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Fiscal and structural resilience building responses to inflation during the 2022-23 energy crisis

A comparative analysis of the approach of the EU and three European countries

Daisy Jameson, Carina Perez and Irene Claeys

Policy report

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Summary

Between 2022 and 2023, Europe experienced an inflationary crisis driven by gas supply disruptions following Russia's invasion of Ukraine, and compounded by post-COVID pandemic supply chain shocks. To support traditional monetary policy tools in combatting inflation, Member States of the European Union deployed a range of so-called 'unconventional' fiscal policies aimed at protecting consumers from the increase in energy prices and limiting the pass-through of inflation to the wider economy. These fiscal policy measures were accompanied by a set of structural resilience building measures aimed at addressing the supply disruption in gas markets by improving the EU's capacity to act in cases of extreme shortages and reducing the risk of future supply shocks.

This report examines the role of unconventional fiscal and structural resilience building policies in counteracting inflation. To do so, it compares case studies of selected EU Member States (France, Germany and Spain) and considers policies implemented at the supranational EU level during the 2022-23 energy crisis. In addition to effectiveness in managing inflation and preserving economic growth, this comparison also takes into account policy objectives such as progress in decarbonising the economy, the sustainability of public finances, fairness considerations and contribution to long-term resilience and crisis-readiness. In response to this analysis, we set out 12 policy recommendations to manage and avoid similar inflationary supply shocks.

The comparatively fast fiscal responses of France (with its freeze of regulated tariffs for gas and electricity from the end of 2021) and Spain (with its Iberian mechanism introduced in June 2022) during the crisis were associated with more moderate inflation. In contrast, Germany's gas and electricity brake was only effective in January 2023, following the mandate of an expert committee to design a measure tailored to previous consumption levels, thereby preserving an incentive to reduce consumption. The rapid introduction of broad measures in France and Spain came at the expense of environmental, fairness and cost considerations. While speed of implementation should be a priority, unconventional fiscal policies should ideally be tailored to a limited consumption level and targeted to the most vulnerable. To better manage this trade-off during future supply shocks, governments should invest in improving their data infrastructure, allowing them to more proactively identify potential inflation shocks, better identify vulnerable households and firms, and deploy support quickly where it is needed.

Regarding structural resilience building measures, the EU improved its capacity to act in the case of gas supply disruptions by strengthening solidarity rules between Member States. The EU also took steps to reduce the risks of future supply shocks with the common storage regulation introducing mandatory EU-wide storage filling rules. Furthermore, the EU's REPowerEU strategy of energy diversification and deployment of renewables was successful in reducing Russian gas supplies, but at the cost of a new dependency on American liquefied natural gas (LNG). Looking forward, EU Member States should accelerate the deployment of renewable energy to meet their 2030 target (42.5% of final energy consumption) and reduce, as far as possible, the role of gas in the economy through further progress in electrification and scaling-up of clean technologies. To secure the supply of critical raw materials as the move to renewables creates new risks, the EU should implement a comprehensive strategy that combines regulatory, financial and trade measures.

Summary of policy recommendations

Fiscal policy recommendations

1. **Unconventional fiscal policies should play a role in managing inflation during future supply shocks.** In France, Germany and Spain, these policies were effective at reducing inflation, maintaining economic output and minimising the welfare impacts of the inflationary shock in 2021–23.
2. **When facing a trade-off between acting fast and designing more targeted and tailored measures, speed of implementation of unconventional fiscal policies should be prioritised.** The rapid deployment of unconventional fiscal policies in France and Spain was a factor behind inflation falling faster. Fast implementation was also effective at buying time for policymakers to introduce more targeted or structural interventions.
3. **Time-limited windfall taxes can represent a fiscally efficient tool to fund unconventional fiscal policies.** Policymakers must balance short-term support to reduce inflation with long-term fiscal sustainability by combining some temporary taxes with limited borrowing.
4. **Where possible, unconventional fiscal policies should be tailored, targeted and time limited.** Policies should be tailored to preserve price signals and targeted to the most vulnerable households and firms to reduce their welfare impacts of inflation. Measures should also be explicitly time limited, especially in cases where they incentivise consumption of energy-intensive goods.
5. **Invest in data collection and institutional data-analysis capacity to be able to respond in a swifter and more targeted way during future supply shocks.** Investments should be made in the integration of data sources, expansion of social registries, recruiting of data analysts and systematic evaluations to identify informational and institutional gaps that might impede crisis response.
6. **Unconventional fiscal policy measures should prioritise support to vulnerable firms.** Supporting firms during inflationary supply shocks is necessary to avoid inflationary spillovers, protect competitiveness and preserve critical production capacity. Small- and medium-sized enterprises (SMEs) should be supported alongside large firms, and policies should be designed in a way that maintains incentives to reduce energy consumption.

Structural policy recommendations

7. **Build on the default solidarity mechanism introduced during the energy crisis,** develop cross-border gas infrastructure facilitating solidarity, and explore the possibility of extending similar solidarity obligations.
8. **Continue to implement buffer stocks in the form of EU-wide gas storage rules.** Ensure storage rules are sufficiently flexible to strike the right balance between security of supply and the limitation of market disruptions during filling periods. When feasible, explore the possibility of cooperating with private actors to limit the public costs of buffer stocks for strategic resources.
9. **Pursue the efforts of the EU's energy strategy REPowerEU** laid out in response to the crisis, which sets the right approach of diversifying energy supplies away from Russian gas, and accelerating the deployment of renewable energy to meet the EU's 2030 target of 42.5% of its final energy consumption.
10. **To advance both decarbonisation and energy independence, reduce the role of gas in the EU's economy through further progress in electrification and scaling-up of clean technologies like batteries, smart grids or low-carbon gases.** Since gas will continue to play a role in the EU's energy mix (including in supporting the deployment of renewables by balancing intermittency), to avoid new dependencies after the move away from Russian gas, the EU should leverage its collective bargaining power through joint procurement when switching to alternative supplies.

11. **Advance electrification and complement supply-side with demand-side policies,** either aimed at lowering electricity costs, such as grid fee subsidies, or at supporting the uptake of electrification technologies, such as subsidies or regulations favouring electric vehicles or heat pumps.
12. **Develop a strategy to address potential security of supply challenges of critical raw materials** that will come with the move to renewables, clean technologies and related energy infrastructure. This strategy should combine improvement of the regulatory environment, better access to funding at the EU level, diversification through clean partnerships and the leveraging of EU buying power.

1. Introduction: context

This report examines the role of unconventional fiscal and structural resilience building policies in counteracting the inflationary shock experienced during the 2022-23 energy crisis in Europe. The fiscal policies widely adopted were labelled 'unconventional' because expansionary fiscal policies would normally not play a role in helping monetary policy reduce inflation in traditional textbook macroeconomics (see Box 1.1). Case studies from France, Germany and Spain and policies implemented at the EU level are compared to understand how their approaches fared in terms of their effectiveness in reducing inflation and preserving economic growth, impact on decarbonisation of the economy, cost-effectiveness and impact on debt sustainability, fairness, and contribution to long-term resilience and crisis-readiness. In response to this analysis, the report sets out 12 policy recommendations to manage and avoid similar inflationary supply shocks.

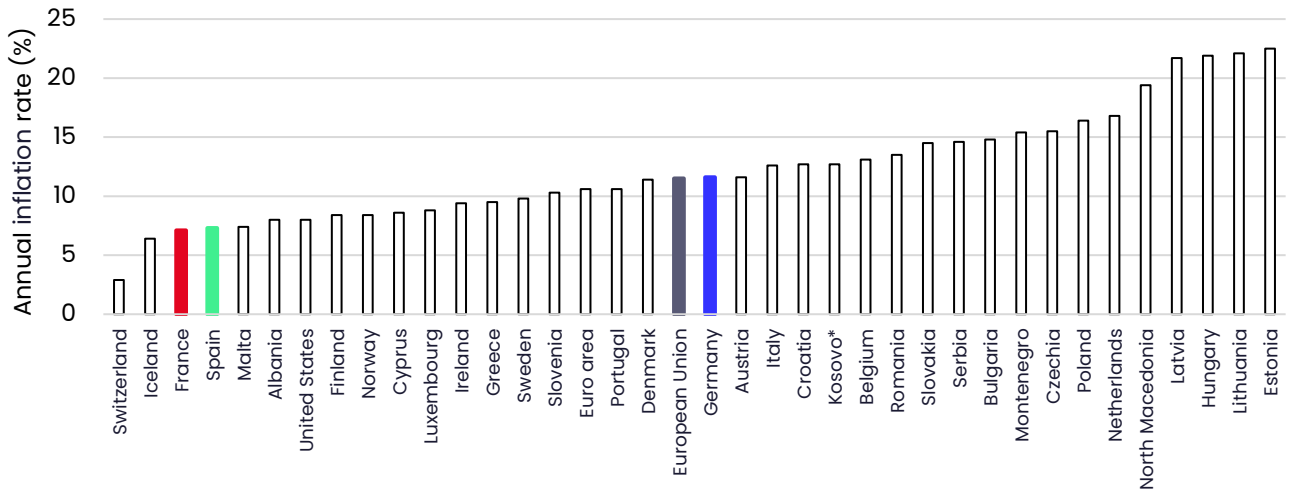
Between 2021 and 2022, EU inflation reached the highest level ever measured, peaking at 11.5% in October 2022 (year-on-year inflation, Eurostat, 2025a). Inflation surged as a result of disruptions in Russia's gas supplies following the onset of its war of aggression against Ukraine in February 2022. In the EU, where wholesale electricity is dispatched following a merit order system, gas prices are a strong determinant of electricity prices.[1] High and volatile gas prices triggered by the supply disruptions therefore caused an electricity crisis. In the months following the invasion of Ukraine, European wholesale electricity prices increased fourfold (Avalos et al., 2023). This energy supply shock also coincided with post-COVID supply chain disruptions and simultaneous aggregate demand pressures in some regions as economies recovered from the pandemic (Gourinchas, 2024).

The magnitude of price surges varied strongly across Member States, with inflation differentials in the euro area reaching historically high levels in 2022 (Coutinho and Licchetta, 2024). Figure 1.1 shows euro area inflation rates in October 2022, when many countries reached peak rates. In Eastern Europe, inflation reached double digits (e.g. 22.5% in Estonia, 16.4% in Poland and 15.5% in Czechia), whereas in other countries, like France (7.1%), inflation remained well below the EU average. This reflects, of course, different exposures to Russian gas supplies and energy imports (Baumgartner et al., 2022) and different levels of previous energy intensity (the amount of energy required to produce a unit of economic output) across economies (Barmes and Schröder Bosch, 2024). However, the differences also reflect a wide variety of policy responses to the shock (Glocker and Wegmüller, 2025), which are the focus of this report.

This report examines the role of so-called unconventional fiscal and structural resilience building policies in managing and reducing the likelihood of future supply shocks by drawing retrospective lessons from the responses to the energy crisis in the EU, France, Germany and Spain in 2022–23. The comparisons focus on how their approaches fared in terms of the policy objectives of reducing inflation and preserving economic growth, contributing to the decarbonisation of the economy, ensuring cost-effectiveness, debt sustainability and fairness, and contributing to long-term resilience and crisis readiness.

[1] Under the merit order system, cheaper sources are dispatched first and generators receive the price of the most expensive source needed to meet demand at a given period (which is often gas).

Figure 1.1. Annual inflation rates in European countries and other key regions in October 2022



Note: Case study Member States are highlighted. Kosovo*: This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.
Source: Authors' calculations based on data from Eurostat (2025a)

The fiscal measures, such as energy consumption subsidies and tax cuts, were adopted by European countries to shield households and businesses from the inflation shock. These measures often had the secondary objective of directly reducing the effect of headline inflation and its pass-through (Altomare and Giavazzi, 2023). By early 2023, EU governments had allocated up to €540 billion to these measures (Bruegel, 2023). Because of the anti-inflationary intent of these fiscal measures, they were often labelled as 'unconventional' (Dao et al., 2023). This is because in traditional textbook macroeconomics, fiscal policies would normally not play a role in helping monetary policy reduce inflation. These unconventional fiscal policies thus challenged the 'standard' way of dealing with supply shocks (see Box 1.1). Despite debates among economists, they proved successful in reducing inflation during the crisis (Dao et al., 2023).

Box 1.1. Why supply shocks are challenging for the policy mix and how fiscal policies can help manage them

From a macroeconomic stabilisation perspective, supply shocks are difficult to manage. As opposed to demand shocks, supply shocks such as the 2022-23 energy crisis cause (rising) prices and (weakening) activity to move in opposite directions. Governments thus need to find the right balance between countering the inflation hike and not disproportionately reducing demand (Bénassy-Quéré, 2024; Dao et al., 2023). Monetary policy dampens demand in order to manage inflation, so a broad-based expansionary fiscal policy that increases aggregate demand could, in theory, enter into conflict with monetary tightening by intensifying supply bottlenecks and worsening inflation (Georgieva et al., 2022). This is what happened in the 1970s, when expansionary policies worsened the economic outlook by boosting aggregate demand without addressing underlying supply-side problems. When economists, used to a Keynesian framework, saw "output decline (prices did not increase immedietaly; prices usually adjust slower than output), they identified it as a negative demand shock to be fought by expansionary monetary and fiscal policies" (De Grauwe, 2014). These imbalances contributed to the stagflation (stagnant economic growth and high unemployment combined with rising inflation) of the 1970s, which ultimately led the Federal Reserve under Paul Volcker to sharply raise interest rates from 1979, leading to a deep recession in 1980–82 (see Figure 1.2).

The inflation hike following the COVID pandemic challenged the traditional separation of monetary and fiscal policies following the experience in the 1970s (Gaffard et al., 2024). Nobel laureate Paul Krugman even called the European response to the energy crisis 'wartime economics' (Krugman, 2022). In fact, standard textbook macroeconomic models suggest that during a supply shock, the efforts of monetary policy in combatting inflation can be supported by fiscal policy. Governments, by increasing tax rates and cutting spending, can help central banks curb demand. This is the case especially when the effectiveness of the European Central Bank's (ECB) monetary policy is

constrained, such as in the euro area, where it can only address average inflationary pressures (Dao et al., 2023). For example, the ECB's interest rate rises may not be sufficiently large for countries with higher-than-average inflation rates.

