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The European Union Policy Toolbox to Support Just Transition

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About the Project

This report is part of a series of papers prepared by Resources for the Future (RFF), Environmental Defense Fund (EDF), and other partners that examine policies and programs to promote fairness for workers and communities in a transition to a low-greenhouse gas emissions economy, often referred to as a just transition. The series looks at existing public policies and programs, grouped thematically as “tools in the toolbox” for policymakers seeking effective strategies to address challenges associated with transition. We focus on policies and programs that can support workers and communities in regions where coal, oil, or natural gas production or consumption has been a leading employer and driver of prosperity.

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Contents

1. Introduction

The European Union (EU) is strongly committed to steering its economy away from high-carbon and pollution-intensive production and toward climate-neutral technologies and business models by 2050. If this transition is not accompanied by adjustment assistance, however, making deep reductions in greenhouse gas (GHG) emissions could disproportionately burden certain segments of society that are dependent on producing or using carbon-intensive energy resources as a primary employer or mainstay of the economy (Vona 2021). Many regional economies in Europe rely on fossil fuel extraction (oil, coal, or gas) or energy- and carbon-intensive production (e.g., steel production and electricity generation). As European Commission president Ursula von der Leyen has frequently stated, the large-scale deployment of low-carbon energy can succeed only if conducted in a fair and inclusive way for all European citizens (European Commission 2019k), what many refer to as *just transition*.

The aim of this report is to distill important lessons learned from the EU experience in promoting just transition to help US policymakers identify key components of a comprehensive and effective energy transition policy package. The report examines EU-level programs implemented over the period 2014–20 and summarizes the policy changes proposed in the European Green Deal for 2020–25.

The just transition concept originated in the US labor movement during the 1970s to describe the need for a support system for workers unemployed because of environmental protection policies (Henry et al. 2020). In the EU, the quality of work and life of its citizens has been a policy goal since its founding. One of the guiding principles of European policymaking is a commitment to reduce social, economic, and territorial development disparities among EU regions to promote integration and the economic growth of all member states. This is referred to as cohesion policy, which is enshrined in the Treaty on the Functioning of the European Union (Art. 174) and plays a crucial role in setting political priorities at the EU level (European Commission 2022g).[1] These policies and programs have been used as building blocks to shape EU just transition policy over time, including in the European Green Deal.[2]

1 *Cohesion policy* is the term used in the EU context to refer to regional policy. In the EU, socioeconomic development is promoted as an expression of solidarity between the EU member states and their regions. Programs and funding targeting socioeconomic development aim to remove economic, social, and territorial disparities across the EU, supporting the restructuring of declining industrial areas and diversification of declining rural areas. The rationale for cohesion policy is to mitigate the negative side effects from the creation of a single market and ensure that all EU citizens can reap the benefits (Samecki 2009).

2 For discussion of the evolving interpretation of just transition, see ILO (2015); Stevis and Felli (2015); Verdolini (2023).

It is important to note that most of the EU programs we discuss are ultimately implemented and used by the member states, which have a fair degree of autonomy in selecting the projects to be funded within the broader design principles set up at the EU level. Other reports in this series have reviewed some of the ways these EU-level programs have been implemented in specific countries.[3]

Within the EU, the concept of just transition indicates the need to support and help territories and regions most affected by the transition to a climate-neutral economy, prioritizing those that have less capacity to deal with the costs of transition (European Commission 2019b). The EU currently distinguishes between regions dependent on extraction of coal and fossil fuels and those dependent on carbon-intensive industries (Alves Dias et al. 2021).

This report does not present an exhaustive list of all programs and investments at the EU level that have been used to support workers and communities; rather, it identifies the key relevant EU policies and programs, describes their main features, and gives several examples of specific funded projects and activities. Many of these policies and programs have been motivated by other energy and economic issues, such as improving energy efficiency for energy security and enhanced productivity, but they include tools that are also applicable to just transition in the context of decarbonization.

Sections 2 and 3 of this report focus on the policies and programs during the full EU long-term budget cycle from 2014 to 2020. Section 4 then discusses more recent EU policy priorities and programs, some of which are still being shaped under the European Green Deal. The report thus provides a broad picture of how the debate around just transition is reshaping and adjusting EU policies and programs. Section 5 concludes by summarizing the relevant lessons learned from the EU experience.

The review of EU just transition policies provides several relevant insights for policymakers seeking to address equity and fairness issues in the United States' energy transition.[4] We briefly summarize the key points here, with discussion of them in Section 5.

- The multiannual and investment-focused EU budget provides long-term, stable funding, which supports addressing many of the challenges associated with just transition.
- The EU Just Transition Mechanism aims to mobilize substantial public and private investment between 2021 and 2027 to support just transition efforts in Europe.
- The Just Transition Mechanism includes a Just Transition Platform to serve as a single access point for related EU-wide resources and a centralized source for technical assistance. The Biden administration has established a similar resource.

3 Reports on just transition measures related to reductions in the coal sector in Germany, Poland, and the UK can be found on the RFF website at **https://www.rff.org/publications/all-publications/?offset=12&topic=10098**. The report on "Just Transition in Poland" examines the topic in the broader context of economic restructuring and increased regional integration of the country.

4 See Look et al. (2021) for a review of key issues for the US energy transition.

- The EU just transition policy framework requires EU member states to develop Territorial Just Transition Plans before accessing funds. The Biden administration has established a mechanism for rapid response teams to support local transition planning.
- One of the three pillars of EU just transition policy in the Green Deal is access to the Public Sector Loan Facility to support the implementation of just transition projects. The United States does not have a financing program explicitly dedicated to supporting transition in energy communities, although the creation of the Greenhouse Gas Reduction Fund in the Inflation Reduction Act may lead to a green bank that could support just transition efforts.
- EU R&D policy supports not only technology development but also innovation in the creation of stronger social institutions as a tool for responding to just transition challenges. The US federal government could do more to support research and pilot implementation of innovative approaches for addressing just transition.

2. Overview of EU Policymaking and the EU Budget

Understanding the relevance of past and current European policies and programs in the context of just transition requires being familiar with key aspects of European-level policymaking and how member states and the European political bodies interact and share policymaking "competence" (what we might think of as "jurisdiction" in the US context). In this section, we summarize the key features governing how the EU and its main policymaking institutions work and how EU level policies are adopted by member states (see Appendix A for more detail).

2.1. Principles of Conferral, Proportionality, and Subsidiarity

Three key principles guide EU policymaking: conferral, proportionality, and subsidiarity. The principle of *conferral* indicates that the EU may articulate policy goals and act only in those areas where member states have explicitly given power to European institutions through the EU treaties. The EU has exclusive jurisdiction in only a few areas. These include monetary policy for eurozone countries and the custom union, in which member states have conferred competence to the EU level. In many other areas, including economic, environmental, and social policy, the EU does not have exclusive jurisdiction but shares its power with the member states. Finally, in certain areas, including public health, education, industry, and culture, the EU has no power to pass laws and can only support and coordinate the action of the member states.

The principle of *proportionality* indicates that EU action cannot exceed what is necessary to achieve the objectives of the EU treaties. This implies that EU policymaking, actions, and programs are justified only within the scope of the EU mandate. The principle of *subsidiarity* means that in those areas where the EU and national governments share competences and the power to act, EU-level action is allowed and justified only if likely to lead to better results than what member states could achieve through independent actions (European Union 2017, 2022b; European Commission 2021b).

Given the EU's legal foundations, its programs relevant to just transition are designed at the EU level, but most are administered by the member states, which have significant autonomy in selecting the projects to be funded within the broader design principles set at the European level (and with Commission concurrence). European programs supporting just transition touch on areas in which, according to the principles of conferral, proportionality, and subsidiarity, the EU does not have sole competence for action but shares responsibility with the single member states (economic, social, and territorial development, as well the labor market), or in which the single countries have sole power to act (education, health) and EU actions can only complement and support those of the individual member states.

2.2. Multiannual Financial Framework (MFF)

EU policies and programs relevant in the context of just transition are funded through the EU long-term budget (European Commission 2022f), known as the Multiannual Financial Framework (MFF). They are grounded in the long-term political priorities that guide the development of the EU and are translated into short-term targets by the European Commission. Precisely because of the nature of EU competences, the EU budget is primarily used for investment. Normally, the EU is not permitted to run a deficit; its budget has to always be balanced.[5] In contrast, national budgets are managed mainly to provide public services and fund social security systems.

Investment programs are considered from a multiannual rather than an annual perspective. With these programs, action at the EU level is likely to be more effective than that of single member states, especially in areas such as cross-border or EU-wide infrastructure. Consequently, the EU budget has a strong multiannual character, and most of the EU budget is allocated to and distributed through structural funds (see Appendixes A and B for more detail).

5 In addition to not being allowed to run a deficit, until recently the EU was not permitted to fund its expenditures through borrowing. However, the Commission was authorized on an exceptional and temporary basis to borrow up to €750,000 million (in 2018 prices) on capital markets to finance the grants and loans provided by the Next Generation EU Recovery Instrument (NGEU) scheme, which followed the COVID-19 pandemic. However, new net borrowing should stop at the end of 2026, after which only refinancing operations will be allowed (see European Parliament 2023d).

Every seven years, an MFF is negotiated. It sets the maximum level of resources ("ceiling") for each major category ("heading") of EU spending, determining the allocation of funds across the different EU structural funds.[6] In addition to a financial plan, the MFF de facto establishes the EU's long-term priorities for the following seven years through the identification of "thematic objectives" in support of which the funding should be spent across the different spending ceilings identified. To achieve these thematic objectives, specific programs can be designed. Both the thematic objectives and the specific programs cut across the different spending ceilings and structural funds.

Within the guidelines of the long-term policy goals and the spending limits set forth in a given MFF, each year the European Commission presents a detailed budget, which may partly redirect spending or slightly change the focus on different priorities through redefinition of the programs, often in response to unforeseen circumstances such as an economic crisis. The current MFF covers the years 2021–27, while the previous MFF was for 2014–20. (For details regarding the specific objectives set up in the MFF 2014–20, see Appendix C.) Table 1 summarizes the differences between the key concepts of structural funds, thematic objectives, and programs in the EU context.

6 Of the headings in the MFF 2014–20, three were relevant for just transition: Sustainable Growth, of which a large part of expenditures was devoted to the EU Common Agricultural Policy; and Smart and Inclusive Growth, which was subdivided into Economic, Social and Territorial Cohesion and Competitiveness for Growth and Jobs. These budget headings accounted for 39, 34, and 13 percent of the MFF, respectively, totaling 86 percent of EU budget spending. However, not all the expenditures under these headings funded programs relevant for just transition. The MFF 2014–20 also included several other headings that are not directly relevant in the context of directly promoting fairness for vulnerable workers and communities: Security and Citizenship, Global Europe, Administration, and Compensations.

Table 1. Definitions of Key Concepts in EU Policymaking

Concept	Definition
Structural funds	The European Structural and Investment Funds (ESI Funds or ESIFs; see Appendix B) are financial tools governed by a common rulebook, set up to implement the regional policy of the EU, as well as the structural policy pillars of the Common Agricultural Policy and Common Fisheries Policy. These funds aim to reduce regional disparities in income, wealth, and opportunities. Europe's poorer regions receive most of the support, but all European regions are eligible under the policy's various funds and programs. The current Regional Policy framework is set for a period of seven years, 2021–27.
Thematic objectives	The goal of the thematic objectives is to focus regional policy funding on areas that deliver the highest benefits to citizens, creating synergies between the funded projects and avoiding excessive fragmentation of funding. Within the MFF 2014–20, 11 thematic objectives (see Appendix C) were identified to guide spending from the ESIFs, particularly that of the European Regional Development Fund, European Social Fund, and Cohesion Fund.
EU programs	Within each MFF, specific targeted programs can be created to address a specific or unforeseen challenge. This is a way to focus funding from the EU budget but also crowd in private investment. For instance, in 2015 the Commission launched the Juncker Plan, a specific investment program with the objective of closing the investment gap left by the financial and economic crisis in the EU. It aimed at mobilizing at least €315 billion in investments for key sectors across the EU by 2018.

The MFF cycle is not aligned with the political cycle of the European Commission; the former runs on a seven-year cycle, while a new Commission is voted into office every five years. This means that most often the Commission inherits an MFF, with its spending ceilings, thematic objectives, and programs. On rare occasions, the president of the Commission and the college of commissioners are voted into office at a time when the MFF has to be renegotiated. When this occurs, the spending realignment gives the new Commission the chance to build its political priorities into the long-term budget. When Ursula von der Leyen was voted into office in 2019, the new MFF 2021–27 provided the opportunity to embed the European Green Deal as the policy flagship program in the EU's long-term budget (see Section 4 for more details).

3. EU Programs in Recent History Related to Just Transition

In this section, we discuss EU programs related to just transition that were implemented during the MFF 2014–20. In Section 4, more recent EU policy developments are discussed, most notably those that have taken place under the European Green Deal. For the purpose of this report, EU programs implemented during the MFF 2014–20 and relevant to just transition are organized around five functional categories:

1. programs supporting sectors and regions transitioning away from coal and other fossil fuel production
2. support for workforce development
3. support for businesses
4. funding for infrastructure
5. funding for research and development

Sections 3.1–3.5 provide detailed descriptions of each of these categories. Table 2 summarizes the MFF 2014–20 programs presented in this report.

Table 2. EU-level Funds and Programs Relevant for Just Transition under the MMF 2014–20

Program	Approximate amounts	Purposes relevant for just transition
1. Programs supporting sectors and regions experiencing structural change away from coal and fossil fuel production		
Multi-Stakeholder Platform for Coal Regions in Transition (2017)	NA	Support the identification and development of projects and strategies for successful transformation of coal-mining and carbon-intensive regions; facilitate sharing of best practices, peer-to-peer learning, and new partnerships with the aim of kick-starting the process of diversification and transition.
2. Support for workforce development		
European Social Fund (ESF) (1957)	€100.35 billion funding plus €36.6 billion national funding (European Commission 2022l)	Provide funds to member states for the implementation of active labor market policies helping citizens, particularly those at greatest risk of poverty, find and retain jobs. ESF funds are accessible by all countries in the EU.
Youth Employment Initiative (YEI) (2013)	€8.95 billion funding plus €1.5 billion national funding (European Commission 2022s)	Support young people who are not in education, employment, or training, including the long-term unemployed or those not registered as job seekers, through the funding of apprenticeships, traineeships, job placements, and further education leading to a qualification.
Employment and Social Innovation (EaSI) program (2006)	€899.6 million funding (European Commission 2022n)	Coordinate EU and national actions on employment, social affairs, and inclusion; modernize EU legislation and implementation; support development of social protection systems and labor market policies; promote geographic mobility and boost employment opportunities by developing a more open labor market; increase the availability of and access to microfinance for vulnerable groups and microenterprises; increase access to finance for social enterprises. Managed directly by the European Commission and organized around three programs: PROGRESS, EURES, and Progress Microfinance.
European Globalization Adjustment Fund (EGF) (2006)	Maximum annual financial ceiling of €150 million (in 2011 prices); maximum amount over the MFF 2014–20 period of €1.05 billion (EPRS 2013; European Parliament and Council 2013e)	Provide one-off financial support, limited in time, to member states for the provision of support to people experiencing unemployment as a result of the global economic and financial crisis or major structural changes in world trade patterns due to globalization (e.g., if a large company shuts down or production is moved outside the EU).
Social protection policies	NA	Provide an overarching framework of regulation ensuring that, among other things, new jobs are available for stranded workers, and communities are in line with given minimum standards of protection and benefits.

