions from direct emissions in the production process and upstream supply chains (Scope 3.1) that contribute to global warming without effective decarbonization measures;
– the following significant positive impacts: Promotion of climate change adaptation by enabling sustainable rail mobility, which could potentially lead to lower emissions from private transport;
– the following significant risk: Stricter regulations to reduce greenhouse gas emissions could lead to potential cost increases due to the adaptation of production facilities, including investments in low-emission technologies and possible penalties for non-compliance (transition risk);
– no significant opportunities for the company.

The process for identifying material impacts, risks and opportunities (ESRS 2 IRO-1) is described in the section entitled Material sustainability matters at Vossloh (page 71 et seqq.).

Particularly against the backdrop of the ambitious climate change mitigation targets of the Paris Agreement to limit global warming to 1.5 degrees on average, rail as a mode of transport is gaining enormously in importance. Moving greater levels of traffic onto the rail network is a core part of sustainable, environmentally and climate-friendly mobility. Vossloh produces durable products for rail infrastructure and provides services to improve the performance, reliability and service life of the rail infrastructure. The Group is continuously working to reduce the consumption of raw materials and minimize emissions, while at the same time ensuring the efficient use of resources and minimizing environmental impact. The continuous optimization of the use of energy, materials and personnel as well as the constant improvement of processes are an integral part of day-to-day business for business management reasons alone. Vossloh is also focusing on its declared general intention to reduce the environmental footprint of its products and services along the entire value chain (ESRS E5, see page 101 et seq.). This is another way in which the company is meeting national and international climate change mitigation targets. The whole Executive Board discusses current developments in the area of climate change mitigation, particularly with regard to greenhouse gas emissions and energy, with the heads of the business divisions and selected heads of the central departments at quarterly management meetings.

Vossloh aims to achieve climate neutrality in its own business operations (Scope 1 and 2) by 2030. This goal was incorporated into Vossloh's sustainability strategy at an early stage, as the climate risk assessment carried out by the Group's Sustainability Committee – involving all relevant stakeholders – confirmed that the technical levers for implementing climate neutrality in Scope 1 and 2 are progressing rapidly. This enabled Vossloh to start mitigating and adapting to physical and transitory risks associated with climate change at an early stage. This goal also enabled Vossloh to keep pace with developments with customers, markets and environmental requirements. The target of climate neutrality in Scope 1 and 2 by 2030 was approved by both the Sustainability Committee and the Executive Board of Vossloh AG.

Although this goal is not formally based on science, the company believes that the climate neutrality target for its own business activities is a contribution to supporting the goals of the Paris Agreement. The Agreement calls for limiting the global temperature rise to well below 2 degrees, ideally to 1.5 degrees, and requires greenhouse gas neutrality in the second half of the century. The planned climate neutrality in our own business operations (Scope 1 and 2) by 2030 is within this time horizon and helps to reduce the risks of climate change. Vossloh mainly uses the Greenhouse Gas Protocol (GHGP) and the international standard for energy management systems ISO 50001 to measure, report and control emissions, including the setting of targets. The determination of the climate neutrality target for 2030 (Scope 1 and 2) is based on assumptions regarding revenue development, which are based on Vossloh's rolling three-year plan and longer-term linear revenue growth. To achieve the goal of climate neutrality, Vossloh has been intensifying its measures to decarbonize the Group since 2021. Extending the calculation of emissions values to the upstream and downstream value chain in the 2024 financial year is a first step towards contributing to climate change mitigation beyond the defined target in the future.

