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Special report

## EU support to coal regions

Limited focus on socio-economic  
and energy transition



EUROPEAN  
COURT  
OF AUDITORS

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# Executive summary

**I** For decades, coal has been a key energy source in the EU. The reduction in coal production led to a significant drop in the number of employees in the sector, mainly before 2000. The EU's Green Deal identified the phasing-out of coal for energy production as an essential factor in achieving the 2030 climate targets and becoming climate-neutral by 2050.

**II** Our audit assessed whether EU support had contributed effectively to the socio-economic and energy transition in EU regions where the coal industry has been in decline. Our audit included a sample of seven EU regions and covered over €12.5 billion of EU funds granted under the 2014-2020 financial framework by the second half of 2021. We expect our findings and recommendations to contribute to the cost-effective implementation of the Just Transition Fund, which aims to alleviate the socio-economic and environmental impact of the transition to climate neutrality, including the phase-out of coal.

**III** We conclude that EU support to coal regions had a limited focus and impact on job creation and energy transition and that, despite overall progress, coal remains a significant source of greenhouse gas emissions in some Member States.

**IV** Laid-off workers experienced a generally positive situation on the labour market in most regions included in our audit scope. Training courses supported by the European Social Fund were available to coal workers who had been laid-off, but data on their participation is lacking. The number of jobs created directly in these regions through investments under the European Regional Development Fund, was relatively low, especially when compared with the total number of unemployed people in these regions. We found that in most regions in our sample, funded projects did not have a significant impact on energy savings or on the renewable energy production capacity.

**V** Since 2018, the Commission has offered various types of expertise to coal regions. The EU has also established the €19.3 billion Just Transition Fund, but did not assess the extent of the funding needs. We found challenges for Member States in using the funding available within the set timeframe to support an effective transition. They present a risk that funds meant to alleviate the socio-economic and environmental costs of the transition might be spent without the transition effectively taking place. This risk has increased with the Russia's 2022 invasion of Ukraine.

**VI** We found that there has been a significant reduction in CO<sub>2</sub> emissions from coal combustion, but that domestic coal has sometimes been replaced by imports or by other fossil fuels. The reporting of methane emissions from closed or abandoned mines has not been sufficiently reliable. A Commission proposal published in December 2021 aims to tackle this issue. The use of methane from closed or abandoned mines for energy purposes was marginal in the Member States included in our audit, with the exception of Germany.

**VII** We recommend that the Commission should:

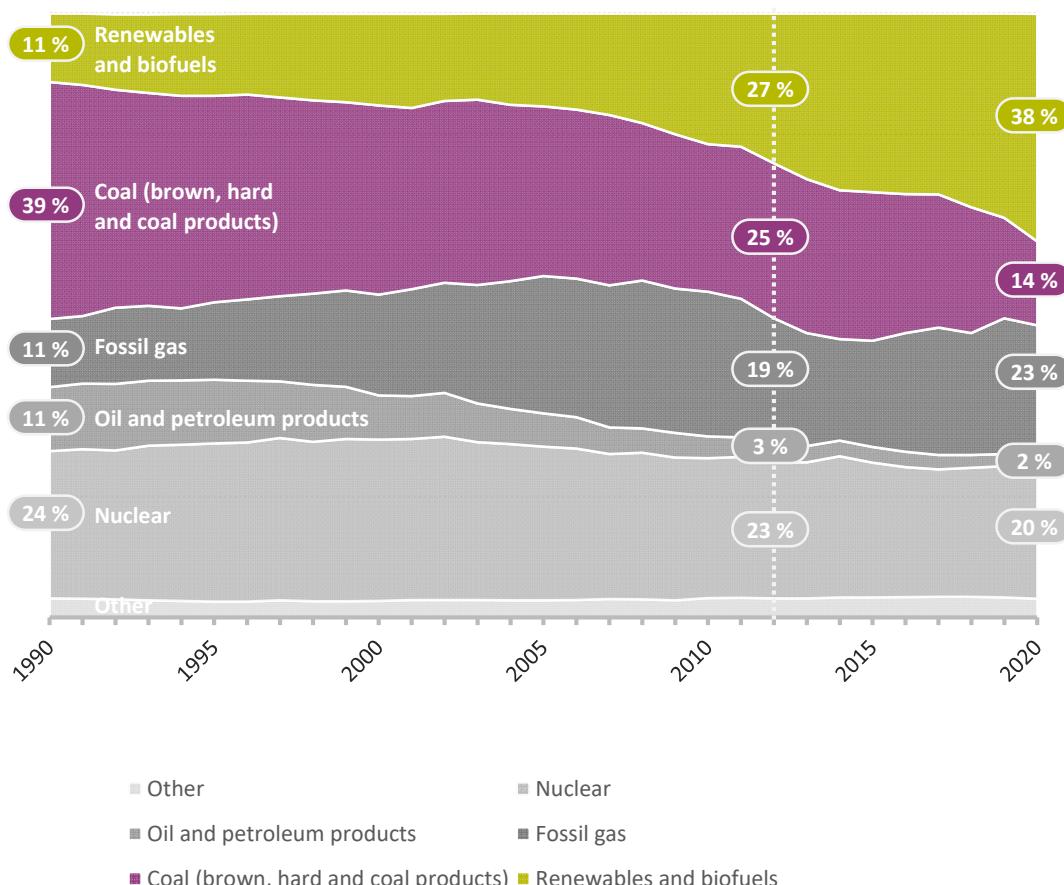
- (1) check that the Just Transition Fund is used effectively and efficiently to alleviate the socio-economic impact of the transition to climate-neutrality in coal and carbon-intensive regions; and
- (2) share good practice for measuring and managing methane emissions from closed or abandoned coal mines.

# Introduction

## The decline of the coal sector and its impact on energy supply and employment

**01** Coal was Europe's largest single source of energy for electricity and heat generation until 2013, when it was overtaken by renewable energy (see *Figure 1*). In 2020, coal still accounted for almost 14 % of electricity and derived heat produced in the EU<sup>1</sup>.

**Figure 1 – Proportion of electricity and heat production by type of fuel**

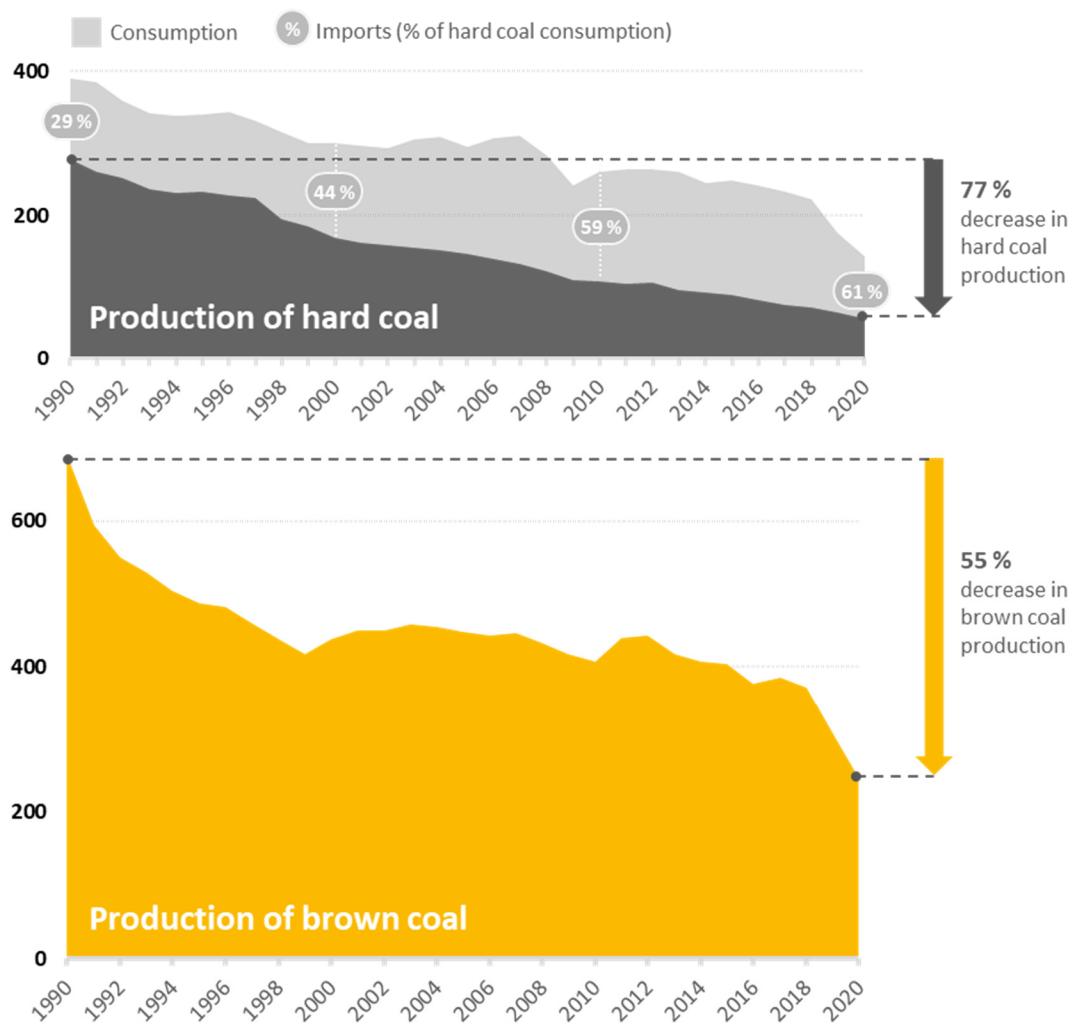


Source: ECA based on Eurostat.

<sup>1</sup> Eurostat.

**02** There are two main types of coal: brown coal (including lignite) and hard coal (including thermal coal, coking coal and anthracite). Brown coal is predominantly mined in surface mines (also known as open-cast mines), while hard coal is mostly mined underground. *Figure 2* shows how coal production and use have developed since 1990. Brown coal is produced and used within the EU, and imports are negligible.

**Figure 2 – Coal production and consumption in the EU-27  
(in million tonnes)**



Source: ECA based on Eurostat.

**03** The consumption of hard coal in the 27 EU Member States fell from 390 million tonnes in 1990 to 144 million tonnes in 2020. In 2020, 61 % of hard coal consumed in the EU was imported, Russia being the source of almost 54 % of these imports. The *Annex* contains information on coal consumption and production by each Member State in 2010, 2015 and 2020.

**04** According to a 2021 study<sup>2</sup>, in 2018, 76 % of the coal consumed in the EU was used for electricity and heating and 24 % was used for energy and material production in industry (mostly the iron and steel industry).

**05** The reduction in coal production has led to a significant drop in the number of people employed in the coal-mining sector (see examples in *Table 1*). The largest drops in the workforce took place before 2000. According to a 2021 study<sup>3</sup>, in 2018, around 159 000 people were employed directly in coal mining, 49 000 in coal-fired power plants and an estimated additional 130 000 jobs along the supply chain. In that year, the coal sector accounted for less than 0.2 % of the EU's employed population.

**Table 1 – Examples of transition periods in the EU-27 and their impact on employment in the coal-mining sector**

Member State (region)	Main period of decline	Jobs reduction in the main period of decline	Employment in 2018***
<b>Czechia</b> (several regions)*	1990-2000	100 000	14 000
<b>Germany</b> (Ruhr area)**	1957-1977	350 000	7 800
<b>Germany</b> (Lausitz area in Brandenburg and Saxony)**	1990-2000	80 000	6 200
<b>Spain</b> (several regions)*	1985-2015	29 000	1 700
<b>Netherlands</b> (Limburg)*	1965-1975	75 000	-
<b>Poland</b> (Upper Silesia, Małopolska and Lubelskie)*	1990-2002	230 000	83 000

Source:

\* IDDRI and Climate Strategies, *Lessons from previous “COAL TRANSITIONS”*, 2017, p. 5.

\*\* GermanWatch, *Transformation experiences of Coal Regions: Recommendations for Ukraine and other European countries, Complete Study*, 2020, p. 21.

\*\*\* Commission – JRC, *Recent trends in EU coal, peat and oil shale regions*, 2021, Appendix C.

