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Why the EU's recovery fund should be permanent

By Elisabetta Cornago and John Springford



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- ★ In the paper that follows, we provide a comprehensive assessment of the €720 billion Recovery and Resilience Facility (RRF) – also known as the EU's recovery fund. We assess its macroeconomic effects, how important it could be for the EU's climate ambitions, and its effects on growth. Our assessment is broadly positive.
- ★ The recovery fund is neither the macroeconomic damp squib of its critics, nor the Hamiltonian moment of its champions. The big net recipients from the fund – Italy, Poland, Spain, Romania and other Southern and Central European countries – will receive transfers of between 0.6 and 1.9 per cent of GDP per year to 2026. These grants could bring Southern Europe's public investment rates closer to those seen in the 2000s, if they are used for additional spending (and not to replace existing spending plans). As long as the spending is additional, it will appreciably raise growth rates – an impact that will peak in 2023 and 2024.
- ★ The fund is not large enough to be a climate game-changer, however. Total spending on climate under the fund will be €45 billion a year, while according to the EU and member-states' own estimates, public investment will have to reach approximately €460 billion a year across the EU to meet 2030 emissions targets. The French government has estimated that its *France Relance* plan will only reduce emissions by 1 per cent by 2030.
- ★ Member-states have made many sensible reform proposals to improve Europe's fraying social cohesion. These include measures to reduce the large number of young people and women on temporary contracts in some countries. Many member-states are investing in childcare capacity, which will raise employment rates, household income and tax revenues. However, the recovery fund may only be spent on one-off investments, so member-states will also need to raise current spending, funded through taxation. More nursery places will require the states to fund more childcare workers' salaries, for example.
- ★ Member-states' plans for the other big spending line – 'digitising' the economy and state – contain some sensible proposals, especially to improve citizens' access to public services and grants for early-stage ventures and research in digital technology. But some projects, such as cloud computing, and chip design and manufacturing, are already dominated by Asian and American companies, and the EU's chances of creating successful rivals are slim.
- ★ Conditionality under the fund is likely to be far more effective than under the EU budget. Unlike the EU budget – the Multiannual Financial Framework (MFF) – the recovery fund has a continuous system of conditionality, with tranches of money being disbursed after reform and investment milestones have been met.

- ★ The recovery fund should be made permanent, and after the current fund ends in 2026, larger. To meet climate targets, EU governments, businesses and households will need to invest more than €1 trillion annually throughout the 2020s, and the recovery fund provides cheaper funding than many governments achieve when borrowing on their own account. Joint borrowing and transfers between member-states are justified because climate change is a cross-border issue. To make an appreciable difference to the fight against climate change, the RRF should provide at least €230 billion of the €460 billion public investment needed annually, to ensure that Europeans collectively bear a chunk of the costs of climate action; climate action is achieved with the lowest possible borrowing costs; richer member-states pay more; and national parliaments and taxpayers have ‘skin in the game’.
- ★ A larger recovery fund would have more sizeable macroeconomic benefits. The structural forces reducing interest rates, inflation and growth have not gone away. Higher public investment is a key tool to raise spending across the economy.
- ★ We also recommend that the recovery fund’s superior form of conditionality is extended to the MFF, and applied to regional development spending and farm subsidies. Waste and cronyism, particularly but not only in Hungary, Bulgaria and Romania, would be curbed by stronger oversight by the EU’s institutions. Some farm payments undermine the EU’s climate goals by subsidising a high-emissions sector, and national governments retain too much power over who receives subsidies.
- ★ The second half of the policy brief consists of country reports on the recovery plans of the eight largest recipients of recovery fund spending: France, Germany, Greece, Italy, Poland, Portugal, Romania and Spain.¹

The EU’s new recovery fund – formally the Recovery and Resilience Facility (RRF) – started disbursing money to member-states in the summer of 2021. The €723.8 billion fund will be spent by the end of 2026, and amounts to 0.8 per cent of EU GDP on an annual basis. For the first time, the EU will be borrowing collectively to fund investment across the EU. The fund will also involve transfers of resources from richer member-states to poorer.

Sceptical commentators have suggested that the recovery fund will not make an appreciable difference to growth.² The fund’s champions have dubbed it a ‘Hamiltonian moment’, after the American Founding Father’s successful campaign to federalise US states’ debts from the War of Independence.³ The truth lies somewhere in between.

The heavy skew of grants and loans towards member-states in the east and south – means the fund could raise growth significantly in the parts of the Union that need it most. Less developed economies in Central and Eastern Europe will receive between 0.5 and 1.7 per cent of GDP per year in grants between 2021 and 2026 – which could speed the modernisation of their energy and transport infrastructure. Czechia and Estonia will only receive 0.5-0.6 per cent of GDP because the formula for determining

grants disfavours them: their unemployment rates have been low for five years, and their GDP per capita is higher than their peers in Central and Eastern Europe. Bulgaria, Croatia and Romania have higher unemployment and are poorer, so they will receive more than 1 per cent.

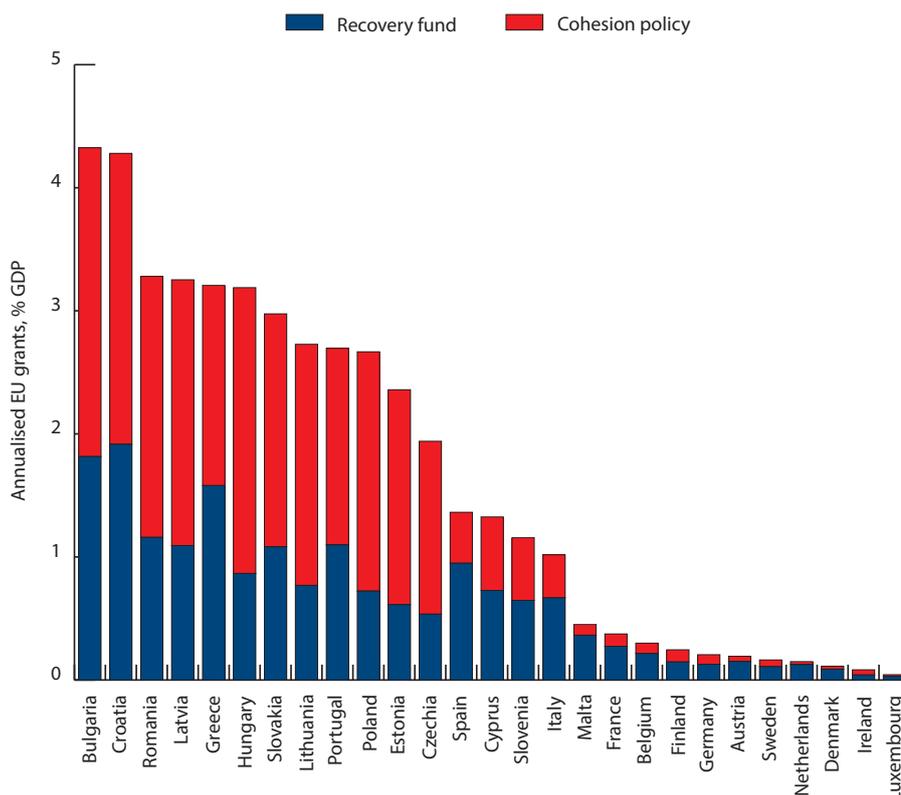
Eurozone members in Southern Europe, still struggling with higher unemployment and higher debt levels as a result of the euro crisis and the pandemic, will receive between 0.6 and 1.6 per cent of GDP per year. Since the average EU member-state grows at around 2 per cent a year, the fund will make a noticeable difference. Central and Eastern European countries will receive further large transfers from the EU budget’s Cohesion Policy (see Chart 1). The recovery fund and Multiannual Financial Framework (MFF) combined will entail a substantial redistribution of income from richer to poorer member-states.

1: To view some key facts and figures on each of the eight countries you can view an interactive map on our website: https://www.cer.eu/sites/all/modules/custom/cer_maps/recovery-fund/map.html

2: Wolfgang Münchau, ‘Beware of smoke and mirrors in the EU’s recovery fund’, *Financial Times*, September 20th 2020.

3: Anatole Kaletsky, ‘Europe’s Hamiltonian moment’, *Project Syndicate*, May 21st 2020.

Chart 1: Recovery fund and cohesion policy grants as a percentage of member-states' GDP, 2021-26

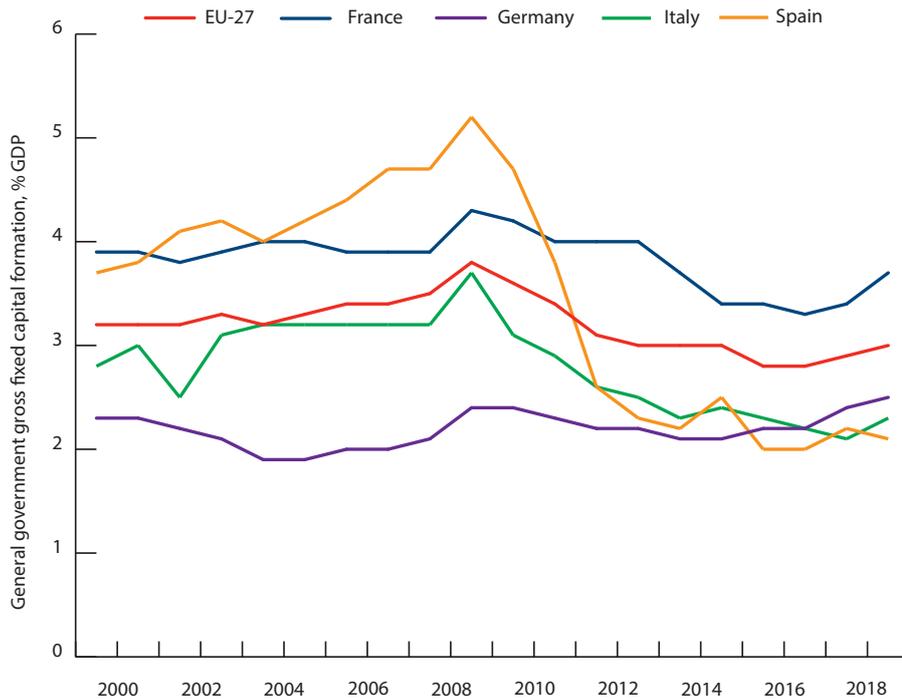


Sources: CER analysis of 'Recovery and resilience plans - an overview', European Parliament, June 2021, 'Breakdown of Cohesion Policy allocations per member-state', European Commission, 2020, and IMF World Economic Outlook Database. Note: Grants are annualised and expressed as a share of GDP as forecast to 2026 by the IMF.

The investment stimulus that the fund provides has a good macroeconomic rationale. Over the last decade, the EU suffered from a prolonged shortfall in aggregate demand, showing up in the slow recovery of the employment rate alongside persistent low inflation. That is despite the European Central Bank (ECB) reducing interest rates below zero and buying government bonds in order to stimulate spending. The main reason for the shortfall in demand was that fiscal policy was too tight. Some countries, especially in Southern Europe, cut back spending and raised taxes to stabilise public debt, and Northern European countries were unwilling to stimulate

their economies. The most effective way for governments to stimulate demand is to invest – as opposed to raising public sector pay, for example – because public investment can boost private investment if projects are well-judged. A new railway that shortens journey times between cities will raise commerce between those cities. But despite low yields on government debt – in Southern Europe, at least after the ECB intervened in 2012 – many European governments reduced investment as a share of GDP in the 2010s as part of their austerity programmes (see Chart 2). Meanwhile, Germany had plenty of fiscal space to invest more, but failed to do so.

Chart 2: Government investment as a percentage of GDP, 2000-20



Source: Eurostat.

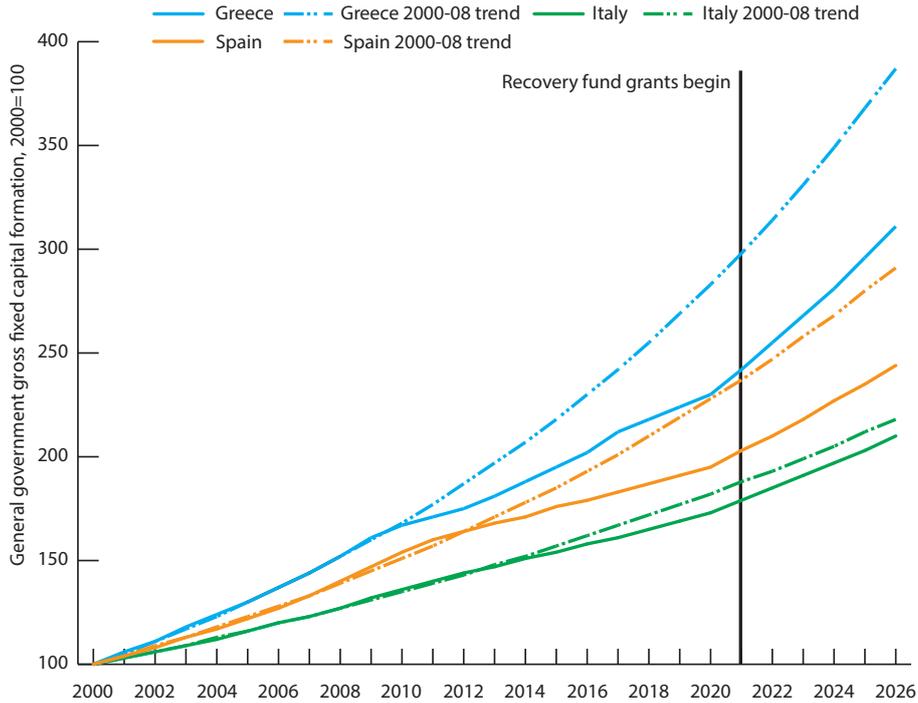
With the ECB keeping borrowing costs low through quantitative easing (QE), even highly indebted governments in Southern Europe have fiscal space to invest, irrespective of the recovery fund. Yet there are two reasons why the fund is helpful in any case. First, the fact that the EU is borrowing collectively means that recovery fund spending is not immediately added to member-states' debts: the money will be repaid by member-states in part according to their relative GDP per capita when bonds expire, with repayments continuing into the 2050s. Second, if interest rates rise significantly (which, as discussed below, is unlikely but cannot be entirely discounted), the fund provides a stream of finance that is independent of national financial conditions.

If Southern European governments use recovery fund grants for additional spending (as opposed to replacing investment that would have happened anyway), they will arrest the slide in public investment that began in the 2010s. Chart 3 shows the path of government investment in Greece, Italy and Spain as compared to the pre-crisis trend. Large gaps developed between 2009 and 2020, in part because GDP fell and in part because governments cut investment as a share of GDP. The forecast period on the chart assumes that each country's RRF grants are

added to the average investment rate in the 2010s. While the grants do not close gaps with the pre-crisis path of public investment, they bring Greece's, Italy's and Spain's investment closer to their pre-2008 growth rates.

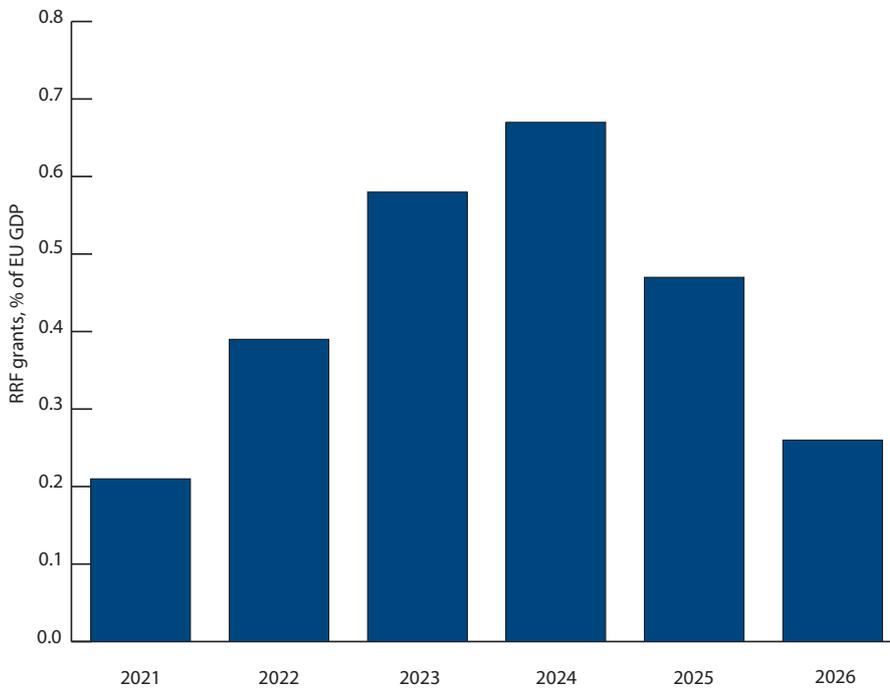
Perhaps more by luck than by design, the investment stimulus provided by the recovery fund is well-timed. It takes time to select and plan investment projects, and money is more likely to be wasted if that process is rushed. And at the time of writing, pandemic-induced shortages of raw materials, components and labour also mean that a rapid rise in public investment spending this year – and possibly next – might crowd out private sector activity, sucking workers and equipment into, say, construction and telecoms from other sectors, and raising inflation. Once the pandemic has receded – hopefully over the next six months, as vaccination programmes and acquired immunity mean that waves fall in size and lethality – stimulus in the form of higher government investment is more likely to raise growth rather than diverting resources that would otherwise have been deployed by the private sector. As Chart 4 shows, disbursements of RRF grants will start rising in 2022, to reach a peak of 0.7 per cent of GDP in 2024.

Chart 3: Government investment trends in Spain, Italy and Greece



Sources: CER analysis of 'Recovery and resilience plans - an overview,' European Parliament, June 2021 and IMF World Economic Outlook Database.

Chart 4: Recovery fund grants as a percentage of EU GDP



Source: 'The fiscal implications of the EU's recovery package,' ECB Economic Bulletin, Issue 6, 2020.

