

Rusche, Christian; Schaefer, Thilo

Article

Is the EU Fit for 55 and Beyond?

Intereconomics

Suggested Citation: Rusche, Christian; Schaefer, Thilo (2024) : Is the EU Fit for 55 and Beyond?, Intereconomics, ISSN 1613-964X, Sciendo, Warsaw, Vol. 59, Iss. 2, pp. 77-82, <https://doi.org/10.2478/ie-2024-0017>

This Version is available at:

<https://hdl.handle.net/10419/297702>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

Christian Rusche and Thilo Schaefer

Is the EU Fit for 55 and Beyond?

Ursula von der Leyen was elected President of the European Commission by the European Parliament in July 2019. She assumed office in November 2019 and unveiled the European Green Deal in December 2019 (European Commission, 2023a) as a focal point of European politics. The primary objective of the Green Deal is outlined and codified in the European Climate Law, which was published in the *Official Journal of the European Union* and came into effect in July 2021 (Regulation (EU) 2021/1119, 2021). The goals specified in this regulation are binding for both the European Union and its member states. Specifically, greenhouse gas emissions are targeted to decrease by 55% in 2030 compared to 1990 (Article 4(1)). Climate neutrality should be achieved by 2050, with subsequent efforts focusing on negative emissions (Article 2(1)). The EU, under the presidency of von der Leyen, has introduced regulations to compel member states to adopt a highly ambitious climate protection policy.

Against the backdrop of these goals, and given that the upcoming European Parliamentary elections are scheduled to take place between 6 and 9 June 2024 – potentially resulting in a new Commission and Commission President – this article aims to provide an overview of the current status of greenhouse gas emissions in the EU and its member states. To underscore the scale of this effort, the article compares state aid spending related to environmental protection, including energy savings, with the achieved reduction in greenhouse gas emissions thus far. The paper concludes with policy recommendations to enhance the efficiency of future investments and discusses the consequences of a changed constitution of the Parliament after the elections.

© The Author(s) 2024. Open Access: This article is distributed under the terms of the Creative Commons Attribution 4.0 International License (<https://creativecommons.org/licenses/by/4.0/>).

Open Access funding provided by ZBW – Leibniz Information Centre for Economics.

Christian Rusche, German Economic Institute (IW), Cologne, Germany.

Thilo Schaefer, German Economic Institute (IW), Cologne, Germany.

Before delving into the development and current status of greenhouse gases, it must be acknowledged that despite the Green Deal being proposed in 2019, the Commission under Ursula von der Leyen has only taken initial steps. The adoption of the last two proposals of the Fit for 55 package occurred on 9 October 2023. This package introduces regulations to achieve the intermediate goal for 2030 set by the European Climate Law. Consequently, it is still too early to assess whether the Commission under Ursula von der Leyen is on track, considering the recent implementation of these laws.

Nevertheless, this paper contributes to the discussion by highlighting the remaining tasks outlined in the Climate Law and identifying the member states with the highest emissions. Despite the recent adoption of regulations aimed at reducing greenhouse gas emissions, it is questionable whether governments will wait, given that climate change is deemed “the biggest security threat of our times” by the German Federal Foreign Office (2023) or as having the potential to result in a global catastrophe (Kemp et al., 2022). Moreover, the Green Deal is deemed crucial for “creating jobs and boosting innovation,” representing what von der Leyen refers to as “Europe’s man on the moon moment” (Hutchinson, 2019).