However, instead of fiscal tightening, many European governments responded to the crisis with a combination of fiscal expansion to support households and businesses and monetary tightening to fight inflation. While the outcome of this policy 'cocktail' was uncertain (Bénassy-Quéré, 2024), it was successful in reducing inflation. Both the International Monetary Fund (IMF) (Dao et al., 2023) and ECB (2023) find that the unconventional fiscal policies adopted in the EU in 2022 lowered inflation and stabilised output, with the IMF finding that they reduced inflation by an average of 0.9% in 2022. With an adjusted model allowing for a non-linear Philipps curve (meaning that the relationship between inflation and unemployment varies with the level of unemployment), the IMF finds that without the energy measures, euro area annual headline inflation in October 2022 would have been 3.2% higher (13.7% instead of 10.6%). By curbing the effective prices paid by consumers and businesses, the measures helped reduce the energy inflation at the origin of the headline inflation shock and helped anchor long-term expectations.[2]

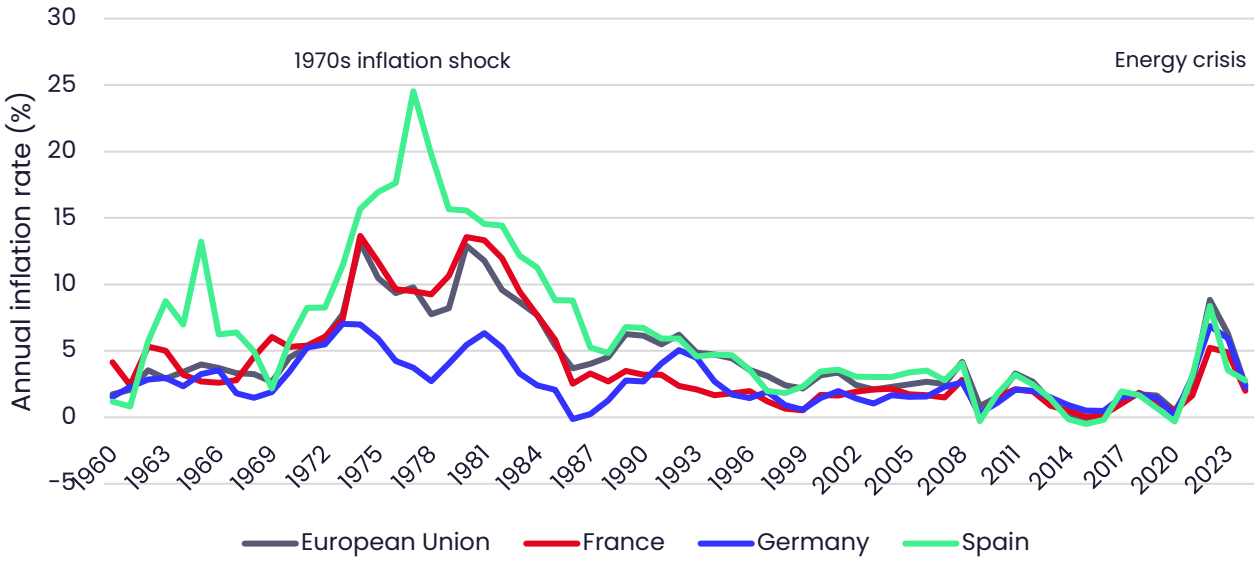
Fiscal policies acted on inflation via two main channels. First, they directly curbed inflation by reducing the effective prices paid by consumers and businesses. Second, they helped anchor inflation expectations and support the credibility of monetary policy frameworks (IMF, 2023b). It should be noted that the unconventional fiscal policies most likely to help reduce inflation via these two channels are price-suppressing measures (such as France's price tariff and Spain's Iberian price mechanism). Non-price-suppressing measures (like lump-sum transfers) are more likely to increase demand for energy and other goods without countering inflation.

Why did expansionary fiscal policies not worsen the inflationary crisis this time, like in the 1970s? Different studies have linked the non-inflationary impact of fiscal measures to the modest role of labour markets in inflation dynamics in Europe (Dao et al., 2023; IMF, 2024). Dao et al. (2023: 21) estimate that "the rise in euro area core inflation since January 2021 primarily reflects pass-through from past headline-inflation shocks, not economic overheating" (as in the US). When the economy is not overheated (i.e. the output gap, or the difference between actual output and potential output, is small), the relationship between inflation and output flattens. In macroeconomic terms, "there may [also] be important non-linearities in the Phillips curve slope: price and wage pressures from falling unemployment become more acute when the economy is running hot than when it's below full employment" (Gopinath 2023). Hence, because the euro area was not in a state of overheating, the inflationary impact of unconventional fiscal policies through demand effects remained limited, and they did not exacerbate inflation.

Beyond supporting monetary policy in reducing prices of a core commodity, there are secondary arguments for governments to use fiscal policy to manage inflation. These include preserving crucial investments by reducing the need for interest rate hikes, protecting the welfare of vulnerable households by preventing them from falling into fuel poverty, preventing otherwise viable firms from having to cease operations, avoiding long-term economic scarring from the crisis, and preventing the price shocks to one sector (e.g. energy) spilling over into other sectors. This is particularly relevant in the case of energy and other essential goods which, as discussed by Weber and Van 't Klooster (2024), have relatively low elasticity of demand in the short run, making it hard for consumers to swiftly change their behaviour to respond to price hikes. Finally, unlike monetary policy, fiscal policy can have faster effects, be designed in a more targeted way, and thus have fewer side effects than monetary policy (Bofinger, 2024).

[2] While the IMF finds no impact of this relationship with a linear Phillips curve, in its adapted model, longer-term inflation expectations rose by 0.2 percentage points in the absence of energy price measures.

Figure 1.2. Consumer price inflation (annual %), 1960-2024



Source: Authors' calculations based on data from World Bank, World Development Indicators (2025)

The fiscal interventions during the crisis were accompanied by a series of regulatory and structural energy market policies aimed at removing the supply disruption in gas markets. These measures attempted to improve the EU's capacity to act in cases of extreme disruptions of gas supplies by strengthening solidarity mechanisms or reducing the risk of future gas supply shocks in the first place, for example by diversifying energy supplies and accelerating the deployment of renewable energy. Many of these policies were implemented at the EU level, in the form of regulations or trade measures, but they were also accompanied by national efforts to secure alternative energy supplies. For simplification purposes and to differentiate them from our assessment of unconventional fiscal policies, this report refers to this wide set of measures as structural resilience building policies.

While the focus of the report is primarily on unconventional fiscal and structural resilience building measures, it contains some separate discussions in boxes on topics relevant for future inflation shocks: why supply shocks are challenging for the policy mix and how fiscal policies can help manage them (Box 1.1), wage policy interventions and their role alongside fiscal and monetary policies in managing inflation (Box 2.1), the challenge of funding unconventional fiscal policies and the different options available to governments (Box 3.1), and the importance of rapid support to protect firms (Box 3.2).

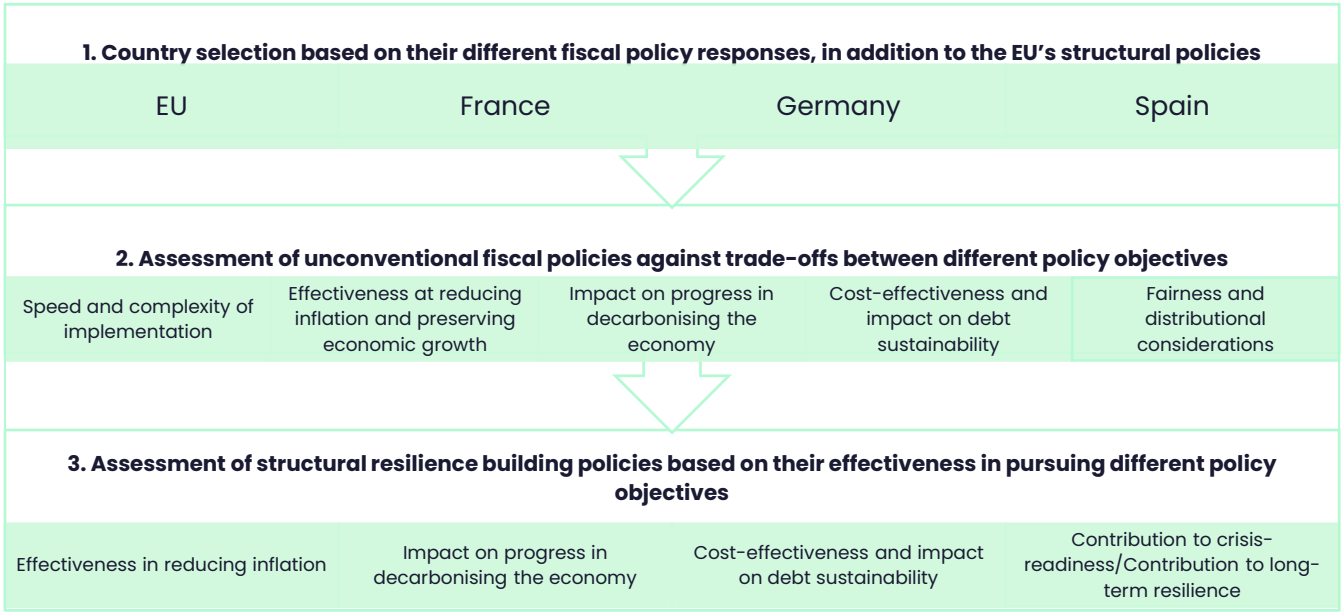
In response to this analysis, the report sets out 12 policy recommendations to manage and avoid similar inflationary supply shocks.

In the context of the green transition and rising geopolitical tensions, inflationary supply shocks risk becoming more frequent and severe. This is likely to be the case especially in sectors where prices play a systemically significant role (Weber, Jauregui et al., 2024), such as energy, other basic production inputs (in the future this might also apply to critical raw materials), basic necessities (such as food and housing), and commercial infrastructure. It is likely that both unconventional fiscal and structural policies will continue to be part of the policy toolkit to complement monetary policies in facing inflationary pressures. Barmes et al. (2024) have investigated how monetary policy can better react to such future inflation shocks and give fiscal policy more space to respond. We build on the recommendations in Barmes et al. (2024) to enable policymakers to take a proactive role in mitigating and preventing negative supply shocks by focusing on what unconventional fiscal and structural resilience building policies should look like.

The remainder of the report is structured as follows (see also Figure 1.3):

- **Section 2** provides a summary of the policy responses to the energy crisis at the EU level and at the national level in France, Germany and Spain. These three large euro area economies provide useful comparative case studies, as they present important differences in terms of the fiscal policies implemented: France acted quickly and broadly, Germany acted slower but in a more targeted way and Spain implemented the exceptional Iberian mechanism.
- **Section 3** draws comparisons from the case studies to analyse the unconventional fiscal policies according to their effectiveness in reducing inflation and preserving growth, their impact on progress in decarbonising the economy, their cost-effectiveness and impact on debt sustainability, and their fairness and distributional considerations.
- **Section 4** revisits the structural resilience building responses at the EU level and, to a lesser extent, at the national level, to assess their success based on their effectiveness in reducing inflation, their impact on progress in decarbonising the economy, their cost-effectiveness and impact on debt sustainability, and their contribution to long-term resilience and crisis-readiness.
- **Section 5** concludes and summarises the policy recommendations that can be drawn from this comparative retrospective analysis.

Figure 1.3. Structure and methodology of the report



2. Case studies: the EU, France, Germany and Spain

This section provides an overview of the unconventional fiscal policies and structural resilience building measures introduced during the 2022-23 energy crisis at the EU level and at the national level in France, Germany and Spain. While wage policies are not the focus of this report, we recognise their role in managing inflation (see Box 2.1).

France, Germany and Spain provide interesting comparative case studies as they are three of the largest euro area economies that had different approaches in their unconventional fiscal policies (see Table 2.1). These were complemented by structural resilience building measures mainly implemented at the EU level, but also complemented by national efforts to diversify energy supplies.

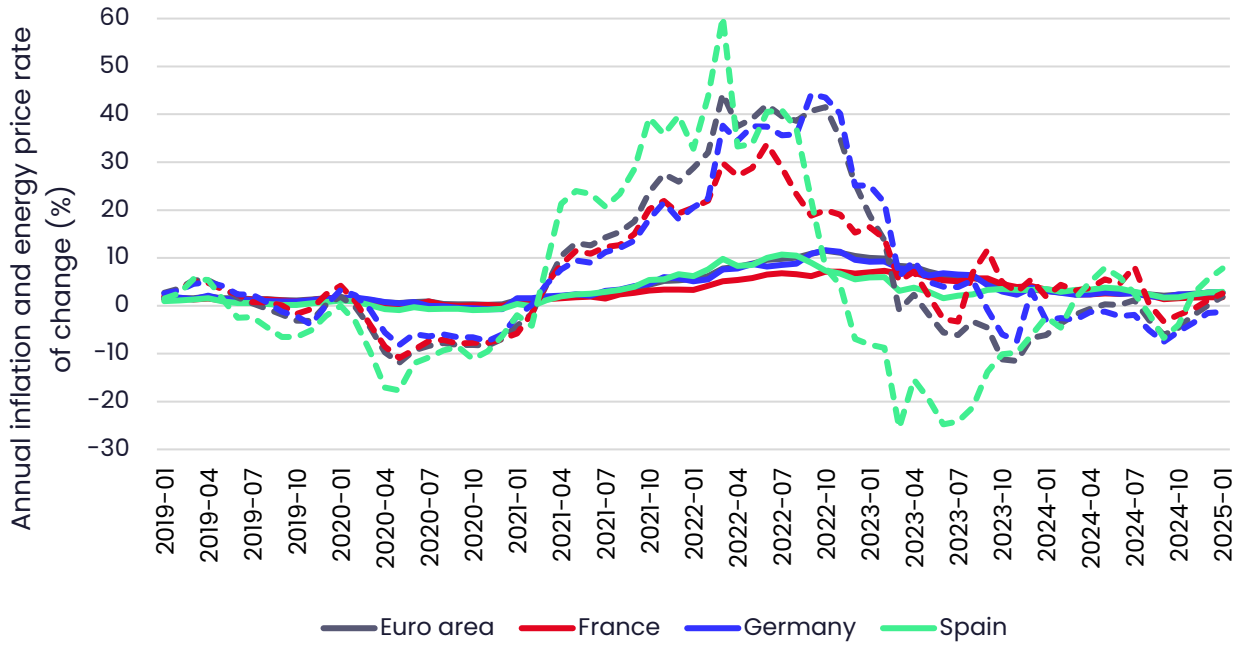
Table 2.1. Country selection based on their different fiscal policy responses, in addition to the EU's structural policies

Category	EU	France	Germany	Spain
2022 average annual inflation	9.2%	5.9%	8.6%	8.3%
Unconventional fiscal policies				
Untargeted measures		Electricity and gas price caps, fuel discount, public takeover of EDF.	Gas and electricity price brake (despite being tailored to past consumption levels), energy-price allowance, removal of energy taxes, national public transport subsidy, Uniper bailout.	Iberian gas price cap, VAT cuts, and removal of taxes on electricity generation and fuel.
Targeted measures		Inflation cheques to certain households, subsidy for energy-intensive companies and SMEs, energy bill support to selected households.	Heating subsidies for low-income and vulnerable households, tax relief for certain groups, and extension of benefits. Hardship schemes for specific household types, SMEs and sectors.	VAT frozen for low-energy-consumed households, transfers to households dependent on region and vulnerability, increased availability of social tariffs, support for energy-intensive sectors.