Yet by 2024 the European economy will have surpassed its 2019 level of output, and the IMF does not think that the pandemic and its aftermath will reduce future growth rates in advanced economies.⁴ Does that mean that the recovery fund is unlikely to perform the main function of fiscal stimulus – to close a gap between output and potential? A eurozone budget that provided rapid stimulus to member-states that were hit by shocks would be ideal. Euro members do not have the safety valve of an independent currency, nor a common budget to provide a rapid reaction to downturns. But it proved too difficult politically and legally to create a counter-cyclical budget at the eurozone level. A long-term investment programme at the EU level is a good second-best, for two reasons.

First, interest rates were low across the developed world going into the pandemic, and low inflation was a particular problem in Europe. The main reason for prolonged output gaps in Europe was excess global savings chasing a limited number of investment opportunities, driving interest rates down. There are good reasons to believe that situation will persist after the pandemic. Despite the shortages in supplies and labour, core eurozone inflation in the summer of 2021 remained below target, reaching 1.9 per cent in September. Europe's ageing population will continue to save and keep interest rates low.⁵ There is little sign that China, whose population is also ageing, is decisively shifting towards a consumption-led growth model. The size of Joe Biden's spending bills is being whittled down by US Congress. All that suggests that a long-term investment programme in Europe will be helpful, because the structural forces dragging down inflation and interest rates have not gone away.

Second, an EU-level programme could protect investment spending from fiscal retrenchment at a national level. A stream of investment expenditure

financed by the EU, but which does not vary with the economic cycle, provides more indebted governments with greater ability to borrow and spend. For countries such as Italy with high debt ratios, this will make fiscal policy more counter-cyclical, and have a small positive effect on their borrowing costs.

The greater danger than too-loose policy is that the EU might tighten its collective fiscal stance too rapidly. The EU's fiscal rules are currently suspended, and are due to be reimposed in 2023. These rules set limits on structural deficits, and mandate that countries' fiscal stances reduce debt ratios to 60 per cent of GDP. The structural deficit is an estimate of annual borrowing while controlling for the economic cycle: if the gap between real and potential output is large, European policy-makers claim that the rules allow member-states to borrow and spend enough to stabilise economies. However, the European Commission's estimates of structural deficits are often hard to understand. In 2019, the Commission claimed that the gap between real and potential output in Italy was 0.2 per cent, exactly the same as Germany's, despite Italy's dire growth performance in the 2010s and high unemployment rate.⁶ Member-states with debt ratios over 60 per cent of GDP must reduce them by one-twentieth per year. Together, those rules mean that Italy must rapidly return to a sizeable fiscal surplus – reducing its ability to invest in, say, sustainable transport or clean energy – to stay in compliance with the EU's fiscal rules.

In sum, the fund will improve growth rates in less developed and slow-growing parts of Europe, as long as the public investment is additional and is not undermined by spending cuts and tax rises in other areas. In the section below, we discuss the extent to which the recovery fund will help with the EU's biggest priorities – to reduce greenhouse gas emissions, hasten the use of new digital technologies, and make European societies less unequal.

Europe's three challenges: The green transition, the digital revolution, greater social cohesion

The green transition

Under the recovery fund's rules, member-states must allocate at least 37 per cent of total expenditure to the 'green transition': the effort to shift away from a carbon-intensive economy and towards a decarbonised economy in which waste is minimised and recycled as much as possible. It is a huge task that has to be done at pace, with big cuts in emissions needed in the 2020s to keep global warming within 1.5 degrees Celsius, as enshrined in the Paris Agreement.

4: 'World economic outlook', International Monetary Fund, October 2021.

5: Christian Odendahl, 'Europe shouldn't worry about inflation', CER insight, July 20th 2021.

6: Robin Brooks and Jonathan Fortun, 'Campaign against nonsense output gaps', Institute of International Finance, May 23rd 2019.

The EU has recently approved more ambitious 2030 climate targets, and it plans to achieve net carbon neutrality by 2050. In a modelling scenario based on a mix of regulation and carbon pricing policies, the European Commission estimates that average annual public and private investment of €1,040 billion is needed between 2021 and 2030 to meet 2030 climate goals.⁷ Of this investment, €120 billion must be spent on the energy supply side (energy grid, power plants, new fuels) and €920 billion on the demand side (industrial,

7: European Commission, 'Stepping up Europe's 2030 climate ambition. Investing in a climate-neutral future for the benefit of our people', Commission staff working document. Impact assessment accompanying the document communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, September 17th 2020.

residential, services and transport sectors). Overall, the largest share of investments is required in the transport sector, which alone will require €622 billion.

In the latest National Energy and Climate Plans – documents member-states must submit to the EU institutions under the EU's climate policy – around 45 per cent of investment needs are labelled as public investment for the energy transition, to cover things like transport and energy distribution infrastructure.⁸ This means the EU needs around €460 billion in annual public investment to meet its 2030 climate goals. (That is total investment, as opposed to extra investment needed to achieve climate goals above regular public expenditure on new plants and infrastructure.)

How much of a step forward is the RRF in this respect? On an annualised basis, the RRF provides €120 billion per year, in grants and loans, to EU member-states. If, as required by the European Commission, 37 per cent of funds go into climate investment and reforms, the total would be about €45 billion per year: still an order of magnitude smaller than the total annual public investment needed EU-wide to meet climate goals. So, the RRF is an important step forward, but national governments will also have to increase their own, nationally financed investment efforts, and use regulations, taxes and subsidies to raise private investment too.

Climate investment under the RRF could be well-timed. Investment in existing, mature technologies will support the economy and create well-paying jobs to support the recovery from the pandemic. Examples of such interventions can be found in the Italian plan, which features generous tax credits for energy efficient home retrofits, and in the Greek plan, which supports investment in energy storage to balance the impact of intermittent renewables.

From the 'resilience' perspective, if European countries want to develop and maintain leadership in low-carbon technologies – from renewables to electric vehicles and batteries – they need to encourage R&D as well as early-stage industrial ventures. For instance, Germany is investing in domestic car battery production, to retain the primacy of its automotive sector. Italy is supporting innovative renewable energy such as new offshore wind technology. Portugal plans to invest in R&D for renewable hydrogen, leveraging its abundant renewable energy resources. Some co-ordination at EU level could allow larger cross-country conglomerates to emerge,

8: The share of public investment (as opposed to private investment) is estimated to be higher in Central and Eastern Europe than in Western and Southern Europe, respectively at 60 per cent and 37-39 per cent. European Investment Bank, 'Investment report 2020/2021: Building a smart and green Europe in the COVID-19 era', 2021.

9: Ian Bond, Elisabetta Cornago and Zach Meyers, 'Why have Europe's energy prices spiked and what can the EU do about them?', CER insight, October 28th 2021.

exploiting economies of scale: France and Germany have joined forces to develop hydrogen solutions for hard-to-decarbonise sectors, including trucks. The jump in natural gas prices in autumn of 2021 should also prompt EU soul-searching over its dependence on imported hydrocarbons, especially from Russia, which uses the supply of gas as a geopolitical tool.⁹

Most funds are going into sustainable transport and charging stations (€75 billion), followed by clean technologies and renewables (€47 billion) and energy efficient buildings (€42 billion).¹⁰ Member-states are rightly spending more on infrastructure such as charging stations and power grids. However, more subsidy is needed to encourage households and businesses to take up building insulation in order to meet EU energy efficiency goals: the European Commission estimates the investment gap for residential energy efficiency at €115 billion per year in the 2020s.¹¹

Retrofitting buildings uses mature technology that can quickly contribute to the recovery. It will reduce households' energy bills as well as greenhouse gas emissions. Higher government subsidies should be accompanied by training to provide more skilled workers for the growing energy efficiency industry. The amount of investment allocated to buildings efficiency over the next five years is not set in stone, even though all RRF funds have now been allocated to specific spending lines and the amounts cannot be changed (unless specific projects are not achievable due to 'objective circumstances', in which case recipients can submit amended plans). Member-states should use more national funding to increase subsidies for energy efficiency.

While the RRF currently runs until 2026, the energy transition will continue beyond that. Subsidies for low-carbon goods and services – such as electric vehicles and retrofits – should reduce their prices by speeding innovation and creating supply capacity. As these goods and services become more affordable, after 2026 the share of public financing could be reduced, with private financing stepping in to a greater extent. The extent to which this is possible will differ across countries, because their markets vary. Grants for building retrofits or for electric vehicles should be larger for poorer households and smaller businesses. Governments could announce now that subsidies will fall over time, to encourage households and businesses to invest in efficiency and electrification as soon as possible. And in the second half of the 2020s and in the 2030s, public investment in infrastructure, from electricity storage to charging

10: Bruegel dataset, updated on July 14th 2021, European Union countries' recovery and resilience plans.

11: Fi-compass, European Structural and Investment Funds, 'The potential for investment in energy efficiency through financial instruments in the European Union', June 2020.

stations, will have to grow, particularly in Central and Eastern Europe.

The digital revolution

The EU has good reasons to invest collectively in stopping climate change, but the rationale for EU investments in the digital economy is weaker. France and Germany are both pushing for 'strategic autonomy' in the digital economy, because they view EU imports of US and Asian technology as a source of geopolitical and economic weakness. Yet it is not apparent that the state can lead the development of a digital economy through public investment.

As part of the EU's 'projects of common European interest' – a form of state aid that is co-ordinated at the EU level – Germany and France are collaborating on investment in cloud computing, and microelectronics, in an attempt to close the gap that has opened up with the US and Asia. Some RRF money will be used to finance these projects.

In cloud computing and data infrastructure, the EU and member-states are together investing up to €10 billion.¹² The project's centrepiece is the Gaia-X cloud computing platform. Gaia-X will provide a set of standards for cloud providers and other companies for the storage and processing of data, and is backed by European companies such as Orange, BMW, Bosch and EDF. Gaia-X is supposed to make it easier for individuals, companies and the public sector to share data securely and comply more easily with money laundering regulations. Its backers also say that the platform will allow companies to process data within their own jurisdiction, rather than having it stored in another member-state or outside the EU. These benefits will probably not overcome the US giants' advantages, however, since some American cloud computing platforms have already made efforts to provide improved data protection in Europe. Their cloud services are already well developed, and economies of scale and first-mover advantage are always powerful forces in digital technology – large data centres are more efficient than small ones,¹³ and pre-existing cloud providers tend to offer distinct proprietary services, which make it difficult for business customers to switch providers without business disruption.

The microelectronics project faces a different problem. Given the EU's strengths in cars, appliances and high technology manufacturing, and the development of internet enabled versions of these products, there is a rationale for seeking to design higher-value semiconductors (and possibly manufacture them). Thierry Breton, the European Commissioner for the Internal Market, has championed the construction of

12: 'What is GAIA-X and what do I need to know?', Squire Patton Boggs, November 2020.

13: 'Google's hyperscale data centres and infrastructure ecosystem in Europe', Copenhagen Economics, September 2019.

14: Antonio Varas and others, 'Strengthening the semiconductor supply chain in an uncertain era', Boston Consulting Group, April 2021.

chip factories in the EU, as part of the drive to onshore supply chains in a sector currently dominated by the US, South Korea, China and Taiwan. The global shortage of semiconductors has in part been driven by COVID-19-induced factory shutdowns in Taiwan, strengthening the apparent rationale for more local production. And Germany is spending €1.9 billion on an industrial strategy for its automotive supply chain, including the onshoring of chip and battery production, in an attempt to ensure that the production of higher value components stays in Germany as the transition to electric cars occurs. Electric vehicles are relatively simple products compared with those with internal combustion engines, and a smaller share of the value is in the body of the car than in batteries and chips. Those are currently largely imported from outside Europe.

But China, South Korea, Taiwan and the US are also throwing subsidies worth tens of billions of dollars at domestic production, especially at the latest small-nanometre chips that the EU would like to bring onshore. And over 50 per cent of added value in semiconductors is in the design of chips, with manufacturing only providing 24 per cent.¹⁴ There may be a rationale for industrial support for the design of new small and energy efficient semiconductors, in order to ensure that the EU has a foothold in a sector that has become a victim of 'geo-economic' thinking, but manufacturing them in Europe will be uncompetitive without vast, and probably continuous, public subsidies.

More generally, digital markets tend to have very large economies of scale (thanks to the importance of having a lot of user data) and network effects (with platforms with many users attracting more users and advertising in a virtuous circle), which means that they tend towards monopoly or oligopoly. These effects mean that European attempts to challenge tech giants may be too late. The EU would be better off focusing on support for new technology in sectors of comparative advantage (which is why investing in new semiconductors for smart appliances and electric vehicles is not necessarily a bad idea, if potentially expensive).

A more sensible focus is digital skills, upon which countries are spending around 21 per cent of the EU money earmarked for digital investment.¹⁵ Portugal will spend €650 million on training people in small and medium sized enterprises in the use of digital technology. Spain will spend €3.6 billion on a 'National Plan for Digital Skills'. As part of its €1.8 billion investment in digital technology, France will award funds through competitions to early-stage projects in quantum computing, cyber security, 5G 'sovereignty' and cloud computing, some of it to train more skilled tech

15: Zsolt Darvas, J. Scott Marcus and Alkiviadis Tzaras, 'Will European Union recovery spending be enough to fill digital investment gaps?', Bruegel, July 20th 2021.

engineers and entrepreneurs in these fields. Government subsidy can encourage young people and workers to invest in science and technology skills, which seem to be undersupplied without government intervention: 28 per cent of Europeans say that their digital skills are not good enough to do their jobs well.¹⁶

An important role for government digital expenditure is to improve the efficiency of public services. Happily, governments are planning to spend an average of 32 per cent of the earmarked money for digital on public services, which means they will receive the most money in the digital investment bracket of the RRF.¹⁷ Providing access to more public services online will reduce administrative costs and the time citizens and businesses must spend filling out forms and taking them to government offices. Government administrative datasets can be used to better understand trends in public health, labour markets and tax, and to improve the response of public services to changes in demand.

In all, however, the large sums of EU grants that governments will be spending on digital – €67 billion in total – have a weaker foundation than the funds earmarked for climate change. Investment in skills (which may be undersupplied by firms and individuals) and digitising the public sector seem like good bets. Subsidies for technologies of the future and ‘digital sovereignty’ are by their nature more risky. Government is more likely to succeed if it provides funding for early-stage science and technology, in part to build advanced skills (as France and others are doing) rather than ploughing money into cloud, semiconductors and other established digital markets where economies of scale and first-mover advantage are such powerful forces (as France and Germany are also doing).

Achieving greater social cohesion

Alongside the focus on the climate and digital transitions, most of the member-states’ plans aim to improve social cohesion, through a combination of investments and reforms. The COVID-19 pandemic has made some social problems worse. Women’s employment, already substantially lower than male employment in most of the EU, fell more than men’s during the pandemic as many women left the workforce to care for children and the elderly at home.¹⁸ The pandemic had very different impacts on office workers, who could work remotely throughout lockdowns and thus fully retained their salary, and workers in hospitality or retail who were fired or furloughed by businesses which closed during lockdowns, as well as care workers who faced higher risks of COVID-19 contagion while delivering essential services.¹⁹

16: ‘Insights into skills shortages and skill mismatch’, European Centre for the Development of Vocational Training, January 2018.

17: Zsolt Darvas, J. Scott Marcus and Alkiviadis Tzaras, ‘Will European Union recovery spending be enough to fill digital investment gaps?’, Bruegel, July 20th 2021.

Several member-states plan to support gender equality by addressing long-standing barriers to women’s employment. For example, Italy is addressing weak childcare provision by building a large number of new pre-schools. Such investments may well be transformational as long as governments ensure sufficient funding for childcare in the long-term – not only to build schools but to operate them. These are important steps, but it is worth noting that most RRF investments – such as energy, digital and transport infrastructure, as well as energy efficient construction – tend to concentrate in areas largely dominated by male employees. More effort is needed to integrate the female workforce in the green and digital transitions, including by increasing the participation of women in science, technology, engineering and maths (STEM), vocational education and reskilling programmes connected to green and digital transition jobs.

Other plans aim to help unemployed people re-enter the workforce. For example, Italy and Greece have proposed reforms to job search and training services. Spain is planning to reform vocational education. France is targeting young people that are ‘farthest from employment’ with training programmes.

The pandemic has brought to the surface lingering problems in the healthcare sector, including patchy local healthcare services, which are important for preventative care (COVID-19 was particularly deadly for people with comorbidities, such as obesity and cardiovascular problems). Several plans aim to change that: Italy is building local healthcare centres, Romania is investing in e-health and telemedicine services, and Greece is reforming primary healthcare and establishing a home healthcare system. Higher public investment both in education and healthcare will require higher budgets for operational costs in order to staff newly established institutions.

The disparities between richer and poorer regions have been widened by COVID-19, because poorer regions have more workers in high-contact jobs, fewer office workers and more people in ill-health.²⁰ These regions may fall further behind as the energy and digital transitions pick up speed. For this reason, for example, some RRF plans address regional disparities by devoting more investment to poorer areas, which often include rural areas suffering from depopulation. Italy is channelling €82 billion to the Mezzogiorno (the bottom third of the ‘boot’) over the course of the recovery fund, including support for female and youth employment (which are lower than in the rest of the country) and strengthening transport infrastructure.

18: International Labour Organisation, ‘Building Forward Fairer: Women’s rights to work and at work at the core of the COVID-19 recovery’, July 2021.

19: BMJ, ‘Healthcare workers 7 times as likely to have severe COVID-19 as other workers’, December 8th 2020.

20: Christian Odendahl and John Springford, ‘Three ways COVID-19 will cause economic divergence in Europe’, CER policy brief, May 2020.

Spain will try to tackle the multiple issues that have led to the depopulation of rural areas, including insufficient transport, telecoms and public services.

Some regions, such as mining areas, are particularly vulnerable to the changes in industrial geography that the energy transition is bringing about, and the plans try to smooth transitions in these regions. For example, Poland is setting up a Special Development Fund to support mining areas.

The recovery fund and the EU budget

The macroeconomic case for the recovery fund is strong, as is its focus on restructuring the European economy through investment in climate and (with some caveats) digital. The long-standing European budget – the MFF – by contrast, needs further reform.