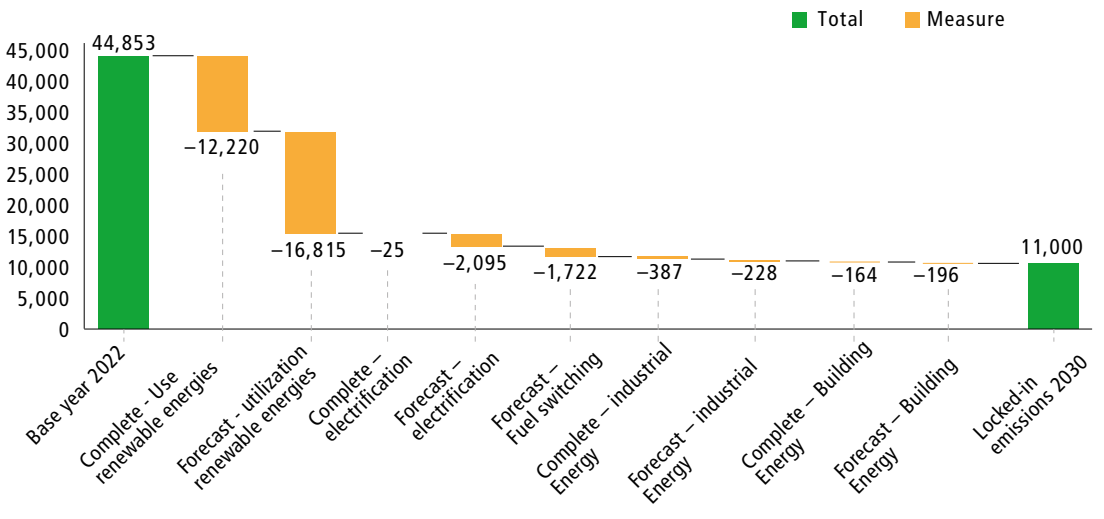
The transition plan for climate change mitigation drawn up in 2024 relates to the Scope 1 and 2 categories. It identifies four decarbonization levers across the Group: Using renewable energies, electrification, switching to less CO_2e-intensive fuels and improving energy efficiency in production. By far the greatest potential for saving CO_2e is the use of renewable energies, especially with the help of purchased green electricity and photovoltaic systems on site. In the Rail Services business unit and, to a lesser extent, in the Tie Technologies business unit, there is also a change in the fuel used. At Vossloh Rail Services, this involves the use of hydrogenated vegetable oils (HVO) instead of diesel for the engines of trains and machines used for maintenance services.

The transition plan for climate change mitigation is part of the budget approved by the Executive and Supervisory Boards for the divisions and Vossloh AG. The budget contains CO_2e intensity targets that are in line with Vossloh's goal of climate neutrality (Scope 1 and 2), as well as measures to achieve these targets. These measures result from the transition plan.

The measures included in the transition plan and budgeted in the company's financial planning to reduce CO_2e emissions for the period from 2025 to 2027 will require capital expenditure (CapEx) of € 8.77 million. A large part of the capital expenditure is attributable to the additional photovoltaic systems planned in the medium term. In addition, operating expenses (OpEx) are planned in the amount of €1.12 million. In 2024, capital expenditure (CapEx) to support Vossloh's 2030 climate neutrality target (Scope 1 and 2) amounted to €1.2 million (see page 24 for the Vossloh Group's total capital expenditure). These investments are relevant for industry 6.14 of the EU taxonomy (see section EU taxonomy on page 108, 6.14. Rail transport infrastructure). In the same year, the Vossloh Group spent €8.4 million (OpEx) on the purchase of electricity and heat from renewable energies (see page 21 for the cost of sales).