Program	Approximate amounts	Purposes relevant for just transition
3. Support for businesses		
European Regional Development Fund (ERDF) (1975)	€228.11 billion funding plus €78.72 billion national funding (European Commission 2022j)	Provide cofunding for projects promoting the development and structural adjustment of regions lagging behind or the conversion of declining industrial regions. The ultimate goal is to help reduce regional imbalances in the EU. All regions of the EU can access funds, but depending on the level of development, the amount of cofunding with member state resources varies. Within the ERDF, the European Territorial Cooperation program, also known as Interreg, was established in the 1990s to provide funds to projects with a specific cross-border, transnational, or interregional dimension (i.e., involving regions from more than one member state), including those focused on declining local industries.
Competitiveness of Enterprises and SMEs (COSME) (2013)	€2.3 million, with 60 percent allocated to financial instruments (European Parliament and Council 2013a)	Improve access to finance for small and medium-sized enterprises (SMEs) in the form of equity and debt (60 percent of the budget); improve access to markets, particularly inside the EU but also at the global level (21.5 percent); improve framework conditions for the competitiveness and sustainability of EU enterprises, particularly SMEs (11 percent); and promote entrepreneurship and entrepreneurial culture (2.5 percent).
Investment Plan for Europe (Juncker Plan) (2015)	€16 billion guarantee from the EU budget and €5 billion from the European Investment Bank, which aimed to mobilize about €315 billion in investments (European Commission 2018c)	Promote growth and investment in the EU after the economic crisis. Structured around three axes: the European Fund for Strategic Investments; the European Investment Advisory Hub and EU Investment Project Portal; and improvement of the European regulatory environment.
EU-wide SMEs policies	NA	Remove administrative burden, share best practices, and promote conditions favoring sustainable development of SMEs.

Program	Approximate amounts	Purposes relevant for just transition
4. Funding for infrastructure		
Cohesion Fund (CF) (1994)	€61.46 billion funding plus €11.22 billion national funding (European Commission 2022d)	Provide funds for environmental and transport infrastructure projects to member states whose gross national income per capita is less than 90 percent of the EU average.
Connecting Europe Facility (CEF)	Transport, €24.05 billion (€11.31 from Cohesion Fund); telecommunications, €1.07 billion; energy sector, €5.08 billion (European Parliament and Council 2013f)	Provide funds for infrastructure development program in three main areas—transport, energy, and telecom—to improve the connection and integration of EU regions, with a specific focus on peripheral regions.
European Fund for Energy, Climate Change and Infrastructure. (Marguerite I/II) (2010, 2017)	Marguerite I (2010): €710 million commitments Marguerite II (2017): €745 million commitments (Marguerite 2023)	Provide access to funding for capital-intensive infrastructure investments within the EU. This equity fund was established with the backing of six major European public financial institutions and the European Commission.
5. Funding for research and development		
Horizon 2020 (H2020)	€80 billion, with small part targeted for projects in coal-intensive regions	Fund EU research and innovation. Includes several calls for projects focusing on carbon-intensive regions and supporting just transition in these regions, as well as other topics relevant for the energy transition more broadly, such as innovation in low-carbon technologies.

Note: EU structural funds are shown in lighter blue.

3.1. Programs Supporting Sectors and Regions Transitioning Away from Coal and Fossil Fuels

The specific focus of EU programs on the transition away from coal and fossil fuels is relatively recent, and initially quite limited until the recent focus on just transition within the EU Green Deal (see Section 4). The EU established the Multi-Stakeholder Platform for Coal Regions in Transition in 2017 to support diversification and technology development in regions transitioning away from coal, as well as peat and oil shale (European Commission 2017b). These regions have been actively mining coal, providing jobs to about 240,000 people, roughly 180,000 in coal mining and 60,000 in coal-fired power plants. Most of these workers have limited opportunities to find alternative employment because of a lack of skills or other types of jobs in their regions (European Commission 2018e; EIB 2020).

Participants in the platform include members of the European Commission and a variety of stakeholders, among them regional and national authorities (with 41 regions across 12 member states and cities), the business community (e.g., coal companies, developers, regional chambers of commerce, and development agencies), trade unions, academia, and NGOs working in the areas of just transition, climate, and the environment (EIB 2020). The objectives of this initiative are to support the identification and development of projects and strategies for successful transformation of coal-mining and other carbon-intensive regions and to facilitate sharing of best practices, peer-to-peer learning, and new partnerships with the aim of kick-starting the process of diversification and transition (EIB 2020).

Two working groups were created to carry out the work of the platform. One was to focus on strategies, experiences, and projects in the area of post-coal economy, such as coal mine closures, regeneration of mining sites, valorization of coal-mining assets, and reskilling of workers, as well as on long-term structural transformation, including the development of new sectors of economic activity and accompanying infrastructure. This was to be done through identification of best practices (collected in a report) and development of a toolkit and guidance on the use of EU funding and programs to support transition. The other working group was to focus on projects in the areas of clean air (including eco-innovation) and energy system technologies (including advanced coal technologies), which are compatible with the EU's long-term commitments to decarbonize the European economy. This group's goals were to be achieved through inventorying and mapping advanced energy and clean air technologies and projects and identifying best practices in eco-innovation and clean air strategies for coal regions (European Commission 2018e).

In the pilot phase, which lasted three years, the activities of the platform focused on regions where coal mining was ongoing. Box 1 highlights some of the projects supported by the platform. The platform now represents one of the components of the EU Just Transition strategy (see Section 4).

Box 1. Examples of Projects Supported by the Platform for Coal Regions in Transition

In 2018, the Coal Regions in Transition Initiative delivered assistance to 13 pilot regions in seven member states. For example, the European Commission Structural Reform Support Service gave technical assistance to coal regions in Greece and Slovakia to help them develop long-term transition strategies. In Poland, the Czech Republic, and Germany, coal regions received guidance to develop and finance identified priority projects with the use of existing EU funds. In the Polish region of Silesia, the EU's largest coal region and the host of COP24, €120 million was allocated under the Regional Operational Programme to provide support to projects in the area of urban infrastructure and clean air and to prepare former mining sites for investments (European Commission 2018f).

3.2. Workforce Support Policies

EU worker support policies include funding for workforce development and minimum requirements in terms of social protection for workers.

3.2.1. Workforce Development

Workforce development policies and programs are relevant for just transition because of the need to train workers for new opportunities in the labor market. EU workforce development programs were supported through three main funding channels in the MFF 2014–20: the European Social Fund and Youth Employment Initiative, the Program for Employment and Social Innovation, and the European Globalization Adjustment Fund. Workforce development was also funded through the European Regional Development Fund (ERDF), the biggest EU structural fund (the ERDF is discussed in Section 3.3.1, as its main purpose is support for businesses).

3.2.1.1. European Social Fund

The European Social Fund (ESF), established in 1957, provides funds to member states for the implementation of policies to help workers find and retain jobs, with a focus on people at greatest risk of poverty (European Commission 2007, 2015c).[7] Although the ESF did not specifically target employment challenges related to energy transition during the 2014–20 period, it promoted labor market participation of workers with obsolete skills in other contexts. Therefore, the institutional capabilities and approach of the fund may be relevant for addressing labor market challenges resulting from decarbonization.

7 In 2021, the European Social Fund was transformed into the European Social Fund Plus (ESF+), running for the period 2021–2027, by merging the existing European Social Fund with the EU Fund for European Aid to the Most Deprived (FEAD) and the EU Programme for Employment and Social Innovation (EaSI). See Section 4.3.

The ESF does not target only economically distressed regions or regions in transition, nor a particular sector, so all EU regions can access ESF funds. Public and private organizations can apply through the national ESF managing authorities in their country. The European Commission sets funding priorities but is not directly involved in selecting projects, which are managed at the level of the member state. For the 2014–20 period, the ESF funding priorities decided at the EU level were promoting employment and supporting labor mobility; promoting social inclusion and combating poverty; investing in education, skills, and lifelong learning; and enhancing institutional capacity and an efficient public administration (European Commission 2022k, m). As shown in Figure 1a, most of the funding went to the first three objectives.

Figure 1. Budget Allocations of the European Social Fund and Youth Employment Initiative

Figure 1a. European Social Fund (billion euros, 2014–2020)

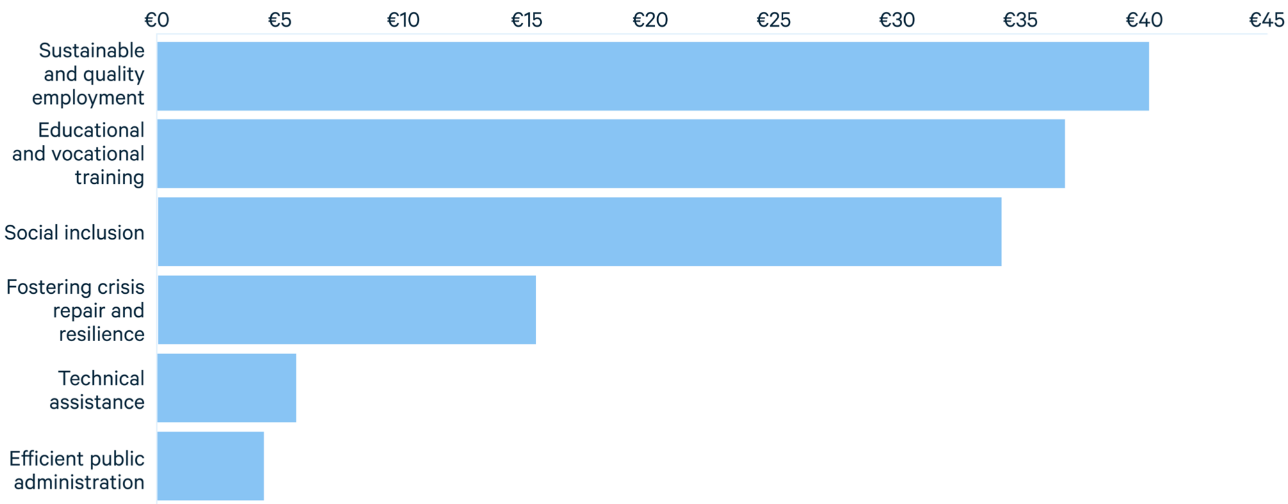


Figure 1b. Youth Employment Initiative (billion euros, 2014–2020)

Source: European Commission (2022l, s).

Projects could apply for funding if they were designed to do one of the following: promote employment, job quality, and a high level of education and training; improve access to the labor market and promote the geographic and occupational mobility of workers; support the adaptation of workers to industrial change and to changes in production systems needed for sustainable development; help young people transition between education and employment; or promote the implementation of reforms, particularly in the fields of employment, education, training, and social policies. One of the key requirements to access ESF funds was that member states must ensure that at least 20 percent of funding was allocated to reducing poverty and discrimination and promoting social inclusion (European Commission 2007). This enhanced policy focus on equity and inclusion is a strength in the just transition context (Look et al. 2022).

Box 2 provides examples of projects supported by the ESF and administered by member states. Historically, these types of projects were not designed to target workers stranded as a result of the energy transition, but they successfully promoted labor market participation of vulnerable groups and citizens or workers with obsolete skills. Thus, they are projects potentially targeting stranded energy workers to be funded through the ESF.

To promote the training and skill upgrading of young people not in education, employment, or training, the European Commission introduced the Youth Employment Initiative (YEI) in 2013. This program specifically targets these young people in regions whose unemployment rate is higher than 25 percent. Half of this initiative was funded through the ESF, while the other half came from an additional allocation (Figure 1b).

Box 2. Examples of Projects Supported by ESF in Germany, Spain, and Italy

Support for market reentry of women STEM graduates in Germany

Women engineers who leave their careers for family reasons face significant challenges in reentering the labor market, despite the need for workers with science, technology, engineering, and mathematics (STEM) backgrounds in the EU. Even during a short absence, their technical skills often become obsolete. Furthermore, language barriers often prevent highly qualified migrant women from seeking placements. In 2017, the ESF cofinanced the Back2Job project in the Niedersachsen (Lower Saxony) region of Germany. This project followed the setup of a previous project in the region and focused on retraining and reintegrating women engineers into the workforce, providing new skills development through part-time formal education from universities and high schools, as well as language courses tailored specifically toward career-relevant languages. In addition, work placements were organized with companies and coupled with one-on-one mentoring programs throughout the placement phase. Total investment for the Back2Job project was €192,236, with the ESF contributing €92,074 through an operational program for the 2014–20 period (European Commission 2017a).

Support for labor market integration and social inclusion for refugees in Spain

The ESF cofinanced the Labour Integration and Social Inclusion of Refugees program, run by the Spanish city of Murcia's Regional Employment and Training Service, with the aim of integrating refugees through assisted job placement. Through targeted help from social workers and job counselors, the project provided training, help in obtaining immigration documents, and job matching. Modeled on an earlier award-winning program for survivors of gender-based violence, the project joined forces with organizations that receive refugees when they arrive in Murcia: Spain's Service for Social Policies, the Spanish Catholic Commission of Migration Association, Cepaim Foundation, Spanish Red Cross Region of Murcia, and Murcia Acoge Association. The project assisted about 80 refugees with job searches, training, or other support. It also set up a method for obtaining reliable data on refugees in Murcia to remove institutional barriers to their integration. Total investment for the project was €157,500, with the regional government of Murcia and the Spanish Ministry of Employment and Social Security financing 75 percent of the project and the ESF contributing €39,375 (25 percent) through the Region de Murcia Operational Programme for the 2014–20 period. The investment falls under the priorities Employment and Labor Market and Social Inclusion. Beyond this period, the region of Murcia will be able to support the project through its own budget (European Commission 2018d).

Support for microcredit and technical assistance to entrepreneurs in Italy

In Italy's Marche region, the ESF cofinanced the Loan of Honour project, which aimed to reduce unemployment by guaranteeing access to microcredit and promoting entrepreneurship. Through the project, the Marche authorities granted medium-term microcredit loans to unemployed people aged 18–60 or to women over 35 who were employed but wished to set up their own businesses. Loans ranged between €25,000 and €50,000. The program also provided free training and tailored technical assistance for the first year of business. Results of the three phases of the project (2006–8, 2010–12, 2013–15), with €7.9 million in funding from the ESF, were 1,355 new businesses and 3,300 new jobs (Trogu 2018).