In macroeconomic terms, the MFF is larger than the RRF, standing at 1 per cent of EU GDP. But unlike the recovery fund, the MFF involves no borrowing by the EU, and is financed by payments from member-states and by some of the EU's 'own resources' – money like tariffs and a share of VAT that legally belongs to the EU, but is collected by member-states. This means that the budget does not help to reduce the surplus of savings over investment in the EU – it largely passes cash from one member-state to the other. As a result, it could do more to raise spending and thus interest rates and inflation across the EU, all of which had been too low before the pandemic, and are likely to be afterwards too.

The MFF, like the RRF, is redistributive, so it raises expenditure in countries in Southern and Central and East Europe that are net recipients. As shown in Chart 1 above, under the EU's cohesion policy, newer member-states – and Portugal and Greece, the two poorest pre-2004 members – receive between 1.4 and 2.5 per cent of GDP annually in spending. That is because most of the money goes to regions within countries whose GDP per capita is lower than the EU average. However, unlike the RRF, a good deal of regional spending under the cohesion policy is determined by regional governments, not central government. Small businesses, charities, and local governments can apply for the funds from regional government; their projects are assessed and then the money is committed and spent.

This funding structure causes two problems. The first is that it takes time to plan and build new roads and bridges, for example, so often payments are delayed beyond the official budget period. According to European Commission data, as of September 2021 Poland had spent only €26 billion of €48 billion of planned expenditure under the European Regional Development Fund for the 2014-2020 budget period.²¹

21: 'European structural and investment funds data, 2014-2020 EU payments', European Commission, accessed September 27th 2021.

(In Poland's case, most of the remaining €22 billion will ultimately be spent, but several years after the MFF has ended.) The RRF, by contrast, is being pushed through by central governments on the basis of their national plans, and must be spent by 2026. This allows RRF spending to have some countercyclical effects.

The second problem is that scrutiny of MFF spending is weaker than under the RRF. The RRF process started with the European Council agreeing the size of the fund and its priorities. Member-states then worked up recovery and resilience plans for scrutiny by the European Commission. Poland's recovery plan had still not been signed off at the time of publication, after a stand-off with the European Commission over steps taken by Poland's government, led by the populist Law and Justice party, to curb the independence of Poland's judiciary, and, in the Commission's view, the government's failure to establish strong enough anti-corruption measures. And Romania's first and second drafts of the plan both failed to pass muster, because there was not enough focus on green investment and information on costs was missing. Once plans are agreed, as Romania's has now been, the first tranches of money can be disbursed – so-called 'pre-financing'. Further tranches are paid out when the Commission is satisfied that pre-agreed milestones – particular reforms and investments, in the main – have been passed. If initial milestones are not passed, member-states must return the pre-financing.

By contrast, the MFF's conditionality mechanisms are largely *ex ante*, with money being disbursed as long as member-states have put together strategic plans that meet the EU's environmental, economic and social goals, and as long as member-states gather data and perform analysis on whether the money is being disbursed according to the plans.²² That is in part because national governments have closer relationships with regional authorities than the European Commission, and so are in theory better able to hold them accountable. New rule-of-law conditionality, agreed after Poland and Hungary threatened to veto the MFF and recovery fund, will allow the Commission to withhold funding if member-states breach the rule of law in a way that compromises the management of EU funds. Governments would be subject to the mechanism if they water down independent powers to investigate and prosecute corruption, for example. But as its name suggests, this conditionality aims to stop downright corruption as well as breaches of the rule of law, as opposed to raising the quality of legitimate reforms and spending.

An additional problem is that the cohesion policy of the MFF has variable effects on growth in the poorest regions of the EU. In a study examining the 2007-13 MFF, Sascha Becker and colleagues compared regions that receive

22: Jorge Núñez Ferrer and others, 'The EU budget and its conditionalities: An assessment of their contribution to performance and reforms', Centre for European Policy Studies, September 2018.

structural funds because their GDP per capita was below 75 per cent of the EU average, to those who just missed out by being above that threshold. On average, they found that one euro of structural funds led to an extra €1.21 in GDP. However, in a second paper, they found big variations in that effect between regions. Those regions with higher levels of education and better perceived quality of government – largely in Northern Europe – did better than the poorer regions of France, Italy, Malta and Portugal.²³

Finally, some parts of the Common Agriculture Policy (CAP) actively undermine the EU's climate goals. In the

2014-20 budget period, the EU spent €275 billion on farm subsidies that had no environmental conditionality attached, compared to €130 billion where green measures were needed to receive the money. Meanwhile, greenhouse gas emissions from agriculture were flat over that period.²⁴ And the European Court of Auditors found that CAP funds earmarked for climate action had little impact on emissions.²⁵ In the 2021-27 period, among other reforms, farmers will be rewarded with subsidies for 'eco-system services', such as reducing soil erosion and flooding, but member-states retain some latitude to define 'eco-system services' and how farmers are rewarded.

Recommendations

Make the recovery fund permanent

The recovery fund was conceived in the midst of the first wave of COVID-19: an emergency that had the potential to kill many people and threaten Europe's financial system, and one which would be more painful for some member-states than others.²⁶ Formally, it was a one-off measure to deal with the pandemic. But the RRF should be made permanent, for three reasons.

1. The EU will need between 1 and 2 per cent of GDP in additional public and private investment annually to reach net zero greenhouse gas emissions by 2050.²⁷ Climate change is a cross-border phenomenon, so the EU has a collective interest in ensuring there is no free-riding by individual member-states. That is why it should continue to provide collective funding for the energy transition, with tough conditions to reduce wasteful spending and green-washing. Borrowing for some of the funding for that transition is also sensible, because it shares the cost between generations, and reduces the need for a sudden leap in taxes, which could stoke a political backlash.

2. Low interest rates, if they persist, mean that the 'hurdle rate' for government investment projects to generate returns (in the form of higher GDP and tax revenues) is lower than in the past. By borrowing collectively, the EU's member-states are channelling surplus savings into a targeted investment programme. That programme has conditions: member-states must enact reforms to reduce constraints on growth.

3. Some member-states will face worse recessions than others in the future, just as Southern Europe was hardest

hit by the euro crisis and the pandemic. The euro means that one potential pressure valve – a devaluation of the currency – is not available. And high debts in Southern Europe mean governments have less fiscal capacity to offset recessions. The RRF, if it were permanent, would provide a constant stream of income to governments, which they can use for investment and which would not be cut in downturns.

The recovery fund's governance should be used for the EU budget

If the RRF is made permanent, its advantages over the MFF – including what the money is spent on, and it being financed by collective borrowing, rather than immediate payments by member-states – should make it the main instrument for governing EU expenditure. The RRF's system of governance should be applied to cohesion spending and the Common Agricultural Policy, for three reasons.

1. The RRF has a better system of governance. Investment and reform plans are determined jointly by member-states and the EU institutions, in accordance with the overall objectives of the EU. Conditionality continues year by year, rather than being largely upfront. This will help to bear down on the waste and corruption that has dogged farm subsidies and regional funding. In 2019, the *New York Times* uncovered oligarchs in Central Europe buying land, sometimes with the connivance of governments, in order to be awarded subsidies.²⁸ Eighty per cent of farm spending goes to the largest 20 per cent of farms. Strengthening oversight of MFF spending will make political buy-in from Northern member-states more likely.

23: Sascha Becker and others, 'Going NUTS: The effect of EU structural funds on regional performance', *Journal of Public Economics*, 2010; and 'Absorptive capacity and the growth and investment effects of regional transfers: A regression discontinuity design with heterogenous effects', *American Economic Review: Economic Policy*, 2010.

24: John Springford, 'The EU budget needs climate proofing', CER insight, November 4th 2019.

25: 'Common Agricultural Policy and climate: Half of EU climate spending but farm emissions are not decreasing', European Court of Auditors, July 2021.

26: Christian Odendahl and John Springford, 'Three ways COVID-19 will cause economic divergence in Europe', CER policy brief, May 2020.

27: Florence Jaumotte and Gregor Schwerhoff, 'Reaching net zero emissions', International Monetary Fund, July 22nd 2021; and 'Net zero by 2050: A roadmap for the global energy sector', International Energy Agency, May 2021.

28: 'The money farmers: How oligarchs and populists milk the EU for millions', *New York Times*, November 3rd 2019.

2. Investment in climate action and, to a lesser extent, digital technologies and other forms of structural transformation of the economy are more important to future prosperity than farm payments, which subsidise a high-emissions sector of the economy. If it proves impossible to reduce farm subsidies significantly to make space for investment in these public goods, overall EU spending needs to be bigger to accommodate more investment.

3. As income differences between newer and older member-states reduce and infrastructure in the least developed member-states improves, the structural funds, which are predominantly a development tool, will become less important. The RRF process is better designed for economic transformation to counter climate change and to ensure that recessions do not curb government investment.

This reform would not require treaty change. Article 312 of the Treaty on the Functioning of the EU says that the MFF must be in balance, unlike the RRF, which is financed by borrowing. But the MFF's spending priorities and the way conditionality operates are determined by an EU regulation, which is ordinary legislation. Thus the MFF part of a combined EU budget could always balance, while the RRF part of the budget could be financed by borrowing as well as tax revenues or transfers by member-states.

The key is that the conditionality and spending priorities of the MFF become more in line with climate and development goals and less susceptible to mis-spending and corruption. That can be done without treaty change. Article 312 is silent on governance arrangements, so the RRF's system could be applied to the MFF.

Reform the fiscal rules to support the recovery fund

A return to the fiscal policies of the 2010s would reduce growth and might undermine the economic and political benefits that the recovery fund has the potential to provide. Government investment was a victim of the last austerity round, because politically it is one of the easier budget lines to cut. The EU's fiscal rules should be reformed to allow governments to maintain higher debt ratios: they are easier to afford, given the structural fall in interest rates globally. They should also allow more borrowing for government to invest, irrespective of the stage in the economic cycle, especially given the sizeable public investment needed to adapt to and mitigate climate change.

The next recovery fund should be doubled in size

Climate change is a global problem: just as setting targets to address it at EU level is the best way to go about it, co-ordinating investment efforts and raising funds to finance those investments is more efficient at EU level.

As noted above, over €460 billion in public investment will be needed annually to meet the EU's 2030 climate targets. For this reason, we recommend that the RRF should continue to operate beyond 2026, and that its next instalment should be much bigger, so that it provides at least half of the €460 billion needed annually for climate investments. That would mean that it would have to be at least €1.4 trillion over the six years from 2026, or twice as large as the current fund.

A 50/50 mix of nationally-funded and RRF-funded public investment would reduce the cost of climate action through collective borrowing at the EU level. It would make it harder for some member-states to free-ride on others' climate change efforts, by providing funding that is specifically earmarked for the climate transition, with oversight by the EU's institutions. Transfers from richer to poorer member-states would make EU-level climate targets more politically acceptable in Central and Eastern Europe: for these countries, the RRF would cover more than half of their required climate investments. Blending national and European co-financing would ensure that vigorous national-level debate would continue on how to best fund climate action, involving parliaments and civil society.

To finance the recovery fund, the EU needs a stable tax base

In order to finance this permanent RRF, the EU needs more 'own resources' – taxes and other payments that are collected by national institutions but that legally belong to the EU collectively. However, they should not solely be the resources that the European Commission has proposed.

The RRF has been financed by issuing EU bonds. The Commission has proposed to pay the EU's creditors through several new sources of revenue: its initial proposal involved earmarking part of the revenues from a new carbon border adjustment mechanism (CBAM), the EU Emissions Trading Scheme (EU ETS) and a levy on digital business activities. While the first two proposals were tabled in July 2021, the proposal for a digital levy has been postponed. The Commission is also considering proposals for additional own resources from taxes on business but has not yet tabled detailed plans.

There are a few problems with the Commission's proposals. First, revenues from the CBAM and ETS will shrink over time, because if they are effective they will reduce carbon emissions: this does not make them ideal as long-term budget resources. And due to its slow phase-in, CBAM would start raising revenues only at the end of its transition period, in 2026. What is more, climate action requires polluting to become more expensive, and it helps politically if tax revenues from environmental taxes and other price-based mechanisms – such as the EU ETS and CBAM – are clearly linked to subsidies and investment in low-carbon alternatives. The recovery fund provides some 'hypothecation' through its 37 per cent

target for climate related expenditure. It would make sense to finance that 37 per cent share using ETS and CBAM revenues – but not the full RRF. Some revenues should be passed to the EU, and some of the remaining revenues should be spent by member-states to support low-carbon innovation and to help poorer people with the cost of the climate transition.

Second, discussions around the digital tax levy were frozen during international negotiations on a global minimum corporate tax rate and on a fairer reallocation of corporate tax revenues between countries. A precondition of the international agreement is that no new digital services taxes or similar measures can be introduced. The Commission plans to resume its proposal in October, but designing such a levy in a way which does not jeopardise the international agreement will be technically and politically difficult.

The Commission has made vague reference to additional potential own resources such as a financial transaction tax, and a financial contribution from businesses. These types of financial tools might provide greater financial sustainability, given their longer time horizon. However, while proposals for both a financial transaction tax and a common corporate tax base have been discussed on and off for years, at this stage there has neither been an agreement on how to take them forward, nor a proposal on the share of revenues which could be devoted to the EU. Detailed proposals are far off: they will be tabled by June 2024.

A higher share of VAT revenues would, like corporate or financial transactions taxes, provide a more stable tax base for the EU. Under the current system for funding the EU, member-states pass a share of VAT revenues to the European Commission (with a formula ensuring that poorer member-states pay less). If the EU is to have more responsibility for investment, it is important that it has access to a long-lived fiscal instrument rather than short-term price incentives to change behaviour – which is what the ETS and CBAM are.

Any permanent recovery fund will differ from the plan we have outlined above: it will be the product of bargaining between 27 member-states. But if enacted, our outline would make a significant difference to climate change, and the EU must respond collectively to the climate emergency. 2026 may seem far off, but the recovery fund as it stands is too small, and it will end before Europe is halfway to net zero. The EU's leaders should start work on a permanent recovery fund before it is too late.

The next sections analyse the recovery and resilience plans submitted by the eight EU countries that will absorb over 80 per cent of the RRF grants. These are France, Germany, Greece, Italy, Poland, Portugal, Romania and Spain.²⁹ The analysis also takes stock of the impact of the COVID-19 pandemic in each country, and assesses their prior economic performance and success in reducing greenhouse gas emissions.

29: European Commission, 'Recovery and Resilience Facility: Maximum grant allocations', 2021.

France

COVID-19

France has had one of the highest rates of COVID-19 cases and deaths in the EU, after three large waves in March and October 2020, and in the spring of 2021. Like most European countries, France provided a '*chômage partiel*' furlough scheme for workers in businesses that were forced to close or limit operations during the pandemic, in effect socialising the worst of the pandemic's economic costs.

Due to that sizeable third wave, in April the Banque de France cut its growth forecast for 2021 from 6 per cent to 5 per cent. With the French economy shrinking by 8 per cent in 2020, this means that it is unlikely to recover its pre-pandemic level until mid-2022.³⁰

France's vaccine rollout has been rapid. Despite the EU's mis-steps with procurement, and early polls showing fewer than half of French people would take the vaccine, vaccine uptake has steadily improved, especially after the government made vaccine passports mandatory to enter bars and restaurants.³¹ Nonetheless, the delta variant's infectiousness means that very high levels of vaccine coverage may be needed to prevent a resurgence of the virus in the winter of 2021-22.

Long-term economic performance

France went into the pandemic with a reasonably balanced current account, and a low public deficit, and it has had little trouble financing the big jump in its deficit as a result of its pandemic-related spending. While it has high productivity levels – similar to northern Europe and the US – France has struggled with low productivity growth since 2008, with GDP per hour worked growing by 0.5 per cent a year on average. Like many advanced economies, some combination of the freeze in the banking system, tight monetary policy, tight fiscal policy, a reduction in the rate of productivity-enhancing

innovation, and falling expectations by investors about future demand meant that growth has disappointed.

In the fourth quarter of 2019, France's unemployment rate was high, at 8.5 per cent, which is a little lower than President Macron believes its 'structural' unemployment rate to be.³² France imposes high tax rates on employers, including taxes on value added and higher social contributions once firms have hired a certain number of employees. It has fairly strict worker protections, and relatively generous unemployment benefits. As a result, France has a higher rate of unemployment than many other countries.

However, it is not yet clear whether France will suffer from a long period of higher-than-usual unemployment as a result of the pandemic. Thanks to its furlough and short-time work scheme, as well as the reopening of the economy after lockdown, in August 2021 unemployment stood at 8 per cent – lower than its pre-pandemic rate (which had been its lowest rate for over a decade). But as the furlough scheme is unwound, France's relatively static labour market is a source of potential weakness. Over the 2010s, France's businesses created new jobs more slowly than those in Germany and the UK. Chart 5 plots the vacancy rate (how many jobs are advertised as a share of the total labour force) against the unemployment rate. Germany and the UK create more new jobs, which (in combination with less generous job protections and unemployment insurance) lead to more people working.

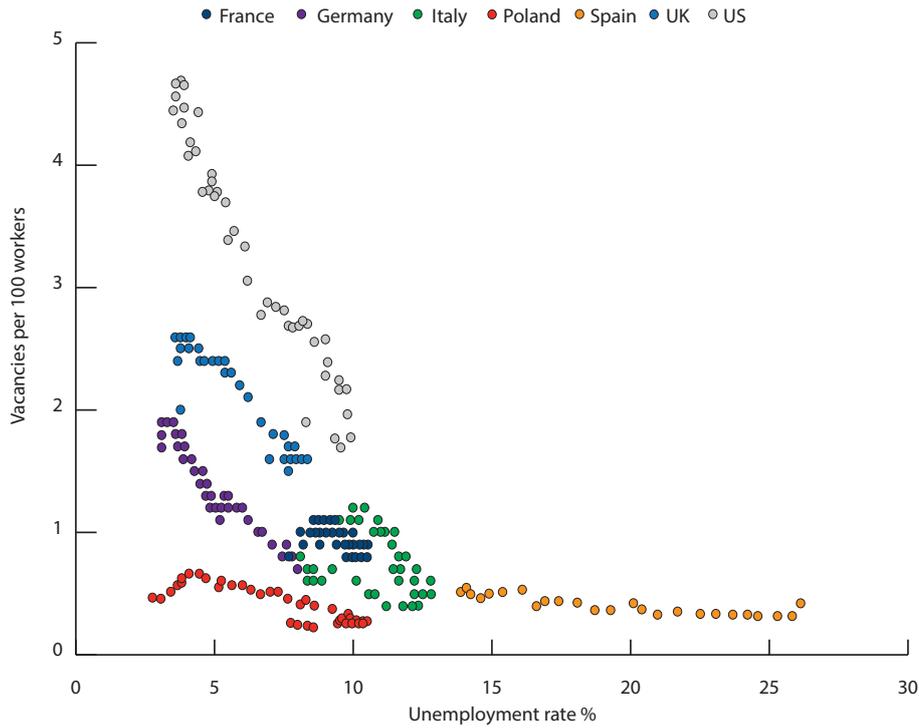
This relative lack of dynamism in the labour market meant that France was slower to recover its pre-2008 employment rate than Germany, Poland or the UK: it took until 2017 to do so (Chart 6). With more static labour markets, it takes time for shocks to particular sectors of the economy to lead to workers moving to other roles.