EU: measures implemented at the supranational level

Between 2021 and 2023 the EU witnessed a sharp increase in its inflation rate, which peaked at 11.5% (annual inflation) in October 2022 (Eurostat, 2025a). Within the EU, there was significant heterogeneity in countries' experiences of inflation. In 2022, the highest average inflation rate in the EU was 19.4% in Estonia, and the lowest just 5.9% in France (Eurostat, 2025a). Figure 2.1 shows the development of monthly year-on-year inflation in the EU since 2019 and the selected case study countries (France, Germany and Spain). The figure also shows the monthly energy price rate of change in that year.

Figure 2.1. Annual inflation and energy price rate of change (monthly data)



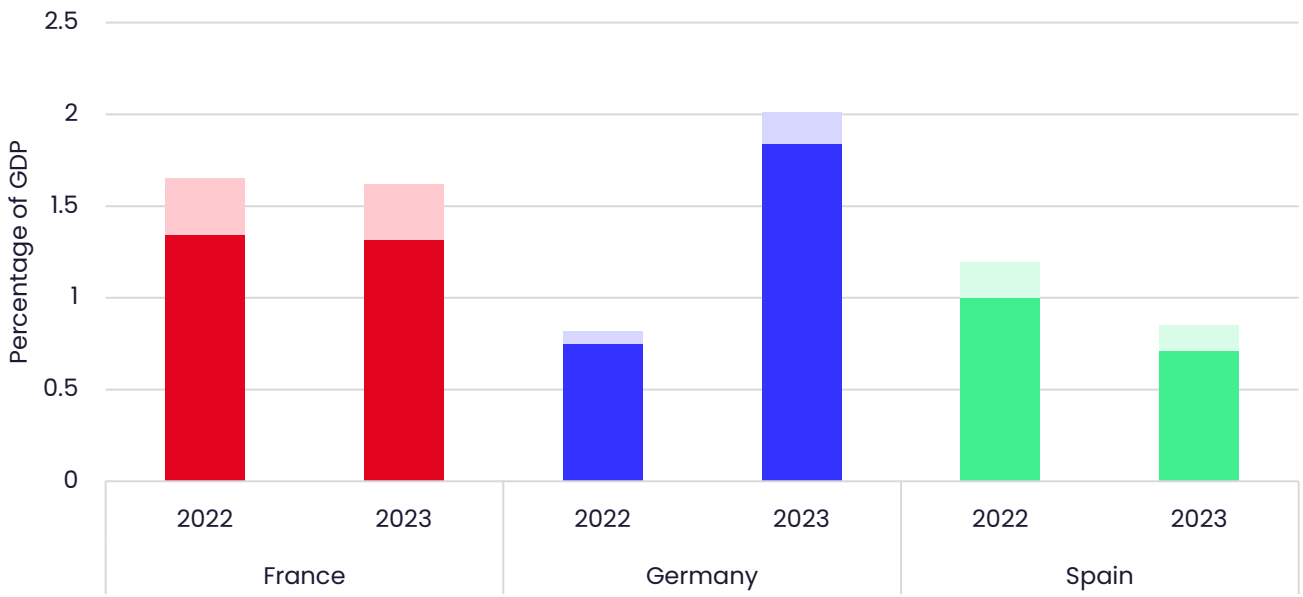
Note: Dashed lines show the energy price rate of change for the region and case study countries in their corresponding colours.
Source: Authors' calculations based on Eurostat (2025a), harmonised indices of consumer prices, monthly data (annual rate of change)

The rise of inflation was mainly fuelled by surges in gas and electricity prices. Amid global inflationary pressures driven by post-pandemic economic recovery and supply bottlenecks, the disruption of Russian gas supplies triggered an energy crisis in Europe. With 45% of its gas imports in 2021 coming from Russia, the EU was particularly vulnerable to the shock. Gas prices on Europe's major virtual trading point for natural gas, the Dutch Title Transfer Facility (TTF), multiplied, reaching an all-time high of nearly €350 per megawatt-hour (MWh) in late August 2022.

Given the central role of gas in determining electricity prices in Europe, and the use of energy in industrial processes, price hikes and volatility also triggered an electricity and cost-of-living crisis. In the EU, where wholesale electricity is dispatched following a merit order system, in which cheaper sources are dispated first and generators receive the price of the most expensive source needed to meet demand at a given period (which is often gas), gas prices are a strong determinant of electricity prices. Consumers then purchase electricity from retailers who purchase it on the wholesale market and add fees to use the electricity grid, taxes and levies, and their own margins. In the second half of 2022, electricity prices (without taxes) surged to a peak of €0.24 per kilowatt-hour (kWh), up from roughly €0.18–0.19/kWh in early 2021, an increase of around 30–35%. The IMF estimates that the 2022 increase in energy prices increased the cost of living for the average European household by about 7% relative to early 2021 (Ari et al., 2025).

To counter the shock, EU governments intervened widely with a set of unconventional fiscal support measures. The measures ranged from broad-based price caps that directly reduced retail energy costs, to targeted income support for vulnerable households, and mixed price-income schemes (such as lower taxes on necessities) designed to balance affordability with efficiency (ECB, 2023). According to the ECB's Economic Bulletin from December 2023, the cost of fiscal support enacted by euro area governments in response to the energy crisis was estimated at 1.8% of gross domestic product (GDP) in 2022 and 1.3% in 2023. Figure 2.2 provides a breakdown of the unconventional fiscal measures implemented in the three case study countries (Castle et al., 2023). We follow Castle et al.'s definition of targeted measures (which indicates whether vulnerable households or firms from specific sectors are targeted) and untargeted measures (where no attempt is made to target the most vulnerable).

Figure 2.2. Spending on energy support measures, targeted and untargeted (% of GDP), 2022 and 2023



Notes: Darker colours show targeted measures and paler colours, untargeted measures.
Source: Authors' calculations based on data from the OECD Energy Support Measures Tracker (Castle et al., 2023)

In addition, EU institutions and governments introduced different measures at the EU level. In May 2022, the European Commission published its REPowerEU Plan, which aims to strengthen energy independence from Russia by promoting energy savings, diversifying supplies and decarbonising the gas-heavy energy sector (which represented 27.4% of total EU CO_2 emissions in 2022) through the deployment of renewable energy. REPowerEU set 2030 targets for solar and wind power, heat pump installations, and hydrogen and biomethane production (European Commission, 2022a). In addition to these targets, the plan extended the scope of measures in the National Recovery and Resilience Plans (regulation 2023/435), implemented as part of the pandemic's recovery fund NextGenerationEU, and provided additional funding (€20 billion) for Member States' projects in energy resilience and security. To improve diversification at the EU level, AggregateEU was introduced to coordinate EU demand for gas with a platform to match suppliers and buyers at the EU level (regulation 2022/2576). From 2022, the Commission also implemented agreements with new trading partners to export natural gas to Europe, and invested in liquefied natural gas (LNG) terminals and gas interconnectors to ensure every Member State had the capability to receive gas from new sources. Furthermore, the EU Energy Platform was launched in April 2022 to help EU countries work together on global markets and increase the bloc's bargaining power.

The EU also updated its gas security of supply framework. Gas security of supply in the EU is ensured by the 2017/1938 gas security of supply regulation (European Commission, 2025d). The regulation promotes regional cooperation and solidarity between EU Member States to improve cross-border gas infrastructure, better identify supply risks and develop common emergency measures. In response to the crisis, the EU Council upgraded its security of supply framework with a series of emergency measures, including the introduction of mandatory minimum storage rules at the EU level and a burden-sharing mechanism between Member States with storage capacities and those without (regulation 2022/1032), a 15% voluntary reduction in gas demand (regulation 2022/1369), and a compulsory solidarity crisis mechanism that would require Member States to share gas supplies with neighbours in times of urgent shortages (regulation 2022/2576). The EU also introduced a wholesale gas price cap with the market correction mechanism (regulation 2022/2578).

Finally, some measures introduced at the EU level aimed at facilitating the implementation of the national fiscal measures. The Commission prolonged the General Escape Clause of the EU fiscal framework, allowing Member States to run higher deficits than possible in normal times. Furthermore, regulation 2022/1854 introduced a windfall levy on energy firms' excess profits (a so-called solidarity

contribution) to support countries in funding financial support measures for energy consumers (see Box 3.1), the proceeds of which are estimated to have been almost €28 billion for 2022 and 2023 (European Commission, 2025e). Finally, the EU loosened its state aid rules with the Temporary Crisis Framework, allowing governments to provide targeted support in order to lower energy prices for households and businesses (European Commission, 2023d).

France: lower exposure to the shock and a rapid, broad response

During the energy crisis, inflation in France reached its highest level for several decades (5.9% annual rate of change in 2022). However, compared with the euro area (8.4%) and the EU (9.2%), France experienced relatively lower inflation, largely because of a smaller increase in energy prices and its relatively low reliance on Russian gas (IMF, 2023a). This stems from electricity making up a comparatively low contribution of the total spending that constitutes the harmonised indices of consumer prices (HIPC), a measure of inflation comparable across countries. France's exposure was also limited due to its reliance on nuclear power, which typically supplies approximately 70% of the country's electricity. In 2021, Russian imports only accounted for 17% of French gas supply, 9% of its oil, and 26% of its coal (compared to 55% for gas, 35% for oil, and 45% for coal for Germany) (Gagnebin et al., 2022). Only 19% of France's gas imports originated from Russia at the beginning of 2022 (against Germany's 48%) (Fontagné et al., 2023), and the share of natural gas in its total consumption of energy in 2021 was 20% (against 27% for Germany) (IEA, 2023d).

It should be noted that France's lower exposure to the energy crisis was compromised by temporary shutdowns of nuclear reactors (due to safety problems and low rainfall disrupting reactor cooling) for maintenance during the crisis, which reduced output by 30% compared with pre-pandemic levels (Analyse et Donnees, 2023). Hydropower output was also adversely affected by drought conditions, falling to levels not seen since 1976. This electricity shortage limited the ability to substitute gas with electricity (Gaulier and Serfaty, 2023) and increased France's short-term dependence on gas-fired power and electricity imports. In fact, for the first time in the history of its nuclear fleet of power plants, France was a net importer of electricity. In response to these outages, forward electricity markets incorporated a 'France risk premium' (traders demanded higher prices to protect themselves against extra supply risks linked to France's nuclear and hydropower outages), contributing an estimated €7 billion to national energy costs in 2022.

In addition to France's lower exposure to gas supply uncertainty, its relatively low inflationary increase during the energy crisis can mostly be traced back to its large-scale policy response (Creel et al., 2023), ranging from fiscal to long-term structural measures.

At the end of 2021, France introduced the '*bouclier tarifaire*', a freeze of regulated tariffs for gas and electricity (IMF, 2023c). The quick implementation of these 'price measures' is generally seen as a key reason for France's relatively lower electricity prices experienced during the crisis. The price measures were accompanied by income measures aimed at preserving consumers' purchasing power, such as one-off inflation compensation payments, an exceptional energy cheque to help pay for rising fuel costs, a petrol price subsidy, as well as permanent increases in social security benefits. Corporate support measures included the extension of the '*prime* Macron' or subsidies for energy-intensive companies and small- and medium-sized enterprises (SMEs), as well as targeted state aid aimed at helping the corporate sector. The price shield and tax reductions stretched to supporting SMEs (i.e. with a €2 million and 10 employee cap per firm), keeping the retail electricity price increase at less than 4% in 2022 and 15% in 2023 (Le Monde with AFP, 2022). The price shield was found to have benefited small local authorities and micro-enterprises. However, larger energy-intensive manufacturers (e.g. steel and chemicals) initially received minimal direct relief. Later, France introduced a €13.5 billion scheme to compensate energy-intensive industries for elevated electricity costs.

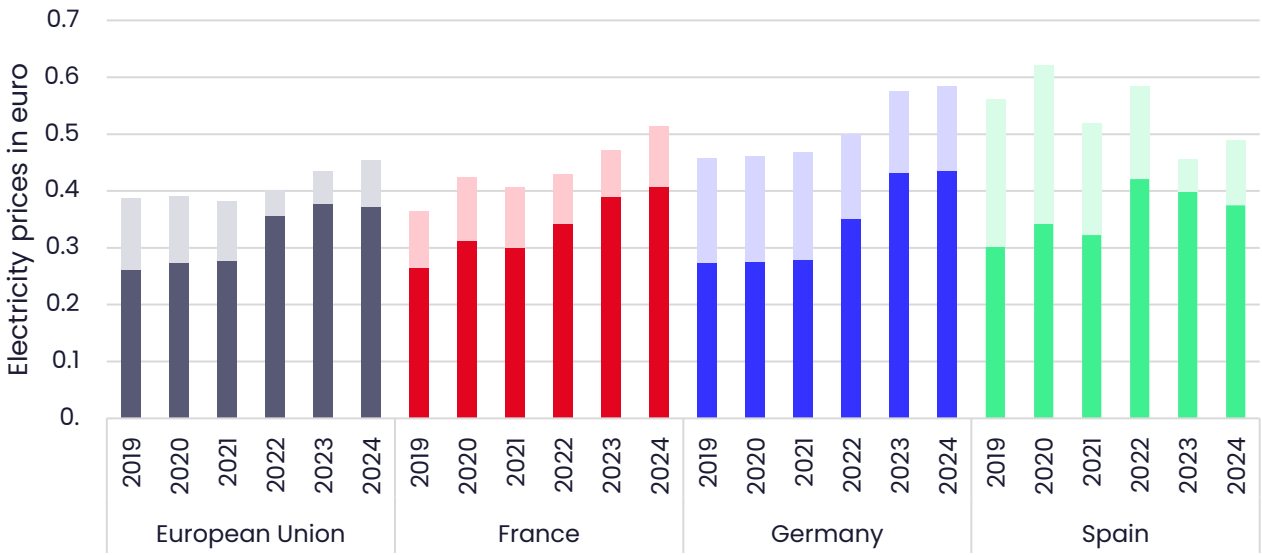
In addition to the freeze on gas and electricity tariffs, France also introduced fuel price subsidies and vouchers, value added tax (VAT) on electricity and fuel tax cuts, direct transfers to vulnerable households, and subsidies and refunds for small businesses and businesses in gas-intensive industries to preserve competitiveness.