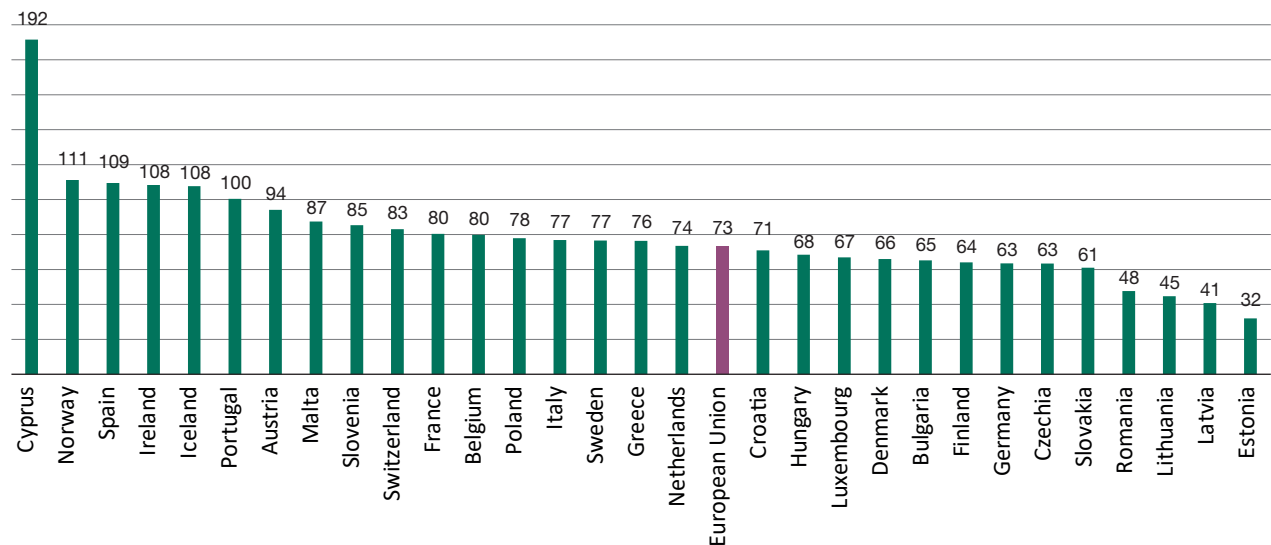
Greenhouse gas emissions

For a comprehensive understanding of greenhouse gas emissions, it is essential to analyse the role of the EU27 countries in global emissions. The Joint Research Centre (JRC) of the European Commission evaluated the emissions by country (Crippa et al., 2020, 11). According to this analysis, the EU27 countries and the United Kingdom were collectively responsible for 8.7% of global CO₂ emissions in 2019, ranking as the third-highest contributors. The largest emissions came from China (30.3%) and the US (13.4%). India follows in the fourth position with a share of 6.8% of CO₂ emissions in 2019, ahead of Russia with a share of 4.7%. The contribution of international aviation was 1.7% in 2019. Furthermore, the JRC concludes that the combined share of global CO₂ emissions from the EU27 and the UK decreased by 1.4 percentage points per year from 2015 to 2019. Consequently, while the EU remains a significant emitter of greenhouse gases, its share and influence on global emissions are diminishing.

Considering the declining share of global emissions, the next step is to analyse the EU’s progress towards the

Figure 1
Greenhouse gas emissions in 2022 compared to 1990 in the EU27, Iceland, Norway and Switzerland

in % of the emissions in 1990



Note: Emissions Database for Global Atmospheric Research (EDGAR) version 8.0 provides estimates for emissions of the three main greenhouse gases (CO₂, CH₄, N₂O) and fluorinated gases.

Source: Authors' calculations based on EDGAR (2023).

goals outlined in the European Climate Law. Data from the Emissions Database for Global Atmospheric Research (EDGAR, 2023a) is utilised for this analysis. The EDGAR dataset results from collaboration between the European Commission, JRC and the International Energy Agency (IEA), and provides comprehensive data on the emissions of three main greenhouse gases (CO₂, CH₄, N₂O) and fluorinated gases from 1970 to 2022. While Eurostat (2023a) also offers greenhouse gas emissions data, it is only available up to 2021 (as of January 2024). The European Environment Agency (EEA, 2023), responsible for collecting data on emissions from member states, publishes various datasets. Due to the longer time series and minimal differences in data, EDGAR is chosen. To illustrate the magnitude of the differences, a brief examination of 2022 data for Germany is informative. According to EDGAR (2023), Germany's greenhouse gas emissions in CO₂ equivalent were 784,004kt. In comparison, data from the EEA (2023) ranges from 743,798kt to 776,449kt.