30: 'Macroeconomic projections', Banque de France, June 2021.

31: 'COVID-19: Les français ont de plus en plus confiance dans la vaccination', *Le Monde*, May 21st 2021.

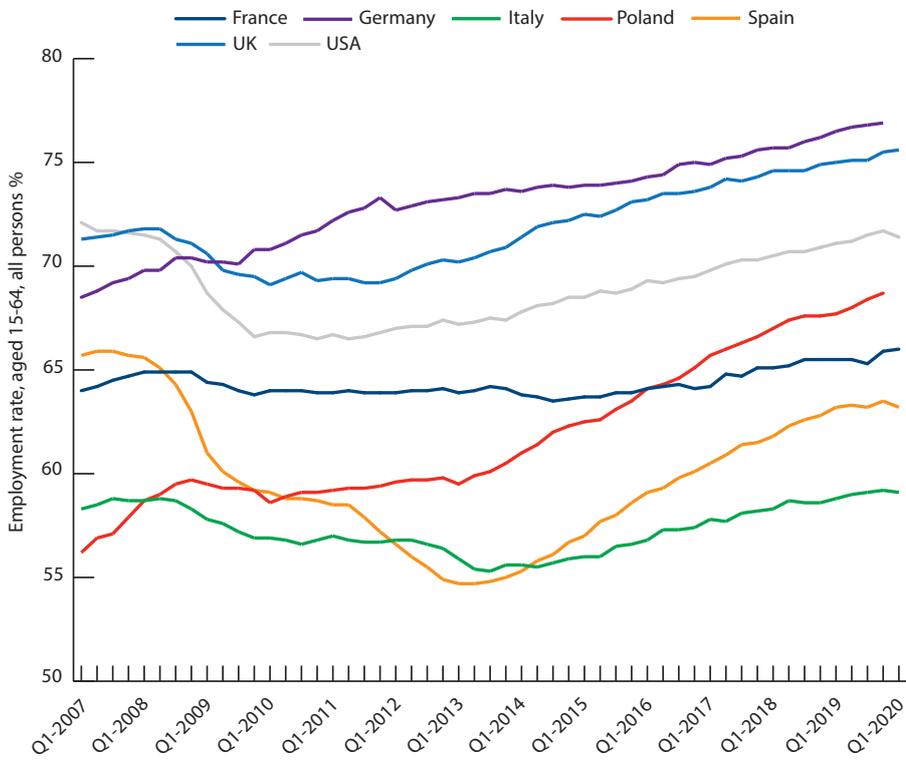
32: 'Macron says French structural unemployment rate of 9 per cent is scandalous', Bloomberg, February 13th 2018.

Chart 5: Job vacancy rates vs unemployment rates, Q1 2009-Q4 2019



Sources: CER analysis of OECD data.

Chart 6: Employment rates, Q1 2007-Q1 2020

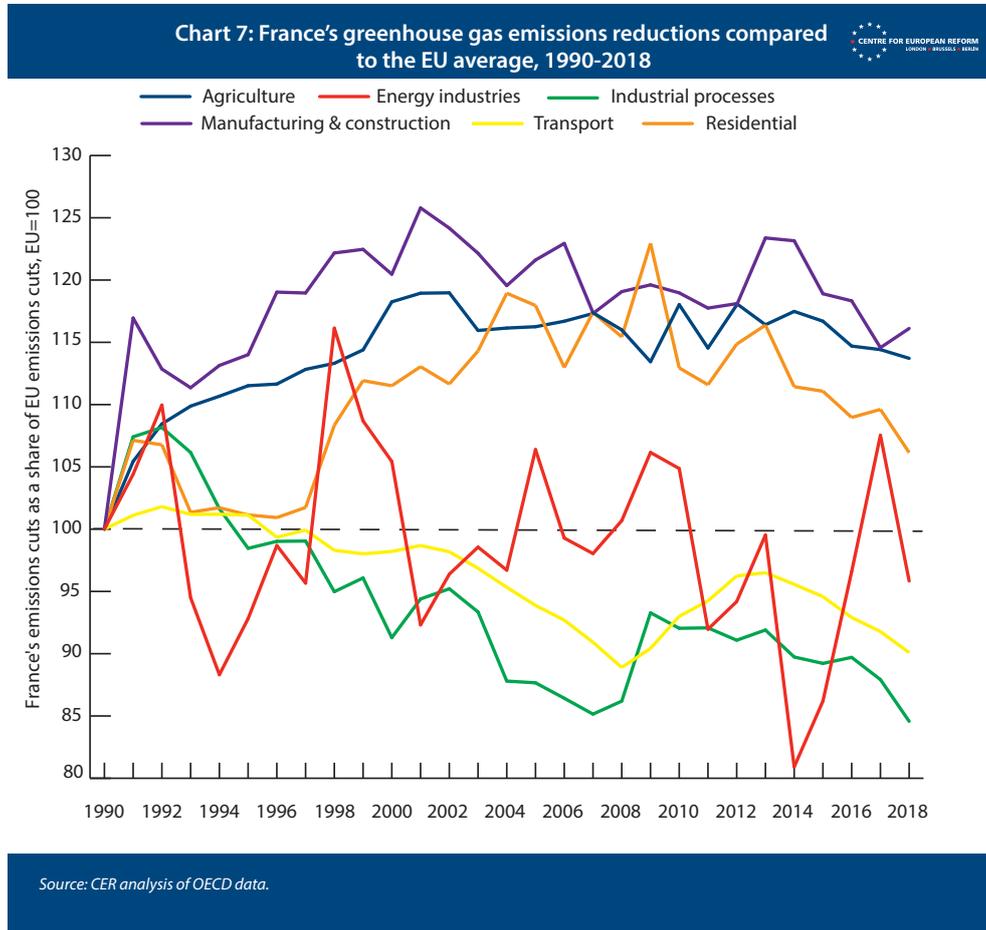


Source: OECD.

Greenhouse gas emissions

By 2018, France's overall greenhouse gas (GHG) emissions had fallen by 18 per cent on 1990 levels, less than the EU average of 26 per cent. But France's emissions have been comparatively low for decades, with more than 70 per cent of its electricity coming from nuclear. As a result it has fewer less costly ways to reduce emissions, such as closing coal and gas-fired plants. Chart 7 shows how

rapidly France has cut emissions from six sectors of the economy compared to the average pace of cuts in the EU (the dotted line on the chart). It has managed to reduce emissions slightly faster than the EU average in transport and industrial processes (such as chemicals, cement, steel and so forth). But it has performed far more poorly than the EU average in manufacturing, construction, housing and agriculture.



The High Council for Climate (HCC), the government's independent climate watchdog, found that the government had missed its 2015 and 2018 targets for housing, transport and agriculture. These sectors are an important focus of France's plans for investment in 2021 and 2022, under its *France Relance* ('France Relaunch') programme.

France's recovery plan

The *France Relance* plan was published in September 2020. €100 billion will be spent over several years, with €40 billion provided by grants from the EU's Recovery and Resilience Facility. In the document, the government pointed out that France's productivity growth had been poor, so the country needed to improve the use of digital tools by businesses (particularly SMEs), raise the dynamism of the labour market and find better matches between employers and the skills French workers

possess. And it argued that faster economic growth was needed to make public finances sustainable, implying that government investment would reduce debt ratios by increasing tax revenues.

The *France Relance* plan amounts to 4 per cent of GDP, with the spending spread out over several years (although the French government plans to meet all spending commitments by the end of 2022). That is a macroeconomically significant sum, which will appreciably raise France's growth rate.

The plan is under three headings: €30 billion will go towards green investment; €34 billion will be spent on reducing taxes on business, on investment in digital technology and skills; and €36 billion will be spent on regional and social cohesion. Some of the larger spending lines are shown in Table 1.

Table 1: Large investments in the <i>France Relance</i> plan	
Environment	€ billion
Rail, subsidy for EVs and hybrids, other transport measures	7
Improving energy efficiency in buildings	5.8
Hydrogen development	1.9
Competitiveness	
Business tax cut	20
Quantum, cyber security, 5G 'sovereignty', cloud	1.8
Cohesion	
Job preservation for young people and people with disabilities, vocational training	7.5
Healthcare, health research, regional spending	7.7
<i>Source: France Relance.</i>	

France will spend a little more than Germany on subsidies for electric and hybrid cars – €1.9 billion vs €1.1 billion – and will provide the state railway company, SNCF, with €4.7 billion for maintenance and upgrades. But it is spending far more than Germany on improving the energy efficiency of buildings - €5.8 billion vs €2.5 billion – a sensible policy, because carbon emissions from housing were higher in 2018 than they had been in 1990. That money will largely be spent on subsidies for poorer people to help cover the cost of retrofitting their accommodation, as well as improving energy efficiency in public buildings. France will also introduce tougher energy standards for new buildings in 2021.

France and Germany are leading an EU 'project of common interest' on hydrogen, which they hope will provide an alternative fuel for heating and trucks, which may be hard to electrify. But the amount that France is committing is far smaller, at €1.9 billion, than Germany's €10.5 billion. It is hard to appraise whether Germany's bet will pay off, but economists largely agree that the most efficient way to develop new climate technology is for governments to impose prices on carbon, or find other ways to restrict emissions, and allow markets to finance new innovations and diffuse them across the economy. While early stage scientific projects, especially at scale, might be so risky for private investors that they are undersupplied by market forces, there is also the risk that hydrogen fails to become a cheap, green fuel, since it needs a lot of electricity to create it..

In its investments in digital technology, the French government is making some risky bets, especially because innovation in this sector is already dominated by US companies. France plans to invest €1.8 billion in quantum computing, cybersecurity, better digital education, 5G 'sovereignty', and cloud computing. Most of that money will be awarded competitively to early-stage projects, with the aim of creating jobs in these areas and creating a cadre of skilled tech engineers and entrepreneurs. While US government investment has been important to the development of its tech sector, especially through defence spending, its large venture

capital and consumer market and rich, privately funded universities are also important. Europe has also struggled to reduce trade barriers to digital services within the single market, and its universities are largely funded by the taxpayer, not tuition fees and donations.

As part of a range of changes to corporate taxation, including a reduction in the headline rate, France will also cut taxes on investment. France is unusual in that its companies must pay tax on the value of their assets, irrespective of their profit and loss position, which discourages investment. The rate of tax on business rents will be reduced, as will a tax on corporate value-added on companies with a turnover greater than €152,000. This will result in a €20 billion reduction in the tax take from business by the end of 2022. These taxes are highly distortionary, in that they discourage businesses from expanding and renting larger properties. These tax cuts could lead to higher investment across the economy (as long as businesses are convinced that future aggregate demand will be robust).

France plans to spend €7.5 billion on job schemes and vocational education and training, which will largely flow to young people, especially those who are 'farthest from employment'. It is not yet clear how quickly the labour market will recover, and younger, poorly educated people always suffer most during recessions and their aftermath, as they have the fewest marketable skills.

In sum, the plan makes a good deal of sense, as it focuses on some of France's more long-standing problems as well as the particular problems thrown up by the pandemic. The plan promotes social cohesion by targeting subsidies for energy efficiency, training and job protection towards poorer people. But the effects of the plan on carbon emissions will be modest: the government, to its credit, has estimated that the plan will reduce emissions on a cumulative basis by 1 per cent by 2030. That is not nothing, but further emissions reduction will require more unpopular policy choices to be made this decade, especially in France's more problematic sectors: transport, buildings and agriculture.

COVID-19

Germany locked down at an early stage of the first wave in March 2020, which meant that it suffered fewer hospitalisations and deaths than most other countries in Western Europe. Deaths in the autumn and winter waves of the disease were lower than its peers, too. Its fiscal response to the pandemic was one of the biggest in Europe: the state paid the wages of millions of workers, keeping the formal unemployment rate below 5 per cent. Germany's pre-existing *Kurzarbeit* scheme meant that it already had systems in place to pay people not to work. The state extended 100 per cent guaranteed loans to many businesses without many conditions, which meant they received the funds quickly. The IMF and the ECB forecast that Germany will reach its pre-pandemic level of output in mid-2022, but the economy is forecast to still be around 2 per cent smaller in 2024 than its pre-pandemic path of output.³³

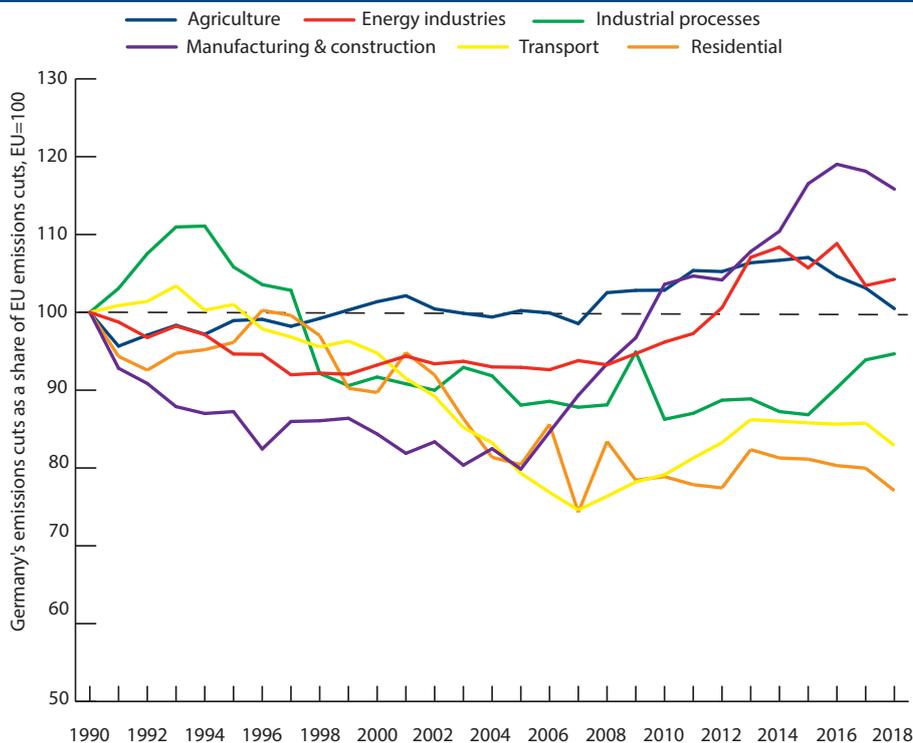
Greenhouse gas emissions

Germany's total emissions had fallen by 31 per cent from their 1990 level by 2018, and reached the 2020 target of a 40 per cent reduction thanks to the COVID-19 pandemic.³⁴ The country's performance is only a little

better than the EU average: Chart 8 shows how rapidly Germany has cut emissions from six sectors of the economy compared to the average pace of cuts in the EU (the dotted line on the chart). Perhaps surprisingly for a country which does not impose speed limits on its motorways, Germany has reduced emissions from the transport sector faster than the EU average, and it has been among the best performers in reduced emissions from residential buildings.

But its efforts in energy generation (after the decision to close down its nuclear power plants), and manufacturing and construction have been worse than the EU average. In the 1990s, reunification helped to reduce pollution from the manufacturing, construction, agriculture and energy generation sectors rapidly, as communist-era plants and machinery in the eastern *Länder* were decommissioned. But since the mid-2000s sectoral emissions have not improved (agriculture) or have risen (manufacturing and construction). The energy generation sector made significant gains only from 2014, despite feed-in tariffs for renewable energy being introduced in 1998.

Chart 8: Germany's greenhouse gas emissions reductions compared to the EU average, 1990-2018



Source: CER analysis of OECD data.