In terms of other measures, the Government encouraged energy efficiency and reduced consumption, notably through support for the renovation of buildings ('MaPrimeRenov') and a sustainable mobility package for employees. Along with other EU countries (see Box 3.1), France introduced an infra-marginal rent levy on electricity producers, a temporary tax designed to capture excess profits from power generators during periods of high electricity prices. Finally, the energy crisis also came with long-term structural changes in the French electricity sector, including the public takeover of the energy company EDF, increased investment plans to extend the lives of nuclear reactors, and some increase in renewables deployment.

Germany: high exposure and a slower but more tailored policy response

Germany was one of the European countries worst hit by the energy crisis. In 2022, inflation in Germany reached 7.9%, the highest rate in over 70 years. Germany's inflation trajectory during the period closely mirrored that of the EU and exceeded that of France and Spain. The main inflation drivers were energy (first oil, then gas and electricity) and food (Watt, 2022). Electricity prices in Germany are among the highest in the EU. Having already trended above average before the crisis, from 2023, post-tax electricity prices for German households increased significantly when compared with the EU average (see Figure 2.3).

Figure 2.3. Household electricity prices in the EU and case study countries



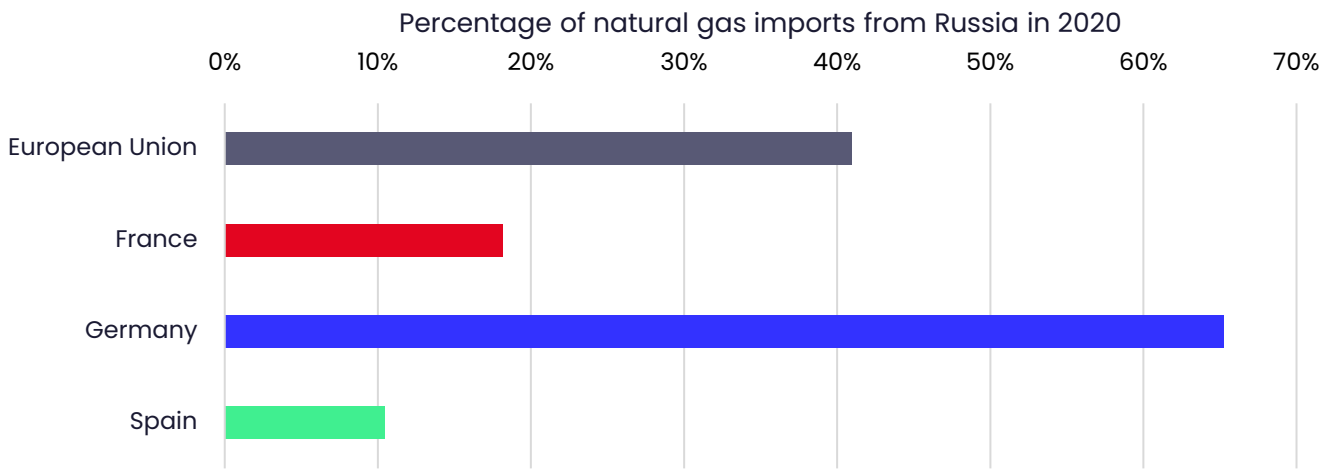
Notes: Energy, supply and network costs are in darker colours; taxes are in paler colours.
Source: Eurostat (2025a)

This situation can largely be explained by Germany's high reliance on Russian gas. With 52 million cubic metres in 2020, Germany was by far the largest net importer of Russian gas (Eurostat, 2025c). Russian natural gas accounted for over 60% of German gas imports prior to the crisis, a much higher share than Spain and France (see Figure 2.4).

Furthermore, Germany's economy is highly gas-intensive. Half of all German households use natural gas for heating. In 2023, industry in Germany used 25.6% of the country's total final energy consumption (compared with 18.7% in France and 22.6% in Spain) (IEA, 2023a, 2023b, 2023c).

The German Government reacted to the energy crisis with a comprehensive policy response, ranging from a series of support packages for energy consumers, including income support and later price measures, to bailouts of utility companies and deployment of new renewables and LNG energy capacities.

Figure 2.4. Natural gas import dependency from Russia in 2020 (% of total natural gas imports)



Source: Authors' calculations based on Eurostat data (Eurostat, 2025c)

As an immediate response to the crisis, Germany introduced several support packages ('*Entlastungspakete*'). The first package in February 2022 aimed at both supporting net incomes via tax measures and transfers (e.g. an increase in commuting and child allowances, a one-off compensation payment for energy prices), complemented by a second package in March 2022 aimed at reducing the cost of energy (e.g. through the early scrapping of the electricity levy to finance renewables and the pricing of monthly local and regional transport tickets at €9). A third package in September 2022 expanded support to a larger proportion of the population, and further countered inflation, notably by delaying the planned increase of carbon prices under the German emissions trading scheme, by increasing progressive taxation thresholds (balancing out the 'cold progression', i.e. when inflation pushes taxpayers into higher tax brackets) and preventing a wage-inflation spiral by exempting employers from paying taxes on one-off premia for employees.

After the launch of the third fiscal package in September 2022, the Chancellor announced a 'defence shield' for the economy ('*Abwehrschirm*'), for which the Government set aside €200 billion primarily to finance a gas and electricity price brake and support for companies. To design the gas and electricity price brake, the Government mandated an expert committee. Economists in Germany were particularly mindful of preserving the price mechanism and with that, incentives to reduce energy consumption in the crisis. The gas and electricity price brake that was then introduced became effective in January 2023 was thus capped at 80% of previous consumption levels for households, and at 70% for industrial customers. Furthermore, the German Government bailed out utility companies as part of a general effort to shield highly impacted industries and protect their liquidity ('*Schutzschild Unternehmen*'). It notably provided a €17 billion rescue package to Uniper's and nationalised Gazprom Germania (SEFE) (Sgaravatti et al., 2023).

Concerning energy diversification measures aimed at reducing its gas dependency, Germany was remarkably fast in securing alternative sources of supply to replace Russian natural gas imports. First, Germany postponed the closure of three nuclear reactors (Neckarwestheim 2, Emsland, and Isar 2) until April 2023, providing a reserve capacity of more than 4,000 megawatt electrical (MWe) (Sgaravatti et al., 2022). It also reactivated coal power plants as part of its gas replacement strategy (including 2,600 megawatt (MW) of hard coal power and 600 MW of lignite units which had previously been scheduled for recommissioning). It accelerated the deployment of renewable energy considerably, notably by enhancing its target of gross electricity consumption by 2030 to 80% and providing new solar photovoltaic (PV) and wind energy sites, extending the participation of municipalities in onshore wind and PV, improving the regulatory environment for rooftop solar PV and providing subsidies for electric vehicles. The Government also invested largely in the transition to renewable energy in the building sector, including through its controversial heating law which mandates the use of renewable energy sources in heating systems. It also rapidly developed several LNG terminals (e.g. Wilhelmshaven, Brunsbüttel, and Lubmin) and its energy suppliers concluded

new agreements, mostly to import American LNG (e.g. LNG Global and EnBW), but also through increased imports from Norway and the Netherlands, Qatar (Qatar Energy and Conoco Philips) and the United Arab Emirates (RWE and Abu Dhabi National Oil company). Finally, the Government implemented two regulations to promote energy savings (e.g. through the suspension of minimum temperatures in rented rooms, a ban on gas/electricity-fuelled heating in swimming pools or a reduction of temperatures in public buildings).

Within the EU, Germany allocated the highest absolute amount of money to crisis measures aimed at shielding households from rising energy prices from September 2021 to January 2023 (Sgaravatti et al., 2023). Bruegel calculated that out of the €540 billion allocated and earmarked across the EU, €158 billion had been earmarked by Germany (Sgaravatti et al., 2023). The IMK (the Macroeconomic Policy Institute) estimated the costs of the three relief packages presented above (thus including not only household measures but also support for companies included in the packages) to have reached €48 billion in 2022, €107 billion in 2023 and €84 billion in 2024, or a total of almost €240 billion (IMK, 2023). In 2023, the IMK estimated the costs of the electricity and gas price brakes to have been €8.5 billion in 2022 and €27 billion in 2023 (Watt, 2023). These estimates are however highly sensitive to changes in marketplaces, and the costs were lower than planned (e.g. by €45 billion in 2023 as reported by Zeit Online), because of earlier-than-planned falling energy costs (Die Zeit, 2023).

Spain: low interconnection that allowed for the exceptional Iberian price mechanism

From 2021 to 2023, Spain saw a slightly more pronounced surge in inflation than the euro area average, peaking at 10.7% in July 2022 (Uxó et al., 2025; Banco de España, 2023a). However, from July 2022 onward, Spain's inflation rate fell earlier and faster, averaging 5% between August 2022 and September 2023, compared with 7.6% in the euro area. By January 2025, inflation in Spain had stabilised at 2.9%, slightly above the euro area average of 2.5% (FEDEA, 2024).

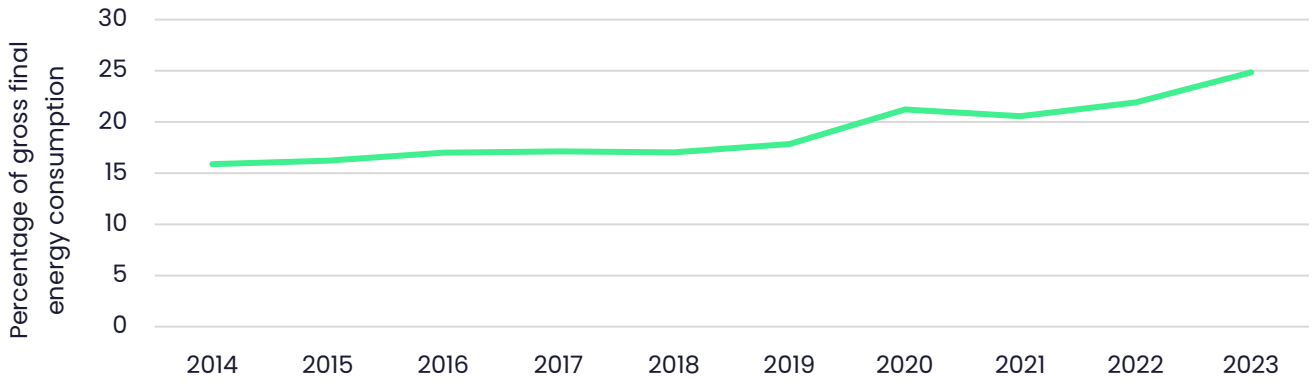
Spain had limited direct reliance on Russian energy, but its dependence on imported fossil fuels from outside the EU, at nearly 70% of energy consumption, made it vulnerable to global market fluctuations (Balteanu and Viani, 2023). Importantly, Spain (together with Portugal) has very limited interconnection to the rest of Europe, thereby representing an 'energy island' particularly vulnerable to price hikes. Energy costs accounted for 40% of Spain's inflation rise, with electricity alone contributing 48% of that value between March 2021 and September 2022. Fuel price increases added another 47%, while gas prices played a smaller role at just 5% (Uxó et al., 2025; Banco de España, 2023b). As inflation spread beyond energy, food prices rose in 2022, prompting the Spanish Government to expand its policy responses to include subsidies for rent, transport and essential foods (Council of Ministers, 2022). By the second half of 2022, the contribution of energy to overall inflation had declined, and from December 2022 to February 2024, energy prices negatively impacted inflation, reflecting falling global gas prices and successful national and EU-wide energy policies.

Prior to the crisis, Spain had been expanding its renewable energy capacity (see Figure 2.5). Its LNG imports were diversified, originating from Algeria, Nigeria and the US. Moreover, the industrial sector constitutes a smaller proportion of Spain's GDP relative to Germany, further moderating its exposure (Balteanu and Viani, 2023).

Between 2021 and 2023, the Spanish Government rolled out a series of policy measures aimed at tackling high energy prices, curbing inflation and easing the impacts on households. The key policy adopted was the Iberian price cap in June 2022. Because of its poor interconnection with the wider EU and the high share of renewable generation, the EU Commission granted Spain (together with Portugal) the authorisation to introduce a temporary cap on the price used for electricity generation until December 2023 (European Commission, 2023a, 2023b). The mechanism established a reference wholesale price for natural gas, starting at €40/MWh until December 2022, then increasing monthly to €65/MWh by December 2023. The cap aimed to reduce electricity bills for consumers on regulated tariffs, while maintaining market functionality by ensuring gas plants remained economically viable through direct compensation rather than market revenues. The Government compensated gas-powered plants for the difference between the actual price and the capped

price, partly funded through consumer electricity bills, revenues from inframarginal generators and from cross-border trade revenues from electricity exporters (Sgaravatti et al., 2022). According to the IMF (2023e), the Iberian price mechanism lowered electricity prices by 16% compared with a scenario without the cap, contributing to a 0.6 percentage point reduction in Spain's overall inflation rate. This had the added benefit of improving the country's competitiveness.

Figure 2.5. Overall share of energy from renewable sources in Spain, 2014–23



Source: Authors' calculations based on data from Eurostat (2025g)

Another measure implemented by the Spanish Government to limit electricity prices was the lowering of VAT, special taxes and regulated charges on electricity bills (Banco de España, 2023a). For natural gas and fuel, the Government reduced VAT and introduced a rebate on fuel costs. To support vulnerable households, the Spanish Government increased discounts on electricity, with 8% of all households being beneficiaries by March 2023, significantly reducing electricity costs for Spain's most financially vulnerable households (Uxó, 2023; Sgaravatti et al., 2022). The Government guaranteed a minimum level of electricity and expanded a financial assistance programme designed to help cover heating costs. In 2023, the minimum aid per beneficiary was set at €40, with an average payment of €375, depending on the climate zone (Oceanic, Continental, Mediterranean Mountain, Semi-Arid, and Subtropical [in the Canary Islands]) in which the recipient lived (Uxó, 2023; Sgaravatti et al., 2022).

To tackle generalised inflation in other sectors and protect household purchasing power during the crisis, the Spanish Government also implemented a range of untargeted measures aimed at stabilising general prices in the food, rent and transport sectors. For example, it reduced VAT on many food products (Sgaravatti et al., 2022) and capped annual rental adjustments at 2%, rather than indexing rents directly to inflation. For transport, the Government introduced extensive subsidies to reduce commuting expenses (Banco de España, 2024). Spain also introduced income measures to counteract the loss of purchasing power among lower-income households by increasing payments to households receiving the Minimum Living Income and non-contributory retirement and pensions payments. The Government distributed a one-time €200 payment in 2022 to employees, self-employed individuals, and unemployed people with low incomes and limited assets (FEDEA, 2024; Sgaravatti et al., 2022; Transición Ecológica y el Reto Demográfico, 2024).