Based on EDGAR (2023) data, Figure 1 illustrates the significant differences in emissions compared to 1990 among EU member states in 2022. Cyprus, for instance, emits 192% of the emissions recorded in 1990, while Norway, Spain, Ireland and Iceland emit approximately 10% more greenhouse gases than in 1990. Conversely,

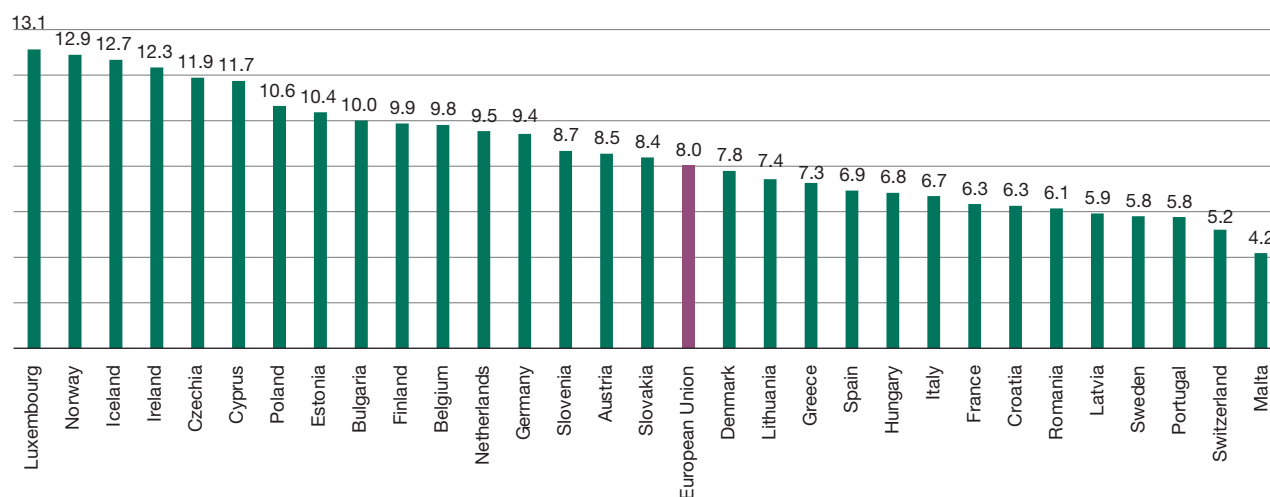
Estonia, Latvia, Lithuania and Romania emit less than 50% of their 1990 levels. The lower emissions shares in former Eastern Bloc countries, compared to those in Western Europe, can be attributed, among other factors, to the decline in industry and the adoption of more efficient technologies following the collapse of the Eastern Bloc – an advantage even reunited Germany benefited from. As of 2022, the EU average of emissions of 1990 is 73%. In the past 32 years, the EU reduced emissions by 27%, averaging less than a one percentage point reduction per year. At this rate, climate neutrality would be achieved around 2090 instead of the targeted 2050. Consequently, increased efforts are necessary. Before discussing past and future actions, an analysis of the country with the highest emissions is essential to identify areas with the greatest potential for emission reduction.

The latest available data in January 2024 from EDGAR (2023) is utilised to assess the emissions of EU member states, Iceland, Norway and Switzerland for 2022 and identify the country with the highest emissions. Germany emerges as the largest emitter in the EU, contributing almost 784,000kt of greenhouse gases in 2022. Following Germany, France emits around 430,000kt, and Poland and Italy each have emissions of around 400,000kt. Spain ranks next, emitting approximately 330,000kt, with

Figure 2

Absolute emissions per capita 2022 in the EU27, Iceland, Norway and Switzerland

in tonnes



Notes: Emissions Database for Global Atmospheric Research (EDGAR) version 8.0 provides estimates for emissions of the three main greenhouse gases (CO₂, CH₄, N₂O) and fluorinated gases.