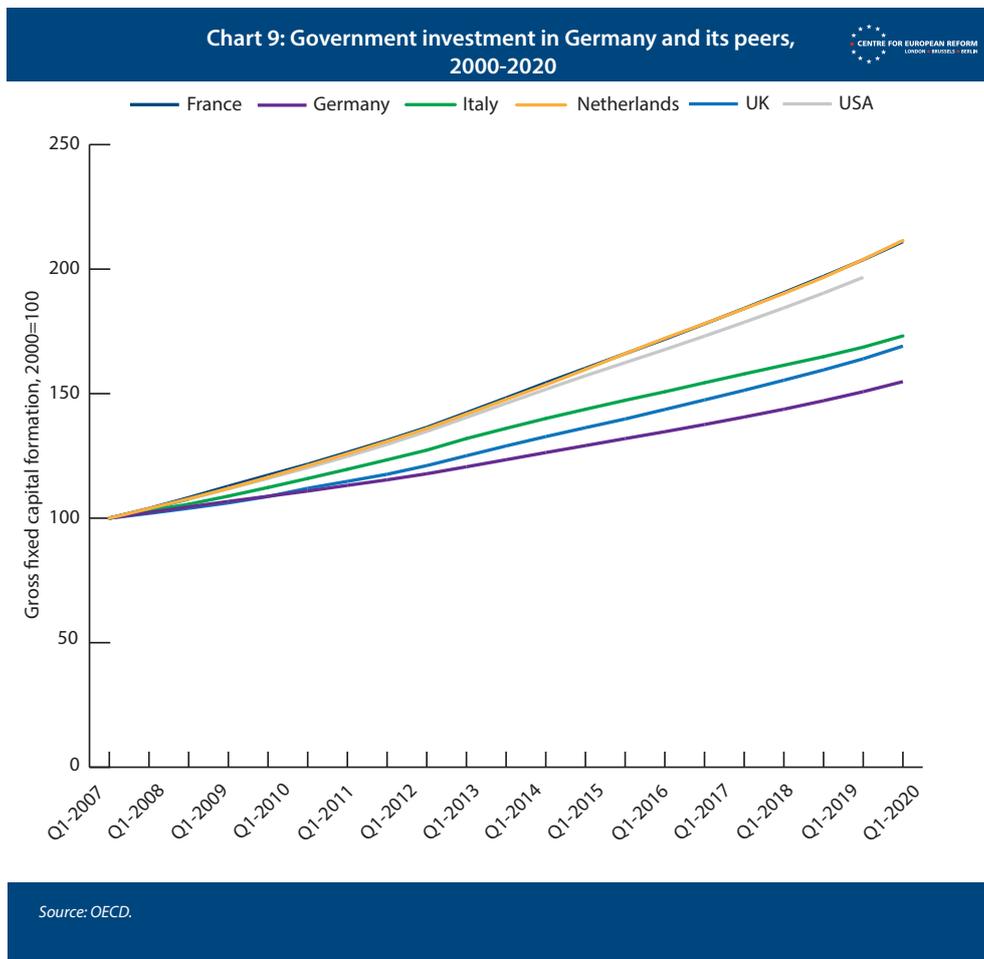
33: 'World economic outlook', International Monetary Fund, April 2021; 'ECB staff macroeconomic projections for the euro area', European Central Bank, September 9th 2021; and Reza Moghadam and others, 'Scarring in Europe', SUERF, March 2021.

34: 'Germany's greenhouse gas emissions and energy transition targets', Clean Energy Wire, August 16th 2021.

Long-term economic performance

Over the last decade, Germany's economic performance has been solid but unspectacular. It had a comparatively good financial crisis, with export sales of its capital goods such as machinery and vehicles to fast-growing emerging economies, especially China, providing external demand during the recovery. Unemployment fell steadily to 3 per cent on the eve of the pandemic. But the improvement in living standards has been disappointing.

Productivity growth has been around the OECD and EU average, with GDP per hour worked rising around 0.9 per cent a year between 2009 and 2019. As a result, real earnings growth has been slow, only rising by a little over 1 per cent annually.³⁵ Public investment has been a victim of Germany's strict fiscal rules, growing at a rate far lower than in its peers (see Chart 9). And weak corporate sector investment rates have meant growth in the private sector capital stock has also been disappointing, at less than 1 per cent a year.³⁶



As the German economy reopens after the pandemic, like many countries it is struggling with higher inflation and labour shortages in some sectors. Bottlenecks should ease as workers return and supply chains re-establish themselves, but Germany's deep integration into global supply chains, with total trade exceeding 80 per cent of GDP – an unusually high number for an economy of Germany's size – means that its economy is particularly exposed to shortages of commodities, components and energy.

Over the longer term, it is also vulnerable to geopolitical competition between the US and China, if that leads to a further degradation in economic relations between the

two superpowers, or if China decides to make it tougher for German companies to build plants in the country. And its ageing population means that productivity growth is needed to ensure that working age people can provide enough tax revenue for health and pensions spending. Higher public and private investment, as well as tax and benefit reforms to reduce saving and raise consumption, will be needed to reduce the economy's reliance on exports as a source of growth.

Germany's recovery plan

Germany had already announced two sizeable fiscal packages before publishing its recovery plan under the RRF. The summer 2020 package combined standard

35: OECD, GDP per hour worked; Destatis (Germany's Federal Statistical Office), index of real earnings.

36: Alexander Roth and Guntram Wolff, 'Understanding (the lack of) German public investment', Bruegel, June 2018.

countercyclical stimulus – a €20 billion VAT cut – with measures to continue to support workers and firms through the pandemic. Its autumn 2020 package was more focused on long-term investment. Together, the packages announced before Germany’s recovery and resilience plan was published in April 2021 amounted to €130 billion. Its recovery plan includes many measures that had already been announced, and only adds another €10 billion in new investments.³⁷ Altogether, the RRF will provide €26 billion in grants to Germany.

Germany has a good record of reducing emissions from buildings, which by 2018 were 41 per cent lower than emissions in 1990, and will spend €2.5 billion on buildings efficiency measures by 2026. However, according to one estimate, €6-10 billion of public support for energy efficiency measures will be needed annually in order to ensure that the cost of retrofitting buildings does not lead to higher poverty rates among poorer renters.³⁸

Similarly, money for decarbonising the transport sector is fairly limited. Germany will provide €1.1 billion to subsidise the purchase of electric or hybrid cars (sales of the latter will need to cease within fifteen years if Germany is to meet its targets for decarbonising the transport sector). Only €0.7 billion will be provided to extend the country’s electric vehicle charging infrastructure.

Germany is using most of the money to fund an industrial strategy that is clearly intended to improve innovation in the country’s sizeable manufacturing base, on the one hand, and attempt to improve the country’s patchy record in creating new digital technology on the other. This is a legitimate thing for government to invest in: European countries generally lack the huge

pools of risk capital and university-industry links that the US enjoys; and government funding for early-stage technological development is needed, especially in new forms of energy. But Germany’s investments are unlikely to raise near-term economic performance.

€10.5 billion will be spent on developing hydrogen technology, with €1.5 billion for R&D in green hydrogen: the International Energy Agency’s attempt to map a path to net zero argued that hydrogen would be needed to provide zero carbon power in sectors that may be hard to electrify, such as heavy industry, long-distance trucking, shipping and aviation. However, engineers differ on whether ‘blue’ hydrogen (hydrogen production in which carbon dioxide is captured and stored underground) or ‘green’ hydrogen (which is made without carbon dioxide being released) will be too expensive compared to battery technology.³⁹

Germany is also making some risky bets on digital innovation. €1.9 billion will be spent on improving the automotive supply chain, including the onshoring of chip manufacture and design, in an attempt to ensure that value added in vehicle manufacture remains in Germany as the transition to electric cars occurs. Electric vehicles are relatively simple compared to ones with internal combustion engines. A large share of the value is in batteries and chips which are currently mostly imported from outside Europe. And as part of the EU’s ‘projects of common European interest’, Germany and France are collaborating on investment in microelectronics, cloud computing and data processing – sectors already dominated by South Korea, China and the US. In the case of cloud computing, it is hard to see the benefit of a European champion when the technology is already mature and there is a pre-existing, well-contested market led by US tech giants.

Table 2: Large investments in Germany’s recovery and resilience plan

	€ billion
Electric cars, including subsidies, infrastructure and support for industry	2.5
Support for green hydrogen	1.5
Energy efficiency in residential buildings	2.5
Microelectronics and communications technology	1.5
Cloud infrastructure and services	0.75
Digitisation of public services	3
90,000 new childcare places	0.5
Support for apprentices	0.7
Hospital modernisation	3

Source: CER analysis of Germany’s recovery and resilience plan.

37: ‘Green recovery tracker report: Germany’, Wuppertal Institute and E3G, May 2021.

38: Sven Bienert, ‘Wissenschaftliche Plausibilitätsprüfung: Der errechneten öffentlichen Förderungslücke zur Erreichung der Klimaziele durch energetische Gebäudesanierungen im Mietwohnungsbau’, Regensburg University, June 2020.

39: ‘After many false starts, hydrogen power might now bear fruit’, *The Economist*, July 2nd 2020.

COVID-19

While Greece managed to avoid a large first wave of COVID-19 infections by locking down early in spring 2020, it suffered from two further waves – and two further lockdowns – in November–December 2020 and in April–May 2021. Most activities re-opened in mid-May 2021.

In 2020, government support to the economy amounted to €23.5 billion (13.7 per cent of GDP).⁴⁰ This involved emergency support for the healthcare sector (such as hiring extra staff and reducing VAT on protective gear) and providing assistance to hard-hit individuals and businesses, respectively through transfers (such as cash stipends and extended unemployment benefits), and liquidity support (such as loan guarantees and deferred tax payments).

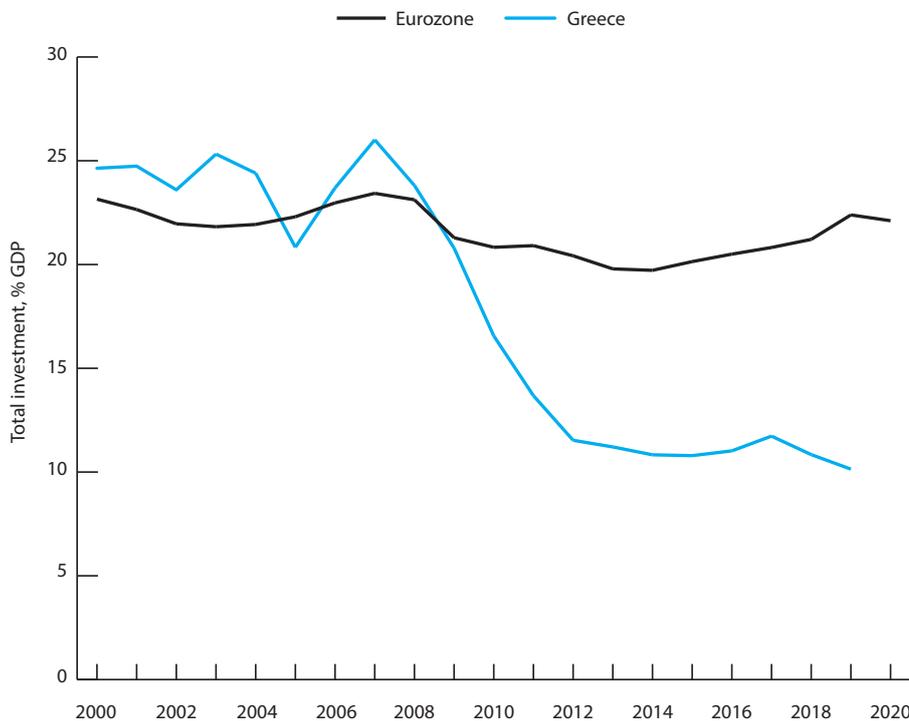
Despite the government stimulus, Greece’s economy contracted by 8.2 per cent in 2020. While the OECD forecasts GDP growth to reach 3.8 per cent in 2021 and 5 per cent in 2022, GDP per capita is forecasted to reach pre-crisis levels only after mid-2022.⁴¹

Long-term economic performance

From 2017, Greece’s economy had started to recover from its long slump after the euro crisis. It achieved a 1.9 per cent annual growth rate in 2019. Bailouts by the EU and the IMF, and the austerity programme had led to an improvement in the primary balance of 1.5 per cent of GDP between 2009 and 2016.⁴² However, GDP in 2019 remained a quarter below its 2007 peak, and total investment had significantly fallen as a share of GDP since 2008 (see Chart 10). Employment remains low relative to the OECD average, particularly among women, and this translates into high poverty rates.

To improve productivity growth, Greece needs substantially higher investment in physical and human capital. Companies need to adopt new technologies, and government needs to improve skills provision and employment services to improve matching between job-seekers’ and employers’ needs.⁴³

Chart 10: Investment share of GDP: Greece vs the eurozone



Source: Eurostat.

40: International Monetary Fund, ‘Policy responses to COVID-19’, website last updated on July 2nd 2021.
41: OECD, ‘Economic Outlook’, May 2021.

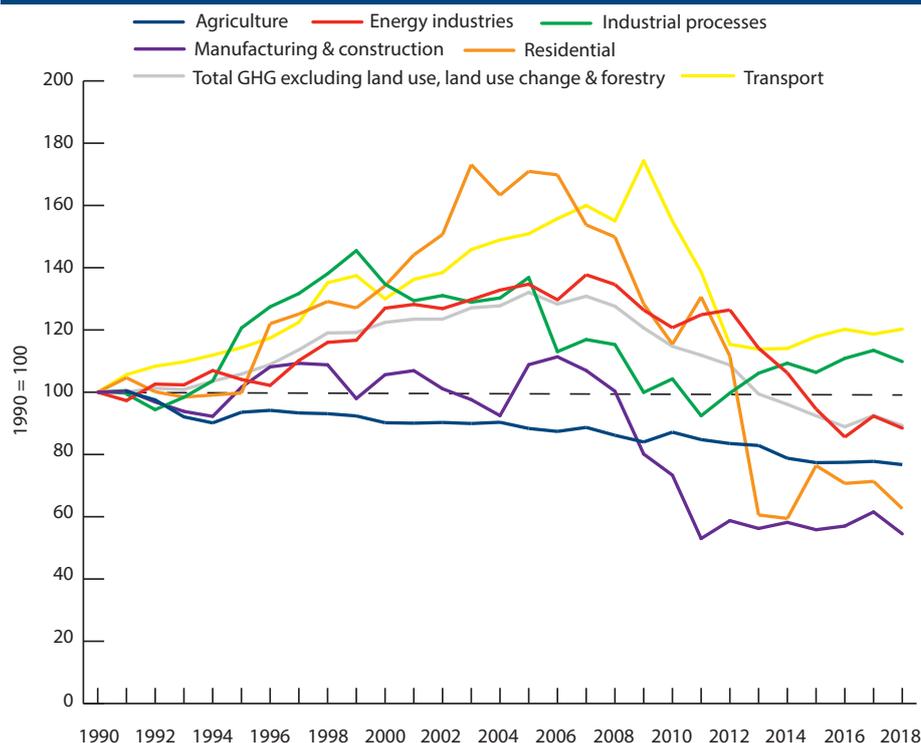
42: OECD, ‘Economic survey of Greece’, July 2020.
43: Bank of Greece, ‘Summary of the annual report’, March 2020.

Greenhouse gas emissions

While Greece's total greenhouse gas emissions fell by 11 per cent between 1990 and 2018, this was largely due to the economic depression of the 2010s (Chart 11). Transport emissions have increased by 20 per cent since 1990, though they are lower today than their pre-financial crisis peak. Manufacturing emissions have dropped by 45 per cent, mainly due to the slump. And emissions from energy industries and housing have fallen as the crisis curbed energy demand.

Coal constituted 38 per cent of total energy supply in 1990, but its share in 2019 had fallen to 15 per cent, having been largely replaced by natural gas and renewable energy. The Greek power sector's carbon intensity (measured in CO₂ emissions per kWh of heat and power) remains substantially higher than the OECD average, but it dropped by 26 per cent between 2005 and 2015 as coal and oil-fired generation fell.⁴⁴ Greece exceeded its 2020 renewable energy target and it has announced that it will phase out lignite coal by 2028.⁴⁵

Chart 11: Greece's greenhouse gas emissions, 1990-2018



Source: CER analysis of OECD data.

Greece's recovery plan

Greece is framing its recovery plan as a strategy to rebound from the COVID-19 crisis, and also to change the Greek growth model and institutions. For this reason, it is reform-heavy and plans to deploy both grants and loans from the RRF – respectively €18.5 and €12.7 billion – between 2021 and 2026. Investment and reforms cover four priorities: the green transition; the digital transformation; employment, skills and social cohesion; private investment and the transformation of the economy.

Energy efficiency renovations make up the largest investment – €2.7 billion – under the green transition

44: International Energy Agency, 'Greece 2017 review', Energy policies of IEA countries, 2017.

45: OECD, 'Greece 2020', OECD Environmental Performance Reviews, October 2020.

heading – mainly in residential buildings, but the plan will also insulate public buildings and provide incentives for private businesses to do the same. Importantly, such investments are paired with the development of an energy poverty action plan, to provide financial support for households unable to heat their homes adequately (currently estimated at 18 per cent of the population).⁴⁶

Other projects include making water management more efficient, by addressing water supply and irrigation, and improving and expanding wastewater treatment. On the climate resilience front, the plan also includes investments for reforestation, flood mitigation and forest firefighting.

46: 'Greece 2.0. National Recovery and Resilience Plan', May 2021.

Power sector investment focuses on expanding storage (€450 million) and strengthening the transmission and distribution system, to enable greater penetration of intermittent renewable energy. The plan will also finance the first carbon capture and storage facility in Greece.

The plan devotes about €550 million to electric transport, including the installation of over 6,600 electric vehicle chargers, but also support to e-mobility industries (such as electric car manufacturing and battery recycling). Road transport absorbs a sizeable chunk of funds devoted to ‘transformation of the economy’: road safety upgrades and the completion of multiple highways will be given €1.3 billion. While these are critical infrastructure, by comparison, only €211 million is devoted to improving cross-country and suburban railways.

As with most countries’ plans, digitisation investments are sizeable, with the most generous being €580 million for digitising public sector archives and services, followed by support for digital upgrades in SMEs (€375

million) and in schools. Digital infrastructure – 5G, broadband, submarine cables – receives €320 million. The government will give tax credits to SMEs investing in digital technology and in equipment for climate change adaptation and the circular economy.

In employment, skills and social cohesion, much of the plan is devoted to structural reforms. This includes €640 million for the reform of labour market policies, including an improvement in the coverage and distribution of unemployment benefits, and programmes that subsidise businesses to employ the unemployed. Over €1 billion is assigned to a new strategy for lifelong learning. Healthcare absorbs about €1.5 billion, involving upgrades of hospital infrastructure and investments in preventative public health programmes, as well as reforms of primary healthcare and the establishment of a home healthcare system. Some of the most ambitious reforms aim to make the justice system and the public administration more efficient, and to boost tax collection.

