STABILISING THE SHOCK MARKET

ENERGY PRICE TRANSMISSION, INFLATION, AND THE CASE FOR CENTRAL BANK SUPPORT OF THE TRANSITION

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EXECUTIVE SUMMARY

The price of fossil fuels has been a trigger for most of the major inflationary episodes in the European Union (EU) over the past half-century, from the Organization of the Petroleum Exporting Countries (OPEC) embargo of 1973 to Russia's invasion of Ukraine and now the war on Iran. New modelling by the New Economics Foundation (NEF) finds that fossil fuel price shocks play the most systemically significant role in headline inflation in all but two of the countries studied. We estimate that a 50% shock to these prices, comparable to the 47% rise in oil prices over the past year, would add between 0.8 and 1.8 percentage points to headline inflation across EU countries. Compared to the European Central Bank's (ECB) 2% inflation target, these results are significant. Yet the monetary policy framework Europe built to fight inflation is not only ill-suited to containing these shocks, but it is also actively suppressing the transition to renewable energy that would end them. How Europe manages inflation is, in large part, a question of how it manages its energy system.

Strikes by the USA and Israel on Iran in February 2026 sent Brent crude from \$70 to over \$100 per barrel in two weeks, colliding with European gas storage at just 30% of capacity and adding an estimated €14bn to the EU's fossil fuel import bill within 30 days. The ECB, which had only just ended its rate-cutting cycle as inflation returned to target, first postponed further reductions and then, in June 2026, raised rates for the first time since 2023, lifting the deposit facility rate to 2.25% even as the eurozone economy contracted. This mirrors its response to the gas crisis of 2022, when it raised the deposit facility rate from -0.5% to 4% in little over a year. In both cases, the ECB reached for interest rates, a tool designed to cool excess demand, in response to inflation originating in the supply of imported energy.

Our results suggest these sorts of price shocks will hit sectors differently. Unsurprisingly, electricity and fuel bills react most strongly to the shock, but effects also trickle through to food prices and transport and water supply services, with the effects on food having the largest impact on headline inflation of the three. Different countries also see different effects, and our results show Eastern European countries being particularly exposed due to a higher reliance on fossil fuels and a consumption basket more heavily weighted to goods and services that are more likely to be buffeted by shocks.

An initial shock does not necessarily have to translate into lasting inflation. Costs pass through gradually. How the burden is finally shared depends on the power of firms to raise prices, the power of workers to raise their incomes in response, and the power of governments and central banks to intervene. The empirical evidence reviewed in this report shows that, on average, workers have lost out. Real compensation in the EU fell by 4.3% in 2022 while profits rose in real terms in the same period. This is because workers' bargaining power has reduced significantly in recent decades. Indeed, the ECB's own economists found unit profits accounted for roughly two-thirds of domestic price pressures in 2022, compared with a historical norm of closer to one-third.

We argue that speeding up the transition is the only way to make Europe more resilient to volatile fossil fuel imports. The current electricity market design clearly underlines this argument. In the EU, gas set the marginal price of electricity 55% of the time in 2022 despite generating only 19% of the EU's power. The International Monetary Fund (IMF) finds that each percentage point increase in the renewables share cuts wholesale electricity prices by 0.6% on average. Spain, having doubled its wind and solar capacity since 2019, saw fossil fuels set its power prices just 19% of the time in the first half of 2025, down from 75%, leaving wholesale prices 32% below the EU average. Unlike imported oil and gas, renewables are domestic, geopolitically secure, and shielded from financial speculation. The problem with hiking interest rates during a fossil fuel price increase is that rate hikes fall asymmetrically on technologies that could reduce future exposure.

This report therefore calls for a new macroeconomic settlement, built on much closer coordination between monetary and fiscal policy. We make the following proposals to reform macroeconomic governance:

- **Recognise that energy resilience is key to price stability.** Because fossil fuel dependence is the dominant source of the shocks that destabilise European prices, supporting the transition directly serves the ECB's primary mandate over the medium term, with its secondary mandate under Article 127(1) TFEU providing a further, independent basis for action. The ECB should act deliberately on energy security, through green dual refinancing rates, a decarbonised collateral framework, and credit guidance.

- **Coordinate monetary and fiscal policy around the type of shock.** Interest rates may be suited to demand-driven inflation, but a supply shock is better met by fiscal and regulatory tools addressing the cost at source, with monetary policy keeping financing conditions compatible with the investment needed for medium-term price stability. Clarifying the ECB's secondary mandate and convening a standing Economic Coordination Council to flag where monetary and fiscal stances pull against each other would achieve this through coordination, not subordination, without compromising central bank independence.

- **Use dual interest rates to fund the green transition**. By setting a separate, lower rate on targeted long-term refinancing tied to green lending, the ECB can keep financing conditions favourable for the transition even while it holds or raises the headline rate to contain demand, something it has already shown it can do through its targeted longer-term refinancing operations.

- **Hold strategic buffers of systemically significant commodities.** Physical reserves of gas and other critical energy commodities, released when prices spike, can blunt a shock before it propagates through the economy, providing a form of price-stability insurance that is cheaper than the damage it prevents.

- **Strengthen the anti- pass-through toolkit now.** With more supply-side inflation likely in the coming years, stronger competition enforcement, ongoing price surveillance and a permanent excess-profits tax on oil and gas should be put in place before the next crisis arrives rather than improvised in an emergency.

1. INTRODUCTION

Fossil fuel prices have been the dominant driver of European Union (EU) inflation in most major episodes of the past half-century, from the Organization of the Petroleum Exporting Countries (OPEC) embargo of 1973 and the Iranian Revolution of 1979, to the post-pandemic supply crunch and Russia's invasion of Ukraine, to the renewed disruption now emanating from the USA's and Israel's attacks on Iran.[1] Understanding how they transmit into consumer prices, and what structural conditions determine the severity and persistence of that transmission, is therefore central to understanding what price stability in Europe requires.

In this report, we focus on fossil fuels and energy prices and discuss the challenge of stabilising and insulating Europe from their volatility. European energy markets are transmission belts for geopolitical violence, logistical fragility, and financial speculation, each capable of triggering inflation that reverberates across the entire economy. How Europe manages inflation is, in large part, a question of how it manages its energy system.

The oil shocks of the 1970s forced a fundamental rethink of macroeconomic institutions. The first OPEC embargo in October 1973 triggered a quadrupling of global oil prices, pushing headline inflation into double digits and precipitating a decade of fitful recovery. The second shock, following the Iranian Revolution in 1979, compounded the structural lesson that in an economy organised around fossil fuel inputs, the inflation problem cannot be disentangled from the energy problem.