<sup>2</sup> European Commission – JRC, *Recent trends in EU coal, peat and oil shale regions*, 2021, p. 61.

<sup>3</sup> European Commission – JRC, *Recent trends in EU coal, peat and oil shale regions*, 2021, pp. 2-4.

**06** A 2021 Commission study<sup>4</sup> explained that coal-mine closures were the result of various factors: inefficient and costly coal production, comparatively cheap imported hard coal, and the increasing volatility of coking-coal prices on international markets. The study also estimated that around 86 000 coal-mining jobs, representing more than half of the total number of jobs in this sector, were at high risk of being lost after 2020 due to the potential closure of uncompetitive mines.

## The negative impact of coal mining and combustion on health, the environment and the climate

**07** Coal mining and combustion have significant negative impacts on health, the environment, and the climate. A study from 2018<sup>5</sup> concluded that there is consistent evidence of the association of coal mining with a wide spectrum of diseases in people who live near mining activities.

**08** Burning coal negatively affects air quality in many places in the EU. According to the European Environment Agency, fine particulate matter (PM<sub>2.5</sub>) caused over 300 000 premature deaths in 2019 in the EU<sup>6</sup>. Residential boilers and stoves burning solid fuels, including coal, represent the key source of these emissions, responsible for more than half of all PM<sub>2.5</sub> emissions in 2019<sup>7</sup>.

**09** According to the annual EU greenhouse gas inventory<sup>8</sup>, which also includes the UK and Iceland, coal combustion was responsible for 15 % of greenhouse gas emissions in 2019 (excluding emissions and sinks from land use, land-use change and forestry, as well as emissions from international aviation). Coal mining, especially in underground

<sup>4</sup> European Commission – JRC, [Recent trends in EU coal, peat and oil shale regions, 2021](#), pp. 50 and 65.

<sup>5</sup> Cortes-Ramirez et al. BMC Public Health, [Mortality and morbidity in populations in the vicinity of coal mining: a systematic review](#), 2018, p. 1.

<sup>6</sup> EEA, [Air quality in Europe 2021](#), 2021.

<sup>7</sup> EEA, [National Emission reduction Commitments \(NEC\) Directive emission inventory](#), data for 2019.

<sup>8</sup> EEA, [Annual European Union greenhouse gas inventory 1990–2019 and inventory report 2021](#), 2021.

mines, also leads to methane emissions, which – if not abated – continue even after the mines have been closed, albeit in smaller quantities. Methane emissions from coal mining and from closed mines were estimated to represent 0.7 % of total greenhouse gas emissions of 4 067 million tonnes CO<sub>2</sub> equivalent in 2019<sup>9</sup>.

**10** The potential negative impact of mining on the environment include the destruction of landscapes and habitats, groundwater contamination, water pollution, soil erosion, and chemical and dust pollution. Coal burning also produces large quantities of solid waste containing contaminants such as mercury, uranium, thorium, arsenic, and other heavy metals.

## Decreasing State aid for the coal-mining sector

**11** State aid means direct or indirect government support for a business or an organisation, putting it at an advantage over its competitors. Sector-specific rules for the 2003-2010 period<sup>10</sup> allowed State aid to be provided to the coal industry to secure the supply of energy in the EU. According to a 2014 study<sup>11</sup>, €87 billion in State aid was paid to hard-coal producers in the EU during the 2000-2012 period.

**12** In 2010, the Council decided on transitional rules for the coal sector to facilitate the closure of uncompetitive coal mines in the 2011-2027 period<sup>12</sup>. According to this Council Decision, State aid is considered compatible with the proper functioning of the internal market if it covers:

- current production losses of coal-production units (“closure aid”) until 2018, on the condition that the mines supported were closed down by the end of 2018;
- costs arising from the closure of coal-production units (“exceptional cost”), which have taken place in the past or will take place up to 2027. The types of cost that

<sup>9</sup> EEA, [Annual European Union greenhouse gas inventory 1990–2019 and inventory report 2021](#), 2021, p. 344.

<sup>10</sup> [Council Regulation \(EC\) No 1407/2002](#) of 23 July 2002 on State aid to the coal industry (OJ L 205, 2.8.2002, p. 1).

<sup>11</sup> Jonek-Kowalska, Izabela, [State aid and competitiveness of the hard coal mining industry in the European Union](#), 2014.

<sup>12</sup> [Council Decision](#) of 10 December 2010 on State aid to facilitate the closure of uncompetitive coal mines (2010/787/EU) (OJ L 336, 21.12.2010, p. 24).

qualify for this State aid include social welfare benefits for laid-off or pensioned-off workers, and costs related to converting or repurposing mining sites.

**13** Since 2011, the Commission has published 21 decisions concerning 10 Member States with regard to compliance with State aid rules under the 2010 Council Decision. The Commission informed us that, almost €19.3 billion of State aid was paid to coal-mining companies in eight Member States in the 2011-2020 period.

## The EU's increasingly ambitious climate agenda

**14** In 2015, the [Paris Agreement](#) established a worldwide climate-mitigation target of limiting global warming to “well below” 2°C, and to pursue efforts to keep it to 1.5°C. The EU and its Member States ratified the Agreement in 2016. In 2019, the Commission published its Communication on [the European Green Deal](#), aimed at “transforming the EU into a fair and prosperous society, with a modern, resource-efficient and competitive economy”. The Green Deal identified the phasing-out of coal as essential for achieving the 2030 climate targets and becoming climate-neutral by 2050.

**15** In 2021, the EU adopted its Climate Law, establishing a binding EU target of net zero greenhouse gas emissions by 2050. It also set an intermediate target of reducing net emissions by at least 55 % by 2030 (compared to 1990)<sup>13</sup>.

**16** Following Russia’s invasion of Ukraine in February 2022, the Commission acknowledged that in the short term, countries might need to increase coal consumption before switching to renewables to avoid relying on fossil gas, provided the 2030 climate and energy targets are respected. The Commission also stated that the EU should accelerate its transition to renewables<sup>14</sup>.

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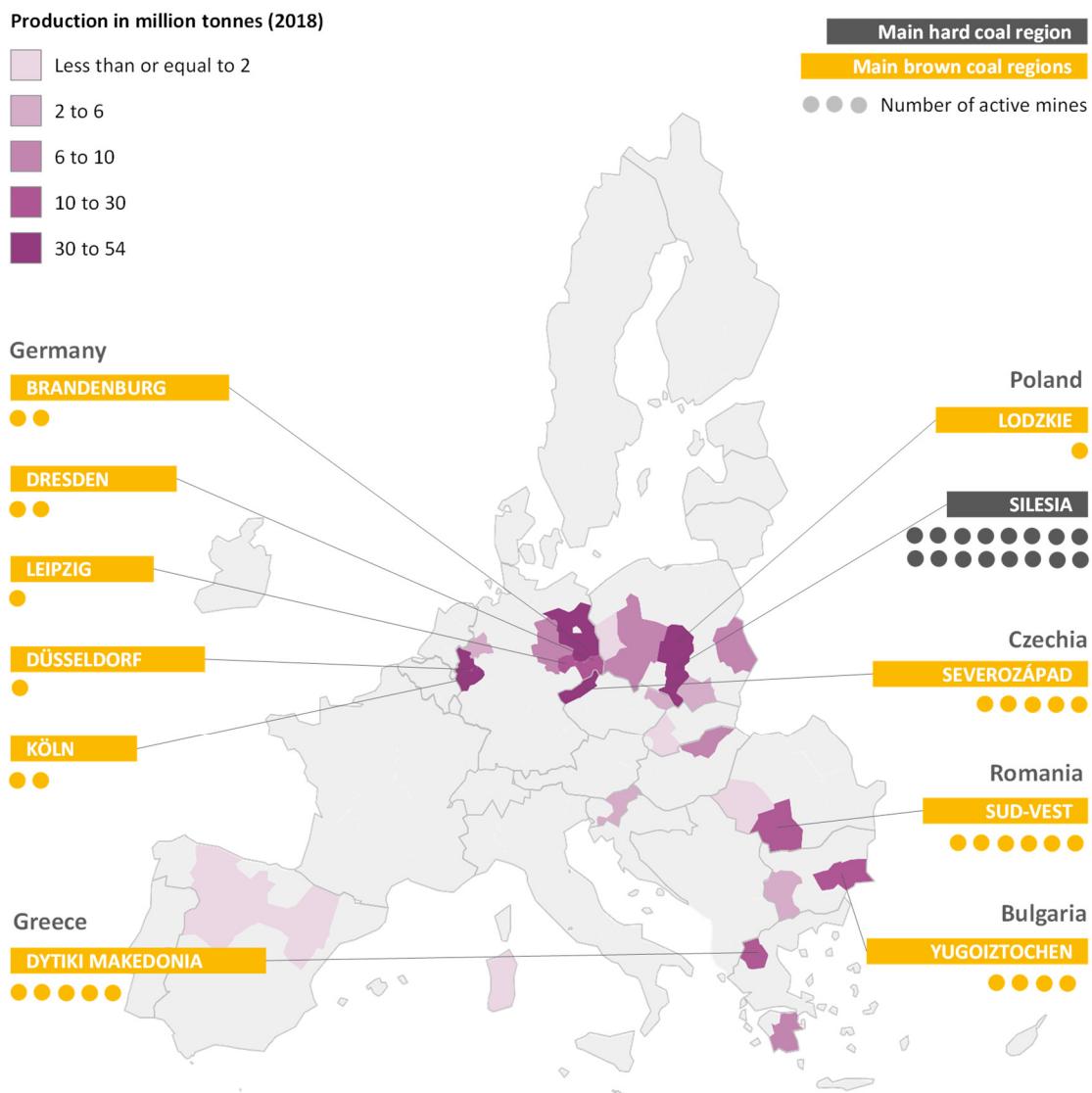
<sup>13</sup> Articles 1, 2, and 4 of [Regulation \(EU\) 2021/1119](#) on the framework for achieving climate neutrality (“European Climate Law”) (OJ L 243, 9.7.2021, p. 1).

<sup>14</sup> Remarks by EVP Frans Timmermans on the war in Ukraine and the impact on EU climate and energy policy in the ENVI Committee, 7 March 2022.

## EU funds available to coal regions

**17** Coal production in the EU has been concentrated in specific regions within Member States. In 2018, coal was still actively being mined in 29 NUTS 2 regions in 11 EU countries (see *Figure 3*).

**Figure 3 – Main coal regions within the EU**



Source: European Commission – JRC, *Recent trends in EU coal, peat and oil shale regions*, 2021, pp. 100-101.

**18** The characteristics of these coal regions vary.

- In some regions, the coal industry is spread over a large geographical area (such as in Asturias in Spain and Silesia in Poland). In others, it is more focused on smaller areas (e.g. Palencia and León in Spain and the Jiu Valley micro-region in Romania).

- Some coal regions are located in or near built-up areas, while others are in more remote rural settings.
- In some coal regions, the coal industry, often directly linked to power and heat production, dominates the economy, while in others coal has been part of a more varied industrial landscape.
- Some coal regions, thanks to their geographical or socio-economic characteristics, have significant potential for exploiting renewable energy sources<sup>15</sup>.

**19** Until the recent introduction of the Just Transition Fund (see paragraph 45), the EU has not made any specific funding programme available to former or current coal-producing regions. For the socio-economic and energy transition to address climate objectives and the consequences of mine closures, Member States and regions were able to access, in addition to their national and regional funding, resources available under the following European Structural and Investment Funds (ESI Funds):

- **European Regional Development Fund** (ERDF), with a 2014-2020 budget allocation of **€228 billion**, to improve economic and social cohesion in the EU by reducing disparities between regions. Among the key areas supported have been innovation and research, the digital agenda, small and medium-sized businesses, and the low-carbon economy.
- **European Social Fund** (ESF), with a 2014-2020 budget allocation of **€100 billion**, to promote sustainable and quality employment and labour mobility.
- **Cohesion Fund** (CF), with a 2014-2020 budget allocation of **€61 billion** for 15 Member States, to reduce economic and social disparities and to promote sustainable development. The fund supports improvements in trans-European transport networks and projects falling under the EU's environmental priorities.