Table 3: Greece’s plan for the RFF: high-level breakdown and key investments

	€ billion	Share of total grants %
1. Green Transition	6.2	33.5
<i>Energy efficiency renovation</i>	2.7	
2. Digital Transformation	2.2	11.9
<i>Digitisation of public services</i>	0.6	
<i>Digital transformation of SMEs</i>	0.4	
3. Employment, skills, and social cohesion	5.2	28.1
<i>New strategy for lifelong learning: Upskilling and reskilling system</i>	1	
<i>Reform of active and passive labour market policies</i>	0.6	
4. Private investment and transformation of the economy	4.9	26.5
<i>Road safety upgrades and completion of key highways</i>	1.3	
<i>Promote research and innovation</i>	0.4	
Sum of grants	18.4	
Loans	12.7	

*Source: CER analysis of data from the Greek Plan.
Note: High-level components in bold; selected significant investment projects and reforms in italics.*

COVID-19

Italy has been among the European countries hardest-hit by COVID-19, having suffered a particularly harsh first wave in spring 2020. A nationwide lockdown was introduced on March 9th. Between mid-March and mid-May 2020, the government implemented a range of fiscal packages amounting to over €860 billion, covering support for businesses to freeze layoffs, deferred tax payments as well as additional funds for healthcare.⁴⁷ The economy contracted by 8.9 per cent in 2020.⁴⁸ The OECD foresees 4.5 per cent GDP growth in 2021.⁴⁹ While both existing and emergency employment protections stopped most workers from being laid off during lockdowns, temporary workers and the self-employed have been particularly badly hit by the economic fallout of the pandemic. These workers are often young and female, and these groups are both priorities in Italy's recovery plan.

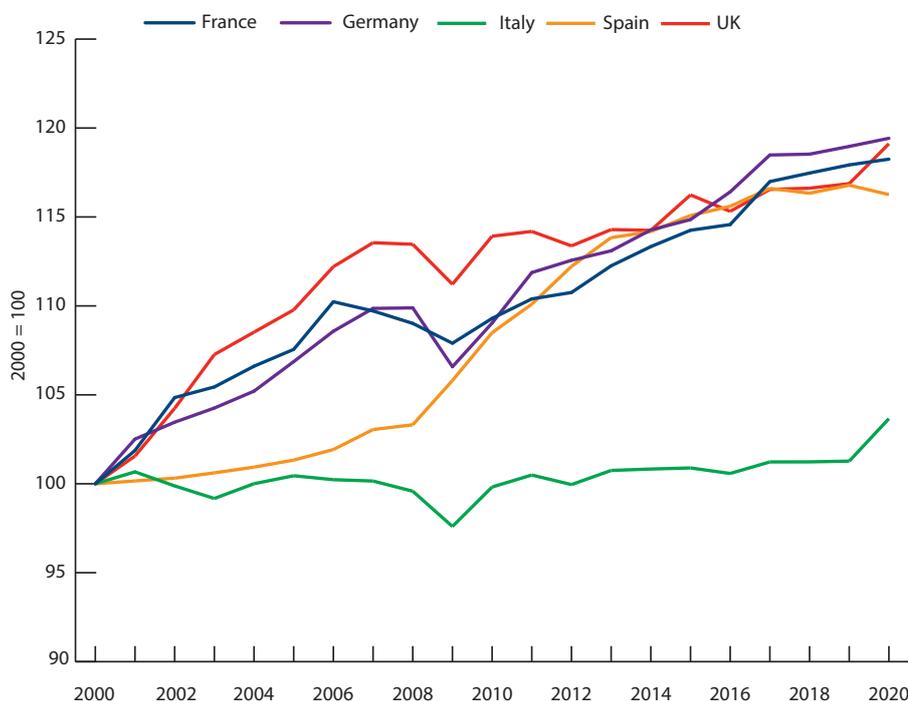
Partly due to disagreements on how to spend RRF funds, the government led by the populist Five Star party's Giuseppe Conte collapsed in January 2021. It was replaced by a government including politicians from across the spectrum and technocrats, led by former

European Central Bank president Mario Draghi. Draghi's government has now been tasked by parliament to design and oversee the roll-out of the recovery plan and implement the much-needed, if unpopular, reforms that will be required to unlock access to EU funds.

Long-term economic performance

Italy's long-term economic stagnation is partly explained by enduring structural weaknesses, which the Recovery Plan aims to address. The country is also highly geographically unequal, with the Mezzogiorno, or South of the country, being much less developed than the North. As illustrated in Chart 12, productivity growth has been flat for about two decades – a trend that coincides with a slowdown in public and private investment since 1999.⁵⁰ Female employment is low, which can be linked to patchy childcare provision. Vocational education levels are below OECD averages.⁵¹ The economy has still not fully recovered from the financial crisis and ensuing austerity policies, with GDP per capita still below pre-crisis levels.⁵² While the unemployment rate has been falling since 2014, in 2019 it was still 10 per cent, with 18 per cent of young people not in education, employment or training.⁵³

Chart 12: GDP per hour worked, 2000-2020



Source: CER calculations based on OECD data.

47: Bruegel, 'The fiscal response to the economic fallout from the coronavirus', dataset last updated on November 24th 2020.

48: Bank of Italy, 'Relazione annuale sul 2020 in sintesi', May 31st 2021.

49: OECD, 'Italy Economic Snapshot', consulted in May 2021.

50: 'Piano nazionale di ripresa e resilienza', Italy's recovery plan, 2021.

51: OECD, 'Economic policy reforms 2021: Going for growth', 2021.

52: World Bank national accounts data, and OECD National Accounts data files.

53: International Labour Organisation, ILOSTAT database.

Greenhouse gas emissions

Italy's greenhouse gas emissions dropped by 17 per cent between 1990 and 2018, well on the way to its 2020 objective.⁵⁴ The residential sector and the transport sectors have seen growing emissions: in 2019, Italy had the second highest number of cars in the EU.⁵⁵ The 2011 housing census indicated that Italy's housing stock is older than the EU average, with more than half built between 1946 and 1980.⁵⁶ Greenhouse gas emissions from the manufacturing and energy industries have dropped by between 40 and 30 per cent: the first trend is explained by the slow-down in economic activity and increased efficiency, particularly in the chemicals sector, whereas the second trend is due to the shift towards natural gas and renewable energy.⁵⁷ In 2019, renewable energy supplied 18 per cent of final energy consumption.⁵⁸

Italy's recovery plan

Italy plans to make full use of both the grant and the loan portion of the RRF – respectively €68.9 and €122.6 billion, for a total of €191.5 billion. This is by far the largest investment programme in the EU. These will be distributed across six priority areas, or 'missions'. As per the RRF's rules, the priority areas of green and digital transitions attract about 40 per cent and 27 per cent of funds. The rest of planned investments are divided between education and research, territorial cohesion and social inclusion, and healthcare (see Table 4). Cross-cutting priorities are improving the participation of women and youth in the workforce, and reducing regional inequalities, particularly with respect to the Mezzogiorno.

The single largest investment item, at €14 billion, is the so-called 'Transition 4.0' plan, which aims to boost business investment in R&D and skills. The success of this programme will depend on businesses' demand for these funds and their ability to spend them wisely.

The largest slice of climate funding will subsidise households' energy efficiency improvements, through tax credits (€13.8 billion). Municipalities will receive €6 billion to improve the energy efficiency and safety of public buildings and guard against flooding and other climate risks. The success of these subsidies will depend upon improving the confusing rules for households, and the bureaucracy involved in checking whether they are eligible.⁵⁹ The limited number of specialised workers and shortages of sustainable construction materials might slow down uptake.

The government will spend €13.2 billion on high-speed railways: while better connections to neighbouring

countries and to the Mezzogiorno are welcome, regional railway networks deserved greater attention, because reducing car use should be a priority. Instead, regional railways received less than €1 billion. On the other hand, Italy is making sizeable investments in local sustainable transport (€8.6 billion), including subway and tram lines in key metropolitan areas as well as better cycling infrastructure and new buses, with the aim of shifting at least 10 per cent of commuting in metropolitan areas from private to public transport.

Investment in renewable energy sources is comparatively low, with about €6 billion in total, of which €2 billion is devoted to biomethane. The focus is on encouraging the scaling-up of new energy sources, such as offshore wind. Recycling and other 'circular economy' solutions are somewhat neglected in the plan, with most funds directed to the improvement and construction of waste management and treatment plants, particularly in the South.

Early childhood education is inadequate in Italy and is a barrier to women's participation in the workforce. The plan aims to add 228,000 childcare places to the existing 355,000.⁶⁰ Improved local healthcare services are also needed, given Italy's ageing population: the government plans to create over 1,200 local healthcare centres ('Case della Comunità') and shift to healthcare provision in the home as far as possible.

Draghi will try to implement several important structural reforms, which the EU has made a condition of Italy obtaining all of the RRF funding. The broadest reforms included in the plan are those addressing public administration and justice. The public administration reform includes a modernisation of staff recruitment procedures (focusing on technical and soft skills) and of performance evaluation, along with investments in the training of civil servants. The complex justice reforms aims to speed up trials, in part by using digital technology for some legal cases.

The scale of Italy's plan is appropriate, given the structural issues that have been holding back the country. The flipside to that is a vast and fragmented set of investments, paired with gigantic reform efforts. Italy has always struggled with political stability and absorption of EU funds, so a successful investment and reform programme will depend both on finding convergence in parliamentary politics, and on careful implementation on the ground.

54: OECD statistics, Greenhouse gas emissions data: National Inventory Submissions 2021 to the United Nations Framework Convention on Climate Change (UNFCCC, CRF tables), and replies to the OECD State of the Environment Questionnaire.

55: Eurostat, 'Passenger cars in the EU', data extracted in September 2021.

56: Eurostat, 'Statistics on housing conditions', data extracted in November and December 2017.

57: Istituto Superiore per la Protezione e la Ricerca Ambientale (ISPRA), 'Italian Greenhouse Gas Inventory 1990-2019. National Inventory Report 2021', 2021.

58: Eurostat, 'Renewable energy statistics', data extracted in December 2020.

59: Kira Taylor, 'Italy's celebrated building renovation scheme hits a snag', *Euractiv*, April 21st 2021.

60: Istituto Nazionale di Statistica, 'L'offerta comunale di asili nido e altri servizi socio-educativi per la prima infanzia', press release, October 20th 2020.

Table 4: Italy's plan for the RRF: high-level breakdown and key investments		
Mission	€ billion	Share of total spending %
Mission 1: Digitalisation, innovation, competitiveness and culture	40.7	21
<i>Largest spending items: Subsidy for digitisation and innovation of business production practices ("Transition 4.0")</i>	14	7.3
<i>Superfast internet (broadband and 5G)</i>	6.3	3.3
Mission 2: Green revolution and ecological transition	59.3	31
<i>Largest spending items: Subsidy for building energy efficiency and resistance to earthquakes ("Ecobonus" and "Sismabonus")</i>	13.8	7.2
Mission 3: Infrastructure for sustainable mobility	25.1	13
<i>Largest spending item: High speed railways</i>	13.2	6.9
Mission 4: Education and research	30.9	16
<i>Largest spending items: Early childhood education plan</i>	4.6	2.4
<i>Redevelopment and safety plan for school buildings</i>	3.9	2
Mission 5: Territorial cohesion and social inclusion	19.8	10
<i>Largest spending item: Job search and training services</i>	4.4	2.3
Mission 6: Healthcare	15.6	8
<i>Largest spending items: Modernisation of technology and digitisation in hospitals</i>	4.1	2.1
<i>Healthcare and assistance at home, telemedicine</i>	4	2.1
TOTAL	191.5	

Source: CER analysis of data from the Italian Plan.
Note: High-level components in bold; selected significant investment projects and reforms in italics.

Poland

COVID-19

While the impact of the first wave of COVID-19 infections in spring 2020 was small in Poland, the country suffered from two large waves peaking in November 2020 and in May 2021.

The fiscal policy response in 2020 totalled 5.3 per cent of GDP and included numerous measures, from wage subsidies and boosted unemployment benefits to emergency healthcare spending and transfers to local governments. On top of this, the government set up credit guarantees and micro-loans for entrepreneurs and the national development agency funded additional liquidity programmes for businesses.⁶¹

The economic impact of the crisis has been smaller in Poland than in other EU countries: GDP dropped by 2.7 per cent in 2020, but the OECD projects that GDP will recover by 3.7 per cent in 2021, attaining its pre-pandemic level by the end of the year.⁶² However, the pandemic could increase the already high level of inequality.⁶³ Temporary workers and small firms have been hit harder by the crisis, and losses in employment have been higher in poorer regions.⁶⁴

Long-term economic performance

Poland's economy has grown steadily in the past twenty years: 2020 was the first year since 1991 where year-on-year real GDP declined. However, large inequalities between regions persist: GDP per capita in Warsaw is almost 300 per cent of the national average, whereas in the poorest region, Przemyśl, this figure is 53 per cent.⁶⁵

The structure of the economy has evolved since Poland shifted from a centrally planned to a market economy after 1991. Productivity increased, mostly thanks to a burgeoning service sector and the internationalisation of manufacturing.⁶⁶ However, manufacturing is largely focused on low value-added goods. Barriers to

productivity growth include labour shortages (due to an ageing population and the low participation of women in the workforce, itself hindered by insufficient childcare), the complex business environment and the slow uptake of digital technologies among SMEs.

Recent investment, partly funded by EU transfers, has also helped to raise productivity, for instance by improving the road network and other infrastructure. But more needs to be done to modernise infrastructure: maintenance of existing roads should be improved, along with local public transport and railways, and the existing vehicle fleet should be renewed to curb high air pollution in urban areas.

Greenhouse gas emissions

Poland's greenhouse gas emissions fell by 13 per cent between 1990 and 2018. Even so, in 2018 Poland's emissions from sectors excluded from the EU ETS were higher than their annual allocation. These include transport and buildings, and are governed by the EU's effort-sharing regulation, which sets member-states' emissions targets, but leaves them in control of how emissions are curbed.⁶⁷ Specifically, transport emissions have more than tripled since 1990 (see Chart 13).⁶⁸

Poland draws 90 per cent of its total energy supply from fossil fuels. Coal is the most-used energy source: it makes up 44 per cent of all fossil fuels used in Poland and three-quarters of all energy generation in Poland.⁶⁹ The country wants to reverse this trend: the recently approved 'Energy Policy of Poland to 2040' sets the target of a maximum of 56 per cent of electricity generation from coal for in 2030.

To address high air pollution levels, Poland also aims to provide all households with district heating and low-emission energy by 2040 – a major overhaul, because residential heat is currently responsible for more than half of the country's coal consumption.

61: International Monetary Fund, 'Policy responses to COVID-19', website last updated on July 2nd 2021.

62: OECD, 'Economic Outlook', May 2021.

63: Pawel Bukowski and Filip Novokmet, 'Within a single generation, Poland has gone from one of the most egalitarian countries in Europe to one of the most unequal', LSE EUROPP blog, December 2nd 2019.

64: OECD, 'Economic survey of Poland', December 2020.

65: Polish recovery plan, 'Krajowy Plan Odbudowy i Zwiększenia Odporności'.

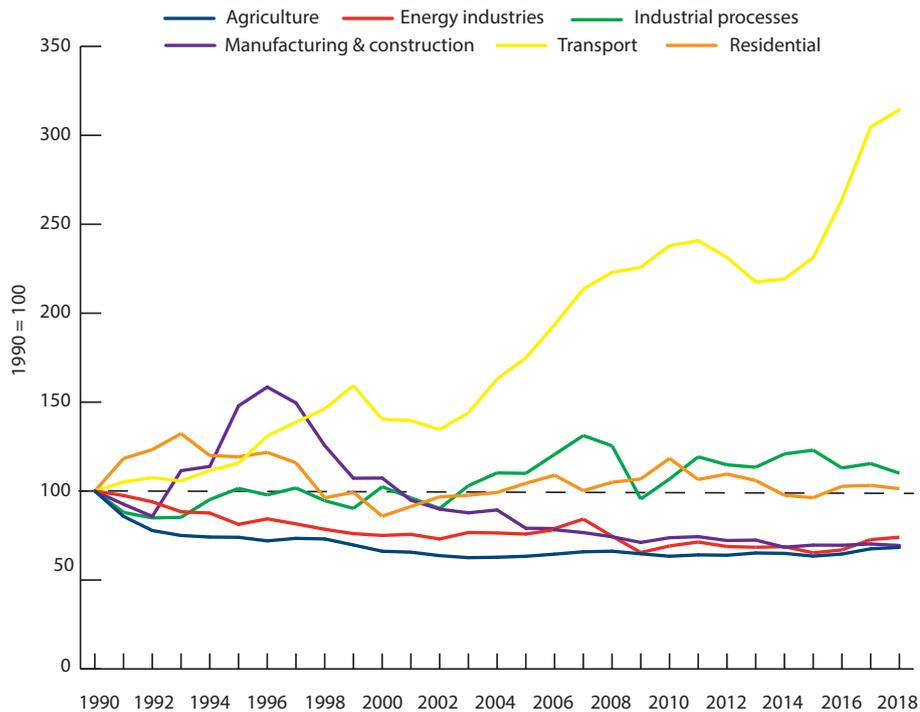
66: OECD, 'Economic survey of Poland', December 2020.

67: EEA, 'Trends and projections in Europe 2020. Tracking progress towards Europe's climate and energy targets report 2020', 2020.

68: IEA data, 'Total final consumption by sector, Poland 1990-2018', *Poland key energy statistics 2018*.

69: IEA data, 'Total energy supply by source, Poland 1990-2018', *Poland key energy statistics 2018*.

Chart 13: Poland's greenhouse gas emissions by sector, 1990-2018



Source: CER analysis of OECD data.

Poland's recovery plan

Poland is seeking the full amount of grants it can receive under the RRF (€23.9 billion), but it has only applied for part of the loans it is entitled to receive (€12.1 billion). The plan aims to overcome the challenges holding back Polish economic development, which can broadly be grouped into three categories:

- ★ **Economic environment:** low productivity; a weak investment climate and consequent low level of private investment; low uptake of digital technologies; weak transport infrastructure; weaker public finances.
- ★ **Social conditions:** an ageing population, which may result in labour shortages; low quality of the health service and problems with access to it; uneven regional levels of development and growth potential, which COVID-19 has worsened.
- ★ **Energy transition:** a dependence on coal, both in the country's energy mix and for jobs in mining regions; outdated and limited public transport infrastructure (both long-distance rail and urban networks).

Poland's recovery plan outlines five investment priorities to solve these problems: resilience and competitiveness of the economy; green energy and the reduction of energy intensity; the digital transformation; effectiveness,

availability and quality of the health-care system; green mobility. Each of these investment areas includes interventions for social and territorial cohesion. Table 5 provides the share of total spending on each priority.