Source: Authors' calculations based on EDGAR (2023) and Eurostat (2023b).

the Netherlands trailing behind at around 168,000kt. The fact that Germany emits the most is not surprising given its substantial population (around 83.2 million as of 1 January 2022, according to Eurostat, 2023b). However, the noteworthy difference in emissions compared to other populous countries is striking. For instance, France, with a population of almost 67.9 million at the beginning of 2022 (Eurostat, 2023b), emitted only about half of the emissions of Germany.

To account for the varying size of economies, the emissions are normalised by dividing them by the population in the next step (see Figure 2). Luxembourg has the highest emissions per capita in 2022, with around 13t. Following closely are Norway (12.9t) and Iceland (12.7t). The average per capita emissions for the EU stand at around 8t in 2022. Noteworthy are the lowest values found in Malta (4.2t), Switzerland (5.2t) and Portugal (5.8t). Focusing on larger economies with more than 40 million inhabitants, Germany exhibits the highest per capita emissions at 9.4t, surpassing Spain (6.9t), Italy (6.7t) and France (6.3t). Possible explanations for Germany's higher absolute and relatively high per capita emissions include geographic factors, the substantial role of the industry sector, particularly energy-intensive industries (Hüther et al., 2023), and the energy mix employed (European Commission, 2023b).

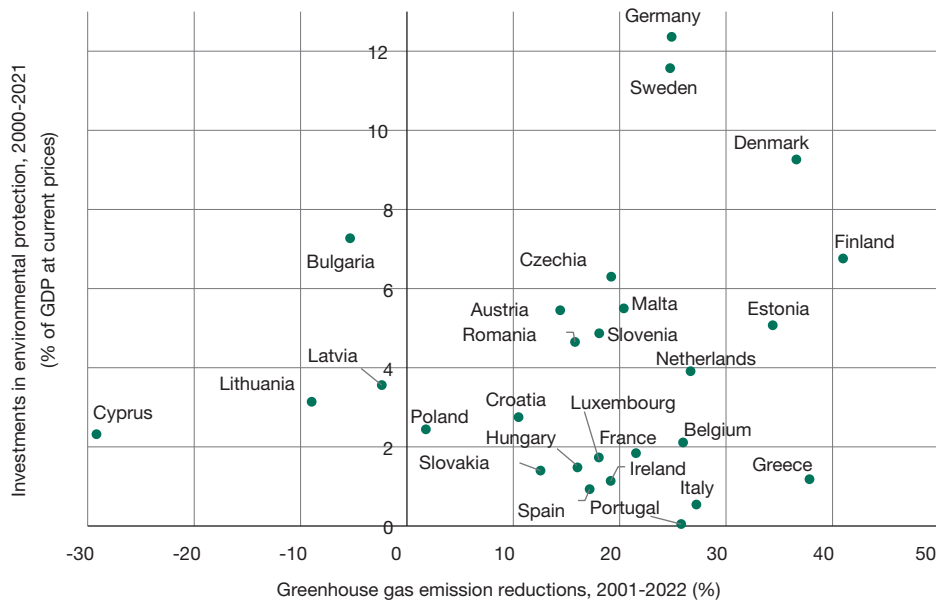
In conclusion, it is evident that the EU must significantly intensify its efforts to meet the targets established in the European Climate Law. Over the past 32 years, the EU has achieved a reduction of approximately 27% in emissions compared to 1990. However, according to the Climate Law, an additional reduction of 28% from 1990 emission levels must be attained by 2030, with an ultimate goal of a 73% reduction by 2050. Concerning member states, the highest absolute potential for greenhouse gas emission reductions is found in larger economies, particularly in Germany, which exhibits both the highest absolute emissions and above-average per capita emissions within the EU. Nevertheless, smaller economies can also contribute to reduction goals by enhancing efficiency, leading to lower per capita emissions. To assess the efforts made by member states, the next section will examine state aid allocated to environmental protection.