Rather than addressing the energy dependence that made economies vulnerable to imported inflation, policymakers concluded that governments themselves were part of the problem. The prevailing economic consensus of the 1950s and 1960s held that there was a stable trade-off between unemployment and inflation, ie that governments could reliably get lower unemployment by tolerating higher inflation.[2]

The oil shocks undermined this belief. Stagflation – simultaneous high inflation and high unemployment – showed the trade-off did not hold when supply, rather than demand, was the source of the shock. Some economists[3,4] had already questioned the theoretical foundations of this trade-off, arguing that workers would simply adjust their wage expectations upward to compensate for any inflation a government tried to engineer, leaving unemployment unchanged.

Other economists[5,6] argued that governments face a built-in temptation to promise low inflation while quietly stimulating the economy before elections, and that if people anticipate this, inflation rises anyway without any of the promised employment benefits. The proposed solution[7] was to hand monetary policy to a central bank whose first-order responsibility is price stability, and whose independence from the government makes its anti-inflation commitments credible. This intellectual framework drove a wave of central bank independence reforms across advanced economies through the 1980s and 1990s, including in the design of the European Central Bank (ECB), whose primary mandate is price stability, while being explicitly insulated from member state governments.

These orthodox monetary policy tools and governance framework have proved ill-suited to the inflation of recent years. Although demand returning post-lockdown played a factor in recent inflation, supply issues have told a more direct story, especially since 2022. The Covid-19 pandemic first ruptured global supply chains, generating broad-based price pressures across goods and services. The most significant increase in inflation, however, was rooted in Europe's dependence on fossil fuel imports. Following Russia's invasion of Ukraine in February 2022, European wholesale natural gas prices reached an unprecedented €319 per megawatt-hour in August 2022 at the Dutch Title Transfer Facility (TTF), Europe's primary wholesale natural gas price benchmark.[8]

The eurozone's annual inflation rate hit a record of 10.6% in October 2022,[9] far above the ECB's 2% target and in stark contrast to the 2.6% recorded just one year earlier.[10] The high inflation in the eurozone resulted primarily from pressures in the energy and food sectors. The ECB's response followed the standard institutional playbook, deploying a demand-side instrument against what was fundamentally a supply-side shock. It launched an unprecedented sequence of rate hikes beginning in July 2022, raising the deposit facility rate from -0.5% to 4% by September 2023.

The pattern has since repeated. Following US and Israeli strikes against Iran on 28 February 2026, Brent crude oil rose from $70 per barrel to over $100 in just two weeks.[11] The conflict coincided with historically low European gas storage levels, estimated at just 30% of capacity following a harsh winter. The ECB, which had only recently ended its rate-cutting cycle as inflation returned to target, postponed further reductions, raising its 2026 inflation forecast and cutting gross domestic product (GDP) growth projections.

Just as the 1970s forced economic paradigms to shift, we must look again at where the current economic orthodoxy has taken us, how it has left us unprepared for and vulnerable to recent inflationary shocks, and how our macroeconomic institutions must change to stabilise prices.

2. THE ORIGINS OF INFLATIONARY SHOCKS

It is important to understand the underlying causes of inflation as they can tell us how governments should craft policies to respond. In economics, the causes of inflation are usually divided into two distinct cases: demand-pull and cost-push. In a world of demand-pull inflation, firms raise prices as they experience excess demand. Typically, this sort of inflation is best dealt with via macroeconomic levers that can depress demand. These include interest rate rises and fiscal consolidation, ie tax rises and spending cuts. In general, governments with progressive tax and benefit systems will not need to actively raise taxes and cut spending; if stronger demand is caused by higher incomes and increased employment, this will automatically reduce government expenditure on unemployment benefits and increase take from taxes. Therefore, interest rate rises by the central bank become the main discretionary tool to respond to inflation, depressing aggregate demand. As we have detailed previously at NEF, coordination between the central bank and fiscal authority can also allow more targeted levers to tackle inflation by tightening financial conditions through lending limits and requiring banks to hold more collateral against loans to particular industries, alongside increasing the nominal amount of bonds in certain markets (via quantitative tightening).[12]

In recent times, western economies have not typically been viewed as suffering from excess demand. Analysis instead points to demand being deficient across the board. In a 2026 Boston Consulting Group survey of 20,000 Europeans across 11 countries, 53% of respondents claimed they were "regularly not able to do things […] because of financial constraints" and 60% were trying to reduce their consumption.[13] These figures have increased by a few percentage points since 2024 and indicate weak demand across the whole period. In fact, some have pointed to deficient demand as an explanation for Europe's low productivity growth since the financial crisis, with austerity policies helping to entrench the low demand.[14] For example, real income and employment in Greece, one of the countries with the strictest austerity packages, are yet to return to their 2008 levels.[15] Given this context, current price increases being driven by demand-pull inflation is an unlikely explanation.

Cost-push inflation, therefore, may better explain Europe's current inflation woes. Inflation is described as cost-push when inputs into the production process increase in cost, which sellers pass on to consumer prices. This sort of inflation is closely associated with the inflation experienced in the 1970s and now, where geopolitical events have caused sharp, rapid increases in the cost of fossil fuels. Given fossil fuels are a key input in many production processes, these sorts of price shocks reverberate across the entire economy. As we have detailed previously at NEF, the best response to this sort of inflation is to protect supply.[16] Ideally, this would be via a suite of precautionary policies that would protect against shocks before they happen. For example, noting that exposure to fossil fuel shocks has caused inflationary bouts in the past, governments may try to transition the economy to domestic renewable energy sources, reducing the need for a country to pay for energy on global markets. However, once a shock has happened, this approach is too late; instead, it requires policies that can stop price rises from spilling over into other industries. In these cases, governments must also act carefully, as it won't always be possible for additional spending to resolve supply shortages and demand may continue to outstrip supply and put pressure on prices to rise.