**20** The Member States' key strategic documents for the use of these funds are partnership agreements and operational programmes (OPs). Some of the OPs are managed centrally in Member States, while others are managed regionally. The Commission provides guidance, approves these planning documents and supervises their implementation. The regional and national authorities are responsible for planning and implementing the socio-economic and energy transition of the coal regions as well as in using the ESI Funds for this purpose.

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<sup>15</sup> European Commission – JRC, “[Clean energy technologies in coal regions: Opportunities for jobs and growth: Deployment potential and impacts](#)”, 2020, p. 5.

**21** Based on the information received from the seven regions included in the scope of our audit (see *Figure 4* after paragraph **25**), the ESI Funds mentioned in paragraph **19**, under the 2014-2020 financial framework, will have supported projects in these regions with more than €12.5 billion in funding.

## Audit scope and approach

**22** This audit provides an insight into the role of EU funds in the socio-economic and energy transition in regions where the coal industry has been in decline. Socio-economic and energy transition of a coal region refers to the process of re-focusing the economy of a coal region in order to replace jobs lost because of coal phase-out, make energy savings and move to energy sources compatible with the EU climate objectives. The results and recommendations of this audit intend to contribute to the cost-effective implementation of the Just Transition Fund (JTF).

**23** We examined whether EU support had contributed effectively to the socio-economic and energy transition in EU regions where the coal industry has been in decline. We focused on whether:

- appropriate training and assistance had been provided to laid-off workers in coal-related industries;
- Member States, together with the Commission, had identified socio-economic development needs and targeted funds accordingly; and
- greenhouse gas emissions from thermal coal had been decreasing in line with the fall in EU thermal coal production.

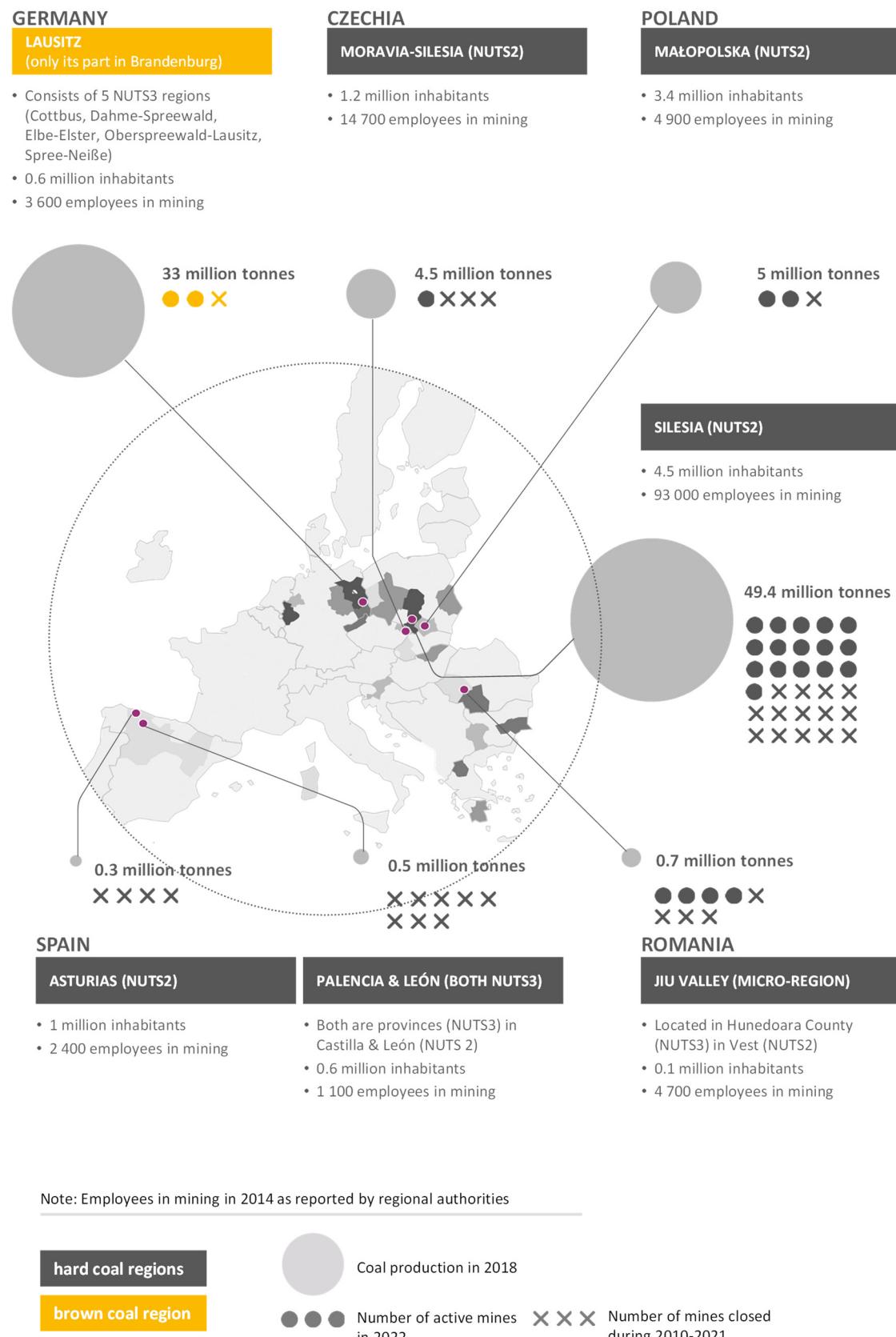
**24** Our audit included a sample of seven EU regions. When assessing the use of EU funds, we focused on the European Social Fund, the European Regional Development Fund, and the Cohesion Fund for the 2014-2020 period. We also covered other actions supporting coal regions, including the Initiative for Coal Regions in Transition and the design of the JTF. At the time of our audit it was too early to include the Territorial Just Transition Plans referred to in paragraph [47](#) in the scope of our work.

**25** We obtained evidence from:

- documentary reviews and interviews with representatives of five Commission Directorates-General (Competition; Energy; Employment, Social Affairs and Inclusion; Regional and Urban Policy and the Joint Research Centre), and with the secretariat of the Initiative for Coal Regions in Transition;
- a review of data on EU coal production, its use and associated greenhouse gas emissions; energy efficiency and renewable energy sources; regional population and the economic situation (mainly from Eurostat);

- a review of various studies assessing the energy transition, methane emissions and the general economic development situation in our sample of seven coal regions;
- interviews with representatives of seven selected coal regions in transition in five Member States (see *Figure 4* below), as well as desk reviews of strategies and documents on the use of EU funds during the 2014-2020 period. We selected these regions based on the number of coal mines closed between 2010 and 2018, and the number of coal-mining employees in 2014.

**Figure 4 – Characteristics of the selected coal regions**



Source: Eurostat, data collected from Member States and European Commission – JRC, [Recent trends in EU coal, peat and oil shale regions](#), 2021, pp. 100-101.

## Observations

**Labour market demand bolstered employment prospects, but data is insufficient to assess how coal workers benefited from EU-funded training**

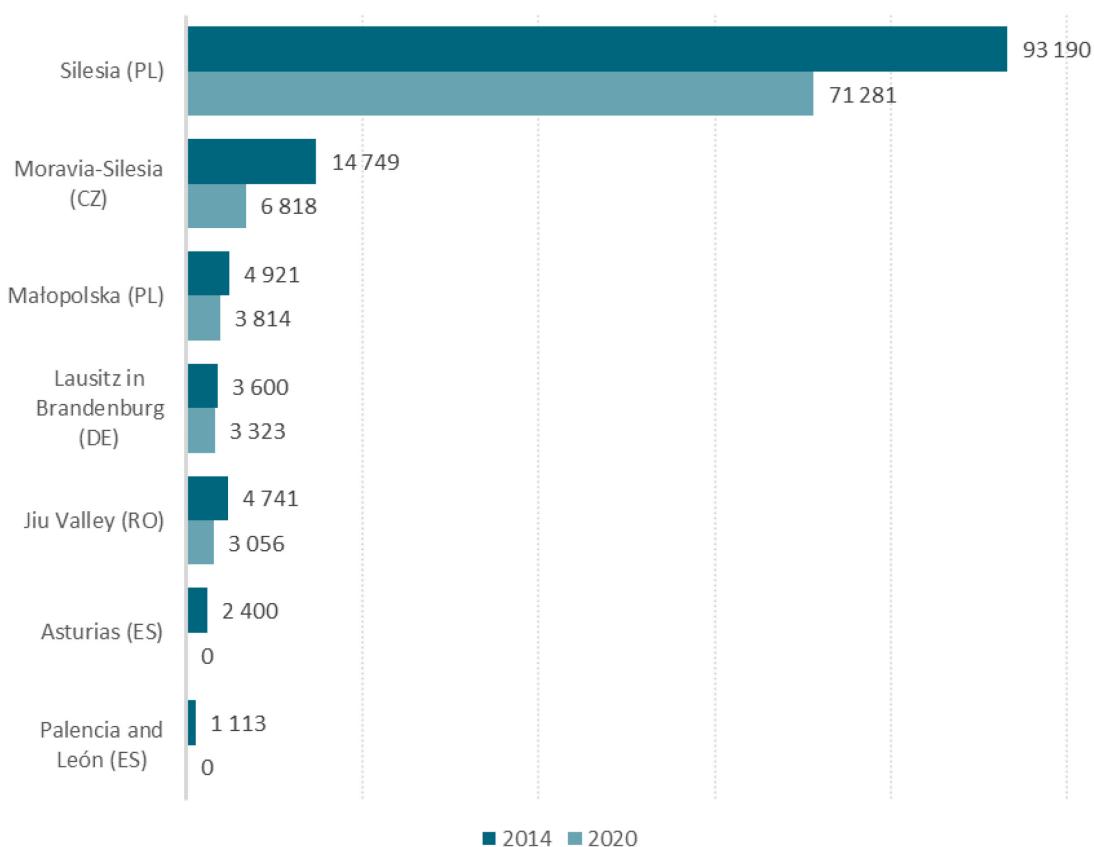
**26** We examined whether Member State authorities provided appropriate training and assistance to laid-off coal-industry employees. We assessed whether:

- sufficient training and assistance activities were offered to help laid-off workers find a new job, taking into account the number of redundancies and the situation in the regional labour markets; and
- data existed to assess what contribution those activities had made.

**Laid-off coal workers experienced a generally positive situation on the labour market**

**27** In the coal regions covered by our audit, in 2020, the number of people employed directly in coal mining represented less than 2 % of the employed population, except for Silesia (PL) and the Jiu Valley (RO), where it was 4 % and 14 % respectively. *Figure 5* shows the decrease in the number of people directly employed in mining between 2014 and 2020. In some regions, these sectoral staff reductions were achieved through natural fluctuations of employees and retirements, for example in Lausitz (DE) and Silesia (PL), while in other regions, for example in Moravia-Silesia (CZ), coal-mining companies had to lay off workers.