State aid

As an indicator of efforts made by EU member states, this section examines expenditures on state aid for environmental protection, including energy savings. Data collected and published by the European Commission (Eurostat, 2023c) is used for this analysis. Generally, Article 107(1) of the Treaty on the Functioning of the European Union prohibits state aid that could adversely affect the single

Figure 3

Investments in environmental protection and greenhouse gas emission reductions in the EU



Notes: Investments by the EU27 member states in environmental protection include energy savings and is the sum of investments of respective years. Calculations of greenhouse gas (GHG) emissions reductions are based on Emissions Database for Global Atmospheric Research (EDGAR) version 8.0, which estimates for emissions of the three main greenhouse gases (CO₂, CH₄, N₂O) and fluorinated gases.

Source: Authors' calculations based on EDGAR (2023) and Eurostat (2023b).

market (see Rusche, 2023b, 17, for an overview). However, some forms are compatible with the single market, and the Commission can permit state aid expenditures by member states. Member states are required to report their expenditures and purposes to the Commission, and this data is published annually (Eurostat, 2023c). As of January 2024, data is available from 2000 to 2021.

Environmental protection, including energy savings, is one of the specified and acceptable purposes, along with other categories such as research and development, regional development, and culture. State aid data is available in absolute euro amounts or as a percentage of GDP in respective years. Figure 3 illustrates the sum of shares of GDP invested by member states in environmental protection, including energy savings, from 2000 to 2021 (vertical axis) and the achieved reduction in greenhouse gas emissions from 2001 to 2022 in percent. Using state aid data from 2000 to 2021 and reduction data from 2001 to 2022 is purposeful, as this combination of data yields the highest correlation (0.18). The combination of state aid data from 2000 to 2021 and reduction data from 2000 to 2022 has a correlation of 0.14, and the reduction data from 2002 to 2022 with the

state aid from 2000 to 2021 yields a correlation of 0.14. Hence, there appears to be a small time lag of one year between expenditures in environmental protection and the reduction of greenhouse gas emissions.

In theory, one would anticipate that if the variables of investments in environmental protection and the reduction in emissions are correlated, countries with the highest investments should also exhibit the highest reductions. Consequently, countries with low investments would correspondingly have low reductions, resulting in a distribution along or near a line from the upper right to the bottom left in Figure 3. However, the observed low correlation and distribution in Figure 3 indicate that this theoretical coherence is not fully reflected in the data. In practice, Germany and Sweden have made the highest investments, approximately 12% of GDP at current prices, yet achieved only moderate reductions of around 25% in emissions. In contrast, Denmark and Finland, despite investing less than Sweden and Germany, achieved better results. On the other hand, countries with low investments, such as Greece, Portugal, Italy and Spain, demonstrate relatively high reductions. The impact of the European debt crisis following

the financial crisis may explain this nexus for these four countries. Bulgaria, with medium investments, has increased its emissions since 2001. Despite these variations among different countries, the expected distribution from the upper right to the bottom left is generally observed. This indicates that, aside from some specific cases, a significant proportion of member states have achieved relatively small reductions since 2000.

Please note that investments in energy savings are likely to lead to lower emissions, but expenditures for environmental protection do not necessarily guarantee a reduction in greenhouse gas emissions. For instance, utilising a forest for timber extraction and establishing renewable energy facilities may result in more significant emissions reductions than preserving the forest, especially if it is a monoculture of spruce. These investments underscore the availability of financial resources. The outlined reductions in the European Climate Law, when compared with the achieved reductions so far, underscore the need for purposeful and efficient spending aimed at reducing emissions. The next section provides policy recommendations for achieving fewer emissions more efficiently.

Policy recommendations

All member states must expedite their efforts to reduce greenhouse gas emissions. While measures with low abatement costs could be prioritised until 2030, it is imperative to implement all possible instruments to achieve net-zero emissions by 2050. Postponing climate protection measures would result in higher costs, as climate mitigation expenses increase when emissions are not reduced. Consequently, all sectors must actively engage in climate action in all member states and beyond. The primary EU instrument for limiting emissions is the EU Emissions Trading System (EU-ETS; European Commission, 2024), which currently covers the energy sector and industry. There are plans to extend its coverage to include buildings and road traffic from 2027. With a reduction in the number of emission allowances each year and the tradability of allowances, the CO₂ price increases as allowances become scarcer, thereby incentivising abatement activities.