3.2.1.2. Employment and Social Innovation Program

The EU-level Employment and Social Innovation (EaSI) program supports social innovation, defined as "new ideas (products, services and models) that simultaneously meet social needs (more effectively than alternatives) and create new social relationships or collaborations; … innovations that are not only good for society but also enhance society's capacity to act" (Donati 2021). Stated goals of this program are to coordinate action at the EU and national levels in the areas of employment, social affairs, and inclusion; support the development of adequate social protection systems and labor market policies; modernize EU legislation and ensure its effective application; promote geographic mobility and boost employment opportunities by developing an open labor market; increase the availability and accessibility of microfinance for vulnerable groups and microenterprises; and increase access to finance for social enterprises (European Commission 2021c). EaSI is managed directly by the European Commission's Directorate-General for Employment, Social Affairs and Inclusion. It is structured along three axes, or program lines: PROGRESS, European Employment Services (EURES), and Microfinance and Social Entrepreneurship (MF/SE) (European Commission 2019g; European Parliament and Council 2013b). Although EaSI was not designed specifically to target challenges facing coal- or carbon-intensive regions, as a prominent program supporting workforce development and entrepreneurship, its axes are relevant in the context of just transition to decarbonization, particularly its provisions to support stakeholder involvement and buy-in (PROGRESS), provide opportunities for workers' mobility (EURES), and support local entrepreneurs (MF/SE).

PROGRESS focuses on providing financial support for information sharing and mutual-learning activities, social policy experimentation projects, and capacity building to increase the involvement of social partners in the areas of sustainable employment, adequate and decent social protection, social exclusion and poverty, and working conditions. Under this axis, the EU also finances specific activities linked with data collection and analysis, including indicators, methodologies, classifications, microsimulations, surveys, studies, and reports (European Commission 2017c). EURES is a cooperation network formed by public employment services and with the participation of labor unions and trade associations. The objective of this axis is to improve geographic labor mobility by making information on job opportunities more transparent and accessible and by funding job-matching services for employment seekers and employers. MF/SE aims to improve access to finance for social enterprises, microenterprises and enterprises serving a particular social good; provide funding for financial intermediaries; and build the capacity of relevant actors.

3.2.1.3. European Globalization Adjustment Fund

The European Globalization Adjustment Fund (EGF) is a special instrument that allows the EU to react to specific emergencies, such as mass layoffs resulting from globalization, for a limited period of time (European Parliament 2023b).[8] Member states can access the EGF to fund up to 60 percent of the cost of two-year projects designed to help workers laid off as a result of major structural changes in world trade patterns due to globalization (e.g., when a large company shuts down or production is moved outside the EU) or as a result of a global economic and financial crisis (European Commission 2019i, 2021d, 2022i). These projects assist workers in finding another job or setting up their own businesses through career advice, education, training or retraining, mentoring and coaching, entrepreneurship and business creation, training allowances, mobility or relocation allowances, subsistence allowances, or other such support (European Commission 2022i).

Unlike the ESF, EGF funding is requested by and granted to EU member states, as opposed to public and private organizations working within a member state. Once funding is granted to a member state, the projects are managed and implemented by national or regional authorities. The EGF funds projects providing workers with one-off individual support that is limited in time; in this, it strongly differs from the EU Structural and Investment Funds (particularly the ESF), which take a strategic long-term perspective in anticipating and managing the social impact of industrial change through activities such as lifelong learning.

Importantly, EGF cannot be used by member states to cofinance social protection measures, such as pensions or unemployment benefits, nor to keep companies in business or help them modernize or restructure (European Commission 2015b). During 2014–20, 53 applications were submitted to the EGF program, requesting a total of about €170 million in funding. Of these, 49 were accepted and 3 withdrawn; 49,562 workers were targeted (European Commission 2020j). Box 3 provides an example of an EGF action supported in 2018.

Box 3. Example of Project Supported by EGF for Dismissed Workers in the Greek Media Sector

In 2018, EGF funds were used to help reemploy 550 displaced workers of three media companies in the Greek region of Attica. Workers were provided with occupational guidance, training, entrepreneurship support, contributions to business start-up, and income allowances. The total cost of the project was around €3.8 million, of which the EU provided 60 percent (European Commission 2018a).

8 The EGF generally can be used only when over 500 workers are laid off by a single company (including its suppliers and downstream producers) or a large number of workers are laid off in a particular sector in one or more neighboring regions. This could result if, for example, high carbon prices on the EU Emissions Trading System and competition from cheaper steel from another country caused a steel plant to close.

3.2.2. Social Protection

Social protection policies aim to protect workers' rights and welfare and to reduce and prevent poverty and economic vulnerability throughout life. Such policies include benefits for children and families, maternity, unemployment, employment injury, sickness, old age, disability, and survivors, as well as health protection. These policies are an important component of just transition because they provide an overarching framework that ensures that new jobs for workers in transition meet minimum standards of protection and benefits. Social protection is an important component of the European single market and a key target of EU (social) cohesion policy. In particular, solid social protection ensures that EU countries and businesses compete in the single market on the strength of their products rather than by lowering labor law standards.

Social protection legislation in the EU remains a responsibility of the member states through legislation, funding, and policy guidance. Standards differ among the member states (European Parliament 2023c). However, in accordance with Article 153 of the Treaty on the Functioning of the EU, the EU can adopt directives to set minimum standards. Directives are a common legal act used in the EU to identify a result to be achieved without dictating the means of achieving it; member states must then enact national laws to put the directives into effect. Relevant to social protections, each member state must ensure minimum standards regarding the following:

- health and safety at work (general rights and obligations; workplace safety, including equipment safety standards; specific risks; and vulnerable workers)
- equal opportunities for women and men (equal treatment at work, pregnancy, maternity leave, parental leave)
- protection against discrimination based on sex or gender, race, religion, age, disability, or sexual orientation
- labor law (part-time work, fixed-term contracts, working hours, employment of young people, informing and consulting employees)

The Commission uses systematic monitoring to check that the rules are correctly implemented and enforced by the member states' national authorities, such as labor inspectorates and courts. While minimum standards must be enforced, each member state is free to provide higher levels of protection (De Baere and Gutman 2017).

3.3. Support for Businesses

EU business support programs relevant to just transition pertain to two areas: supporting small and medium-sized enterprises (SMEs) through direct funding or improved access to financial instruments and working to streamline regulation (and thus remove barriers to growth) and introduce business practices that boost productivity and competitiveness. Both types of instruments are relevant for just transition insofar as they help generate new economic opportunities and facilitate economic diversification, creating new jobs in the process.

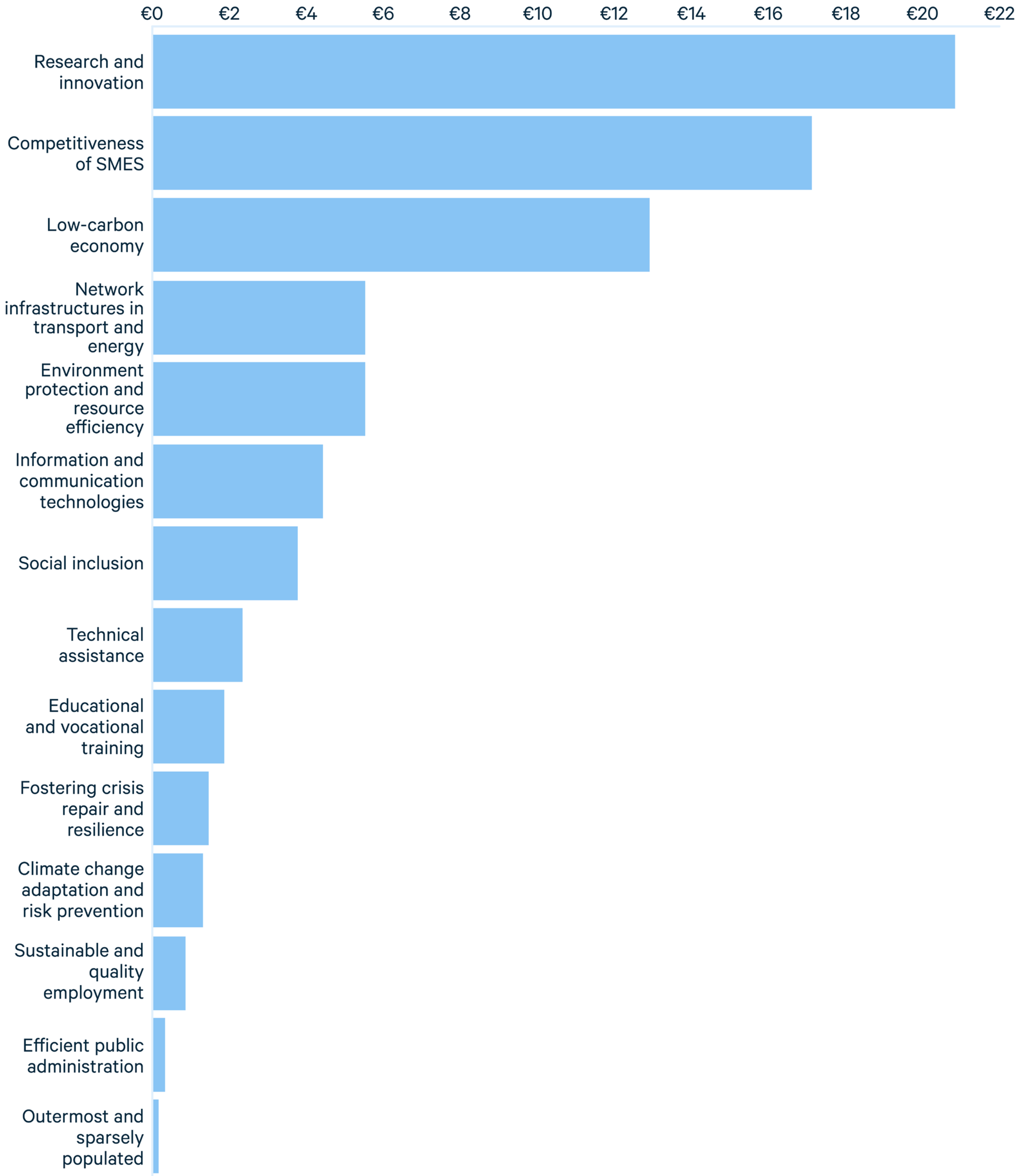
3.3.1. Direct Funding and Improved Access to Financial Instruments for Firms

EU funding supports businesses in overcoming specific barriers to growth. Here we focus on three main programs: the European Regional Development Fund, which is the biggest of the EU structural funds; the Competitiveness of Enterprises and Small and Medium-sized Enterprises program; and the Investment Plan for Europe.

3.3.1.1. European Regional Development Fund

The European Regional Development Fund (ERDF) cofunds projects promoting the development and structural adjustment of regions that are lagging economically, including industrial regions undergoing major economic transitions or decline. Its ultimate goal is to help reduce regional imbalances in the EU. The ERDF can be accessed by all regions of the EU, but depending on the level of development, the proportion of cofunding by member states varies: more developed regions (those with GDP per capita above 90 percent of the EU average) need to provide at least 50 percent cofunding for each project; transition regions (those with GDP per capita between 75 and 90 percent of the EU average) need to provide at least 40 percent; and less developed regions (those with GDP per capita below 75 percent of the EU average) need to provide at least 15 percent. ERDF funds are managed at the member state level; the allocation of ERDF funds to different projects is determined through partnership agreements, strategy documents prepared by each member state with the assistance of regional and social partners (European Parliament 2023a). The overall budget allocations of the ERDF in the MFF 2014–20 across different objectives are shown in Figure 2.

Figure 2. Budget Allocations of the ERDF Based on Thematic Objectives (billion euros, 2014–2020)



Source: European Commission (2022j).

Within the ERDF, funds were also specifically earmarked to support the European Territorial Cooperation program, also known as Interreg. Interreg was established in the early 1990s, when the European single market came into force, to support and promote territorial cooperation processes. Within Interreg, funds are provided to projects with a specific cross-border, transnational, or interregional dimension—those involving regions from at least two member states. These include projects focused on declining local industries, improving the accessibility of Information and Communication Technologies or transport infrastructure, and more broadly, promoting integrated territorial development between national, regional, and local entities in large European geographic areas (European Parliament 2019, 2023a). Box 4 provides examples of projects supported by the ERDF, including through the Interreg program.

Box 4. Examples of Projects Supported by ERDF

Supporting a Polish mesh and steel filter manufacturer

ERDF funding supported the Polish wire mesh and steel filter manufacturer Niltech in renewing its production process to include clinching-based manufacturing. Clinching machines cost less than other joining machines and can also be adapted to join nonmetal parts, including polymers and composite materials. Without the need for solvents, acids, and other hazardous liquids commonly used in these joining processes, clinching is generally considered an environmentally friendly alternative. The total investment for the project amounted to €216,307. ERDF contributed €140,107 through the Regional Operational Programme for Świętokrzyskie Voivodeship for the 2014–20 period. The investment falls under the priority of Support to SMEs (European Commission 2019h).

Boosting Innovative Entrepreneurial Ecosystem in Regions for Young Entrepreneurs

The Boosting Innovative Entrepreneurial Ecosystem in Regions for Young Entrepreneurs (IEER) project aimed to support young entrepreneurs around Europe and help them build business management skills. It involved 10 European regions and implemented regional ecosystems for start-ups. After investigating the 10 regions' business environments, IEER tapped into the knowledge of regional experts—including public, private, and educational stakeholders—to support sharing of experience and best practices. This included peer-learning visits, guided workshops and working groups (over 100 events across all regions), and an analysis of how European Structural Funds had been used in the 10 regions.

Following this process, each of the regions established an action plan outlining a regional learning platform for entrepreneurs, business development agencies, educational institutions, and civil servants. In total, the plans comprise 50 actions, including entrepreneurship training, mindset-related courses in schools, and start-up assistance. Along with the action plans, the events led to the formulation of 20 best practices and a handbook to guide the development of entrepreneurial ecosystems.

Implementation of IEER action plans subsequently led to an estimated €40 million of investment. Regional strategies in which knowledge derived from IEER was applied include Finland's Helsinki-Uusimaa regional program, the innovation strategy for Western Pomerania in Poland, and the strategic entrepreneurship plan for Valencia, Spain.

At the EU level, IEER worked with the European Commission and Committee of the Regions on policies addressing start-ups, such as the Start-up and Scale-up Initiative. It provided input into the Committee of the Regions' opinion on the contribution of regions and cities to the EU policy framework on SMEs. Total investment for the Boosting Innovative Entrepreneurial Ecosystem in Regions for Young Entrepreneurs project amounted to €2,294,882. The ERDF contributed €1,950,650 through the Interreg Europe operational program for the 2014–20 period. The investment falls under the priority Competitiveness of Small and Medium-Sized Enterprises" (European Commission 2020k; Interreg Europe 2022).