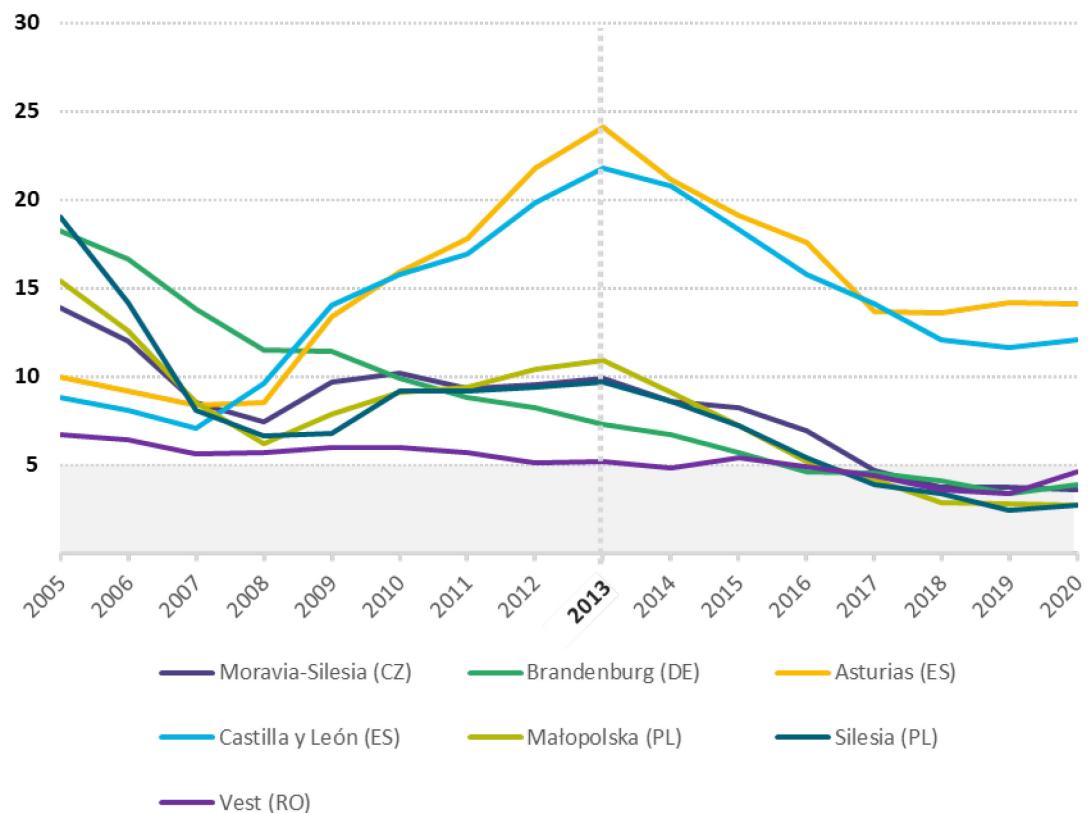
**Figure 5 – Direct jobs in coal mining between 2014 and 2020**



Source: ECA based on data obtained from Member States.

**28** *Figure 6* shows how the unemployment rate has developed in the selected coal-producing regions since 2005. The decreasing unemployment rate from 2014 indicates that the situation on the labour market was generally positive for job seekers, reducing the risk that laid-off coal-industry workers would remain unemployed. By 2020, the unemployment rate has decreased below 5 % in all regions covered except the two in Spain. Unemployment in these two regions was however below the national rate (15.5 %). Despite these improvements, some difficulties in the job market might not be captured by the analysis of the unemployment rate (see *Box 1*).

**Figure 6 – Unemployment rate, 2005-2020 (in %)**



Source: ECA based on Eurostat data for [unemployment](#) rates in population 15-74.

### Box 1

#### **Three quarters of people aged between 15 and 65 in the Jiu Valley (Romania) do not have a job**

In the Jiu Valley, following the restructuring of the coal sector, the number of people employed decreased from 70 000 in 1995 to 25 000 in 2019. There were 100 000 people aged between 15 and 65 in 2019. Only 1 489 were considered unemployed, as they were actively looking for work and registered with the unemployment office. The unemployment rate therefore gives an incomplete picture of the difficult employment situation in the Jiu Valley.

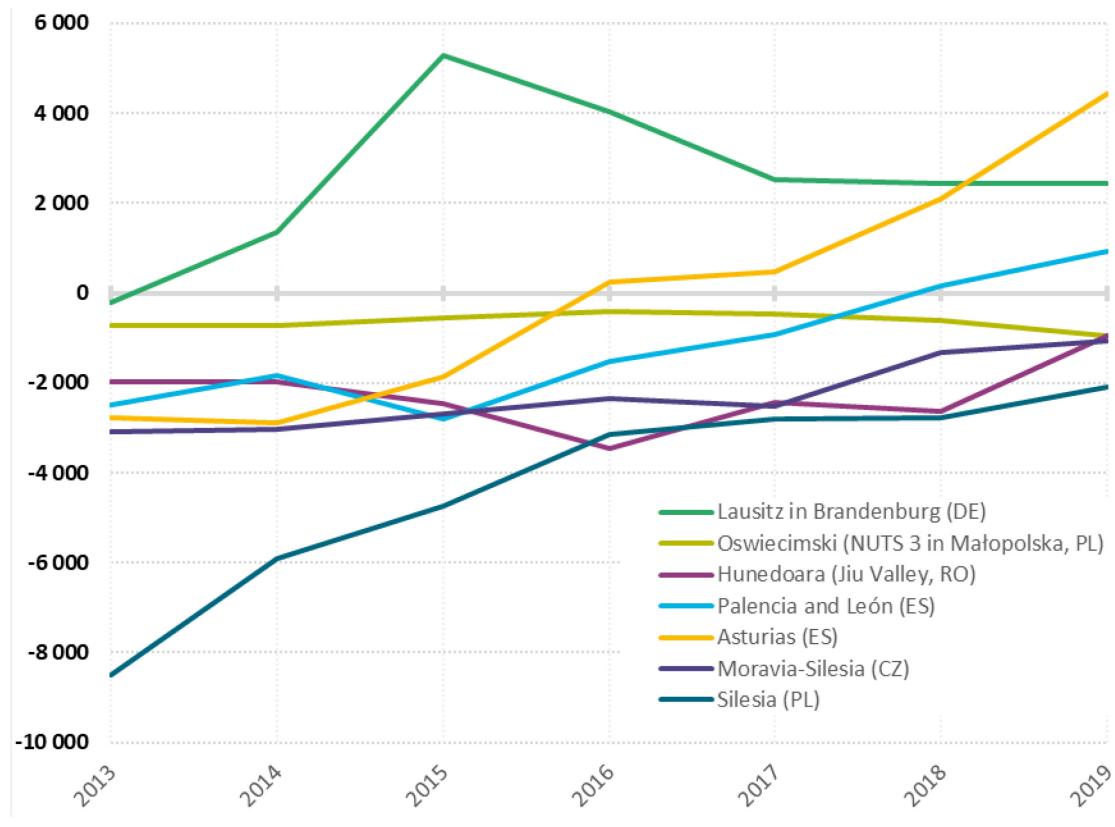
According to the Initiative for Coal Regions in Transition<sup>16</sup>, the Jiu Valley has a largely undiversified economy that still depends heavily on mining activities. Its limited connectivity and deteriorated transport infrastructure, its environmental degradation and successive mine closures with their waves of lay-offs have led to an overall decline in the Jiu Valley's population. Despite a degree of economic restructuring, the region has limited attractiveness for private investors.

**29** Except for Lausitz (DE) and Asturias (ES), the other regions in our sample experienced negative net migration during the 2013-2020 period; in other words, more people left the regions than settled in them (see *Figure 7*). This also partly contributed to the reduction in the unemployment rate, as some unemployed people decided to move out of the regions to look for new jobs elsewhere.

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<sup>16</sup> European Commission, “Regional profile Jiu Valley”, Initiative for Coal Regions in Transition, 2020.

**Figure 7 – Net migration in the selected regions, 2013-2019**

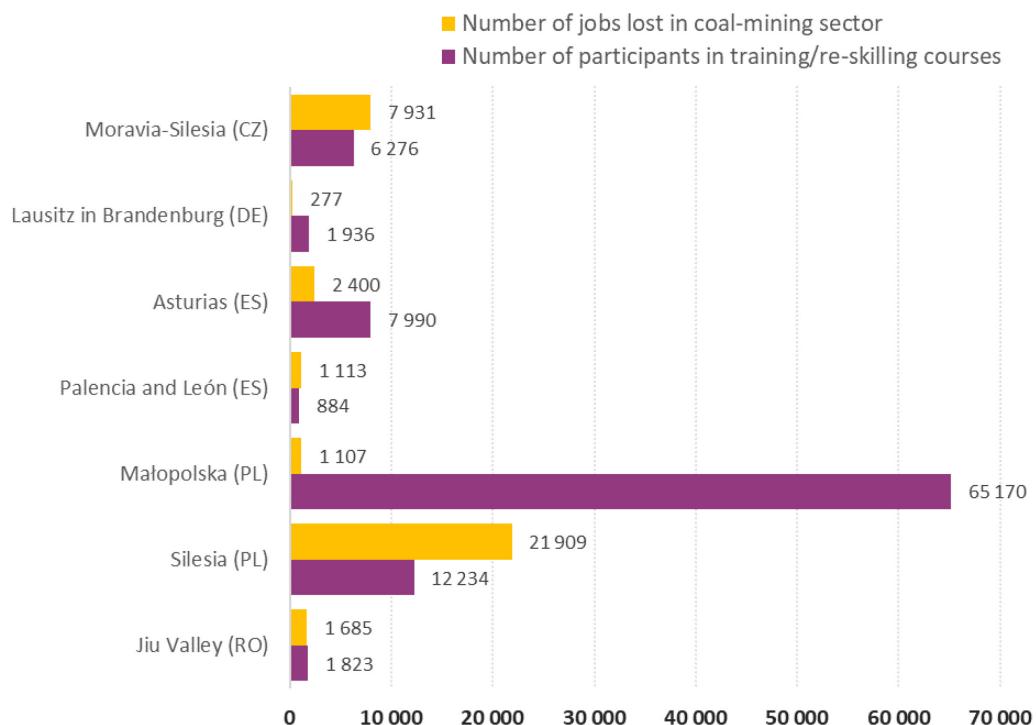


Source: ECA based on Eurostat data.

**EU-funded training was available to laid-off coal workers but data on participation is lacking**

**30** *Figure 8* summarises the support provided under the European Social Fund to training courses and activities available to unemployed people, including the laid-off coal-mining employees, in the regions covered by our audit. In most regions, national funds were also used to provide training and reskilling to unemployed people and laid-off coal-mining workers.

**Figure 8 – ESF-funded activities during 2014-2020**



Source: ECA based on data obtained from Member States.

**31** *Box 2* describes two projects that specifically supported former coal-industry workers. The participants in these projects represented less than 2 % of the lost jobs in the coal-mining sector in the audited regions. For the two projects supported in Moravia-Silesia (CZ) and Palencia and León (ES), it can be seen that these projects initially targeted a higher number of participants than the number of people who ultimately participated.

## Box 2

### Example of EU funded measures targeted at laid-off coal-industry employees

In **Moravia-Silesia (CZ)**, the ESF provided €370 000 to a project offering participants job diagnostics, training, re-skilling and job matching. Of the 338 people involved in this project, 260 (77 %) were from a coal-mining company. At the time of the audit, 324 participants completed the planned measures and 278 obtained a job after leaving the programme. The initial budget for the project was four times higher, but had to be reduced due to positive development in the labour market which led to lower-than-expected interest from potential participants.

In **Palencia and León (ES)**, the European Globalisation Adjustment Fund (EGF) provided €1.02 million to finance a project aimed at improving the employability of former mining workers. The objective of this fund is to address wide-scale redundancies as a result of industrial restructuring. The project provided training to 198 former coal workers, which represented 58 % of the initial target (339). According to the information available, 81 (41 %) workers managed to find a job as a result of the training.

**32** The ESF legislation did not require Member States to report data relating to former coal-industry employees separately. The relevant authorities in the selected regions were unable to extract information concerning former coal-industry employees. Consequently, the number of laid-off coal industry employees that participated in the EU-funded measures, and the contribution of those measures to helping the participants to find new jobs, could not be established. Information was only available for the very few targeted measures such as those described in *Box 2* above.

### Member States used EU funds for territorial cohesion without focusing on the transition of coal regions

**33** We examined whether Member States, together with the Commission, had identified socio-economic development needs and targeted funds accordingly. We assessed whether:

- the Member States had identified the issue of coal decline in their strengths, weaknesses, opportunities and threats (SWOT) analysis in their OPs and developed strategic documents addressing the socio-economic transition;

- o the Member States, with the support of the Commission, had invested EU funds on actions contributing to the energy transition and the development of the economic fabric of the affected coal regions and deliver clear benefits such as the creation of new jobs, increasing capacities of renewable resources and reducing energy consumption; and
- o after the Paris Agreement was adopted, the Commission had taken action to support coal regions in transition in line with their specific needs.