Due to the limited geographical scope of the EU-ETS, EU firms can not only choose between purchasing emission allowances and reducing emissions but also consider relocating to countries outside the EU with less ambitious climate protection regulations. To mitigate the risk of carbon leakage, the production costs for companies operating in the EU should not just increase through higher CO₂ prices. Measures supporting emis-

sion-reducing investments enable companies to produce more climate-friendly goods within the EU. Apart from these direct measures, which should be limited to the additional costs (of the climate friendly installation compared to a conventional reference), there is a need for infrastructure for the production and transport of renewable energy to meet the increasing demand from climate-friendly producers, building and vehicles. The growing amount of state aid in these areas reflects the member states' efforts to ease transformation costs. However, the varying amounts of state aid provided by EU member states pose a risk of a subsidy race, where financially strong states are better equipped to support their companies, potentially distorting competition within the single market (Rusche, 2023a). This may also help explain the positions of richer countries in Figure 3.

There is a risk of rising subsidies not only within the EU, potentially impacting competition negatively. Examples such as the Inflation Reduction Act (IRA) under the Biden Administration in the US and extensive subsidies in China demonstrate effective measures to support climate-friendly technologies produced within subsidising countries, thereby aiding their domestic industries. Consequently, European climate policy must strike a balance between carbon pricing and state aid. European regulations should be open to cooperation with other countries, even if their climate protection levels differ from the European approach. The usefulness of the Carbon Border Adjustment Mechanism in advancing this balance remains to be seen. Its implementation will require coordination between the EU and its trade partners, at least in establishing a common understanding regarding the verification of carbon emissions. Since climate change has global effects, any unilateral effort is likely to fail unless major emitters move in the same direction. The declarations from the latest Conference of the Parties (COP) may sound like progress, but success depends on implementing effective instruments for global emissions reduction.

While improving carbon accounts in Europe is essential, the EU needs to assert itself as a driving force for international cooperation in climate protection. The Climate Club, which was initiated by German Chancellor Scholz in 2022 and gained 37 members after COP28, plans to work on a common understanding of comparable and interoperable standards as part of its working programme in 2024. This holds the potential to enhance international coordination, but the extent of its impact will depend heavily on the outcome of the US presidential election and how much further this Climate Club can advance a multilateral approach to combat climate change.

From a business perspective, a significant drawback of European climate protection efforts is the bureaucratic burden associated with detailed regulations in support programmes and the necessity to navigate European state aid laws. In contrast, in the US, a current member of the Climate Club, applying for IRA tax breaks is comparatively straightforward. Regulations often vary among European member states. When examining power generation, there is still untapped potential for better integrating and developing the European grid. As the share of volatile renewable energy increases, so does the need for flexibility. Therefore, wind generation along European coastlines and large-scale photovoltaic installations in sunny regions of southern Europe need to complement each other. Infrastructure investments in the power grid, as well as in hydrogen and carbon pipelines, are essential requirements for many companies aiming to reduce their emissions.

Climate policy after the European Parliament elections

After years of prioritising climate policy following the Green Deal and Fit for 55 decisions, it is expected that this year's European Parliament elections will shift the focus from climate protection to competitiveness and the efficiency of climate regulation. The European People's Party and liberals aim to reduce the bureaucratic burden, with the latter even proposing a regulatory pause. Socialists and Democrats reject such a pause but advocate for strengthening social issues in the green transition. While a more balanced approach to climate protection that addresses the trade-offs between unilateral ambitions and global competitiveness seems overdue, a breakdown of climate regulation would pose a significant threat to reaching the targets set by Green Deal legislation. Common rules on the verification of emissions, proofs of origin for renewable energies, and better integration of European energy grids are just a few of the issues that need to be swiftly addressed to both advance climate protection and enhance efficiency. Therefore, efficient climate policy should remain a top priority for any new Commission and the future European Parliament.