Measures that target support at specific cost shocks can be particularly helpful. First, for subduing the spillover effects that an increase in prices in one industry can have on others. Second, for using resources frugally, reducing the likelihood that an intervention will translate into excess demand that puts pressure on prices. This can involve direct support to industries experiencing supply shocks and measures that put pressure on firms to not pass on costs disproportionately. This includes greater price surveillance and use of windfall taxes and anti-trust laws to prevent price gouging. Central banks could also use their ability to guide credit to achieve targeted easing of financial conditions in particular sectors; for example, offering lower interest rates for lending to green infrastructure projects. However, central bank independence has made such interventions rarer, as they see targeted support as overstepping their mandate. Again, this is an area where coordination between the central bank and the fiscal authority could help achieve better policy outcomes. Giving the central bank clear advice on how it can target its tools during cost-push-driven inflation would give it the political permission to act. Further, it would also require it to justify not acting if it disagreed. Ultimately, this would make the central bank more accountable for aligning itself with the government's goals and allow it to achieve a more differentiated approach to combatting inflation.[17]

At any moment in time, inflation is caused by a combination of these factors, as each type of inflation can have knock-on effects on the other. Demand-pull inflation can raise the prices for things that are inputs in other industries, stoking further cost-push inflation. Cost-push inflation in one industry can reduce how much another industry can afford to supply, encouraging firms to raise prices so demand clears, further stoking demand-pull inflation. Thus, the supply-side and demand-side will always be relevant; therefore, this distinction is more about where inflation originates, especially when it runs above target, than something that can be fully separated and measured. How exactly inflation persists in these cases reflects the power of firms to raise prices, the power of workers to raise their income in response, and the power of governments and central banks to intervene to curtail price increases – these mechanisms are discussed in more depth in Section 2.3.

2.1 HOW INFLATION PASSES THROUGH SUPPLY CHAINS

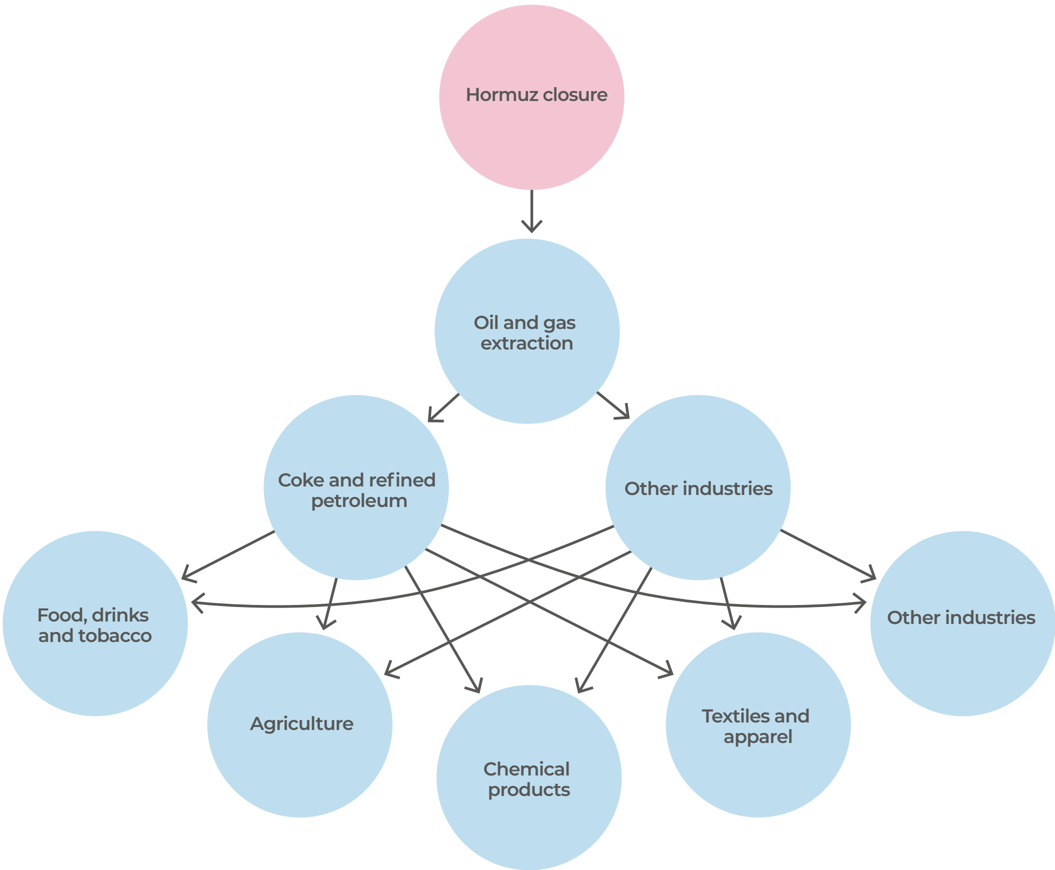
To get a more precise picture of how inflation is passing through supply chains, we can use input-output analysis to formally measure the interlinkages between different production processes. Currently, inflation in Europe seems to originate from cost pressures. This has been driven by shocks in the price of oil driven by Russia's invasion of Ukraine and the USA's and Israel's war on Iran. Input-output analysis thus allows for an understanding of how much oil prices, along with other industrial inputs, are directly and indirectly impacting headline inflation figures.

To illustrate the difference between the direct and indirect effect, imagine a 1% increase in the price of producer energy provision. Consumer energy costs will be strongly related to producer costs, and for this example we might assume that a 1% increase in producer prices feeds through to a 0.9% increase in consumer prices. The EU monitors inflation using the Harmonised Indices of Consumer Prices (HICP), and therefore how the HICP weighs different consumer prices is what matters for headline inflation figures. As energy costs make up roughly 9-10% of the HICP measure of inflation, a 1% increase in producer energy prices would lead to a 0.08-0.09 percentage point increase in the HICP headline measure. This is the direct effect.

The indirect effect comes from the fact that energy is also an input to lots of other production processes. A 1% increase in energy costs also increases the cost of anything that uses energy as an input, for example the energy used to run a warehouse. This warehouse may be an input into other production processes, which now also sees increased costs. Following this chain of reasoning, there will be knock-on effects across the entire supply chain from an increased cost of energy – the sum of these effects is seen as the indirect effect of a price increase. This process is illustrated in Figure 1.

Input-output tables show us what domestic industries go into the production process of an industry's output. For example, an input-output table can tell us that to produce €50bn of food in a country requires €7bn of domestic agriculture, €3bn of wholesale trade, €15bn of other domestic inputs, €17bn of imports, €5bn of wages, €2bn of profits, and €1bn of taxes. Dividing by total output, we can get a sense of how a production process is made proportionally, ie 34% of total food output comes from imports. Doing this for every domestic industry in the economy, we get what is called the table of technical coefficients – a matrix that tells us what inputs go into making one unit of output. This matrix can tell us not only what goes into the production process of a certain industry but also how much an industry's output is used in other industries.