To support businesses, the Government introduced direct subsidies and financial relief targeted at transport, agriculture and energy-intensive industries through direct financial aid, reduced corporation taxes and easing of regulations (Balteanu and Viani, 2023).

On the structural measure side, Spain is home to six LNG regasification terminals, accounting for 35% of the EU's total LNG regasification capacity, the largest of any EU Member State. This infrastructure allowed Spain to import and store substantial volumes of LNG, further insulating the country from Russian gas supply shortages and enhancing the EU's overall energy security (European Commission, 2024). To curb energy demand, Spain implemented a mix of public awareness campaigns, financial incentives and temporary consumption restrictions. To encourage responsible energy use, the Government provided financial incentives, including grants, tax deductions, and subsidised loans for energy-efficient upgrades like better insulation and heating systems. The

National Energy Efficiency Fund also expanded support for large-scale energy reduction projects in industrial and residential sectors (IDAE, 2024). Beyond voluntary measures, Spain introduced temporary consumption restrictions through the 'More Energy Security Plan' in October 2022, aiming to cut domestic gas consumption by 5.1%-13.5% (Reuters, 2022). These combined efforts helped stabilise energy markets, improve energy security, and lay the foundation for long-term sustainability.

Finally, Spain has allocated €12 billion to enhance energy efficiency of public and private buildings and €13.2 billion to low-carbon infrastructure. The Government is also exploring creating a comprehensive strategic reserve system to promote resilient supply chains (European Commission, 2021).

The role of wage policy

While the focus of the report is primarily on unconventional fiscal and structural resilience building policies, it also recognises the role of wage policy in managing inflation (see Box 2.1) and recommends coordination between fiscal, wage and monetary policies in the face of future inflation shocks.

Box 2.1. The role of wage policy in managing inflation

This report focuses primarily on the role of unconventional fiscal and structural resilience building policies in managing inflation. However, wage policies can also be effective tools to help manage inflation and preserve an economy's competitiveness by controlling the unit costs of labour. Figure 2.6 shows how wage increases varied between France, Germany and Spain as a result of their different approaches to wage policy. A coordinated approach between fiscal, monetary and wage policy is necessary to both manage inflation and protect households from increases in their cost of living.

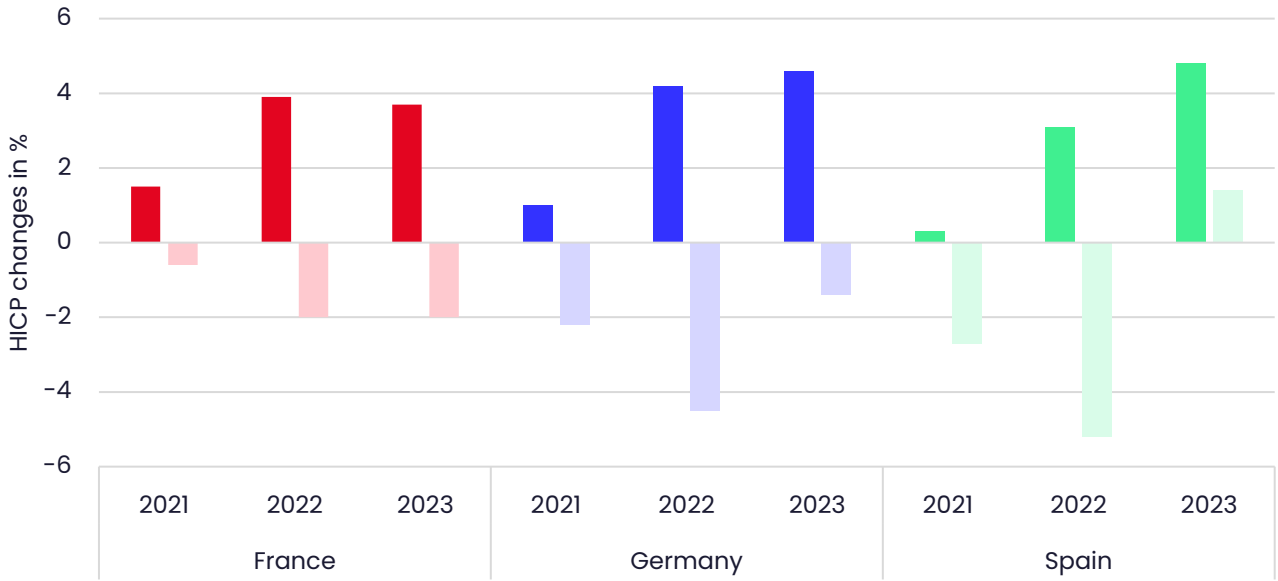
As Höpner et al. (2024) discuss, Germany's high exposure to the energy crisis and low unemployment left it vulnerable to increasing wage demands. While it acted relatively slowly to manage prices, it was more reactive in deploying wage policies. Collaboration between the Government, trade unions and employers to implement a mixture of one-off tax-free payments, 'zero-month' clauses, and increasing durations of collective wage agreements meant that Germany was able to protect its competitiveness with relatively lower increases in unit labour costs. It also introduced a minimum wage increase in October 2022, benefitting 5.8 million employees. This meant that targeted policies to manage wage loss at the lower end of the income distribution were the most effective. Targeted measures reduced low-wage sectors from 19% to 16% of total employment.

France also managed to limit wage increases. As opposed to the German coordinated wage setting approach, France managed its wages through its centralised state. France, in turn, is characterised by a centralised state and large public sector (with 20.1% of the labour force employed in the public sector in 2023, compared with Spain's 16.6% and Germany's 11% in 2020; International Labour Organization, 2024; and Eurostat, 2021). The French Ministry of Economy and Finance unilaterally added wage constraint to public sector employees, while increasing the minimum wage through regulation to match inflation. France also increased the national minimum wage to address wage erosion at the lower end of the income distribution.

On the other hand, as discussed by Tassinari et al. (2024), Spain had weaker institutional capacity (the trade unions in particular lacked the capacity to pose credible threats) for coordinated wage policy responses. Spain therefore adopted less sophisticated wage policy coordination mechanisms compared with Germany's corporatist approach. The Spanish Government, a left-wing coalition, tried to adopt an inclusive and coordinated approach to inflation management. It implemented repeated increases in the minimum wage, in agreement with unions, although employers opposed this move (Bondy et al., 2024). While the Spanish Government reacted quickly to control prices, it was less effective at managing wages. Negotiations between the Government, unions and employers' organisations failed to lead to an agreement on wage-indexation and negotiations collapsed.

Similarly to fiscal policy, fast, targeted action should be a priority for governments adopting wage policy in response to inflation. And like with fiscal policy, attempts should be made to increase the capacity of relevant authorities to be able to deploy targeted measures efficiently.

Figure 2.6. Nominal and real wage increases 2021–23 (%)



Notes: Nominal wage increases are in darker colours and real wage increases in paler colours.
Source: Authors' calculations based on data from Eurostat (2025d)

3. Analysis of the unconventional fiscal responses to the shock

This section assesses France, Germany and Spain's unconventional fiscal policies implemented during the energy crisis against the trade-offs in policy objectives they faced. The speed with which the countries implemented the crisis measures, while important to reduce inflation quickly, came at the cost of targeting them towards the most vulnerable households and firms, and at the expense of a more cost-effective and environmentally friendly tailored policy response with smaller negative effects on public finances and energy-induced emissions. This section also briefly discusses how the measures were funded (see Box 3.1) and how fiscal responses targeted large businesses and the energy industry, leaving smaller firms lacking support (see Box 3.2).

Spain and France's faster responses were associated with more moderate inflation developments. However, rapid action came at the expense of environmental and fiscal sustainability (see Table 3.1). Governments should therefore improve their ability to design and quickly deploy targeted measures by investing in data collection and insituttional data analysis capacity. This will allow them to more effectively track prices (to identify potential inflation shocks early on) and identify vulnerable households and firms to target measures to. Governments should also focus on building capacity to be able to use this data to effectively design policy.

Table 3.1. Assessment of countries' approaches to implementing unconventional fiscal policy in 2021–23 against trade-offs between policy objectives

Type of unconventional fiscal policy	Objectives pursued				
	Speed and complexity of implementation	Effectiveness in reducing inflation and preserving economic growth	Impact on progress in decarbonising the economy	Cost-effectiveness and impact on debt sustainability	Fairness and distributional considerations
Untargeted and untailored price cap (France and Spain)					
Tailored price cap (Germany)					
Targeted income support/subsidies (all)					

Note: The colours assess the policies against their contribution to the objective pursued. Green indicates that the measures contributed to the objective pursued, orange indicates that it could contribute partially or under certain conditions, red indicates that it acted against the objective in question.

Acting swiftly to avoid lasting damages to the economy

Speed was a key distinguishing factor in the three countries' approaches to the energy crisis.

France introduced its tariff shield in October 2021, freezing regulated consumer tariffs for gas and electricity, and successfully reducing inflation and the economic impact of the crisis (Clavères and Gantois, 2024; Cour des Comptes, 2024). Estimates suggest that this measure alone reduced the country's GDP loss by -2.2 to -1.2 percentage points (Lemoine et al., 2024). Moreover, the tariff shield and accompanying fuel price discounts lowered the Consumer Price Index (CPI) by 2.4 percentage points in 2022, even before accounting for second-round effects on inflation (Creel at al., 2023). Bourgeois and Lafrogne-Joussier (2022) found that France's tariff shield reduced the contribution of higher energy prices to inflation from 8.4% to 5.3% between Q2 2021 and Q2 2022. In addition, as Creel et al. (2023) discuss in the context of France, governments acting to keep inflation lower in the short term, meant that automatic indexation mechanisms (e.g. on social benefits, pensions and minimum wages) did not react as strongly, reducing the risk of long-term inflationary pressures.

Spain's similarly proactive approach introduced the Iberian price cap in June 2022, earlier than most of the country's EU counterparts. This swift action led to a more moderate inflation peak and faster reduction relative to other Member States (see Figure 2.1). According to Banco de España (2023a), Spain's policy measures reduced the HICP growth rate by 2.3% in 2022. The cap further helped to maintain Spain's competitiveness, with its share of exports to countries outside of the EU increasing by 14%, surpassing the export growth of other major European economies. As the IMF (2023e) states, the "Spanish economy weathered the energy crisis better than most peers, and growth has remained resilient to weaker global trade and the drag from higher interest rates." According to Eurostat data (2025f), Spain's GDP expanded by 6.2% in 2022, compared with the euro area average of 3.4%, followed by 2.7% in 2023, while the euro area grew only 0.4%.

In comparison, Germany took longer to manage gas and electricity prices directly. In September 2022, almost a year after prices initially started rising, the Government mandated an expert committee to design a gas and electricity price reduction mechanism. The initial measures implemented by the German Government had minimal impacts on inflation (estimated at 0.1-0.2% per measure), whereas the gas and electricity price brakes had a more substantial impact, reducing inflation by 0.6% and 0.4% respectively (Lan et al., 2022). Germany narrowly avoided recession, recording a modest GDP growth of 0.5% in 2023. While the exposure of the three countries is a key determining factor for the impact of the shock on the rate of inflation and growth, implementing measures swiftly can help directly reduce the inflation rate felt by households and firms, control inflation expectations, and provide time for households and firms to reduce their overall demand for energy or substitute their demand for gas with alternative energy sources.

Recommendation 1: Unconventional fiscal policies should play a role in managing inflation during future supply shocks. In France, Germany and Spain, these policies were effective at reducing inflation, maintaining economic output and minimising the welfare impacts of the inflationary shock in 2021-23.

Recommendation 2: When facing a trade-off between acting fast and designing more targeted and tailored measures, speed of implementation of unconventional fiscal policies should be prioritised. The rapid deployment of unconventional fiscal policies in France and Spain was a factor behind inflation falling faster. Fast implementation was also effective at buying time for policymakers to introduce more targeted or structural interventions.

Tailoring and targeting measures to reduce their fiscal cost, preserve incentives for energy savings and ensure fairness

These broad fiscal measures also come with trade-offs for fiscal costs, environmental sustainability and the equitable distribution of the cost and benefits of action.

Environmental considerations
While they allow for quick action, it has been widely argued that as broad-based measures distort market signals, they undermine environmental objectives (Gros and Shamsfakhr, 2022; Dao et al., 2023; Creel et al., 2023; Fontagné et al., 2023; Rüdinger, 2023).

In France, a large proportion of the fiscal support deployed was not targeted (to the most vulnerable) and tailored (to limit the level of consumption). Banque de France (Lemoine et al., 2024) estimates that of France's fiscal support, 80% of relief spending went on untargeted price subsidies, especially the tariff shield. As Gros and Shamsfakhr (2022) discuss in the context of France, a core problem with its broad retail price cap is that such caps dampen the price signal, thus diminishing incentives for households and firms to save gas. Similarly in Spain, Collado et al. (2023) found that the Iberian mechanism led to an increase in electricity generation from gas-fired plants, in contradiction to the EU's climate goals, with REPowerEU aiming to halve the EU's gas consumption by 2030 compared with 2019 (European Commission, 2022b). This was more than Spain could consume and led to an increase in exports to France by over 80% as Spanish wholesale prices fell below French prices. In comparison to France and Spain, Germany's price mechanism was implemented in a more tailored way. It was capped at 80% of historic household and small company gas consumption (70% of historic consumption for large firms) in the year to September 2022 (Federal Ministry for Economic Affairs and Energy, 2022), incentivising consumption reductions for the final 20% above the 80% usage cap. In 2022, Germany's primary energy consumption was down 4.7% compared with 2021, with a significant decrease in natural gas consumption (-14.8%) (Arbeitsgemeinschaft Energiebilanzen e.V. 2023). However, despite the German price cap being more tailored, it did not come without environmental costs. The International Energy Agency (IEA) argues that keeping the policy in place for an extended period implied continued support for fossil fuel consumption (Missbach et al., 2024). A potentially helpful measure to counter the environmentally damaging effects of fossil fuel subsidies are public awareness initiatives that encourage households and businesses to save energy during energy crises, with estimates from the US suggesting that up to 20% of energy demand in residential buildings could be saved via behavioural changes (Motherway et al., 2022).

Cost considerations
Furthermore, the unconventional fiscal policies, especially when they were broad, came with a high cost for public finances.

As measures like the French tariff shield and Iberian price cap continued to incentivise gas consumption, they failed to encourage energy savings (Carluccio and Stalla-Bourdillon, 2024). Measures that incentivised reduced energy consumption, on the other hand, ultimately reduced the fiscal cost of support packages as the governments would have been financially supporting lower gas consumption. However, fiscal sustainability must be understood in terms of debt-to-GDP ratios, that is, the relation between debt dynamics and economic growth. A counterfactual scenario with lower fiscal spending may have resulted in weaker economic growth and higher welfare costs, worsening these ratios. Thus, while costly, the fiscal interventions may have ultimately protected output and supported a more favourable macroeconomic trajectory. While we do not analyse how a counterfactual scenario would have fared in this report, we highlight that debt sustainability can also depend on the approach to funding unconventional fiscal policies. As detailed in Box 3.1, there are different ways of financing these measures, some more cost-effective than others. Box 3.1 suggets that windfall taxes can be a cost-effective solution to financing unconventional fiscal policies during an inflationary supply shock.