### Most transition strategies were developed recently

**34** There was no EU-level legal requirement to prepare a socio-economic or energy transition strategy for coal regions in 2014-2020. Nevertheless, we consider that it would have been a good practice to have such a strategy in place, especially since all the selected regions except for Brandenburg were facing a strong decline in coal production, and coal mining was no longer a viable activity. **Table 2** presents an overview of the development of the socio-economic strategies in the selected coal regions. Our review of the transition strategies shows that those published between 2018 and 2021 contain an assessment of their region's SWOT or similar analyses, and that key stakeholders were involved in drawing them up.

**Table 2 – Overview of the socio-economic transition strategies in the selected regions**

Region	Comments
Moravia-Silesia (CZ)	In 2015, the Czech government decided to implement the RE:START Programme, aimed at supporting the economic restructuring of three coal regions in Czechia. The first RE:START action plan was developed for 2017-2030.  A regional strategy for 2019-2027, published in 2019, spelled out the need for socio-economic transition as well as the negative impact of the coal industry on the environment and the climate.
Lausitz (DE)	Dedicated socio-economic transition strategies for Lausitz were developed after 2017, following the adoption of a coal exit strategy for Germany, which earmarked €17 billion of national aid for Brandenburg until 2038.

Asturias (ES)	In a context where relatively few miners were active in 2013 and mining activities had ceased in 2018, funds under the 2013-2018 strategy were mainly spent on compensating former miners. Strategies for 2019-2027 focus on economic reactivation and an alternative development of mining regions to achieve their structural transformation.
Silesia (PL)	The need for socio-economic and energy transition had already been highlighted in a 2013 strategy, but the corresponding action plan for the “transformation of the region” was only published in 2019. In 2020, a new regional strategy was adopted, with a greater focus on the socio-economic transformation of the region.
Małopolska (PL)	Although a strategy from 2011 included measures to deal with the socio-economic transition, the planned measures in the 2020 strategy better address the transition’s needs.
Jiu Valley (RO)	A 2022-2030 strategy for the socio-economic and environmental development of the Jiu Valley was in the approval process at the time of the audit. Developed with EU funds, the strategy was based on analyses of challenges and opportunities in the micro-region, and took into account the views of relevant stakeholders. This is the third development strategy for the Jiu Valley. The strategy approved in 2016 was never implemented. The strategy for the 2002-2010 period did not have a significant impact on the socio-economic situation in the Jiu Valley.

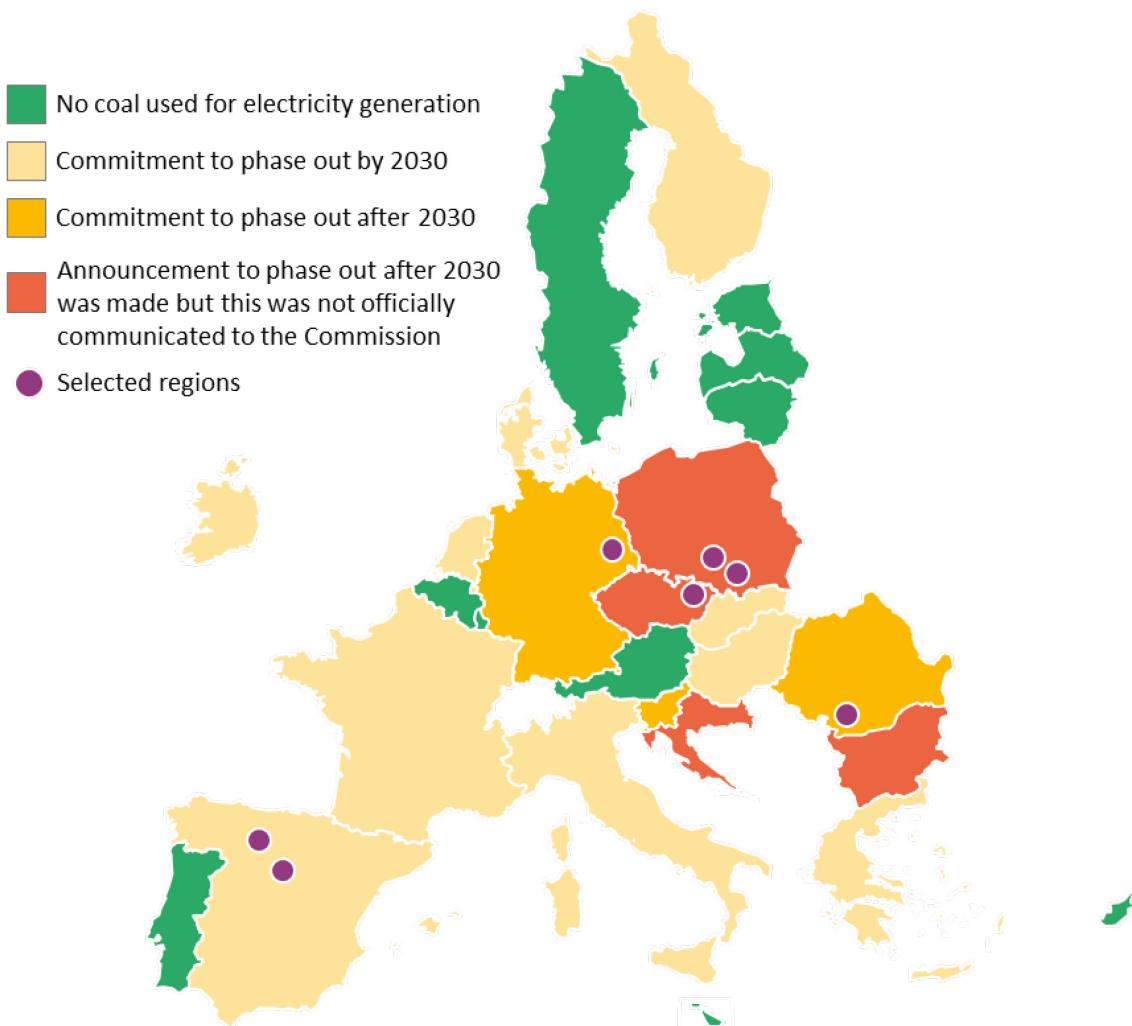
Source: ECA.

**35** The official commitments to phasing out coal were made between 2016 and 2022 (see [Figure 9](#)) and contributed to the recent development of the transition strategies in the selected regions. Integrated national energy and climate plans (NECPs) for the period 2021-2030 outline how Member States intend to address issues such as energy efficiency, renewables and the reduction of greenhouse gas emissions. They were last updated in 2019, meaning that impact of the most recent commitments is not yet reflected in current plans. Member States will have to submit a draft update of their NECPs to the Commission by June 2023<sup>17</sup>.

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<sup>17</sup> Articles 3 and 14 of [Regulation \(EU\) 2018/1999](#) on the Governance of the Energy Union and Climate Action (OJ L 328, 21.12.2018, p. 1).

**Figure 9 – Coal phase-out status by country (May 2022)**

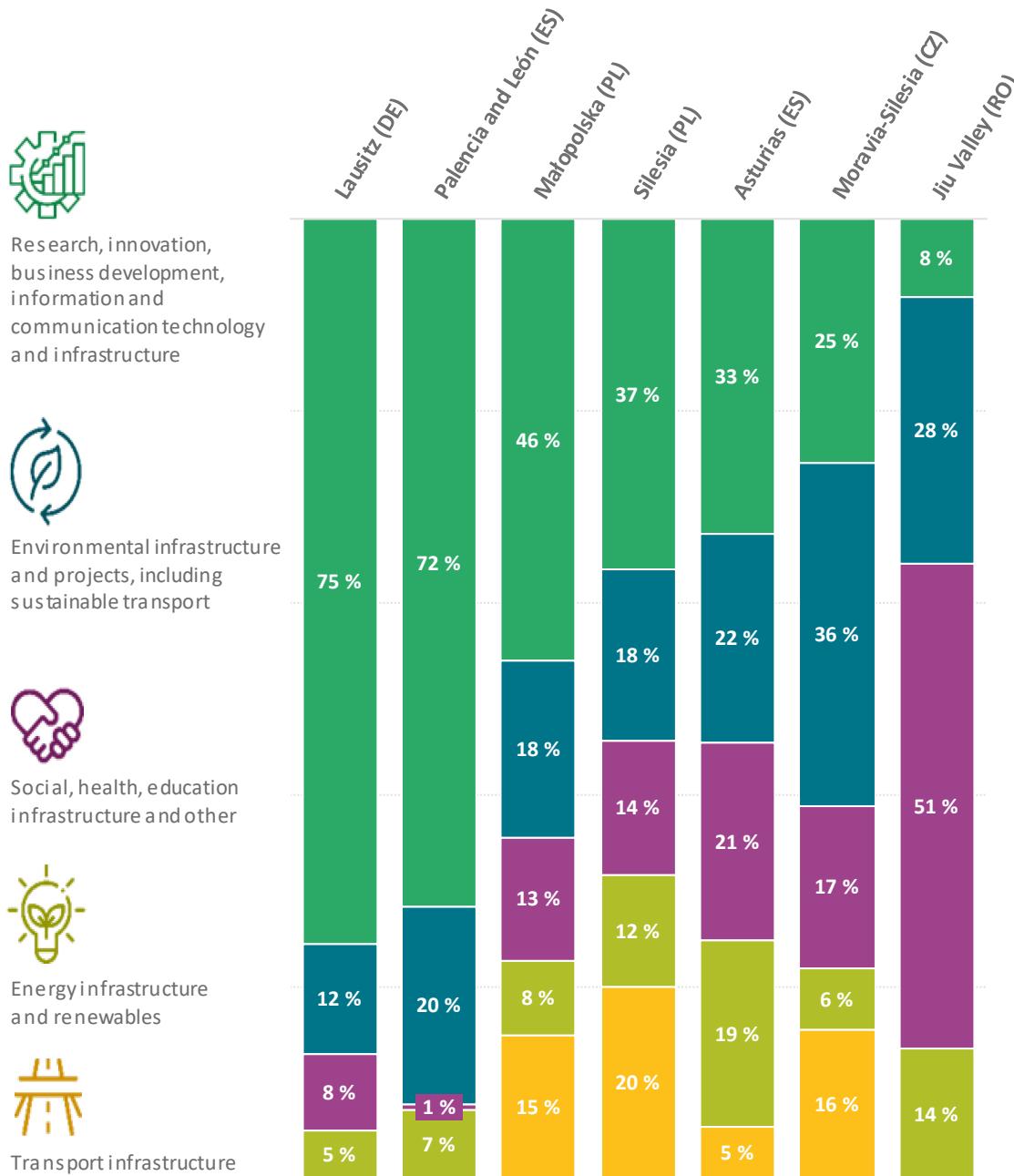


Source: ECA based on [information](#) held by the European Commission.

**ERDF and CF support was available, but its impact on energy transition and jobs was limited**

**36** *Figure 10* shows the ERDF uptake by the selected coal regions, including under national-level programmes. In Lausitz (DE), Palencia and León (ES), and Małopolska (PL), a large proportion of ERDF funding went into research, innovation and business development. In the Jiu Valley (RO), Silesia (PL) and Moravia-Silesia (CZ), significant proportions of the funds were invested to improve social, health, education and transport infrastructures. In all regions apart from Lausitz, more than 18 % of ERDF funding was spent on measures to improve the environment, such as wastewater treatment facilities, or actions to improve air quality. By the last quarter of 2021, the seven regions covered by our audit approved EU support of €9.5 billion to fund projects under the ERDF.

**Figure 10 – Use of 2014-2020 ERDF in selected coal regions**



Source: ECA based on information provided by Member States and the selected coal regions.

**37** In addition to ERDF funding, €2.5 billion from the Cohesion Fund was used to support projects in four regions. In the Jiu Valley (RO), the size of this funding was significant, as it represented 46 % of the region's Cohesion Fund and ERDF spending combined. The supported projects were aimed at renovating and modernising the water and wastewater system in Hunedoara county. In Silesia (PL) and Małopolska (PL), the Cohesion Fund represented 28 % and 22 % respectively, of these two funds combined, the majority of which was spent on the construction of railways, motorways and roads, falling under the Trans-European Transport Network. In Moravia-Silesia

(CZ), the Cohesion Fund represented 14 % of these two funds combined and was also largely used to support projects in the area of transport infrastructure.