FIGURE 1: KNOCK-ON EFFECTS OF AN OIL AND GAS PRICE SHOCK.



Source: Own illustration inspired by Forces of Production (2026).[18]

This allows us to directly model how a price shock in one industry can propagate to increased prices elsewhere. Take a 1% increase in energy prices. As we stated earlier, this may have a 0.08-0.09 percentage point impact on the headline HICP measure. The technical coefficient matrix shows that to produce €1 of steel requires €0.025 of domestic energy. Therefore, if the price of energy increases by 1%, then the price of steel will increase by 0.025%, all else being equal. But now, as the price of steel has increased, anything that uses steel as an input will also see its costs rise. As this process repeats, prices will converge to a heightened level where the initial price shock has trickled through the entire production network. From this we can calculate the indirect impact of a price shock in a certain industry, assuming costs are fully passed through and propagate down supply chains fully.

As we discuss in Section 2.3, this assumption is not that realistic, as costs may not be fully passed through and changes to production processes alter propagation dynamics. The results are still insightful to make comparisons across industrial sectors and countries but shouldn't be taken as a forecast for this reason. Table 1 shows the top 10 industries where a 1% increase in costs will have the greatest average impact on HICP in EU countries.

To model these results, we use the latest available input-output table data from Eurostat. For most countries, the latest input-output data is from 2020–23 but for Bulgaria the latest data is from 2010. Ireland has no Eurostat data, so it is excluded from the results. These results should be interpreted as the impact of a cost shock, assuming production processes of EU countries have remained similar since the early 2020s and since 2010 for Bulgaria.

TABLE 1: HOW A 1% COST SHOCK PASSES THROUGH IN DIFFERENT INDUSTRIES

The 10 industries where a 1% increase in costs has the largest effect on headline inflation by classification of products by activity (CPA; EU average, direct, indirect and total effect on HICP, percentage points). Based on input-output data from 2020–23 for all EU countries apart from Bulgaria (2010) and Ireland (not included).

	Direct effect	Indirect effect	Total effect
Food, drinks, and tobacco (C10-12)	0.20	0.02	0.22
Accommodation and food services (I)	0.11	0.01	0.11
Agriculture (A01)	0.04	0.04	0.08
Real estate services (L68)	0.05	0.02	0.07
Energy provision (D)	0.04	0.02	0.07
Textiles and wearing apparel (C13-15)	0.06	0.00	0.06
Coke and petroleum (C19)	0.05	0.01	0.06
Wholesale trade excluding vehicles (G46)	0.00	0.05	0.05
Motor vehicles and trailers (C29)	0.04	0.00	0.04
Land transport (H49)	0.02	0.02	0.03

Note: NEF analysis using national input-output tables and HICP consumption weights from Eurostat. Effects are calculated using a Leontief price model applied to latest product-by-product input-output tables available by country. The latest industry-by-industry input-output tables are used for Denmark, Finland, Netherlands, Romania where product-by-product tables aren't available. Ireland is not included due to lack of Eurostat data. CPA to HICP weighting conversions are calculated using Cai & Vandyck (2020).[19] The direct effect is the 1% shock scaled by how the CPA category translates to a HICP weighting. The indirect effect is the additional impact once the price shock has been completely passed through the sector's use as an input in other industries, assuming no changes to underlying production technology. The total is the sum of the direct and indirect effect.

This assumption may feel slightly unrealistic, but it is the most up-to-date modelling we can do based on available data. Because of these limitations, we emphasise these results are simply illustrative rather than predictive.

Here we see that food, drinks, and tobacco prices have the largest direct effect, owing to their larger weighting in HICP. Wholesale trade and agriculture have the largest indirect effects, being an input in the production process for many other industries.

This analysis is based on a 1% price shock that is common across all industries, but not all price shocks are made equal. Different industries are affected by, and vulnerable to, economic shocks in different ways. Although food, drinks, and tobacco prices (from here on summarised as "food prices") look the most significant under this analysis (C10-12), as a 1% increase in food prices has a 0.22 percentage point impact on the headline HICP measure, food prices are typically less volatile than fossil fuel and energy prices (C19), which have a 0.06 percentage point impact (although climate change is starting to make food prices more volatile than before). To understand how systemically significant price shocks are (and therefore how much policy attention they demand), we should also understand what the average price shock looks like for a certain industry. Isabella Weber et al.[20] construct an understanding of systemically significant prices by using historical variance in prices as the price shock. In essence, using the standard deviation in inflation at the industry level, we can simulate what a typical shock looks like for a particular industry (given that a 1 standard deviation shock represents the top 16% of the data, assuming a normal distribution, one can think of this as roughly a once-in-every-six-years shock). Results are only averaged for countries for which Eurostat provides sector level gross domestic product (GDP) deflators.

TABLE 2: FOSSIL FUELS AND ENERGY ARE THE MOST SYSTEMICALLY SIGNIFICANT PRICES IN ALL BUT TWO COUNTRIES.

The 10 industries where a one standard deviation shock (1997-2024) in price translates to the largest impact on headline inflation (CPA; EU average, total effect on HICP, percentage points).

	Occurrences as...			Average 1 standard deviation shock	Average p.p. impact on headline inflation
	Most significant price	Top five most significant prices	Top 10 most significant prices		
Coke and refined petroleum (C19)	6	13	13	22.3%	1.21
Energy provision (D)	5	13	13	15.2%	1.02
Food, drinks, and tobacco (C10-12)	2	13	13	5.0%	1.16
Agriculture (A01)	0	11	13	7.9%	0.65
Real estate services (L68)	0	6	12	5.3%	0.39
Accommodation and food services (I)	0	6	11	3.5%	0.34
Wholesale trade excl. vehicles (G46)	0	1	9	4.2%	0.24
Financial services (K64)	0	0	9	7.1%	0.20
Chemical products (C20)	0	0	8	8.2%	0.23
Textiles and apparel (C13-15)	0	0	8	3.2%	0.21

Source: NEF analysis using national input-output tables and HICP consumption weights from Eurostat. Standard deviation calculated from Eurostat 1997-2024 GDP deflator series by country. Results only cover the 13 countries with GDP deflator data at the sector level, namely: Austria, Belgium, Czechia, Germany, Denmark, Estonia, Greece, Finland, France, Hungary, Latvia, Netherlands, and Romania. Real estate services do not have GDP deflator data for any country, so the standard deviation has been set to the sector average by country.