Helping local grocery shops in Germany compete against online retail giants

Smart Emma is an EU-funded research project launched in 2016 in the German region of North Rhine–Westphalia. The project developed a prototype online shop that allows consumers to purchase local produce and have it home delivered. The purpose of Smart Emma was to research how a coalition of food retailers on an online platform can be achieved, what acceptance factors exist, and what a sustainable delivery model could look like to help cities become more environmentally friendly. Twenty grocery retailers, including fruit and vegetable shops, bakeries, butchers, and fishmongers, collaborated by participating in interviews and testing. For the participating retailers, a prototype mobile device app was developed that could send notifications when a new order was placed. This could help retailers incorporate online ordering from their existing shop floor or counter. A delivery system via electric bicycles was developed and tested. The total investment for the project Smart Emma – Ordering Fresh Products Online amounted to €1,599,045. The ERDF contributed €799,522 through the Nordrhein-Westfalen ERDF operational program for the 2014–20 period (European Commission 2019j).

3.3.1.2. Competitiveness of Enterprises and Small and Medium-sized Enterprises Program

Within the MFF 2014–20, the Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME) program supported access to finance for SMEs and financed projects focused on reducing administrative and regulatory burden, as a way to strengthen the competitiveness and sustainability of European businesses, with a particular focus on SMEs. The specific objectives of COSME were as follows:

- improve access to finance for SMEs in the form of equity and debt
- improve access to markets, particularly inside the EU but also at global level
- improve framework conditions for the competitiveness and sustainability of EU enterprises
- promote entrepreneurship and entrepreneurial culture (European Commission 2011a)

COSME is relevant in the context of just transition because many SMEs, particularly those in declining regions or communities, face major barriers to financing due to their inability to demonstrate their creditworthiness and difficulty in accessing risk capital. This negatively affects the prospects for redirecting economic growth toward more productive sectors, the quality of new enterprises and their labor demand, and their prospects for growth and survival.

The program was managed by the European Investment Fund and Executive Agency for Small and Medium-Sized Enterprises (EASME) (EIF 2014). COSME did not invest directly in SMEs; rather, it provided funds to financial intermediaries (financial or credit institutions, loan funds, or guarantee institutions), which then financed SMEs (EIF 2015).

COSME relied on two financial instruments: the Loan Guarantee Facility (LGF) and Equity Facility for Growth (EFG) (European Commission 2015a, 2019a, 2022e). The LGF provides loan guarantees and counterguarantees for financial intermediaries, including the securitization of SME debt-finance portfolios. Through risk sharing, COSME was meant to allow financial intermediaries to expand the range of SMEs and types of financial transactions they support (e.g., through guarantee organizations, banks, leasing companies) and to play a leveraging role with respect to other private capital.

The EFG was the part of COSME dedicated to investments in risk-capital funds. It provided venture capital and mezzanine finance to expansion and growth-stage SMEs, in particular those operating across borders. COSME also funded the Enterprise Europe Network, a network that that helps SMEs find business and technology partners (see Section 3.3.2); Your Europe Business, providing practical information on doing business within Europe; and the SME Internationalisation Portal, supporting companies willing to develop their activities outside Europe (European Commission 2016).

3.3.1.3. Investment Plan for Europe

The Investment Plan for Europe, also known as the Juncker Plan, was a program introduced by the Juncker Commission in 2015 as a way to promote growth and private investment in the EU after the global economic recession (Bankwatch 2022). The plan had three pillars: the European Fund for Strategic Investments (European Commission 2021a); the European Investment Advisory Hub and European Investment Project Portal; and changes to the European regulatory environment (EIB 2022b).

The European Fund for Strategic Investments (EFSI) was launched in 2015 as a joint initiative of the European Commission and the European Investment Bank (EIB) Group. EFSI is implemented by the EIB Group and consists of a €26 billion guarantee from the EU budget, complemented by a €7.5 billion allocation of the EIB's own capital. The total amount of €33.5 billion aimed to unlock additional investment of at least €500 billion by 2020 (EIB 2018). Through EFSI, the EIB Group provided funding for economically viable projects, especially for projects with a higher risk profile (European Commission 2019f). It focused on aspects of key importance for the European economy, including support for small and medium-sized businesses, strategic digital, transport and energy infrastructure, and research, development, and innovation.

The European Investment Advisory Hub and the European Investment Project Portal both provided technical assistance and greater visibility of investment opportunities, thereby helping proposed investment projects become a reality. The European Investment Advisory Hub was designed to act as a single access point to various types of advisory and technical assistance services. It supported the identification, preparation, and development of investment projects across the EU (EIB 2022c). The European Investment Project Portal was an instrument supporting investors looking for investment opportunities in areas such as energy efficiency, transport, healthcare, renewable energy, broadband infrastructure, or financing SMEs.

3.3.2. Streamlining Regulation and Promoting Best Practices

Relevant EU-wide policies supporting SMEs relate to the removal of administrative burden, sharing of best practices, and promotion of conditions that favor the sustainable development of SMEs, which are important economic actors in the EU. A few key policies in this respect were adopted before the MFF 2014–20. For instance, the Small Business Act (SBA), which represents the framework and basis for EU policy on SMEs, was adopted in 2008. The SBA aimed to simplify regulation as a way to promote entrepreneurship, help companies grow, facilitate the exchange of best practices, and develop synergies between actions taken at the national and EU levels. The SBA includes 10 principles and several measures, such as facilitating financing, putting forward recommendations to improve taxation, increasing access to procurement procedures, and encouraging women entrepreneurs. The SBA also established the European Enterprise Network and carried out the SME Performance Review, a report monitoring and assessing the progress of SMEs in the different member states (EASME 2014; European Commission 2019a).

A related program, the Entrepreneurship 2020 Action Plan, was adopted in 2012 to coordinate all EU actions for the promotion of entrepreneurship (European Commission 2013). The plan focused on three goals: strengthening framework conditions for entrepreneurs by removing existing structural barriers, supporting entrepreneurs in crucial phases of the business life cycle, and fostering entrepreneurship.

Additionally, over the MFF 2014–20 period, the EC adopted the Green Action Plan, which aimed to raise awareness among SMEs regarding resource efficiency and the circular economy, as well as the positive cobenefits these can have for productivity and competitiveness. To this end, the plan identified 34 actions at the EU level, including informing SMEs about the EU resource efficiency actions under the different funding programs such as COSME (Section 3.3.1.2) and Horizon 2020 (Section 3.5), improving technology transfer, fostering cooperation, and simplifying procedures and access to funding (Green 2015).

3.4. Funding for Infrastructure

EU infrastructure development programs are important in the context of just transition because they fund strategic infrastructure, which opens economic opportunities for communities and regions in transition. Within its cohesion policy, the EU has a strong tradition of supporting infrastructure development as a way to reduce economic and social disparities among its regions and increase the economic linkage among EU member states. These investments have often targeted less-developed regions to promote their economies and reduce disparities among EU regions. Other programs focused on promoting infrastructure development in all EU countries and regions, specifically in key sectors such as transportation, energy, and telecoms, all of which play a key role and experience challenges in the EU just transition to a carbon-neutral economy. EU-level infrastructure development programs are mainly funded through the Cohesion Fund, one of the EU structural funds (see Appendix B); the Connecting Europe Facility; and the European Fund for Energy, Climate Change and Infrastructure.

3.4.1. Cohesion Fund

The Cohesion Fund (CF) supported environmental and transportation infrastructure projects within the MFF 2014–20, with the aim of reducing economic and social disparities and promoting sustainable development in member states whose gross national income per capita is less than 90 percent of the EU average. During the 2014–20 period, these states were Bulgaria, Croatia, Cyprus, the Czech Republic, Estonia, Greece, Hungary, Latvia, Lithuania, Malta, Poland, Portugal, Romania, Slovakia, and Slovenia (European Commission 2022c). In addition to providing funding for projects, the CF included a technical assistance component (Widuto 2019).

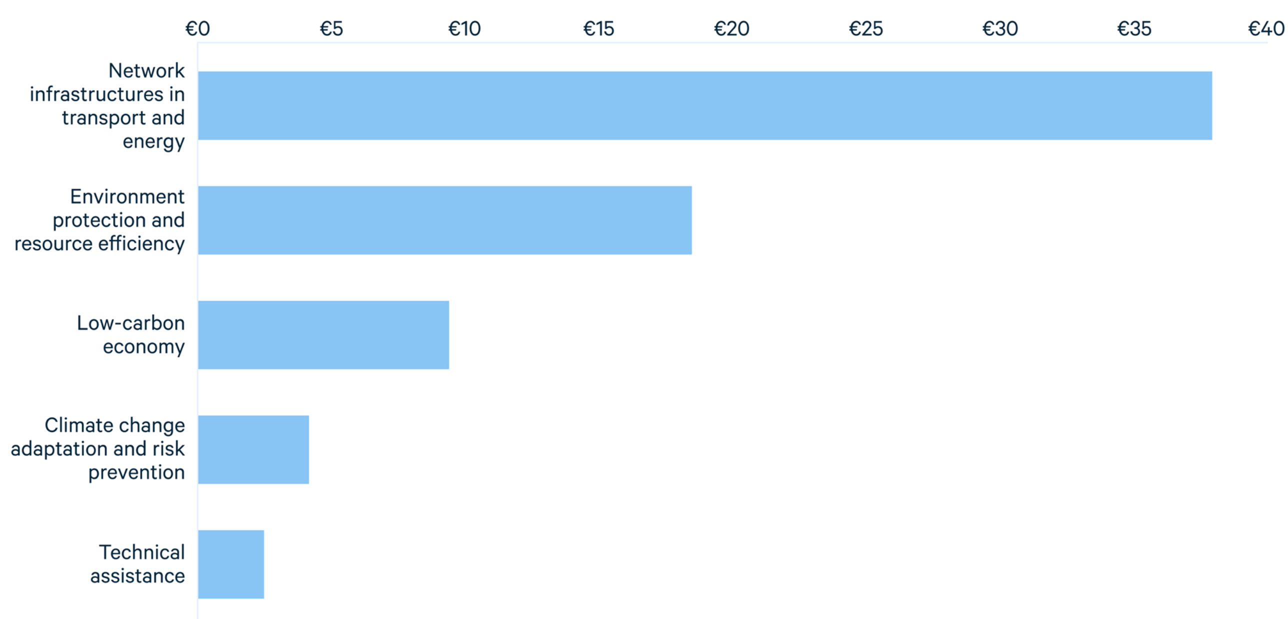
The CF is relevant to just transition for two main reasons. First, by funding transportation infrastructure investments within poorer regions, the CF increases economic integration, diversification, and development. And second, by promoting investment in (sustainable) energy infrastructure, the CF further assists with economic diversification in fossil-intensive regions while capitalizing on existing assets and infrastructure, such as electricity transmission systems and existing skill sets within the local labor force.

Specific targets of the CF relevant for fossil-intensive regions include taking the following actions:

- improving the urban environment
- revitalizing cities
- regenerating and decontaminating brownfield sites (including conversion areas)
- reducing air pollution
- promoting noise-reduction measures
- developing and rehabilitating railway systems
- protecting and restoring biodiversity
- promoting ecosystem services (European Parliament and Council 2013c, European Parliament 2017)

Budget allocations across the different objectives of the CF are presented in Figure 3. Box 5 describes one example project supported through the CF.

Figure 3. Budget Allocations of the CF Based on Thematic Objectives



Source: European Commission (2022d)

Box 5. Example of Project Supported by Cohesion Fund in Former Mining Area in Portugal

The former mining area of Urgeiriça in Portugal has undergone a process of environmental remediation, which began in 2005 and was scheduled to end in 2020. Among the interventions were work on the tailings dam, an embankment used for storing the often toxic by-products of the mining operation; chemical and radiological decontamination of the soil and subsoil around the buildings and historically significant equipment in the complex; structural work to stabilize the buildings; improvement in the collection and transport of leachate (a liquid containing harmful substances that can enter the environment by percolating through solid matter) to ensure that contaminated mine water is treated before discharge; removal of sludge deposits detected around the new dam; and building of a structure to hold this sludge and other material resulting from the decontamination. Remediation of the Urgeiriça site is of particular importance given its location in a built-up zone and to make the area fit to host public activities and events. The total investment for the project Environmental Rehabilitation of Old Urgeiriça Mining Site – Final Phase was €13,237,032. The CF contributed €9,631,587 through the Sustainability and Efficient Use of Resources operational program for the 2014–20 period. The investment fell under the priority Environmental Protection and Promotion of Resource Efficiency (European Commission 2020g).

3.4.2. Connecting Europe Facility

The Connecting Europe Facility (CEF) was a flagship funding program under MFF 2014–20 that supported infrastructure development in three main areas—transport, energy, and telecom—aiming to better connect and integrate regions within the EU, with a specific focus on peripheral regions (European Commission 2018b, 2019c). In this sense, the CEF program is justified by the principle of *subsidiarity*, because infrastructure planning and financing from a national perspective often does not prioritize multinational and long-term cross-border investments. As with the Cohesion Fund, the CEF is relevant in the context of a just transition for workers and communities because better infrastructure promotes economic development and can sustain diversification of the economy from a focus on carbon-intensive products.

Projects supported by the CEF were meant to promote growth, jobs, and competitiveness while also addressing the climate neutrality goal set by the European Commission. As with many funding programs in the MFF 2014–20, the CEF focused on supporting smart, sustainable, and fully interconnected transport, energy, and digital networks. Under the MFF 2014–20, the CEF had an allocation of €30.5 billion (European Parliament and Council 2021b). About 80 percent of the funding was devoted to the development of or research on transport infrastructure, 16 percent to energy infrastructure, and the rest to telecom infrastructure.

The CEF was implemented either through calls for proposals (grants) or via the procurement of services by the European Commission (EIB 2022a). In addition, the EIB implemented the CEF Debt Instrument, a risk-sharing facility that mainly covered the transport and energy sectors and was offered either directly or through a financial intermediary. Box 6 describes one example project supported through the CEF.

Box 6. Example of Project Supported by CEF Funds for eInvoicing in Ireland

The project eInvoicing for Communities, part of the CEF Telecom program, aimed to accelerate and simplify the adoption of electronic invoicing (eInvoicing) using community-based models in the Irish higher education sector. Thanks to the project, 14 institutions received and processed electronic invoices based on current specifications. In addition, two solution providers focusing on SMEs upgraded their systems with an eInvoicing module so that their clients can send and receive eInvoices compliant with the European standard. For this purpose, an existing certified access point was used to test sending and receiving compliant eInvoices. Finally, an eInvoice portal was set up to provide support for small businesses in sending compliant eInvoices. The project was allocated an EU contribution of €539,310 on total eligible costs of €719,080 (INEA 2019).