**38** *Table 3* shows the number of jobs to be created directly with ERDF support according to data received from the managing authorities. Their level is low (below 5 %) compared with the 2014-2020 unemployment average in the selected regions. By stimulating demand for products and services for subsidised projects, the ERDF also creates jobs indirectly, but data on such indirectly created jobs is not available.

**Table 3 – Overview of jobs, to be created directly with 2014-2020 ERDF-funded projects**

Region	Number of jobs (A)	Average number of unemployed people in 2014-2020 (B)	Expressed as % (A/B *100)
Moravia-Silesia (CZ)	387	33 800	1.1
Lausitz (DE)	110	24 000	0.5
Asturias (ES)	668	74 700	0.9
Silesia (PL)	3 802	93 600	4.1
Małopolska (PL)	2 151	70 500	3.1
Jiu Valley (RO)	104	75 000	0.1

Source: ECA based on information provided by Member States and Eurostat (information for Palencia and León (ES) has not been provided by the Spanish authorities). For Jiu Valley (RO), we use the number of people in active population not having a job instead of the average number of unemployed people (see *Box 1*).

**39** A 2020 report by the European Commission<sup>18</sup> assessed the potential of former coal regions at NUTS 2 level to invest in renewable energy sources and to create jobs with these clean energy technologies. The seven selected regions were assessed as follows.

- Brandenburg (Lausitz) (DE), Asturias (ES), and Castilla y León (Palencia and León) (ES) are regions with high employment potential from deploying clean energy technologies.

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<sup>18</sup> European Commission – JRC, *Clean energy technologies in coal regions: Opportunities for jobs and growth*, 2020, pp. 5-6.

- Małopolska (PL) and Vest (Jiu Valley) (RO) could slowly develop employment with clean energy technologies by 2030, but the potential of these technologies to create jobs could only be fully realised by 2050.
- Moravia-Silesia (CZ) and Silesia (PL) have limited ability to fully substitute coal-related jobs with employment in the sector of clean energy technologies.

**40** EU funds usually do not subsidise larger projects for the installation of mature renewable-energy technologies, as these should nowadays generate sufficient revenue streams and would not receive a grant<sup>19</sup>. ESI Funds thus usually support smaller installations. This has been confirmed by our analysis of ERDF spending in the seven selected regions, used mostly for new solar panel installations. The Jiu Valley (RO) did not fund any renewable energy installations, and four selected regions spent less than 1 % of their contracted ERDF funding on renewable energy sources. Silesia (PL) contracted the highest proportion of ERDF spending on renewable energy sources of around 3 %, which will provide new renewable-energy capacity and represent 2.3 % of the potential technical capacity for the region according to the 2020 report mentioned in previous paragraph.

**41** The EU's "energy efficiency first" principle means addressing energy efficiency ahead of investments in additional energy supply. In the audited regions, ERDF spending on projects for energy savings in public infrastructure, existing housing stock, SMEs and large enterprises ranged from 2.4 % of ERDF contracted spending in Palencia and León (ES) to 15 % in Asturias (ES).

**42** We were able to establish the expected impact of these EU-funded energy-efficiency measures only for Moravia-Silesia (CZ), where projects for 2014-2020 are expected to generate annual energy savings representing almost 5 % of total annual heat consumption in the region. For Silesia (PL) and Małopolska (PL), the authorities provided data on the impact of the regional programmes but not of the national-level programmes. In each of these two regions, EU-funded energy savings are expected to be less than 3 % of annual heat consumption and less than 1 % of annual electricity consumption. The remaining regions in our sample did not provide us with sufficiently complete data to make an estimate.

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<sup>19</sup> Article 61 of Regulation (EU) No 1303/2013 (OJ L 347, 20.12.2013, p. 320).

**43** In our report on energy efficiency in enterprises, we also found that EU-funded energy-efficiency projects would only deliver a modest contribution to EU objectives<sup>20</sup>. A 2020 study by the European Commission<sup>21</sup> shows that most energy savings at national level<sup>22</sup> come from energy-efficiency obligations or energy taxation.

### The EU has recently considerably increased its support for the transition of coal regions

**44** In December 2017, the Commission announced the launch of the [Initiative for Coal Regions in Transition](#) ("CRI{T}"), with a budget of €3.1 million. The initiative consisted in an open platform bringing together all relevant stakeholders, promoting the exchange of knowledge and experiences between coal regions. It also delivered technical assistance to seven specific coal regions (including Asturias (ES), Silesia (PL), Małopolska (PL) and the Jiu Valley (RO)). In June 2020, the Commission launched the [Just Transition Platform](#), building on experience gleaned from the CRI{T} Platform. Reports published by the JRC<sup>23</sup> identified a number of these regions and described their profile.

**45** As part of the European Green Deal, the Commission proposed the Just Transition Mechanism to target the regions and sectors most affected by the transition towards the climate-neutral economy, and which are dependent on fossil fuels, including coal,

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<sup>20</sup> [Special report 02/2022: Energy efficiency in enterprises – Some energy savings but weaknesses in planning and project selection](#), paragraphs 117-120.

<sup>21</sup> European Commission, [2019 assessment of the progress made by Member States towards the national energy efficiency targets for 2020 and towards the implementation of the Energy Efficiency Directive as required by Article 24\(3\) of the Energy Efficiency Directive 2012/27/EU](#), 2020; Figure 3, COM(2020) 326 final.

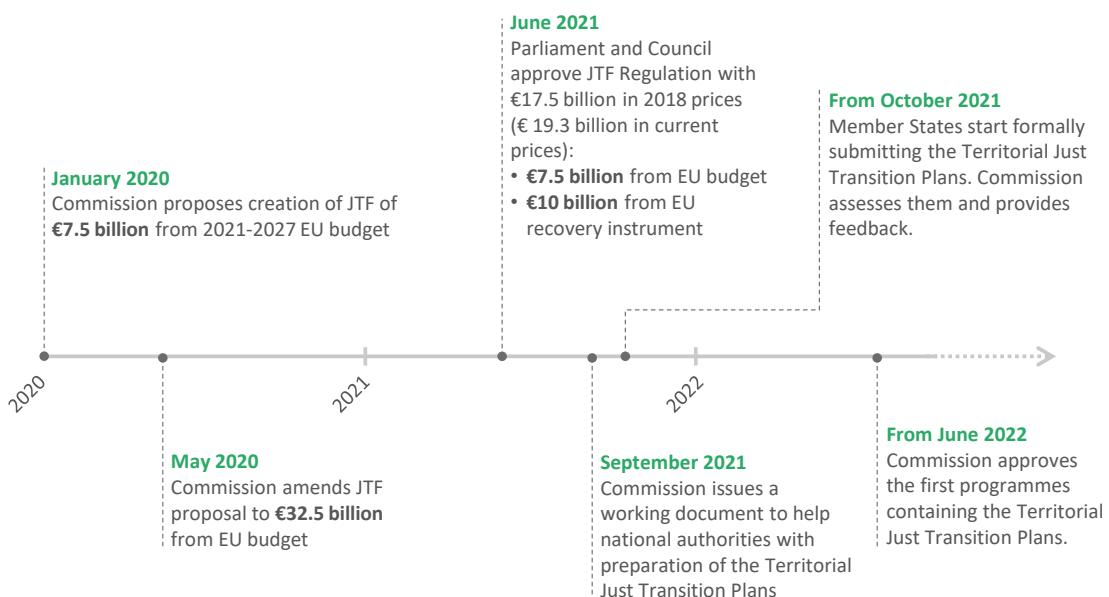
<sup>22</sup> Savings under Article 7 of the Energy Efficiency Directive.

<sup>23</sup> European Commission – JRC, [EU coal regions: opportunities and challenges ahead](#), 2018. [Clean energy technologies in coal regions: Opportunities for jobs and growth](#), 2020. European Commission – JRC, [Recent trends in EU coal, peat and oil shale regions](#), 2021.

peat and oil shale and greenhouse-gas-intensive industrial processes (“regions affected by the transition”). It consists of three pillars:

- a Just Transition Fund<sup>24</sup> with €19.3 billion available mainly for grants, which is implemented under shared management between the Commission and the Member States (see *Figure 11*);
- a Just Transition Scheme providing budgetary guarantees under InvestEU to “crowd in” private investment; and
- a public-sector loan facility, whereby EIB loans would be combined with EU grants.

**Figure 11 – JTF timeline**



Source: ECA based on legislation and information obtained from the Commission.

**46** Our opinion<sup>25</sup> on the Commission’s proposals for the JTF Regulation highlighted that the Commission had not carried out a comprehensive analysis of what the previous EU funding achieved in these regions, or of their remaining needs. It underlined the importance of coordination and complementarity of various sources of funding. It stressed in particular the risk that funds meant to alleviate the socio-

<sup>24</sup> Regulation (EU) 2021/1056 of the European Parliament and of the Council of 24 June 2021 establishing the Just Transition Fund (OJ L 231, 30.6.2021, p. 1).

<sup>25</sup> Opinion No 5/2020 on the Commission’s 2020/0006 (COD) proposals of 14 January 2020 and of 28 May 2020 for a Regulation of the European Parliament and of the Council establishing the Just Transition Fund.

economic and environmental costs of the transition would be spent without the transition effectively taking place, as some regions would not transform their carbon-intensive industries. This risk is accentuated by the limited timeframe of the programme. Funds from the EU Recovery Instrument, amounting to €10.87 billion, will need to be committed by the end of 2023 and used by the end of 2026.

**47** Territorial Just Transition Plans are a central element for JTF implementation. As of August 2022, ten Territorial Just Transition Plans had been approved. Russia's invasion of Ukraine in 2022, and its effects on the energy market, may also result in delays in the transition away from coal, and have an impact on the implementation of the transition plans.

**48** The JTF Regulation lays down a number of elements which Member States need to describe in their just transition plans, including the transition process at national level, the transition challenges of the most affected regions, and the expected contribution of the JTF<sup>26</sup>. A Commission staff working document on the territorial just transition plans<sup>27</sup> presents the view of the Commission services on the programming requirements. When it comes to conditions for accepting the plans, the document describes the situations in which the Commission would expect to accept or reject Member States' proposals. These conditions have the potential of partially reducing some of the risks identified in our opinion, but at the time of the audit, it was too early to assess how they would be applied in practice.

## Despite overall progress, coal remains a significant source of greenhouse gas emissions in some Member States

**49** We examined the evolution of the greenhouse gas emissions from coal. We assessed whether:

- the use of coal for electricity and heat production (and associated CO<sub>2</sub> emissions) has been declining in line with the fall in EU thermal coal production; and
- reliable estimates of methane emissions from active and abandoned coal mines have been available, together with rules and incentives to limit methane emissions from closed mines.

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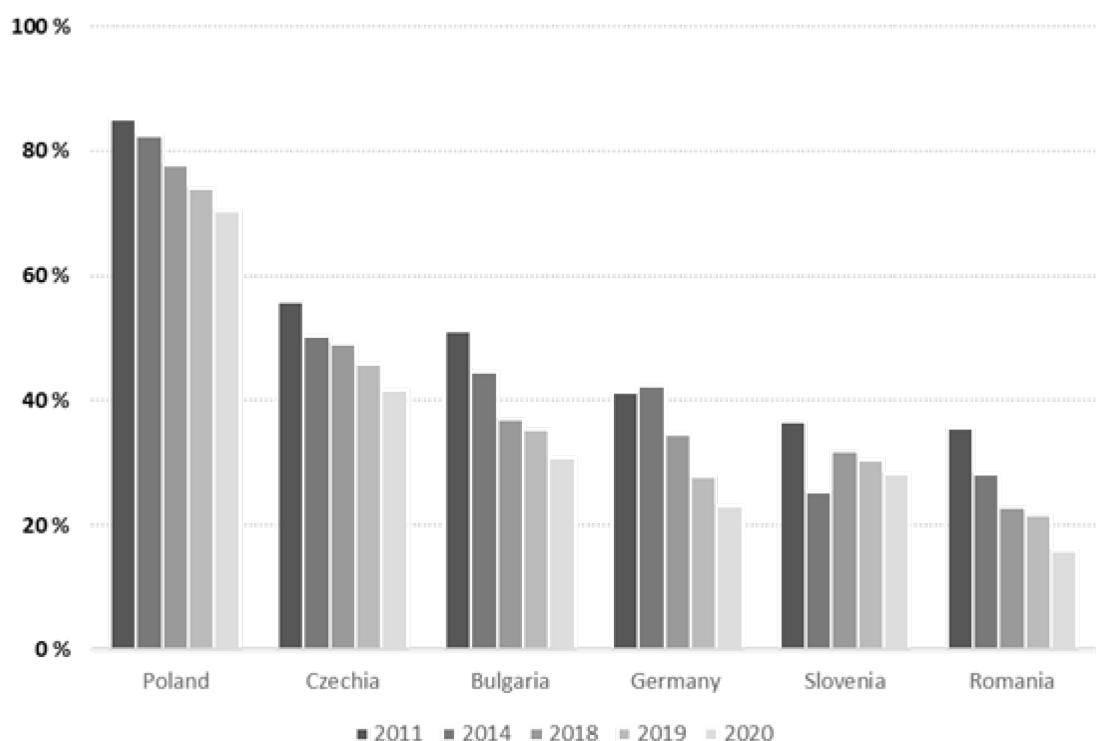
<sup>26</sup> Article 11 of Regulation (EU) 2021/1056.