While the top 10 industries are broadly the same as the industries with the greatest impact on HICP from a 1% shock (financial services and chemical products replace motor vehicles and land transport in the top 10), the ordering changes significantly. Coke and refined petroleum and energy provision are the most significant prices in 11 out of the 13 countries for which there is data and are in the top 10 for all countries. Only food, drinks, and tobacco and agriculture prices are also in the top 10 for all 13 countries. These results are driven by the coke and refined petroleum and energy provision industries' particularly large variance in prices compared to other industries. Not only do these industries have a relatively large direct and indirect impact on headline inflation, but they often experience large price shocks that outsize the effects of other industry price swings. This leads to the assertion that fossil fuels and energy play a systemically significant role in headline inflation across EU countries.

Overall, these results tell us that fuel and energy costs are clearly worth focusing on. Not only do they carry relatively high direct and indirect impacts on inflation, but they also see some of the largest price variations.

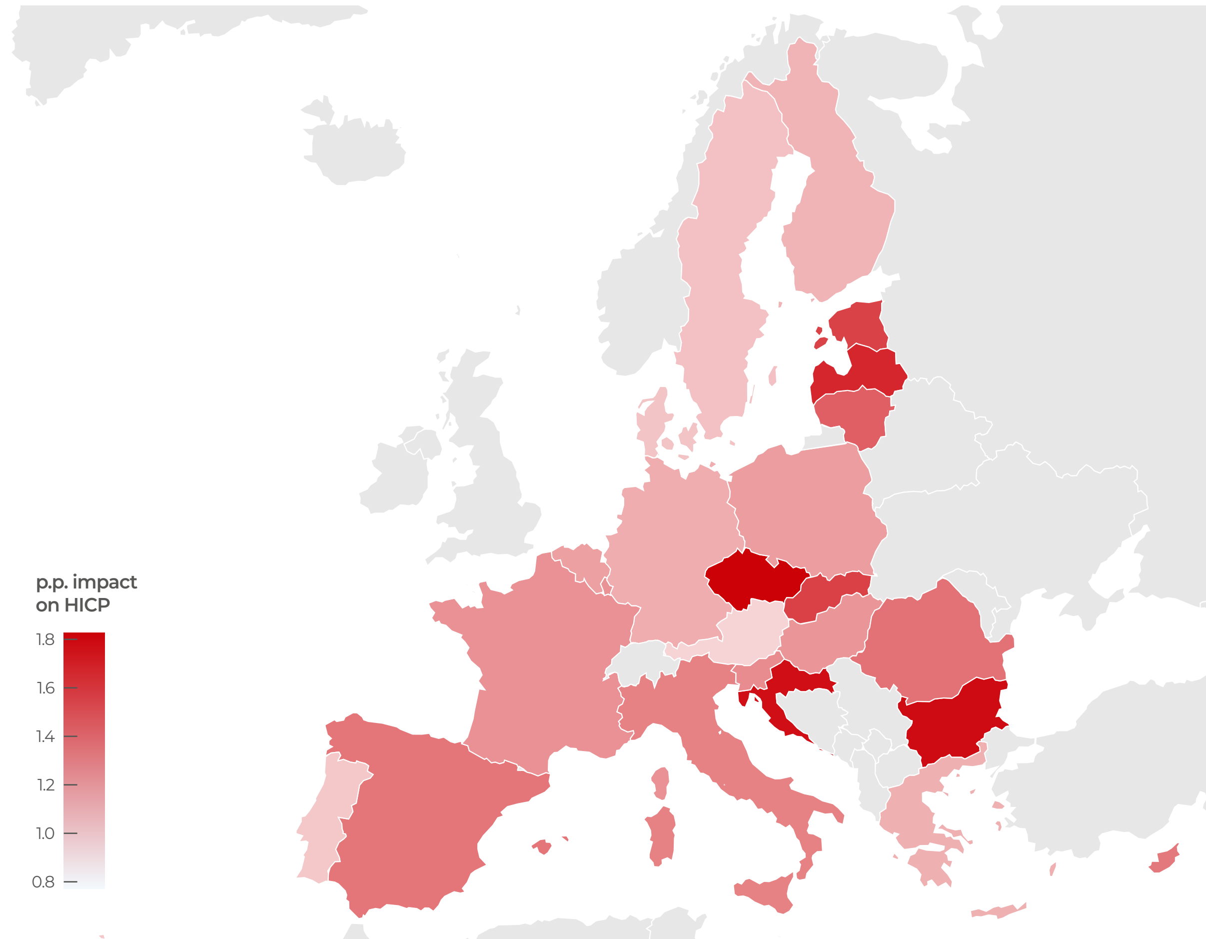
2.2 THE IMPACT OF A FOSSIL FUEL AND ENERGY SHOCK

Understanding that coke and refined petroleum and energy provision are the most systemically significant prices in the EU, it can be helpful to model the impact of a particularly large shock to these sectors, just as we saw recently from the closure of the Strait of Hormuz. Here we model a 50% price increase in the coke and refined petroleum sector and a 50% price increase in the energy provision sector to show the effects this can have across countries and sectors. We chose these numbers to be illustrative, but they reflect the recent 47% increase in the price of oil[21] (from \$63 to \$93 per barrel, June 2025–26). For context, when Russia's invasion of Ukraine sent oil prices rising by 67%[22] (from \$69 to \$116 per barrel, June 2021–22), GDP deflators for coke and refined petroleum and energy provision followed suit, at an average of 61% and 68%, respectively, for the countries Eurostat has data for.[23] To reflect this empirical observation, we model the shock to fossil fuel producer prices and energy prices separately, despite the former being a key input into the latter. It is further justified by the fact that oil and gas contracts and marginal pricing affect the cost of energy provision beyond just the effect of the price of fossil fuel inputs in the production process for energy provision. We believe modelling the shock only as a 50% shock to coke and refined petroleum prices would underestimate the impact and reach of a fossil fuel price shock.

Figure 2 shows how the shock differs by country, assuming a 20% pass-through to consumer price headline inflation within a year. This pass-through is again an illustrative assumption but is within the range of what economists at the Bank of England have estimated in the UK.[24] These results are driven by how oil- and energy-intensive the production processes are in the input-output tables for each country provided by Eurostat and how highly weighted the most affected industries are when translated into consumer price baskets. It is worth noting that, despite variation, the impacts of the modelled shock are still between a 0.8 and a 1.8 percentage point increase in headline inflation. When the majority of countries within the EU are targeting 2% inflation, these numbers are significant for all countries even if some are more exposed than others. This analysis is not supposed to be a forecast but a reflection of how the different make-up of European economies leave them exposed in different ways. Input-output analysis can only tell a partial story; some countries may fare better or worse than these results indicate.