3.4.3. European Fund for Energy, Climate Change, and Infrastructure

he 2020 European Fund for Energy, Climate Change and Infrastructure, also known as the Marguerite Fund, was an equity fund established in 2010, with the backing of six major European public financial institutions and the European Commission, to provide access to funding for capital-intensive infrastructure investments within the EU (European Commission 2009; EIB 2010; Caisse des Dépôts 2015). The first set of investments, known as Marguerite I, was set for a term of 20 years starting in 2010. Commitments from the funding institutions were at €600 million, along with more than €100 million in commitments from additional investors as the fund was established, bringing the total to over €700 million. In addition to the equity commitment, a €5 billion debt financing initiative was set up to provide debt capital at the level of the project. The fund is currently fully invested, having committed over €700 million in equity and quasi-equity capital to 20 investments in 13 member states, across all target sectors, and acting as a catalyst for projects with an aggregate size of over €10 billion.

At the end of 2017, a second set of investments, known as Marguerite II, was established to continue implementing key EU policies in the areas of climate change, energy security, digital agenda, and trans-European networks. The Fund had a 10-year fund life, with 2 possible 1-year extensions. The EIB committed €200 million, of which €100 million is guaranteed by the European Fund for Strategic Investments (EFSI), and five national promotional banks committed another €100 million each. Greenfield investment supporting new projects and facilities accounted for the majority of investment, but brownfield investment targeting replacement, modernization, and capacity enhancement of existing assets were also funded (Caisse des Dépôts 2015). Importantly, Marguerite II invested in greenfield infrastructure cases before they are fully developed, despite the risk. By 2023, Marguerite II was fully invested and the fundraising for the setup of Marguerite III started (Marguerite 2023).

As in the case of the CF and CEF, the Marguerite Funds are relevant in the context of just transition for workers and communities because they provide financing to promote long-term investment in infrastructure, which in turn can spur economic and social development and sustain diversification of the economy beyond a focus on carbon-intensive products.

3.5. Funding for Research and Development

EU-level funding priorities for research and development (R&D) are outlined in a planning document (work program) that spans the whole MFF period. This generates a steady and foreseeable source of funding for R&D. A unique feature of EU R&D programming, sometimes referred to as research and innovation (R&I), is an emphasis on social, policy, and business model research and innovation, extending beyond the US focus on hard science and technology development.

Under all MFFs, EU R&D programs are managed at the EU level, calls for proposals reflect EU research priorities, projects are submitted by research institutions in response to calls for proposals, and projects are selected through an expert evaluation procedure that is managed at the EU level based on novelty, plan for implementation, and prospects of impacts (European Commission 2022p). Most projects require the establishment of a consortium of research partners, which can involve institutions in the EU and other countries, depending on the specific type of call.

EU-level funding for R&D is relevant in the context of just transition: if targeted toward the specific needs of coal- and carbon-intensive regions and communities, it can generate evidence on the drivers of and barriers facing economic transition away from fossil fuels and toward more sustainable and circular economies. EU-level R&D funding within the MFF 2014–20 has been used to finance a few projects specifically focused on improving the understanding of challenges for coal regions in transition. In this way, R&D programs promote the generation of knowledge around options for just transition, including technologies and business models, as well as the development of specific strategies to support the implementation of such transition on the ground.

Horizon 2020 (H2020) (European Commission 2011b) was Europe's key R&D program under the MFF 2014–20. H2020 funded research and innovation actions, innovation actions, and coordination and support actions, in addition to providing opportunities for tenders. Research and innovation actions are primarily activities aiming to establish new knowledge or explore the feasibility of a new or improved technology, product, process, service, or solution. They may include basic and applied research, technology development and integration, or testing and validation on a small-scale prototype in a laboratory or simulated environment. Innovation actions are intended to produce plans and arrangements or designs for new, altered or improved products, processes, or services. They may include prototyping, testing, demonstrating, piloting, large-scale product validation, and market replication. Coordination and support actions are accompanying measures such as standardization, dissemination, awareness-raising and communication, networking, coordination or support services, policy dialogues, and mutual learning exercises and studies, including design studies for new infrastructure, and may also include complementary activities of strategic planning, networking, and coordination among programs in different countries (European Commission 2014a).

With a budget of nearly €80 billion, H2020 included several calls for projects focusing on carbon-intensive regions and supporting just transition in these regions. This focus became prominent as EU commitments toward carbon neutrality strengthened. H2020 has been strongly focused on topics relevant for the energy transition more broadly, including innovation in low-carbon technologies (European Commission 2022p). Box 7 presents two examples of H2020 projects focusing on coal- and carbon-intensive regions.

Box 7. Examples of H2020 Projects Focusing on Coal- and Carbon-Intensive Regions

CINTRAN

The EU-funded CINTRAN project focuses on several carbon-intensive regions in the EU: Western Macedonia (Greece), Silesia (Poland), Ida-Virumaa (Estonia) and the Rhenish mining area (Germany). These regions were selected to cover a diverse set of fuels, economic development challenges, economic diversification approaches, political economy dynamics, and spatial compositions. The aim of the project was to explore the determinants and drivers of structural change in these regions and find ways to minimize transition risks. The project relied on both quantitative model-based research and qualitative analysis, in close collaboration with regional stakeholders (European Commission 2022b).

TRACER

The overall objective of the TRACER project was to support several coal-intensive regions around Europe in designing or redesigning their R&D strategies to facilitate their transition toward a sustainable energy system. Nine European regions are involved, six of them in EU member states (Bulgaria, Czech Republic, Germany, Greece, Poland, Romania) and three in countries outside the EU (Serbia, Ukraine, UK). The project assisted policymakers in these regions in developing, implementing, and reviewing their R&D strategies. Project partners provided information expertise and advice. Specifically, the project did the following: assisted the regional actors in developing R&D strategies for smart specialization, including the development of public R&D capacities, consistent with the EU's Strategic Energy Technology Plan; helped identify and exchange best practices, including industrial road maps from coal toward new technologies and transition strategies for coal-based combined heat and power production to low-carbon electricity and district heating generation; investigated relevant social challenges in the target regions, including necessary reskilling of the workforce; and provided guidance on how to leverage national public and private cofinancing (European Commission 2022q).

4. Recent Developments Related to Just Transition

While EU-level funding under the MFF 2014–20 supported a wide array of relevant programs and projects, these efforts were not specifically designed to address just transition. Rather, the long-standing focus of EU policymaking on the promotion of social economic cohesion was built into these programs and projects, which sought to reduce disparities between the heterogeneous EU regions and strengthen economic and social integration.

This changed after the election of Ursula von der Leyen as president of the European Commission in July 2019. Once she took office, the Commission (with its executive vice president for the Green Deal, Frans Timmermans, and others playing prominent roles) put forward the European Green Deal as one of six political priorities for the period 2019–24.[9] The aim of the Green Deal is "to make Europe the first climate-neutral continent by 2050, while boosting the competitiveness of European industry and ensuring a just transition for the regions and workers affected" (EPRS 2020). In this political program, just transition for workers and communities has become an explicit goal of the Commission on the road to climate neutrality. The von der Leyen Commission entered into office in the midst of negotiations for a new long-term budget for the EU, the MFF 2021–27. This provided a unique opportunity for the Commission to embed the cornerstone principles of its political vision in the long-term budget through revision of existing programs, projects, and lines of funding, as well as establishment of specific spending ceilings.

In this section, we briefly describe the European Green Deal and relevant policies implemented to address the COVID-19 pandemic and associated recession. We then detail how just transition is reflected in the high-level political priorities of the von der Leyen Commission, particularly the Green Deal. Finally, we describe the key programs being designed and implemented to support just transition in Europe—the Just Transition Mechanism, Just Transition Fund, Just Transition Scheme, and Public Sector Loan Facility—as well as the Just Transition Platform. These programs are currently on the political agenda, and many aspects still have to be negotiated and implemented.

The Russian invasion of Ukraine in 2022 in the aftermath of the COVID pandemic, and the resulting energy price shock, had important implications for the ability of the Commission to pursue many of its political priorities, including those related to the EU energy transition and the debate around issues of fairness for workers and communities. However, the full extent of these repercussions cannot yet be fully assessed; here we describe the main features of these programs, but we do not delve into their deployment on the ground.

9 The six political priorities are a European Green Deal, a Europe fit for the digital age, an economy that works for people, a new push for European democracy, promoting the European way of life, and a stronger Europe in the world (EPRS 2020).

4.1. The European Green Deal, MFF 2021–27, and Next Generation EU

The stated aim of the European Green Deal is to make Europe climate-neutral by 2050, while safeguarding biodiversity, establishing a circular economy, and eliminating pollution. The Green Deal contains several elements in pursuit of these goals, including regulation, tax instruments, expansion of the EU Emissions Trading System, and protection of vulnerable populations—all carried out with substantial stakeholder engagement. At the same time, the Green Deal seeks to build consensus around pathways for achieving these goals and promote action at the local level through a European Climate Pact, which brings together regional and local authorities, civil society, industry, and schools in dialogue. Indeed, the Green Deal has been described not only as a plan to promote the energy transition strategy but also as the new strategy to promote growth and competitiveness in the European economy. In this context, the long-standing European cohesion policy has embraced just transition by committing to make sure that "no European is left behind" (European Commission 2019b).

To implement the European Green Deal, in January 2020, the Commission proposed the Green Deal Investment Plan (also known as the European Green Deal Investment Plan or Sustainable Europe Investment Plan). The plan combines legislative and nonlegislative initiatives and has three main objectives: a financial dimension that involves mobilizing at least €1 trillion in funds in 2020–30 to support the transition toward climate neutrality; an enabling framework, with a mix of regulations and incentives to ensure that investment decisions across all sectors take into account sustainability; and the provision of advice and technical support to public administrations and project promoters.

With respect to the goal of mobilizing at least €1 trillion, the European Commission acted on two fronts, focusing on both public and private funding. The debate over the Green Deal Investment Plan and associated instruments at the time was linked to the negotiations on the MFF 2021–27, which were carried out in 2020 as the COVID-19 pandemic spread in Europe and beyond. A significant part of the EU political debate thus focused on the need to ensure that the European Green Deal priorities would still be pursued during the post-pandemic economic recovery. The MFF 2021–27 was adopted by the European Council following the consent of the European Parliament on December 17, 2020. A temporary instrument designed to drive the recovery of Europe, called Next Generation EU, was also approved, amounting to €750 billion (European Commission 2020e). Together, the MFF 2021–27 and Next Generation EU provide €1.8 trillion (in 2018 prices) of funding to support recovery from the COVID-19 pandemic and the EU's long-term priorities.

The Commission has been authorized, on an exceptional basis, to borrow up to €750 billion (in 2018 prices) on the capital markets to address the consequences of the COVID-19 crisis. It also has focused on mobilizing private funds in support of the European Green Deal (European Commission 2020c). To this end, the Commission built on the experience of the Investment Plan for Europe (see Section 3.3.1.3) under the MFF 2014–20 to propose a new investment program, InvestEU. The aim of InvestEU is to leverage around €279 billion in private and public investments over 2021–30. This is to be achieved by providing an EU budget guarantee to allow the EIB and other implementing partners to invest in more and higher-risk projects, crowding in private investors (European Commission 2020c). While InvestEU was designed to crowd in private investments in all areas, at least 30 percent of mobilized investments will have to target climate- and environment-related projects. Furthermore, InvestEU directly supports the EU just transition with a scheme to mobilize €45 billion of sustainable investments in the regions most affected by the transition challenges (European Commission 2019e; European Parliament and Council 2021a).[10]

As of early 2023, the Commission is working to fully implement most aspects of these policies. Negotiations are ongoing, including those related to just transition, and some require further steps to implement. The strategy is to use public funds to support political priorities but also as a way to leverage private funding.

4.2. Promoting Just Transition

Within the European Green Deal, the von der Leyen Commission committed to promoting just transition. While specific attention is devoted to carbon-intensive regions (i.e., those heavily dependent on fossil fuel production, including coal, peat, and oil shale) and greenhouse-gas-intensive industrial processes, the Commission's broader concern is that the EU energy transition is carried out in such a way that "no European is left behind" (European Parliament 2021). Hence in EU policy discussion, the term *just transition* has a much broader meaning than previously, extending beyond coal-intensive communities, regions, and sectors.[11] Rather, it refers to the challenges that all EU regions and countries will face as they move away from traditional means of production and toward the digitalization of their economies. Indeed, the Commission's strong focus on the digital transition (alongside the green transition) increases the relevance of matters linked to fairness for workers and communities. Recently, the policy discourse has been increasingly focused on addressing the challenges of the just ecological and digital transitions, often referred to as the "twin transitions" (Verdolini and Belpietro 2022).

To promote the EU just transition, the von der Leyen Commission built on many of the programs and instruments described in Section 3. Many of these still appear in the MFF 2021–27, such as the European Regional Development Fund, while several have been revised, reshaped, and streamlined to more directly support just transition. This is the case, for instance, with the European Social Fund, which has been integrated along with the Youth Employment Initiative, Fund for European Aid to the Most Deprived,

10 InvestEU is built on three pillars: the InvestEU Fund, to mobilize public and private investment using guarantees from the EU budget; the InvestEU Advisory Hub, to provide technical advice to investment projects seeking financing; and the InvestEU Portal, an easily accessible database bringing together projects and investors (European Parliament and Council 2021a).

11 For discussion of pressure on coal-intensive areas and sectors, see European Commission (2020b, e).

and EU Programme for Employment and Social Innovation into what is now known as European Social Fund Plus (ESF+). The previous programs overlapped to a large extent and integrating them allows funding to be used in a more efficient and coherent manner (European Commission 2015d, 2020i). The von der Leyen Commission has also introduced a set of programs designed explicitly to promote just transition, which we summarize in Section 4.3.

4.3. Policies and Programs of the Just Transition Mechanism

Within the European Green Deal, the Just Transition Mechanism (JTM) is an EU-level program designed to overcome the economic and social costs of the climate transition in the most vulnerable coal- and carbon-intensive regions (European Parliament 2021). The JTM is meant to provide targeted support to the territories most affected by the transition toward climate neutrality and prevent increased regional disparities. This is to be addressed through diversification and modernization of the local economies and by seeking to mitigate the negative repercussions of the energy transition on employment. The JTM spans several wider EU-level programs, such as EU funding in the MFF, national cofunding, and a dedicated scheme under InvestEU. The mechanism is intended to mobilize at least €150 billion of public and private investment between 2021 and 2027 to support just transition in the most vulnerable regions (European Commission 2020b, h). US investment devoted explicitly to just transition has historically been far less than this, with estimates ranging from $400 million of direct public investment over 2015–20 (Shelton et al. 2022) to a few billion dollars over 2015–22 when including public and induced private investments (Lawhorn 2022). The JTM consists of three pillars—the Just Transition Fund, Just Transition Scheme, and Public Sector Loan Facility—as well as the Just Transition Platform to provide technical assistance.