<sup>27</sup> Commission Staff Working Document on the territorial just transition plans, SWD(2021) 275 final.

**CO<sub>2</sub> emissions from coal combustion decreased, but domestic coal has sometimes been replaced by imports or by other fossil fuels**

**50** In the EU-27, CO<sub>2</sub> emissions from the use of coal for electricity and heat generation fell by 59 % between 1990 and 2020. *Figure 12* shows that the proportion of gross electricity and heat generation powered by coal was still above 15 % in six EU countries in 2020. In the six EU countries described in *Figure 12*, coal combustion for electricity and heat generation was responsible for between 9 % and 32 % of their total greenhouse gas emissions in 2020 (excluding emissions and sinks from land use, land-use change and forestry, as well as emissions from international aviation)<sup>28</sup>.

**Figure 12 – Proportion of gross electricity and heat production from coal**



Source: ECA based on EEA data published by Eurostat.

**51** The proportion of electricity and heat produced from coal across the EU decreased by 11 percentage points between 2013 and 2020, from 25 % to 14 %. While the proportion of electricity and heat generated from renewable energy sources increased by 11 percentage points in the same period, the proportion generated from fossil gas also grew by 4 percentage points (see *Figure 1*). In the regions included in our

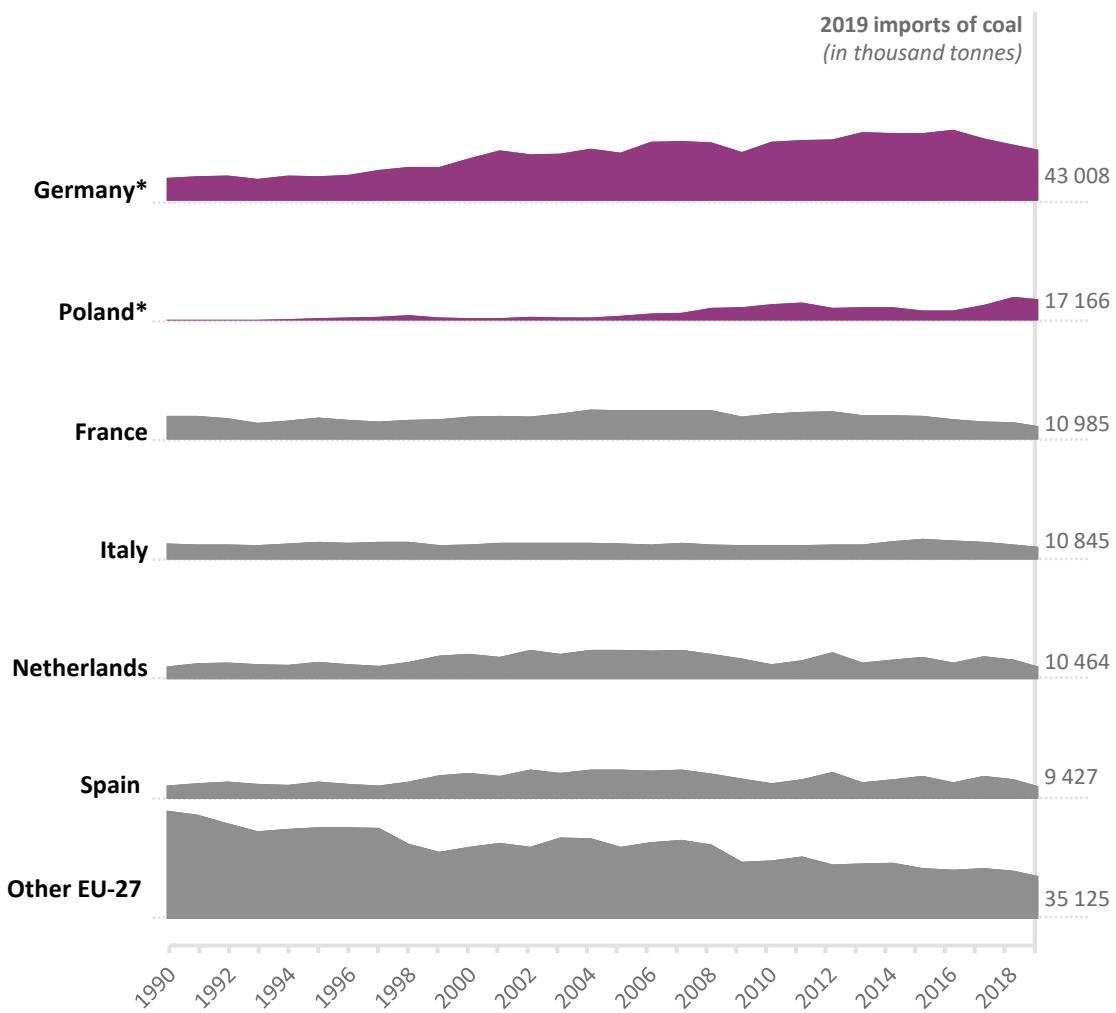
<sup>28</sup> EEA, *Annual European Union greenhouse gas inventory 1990–2020 and inventory report 2022*, 2022, pp. 80 and 102.

audit and the corresponding Member States, we generally observed that coal had not only been replaced with sustainable energy sources.

- In Czechia, hard-coal production in Moravia-Silesia (CZ) fell by 60 % between 2014 and 2019. Due to increased imports of hard coal, the CO<sub>2</sub> emissions caused by the combustion of hard coal in Czechia fell by only 32 %.
- In Lausitz (DE), active mines produced more coal to cover the lost production from the closed Cottbus mine.
- In Spain, CO<sub>2</sub> emissions from burning coal for electricity and heat generation fell by 63 % between 2013 and 2019. However, around 40 % of this drop in CO<sub>2</sub> emissions was offset by an increased use of fossil gas.
- In Poland, hard-coal production decreased by 25 % between 2014 and 2020, while use only fell by 15 %, as domestic production was partially replaced with imports.
- In the Jiu Valley (RO), the decrease in coal production was partially offset by increased imports of fossil gas.

**52** *Figure 13* shows the EU Member States which imported the most coal, of which hard coal accounted for 91.5 % in 2019. Germany and Poland have significantly increased their imports of coal in the last 15 years, while the coal imports are generally declining in the rest of the EU.

**Figure 13 – Imports of coal**

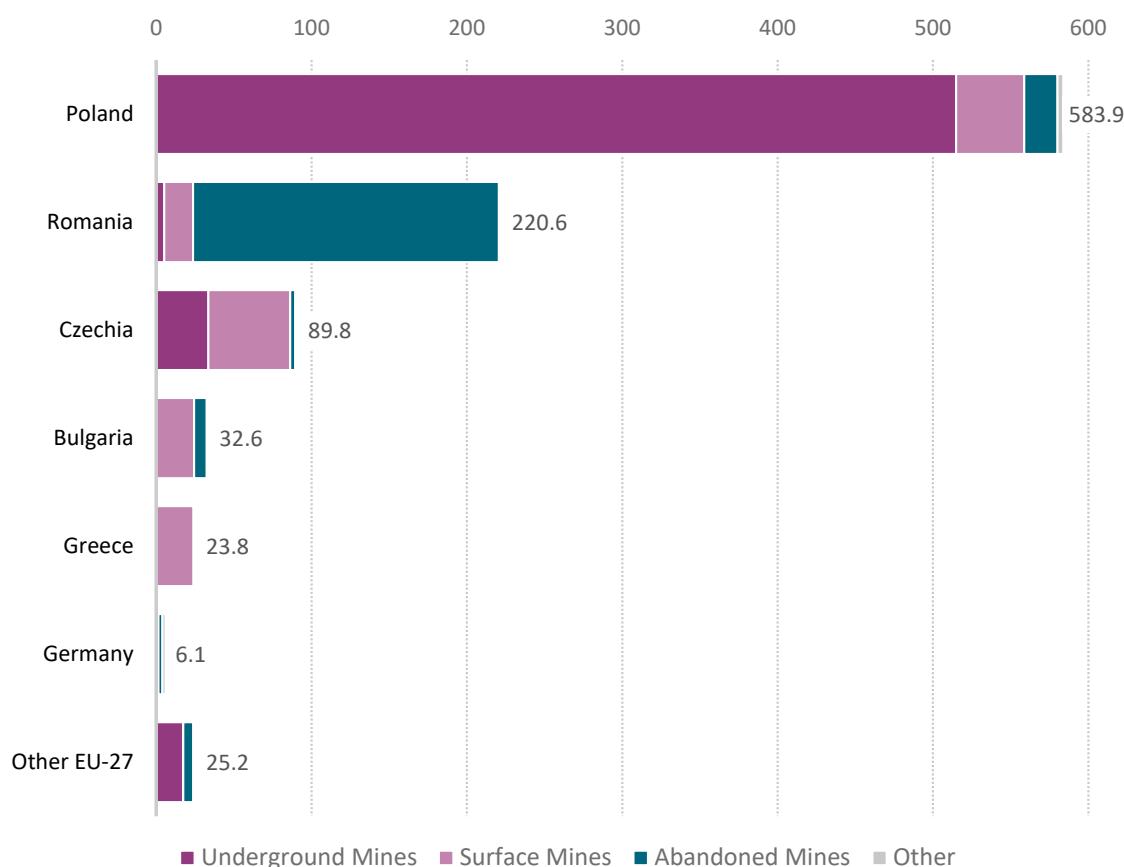


Source: ECA based on Eurostat data.

## Member States have so far paid little attention to methane emissions from closed or abandoned coal mines

**53** *Figure 14* shows that Poland is by far the largest emitter of methane from coal mining and handling, followed by Romania and Czechia, altogether representing 89 % of all these methane emissions<sup>29</sup>. The diagram also shows that active underground mines are the largest single contributor to methane emissions. As methane concentrations in these mines are continuously checked for health and safety reasons, the estimates of methane emissions reported in the national greenhouse gas inventories for active underground mines are considered reliable.

**Figure 14 – Estimated methane emissions from coal mines in 2019  
(in thousand tonnes)**



Source: ECA based on EEA greenhouse gas inventory data.

<sup>29</sup> EEA, *Annual European Union greenhouse gas inventory 1990-2019 and inventory report 2021*, 2021, p. 346.

**54** Emissions from surface mines cannot be measured continuously, as they are diffused over a wide area. Consequently, the most accurate estimation approach is based on quantities of coal mined in each active mine multiplied by an emissions factor. Methane emissions estimates from closed or abandoned underground mines are the least accurate, as there is no continuous measurement of methane in these closed mines allowing more reliable emission factors to be calculated. A 2020<sup>30</sup> study predicted that the proportion of methane emissions across the entire coal industry coming from closed (not flooded) or abandoned mines would increase significantly in the future, mainly due to lower emissions from active mines and deeper shafts in the recently closed mines.

**55** Some Member States put in place incentives in the form of subsidies, State aid and tax breaks for investments in systems using methane from closed or abandoned mines for electricity and heat generation, including Czechia, Germany, and Poland. However, only a few operational projects in the countries included in our audit use methane from closed or abandoned mines for electricity generation, with the exception of Germany, where more than 50 such projects are operational<sup>31</sup>.