With the measures listed in the transition plan, Vossloh plans to save a total of 33,853 metric tons of CO_2e (Scope 1 and 2) by 2030 compared to the base year 2022. 2022 was selected as the base year for determining the reference value. In the selection process, care was taken to ensure that the base year reflected the company's typical activities and that no extraordinary external factors, such as extreme weather events, had a significant influence on the data. To achieve the target, over 86 % of the savings are to be achieved through the use of renewable energies. Progressive electrification accounts for around 6 % and the targeted fuel switch to HVO for a further 5 %. The company currently assumes that the amount of greenhouse gas emissions for which there is no possibility of elimination (locked-in GHG emissions) will amount to 11,000 metric tons of CO_2e in 2030. This takes into account, inter alia, the fact that there are currently no alternative energies available in sufficient quantities and at economic prices for the gas-powered furnaces for the heat treatment of tension clamps in Werdohl. In addition, Vossloh Rail Services' diesel-powered maintenance machines cannot be operated entirely with HVO due to engine limitations. From 2030, the remaining 11,000 metric tons of CO_2e emissions are to be offset annually. At the same time, new technological developments are continuously evaluated to check whether they can contribute to the reduction of locked-in GHG emissions. The aim is not to rely solely on offsetting in the long term, but to achieve an actual reduction in emissions through progressive solutions and therefore reduce the ecological footprint in the long term.

Transition plan



	2022 (base year)	2030 (target)
Greenhouse gas emissions (t CO_2e)	44,853	11,000
Use of renewable energies		**–29,035**
Complete (Scope 1)		–12,220
Forecast		–16,815
Scope 1		–3,203
Scope 2		–13,612
Electrification		**–2,120**
Complete (Scope 1)		–25
Forecast (Scope 1)		–2,095
Fuel switching		**–1,722**
Forecast (Scope 1)		–1,722
Industrial energy efficiency		**–615**
Done		–387
Scope 1		–220
Scope 2		–167
Forecast		–228
Scope 1		–4
Scope 2		–224
Building energy efficiency		**–360**
Done		–164
Scope 1		–104
Scope 2		–60
Forecast		–196
Scope 2		–196

Vossloh's economic activities are covered by the delegated regulations on climate change adaptation or climate change mitigation in accordance with the EU Taxonomy Regulation – see the explanations starting on page 105. Vossloh's sales revenues in the year under review were 100 percent taxonomy-eligible and 67 percent taxonomy-aligned, as the latter measurement essentially only applies to revenues relating to electrified rail lines. Whether and when rail lines will become electrified is not a decision to be made by Vossloh. The company can only react to decisions made by its customers and can therefore neither define targets nor plan capital expenditure for the transition from taxonomy-eligible to taxonomy-aligned activities in the long term.

Since the beginning of 2025, sustainability targets in environmental and climate protection have also been relevant for the remuneration of the Executive Board, after they were taken into account for the first time in the new remuneration system adopted for 2025 (ESRS 2 GOV-3, see page 69).

Environmental and climate protection is an integral part of Vossloh's operational processes. Environmental officers have been appointed at the Group companies' sites and corresponding reporting systems have been implemented. As at the reporting date of December 31, 2024, 79 % (previous year: 84 %) of employees worked for an ISO 14001 certified unit. The proportion of operating companies with corresponding certification was 64 % (previous year: 68 %). The decline is due to the companies acquired in the course of 2024 that have not yet been certified.

With standardized risk analyses that correspond to the hazards influenced by climate change in accordance with Delegated Regulation (EU) 2021/2139, Vossloh has been systematically examining the risks that could result for the company from the physical consequences of climate change, such as the more-frequent occurrence of extreme weather conditions, for the first time since 2024. Starting with the Group headquarters in Werdohl, the company is gradually subjecting all production sites to a risk analysis based on their GPS coordinates in order to assess the probability of natural disasters and their potential impact on the respective site. In the 2024 financial year, the 15 most important sites in the Group were analyzed. For example, the impacts of heat waves on infrastructure and the workforce or the dangers of severe storms and heavy rainfall are taken into consideration.