4.3.1. Just Transition Fund

The Just Transition Fund (JTF) is a new financial instrument created with the aim of promoting economic diversification and workforce development in European territories most affected by the transition to a low-carbon economy (European Parliament 2021). A 2020 preliminary analysis identified the EU regions most exposed to the energy transition because of their heavy reliance on fossil fuels in terms of high-carbon intensities, employment in carbon-intensive industries and in hard coal and lignite mining, production of peat and oil shale, and level of economic development. (The figure in Appendix E shows the results of this analysis and illustrates in green these regions within Europe. These regions were eligible for the JTF, which primarily provides grants in support of projects to alleviate the social and economic costs resulting from the energy transition, such as the diversification of economic activities and support for workers adapting to a changing labor market (e.g., development of skills and competencies) (European Commission 2020b).

The JTF has an allocation of €7.5 billion under the MFF and €10 billion under Next Generation EU in 2018 prices. Member states may, on a voluntary basis, supplement their JTF with additional resources from their national allocations under the ERDF and ESF+, by the total amount cannot not exceed three times their JTF allocation. To unlock funding from the JTF, EU countries have to match the amount received from this fund with national cofinancing as follows: 85 percent for less developed regions, 70 percent for transition regions, and 50 percent for more developed regions (European Parliament 2021).

Other key design features of the JTF include the exclusion of fossil fuel financing, an incentive mechanism encouraging investments that cut GHG emissions in regions benefiting from JTF support, reinforced references to the EU's targets for energy and climate and to the implementation of the Paris Agreement, and inclusion of a clause for the Commission to review the implementation of the JTF by June 30, 2025, with regard to achievement of the set objectives (European Commission 2020a). As with many other programs in the EU, the JTF has been implemented under shared management rules with the member states, in close cooperation with national, regional, and local authorities (European Parliament 2021).

4.3.2. Just Transition Scheme and Public Sector Loan Facility

The other two pillars of the JTM, the Just Transition Scheme (JTS) and Public Sector Loan Facility (PSLF), target a wider range of projects and regions, including investments in energy and transportation infrastructure, district heating networks, and energy efficiency measures such as building renovations (European Commission 2020i, European Parliament 2021). The JTS is a dedicated investment scheme under InvestEU designed to crowd in additional private investments and attract an estimated €45 billion (European Commission 2020b: European Parliament 2021). The PSLF is a blending instrument which combines grants from the EU budget (up to €1.5 billion) with loans from the EIB (up to €10 billion): selected projects receive a grant from the European Commission and a loan from the European Investment Bank, thereby reducing the financial burden on state budgets. The PSLF was established to leverage public financing in support of just transition and is intended to help mobilize up to € 18.5 billion of public investments (European Commission 2020b; European Parliament 2021). Eligibility for the PSLF is limited to those projects that do not generate sufficient streams of revenue and would not be financed on commercial terms without grant support from the fund (European Commission 2020b).

4.3.3. Just Transition Platform

In addition to the three key programs described, the JTM established the Just Transition Platform (JTP) to provide technical assistance in two key areas. First, the JTP is to assist member states in drafting their Territorial Just Transition Plans, which are instrumental for access to JTM funding and opportunities (European Commission 2020f). They identify the challenges in each territory, and set out development needs and objectives to be met by 2030; in addition, they specify the type of interventions envisaged as well as the governance mechanisms. Once a territorial just transition plan is approved, territories can access the dedicated financing under the Just Transition Mechanism (European Commission 2020b; European Parliament 2021). Second, the JTP builds on and expands the work of the Multi-Stakeholder Platform for Coal Regions in Transition (see Section 3.1) and is to provide transitioning regions with coordinated and general technical assistance from the Commission and the EIB Group, a web-based help desk, and the exchange of best practices (European Commission 2020h).

5. Conclusions

Lessons and experience from past efforts to promote economic and social cohesion within the EU, in an effort to reduce economic and social disparities among the different regions, were key in guiding the design of the just transition strategy within the context of the European Green Deal. This new just transition strategy aims to benefit the most carbon-intensive European regions, where economic disruptions associated with energy transition are expected to be the most severe. However, it also takes a broad focus to aid any EU region struggling with energy transition. Many existing EU programs for bolstering European economic progress have been adapted to support just transition priorities, building on the overarching concept of EU cohesion. Importantly, the EU policymaking process has aimed to embed fairness considerations in many aspects of policy, formulating a systemic approach to addressing just transition.

While the report can provide information for developing just transition policies in any jurisdiction, its aim is to provide insights for policymakers addressing the US energy transition. Therefore, we conclude the report by recapitulating insights from the EU experience that may be particularly helpful for US policymaking in this area.

- The funding stability provided by the seven-year, investment-focused EU budget supports addressing many of the challenges associated with just transition. An even longer period of planning and stable investment flows may be needed to accomplish regional economic restructuring and substantial workforce development. To accomplish those results, political support for the undertaking needs to be maintained over that time.
- A substantial as well as stable investment budget is needed, given the scale of the overall task. The EU experience also highlights the roles for both public and private investment. By way of illustration, the EU Just Transition Mechanism (see Section 4.3) aims to mobilize at least €150 billion of public and private investment between 2021 and 2027 to support just transition efforts in the most vulnerable regions.
- Having a central hub that serves as a single access point for financing, technical assistance (e.g., development of state-level just transition plans), and assistance in project implementation can significantly increase overall effectiveness of transition assistance. The Just Transition Mechanism includes a single access point, the Just Transition Platform (see Section 4.3.3). The Biden administration's Interagency Working Group on Coal and Power Plant Communities and Economic Revitalization has established a similar mechanism, although it needs to be legally established within a federal agency in order to continue over the longer term.

- The EU just transition policy framework requires that before EU member states access funding for their just transition initiatives, they must develop their own just transition plans that include consulting with principally affected sectors and communities. The Biden administration's Interagency Working Group has set up a mechanism for rapid response teams to support energy communities and state-level institutions in developing transition plans. This has not yet been legally established at the federal level, however, and it remains to be seen how state, regional, and federal authorities will organize just transition collaboration over the longer term. Addressing this question is a necessary step to strengthen the base for just transition planning and policies in the United States.
- One of the three pillars of EU just transition policy in the Green Deal is access to the Public Sector Loan Facility (see Section 4.3.2) to support private implementation of just transition projects that are unable to access commercially available loans, although they may play an important role in economic development. The United States does not yet have an exact corollary financial mechanism. However, it does have a number of publicly-supported financing programs that generally support the type of economic development required to facilitate a just transition, including provisions in the 2022 Inflation Reduction Act.
- The EU approach has included several research avenues to explore the feasibility of a new or improved technology, product, process, or service to advance just transition goals, including through learning-by-doing to support social innovation. Examples include the Horizon 2020 initiative (see Section 3.5), and the Employment and Social Innovation (EaSI) program (see Section 3.2.1). In contrast, much of US R&D funding is targeted at technology development (e.g., ARPA-E). The EU experience suggests the value of also supporting research and pilot implementation of innovative social and economic approaches for addressing the US energy transition.

Appendixes

Appendix A: Overview of EU Functions Relevant to Just Transition Policy Implementation

The EU is a political and economic union of 27 European countries (as of 2021) that share a set of values and objectives, with the aim of supporting economic development and citizens' well-being. Since the 1990s, the EU has focused on enhancing economic, social, and territorial solidarity and cohesion among member states (European Union 2022a). Long-standing internal EU policies (i.e., common policies) are the European single market, common agricultural policy, employment, environment, and justice and home affairs. EU institutions jointly develop the EU political strategy (European Commission 2022r).

A.1. Decisionmaking Power

Although the member states are sovereign and independent, they delegated some of their decisionmaking power to the EU institutions so that decisions on specific matters of common interest can be made democratically at the supranational level. The Treaty on the Functioning of the European Union defines four types of decisionmaking powers, referred to as competences of the EU: *exclusive competence*, or sole decisionmaking power; *shared competence*, decisionmaking power shared with the member states, which can act only if the EU has chosen not to; *competence to support*, the power to support, coordinate, or supplement the actions of the member states; and *special competence*, the power to provide arrangements within which EU member states must coordinate policy. The EU must exercise its competences according to the principles of proportionality and subsidiarity (see Section 2.1) (European Union 2022b).

A.2. Funding

Unlike national budgets, which are managed mainly to provide public services and fund social security systems, the EU budget is used primarily for investment. Importantly, the EU may not run a deficit. Because investment programs are considered from a multiannual rather than an annual perspective, the EU budget has a strong multiannual character. Every seven years, a Multiannual Financial Framework (MFF) sets the maximum level of resources ("ceilings") for each major category ("heading") of EU spending. In addition to a financial plan, the MFF establishes the EU's long-term priorities. Within the guidelines and spending limits set forth in a given MFF, each year the European Commission presents a detailed budget. The MFF is on a seven-year cycle, while the political cycle of the Commission is five years; the two are not aligned. The EU budget is financed mainly through three sources: customs duties on imports from outside the EU, a small portion of the value-added tax collected by each member state, and a portion of each member state's gross national income calibrated to its relative wealth level (European Commission 2019d). From January 1, 2021, a new category of own resources called "plastic own resource" was introduced by the 2020 Own Resources Decision. It is a national contribution on the basis of the quantity of non-recycled plastic packaging waste, with a uniform call rate of EUR 0.80 per kilogram. Other components of the EU revenue include taxes paid by EU staff on their salaries, contributions from non-EU countries to certain EU programs, remaining UK contributions and fines paid by companies found in breach of competition laws or other laws. If there is a surplus, the balance from each financial year is entered in the budget for the following year as revenue. Other revenue, balances and technical adjustments usually make up around 2–8 percent of total revenue (European Parliament 2023d).

A.3. The European Semester

The EU and all member states follow an annual cycle of policy coordination. The cycle starts in November, with the Commission setting the priorities for the year to come as part of the Autumn Package. In February, the Commission publishes the Winter Package with reports on the overall economic and social developments in each member state. Between May and July, the Commission provides each member state with tailored economic and budgetary policy recommendations. The national governments then incorporate these recommendations into their reform plans and national budgets. The cycle ends the following October, when national governments submit draft budgetary plans considering the EU recommendations adopted by the European Council in summer (European Commission 2022a). Following the COVID-19 pandemic, the European Semester's deadlines were changed to overlap with those of the temporary Recovery and Resilience Facility, which was initially intended to provide €672.5 billion in loans and grants to support reforms and investments undertaken by the member states with the aim of mitigating economic and social impacts of the pandemic while promoting the green and digital transitions (European Commission 2022o).

Appendix B: European Structural and Investment Funds

The European Structural and Investment Funds (ESIFs) together channel over half of the EU budget and are intended to support economic and social development and cohesion among the member states by fostering job creation and a sustainable and healthy European economy and environment. Their funding is linked with the Commission's policy priorities (see Section 3 and Appendix C). During the MFF 2014–20, the five ESIFs were as follows:

- European Social Fund (ESF)
- European Regional Development Fund (ERDF)
- Cohesion Fund (CF)
- European Agricultural Fund for Rural Development (EAFRD)
- European Maritime and Fisheries Fund (EMFF)

Of these funds, three specifically target Cohesion Policy priorities (see Section 2) and are therefore directly relevant in the context of supporting fairness for workers and communities: the ESF, the ERDF, and the CF (European Commission 2022h). The funds are jointly managed by the European Commission and the member states. Member states' use of the funds includes the provision of cofinancing, which can differ by fund, type of member state, and funding area. In collaboration with the Commission, each country prepares a partnership agreement setting out how the funds will be used during the given funding period. In these agreements, it is possible to combine the resources of the ESIFs and other EU instruments in a complementary way (European Commission 2015e; Gardner 2019).

Partnership agreements lead to a series of investment programs channeling the funding to different regions and projects in the policy areas concerned. Fund-specific regulations set out the minimum contribution of each ESIF to a particular investment area (e.g., innovation, energy, information and communication technology, or SME support in the ERDF; promoting social inclusion or combating poverty and discrimination in the ESF). During implementation of a partnership agreement, the Commission may request that the member states make appropriate adjustments if specific recommendations are issued (European Parliament and Council 2013d).

The ESIFs provided more than €450 billion over 2014–20. By design, support was provided to heterogeneous projects both within and across member states and through different policy instruments, including grants, repayable assistance, and financial instruments (European Commission 2014b).

Appendix C: Thematic Objectvies of The MFF 2014–2020

During the MFF 2014–20, three broad policy objectives were agreed on and pursued: smart growth, sustainable growth, and inclusive growth. These three areas were broken down into 11 thematic objectives (TOs) (European Commission 2015c):

Smart growth meant developing an economy based on knowledge and innovation and included these three TOs:

- strengthening research, technological development, and innovation
- enhancing access to, and use and quality of, information and communication technology
- enhancing the competitiveness of SMEs, the agricultural sector (for the EAFRD), and the fishery and aquaculture sector (for the EMFF)

Sustainable growth involved promoting a more resource-efficient, greener, and more competitive economy and included these four TOs:

- supporting the shift toward a low-carbon economy in all sectors
- promoting climate change adaptation, risk prevention, and management
- preserving and protecting the environment and promoting resource efficiency
- promoting sustainable transport and removing bottlenecks from key network infrastructures

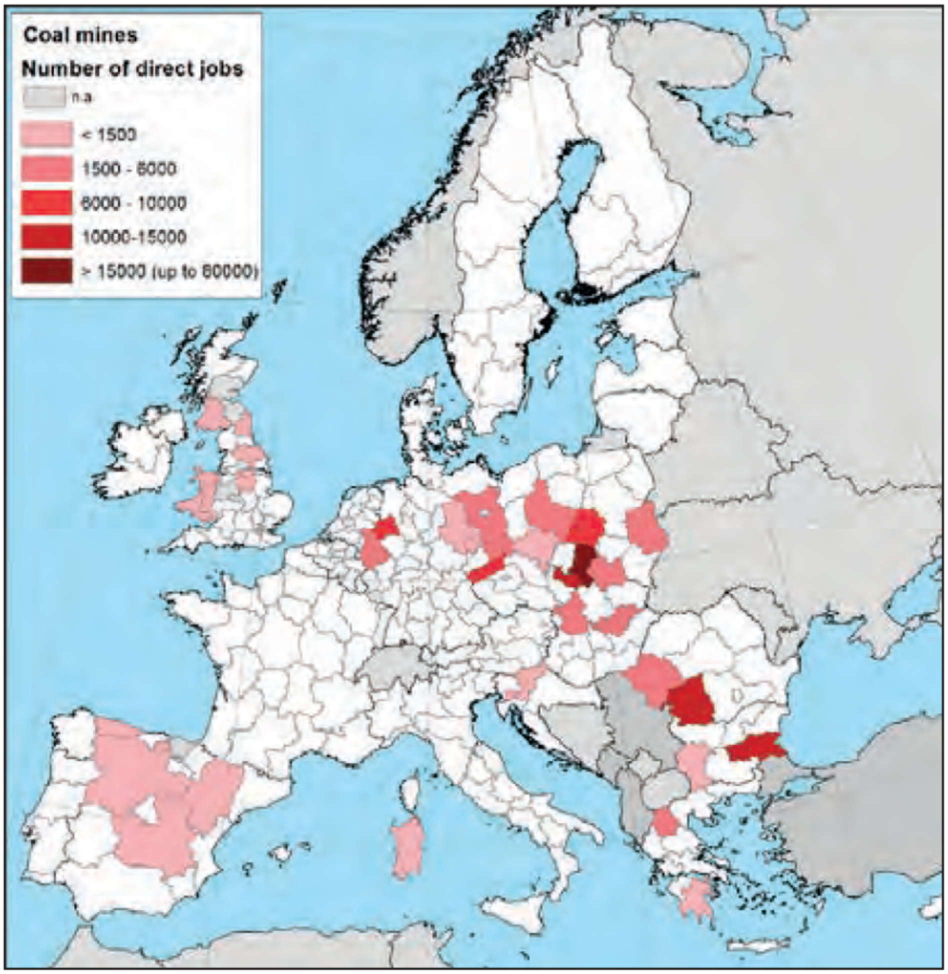
Inclusive growth aimed to foster a high-employment economy that delivered on social and territorial cohesion and included these four TOs:

- promoting sustainable and quality employment and supporting labor mobility
- promoting social inclusion and combating poverty and any discrimination
- investing in education, training, and vocational training for skills and lifelong learning
- enhancing institutional capacity of public authorities and stakeholders and efficient public administration

These were considered the sectors and areas of intervention where EU support through the ESIFs could bring the greatest added value to each member state's effort. The TOs served to guide the allocation of spending from the ESIFs and represented a starting point for coordination in the partnership agreements and programs that each member state signed with the Commission to manage the funds.