Box 3.1. Funding unconventional fiscal policy measures

Financing for the costly measures deployed by France, Germany and Spain came from offsetting cuts, extra borrowing, or special levies. While the recovery of economic activity, combined with high inflation in 2022 boosting tax receipts automatically ('bracket creep' or the 'cold progression' effect, as explained above for Germany), partially allowed funding relief without new measures (Beaujeau et al., 2023), countries still had to adopt alternative measures to fund the remaining spending. Each approach had trade-offs:

- **Deficit neutralisation:** Governments can fund emergency measures by cutting public spending elsewhere. IMF simulations show that cutting other expenditures, and thus

keeping the budget deficit neutral, slightly strengthened disinflation, but slowed growth. For example, an IMF model found that offsetting energy support spending with cuts to public consumption would further reduce inflation (by 0.1 percentage points in 2022 and 0.3 percentage points in 2023) but "reduce the level of output significantly", with a 0.6% drop in prices corresponding to a 1% output loss (Dao et al., 2023). Therefore, while deficit-neutral approaches align with standard views of fiscal constraint in a time of inflation and for policy credibility, they may worsen a supply-drive downturn and generate only modest disinflation.

- **Additional borrowing:** Governments can also fund emergency spending by running larger deficits. Germany, for instance, largely financed its relief programmes by issuing debt through special off-budget funds ('*Sondervermögen*'). In late 2021 and 2022, Germany repurposed unspent COVID relief into an 'Energy and Climate Fund' (IMF, 2023d). This allowed support without immediate spending cuts. The advantages to this approach include flexibility and fast implementation, but the downsides are higher public debt and future fiscal burdens. Lan et al. (2022) note that Germany's debt ratio held steady in 2022 as a result of maintaining low borrowing costs, which offset the new borrowing. In Spain, revenues also unexpectedly surged (thanks partly to strong growth) so that the headline deficit actually fell in 2022 despite the support measures (IMF, 2023e). In general, financing by borrowing or allowing deficits to rise provides immediate relief but may complicate monetary policy and limit future fiscal space. If governments are considering raising additional finance to fund fiscal policy measures, they could consider leveraging Sustainability-Linked or Green Bonds, generally earmarked to finance clean energy, transport or infrastructure, to fund the transition to renewable energy that would build resilience against future energy shocks. Depending on the restrictions within the bonds, they may also be used to fund energy subsidies and efficiency upgrades for households, thus reducing energy demand. The bonds should comply with agreed use-of-proceeds principles and could therefore not be used for general-purpose spending (e.g. direct subsidies or cash transfers). In the context of an alternative price shock, for example, in the food sector, green bonds could be issued to invest in sustainable agriculture measures.
- **Price stabilisation mechanisms:** Some countries have measures that balance energy costs over time through two-way price adjustments. Chile, for example (Fredes et al., 2021), has measures in place that aim to subsidise retail energy prices when they exceed a certain level, which is later paid for by increasing bills when they fall below the level, thus balancing the cost of energy over time. When market prices are above the strike price, generators pay the difference back to consumers. When prices are below the strike price, top-up payments are provided to reach the strike price. This could be extended to other sectors where volatile prices could drive wide-spread inflation, including for food, though challenges remain in setting the appropriate price thresholds and recovery mechanisms.
- **Windfall or sectoral taxes:** An alternative measure would be to levy one-off or temporary taxes on unexpected corporate gains. It has been shown that firms have amplified cost shocks by increasing prices above their cost increases (Weber et al., 2025), thereby worsening inflation. Therefore, redistributive policies like windfall taxes can not only help fund fiscal support measures, but also be effective at directly reducing inflation where excess profits exist, without having detrimental impacts on employment and income inequality. During the 2022 energy shock in the EU, regulation 2022/1854 introduced the opportunity for national authorities to implement a windfall levy on energy firms' excess profits. France used a long-standing levy on renewable producers (the Contribution au Service Public de l'Électricité [CSPE] surcharge) to cover roughly two-thirds of its energy price cap costs (about 1.3% of GDP) (IMF, 2023d). Spain introduced emergency levies on big electricity and oil firms (a 1.2% turnover tax) and on bank profits, raising €3.5 billion, or 0.25% of GDP (IMF, 2023e). Germany also introduced a mechanism to capture excessive profits by energy companies to finance its electricity price brake (Federal Ministry for Economic Affairs and Climate Action, 2023). Aside from managing inflation itself, a key advantage is that windfall taxes leverage the crisis' own automatic gains to fund support. That is, they capture pure economic rates without distorting the economy, thus limiting impacts on investment output like other corporate taxes would. To provide clarity to markets, avoid uncertainty and to act as a preventative measure to discourage firms from increasing prices above their increase in costs, governments should establish clear rules on when

windfall taxes should be deployed and at what rate. To do this effectively, governments must monitor costs and prices in sectors to identify when profits are increasing at a rate faster than costs.

Funding supply shock relief inevitably involves trade-offs. Deficit neutral schemes curb inflation but deepen the downturn, whereas borrowing spurs demand but raises debts. Windfall levies offer a middle path, converting sector profits into general support, and proved an efficient tool during the energy crisis because they harnessed the crisis' own windfalls.

Fairness considerations
In addition to environmental and fiscal considerations, broad measures (particularly price measures) can also come with costs in terms of equity.

Analysis by the ECB (Amores et al., 2023) of six EU countries (including France, Germany and Spain) suggests that the measures they adopted during the energy crisis were broadly effective at managing inflation for all households within those countries, reducing consumer inflation by 4.4% and cutting the welfare costs of inflation by a third, but they achieved only partial success in addressing the unequal distributional impact of the inflationary shock. The measures cut the inflation differential between the richest and poorest income deciles in half, from 0.7 percentage points to 0.35 percentage points, demonstrating their capacity to moderate the regressive effects of rising prices. However, significant differences persisted across the income distribution, with the welfare gap between the lowest and highest income deciles reaching 8.4 percentage points as a result of the inflation surge, of which government measures closed only slightly more than half.

In addition, many of the energy subsidies implemented disproportionately benefited higher-income households that consume more energy. In France, the wealthiest 10% of households received an estimated €420 in subsidies under the fuel rebate and tariff shield, compared with €180 for the poorest 10% (Galgóczi, 2023). Carluccio and Stalla-Bourdillon (2024) at the Banque de France estimate that while the average consumer was shielded by France's measures, the poorest 10% received less benefit than under a targeted cash transfer scheme. Spain followed a similar approach to France, with only an estimated 15-20% of relief being means-tested (Banco de Espana, 2023b). Banco de Espana argued that more targeted policies would have mitigated the impact of inflation on vulnerable groups more effectively. In contrast, the more targeted price cap in Germany and income support measures adopted in all three countries aimed to protect vulnerable households and industries and offered a more equitable distribution of support (Amores et al., 2023). Even though Germany was the most effective at diverting support towards low-income and key sectors, econometric modelling suggests that if more strictly targeted transfers in the context of fuel support had been used, relief for the poorest households could have been greater (Best et al., 2022).

Recommendation 3: Time-limited windfall taxes can represent a fiscally efficient tool to fund unconventional fiscal policies. Policymakers must balance short-term support to reduce inflation with long-term fiscal sustainability by combining some temporary taxes with limited borrowing.

Recommendation 4: Where possible, unconventional fiscal policies should be tailored, targeted and time limited. Policies should be tailored to preserve price signals and targeted to the most vulnerable households and firms to reduce their welfare impacts of inflation. Measures should also be explicitly time limited, especially in cases where they incentivise consumption of energy-intensive goods.

How improved data capacities can help strike the right balance

The ability of governments to target unconventional fiscal policies depends heavily on the availability and quality of administrative and consumption data and their capacity to analyse it.

Challenges acknowledged in the literature include poorer households not necessarily having access to support when offered it if they do not already have access to existing cash transfer programs (e.g.

informal workers and those not in receipt of social aid) (Missbach et al., 2024). For example, in France, the €100 'énergie' cheques were only sent to households on an existing list. Furthermore, governments lacked detailed household-level income records (rather than individual-level via tax returns) and faced barriers in accessing data required due to strict privacy laws blocking data sharing. In Germany for example, confidentiality rules prevented the linking of federal and state databases (Arregui et al., 2022). None of the countries studied had a unified system that combined utility bills with socioeconomic data (e.g. income) as they are collected via different systems, thus making it more challenging to deliver transfers to those outside existing social welfare systems. Limited data processing capacity within governments was also a barrier to implementing targeted solutions. Fetzer et al. (2025) show that Germany's more targeted scheme was still "hindered by insufficiently granular data and bureaucratic complexity", with the Government not holding the data required to link tax ID and up to date bank account numbers (Seibel, 2022). Although out of scope of this report, evidence from the UK suggests that it lacked the data-analysis staff required to deliver targeted support measures. Fetzer et al. (2025) demonstrate that when policymakers have rich data of observable characteristics and greater informational capacity, they are able to design policies that are more targeted and efficient.

Recommendation 5: Invest in data collection and institutional data-analysis capacity to be able to respond in a swifter and more targeted way during future supply shocks. Investments should be made in the integration of data sources, expansion of social registries, recruiting of data analysts and systematic evaluations to identify informational and institutional gaps that might impede crisis response.

This section has primarily focused on the approach to supporting households. Supporting firms is also critical during times of inflationary pressure. The role of fiscal policy in supporting firms is discussed further in Box 3.2.

Box 3.2. The importance of rapid support for protecting firms

During the crisis, governments were criticised for acting more slowly and providing comparatively less generous support for firms and local authorities than for households. On average, fiscal measures directed towards firms amounted to just 0.6% of GDP, a fraction of the total support for households (European Commission, 2022a). For example, in France, despite relatively low energy inflation, food and the costs incurred by businesses in the production of their products or services (i.e. corporate production prices) did surge, suggesting that the government's crisis toolbox lacked appropriate measures to support firms (Fontagné et al., 2023). Despite this lack of a rapid response, support for firms, particularly those in energy-intensive sectors, was critical for four key reasons, to:

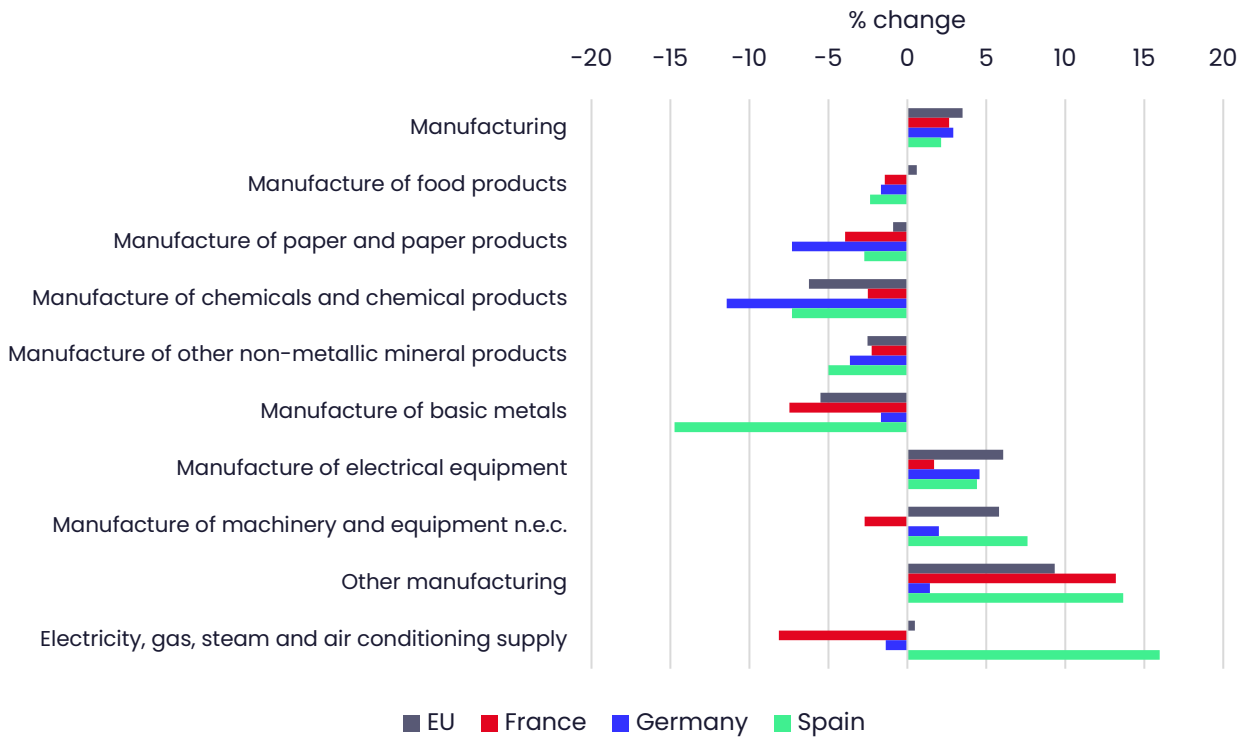
1. **Prevent firm closures:** Support is needed to prevent the closure of otherwise viable firms in response to higher input costs. SMEs are particularly vulnerable as they often lack the bargaining power to secure favourable energy contracts and face borrowing constraints that limit their ability to absorb sharp cost increases (Hemmerlé et al., 2022).
2. **Avoid price pass-through:** Supporting firms mitigates the immediate pass-through of energy prices to consumers, thereby cushioning the impact on private consumption and preserving short-run economic growth.
3. **Maintain competitiveness:** For firms in energy-intensive industries, support is vital to help maintain their international competitiveness and an economy's export performance and balance of trade, particularly when competing against jurisdictions with lower energy prices.
4. **Prevent spillovers:** Failing to support key upstream producers risks widespread inflationary spillovers, as these sectors supply intermediate goods essential to other industries. Price increases propagate inflation across the economy through inter-sectoral input–output linkages (Weber and Van 't Klooster, 2024).

Initially, energy producers and traders and energy-intensive manufacturers were the most exposed to the volatility in the fossil fuels markets. While overall EU industrial output and employment in 2022 exceeded 2021 levels, energy-intensive sectors saw output declines despite

stable employment (see Figure 3.1). For example, the chemicals industry contracted by nearly 8% and basic metals by approximately 5% between Q3 2021 and Q3 2022 (Eurostat, 2023). This decoupling of output and employment may suggest a temporary shock absorption strategy by firms or the effect of state subsidies on protecting jobs.