To boost productivity and competitiveness, Poland's national recovery plan wants to improve connections between businesses and research institutes. The government has also put forward fiscal incentives such as tax credits for innovation. To deal with labour shortages, the Polish government wants to allow for continued work beyond retirement age, do more to retrain those who are unemployed and facilitate the access of foreigners to employment. The plan also includes reform of vocational education and lifelong learning, to strengthen the link between schools and the labour market.

The plan insists that Poland's energy transition will have to be gradual, and sets a deadline of 2049 for the full phase-out of coal. Coal mining is very important in Poland, both in economic and political terms. The sector accounts for 83,000 jobs and the Polish government will have to tread carefully with powerful industry and trade union bosses, in order to avoid social unrest. Ahead of the far-off coal phase-out, the recovery plan envisages natural gas as a transitional energy source; and the government has agreed substantial severance payments for miners. The plan also includes reforms to facilitate investment in renewable energy.

A range of reforms and investments aim to increase internet use, particularly by giving citizens greater access to public services online. For this, Poland will invest in digital skills and in network infrastructure (5G, high-speed internet), and remove red tape that is slowing down infrastructure development.

Poland plans to reform the hospital sector and strengthen primary healthcare, based on an analysis of health needs that will consider demographic and epidemiological trends and regional differences.

The plan also includes investments to replace older, inefficient rolling stock used on the rail network. The

government will also mandate clean transport zones in urban areas.

At the time of publication, the Commission has still not approved Poland's recovery plan, amid growing tensions between Brussels and Warsaw over the rule of law. The Commission has linked the disbursement of the funds to the Polish government changing judicial reforms that have politicised the country's courts.⁷⁰ Poland will not receive funds until the Commission approves the plan. Among plans sent to the Commission, only Poland and Hungary's recovery plans have yet to be approved.

Table 5: Poland's recovery and resilience plan

	€ billion	Share of total spending %
Resilience and competitiveness of the economy	4.7	13.1
<i>Investments supporting robotization and innovation in businesses</i>	0.5	
<i>Childcare</i>	0.4	
Green energy and energy efficiency	14.3	39.7
<i>Energy efficiency in residential buildings</i>	3.2	
<i>Hydrogen</i>	0.8	
<i>Wind farms</i>	3.3	
Digital transformation	4.9	13.6
<i>5G networks</i>	1.4	
<i>Provision of high-speed internet</i>	1.2	
Effectiveness, accessibility and quality of the healthcare system	4.5	12.5
<i>Medical infrastructure</i>	2.1	
<i>Digital healthcare</i>	1	
Green, smart mobility	7.5	20.8
<i>Electric buses</i>	1.1	
<i>Railways</i>	2.4	
Total (grants + loans)	35.9	
of which grants	23.8	
of which loans	12.1	

Source: CER analysis of the Polish recovery plan, 'Krajowy Plan Odbudowy i Zwiększania Odporności'.

70: 'Poland warned no EU recovery funds without judicial reform', *Financial Times*, September 9th 2021.

Portugal

COVID-19

Deaths have been close to the EU average, at around 1,700 per million.⁷¹ Portugal locked down promptly in the first wave of the pandemic, but the country suffered further waves, with the peak of the pandemic coming in early February 2021, with over 200 people dying per day.

However, the vaccine rollout has been good, with over 85 per cent of the population having received at least one dose of the vaccine by early October.⁷² The infectiousness of the Delta variant means that the country could still be susceptible to another wave, but by early October cases had declined to 500 a day.

The importance of tourism to Portugal's economy meant that its economy was one of the worst performers in the EU in 2020, shrinking by 7.6 per cent. It shrank a further 3 per cent during the strict lockdown of the first quarter of 2021. As with most other countries, government wage subsidies meant that the unemployment rate did not rise markedly, and a fairly rapid recovery is likely, despite the reduced tourist numbers in the summer of 2021. However, the European Commission forecasts that the country will only reach its pre-pandemic level of output in mid-2022.

Long-term economic performance

Portugal's economy shrank for two years after the 2010 eurozone crisis. After 2012, growth was weak until it accelerated to around 2.5 per cent a year from 2016 to the end of 2019. Portugal's centre-left government had relaxed austerity measures when taking office in 2015, and a pick-up in growth in Spain and the rest of Europe boosted exports. The country's relatively high debt, which peaked at 133 per cent of GDP in 2014, had fallen to 118 per cent in 2019, before the pandemic pushed it back up to 133 per cent in 2020.

There are two main economic risks facing Portugal: one cyclical and one structural. Before the pandemic, Portugal's services exports, led by travel and tourism, had improved markedly, benefitting from investment in higher-value tourism.⁷³ With luck, tourism revenues will not be permanently lower in the future, as COVID-19 becomes less lethal; but the virus may reduce tourist

numbers for several years, which would mean that other sources of export revenue may need to be found.

The second, more structural problem is that Portugal has long-standing weaknesses in skills and gender equality. Portugal has one of the highest shares of less educated workers in the EU – in 2018, 57 per cent of the workforce had low qualifications, compared to the EU average of 20 per cent.⁷⁴ But the gap is smaller among younger workers – which may suggest that recent investment in education and skills is paying off. Women are over-represented in temporary, part-time and low-skilled jobs, which is why the country has a higher gender pay gap than the EU average. Raising public investment in childcare provision and reducing the very high level of protection for workers with permanent contracts, who are largely men, would help to reduce these disparities.

Greenhouse gas emissions

Portugal easily achieved its unambitious 2020 target of a 1 per cent increase in GHG emissions compared to 2005 levels. By 2019 they were down by a fifth. Chart 14 shows Portugal's emissions cuts in proportion to the EU average (shown as 100 on the chart). In all sectors bar emissions from residential buildings, its cuts to emissions were smaller than the EU average. As one of the poorer countries in Western Europe, that is perhaps not surprising. But Portugal's GDP in 2014 had fallen back to its 2000 level, thanks to the euro crisis, and had its economic performance been better its emissions performance would have been far worse.

Portugal's 2030 targets are much tougher – they require a cut in emissions of 45-55 per cent on 2005 levels. This means that Portugal will have to cut emissions by a further 30 per cent on 1990 levels by the end of the decade, with a 17 per cent reduction coming from sectors that are not covered by the ETS, such as transport and buildings. Luckily, Portugal has some of the best conditions for renewables in Europe, being a sunny and windy country, which will help it meet its testing 80 per cent target for renewables' share in electricity generation, and 47 per cent for final energy demand.⁷⁵ Portugal also plans a 35 per cent cut in energy consumption on 2005 levels.

71: 'Cumulative confirmed COVID-19 cases per million people', Our World in Data, October 7th 2021.

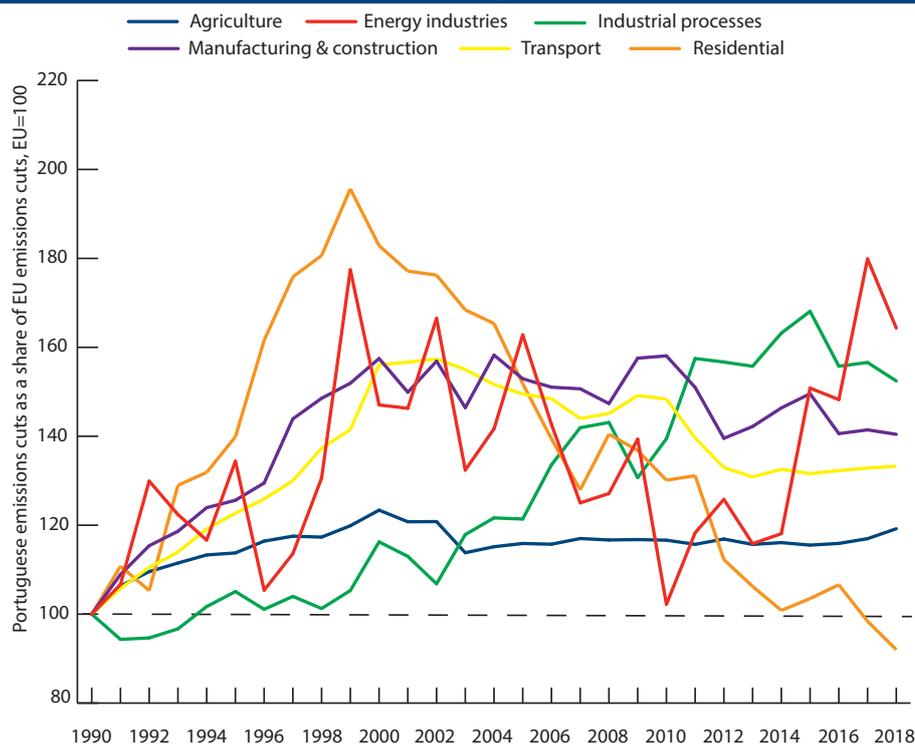
72: 'Share of people vaccinated against COVID-19', Our World in Data, October 4th 2021.

73: '2019 Article IV consultation, Portugal', IMF, July 2019.

74: '2020 skills forecast: Portugal', European Centre for the Development of Vocational Training, 2020.

75: 'Europe 2020 targets: Statistics and indicators for Portugal', European Commission, 2020.

Chart 14: Portugal's greenhouse gas emissions reductions compared to the EU average, 1990-2018



Source: CER analysis of OECD data.

Portugal's recovery plan

Portugal is seeking a total of €16.6 billion from the EU, with almost €14 billion coming in grants and €2.7 billion in loans. The government will decide whether to take up a further €2.3 billion in loans in 2022, if demand for one of the measures it plans to use the loans for – the capitalisation of businesses and support for business R&D – is strong enough. Portugal has set up a national R&D bank, the Banco Português de Fomento, which is taking equity stakes in companies that it deems to have growth potential but that have been battered by the pandemic.

The main elements of the plan are fivefold. First, the government plans to expand the national health service, which had too few hospital beds to cope with the pandemic. It plans to spend €1.3 billion on 6,000 new hospital beds and 34 mobile units providing primary care in rural areas. And it will expand the provision of care services for children, the elderly and disabled people.

Second, Portugal plans to spend €2.8 billion on building projects – better housing for 26,000 households and support for the renovation of public and private buildings (including €610 million to be spent on improving energy efficiency in buildings).

Third, it will spend a further €2.7 billion on climate and environmental policy, including €715 million on decarbonising industry, €370 million on R&D in renewable hydrogen energy (which the country's abundant renewable resources should help with), and €1 billion on public transport and rail infrastructure.

Fourth, as with many other countries, it will spend a significant sum on digitisation (€2.4 billion) and, sensibly, given its high share of low-skilled jobs, on education and training (€1.3 billion). Some of the digital investments – in improving access to public services, and digitising the records of the national health service, and the provision of justice and tax collection – are similar to other countries. The government will also upgrade science facilities in schools and universities. A large sum – €650 million – will be spent on training in small and medium-sized businesses to improve their use of digital technology.

Fifth, Portugal will seek to reduce barriers to entry into regulated professions and make it easier for firms to hire people on permanent contracts. An equal pay act and other laws will strengthen employment rights for women.

Table 6: Large investments in Portugal's recovery and resilience plan	
	€ billion
Housebuilding and retrofit of existing buildings	2.8
Support for green hydrogen	0.4
Cutting industrial emissions	0.7
Health service capacity expansion	1.3
Digital education and training, and digitisation of public services	2.4

Source: CER analysis of Portugal's recovery and resilience plan.

Romania

COVID-19

Total cases per million of population have been comparatively low in Romania, while deaths have been around the EU average, at 1,700 per million. This is because cases have been undercounted and the health-care system has struggled to cope with the pandemic. Like many Central and Eastern European member-states, Romania locked down early enough to avoid the worst of the first wave of the virus, but it had two big waves in winter 2020 and spring 2021. At the time of publication, it was undergoing its third and largest wave of the pandemic, with cases rising rapidly. However, its economy has so far been relatively unscathed, shrinking by 4 per cent in 2020 (less than the EU average of 6 per cent), before making a partial recovery in the first quarter of 2021, growing nearly 3 per cent. The government provided more money to the health system, income support through temporary wage subsidies to furloughed workers, and tax deferrals and credit guarantees to businesses.

The country's biggest problem is that its vaccination programme has gone very badly so far. At the time of publication, a little over 30 per cent of its population has had both doses of the vaccine, and the number of daily vaccinations has slowed sharply, with only 0.08 vaccinations per 100 people daily.⁷⁶ The problem is not vaccine supply – as a member of the EU, Romania has had enough doses to meet demand since April 2021. According to reports, vaccine scepticism, distrust of the state and a lack of vaccination centres are the main problems: Romania has one of the most rural populations in the EU.⁷⁷

This means that Romania is vulnerable to the Delta variant, since it is nowhere near herd immunity.

Long-term economic performance

Romania is one of the least developed economies in the EU, but a decent decade of growth before the pandemic had seen income per capita reach two-thirds of the EU average (on a purchasing power basis). Unemployment was low when COVID-19 struck. However, twin deficits had emerged between 2017 and 2019, with the government moving into a sizeable structural deficit after increasing state pension spending and public sector wages. Public investment was squeezed as a share of overall government expenditure. The current account had also deteriorated substantially, to -5.5 per cent of GDP in 2019, implying that the country as a whole was borrowing from abroad. This, together with Romania's

shrinking population means that there is a risk that domestic spending may have to be curtailed after the pandemic. Low vaccination take-up and further waves of the virus might lead to a slow, bumpy recovery, which may force the government to reduce spending, curbing economic growth, and leading more working age Romanians to leave the country.

The government predicts a structural growth rate of 5 per cent, two percentage points higher than the average of the previous decade, while the IMF is more circumspect, predicting a structural growth rate of 3.5 per cent. If the latter is closer to the truth, it will be even more important that Romania's recovery plan is well spent.

Romania's infrastructure has been improving but is worse than that of its peers in Central and Eastern Europe. According to the World Economic Forum, its transport infrastructure ranks 61st in the world, with road quality ranked 119th. Six per cent of the population are exposed to unsafe drinking water, and 29 per cent of the population do not use the internet regularly.⁷⁸ 98 per cent of Romanians are exposed to levels of air pollution that are above World Health Organisation recommendations.⁷⁹

Meanwhile, Romania's problems with corruption and weak tax collection are well documented. Transparency International's Corruption Perceptions Index scores it 69th globally for corruption, the same rank it had in 2012.⁸⁰ And the International Monetary Fund estimates that Romania could raise tax revenues by 2.5 per cent of GDP if it improved tax administration to the average quality of other Central and Eastern European members of the EU, particularly through improved IT systems and better management of the government's tax service.⁸¹

Greenhouse gas emissions

As a formerly planned economy with weak environmental protections, Romania's industrial plants were very dirty compared to those in Western Europe in the 1990s. Thanks to the transition to capitalism, accession to the EU and the growth of the services sector, the country's greenhouse gas emissions fell by 65 per cent between 1990 and 2019. Moreover, the country has made faster progress in reducing the emissions intensity of its economy than its peers in the former Eastern Bloc (see Chart 15, which shows kilograms of GHG emitted per euro of output over time). In part, that is because its industrial production has fallen faster as a share of GDP than, for example, Poland's.

76: 'Share of people vaccinated against COVID-19', Our World in Data, October 24th 2021.

77: See for example, 'Romania halts most COVID-19 vaccine imports as people shun jabs', *Irish Times*, July 1st 2021; 'Why did Romania's vaccination campaign derail after such a good start?', *Euronews*, June 8th 2021.

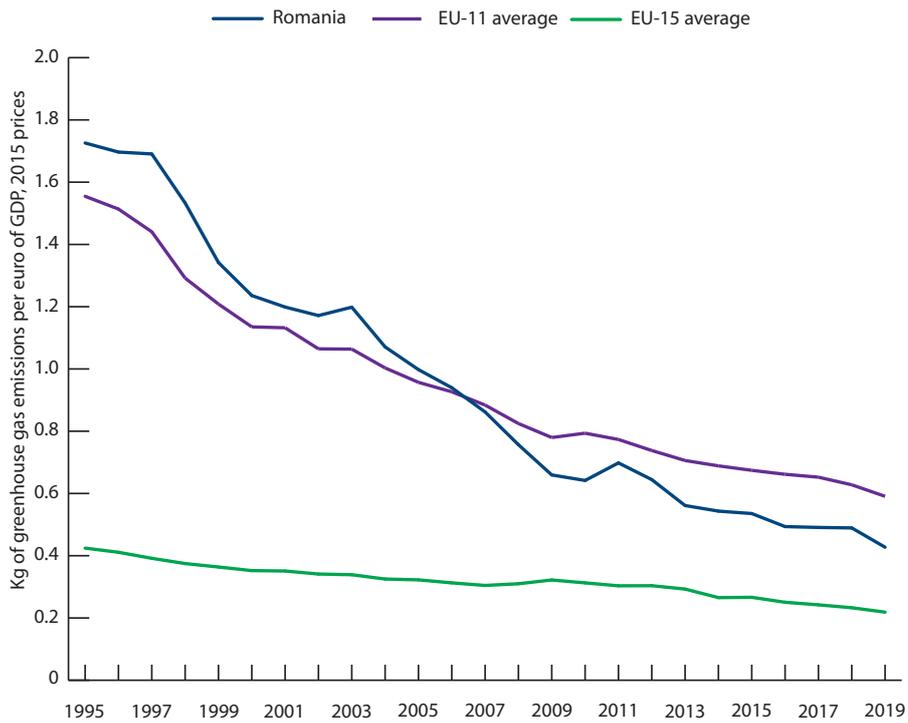
78: 'The global competitiveness report', World Economic Forum, 2019.

79: 'Regional outlook 2021: Country notes, Romania', OECD.

80: 'Corruption perception index', Transparency International, 2020.

81: 'Article IV staff concluding document, Romania', International Monetary Fund, May 2021.