Appendix D: Number of Jobs in Coal Mines in EU Regions, 2018

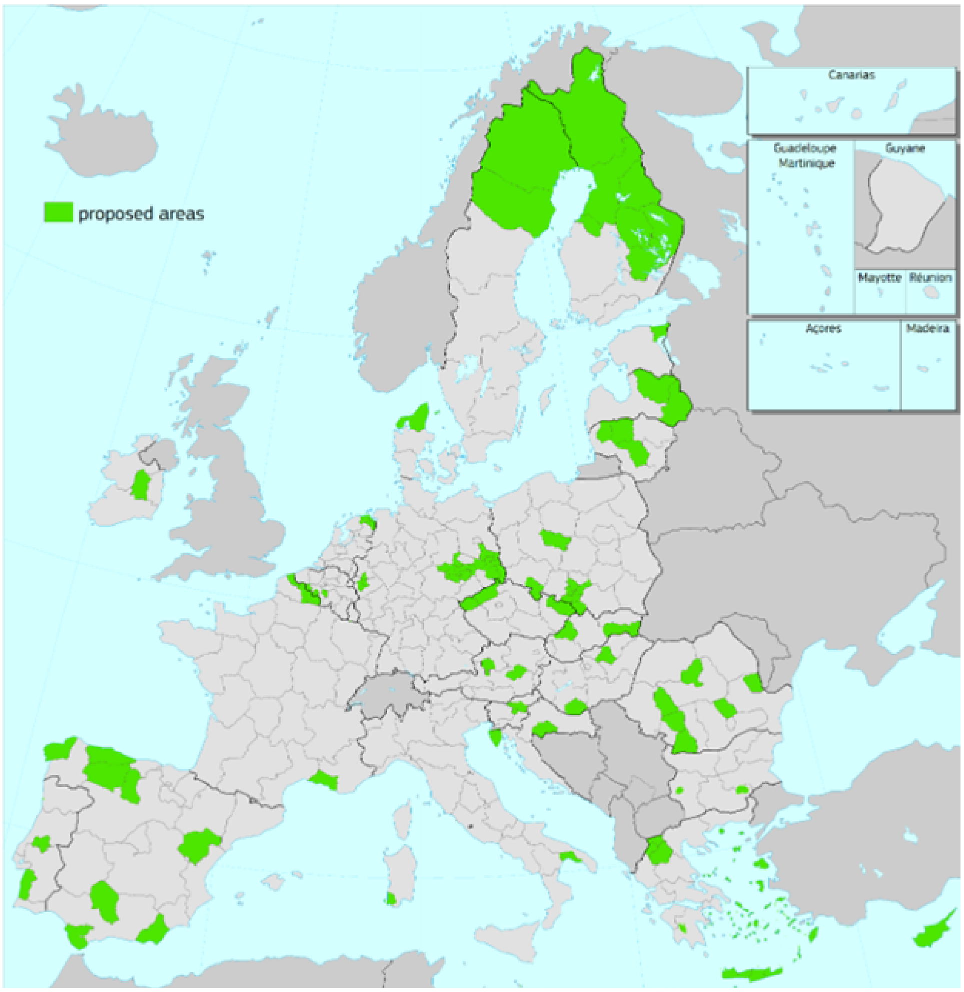
Figure A1. Number of Coal Mines in EU Regions, 2018



Source: EIB (2020).

Appendix E: Just Transition Fund Territorial Eligibility: Preliminary Commission Analysis

Figure A2. Just Transition Fund Territorial Eligibility: Preliminary Commission Analysis



Source: European Commission (2020d).

References

Alves Dias, Patricia, Andrea Conte, Konstantinos Kanellopoulos, Zoi Kapetaki, Giovanni Mandras, Hrvoje Medarac, Wouter Nijs, Pablo Ruiz Castello, Julian Somers, and Dalius Tarvydas. 2021. *Recent Trends in EU Coal, Peat and Oil Shale Regions. Luxembourg: Publications Office of the European Union*. **https://doi.org/10.2760/510714**.

Bankwatch. 2022. "European Fund for Strategic Investments (EFSI)." CEE Bankwatch Network. **https://bankwatch.org/project/european-fund-for-strategic-investments-efsi#project-news**.

Caisse des Dépôts. 2015. *Q&A 2020 European Fund for Energy, Climate Change and Infrastructure (Marguerite Fund)*. **https://www.caissedesdepots.fr/fileadmin/PDF/international/faqang_margurite.pdf**.

De Baere, Geert, and Kathleen Gutman. 2017. "The Basis in EU Constitutional Law for Further Social Integration." In *A European Social Union after the Crisis*, edited by Frank Vandenbroucke, Catherine Barnard and Geert De Baere, 309–43. Cambridge: Cambridge University Press.

Donati, Niccolo. 2021. "EU Programme for Employment and Social Innovation (EASI): Policy Dossier." EuVisions. February 27, 2021. **http://www.euvisions.eu/eu-programme-for-employment-and-social-innovation-easi-policy-dossier/**.

EASME (Executive Agency for Small and Medium-Sized Enterprises). 2014. *Enterprise Europe Network: SMEs Step Up a Gear with the Enterprise Europe Network*. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2826/33609**.

———. 2018. *Green Action Plan for SMEs: Addressing Resource Efficiency Challenges and Opportunities in Europe for SMEs: Implementation Report*. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2826/031664**.

EIB (European Investment Bank). 2010. "FAQ Available on the Marguerite Fund." March 17, 2010. **https://www.eib.org/en/press/news/2020-european-fund-for-energy-climate-change-and-infrastructure-marguerite-fund**.

———. 2018. *Investment Plan for Europe*. Luxembourg: EIB. **https://doi.org/10.2867/011274**.

———. 2020. *Coal Regions in Transition: Overview, 2020*. Luxembourg: EIB. **https://www.eib.org/attachments/thematic/coal_regions_in_transition_overview_2020_en.pdf**.

———. 2022a. "Connecting Europe Facility Debt Instrument." **https://www.eib.org/en/products/mandates-partnerships/cef/index.htm**.

———. 2022b. "EFSI and Its Legacy." **https://www.eib.org/en/products/mandates-partnerships/efsi/index.htm**.

———. 2022c. "The InvestEU Advisory Hub." **https://advisory.eib.org/about/the-hub**.

EIF (European Investment Fund). 2014. COSME Financial Instruments: Leaflet for Intermediaries. October 22, 2014. **https://www.eif.org/news_centre/publications/cosme-leaflet.htm**.

———. 2015. "COSME: Loan Guarantee Facility (LGF)." October 27, 2015. **https://www.eif.org/what_we_do/guarantees/single_eu_debt_instrument/cosme-loan-facility-growth/index.htm**.

EPRS (European Parliamentary Research Service). 2020. **The von der Leyen Commission's Priorities for 2019–2024**. January. **https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/646148/EPRS_BRI(2020)646148_EN.pdf**.

European Commission. 2007. *European Social Fund: 50 Years Investing in People*. Directorate-General for Employment, Social Affairs and Equal Opportunities. Luxembourg: Office for Official Publications of the European Communities. **https://ec.europa.eu/employment_social/esf/docs/50th_anniversary_book_en.pdf**.

———. 2009. "Europe's Leading Public Financial Institutions Launch 'Marguerite,' the 2020 European Fund for Energy, Climate Change and Infrastructure." Press release. December 4, 2009. **https://ec.europa.eu/commission/presscorner/detail/en/BEI_09_242**.

———. 2011a. "Communication from the Commission: An Action Plan to Improve Access to Finance for SMEs." December 7, 2011. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0870**.

———. 2011b. "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Horizon 2020 – The Framework Programme for Research and Innovation." November 30, 2011. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52011DC0808**.

———. 2013. "Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions Entrepreneurship 2020 Action Plan: Reigniting the Entrepreneurial Spirit in Europe." January 9, 2013. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52012DC0795.**

———. 2014a. *H2020 Online Manual*. **https://ec.europa.eu/research/participants/docs/h2020-funding-guide/index_en.htm**.

———. 2014b. "Partnership Agreements on the European Structural and Investment Funds." February 28, 2014. **https://ec.europa.eu/info/publications/partnership-agreements-european-structural-and-investment-funds_en**.

———. 2015a. "COSME: Leaflet EN." April 14, 2015. **https://ec.europa.eu/docsroom/documents/9783**.

———. 2015b. *European Globalisation Adjustment Fund: Solidarity in the Face of Change*. Directorate-General for Employment, Social Affairs and Inclusion. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2767/36182**.

———. 2015c. *European Structural and Investment Funds, 2014–2020: Official Texts and Commentaries*. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2776/10671**.

———. 2015d. The Fund for European Aid to the Most Deprived (FEAD): Breaking the Vicious Circle of Poverty and Deprivation. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2767/4605**.

———. 2015e. *Guidance for Member States on Combination of Support from a Financial Instrument with Other Forms of Support*. August 10, 2015. **https://ec.europa.eu/regional_policy/en/information/publications/guidelines/2015/guidance-for-member-states-on-combination-of-support-from-a-financial-instrument-with-other-forms-of-support**.

———. 2016. *Programme for the Competitiveness of Enterprises and SMEs*. September. **https://www.copernicus.eu/sites/default/files/2018-11/01_COSME.pdf**.

———. 2017a. "Fishing from the 'Silent Reservoir' of Germany's STEM Skills." August 1, 2017. **https://ec.europa.eu/regional_policy/en/projects/Germany/fishing-from-the-silent-reservoir-of-germanys-stem-skills**.

———. 2017b. "No Region Left Behind: Launch of the Platform for Coal Regions in Transition." Press release. December 11, 2017. **https://ec.europa.eu/commission/presscorner/detail/en/IP_17_5165**.

———. 2017c. *Performance Monitoring Report of the European Union Programme for Employment and Social Innovation (EaSI) 2015–2016*. Directorate-General for Employment, Social Affairs and Inclusion. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2767/139461**.

———. 2018a. "Commission Welcomes Adoption of Its Proposal to Help Dismissed Workers in Greek Media Sector with €2.3 Million." November 19, 2018. **https://ec.europa.eu/social/main.jsp?langId=en&catId=581&newsId=9255&furtherNews=yes**.

———. 2018b. *EU Budget for the Future: The Connecting Europe Facility (CEF)*. Luxembourg: Publications Office of the European Union. October 30, 2018. **https://policycommons.net/artifacts/284026/eu-budget-for-the-future/1141363/**.

———. 2018c. "Investment Plan for Europe, July 2018." **https://www.consilium.europa.eu/en/policies/investment-plan/**.

———. 2018d. "Personalised Labour Market Integration and Social Inclusion for Refugees in Murcia, Spain." September 5, 2018. **https://ec.europa.eu/regional_policy/en/projects/spain/personalised-labour-market-integration-and-social-inclusion-for-refugees-in-murcia-spain**.

———. 2018e. *Platform on Coal and Carbon-Intensive Regions: Terms of Reference*. **https://energy.ec.europa.eu/system/files/2018-03/crit_tor_fin_0.pdf**.

———. 2018f. *Structural Support Action for Coal and Carbon Intensive Regions*. November 2018. **https://climate.ec.europa.eu/system/files/2018-11/initiative_5_support_en_1.pdf**

———. 2019a. Annual Report on European SMEs 2018/2019: Research & Development and Innovation by SMEs. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2826/500457**.

———. 2019b. "Communication from the Commission: The European Green Deal." December 11, 2019. **https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:52019DC0640&from=EN**.

———. 2019c. *The Connecting Europe Facility: Five Years in Supporting European Infrastructure: Investing in European Networks*. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2840/80126**.

———. 2019d. *The EU Budget at a Glance*. Luxembourg: Publications Office of the European Union. **https://data.europa.eu/doi/10.2761/963945**.

———. 2019e. EU Budget for the Future: What Is the InvestEU Programme? March 19, 2019. **https://ec.europa.eu/info/sites/default/files/what_is_investeu_mff_032019.pdf**.

———. 2019f. "The European Fund for Strategic Investments (EFSI)." **https://wayback.archive-it.org/12090/20191231194721/https://ec.europa.eu/commission/priorities/jobs-growth-and-investment/investment-plan-europe-juncker-plan/european-fund-strategic-investments-efsi_en**.

———. 2019g. *Performance Monitoring Report of the European Union Programme for Employment and Social Innovation (EaSI) 2017–2018*. Directorate-General for Employment, Social Affairs and Inclusion. **https://doi.org/10.2767/438208**.

———. 2019h. "Polish Metal Company Increases Competitiveness with Clinching-Based Manufacturing." February 26, 2019. **https://ec.europa.eu/regional_policy/en/projects/poland/polish-metal-company-increases-competitiveness-with-clinching-based-manufacturing**.

———. 2019i. "Report from the Commission to the European Parliament and the Council on the Activities of the European Globalisation Adjustment Fund in 2017 and 2018." September 16, 2019. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52019DC0415&qid=1610291198837**.

———. 2019j. “Smart Emma: Helping Local Grocery Shops in Germany Compete against Online Retail Giants.” December 2, 2019. **https://ec.europa.eu/regional_policy/en/projects/Germany/smart-emma-helping-local-grocery-shops-in-germany-compete-against-online-retail-giants**.