The risk analyses are based on the Intergovernmental Panel on Climate Change (IPCC). They look at three time periods (the years 2025, 2040, 2060) and three scenarios (limiting global warming to 1.5 degrees according to the Paris Agreement, achieving net zero by 2040, and emissions development without behavioral change). This covers both transitory and physical climate risks. At the same time, the scenarios take into consideration risks from all natural elements, i.e. water (heavy rain, floods, drought), earth (erosion, soil/mud avalanches), air (acute and chronic temperature changes, winds, storms, tornadoes, heat waves) and fire. The data used for the analyses comes from widely recognized national and supra-regional environmental authorities as well as from global meteorological models and seasonal mapping studies by scientific institutions. The CMIP6 data, inter alia, was used as the basis for the climate risks with the greatest influence on our current behavior that can be planned as best as possible. The Coupled Model Intercomparison Project (CMIP) coordinates climate model simulations worldwide as part of the World Climate Research Program (WCRP). The risks considered in 2025 represent acute risks that require immediate action. 2040 was chosen as the date for reaching the median path. 2060 forms the long-term horizon for strategic directions that can be influenced today.

The analyses are evaluated using artificial intelligence. The expert committees at the individual sites compare the gross risks determined in this way with the risk minimization measures already taken there. The results of the resulting resilience analyses are still pending. The first results are expected to be available in the course of 2025. The resulting net risks – taking into account minimizing measures – will be incorporated into strategic investment decisions in future. In addition, site-specific risk analyses and the resulting precautionary measures are to be integrated into the reporting cycle as part of the annual management review in future.

Compared to the physical risks due to the greater impact of global warming, Vossloh considers the transitory risks in the business model to be lower overall. With its products and services, the company supports the shift to a lower-emission transport model, utilizing the broad portfolio of its business units. This focus underlines the resilience of Vossloh's business model to short, medium and long-term climate-related changes. The company expects this positioning to ensure access to funding at an affordable cost of capital as sustainable mobility solutions are increasingly in demand.

In terms of their positive and negative impacts on climate change, greenhouse gas emissions are particularly relevant for Vossloh, measured in the form of CO_2e (CO_2-equivalent) emissions. The fact that the company causes such emissions was assessed negatively in the materiality analysis.
Promoting the transition to environmentally friendly mobility through Vossloh's business model is positive. In general, there is a risk that countries in which Vossloh produces or provides services will tighten the greenhouse gas emissions requirements to be met by companies. This could make it necessary for Vossloh to adapt its production facilities, work processes and equipment accordingly, which would result in financial costs.

The achievement of climate neutrality (Scope 1 and 2) by 2030 is measured using the indicators CO_2e emissions, CO_2e intensity (metric tons of CO_2e/revenue in € million) and energy intensity (energy consumption in MWh/ sales revenues in € million). Energy intensity and CO_2e intensity are the indicators used by Vossloh to measure its progress in terms of energy efficiency and minimizing CO_2e emissions, while also taking the company's growth targets into account.

As part of the group-wide Carbon Neutrality 2030 initiative (Scope 1 and 2), a cross-divisional team led by the Head of Corporate Sustainability with the support of all business units drew up the transition plan described above for reducing energy consumption and CO_2e emissions in 2024. The implementation focused in particular on the most energy-intensive processes and systems and the most CO_2e-intensive energy sources.

At the level of the individual Group companies and sites, packages of measures were budgeted for the years up to 2027 and extrapolated up to 2030, with the help of which climate neutrality (Scope 1 and 2) is to be achieved. This corresponds to an average annual reduction in CO_2e intensity of 11 %, based on the assumption that the total reduction in CO_2e intensity in Scope 1 and 2 over the period from 2022 to 2030 is 100 %, which corresponds to a distribution over nine years. After significant decreases of 15 % (2022) and 19 % (2023), CO_2e intensity was reduced by 10 % in the 2024 financial year. Thanks to the positive development in recent years, the company is still in line with the reduction path to 2030. The most important measures implemented in 2024 related to changing the energy mix and improving energy efficiency. They are explained in more detail under the heading Energy (ESRS E1-5, see page 97). Based on the action plans, Vossloh intends to further reduce direct and indirect CO_2e emissions in relation to Group sales revenues in subsequent years. The main CapEx and OpEx items have already been mentioned in connection with the transition plan described above.