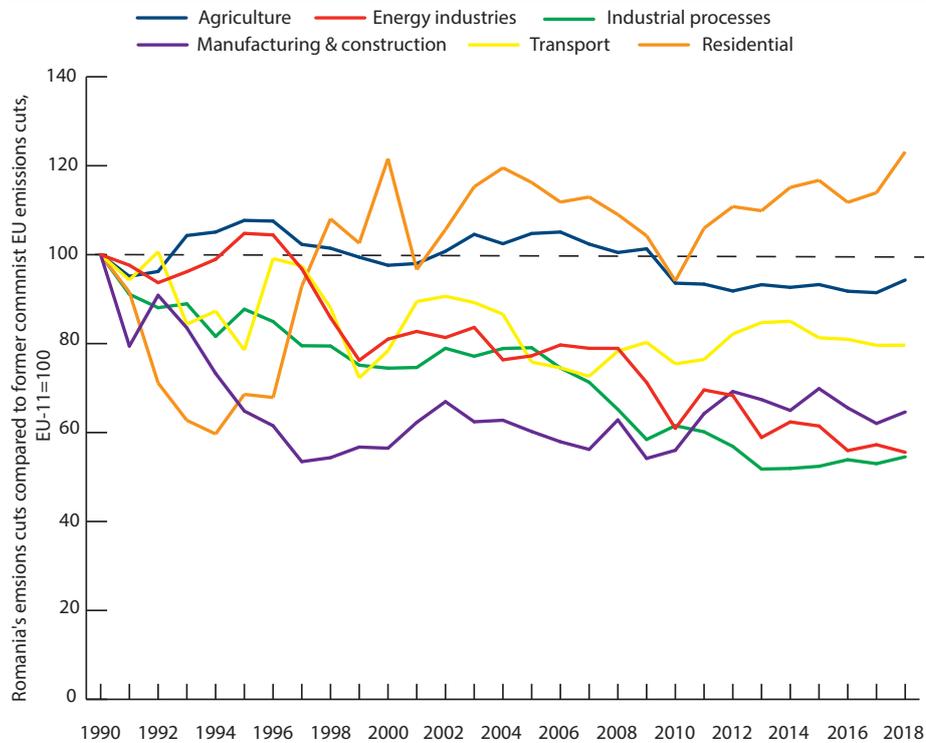
Chart 15: Emissions intensity of Romania's economy



Source: CER analysis of Eurostat data.

Note: EU-11 are the newer member-states in Central and Eastern Europe that joined from 2004, EU-15 are the pre-existing EU members.

Chart 16: Emissions reductions 1990-2018: Romania vs EU-11



Source: CER analysis of OECD data.

But it is not only in the heavy industry and manufacturing sectors that Romania has out-performed its peers. Its emissions cuts have also been more rapid than the average in former communist EU member-states in all sectors, including transport and agriculture, except for housing. A score below 100 in Chart 16 below corresponds to more cuts than the average, compared to the 1990 baseline.

However, as Chart 15 shows, Romania still has a way to go before it catches up with Western Europe, as measured by emissions intensity. The EU's 'effort sharing' principles mean that, outside those sectors governed by the Emissions Trading Scheme (such as electricity generation, in which decarbonisation is in part determined by EU-level action), Romania must reduce emissions by 2 per cent in 2030, relative to their level in 2005.⁸² Targets in more developed countries are much tougher, because they have more financial and technological resources to spend on climate action. That means that Romania has some wiggle room to expand its road network, helping to connect its sizeable rural population to more employment opportunities, for example.

Romania's recovery plan

Romania has requested €14 billion in grants and €15 billion in loans from the RRF. The grants amount to more than 6 per cent of annual GDP, although they will be spent over several years, from 2021 to 2026.

Romania's recovery plan proposes reforms and investments that deal with most of the recommendations that the European Commission and the IMF have been making for several years. The main areas for spending and reform are:

- ★ €7.6 billion on roadbuilding, road safety and electric vehicle charging; railway and metro improvements; reform of vehicle taxation to raise the cost of pollution

- ★ €2.2 billion on energy efficiency in government and residential buildings

- ★ €1.9 billion on improving public sector IT; reforms to ensure more high-speed internet access

- ★ €1.9 billion on improving water and sewerage

- ★ €1.6 billion on electrifying transport; reform of the electricity market to eliminate coal

- ★ €1.4 billion on reforestation and biodiversity

- ★ €1.2 billion on waste management

- ★ €0.5 billion on digitisation of the anti-fraud and customs offices, alongside reforms to raise tax collection

The European Commission signed off on the second version of Romania's plan in September 2021. The first had been sent back because there was not enough focus on green investment. The second plan had to be redrafted, because it had missed out detailed information on costs and spending. *Newsweek Romania* reported that the government had provided inconsistent sums in the chapter on digital investment, and it had plans to use EU money to cover recurring costs, such as civil servants' salaries, when the RRF's rules dictate that the money must be used for one-off investments.⁸³

So far at least, the Romanian case suggests that the recovery fund process is working as it should: European Commission officials have been scrutinising plans effectively and refusing to sign them off if they do not match the RRF criteria; and the reform and investment priorities seem reasonable. Ensuring investments and reforms are effective will require continued scrutiny, especially in countries with weaker institutions for holding governments to account.

82: 'Summary of the Commission assessment of the draft National Energy and Climate Plan 2021-2030, Romania', European Commission, 2019.

83: 'Weitere milliarden aus Brüssel – diese vier Länder bekommen das "Go"', *Die Welt*, July 26th 2021; 'Document exclusiv: Comisia Europeană desființează capitolul PNRR de Digitalizare. Costuri suspecte', *Newsweek Romania*, July 30th 2021.

Spain

COVID-19

As of July 2021, Spain had suffered over 81,000 confirmed deaths, with its worst wave in January 2021.⁸⁴ Lockdowns were put in place in March-June 2020 and in October 2020-May 2021. This took a toll on economic activity, as GDP dropped by 10.8 per cent and unemployment climbed to 15.5 per cent in 2020.⁸⁵

The government's emergency fiscal measures totalled €85 billion as of June 2021, with €24.7 billion being devoted to unemployment benefits for temporarily laid-off workers (Temporary Employment Adjustment Schemes, or ERTes).⁸⁶ An additional €100 billion was devoted to government guarantees for loans taken up by firms and self-employed workers.

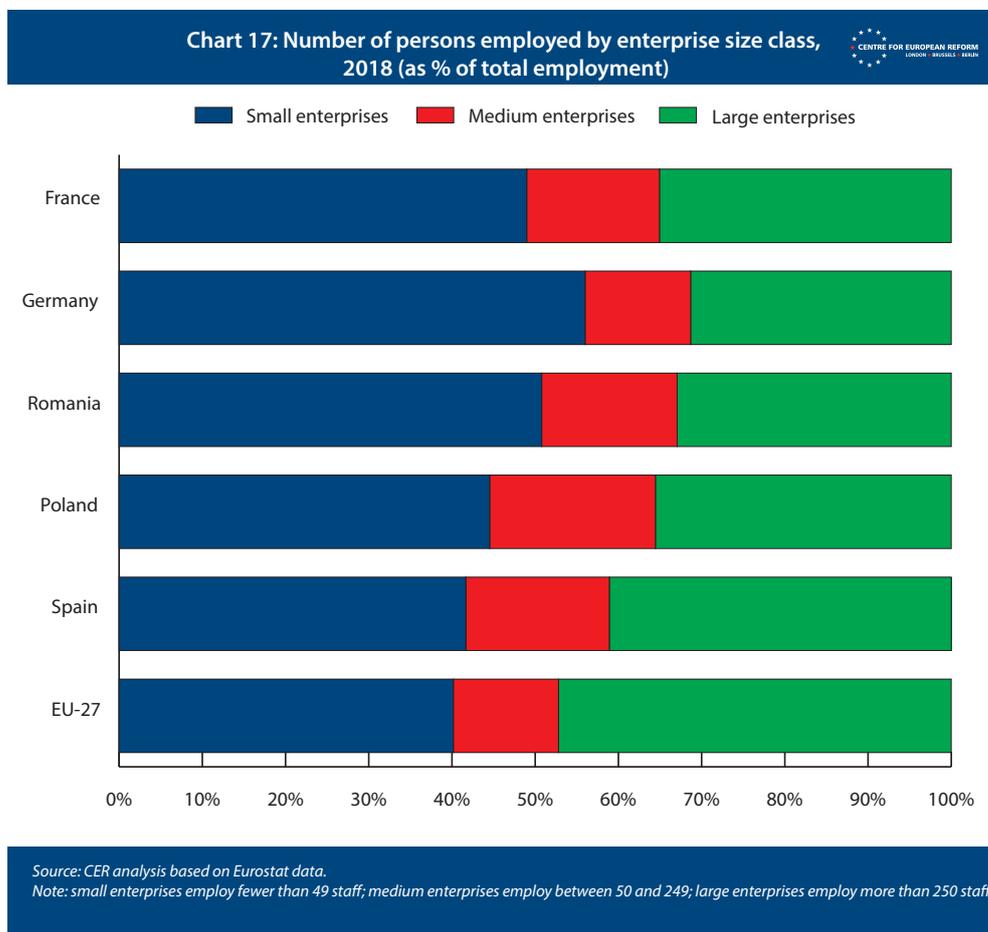
As of September 2021, over 80 per cent of the population had received at least one shot of the COVID-19 vaccine.⁸⁷ The Banco de España, Spain's central bank, forecasts 6.2

per cent GDP growth in 2021, with economic activity reaching pre-pandemic levels in late 2022.⁸⁸

Long-term economic performance

While Spain's post-financial crisis unemployment rate had peaked at 26 per cent in 2013, it was still at 14 per cent in 2019 – substantially higher than the eurozone average.⁸⁹ As a result of high levels of protection for workers on permanent contracts, 25 per cent of the employed workforce has temporary contracts, over ten percentage points higher than the eurozone average.⁹⁰ Many people on temporary contracts lost their jobs in the pandemic.

The Banco de España blames the small size of Spanish firms (see Chart 17) and relatively low skills and technological capital as the main reasons for low economic growth in Spain. Spain's central bank argued that the government needs to redesign the education system, and raise investment in innovation.⁹¹



84: Our World in Data, COVID-19 dataset.

85: OECD, 'Spain Economic Snapshot', consulted in June 2021.

86: International Monetary Fund, 'Policy responses to COVID-19', website last updated on July 2nd 2021.

87: Our World in Data, COVID-19 dataset.

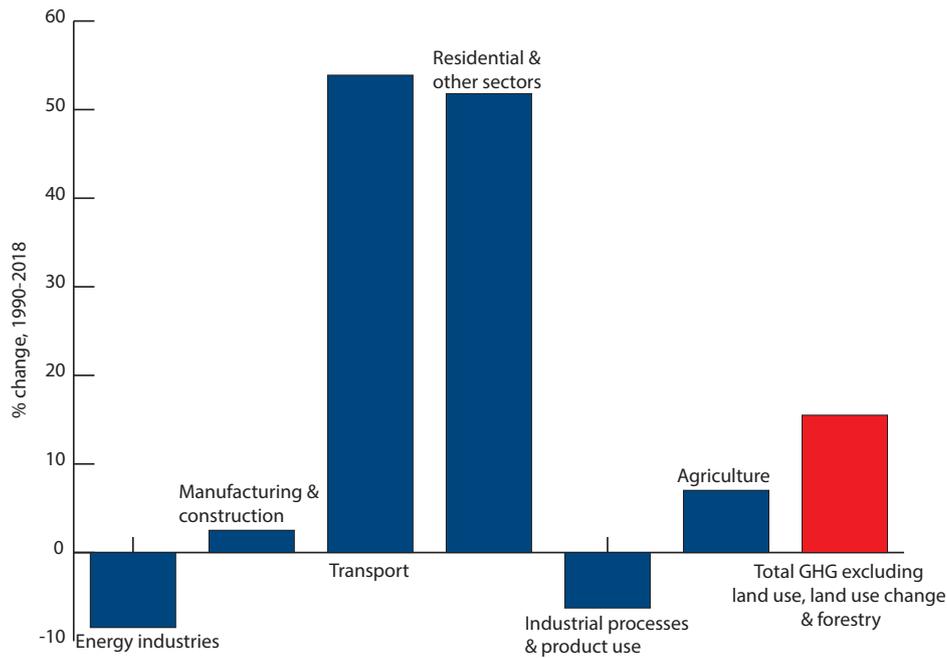
88: Banco de España, 'Proyecciones macroeconómicas de la economía española (2021-2023)', Boletín Económico 2/2021.

89: International Labour Organisation, ILOSTAT database. Data retrieved on September 7th 2021.

90: Banco de España, 'Informe anual 2020', May 2021.

91: Banco de España, 'Informe anual 2019', June 2020.

Chart 18: Spain's greenhouse gas emissions by sector, 1990-2018



Source: CER analysis of OECD data.

Greenhouse gas emissions

Spain's greenhouse gas emissions have increased by 16 per cent since 1990 (see Chart 18). However, emissions peaked in 2007 and have since been falling, allowing Spain to meet its 2020 target.⁹² Per capita emissions, at 7.1 tonnes of CO₂ equivalent (tCO₂eq) in 2018, are lower than the EU average of 8.2 tCO₂eq.⁹³

Most emission cuts have come from the energy sector, whereas emissions in the transport and residential sectors have increased by over 50 per cent since 1990.⁹⁴ In 2019, Spain met 18.4 per cent of total energy consumption with renewable energy, and it aims to increase this share to 42 per cent by 2030. Renewable energy should generate 74 per cent of electricity generation by then.⁹⁵

Spain's recovery plan

Spain plans to invest about €70 billion in grants from the RRF between 2021 and 2023, covering four broad priority areas: green transition, digital transformation, social and territorial cohesion, and gender equality: this assessment focuses on this early set of investments. An additional €70 billion in RRF loans will be used to finance special funds in 2021-2023 (for example supporting business recapitalisation and scaling start-ups), and the continuation of investment programmes beyond 2023.

92: OECD statistics, Greenhouse gas emissions data: National Inventory Submissions 2021 to the United Nations Framework Convention on Climate Change (UNFCCC, CRF tables), and replies to the OECD State of the Environment Questionnaire.

93: Ministerio para la Transición Ecológica y el Reto Demográfico, 'Environmental Profile of Spain 2019', 2020.

Spain's plan groups investments and reforms into ten 'lever policies' (see Table 7). The result is a very reform-intensive plan. The overhaul of the fiscal system and public administration are the two most important sets of reforms.

As for investment, the area receiving most money is the modernisation and digitisation of industry and SMEs, with €16 billion, amounting to 23 per cent of funds. Sector-specific efforts include a focus on modernising key sectors – tourism, automotive, agri-food, health, aviation, shipping and renewables. Some of the funds also aim to support more niche innovations, such as 3D printing.

Green investments target sustainable mobility (both national and local infrastructure and the renewal of vehicle fleets), housing renovations and energy infrastructure. Smaller investments seek to protect and restore ecosystems and water resources.

While subsidies for electric cars are included, the sustainable mobility chapter of the plan (€6.5 billion) focuses on alternatives to the use of private vehicles such as cycling, walking and public transport, in an effort to improve air quality. The government has put forward housing renovation and urban renewal plans, with a focus

94: OECD statistics, Greenhouse gas emissions data: National Inventory Submissions 2021 to the United Nations Framework Convention on Climate Change (UNFCCC, CRF tables), and replies to the OECD State of the Environment Questionnaire.

95: Ministerio para la Transición Ecológica y et Reto Demografico, 'Environmental Profile of Spain 2019', 2020.

on lower-income areas. This is a clever effort to deal with energy poverty in lower-income areas while improving economic and social conditions.

Support for renewable energy focuses on innovative sources and specific applications, such as integrating renewable energy generation with buildings, businesses and industry, and installing renewable plants on islands. Energy sector investment is also oriented towards storage and smart grids, highlighting their role in the clean energy transition.

Spain is investing €12.3 billion in education, skills and research, encompassing virtually all stages of education including lifelong learning. The biggest investment is a national plan for digital skills, which aims to create a network of centres for digital skills training, catering

to both students and workers. A reform of vocational training aims to improve the skills of both employed and unemployed citizens. On research, the plan aims to improve governance and co-ordination within the system of public institutions focusing on science, technology and innovation, and to strengthen the connection between public R&D institutions and the private sector.

On social policy, the €4.9 billion budget is almost evenly split between care and inclusion, including reforms of social services and asylum, and employment. While employment-oriented measures aim to reduce the excessive reliance on temporary contracts, and increase particularly youth and female employment, relatively few details are provided on the strategies and investments to achieve this.

Table 7: Spain's plan for the RFF: high-level breakdown and key investments

	€ billion	Share of total spending %
I. Urban and rural agenda, agricultural development and the fight against depopulation	14.4	20.7
<i>Largest spending items: Action Plan for sustainable, safe and connected mobility in urban and metropolitan areas</i>	6.5	9.4
<i>Housing rehabilitation and urban renewal plan</i>	6.8	9.8
II. Resilient infrastructures and ecosystems	10.4	15
<i>Largest spending items: Transport and mobility</i>	6.7	9.6
<i>Preservation of ecosystems, biodiversity and water resources</i>	3.7	5.4
III. A fair and inclusive energy transition	6.4	9.2
<i>Largest spending item: Renewable energy</i>	3.2	4.6
IV. A public administration for the 21st century	4.3	6.2
V. Modernisation and digitalisation of industry and SMEs, entrepreneurship and business environment, recovery and transformation of tourism and other strategic sectors	16.1	23
<i>Largest spending item: Fostering SME growth</i>	4.9	7
VI. Promotion of science and innovation and strengthening of the capabilities of the National Health System	4.9	7.1
<i>Largest spending item: Reforms and investment in the national science, technology and innovation system</i>	3.4	4.9
VII. Education and knowledge, lifelong learning and capacity building	7.3	10.5
<i>Largest spending item: Plan for digital skills</i>	3.6	5.2
VIII. The new care economy and employment policies	4.9	7
<i>Largest spending items: Care and inclusion</i>	2.5	3.6
<i>Labour market reforms</i>	2.4	3.4
IX. Promotion of the culture and sports industries	0.8	1.2
X. Modernisation of the tax system for inclusive and sustainable growth	/	/
Total	69.5	

Source: CER analysis Spain's recovery and resilience plan.
Note: High-level components in bold; selected significant investment projects and reforms in italics.

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