———. 2019k. “Statement by President von der Leyen on 1 December 2019.” Speech/19/6629. Brussels. **https://ec.europa.eu/commission/presscorner/detail/it/speech_19_6629**.

———. 2020a. “Commission Welcomes the Political Agreement on the Just Transition Fund.” December 11, 2020. **https://ec.europa.eu/commission/presscorner/detail/en/IP_20_2354**.

———. 2020b. “EU Budget for Recovery: Questions and Answers on the Just Transition Mechanism.” May 28, 2020. **https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_931**.

———. 2020c. “The European Green Deal Investment Plan and Just Transition Mechanism Explained.” January 14, 2020. **https://ec.europa.eu/commission/presscorner/detail/en/qanda_20_24**.

———. 2020d. *European Semester 2020: Overview of Investment Guidance on the Just Transition Fund 2021–2027 per Member State (Annex D)*. February 27, 2020. **https://commission.europa.eu/publications/2020-european-semester-overview-investment-guidance-just-transition-fund-2021-2027-member-state_en**.

———. 2020e. “Europe’s Moment: Repair and Prepare for the Next Generation.” May 27, 2020. **https://ec.europa.eu/commission/presscorner/detail/en/ip_20_940**.

———. 2020f. “Financing the Green Transition: The European Green Deal Investment Plan and Just Transition Mechanism.” January 14, 2020. **https://ec.europa.eu/regional_policy/en/newsroom/news/2020/01/14-01-2020-financing-the-green-transition-the-european-green-deal-investment-plan-and-just-transition-mechanism**.

———. 2020g. “Former Mining Area of Urgeiriça, Portugal Cleaned Up.” June 17, 2020. **https://ec.europa.eu/regional_policy/en/projects/Portugal/former-mining-area-of-urgeirica-portugal-cleaned-up**.

———. 2020h. “Green Deal: Coal and Other Carbon-Intensive Regions and the Commission Launch the European Just Transition Platform.” June 26, 2020. **https://ec.europa.eu/commission/presscorner/detail/en/IP_20_1201**.

———. 2020i. *Proposal for a Regulation of the European Parliament and of the Council Establishing the Just Transition Fund*. January 14, 2020. **https://eur-lex.europa.eu/resource.html?uri=cellar:b82780d8-3771-11ea-ba6e-01aa75ed71a1.0003.02/DOC_1&format=PDF**.

———. 2020j. *Study Supporting the Ex Post Evaluation of the European Globalisation Adjustment Fund (2014–2020)*. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2767/204192**.

———. 2020k. “10 European Regions Team Up to Give Young People the Tools to Succeed in Business.” August 31, 2020. **https://ec.europa.eu/regional_policy/en/projects/Poland/10-european-regions-team-up-to-give-young-people-the-tools-to-succeed-in-business**.

———. 2021a. *European Fund for Strategic Investments (EFSI)*. **https://ec.europa.eu/info/sites/default/files/about_the_european_commission/eu_budget/db_2021_programme_statement_european_fund_for_strategic_investements_efsi.pdf**.

———. 2021b. *The European Union: What It Is and What It Does*. Luxembourg: Publications Office of the European Union. **https://doi.org/10.2775/946008**.

———. 2021c. “Employment, Social Affairs & Inclusion: Funding.” **https://ec.europa.eu/social/main.jsp?catId=86**.

———. 2021d. Report from the Commission on the Ex Post Evaluation of the European Globalisation Adjustment Fund (EGF) 2014–2020. December 13, 2021. **https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0788&from=EN**.

———. 2022a. “Autumn Package.” **https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/autumn-package_en**.

———. 2022b. “Carbon Intensive Regions in Transition: Unravelling the Challenges of Structural Change.” **https://cordis.europa.eu/project/id/884539/it**.

———. 2022c. “Cohesion Fund.” **https://ec.europa.eu/regional_policy/en/funding/cohesion-fund/**.

———. 2022d. “Cohesion Fund: Data.” **https://cohesiondata.ec.europa.eu/funds/cf**.

———. 2022e. “COSME: Europe’s Programme for Small and Medium-Sized Enterprises.” **https://single-market-economy.ec.europa.eu/smes/cosme_en**.

———. 2022f. “EU Budget.” **https://ec.europa.eu/info/strategy/eu-budget_en?hash=35666630646439323337366464&language=en**.

———. 2022g. “The EU’s Main Investment Policy.” **https://ec.europa.eu/regional_policy/en/policy/what/investment-policy/**.

———. 2022h. “European Funding for Broadband 2014–2020.” **https://ec.europa.eu/digital-single-market/en/news/overview-eu-funding-broadband**.

———. 2022i. “European Globalisation Adjustment Fund for Displaced Workers (EGF).” **https://ec.europa.eu/social/main.jsp?catId=326&langId=en**.

———. 2022j. “European Regional Development Fund: Data.” **https://cohesiondata.ec.europa.eu/funds/erdf**.

———. 2022k. “European Social Fund.” **https://ec.europa.eu/regional_policy/en/funding/social-fund/**.

———. 2022l. “European Social Fund: Data.” **https://cohesiondata.ec.europa.eu/funds/esf**.

———. 2022m. “European Social Fund Plus (ESF+).” **https://ec.europa.eu/social/main.jsp?catId=325&langId=en**.

———. 2022n. “European Social Fund+: Performance.” **https://ec.europa.eu/info/strategy/eu-budget/performance-and-reporting/programme-performance-overview/european-social-fund-performance_en#mff-2014-2020-employment-and-social-innovation**.

———. 2022o. “European Semester 2021: An Exceptional Cycle.” **https://ec.europa.eu/info/business-economy-euro/economic-and-fiscal-policy-coordination/eu-economic-governance-monitoring-prevention-correction/european-semester/european-semester-timeline/european-semester-2021-exceptional-cycle_en**.

———. 2022p. “Horizon 2020.” **https://ec.europa.eu/info/research-and-innovation/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-2020_en**.

———. 2022q. “Smart Strategies for the Transition in Coal Intensive Regions.” **https://cordis.europa.eu/project/id/836819**.

———. 2022r. “What the European Commission Does in Strategy and Policy.” **https://commission.europa.eu/about-european-commission/what-european-commission-does/strategy-and-policy_en**.

———. 2022s. "Youth Employment Initiative: Data." **https://cohesiondata.ec.europa.eu/funds/yei.**

European Parliament. 2017. *Guide to 2014-2020 EU Funding*. European Parliament Research Service. **https://www.europarl.europa.eu/EPRS/Funding_Guide_EN.pdf**.

European Parliament. 2019. European Regional Development Fund and Cohesion Fund 2021–2027. *European Parliamentary Research Service Briefing*. January. **https://esifa.eu/wp-content/uploads/2019/06/European-Regional-Development-Fund-and-Cohesion-Fund-2021_2027.pdf**.

———. 2021. *Just Transition Fund*. European Parliamentary Research Service Briefing. September 2021. **https://www.europarl.europa.eu/RegData/etudes/BRIE/2020/646180/EPRS_BRI(2020)646180_EN.pdf**.

———European Parliament. 2023a. "European Regional Development Fund (ERDF)". Factsheets of the European Union. April 2023. **https://www.europarl.europa.eu/factsheets/en/sheet/95/european-regional-development-fund-erdf-**.

———2023b. "European Social Fund Plus." March 2023. **https://www.europarl.europa.eu/factsheets/en/sheet/53/european-social-fund-plus**.

———. 2023c. *Social and Employment Policy: General Principles*. November 3, 2021. **https://www.europarl.europa.eu/factsheets/en/sheet/52/social-and-employment-policy-general-principles**.

European Parliament. 2023d. "The Union's Revenue." Factsheets of the European Union. April 2023. **https://www.europarl.europa.eu/factsheets/en/sheet/27/the-union-s-revenue**.

European Parliament and Council. 2013a. Regulation (EU) No. 1287/2013 of the European Parliament and of the Council of 11 December 2013 Establishing a Programme for the Competitiveness of Enterprises and Small and Medium-Sized Enterprises (COSME) (2014–2020) and Repealing Decision No. 1639/2006. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex:32013R1287**.

———. 2013b. Regulation (EU) No. 1296/2013 of the European Parliament and of the Council of 11 December 2013 on a European Union Programme for Employment and Social Innovation ("EaSI") and Amending Decision No. 283/2010/EU Establishing a European Progress Microfinance Facility for Employment and Social Inclusion Text with EEA Relevance. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32013R1296&qid=1610291314270**.

———. 2013c. Regulation (EU) No. 1300/2013 of the European Parliament and of the Council of 17 December 2013 on the Cohesion Fund and Repealing Council Regulation (EC) No. 1084/2006."

———. 2013d. Regulation (EU) No. 1303/2013 of the European Parliament and of the Council of 17 December 2013 Laying Down Common Provisions on 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 and Laying down General Provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund and Repealing Council. **https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32013R1303&rid=3**.

———. 2013e. Regulation (EU) No. 1309/2013 of the European Parliament and of the Council of 17 December 2013 on the European Globalisation Adjustment Fund (2014–2020) and Repealing Regulation (EC) No. 1927/2006. **https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32013R1309**.

———. 2013f. Regulation (EU) No. 1316/2013 of the European Parliament and of the Council of 11 December 2013 Establishing the Connecting Europe Facility, Amending Regulation (EU) No. 913/2010 and Repealing Regulations (EC) No. 680/2007 and (EC) No. 67/2010.

———. 2021a. Regulation (EU) 2021/523 of the European Parliament and of the Council of 24 March 2021 Establishing the InvestEU Programme and Amending Regulation (EU) 2015/1017. **https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R0523&from=EN**.

———. 2021b. Regulation (EU) 2021/1153 Establishing the Connecting Europe Facility. **https://www.europeansources.info/record/proposal-for-a-regulation-establishing-the-connecting-europe-facility/**.

European Union. 2017. "Distribution of Competences." Luxembourg: Publications Office of the European Union. **https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=LEGISSUM:competences**.

———. 2022a. "Aims and Values." **https://european-union.europa.eu/principles-countries-history/principles-and-values/aims-and-values_en**.

———. 2022b. "European Citizens' Initiative: FAQ EU Competences and Commission Powers." **https://europa.eu/citizens-initiative/how-it-works/faq/faq-eu-competences-and-commission-powers_en**.

Gardner, Desmond. 2019. "Combination of Financial Instruments with Other Forms of Support." Presented at the Energy Efficiency and Renewable Energy Financial Instruments for Managing Authorities – FIRECE Project workshop, Brussels, January 17–18, 2019. **https://www.fi-compass.eu/sites/default/files/publications/7-Desmond-Gardner-Combination-of-financial-instruments-with-other-forms-of-support_0.pdf**.

Henry, Matthew S., Morgan D. Bazilian, and Chris Markuson. 2020. "Just Transitions: Histories and Futures in a Post-COVID World." *Energy Research & Social Science* 68:101668. **https://doi.org/10.1016/j.erss.2020.101668**.

ILO (International Labour Office). 2015. *Guidelines for a Just Transition towards Environmentally Sustainable Economies and Societies for All*. Geneva: ILO. **https://www.ilo.org/wcmsp5/groups/public/@ed_emp/@emp_ent/documents/publication/wcms_432859.pdf**.

INEA (Innovation and Network Executive Agency). 2019. "Promoting uptake of eInvoicing by the local authorities in Ireland." June 2019. **https://wayback.archive-it.org/12090/20190615092814/https://ec.europa.eu/inea/en/connecting-europe-facility/cef-telecom/2017-eu-ia-0158**.

Interreg Europe. 2022. "Boosting Innovative Entrepreneurial Ecosystem in Regions for Young Entrepreneurs." **https://projects2014-2020.interregeurope.eu/ieer/**.

Lawhorn, Julie M. 2022. *The POWER Initiative: Energy Transition as Economic Development*. CRS Report R46015. Congressional Research Service. September 8, 2022. **https://crsreports.congress.gov/product/pdf/R/R46015**.

Look, Wesley, Daniel Raimi, Molly Robertson, Jake Higdon, and Daniel Propp. 2021. *Enabling Fairness for Energy Workers and Communities in Transition: A Review of Federal Policy Options and Principles for a Just Transition in the United States*. Washington, DC: Resources for the Future. **https://www.rff.org/publications/reports/enabling-fairness-for-energy-workers-and-communities-in-transition/**.

Marguerite. 2023. "Who We Are. Investment Funds." **https://www.marguerite.com/who-we-are/**.

Samecki, Pawel. 2009. *Orientation Paper on Future Cohesion Policy*. **https://www.dotaceeu.cz/Dotace/media/MMR_StaryWeb/import/Kohezn%C3%AD%20politika%20EU/Dokumenty/FileList/Orientation-Paper-on-future-Cohesion-Policy-Pawel.doc**.

Shelton, Rebecca, Wesley Look, Joey James, Evan Fedorko, Sophie Pesek, Dan Mazzone, and Aurora Barone. 2022. *POWER for Transition: Investment in Coal Communities through the Partnerships for Opportunity and Workforce and Economic Revitalization (POWER) Initiative*. RFF Report 22-07. Washington, DC: Resources for the Future. **https://media.rff.org/documents/Report_22-07.pdf**.

Simon, Frédéric. 2020. "EU Boosts 'Just Transition Fund,' Pledging €40 Billion to Exit Fossil Fuels." EURACTIV. May 27, 2020. **https://www.euractiv.com/section/energy/news/eu-boosts-just-transition-fund-pledging-e40-billion-to-exit-fossil-fuels/**.

Stevis, Dimitris, and Romain Felli. 2015. "Global Labour Unions and Just Transition to a Green Economy." *International Environmental Agreements: Politics, Law and Economics* 15 (1): 29–43. **https://doi.org/10.1007/s10784-014-9266-1**.

Trogu, Valentina. 2018. "Prestito d'Onore Regione Marche 2023: Come usufruire dei prestiti d'onore nelle Marche." 24Economia. April 22, 2018. **https://www.24economia.com/prestito-onore-regione-marche/**.

Verdolini, Elena. 2023. *Interlinkages between the Just Ecological Transition and the Digital Transformation*. European Trade Union Institute Working paper, ISSN PDF 1994-4454, **https://www.etui.org/publications/interlinkages-between-just-ecological-transition-and-digital-transformation**.

Verdolini, Elena, and Chiara Belpietro. 2022. "Giusta transizione ecologica: L'impatto delle tecnologie digitali." *Giornale di diritto del lavoro* 174: 205–24. **https://www.francoangeli.it/riviste/Scheda_rivista.aspx?IDArticolo=71910**.

Vlaanderen. 2022. "Just Transition Fund (JTF): Just Transition Mechanism." **https://eufundingoverview.be/funding/just-transition-fund-jtf-just-transition-mechanism**.

Vona, Francesco. 2021. "Managing the Distributional Effects of Environmental and Climate Policies: The Narrow Path for a Triple Dividend." OECD Environment Working Papers No. 188. December 15, 2021. **https://doi.org/https://doi.org/10.1787/361126bd-en**.