The implementation of the measures in the transition plan to achieve climate neutrality (Scope 1 and 2) in 2030 depends to a large extent on the availability and allocation of resources. Resources are needed, for example, to purchase green and CO_2-free electricity, for which a surcharge is payable in most cases. In addition, capital expenditure is required to install solar panels, insulate buildings or purchase more energy-efficient equipment.

The level of CO_2e and greenhouse gas (GHG) emissions in the Scope 1 and Scope 2 categories was determined by Vossloh, as in previous years, on the basis of the GHG Protocol (Greenhouse Gas Protocol). The quantities of Scope 3 emissions reported for the first time were determined by a specialized team with the help of an external consultancy, also in accordance with the GHG protocol. First, Vossloh's value chain was mapped in detail. This showed that 14 of the 15 categories of the GHG Protocol apply to Vossloh. As Vossloh does not engage in franchising, category 14 was excluded from Scope 3. This was followed by a comprehensive analysis to determine which categories have the greatest impact. To ensure completeness and accuracy, a detailed guideline was drawn up that transposes the requirements of the GHG protocol into the company's existing business processes.

As indicated in the guideline, the annual data for each applicable category was downloaded from internal company databases and converted using the relevant CO_2e emission factors. The resulting CO_2e emissions were then summarized by category and business unit and entered into the company's group-wide reporting system. Business units were instructed to use primary CO_2e emission factors wherever possible. When primary data was unavailable, average values from the Ecoinvent database were applied. If neither was available, spend-based emission factors were used. Due to limited availability of supplier-provided primary data, spend-based CO_2e factors were used in 90% of cases. The remaining 10% relied on either primary data (mainly for business travel and selected purchased goods) or Ecoinvent averages (primarily for category 5 – production waste).

In addition, the company applied system boundary principles to include all relevant activities and harmonized its inventory with the organizational and operational boundaries defined for Scope 1 and Scope 2. Weekly coordination meetings were held to ensure consistency. In addition, two comprehensive reporting test runs were carried out, covering six and nine months of business activity, respectively.

The table below describes the recorded and categorized greenhouse gas emissions of the Vossloh Group, divided into the different emission areas (Scope 1, 2 and 3). The Group does not currently support any projects to reduce greenhouse gas emissions that are financed via CO_2 certificates and does not apply any internal CO_2 pricing systems. The emission factors for Scope 1 emissions were obtained from the Defra database. The emission factors for the location-based Scope 2 emissions were taken from the VDA database and take into account the global warming potential over 100 years (GWP100) and the greenhouse gases CH_4 and N_2O. Market-based Scope 2 emissions use emission factors from energy suppliers or, in their absence, the VDA database. Scope 3 emissions are based on primary data and the Ecoinvent and Carbon Saver databases, whereby GWP100, CH_4 and N_2O are also taken into account.

	Review				Milestones and goals			
Greenhouse gas emissions	Base-year[1]	2023	2024	% 2024 (N)/ 2023 (N-1)	2025	2030	(2050)	Annually % of the target/ base year[4]
Scope 1 GHG emissions								
Gross scope 1 GHG emissions (t CO_2e)	19,319	20,685	21,113	102 %	20,046	11,000	0	104 %
Percentage of Scope 1 GHG emissions from regulated emissions trading systems (%)								
Scope 2 GHG emissions								
Gross location-based Scope 2 GHG emissions (t CO_2e)			35,577					
Gross market-based Scope 2 GHG emissions (t CO_2e)	25,534	21,647	16,802	78 %	11,502	0	0	45 %
Scope 3 GHG emissions								
Total gross indirect GHG emissions (Scope 3) (t CO_2e)[2,3]			1,411,302					
1 Purchased goods and services			1,028,313					
2 Capital goods			33,660					
3 Fuel and energy-related activities			10,877					
4 Upstream transportation and distribution			35,508					
5 Waste generated in operations			21,865					
6 Business travel			8,006					
7 Employee commuting			4,634					
8 Upstream leased assets			150					
9 Downstream transportation			10,908					
10 Processing of sold products			17,358					
11 Use of sold products			111,799					
12 End-of-life treatment of sold products			107,439					
13 Downstream leased assets			4,330					
15 Investments			16,455					
Total GHG emissions								
Total GHG emissions (location-related) (t CO_2e)			1,467,994					
Total GHG emissions (market-based) (t CO_2e)	44,853	42,332	1,449,219					

[1] Base year for Scope 1 and Scope 2 is 2022.