References

- Bundesregierung (2022), Klimaschutzgesetz, Generationenvertrag für das Klima, <https://www.bundesregierung.de/breg-de/themen/klimaschutz/klimaschutzgesetz-2021-1913672> (22 January 2024).
- Crippa, M., D. Guizzardi, M. Muntean, E. Schaaf, E. Solazzo, F. Monforti-Ferrario, J. G. J. Olivier and E. Vignati (2020), *Fossil CO₂ emissions of all world countries – 2020 Report*, Publications Office of the European Union.
- EDGAR – Emissions Database for Global Atmospheric Research (2023), EDGAR Total GHG in CO₂eq (EDGAR_AR5_GHG_1970_2022b), EDGAR Community GHG Database (a collaboration between the European Commission, Joint Research Centre (JRC), the International Energy Agency (IEA), and comprising IEA-EDGAR CO₂, EDGAR CH₄, EDGAR N₂O, EDGAR F-GASES version 8.0, https://edgar.jrc.ec.europa.eu/dataset_ghg80 (30 January 2024).
- European Commission (2023a), The European Green Deal, Striving to be the first climate-neutral continent, https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en (4 January 2024).
- European Commission (2023b), State of the energy union report 2023 – country fiches, https://energy.ec.europa.eu/publications/state-energy-union-report-2023-country-fiches_en (9 January 2024).
- European Commission (2024), EU Emissions Trading System (EU ETS), https://climate.ec.europa.eu/eu-action/eu-emissions-trading-system-eu-ets_en (30 January 2024).
- EEA – European Environment Agency (2023), Approximated estimates for greenhouse gas emissions 2022, DAT-205-en, <https://www.eea.europa.eu/en/datahub/datahubitem-view/f6e68f73-b494-4f8c-8c73-8a153a53f64a?activeAccordion=> (4 January 2024).
- European Parliament (2019), Parliament elects Ursula von der Leyen as first female Commission President, <https://www.europarl.europa.eu/news/en/press-room/20190711IPR56824/parliament-elects-ursula-von-der-leyen-as-first-female-commission-president> (4 January 2024).
- Eurostat (2023a), Greenhouse gas emissions by source sector, env_air_gge_custom_9184074, https://ec.europa.eu/eurostat/databrowser/view/env_air_gge_custom_9184074/default/table (5 January 2024).
- Eurostat (2023b), Population on 1 January by age and sex, demo_pjan_custom_9188390, https://ec.europa.eu/eurostat/databrowser/view/demo_pjan_custom_9188390/default/table (9 January 2024).
- Eurostat (2023c), Aid by main objectives, AID_SCB_OBJ, https://webgate.ec.europa.eu/comp/redisstat/databrowser/view/AID_SCB_OBJ/default/table (9 January 2024).
- Federal Foreign Office (2023), Climate change – the biggest security threat of our times, <https://www.auswaertiges-amt.de/en/ausenpolitik/internationale-organisationen/vereintenationen/climate-change-security-council/2179806> (4 January 2024).
- Hutchinson, L. (2019, 11 December), 'Europe's man on the moon moment': Von der Leyen unveils EU Green Deal, *The Parliament*, <https://www.theparliamentmagazine.eu/news/article/europes-man-on-the-moon-moment-von-der-leyen-unveils-eu-green-deal> (10 January 2024).
- Hüther, M., H. Bardt, C. Bähr, J. Matthes, K.-H. Röhl, C. Rusche and T. Schaefer (2023), Industriepolitik in der Zeitenwende, *IW-Policy Paper*, 7.
- Kemp, L. et al. (2022), Climate Endgame: Exploring catastrophic climate change scenarios, *Proceedings of the National Academy of Sciences of the United States of America (PNAS)*, 119(34), <https://doi.org/10.1073/pnas.2108146119>.
- Regulation (EU) 2021/1119 of the European Parliament and of the Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law') (2021), *Official Journal of the European Union*, L 243, 1-17.
- Rusche, C. (2023a), Der Umweltschutz im Spiegel staatlicher Beihilfen, *IW-Kurzbericht*, 20.
- Rusche, C. (2023b), Vereinbarkeit von Wettbewerbsrecht und Klimaschutz. Ein Überblick, *IW-Report*, 28.