FIGURE 2: FOSSIL FUEL AND ENERGY PRICE SHOCKS WILL HAVE DIFFERING IMPACTS ACROSS THE EU

Headline increase in inflation from 50% shock in coke and petroleum and energy provision prices, by EU country. Percentage point impact on HICP, assuming 20% pass-through of total effect within one year.



Source: NEF analysis using national input-output tables and HICP consumption weights from Eurostat. Ireland is not included due to lack of data. The Leontief price model is applied to a hypothetical 50% cost shock to both energy provision and coke and refined petroleum sectors.

Figure 2 suggests Eastern European countries are more exposed. This corroborates findings of similar input-output analysis which further looks at intra-EU trade and finds periphery economies, and especially those more heavily reliant on imports, more exposed to shocks.[25] This analysis is different as it has only looked at domestic production processes. Therefore, it is insightful that even without considering cross-country trade patterns, these countries are more exposed to fossil fuel shocks due to their domestic production processes and consumption patterns.

Table 3 shows the different impact the oil and energy shock has on different parts of the consumption basket. Unsurprisingly, the operation of personal transport equipment (including fuel costs) and electricity prices are the most affected, as these parts of the consumption basket are most closely tied to the inputs we are shocking. Other than this, food has the greatest impact on HICP. This is mainly due to its higher weighting in consumption baskets across countries, as its actual inflation impact within the sector is middling. Transport services and water supply and other utility services experience the second most significant price change for an oil and energy shock, respectively. In both cases, oil and energy will be a significant input to these production processes; however, their actual HICP impact is not as high due to lower weighting in the consumption baskets. Overall, the results give a sense of how an oil and energy shock will have differential impacts across different parts of the consumption basket used to measure inflation.

2.3 HOW INFLATION PERSISTS IS POLITICAL

After a shock in inflation, how long will it actually persist? As mentioned earlier, the idea that prices will follow the full pass-through from the input-output analysis is unlikely. First, the process of passing on costs will take time; analysts from the Bank of England suggest pass-through of the total effect (sum of direct and indirect) within the year is limited to 20-40% with it happening quicker in manufacturing processes than service provision.[26] For example, manufacturers may have to experience cost increases quicker as they replace inventories compared to service providers who may be locked into contracts. Second, in this time, producers may respond to the new costs and find new ways to produce their products, for example finding cheaper inputs or less energy-intensive production methods. Input-output modelling assumes that the technological processes to produce a good or service stay exactly the same, but over time this will almost certainly change, altering how costs are passed through. Assuming production processes respond to price rises by finding less costly ways to produce their goods, this process should ultimately dampen inflation, compared to if no readjustment were made.

Of course, inflation doesn't just come from unanticipated shocks; it is also anticipated. In general, how inflation is anticipated is what allows central banks and governments to target steady levels of inflation. However, a shock can readjust people's expectations of future prices and affect how inflation persists. For example, if a shock changes people's expectations of future inflation, then people may search, or bargain with their employers, for better wages than before. These increased wages may stimulate demand and mean heightened inflation persists via prolonged demand-pull inflation. Alternatively, news of a price shock may allow sellers to hike their prices, even if not directly impacted by the price shock in their production process. This furthers the amount of cost-push inflation experienced, keeping inflation elevated.

Some economists worry that these actions won't just heighten inflation temporarily but permanently. Talks of wage-price spirals reflect the idea that if workers can secure higher wages, then this will also push up the production costs for producers who will pass on the costs and further increase inflation expectations.[27] Alternatively, a profit-price spiral can take hold if firms hike their prices or protect their margins.[28] Empirical evidence has shown in recent years that workers' bargaining power has significantly lessened[29] and may explain why wage-price dynamics seemingly haven't taken hold; for example real compensation in the EU fell by 4.3% in 2022 and a further 0.7% in 2023.[30] On the other hand, profits rose in real terms in the same period.[31] Detailed breakdowns show how these profit increases have been concentrated in a few select industries, often those most related to where price shocks originate.[32] The ECB's own economists[33] found that unit profits accounted for roughly two-thirds of domestic price pressures in 2022, compared with a historical norm of closer to one-third.

TABLE 3: FOSSIL FUEL AND ENERGY PRICE SHOCKS WILL HAVE DIFFERING IMPACTS ACROSS SECTORS.

	Oil shock		Energy shock		Overall shock
	% impact in sector	p.p. impact on headline HICP	% impact in sector	p.p. impact on headline HICP	p.p. impact on headline HICP
Food	0.10	0.02	0.32	0.05	0.07
Non-alcoholic beverages	0.08	0.00	0.33	0.01	0.01
Alcoholic beverages, tobacco and narcotics	0.08	0.00	0.33	0.02	0.02
Clothing	0.04	0.00	0.30	0.01	0.01
Footwear	0.04	0.00	0.29	0.00	0.00
Actual rentals for housing	0.03	0.00	0.20	0.01	0.01
Imputed rentals for housing	0.02	0.00	0.15	0.00	0.00
Maintenance and repair of the dwelling	0.09	0.00	0.34	0.00	0.01
Water supply and miscellaneous services	0.05	0.00	0.47	0.01	0.01
Electricity, gas and other fuels	2.04	0.12	7.39	0.44	0.56
Furniture and furnishings	0.05	0.00	0.24	0.00	0.01
Household textiles	0.05	0.00	0.30	0.00	0.00
Household appliances	0.04	0.00	0.21	0.00	0.00
Glassware, tableware and household utensils	0.06	0.00	0.35	0.00	0.00
Tools and equipment for house and garden	0.04	0.00	0.23	0.00	0.00
Goods and services for household maintenance	0.07	0.00	0.29	0.00	0.01
Medical products, appliances and equipment	0.04	0.00	0.25	0.01	0.01
Out-patient services	0.02	0.00	0.15	0.00	0.00
Hospital services	0.02	0.00	0.14	0.00	0.00
Purchase of vehicles	0.05	0.00	0.20	0.01	0.01
Operation of personal transport equipment	5.11	0.40	0.22	0.02	0.42
Transport services	0.36	0.01	0.19	0.00	0.01
Postal services	0.06	0.00	0.14	0.00	0.00
Telephone and telefax equipment and services	0.02	0.00	0.23	0.01	0.01
Electronic equipment	0.03	0.00	0.16	0.00	0.00
Other major durables for recreation and culture	0.05	0.00	0.20	0.00	0.00
Other recreational items	0.08	0.00	0.27	0.01	0.01
Recreational and cultural services	0.06	0.00	0.24	0.01	0.01
Newspapers, books, and stationery	0.05	0.00	0.25	0.00	0.00
Package holidays	0.07	0.00	0.17	0.00	0.00
Education	0.02	0.00	0.16	0.00	0.00
Catering services	0.05	0.00	0.34	0.03	0.03
Accommodation services	0.04	0.00	0.29	0.01	0.01
Personal care	0.08	0.00	0.33	0.01	0.01
Other services n.e.c.	0.02	0.00	0.12	0.01	0.01