Governments faced similar challenges in supporting firms as with households, leading to a slow response and a combination of broad-based and targeted support instruments. Early interventions focused on untargeted measures, such as fuel tax reductions, electricity price caps, and wholesale subsidies, intended to provide immediate relief. More targeted assistance, including direct grants for energy-intensive firms and SMEs, was introduced later and often implemented unevenly across Member States. These delays highlight the institutional challenges in designing and delivering rapid, targeted support to firms. As with households, there were trade-offs in terms of environmental sustainability. Extending the price cap to cover firms similarly reduced the incentive for firms to invest in energy efficiency. Where aid is not conditional on decarbonisation or restructuring efforts, such measures may entrench inefficient energy consumption patterns. In contrast, policies that include sustainability criteria, such as Germany's offer, model support for structural transformation in energy-intensive sectors. There are also trade-offs with the economic resilience of other states that countries trade with. For example, there were concerns about fairness within the internal market when Germany supported its industry so heavily that other countries, lacking the financial resources to also support their industries, would experience detrimental impacts to their competitiveness and economic growth (Watt, 2022).

Figure 3.1. Change in output in key industries between Q3 2021 and Q3 2022



Source: Authors' calculations based on data from Eurostat (2025e)

Recommendation 6: Unconventional fiscal policy measures should prioritise support to vulnerable firms. Supporting firms during inflationary supply shocks is necessary to avoid inflationary spillovers, protect competitiveness and preserve critical production capacity. Small- and medium-sized enterprises (SMEs) should be supported alongside large firms, and policies should be designed in a way that maintains incentives to reduce energy consumption.

4. Analysis of the structural resilience building responses

This section assesses the structural resilience building measures that were introduced at the EU and national levels (France, Germany and Spain) during the energy crisis. These policies aimed to reduce the supply disruption in gas markets, to improve the EU's capacity to act in cases of extreme disruption and to reduce the risk of future gas supply shocks. The structural resilience building measures are assessed in terms of their effectiveness in reducing inflation, their impact on decarbonisation and public finances, and their contribution to long-term resilience and crisis-readiness.

The EU improved its capacity to act in the case of gas supply disruptions by introducing default solidarity rules between Member States in times of extreme disruption (see Table 4.1). It also introduced a wholesale price cap on its main gas exchange, whose impact however could not be demonstrated (because it was never activated), and which has led to warnings about distortionary effects on gas prices. Furthermore, the EU took steps to reduce the risks of future supply shocks by revising its storage regulation to introduce mandatory EU-wide storage filling rules and by laying out its REPowerEU energy diversification and renewable energy acceleration strategy. The latter was successful in reducing Russian gas supplies, but at the current pace of renewable energy deployment, EU Member States are likely to miss their 2030 target. Furthermore, the move away from Russian gas came at the cost of a new dependency on American LNG. Alongside other clean technologies, electrification could help reduce the role of gas in the EU economy and should be supported by demand-side and supply-side support. Finally, new critical raw material dependencies arising with the move to net zero technologies will call for a comprehensive response at EU level.

Table 4.1. Assessment of the structural resilience building responses

Type of structural resilience building policy			Objectives pursued			
			Effectiveness in reducing inflation and preserving economic growth	Impact on progress in decarbonising the economy	Cost-effectiveness and impact on debt sustainability	Contribution to long-term resilience/crisis-readiness
Improving the EU's capacity to act in case of disruption	Gas solidarity mechanism					
	Wholesale price cap					
Reducing risk of future gas supply shocks	Common gas storage/ buffer stocks					
	REPowerEU	LNG				
		Renew-ables				

Note: The colours assess the policies against their contribution to the objective pursued. Green indicates that the measures contributed to the objective pursued, orange indicates that it could contribute partially or under certain conditions, red indicates that it acted against the objective in question, and grey indicates that the measure is unrelated to the objective.

Improving the EU's capacity to act in case of gas supply disruptions

The EU attempted to improve its capacity to act to manage gas supply disruptions through the emergency solidarity mechanism (regulation 2022/2576) and the market correction mechanism (regulation 2022/2578), also known as the gas price cap. While the first is likely to have contributed to the EU's crisis readiness, the impact of the second cannot be demonstrated.

Strengthening crisis-readiness through solidarity in gas markets
The EU enhanced its preparedness for extreme disruptions in the gas market by strengthening its solidarity framework, originally introduced by the 2017 gas security of supply regulation (regulation 2017/1938). As solidarity essentially involves redistributing gas supplies among Member States to make up for extreme shortages, it represents a comparatively fiscally efficient measure for countering supply disruptions.

The EU's gas security of supply regulation contains a last resort solidarity mechanism, which foresees that if the supply of protected customers in one Member State is severely threatened in an emergency, neighbouring Member States should step in to help fill the supply gap. The regulation provides that the technical details of solidarity should be fixed by bilateral agreements between Member States (initially by the end of 2018). However, when the crisis began in 2021, only a small number of the 40 identified agreements were in place (European Commission, 2025d), partly because of their technical complexity (ECA, 2024). To make up for this lack of bilateral solidarity, the emergency solidarity mechanism (regulation 2022/2576) therefore filled this void by introducing a temporary compulsory solidarity mechanism between Member States, applicable in the absence of bilateral agreements. It provides that in case of a declared emergency, a Member State could formally request assistance from neighbouring countries obliged to deliver gas, even if that meant curtailing supplies to non-essential domestic consumers. The emergency regulation also extends the solidarity obligation to gas volumes needed to ensure the functioning of the electricity system (to counter the risks of an electricity crisis), as well as to not only directly connected Member States, but also those with LNG facilities.

As the solidarity mechanism has not been activated (this would only have been the case in a severe emergency), its effectiveness in limiting supply disruptions (and through that, inflation) can only be demonstrated hypothetically. A crisis simulation carried out by the European Commission and ENTSOG (the network of national gas regulators) in 2022 demonstrated that the solidarity framework would be effective in a gas emergency of the size of a complete interruption of Russian gas imports. The simulation exercise also identified areas of improvement for the solidarity framework, such as the lack of clarity of what constitutes fair compensation between Member States or of rules in case of two solidarity requests (European Court of Auditors, 2025). Based on the simulation, the Commission concluded that the default solidarity mechanism should be made permanent, as it would "make the EU's security of supply architecture complete on a permanent basis, while discharging EU Member States of the obligation to sign bilateral agreements". It also suggested that it should be adapted to LNG as the latter plays a bigger role in the EU's security of supply. In addition to the difficulties on agreeing and implementing specific provisions of solidarity, Yafimava (2023), notes that the measures aimed at helping the "most affected Member States in the event of a severe gas shortage [would be limited by] infrastructure and capacity constraints, limiting the volume of gas that could flow into the central and east European sub-region". In 2024, the gas market package (directive 2024/1788 and regulation 2024/1789) introduced permanent default solidarity clauses, albeit in a softer version than in the temporary mechanism (excluding the extension to gas used for electricity and only making solidarity for not-directly-connected Member States with LNG facilities voluntary) (Yafimava, 2024).

Recommendation 7: Build on the default solidarity mechanism introduced during the energy crisis, develop cross-border gas infrastructure facilitating solidarity, and explore the possibility of extending similar solidarity obligations.

Finally, the EU made use of regional cooperation provisions set out in the original EU security of supply regulation. These include the introduction of 'risk groups' of Member States, which can cooperate to identify and counter security of supply risks, as well as the preparation of national plans to ensure the supply of protected customers in the case of major supply cuts. In 2022, 11 Member States declared an 'early warning' level, the first stage of the crisis framework, and one escalated to 'alert' level (ECA, 2024). These declarations went hand in hand with enhanced cooperation between national transmission system operators, authorities and the Commission, facilitating cross-border gas flows in the crisis (ECA, 2024).

The market correction mechanism: a regulated wholesale price cap with distortionary risks and indemonstrable impact on inflation

In order to limit extreme price spikes in gas markets, the EU introduced a temporary natural gas price cap on Europe's major exchange, the TTF, with the so-called market correction mechanism (MCM). Introduced in December 2022, the MCM was terminated in January 2025.

The MCM intervened in wholesale markets by putting a regulated ceiling on prices at which gas could be traded on the TTF. It therefore differed from retail price caps, such as the national gas and electricity price brakes discussed in Section 3. With these retail price caps, governments aim to address end-user prices by intervening with prices charged to households and industry in retail markets, and compensating electricity retailers for the difference between the regulated and the market price using public funds (Gros and Shamsfakhr, 2022). The uncompensated MCM therefore came without direct fiscal costs. However, just like retail price caps, it failed to incentivise gas savings.

The MCM would have been activated if the Dutch TTF price exceeded €180/MWh for three consecutive working days and if these prices were €35/MWh higher than the reference price set by the MCM. After the introduction of the MCM, energy prices trended downward, and thus these conditions were never met. The high price was a result of difficult negotiations between Member States, with some countries, like Germany and the Netherlands, against such a strong intervention. Member States in favour of the price cap, in turn, argued that the high TTF prices were driven by speculation (Gros, 2022).

The effectiveness of the MCM in reducing inflation is subject to debate and was, at most, minimal. While the European Commission (2023a) underlines that the price cap limited gas prices, the European Court of Auditors (ECA, 2024) argues that its impact cannot be asserted because it was never activated. Similarly, the Agency for the Cooperation of Energy Regulators (ACER) and the European Securities and Markets Authority (ESMA) (the European energy and financial market regulators) found that no significant impacts (positive or negative) could be directly attributed to the MCM (ACER, 2023a). This should not, however, mean that a legal price cap like the MCM cannot have any potential impact on market dynamics and security of supply. The regulators noted that one potential beneficial effect of the MCM could have been that it led traders to avoid excessively high bids, with a potentially taming effect on prices. Furthermore, the MCM had a signalling value by underlining the EU's commitment to counter price hikes, therefore potentially moderating markets. Confirming the main conclusions of the regulators, an empirical study carried out by Botta (2024) suggests that the MCM played at the very most a minor role in reducing price spikes, volatility and inflation.

Not only has its impact on inflation not been demonstrated, but an uncompensated legal price cap like the MCM could lead to market disruptions. Both ACER (2023a) and ESMA (2023) accordingly warned about the financial risks of the MCM, suggesting that even without being triggered, such a mechanism could lead traders to move their activity to alternative trading places and even worsen security of supply. To prevent circumvention around TTF trades, the MCM was later extended to other EU virtual trading points. In response to renewed (LNG) price volatility in 2025, the European Commission indicated it was studying Draghi's recommendation to extend dynamic price caps like the MCM into the future (Foy et al., 2025). This led market participants to reiterate their concerns about market disruptions in an open letter to the European Commission President Ursula von der Leyen (Guth et al., 2025). Participants were especially worried that price caps could undermine Europe's attractiveness to LNG suppliers, lead to price volatility, and deter long-term investments in

infrastructure, with "far-reaching negative consequences for the stability of European energy markets and the security of supply across the continent" (Abnett, 2025).

Given the distortionary risks of the MCM, and the weak evidence of its disinflationary benefits, we do not advocate for the extension of the mechanism.

Reducing the risk of future supply shocks

The EU and national governments took measures to reduce risks of future supply shocks by strengthening the common buffer stock framework, improving the functioning of gas and derivative markets, and diversifying energy supplies.

The revised gas storage regulation: stabilising gas prices through common buffer stocks
To dampen supply bottlenecks and associated inflation when they arise, a strategy long suggested by Keynes, Kaldor, and others (Ussher, 2016) is to implement buffer stocks. By guaranteeing critical volumes when supply is tight, they act as insurance against shortages and therefore limit price fluctuations and spikes.

While buffer stocks could in theory be implemented at the national level, the high integration of gas markets in the EU requires a form of coordination. At the beginning of the energy crisis, actions implemented unilaterally by individual EU governments unnecessarily worsened the gas price hikes (Letta, 2024; Draghi, 2024). Member States attempted to secure their own gas supplies by implementing uncoordinated storage measures. These were accompanied by temporary export restrictions on gas and attempts to enter individual arrangements with third countries. This led Member States to effectively compete against and outbid each other.

This trend was reversed with the introduction of EU-wide rules to cooperatively establish gas buffer stocks in the updated gas storage regulation. The EU's 2022 revision of the gas storage regulation first introduced binding EU-wide targets for gas storage levels (at 90% of their full capacity by 1 November each year). To ensure that security of supply costs were shared fairly among Member States, independently from their storage capacities, the regulation also introduced a burden-sharing mechanism, encouraging Member States without storage (Estonia, Finland, Greece, Lithuania and Luxembourg) to enter bilateral agreements with the others.

Different analyses suggest that the storage regulation fulfilled its purpose of stabilising gas markets, at most by directly reducing prices, at least by providing a political signalling effect of the EU's commitment to do so. The regulation's storage targets were achieved in November 2023; 90% of EU storages were filled. According to the IEA, the high storage levels and decreased demand reduced European spot gas prices in Europe in 2023 (IEA, 2023e). Similarly, ACER indicated that the gas storage obligation contributed positively to EU supply security and that in 2023, "storage filling levels [were] significantly above last years' average and have contributed to driving prices down" (ACER, 2023b). The ECA (2024), however, downplays the contribution of the regulation, indicating that several Member States already had national storage obligations or strategic reserves before the crisis, and that the storage levels in 2023 did not significantly depart from previous practice. It does however recognise that the EU-wide binding target had some benefits in that it provided certainty, had a strong signalling effect regarding the EU's commitment to ensuring security of supply and reduced the risk of gas storage manipulation. It should be noted that bilateral agreements through the burden-sharing mechanism have not been used by Member States to date. Countries without storage have instead relied on their own (e.g. market-based) measures to fulfil their storage obligations (VIS, 2024).

Despite the overall positive impact of the common storage target during the energy crisis, mandatory storage rules can also have unwanted effects. Overly rigid rules can be exploited by market participants who can take advantage of the obligation for governments to fill storages regardless of market prices, therefore potentially leading to price surges. In the storage filling period in 2025, market anticipations around the 90% compulsory target have thereby led to renewed tensions in the gas market (Pub Affairs, 2025; Hancock and Moore, 2025). In coordination with the European Commission, the German Government aimed to ease tensions by lowering its 2025

storage target from 90% to 80% (or even lower). The tensions also led the Commission to propose the introduction of more flexibility into the storage requirements in March 2025.