**56** There are currently no EU-wide rules limiting methane emissions from coal mining and handling. Nevertheless, the Commission has taken action to obtain better information on methane emissions from active, closed or abandoned coal mines and to reduce these emissions, by publishing a proposal for a regulation in 2021<sup>32</sup>.

*Figure 15* describes elements of this proposal, which are relevant for the coal sector.

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<sup>30</sup> N. Kholod et al., *Global methane emissions from coal mining to continue growing even with declining coal production*, *Journal of Cleaner Production*, Volume 256, 120489, 2020.

<sup>31</sup> Coal Mine Methane Database, developed by US Environmental Protection Agency's Coalbed Methane Outreach Program at the request of the Coal Subcommittee of the Global Methane Initiative.

<sup>32</sup> *Proposal for a Regulation of the European Parliament and of the Council on methane emissions reduction in the energy sector and amending Regulation (EU) 2019/942*, COM(2021) 805 final.

**Figure 15 – Key elements of the proposed regulation on the methane emissions from coal sector**

	 <b>Closed or abandoned underground coal mines</b>	 <b>Operating underground and surface coal mines</b>
<b>Monitoring and reporting</b>	<ul style="list-style-type: none"> <li>• setting up an inventory of all closed or abandoned coal mines</li> <li>• installing measurement equipment, regular measurement and reporting</li> </ul>	<ul style="list-style-type: none"> <li>• setting up rules for monitoring and reporting of methane emissions</li> </ul>
<b>Mitigation</b>	<ul style="list-style-type: none"> <li>• developing and implementing a mitigation plan to address methane emissions</li> </ul>	<ul style="list-style-type: none"> <li>• in underground coal mines, prohibiting methane venting and flaring from drainage stations (<i>from 2025</i>) and from ventilation shaft (<i>from 2027</i>)</li> </ul>

*Source:* ECA based on the proposed Regulation.

## Conclusions and recommendations

**57** Our audit assessed whether EU support in 2014-2020 had contributed effectively to the socio-economic and energy transition in seven selected EU regions where the coal industry has been in decline. We conclude that EU support to coal regions had a limited focus and impact on job creation and energy transition and that, despite overall progress, coal remains a significant source of greenhouse gas emissions in some Member States.

**58** First, we looked at whether laid-off coal workers had received appropriate training and assistance to help them find a new job. Regional authorities were able to use both national and EU funds for this purpose. We found that training courses supported by the ESF were available to coal workers who had been laid off, but that data on participation for this specific group was lacking. A generally positive situation in the labour market in most regions included in our audit scope reduced the risk of laid-off coal workers remaining unemployed (paragraphs [26-32](#)).

**59** Second, we assessed whether Member States, together with the Commission, had identified the socio-economic needs of the coal regions and targeted funds accordingly. The selected coal regions had used EU funds in different ways with a view to addressing their own specific needs but with weak focus on socio-economic and energy transition. We observed that most regions had developed their transition strategies towards the end of the 2014-2020 period.

**60** We saw that the number of jobs created directly in these regions through investments under the ERDF was relatively low. We found that in most regions in our sample, funded projects did not have a significant impact on energy savings or on the renewable energy production capacity (paragraphs [33-43](#)).

**61** Since 2018, the Commission has offered various types of expertise to the coal regions, and in 2020 it made proposals to set up the €19.3 billion Just Transition Fund. Our opinion on the Commission's proposals for the JTF Regulation highlighted that the Commission had not carried out a comprehensive analysis of what the previous EU funding achieved in these regions, or of their remaining needs. We also found challenges for Member States in using the funding available within the set timeframe to support an effective transition. These weaknesses pose the risk that funds meant to alleviate the socio-economic and environmental costs of the transition may be spent without the transition effectively taking place. This risk has increased with the Russia's 2022 invasion of Ukraine (paragraphs [44-48](#)).

## **Recommendation 1 – Check that the Just Transition Fund is used effectively and efficiently to alleviate the socio-economic impact of the transition to climate-neutrality in coal and carbon-intensive regions**

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The Commission, when approving Territorial Just Transition Plans and Programmes and their amendments, and when monitoring and reporting on their implementation, should check that Member States have:

- (a) specified the planned measures and timeframe for transitioning away from coal and transforming carbon-intensive activities in line with the EU's climate objectives;
- (b) ensured that programmed resources do not exceed the financial needs identified in line with the pace of the transition; and
- (c) ensured complementarity and coordination between the various EU and national sources of funding.

### **Target implementation date: 2022 for the adoption of Territorial Just Transition Plans and Programmes; 2026 for monitoring and reporting**

**62** Lastly, we assessed whether greenhouse gas emissions from coal have been decreasing in line with the fall in EU coal production. We found that there has been a significant reduction in CO<sub>2</sub> emissions from coal combustion, but that domestic coal has sometimes been replaced by imports or by other fossil fuels. The proportion of gross electricity and heat generation powered by coal was still above 15 % in six EU countries in 2020.

**63** We also found that the reporting of methane emissions from closed or abandoned mines has not been sufficiently reliable, and that with the exception of Germany, there is only marginal use of methane from these mines. The reporting and mitigation of these emissions is currently not well regulated, but a Commission proposal published in December 2021 aims to tackle these issues (paragraphs [49-56](#)).

## **Recommendation 2 – Share good practice for measuring and managing methane emissions**

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Building on the 2021 proposal for a Regulation on methane emissions reduction in the energy sector, the Commission should gather and share examples of good practice in Member States of measuring and managing methane emissions from closed or abandoned coal mines.

**Target implementation date: 2025**

This Report was adopted by Chamber I, headed by Ms Joëlle Elvinger, Member of the Court of Auditors, in Luxembourg at its meeting of 21 September 2022.

*For the Court of Auditors*

Klaus-Heiner Lehne  
*President*

# Annex

## EU coal production and consumption

(in thousand tonnes)

Member States	2010		2015		2020	
	Production	Consumption	Production	Consumption	Production	Consumption
<b>Belgium</b>	2 005	7 836	1 274	6 329	1 140	4 613
<b>Bulgaria</b>	30 749	34 080	36 797	37 915	23 055	23 915
<b>Czechia</b>	58 180	55 599	48 984	48 657	34 113	37 281
<b>Denmark</b>	-	6 521	-	3 154	-	1 240
<b>Germany</b>	197 914	249 172	200 171	255 305	120 452	151 630
<b>Estonia</b>	22	60	8	29	15	12
<b>Ireland</b>	-	2 024	-	2 401	-	708
<b>Greece</b>	56 520	58 319	46 246	44 548	14 054	14 645
<b>Spain</b>	10 561	16 582	4 695	26 272	567	5 554
<b>France</b>	3 219	21 787	3 315	17 512	2 417	10 421
<b>Croatia</b>	-	1 198	-	1 021	-	603
<b>Italy</b>	4 211	25 705	1 768	21 581	1 292	9 152
<b>Cyprus</b>	-	27	-	6	-	22
<b>Latvia</b>	-	170	-	81	-	39
<b>Lithuania</b>	-	316	-	265	-	221
<b>Luxembourg</b>	-	111	-	84	-	66
<b>Hungary</b>	10 195	11 761	10 267	11 423	6 991	8 097
<b>Malta</b>	-	-	-	-	-	-
<b>Netherlands</b>	2 130	14 228	2 117	20 056	1 947	8 288
<b>Austria</b>	1 431	6 472	1 379	6 103	1 370	5 025
<b>Poland</b>	142 963	144 591	145 477	138 339	108 476	111 560
<b>Portugal</b>	-	2 705	-	5 512	-	957
<b>Romania</b>	31 129	32 611	25 493	27 858	15 031	16 678
<b>Slovenia</b>	4 430	4 950	3 168	3 613	3 175	3 491
<b>Slovakia</b>	4 093	9 333	3 637	8 049	2 187	5 608
<b>Finland</b>	866	8 256	915	5 271	796	3 639
<b>Sweden</b>	1 197	4 283	1 187	4 060	1 070	3 153
<b>EU-27</b>	561 815	718 697	536 898	695 445	338 149	426 620

Source: Eurostat.

# Acronyms and abbreviations

**CF:** Cohesion Fund

**CO<sub>2</sub>:** Carbon dioxide

**ESF:** European Social Fund

**ERDF:** European Regional Development Fund

**ESF:** European Social Fund

**ESI Funds:** European Structural and Investment Funds

**JRC:** Joint Research Centre

**JTF:** Just Transition Fund

**OP:** Operational programme

**NECP:** National energy and climate plan

**PM<sub>2.5</sub>:** Fine particulate matter

**SWOT:** Strengths, Weaknesses, Opportunities, Threats

# Glossary

**Carbon-intensive regions:** Regions in which fossil fuels are widely used for electricity generation, heating or in industrial processes, resulting in a high level of greenhouse gas emissions.

**Climate neutrality:** Situation in which human activities have no net effect on the climate.

**European Green Deal:** EU growth strategy, adopted in 2019, aiming to make the EU climate-neutral by 2050.

**European Structural and Investment Funds:** The five main EU funds which together supported economic development across the EU in 2014-2020 period: the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development, and the European Maritime and Fisheries Fund.

**Greenhouse gas:** A gas in the atmosphere – such as carbon dioxide or methane – that absorbs and emits radiation, trapping heat and thus warming the Earth's surface through what is known as the greenhouse effect.

**NUTS:** *Nomenclature des unités territoriales statistiques* – system classifying EU regions into three groups by population size for statistical purposes and regional policy-making, NUTS 1 being the largest and NUTS 3 the smallest.

**Operational programme:** The basic framework for implementing EU-funded cohesion projects in a set period, reflecting the priorities and objectives laid down in partnership agreements between the Commission and individual Member States.

**Paris Agreement:** International accord signed in 2015 to limit global warming to less than 2°C, with every effort to limit it to 1.5°C.

**Partnership agreement:** An agreement between the Commission and a Member State or a non-EU country in the context of an EU spending programme, setting out, for example, strategic plans, investment priorities or the terms of trade or development aid provisions.

**Small and medium-sized enterprise (SME):** A business which employs fewer than 250 people and which has an annual turnover of less than €50 million, or an annual balance sheet total of less than €43 million.

**State aid:** Direct or indirect government support for a business or an organisation, putting it at an advantage over its competitors.

**SWOT analysis:** An assessment of an entity's, a jurisdiction's or a programme's strengths, weaknesses, opportunities and threats.

**Thermal coal:** Coal used mainly in power plants for electricity and heat generation.

## Commission's replies

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=62373>

## Timeline

<https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=62373>

## Audit team

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This performance audit was carried out by Audit Chamber I Sustainable use of natural resources, headed by ECA Member Joëlle Elvinger. The audit was led by ECA Member Nikolaos Milionis, supported by Kristian Sniter, Head of Private Office and Matteo Tartaggia, Private Office Attaché; Emmanuel Rauch, Principal Manager; Jindřich Doležal, Head of Task; Gareth Roberts, Kurt Bungartz, Krzysztof Zalega, Pekka Ulander, Maria Eulàlia Reverté I Casas and Mihaela Vacarasu, Auditors. Marika Meisenzahl provided graphical support. Richard Moore and Laura Mcmillan provided linguistic support.



*From left to right:* Kristian Sniter, Emmanuel Rauch, Maria Eulàlia Reverté I Casas, Nikolaos Milionis, Matteo Tartaggia, Pekka Ulander, Jindřich Doležal.

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**Phasing-out coal is essential for achieving the EU climate objectives, and in 2020 the EU established the €19.3 billion Just Transition Fund to support the transition to climate neutrality. To draw lessons for the implementation of this Fund, we assessed whether EU support in 2014-2020 had contributed effectively to the socio-economic and energy transition in EU regions where the coal industry had been in decline. We conclude that the support had limited focus and impact on job creation and energy transition and that, despite overall progress, coal remains a significant source of greenhouse gas emissions in some Member States. We recommend actions for the effective and efficient use of the Just Transition Fund, and for better measurement and management of methane emissions from closed or abandoned mines.**

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