Source: NEF analysis using national input-output tables and HICP consumption weights from Eurostat. Headline impact on inflation is averaged across EU countries; Ireland is not included due to lack of data. Leontif price model is applied to hypothetical 50% cost shock to both energy provision and coke and refined petroleum sectors.

Ultimately, who bears the cost of inflation is a political process out of conflict between labour and capital.[34] Typically, inflationary bouts are triggered by unanticipated shocks which then impact wage or profit dynamics and change inflation expectations. How well firms can protect or increase their profits and how well workers can protect or increase their wages reflect their power. When both capital and labour persistently claim higher shares of real income compared to available real output, then inflation becomes persistent.

This can be illustrated by an oil price shock. When the price of oil increases, firms try to protect their margins by passing costs through into prices. Workers who see their relative wages and purchasing power erode then demand higher real wages. In response, firms across the economy shield their profits in the face of higher wages by increasing prices, and so on. Evidently, the claims by both labour and capital exceed the value of the real output, leading to persistent inflation and eroding the value of the currency.

While this process is costly, it is important to note that this cost may be preferable compared to the alternative of simply allowing a sharp reduction in real wages and intentionally inducing unemployment and recession by hiking interest rates. With no conflict, firms could increase prices and pass on all costs to consumers. This would only lead to a price level shift; inflation would be transitory and not persistent. Yet the costs would be borne disproportionately by labour. Conflict inflation can thus be vital for redistribution between capital and labour. This is one reason it would be unwise to try to target no inflation in general or a very rapid return to the inflation target, as workers would always bear costs disproportionately.

Lastly, this has only described the market dynamics that determine inflation persistence by the power of different market actors, but one key player is missing – the government. Government intervention can affect inflation expectations, calm wage and profit dynamics, and reduce the costs associated with conflict by making credible interventions such as directing support to smooth over price shocks to contain inflation. Central banks try to use interest rate rises to stop persistently high inflation from taking hold. This has been problematic in recent times when inflation has seemingly not been caused by demand-pull or wage-price spiral dynamics. Interest rate rises are supposed to suppress economic activity, increase unemployment, and therefore reduce workers' bargaining power to stop wage-price dynamics and dampen demand-pull inflation.

In the face of cost-push-driven inflation, interest hikes actually may be self-defeating in the long term[35] – hikes deliver weak marginal disinflation, increase the cost of capital-intensive production, prolong cost-push inflation, and make it harder to invest in the green transition that could move us away from the shocks to oil prices and energy that are the most significant drivers of price rises in the first place. Furthermore, if the interest rate rises are ineffective in tackling inflation, then interest rates may rise without significantly lowering inflation expectations. In this case, a more active approach from the government, and the central bank exploring tools other than interest rates, is needed, not just to reduce the impact of cost-push inflationary pressures but to stop profit-price dynamics from taking hold and resulting in the initial shock causing persistently high inflation.

3. FOSSIL FUELS AMPLIFY MACROECONOMIC SHOCKS

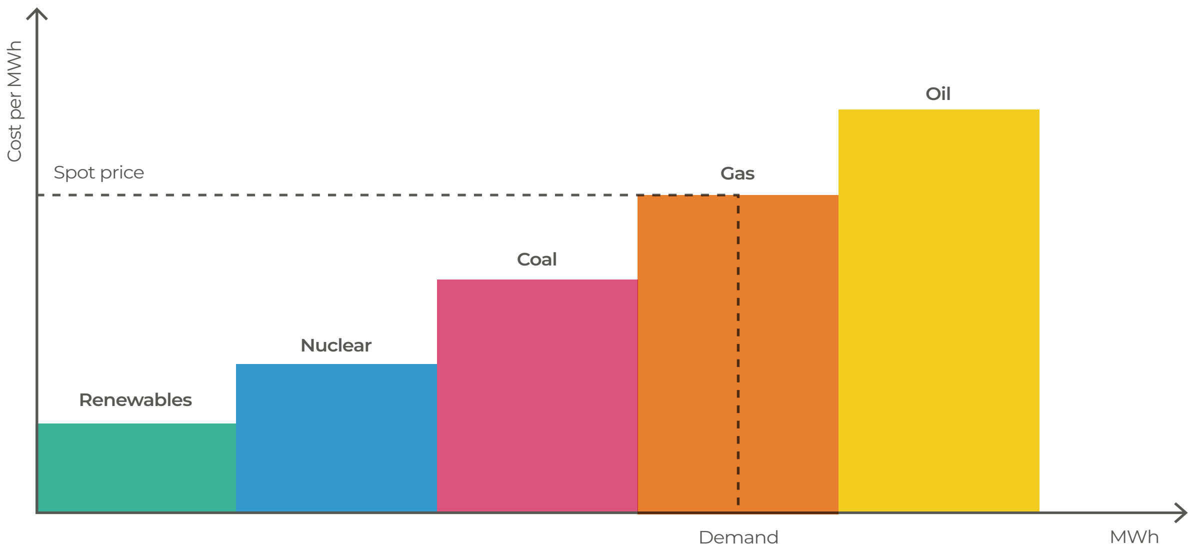
Our analysis highlights that a transition towards a renewable energy system is not only necessary given the threat of the climate crisis, but it's also imperative for sustained price stability. In all European economies, fossil fuels and energy play a systemically significant role in headline inflation. At the same time, conventional monetary policy tools are proving largely ineffective, given the supply-side nature of recent inflationary shocks. As we show in the next section, renewable energy can play a leading role in maintaining price stability. However, to accelerate the transition, the European Central Bank (ECB) needs to incorporate considerations of the effects of its policies on the energy transition into its decision-making; otherwise, it risks slowing down inflation's very remedy.