Other potential downsides of public gas buffer stocks highlighted by ACER are the high costs of filling storage and their potentially negative impact on the energy transition, as storage rules, by keeping gas as a strategic resource, send signals disincentivising renewable investments (Dulian, 2024, ACER, 2023c). The Council of European Energy Regulators (CEER) further finds that when Member States are legally required to hold gas stocks, the revenues from market sales only partially cover the holding costs, leaving residual costs to be covered by governments (Binder, 2024; VIS, 2024). To reduce the burden placed on public finances, the introduction of buffer stocks for strategic resources could be accompanied by contingency planning leavers to identify key weaknesses in supply chains. Finally, to limit the public costs of buffer stocks for strategic resources, governments could explore incentives to encourage private companies to stockpile commodities through the adjustment of tenders, tax breaks or concessional loans in exchange for them holding stockpiles of a strategic good (European Commission, 2025a).

Recommendation 8: **Continue to implement buffer stocks in the form of EU-wide gas storage rules.** Ensure storage rules are sufficiently flexible to strike the right balance between security of supply and the limitation of market disruptions during filling periods. When feasible, explore the possibility of cooperating with private actors to limit the public costs of buffer stocks.

Looking forward, the logic of public buffer stocks could prove valuable in sectors whose importance will grow as European countries move away from gas to renewables, like critical raw materials or hydrogen (*cf.* the section on REPowerEU below). In 2024, France and Germany established public–private critical minerals funds, including €500 million from the Government to raise an additional €1.5 billion private investments in France, and €1 billion managed by the state-owned development bank KfW in Germany. In Spain, the European Commission is providing the Government with technical support to create a so-called Strategic Reserve of essential and strategic resources based on Industrial Capabilities (RECAPI) to reduce the country's essential resource vulnerability and promote more resilient supply chains. Finally, given the potential of low-carbon hydrogen in contributing to the decarbonisation of transport, industry and electricity, a European strategic hydrogen reserve could be built up (Wouters and van Wijk, 2024).

REPowerEU: supporting decarbonisation and long-term resilience through the diversification of energy supply and the expansion of renewables

The REPowerEU strategy laid out by the European Commission aims to diversify energy supplies and deploy renewables, therefore contributing to both the EU's energy security of supply and decarbonisation objectives.

The main REPowerEU objective, to reduce the EU's dependence on Russian natural gas, has been largely met. Russian imports for pipeline gas and LNG combined have dropped from 150 billion cubic metres (bcm) in 2021 (about 37.5% of total imports) to 52 bcm (less than 19%) in 2024. This was mainly achieved by resorting to alternative suppliers (e.g. the US, Algeria, Azerbaijan, Egypt) (Gross and Stelzenmüller, 2024) through bilateral agreements or EU memoranda of understanding. Russian imports of LNG in the EU were largely replaced by American LNG, which more than doubled from 19 bcm in 2021 to 45 bcm in 2024 (representing 16.5% of overall imports) (European Commission, 2024). AggregateEU was also successful at building matches across suppliers and consumers, although the ECA notes its benefits are challenging to verify (ECA, 2024). Following the energy crisis, the EU has continued to phase out its reliance on Russian gas, committing in 2025 to fully end Russian imports by 2027 (European Commission, 2025b, 2025c).

In addition to phasing out Russian gas, efforts to build energy efficiency and reduce demand during the crisis also proved effective. In line with the 15% voluntary gas saving regulation, EU natural gas consumption declined by almost 20% between 2021 and 2023 (EU Council, 2025). This was achieved through a combination of fuel switching, energy efficiency measures, and demand management (particularly in public buildings), and through a large drop in industrial output (more than 3% between 2021 and 2024; Eurostat, 2025e) and the curtailing of operations in gas-intensive industries.

As regards renewables, the picture is mixed. The EU's share of renewables in its total final energy consumption increased from 21.9% in 2021 to 24.6% in 2023 (+2.7% in two years) (Eurostat, 2025b). Even if this share continued to progress by 1.5% per year, it would only reach about 35% in 2030, far behind the EU's binding renewable energy objective (42.5% of renewables in its total final energy consumption in 2030, as set out in the Renewable Energy Directive 2023/2413). Although the EU is on track to meet its targets for solar energy (Losz and Corbeau, 2024), this below-trend progress is due to the slow progress of particular energy sources like offshore and onshore wind, and technologies that could fuel the demand of renewable energy (such as electric vehicles, heat pumps and hydrogen).

At an individual country level, France, Germany and Spain have made steady, albeit slow progress towards their renewable objectives. Between 2021 and 2023, the share of renewable energy in final energy consumption increased from 19.3% to 22.3% (+3%) in France, from 19.3% to 21.6 % (+2.3%) in Germany, and from 20.6% to 24.9% (+4.3%) in Spain (Eurostat, 2025b). Assuming a continuation of current trends, only Spain has made sufficient progress in recent years to be close to the EU objective of 42.5% by 2030.

Recommendation 9: **Pursue the efforts of the EU's energy strategy REPowerEU** laid out in response to the crisis, which sets the right approach of diversifying energy supplies away from Russian gas, and accelerating the deployment of renewable energy to meet the EU's 2030 target of 42.5% of its final energy consumption.

While the rapid reduction of Russian gas was a statement of the EU's ability to react quickly, it continued the reliance on gas and shifted its dependency from Russian natural gas to American LNG. The move towards LNG also led to increased exposure to global price volatility and structurally higher prices (ECA, 2024). In addition, LNG is costly: despite being the biggest global LNG buyer, as LNG has to be shipped to the EU, Europeans pay a premium for LNG compared with the US, primarily as a result of transport costs (Heussaff and Zachmann, 2024). While gas prices have come down from their crisis levels, they are currently three to five times higher than in the US, compared with two to three times higher historically. With the re-election of Donald Trump, LNG imports from the US might also weaken the EU's negotiating position in discussions around tariffs. To leverage the EU's bargaining power, Draghi (2024) has recommended ensuring joint procurement of gas through the EU Energy Platform established in the solidarity regulation (2022/2576), a proposal only partly included in the gas package for now.

In the long term, the move away from gas towards renewables and complementary clean technologies represents the most sustainable strategy, from both an environmental and energy resilience perspective. Even if gas is likely to continue playing a major role in the EU's economy over the coming decades (including for the deployment of renewables, as it can balance intermittency on the electricity grid), there is room to reduce the EU's reliance on gas. This can primarily be achieved through the progress of electrification (especially in transport and household heating). When electrification is not possible (for instance, in high temperature and industrial processes), natural gas could be replaced by low-carbon gases (i.e. low carbon hydrogen or biomass) or its emissions mitigated through carbon capture, utilisation and storage (CCUS) technologies. Reducing the EU's dependence on gas in electricity consumption to complement variable renewable production will also be challenging. Progress could be achieved gradually in the next decades through the scale-up of other clean technologies such as batteries and low-carbon gases as well as demand-side mechanisms like smart-meters.

Recommendation 10: **To advance both decarbonisation and energy independence, reduce the role of gas in the EU's economy through further progress in electrification and scaling-up of clean technologies like batteries, smart grids or low-carbon gases.** Since gas will continue to play a role in the EU's energy mix (including in supporting the deployment of renewables by balancing intermittency), to avoid new dependencies after the move away from Russian gas, the EU should leverage its collective bargaining power through joint procurement when switching to alternative supplies.

Despite some progress in renewables, each of the three countries studied struggles with the electrification of its economy. In 2023, the share of electricity in final energy consumption was 25% in France, 20% in Germany, and 24% in Spain (IEA, 2023f, 2023g, 2023h). In the IEA's net zero scenario, a fully decarbonised economy would have a share of electricity in final energy consumption of about 50% (IEA, 2021). The more recent estimates of the Energy Transition Committee even reach 65–70%. Importantly, if policies in favour of the expansion of renewable electricity supply (such as Contracts for Difference for renewables) are not accompanied by the expansion of the electrification of energy demand, there is a risk that a mismatch between renewable electricity supply and demand actually drives up prices, therefore reducing incentives to electrify. Heussaff and Zachmann (2024) estimate that if demand does not keep pace with supply, "tens of billions of euros annually could be channeled through state contracts, generating costs that must ultimately be recovered from consumers".

Recommendation 11: Advance electrification and complement supply-side with demand-side policies, either aimed at lowering electricity costs, such as grid fee subsidies, or at supporting the uptake of electrification technologies, such as subsidies or regulations favouring electric vehicles or heat pumps.

Looking forward, the transition to renewables and other net zero technologies will come with its own challenges in terms of security of supply, notably in critical raw materials (European Commission, 2023c). The Critical Raw Materials Act (CRMA) therefore sets EU objectives for the domestic extraction (at least 10% of EU annual consumption), processing (40%) and recycling (25%) of critical raw materials. In terms of policies, the Act improves the regulatory environment by speeding up permitting procedures and simplifying funding applications for identified strategic projects. In June 2025, the EU had already approved 13 new projects outside its borders. However, the CRMA has been criticised for lacking common funding, engagement and binding mechanisms (EP Research Service, 2024; Findeisen and Wernert, 2023). Therefore, realistic diversification efforts in critical raw materials should be complemented with sufficient funding opportunities at the EU level, the development of clean tech agreements with third countries, and potentially, the leveraging of EU joint buying power through aggregate purchases.

Recommendation 12: Develop a strategy to address potential security of supply challenges of critical raw materials that will come with the move to renewables, clean technologies and related energy infrastructure. This strategy should combine improvement of the regulatory environment, better access to funding at the EU level, diversification through clean partnerships and the leveraging of EU buying power.

5. Conclusions and recommendations

The 2022-23 energy crisis in Europe was an experiment in how unconventional fiscal and structural resilience building measures can be used to manage and avoid similar inflationary supply shocks. Our analysis of the EU, France, Germany and Spain found that, when these measures are deployed swiftly and well designed, they can play a critical role in protecting households, firms and the wider economy from the impacts of inflation during a crisis, and can be effective at building resilience against future shocks. Policymakers should therefore continue to take a proactive role in preventing and mitigating negative supply shocks.

When it comes to implementing unconventional fiscal policies, speed of action is crucial. Countries that acted early in the energy crisis, including France and Spain, were more successful than other states at bringing inflation down fast and dampening its peak, thus limiting economic disruption. However, fiscal measures implemented to counteract inflationary shocks should be carefully designed to be tailored to a certain consumption level and targeted towards the most vulnerable households and firms, and be time limited. They should also be funded through fiscally sustainable mechanisms like windfall taxes. To be able to deploy tailored and targeted measures at speed in future crises, governments could strengthen their data and institutional capacity by investing in enhanced data collection systems, expanded social registries, and strengthened analytical capabilities. Furthermore, support for vulnerable firms, particularly SMEs, is essential for preventing inflationary spillovers while preserving productive capacity.

Beyond immediate fiscal responses, structural resilience building measures offer pathways to long-term resilience to crises and reduced exposure to inflationary supply shocks. Extending solidarity mechanisms like the one introduced for gas during the energy crisis should strengthen the EU's crisis preparedness. Continuing to implement flexible EU-wide buffer stock systems will reduce the risk of future gas supply shocks. Further pursuing the REPowerEU energy diversification strategy and the acceleration of renewables in line with the EU's 2030 objective will strengthen the EU's energy security and drive forward its decarbonisation. When switching to alternative gas suppliers, the EU should leverage its collective bargaining power to avoid new dependencies. The role of gas in the EU economy can be reduced by electrification and other clean technologies, like batteries, smart grids or low-carbon gases. Finally, as the move towards renewables and clean technologies will come with new security of supply challenges in critical raw materials, a comprehensive EU-wide strategy should be developed.

Fiscal policy recommendations

1. **Unconventional fiscal policies should play a role in managing inflation during future supply shocks.** In France, Germany and Spain, these policies were effective at reducing inflation, maintaining economic output and minimising the welfare impacts of the inflationary shock in 2021–23.
2. **When facing a trade-off between acting fast and designing more targeted and tailored measures, speed of implementation of unconventional fiscal policies should be prioritised.** The rapid deployment of unconventional fiscal policies in France and Spain was a factor behind inflation falling faster. Fast implementation was also effective at buying time for policymakers to introduce more targeted or structural interventions.
3. **Time-limited windfall taxes can represent a fiscally efficient tool to fund unconventional fiscal policies.** Policymakers must balance short-term support to reduce inflation with long-term fiscal sustainability by combining some temporary taxes with limited borrowing.
4. **Where possible, unconventional fiscal policies should be tailored, targeted and time limited.** Policies should be tailored to preserve price signals and targeted to the most

vulnerable households and firms to reduce their welfare impacts of inflation. Measures should also be explicitly time limited, especially in cases where they incentivise consumption of energy-intensive goods.

5. **Invest in data collection and institutional data-analysis capacity to be able to respond in a swifter and more targeted way during future supply shocks.** Investments should be made in the integration of data sources, expansion of social registries, recruiting of data analysts and systematic evaluations to identify informational and institutional gaps that might impede crisis response.
6. **Unconventional fiscal policy measures should prioritise support to vulnerable firms.** Supporting firms during inflationary supply shocks is necessary to avoid inflationary spillovers, protect competitiveness and preserve critical production capacity. Small- and medium-sized enterprises (SMEs) should be supported alongside large firms, and policies should be designed in a way that maintains incentives to reduce energy consumption.

Structural policy recommendations

7. **Build on the default solidarity mechanism introduced during the energy crisis** to develop cross-border gas infrastructure facilitating solidarity, and explore the possibility of extending similar solidarity obligations.
8. **Continue to implement buffer stocks in the form of EU-wide gas storage rules.** Ensure storage rules are sufficiently flexible to strike the right balance between security of supply and the limitation of market disruptions during filling periods. When feasible, explore the possibility of cooperating with private actors to limit the public costs of buffer stocks for strategic resources.
9. **Pursue the efforts of the EU's energy strategy REPowerEU** laid out in response to the crisis, which sets the right approach of diversifying energy supplies away from Russian gas, and accelerating the deployment of renewable energy to meet the EU's 2030 target of 42.5% of its final energy consumption.
10. **To advance both decarbonisation and energy independence, reduce the role of gas in the EU's economy through further progress in electrification and scaling-up of clean technologies like batteries, smart grids or low-carbon gases.** Since gas will continue to play a role in the EU's energy mix (including in supporting the deployment of renewables by balancing intermittency), to avoid new dependencies after the move away from Russian gas, the EU should leverage its collective bargaining power through joint procurement when switching to alternative supplies.
11. **Advance electrification and complement supply-side with demand-side policies,** either aimed at lowering electricity costs, such as grid fee subsidies, or at supporting the uptake of electrification technologies, such as subsidies or regulations favouring electric vehicles or heat pumps.
12. **Develop a strategy to address potential security of supply challenges of critical raw materials** that will come with the move to renewables, clean technologies and related energy infrastructure. This strategy should combine improvement of the regulatory environment, better access to funding at the EU level, diversification through clean partnerships and the leveraging of EU buying power.

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