[2] Base year for Scope 3 is 2024.

[3] Scope 3 milestones and targets | 2025 | 2030 | 2050 | and annual percentage target/base year are not applicable as Vossloh measured its Scope 3 emissions for the first time in 2024 and has not yet set a Scope 3 reduction target.

[4] The annual target is 2025.

The interim target for 2025 envisages an increase in Scope 1 emissions of 727 t CO_2e compared to the base year 2022, which corresponds to an increase of 3.8 %. The interim target for 2025 envisages a reduction in Scope 2 emissions of 14,032 t CO_2e compared to the base year, which corresponds to a reduction of 55.0 %. For the sum of Scope 1 and Scope 2 emissions, a reduction of 13,305 t CO_2e is expected in 2025 compared to the base year, which corresponds to a decrease of 29.7 %.

As part of Scope 1, Vossloh used 1,287 liters of hydrogenated vegetable oil in the reporting year, which generated 46 kilograms of biogenic emissions (CH_4 and N_2O only).

The market-based CO_2 emission factors provided by the utilities companies to calculate Scope 2 emissions do not specify the percentages of biogenic CO_2 from biomass, CH_4 and N_2O.
This information is therefore not currently available. The CO_2 emission factors used to record Scope 3 emissions (average and spend-based) do not take into account biogenic CO_2 emissions from the upstream and downstream value chain.

In 2024, 58.8 % of the green electricity used by Vossloh was purchased via bundled contracts.

Energy

On the subject of energy, the materiality analysis revealed:
– the following significant negative impacts: Depletion of limited resources through the consumption of non-renewable energies, particularly fossil fuels, in production processes;
– the following significant positive impacts: Promotion of decarbonization by increasing the use of renewable energies in production in order to achieve Scope 1 and Scope 2 climate neutrality by 2030 and significantly reduce the share of non-renewable energies;
– the following significant risk: An increase in operating expenses due to rising energy prices, therefore impairing competitiveness;
– no significant opportunities for the company.

The process for identifying material impacts, risks and opportunities (ESRS 2 IRO-1) is described in the section entitled Material sustainability matters at Vossloh (page 71 et seqq.).

The type of energy consumed (energy mix) and the efficiency of the energy used are factors that strongly influence the level of greenhouse gas emissions. With regard to Vossloh's goal of climate neutrality in the Scope 1 and Scope 2 categories by 2030, the materiality analysis resulted in a negative assessment because the company uses non-renewable energy from fossil sources in its production processes and therefore contributes to the depletion of finite resources. As decarbonization progresses, the use of energy from renewable sources is increasing. Vossloh is exposed to the risk that energy purchased in the future, regardless of its type, may become more expensive and therefore cause higher costs.

In order to increase the share of renewable energies in total energy consumption, Vossloh is equipping more and more of its factory buildings with photovoltaic systems and is purchasing green electricity at more and more sites. Corresponding activities are part of the transition plan drawn up in 2024, which is explained in detail on pages 91 et seq. Measures to improve efficiency include the use of process heat, the installation of modern, energy-efficient systems and better insulation of buildings. The most important lever for improvement in 2024 remained the use of electricity from renewable sources by expanding the company's own solar power generation. This was particularly evident in our foundry in India and in Poland with two new solar farms and in China with the expansion of the existing solar panel installations on the factories' roofs. In addition, the purchase of electricity from renewable sources was further increased.