3.1 RENEWABLES CAN BRING PRICES DOWN

Understanding the dynamics of the European energy market's pricing system is key to appreciating the influence of renewable energy generation on bringing prices down. In the merit order pricing system, the electricity price, or clearing price, is determined by the cost of the most expensive technology required to meet energy demand within a given timeframe. This, in turn, depends on the energy source used for electricity generation. While renewable technologies, such as wind and solar power, have marginal costs approaching zero, since the input – wind and sunlight – is free, fossil-fuel-based technologies have higher operating costs. Therefore, as long as renewable energy is insufficient to meet all energy demand in a given system, the price is predominantly determined by the most expensive technology, which is primarily gas.[36]

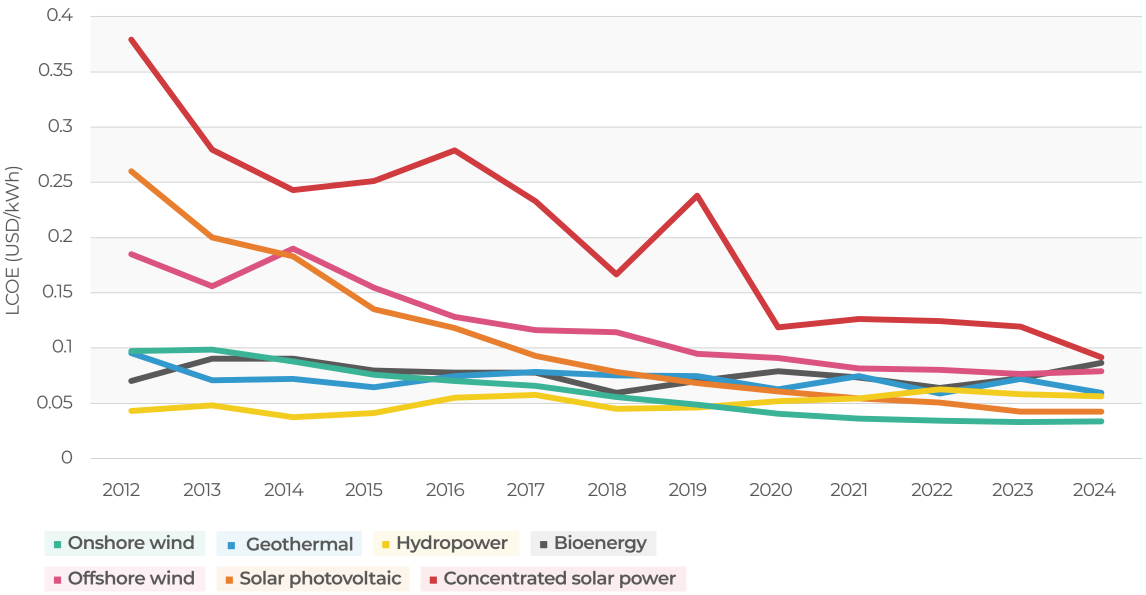
A study by the Joint Research Centre (JRC) shows that gas-powered plants play a disproportionate role in the EU's wholesale electricity market. In 2022, they set the price 55% of the time, despite generating only 19% of the EU's total electricity. The JRC further projects that this trend will continue, estimating that gas will set the price 56% of the time by 2030, despite accounting for only 11% of total electricity.[37]

FIGURE 3: SIMPLIFIED MERIT-ORDER SUPPLY-DEMAND STACK.



Source: Own illustration inspired by Gasparella et al. (2023).[38]

FIGURE 4: GLOBAL RENEWABLE ENERGY LEVELISED COST OF ELECTRICITY (LCOE) BETWEEN 2010 AND 2024 IN USD/KWH, BY SOURCE.



Source: IRENA (2025).[39] Note: Costs are expressed in constant 2024 USD per kilowatt-hour.

It is not only during supply shocks that the problem of fossil fuels determining electricity prices becomes evident. It is also an issue when considering that renewables are the most cost-effective option. The International Renewable Energy Agency found that 91% of newly commissioned renewable energy projects delivered electricity at a lower cost than the cheapest newly installed fossil-fuel-based alternative. For instance, the levelised cost of electricity (LCOE),[a] for global onshore wind is 53% lower than that of fossil-fuel-based generation.[40] The already low costs of renewables are further projected to decline due to continued technological learning and supply chain maturity. By allowing gas to set the price, the EU is thus missing out on low, decreasing, and geopolitically independent energy prices.

There is a broad consensus in the literature that increasing the proportion of renewable energy in the energy mix has a positive overall effect on wholesale electricity prices. A study by the International Monetary Fund analysing 24 European countries between 2014 and 2021 concluded that renewable energy significantly reduced electricity prices.[41] The study found that an increase of one percentage point in the share of renewables decreases the price by an average of 0.6%. The study finds that increasing the share of renewables to 30% would lead to an 8.8% reduction in prices, and an even greater reduction of 20% if the share were to increase to 50%. Another academic study finds that increasing the share of renewables would significantly reduce the pass-through effect of gas prices on electricity prices in Europe.[42] For 2024, the authors estimate that, for every €1 increase in the price for 1 MWh of gas, the average price of 1 MWh of electricity rises by €1.40. According to their calculations, deploying 30% more renewables would reduce the pass-through effect to below €0.50, while a 60% increase would reduce it to below €0.25. This would mean that, if gas prices were to rise by €1, electricity prices would only rise by €0.25.

Similarly, the European Environment Agency estimates that meeting the EU's 2030 renewable energy targets could lower annual European power prices by 57% compared to 2023 levels.[43] These findings are reflected in a recent report by Positive Money, which estimates that the deployment of wind and solar reduced wholesale electricity

a The LCOE is a metric which represents the minimum price at which electricity must be sold to break even over the life of the plant. It includes the costs associated with building and operating an energy asset, including capital, fuel and maintenance costs. It thus allows for cost comparison between different technologies, and their relative competitiveness.

prices by, on average, 24% between 2023 and 2025 in 17 European countries.[44] Overall, the findings show that increasing the share of renewables can substantially reduce electricity prices, while increasing resilience to price fluctuations. This can also be seen in Spain, where the country has rapidly increased its generation of renewable energy, as described in Box 1. Importantly, this is without regard to the benefits from averted damages of the climate crisis.

The issue of volatility is often raised when discussing the impact of renewable energy on wholesale electricity prices. Academic studies have found that an increased proportion of renewable energy in the energy mix leads to greater price volatility, meaning that prices fluctuate more during the day.[45] This is true even when there is an overall decline in prices. The reasons for this increased volatility are that renewables are more exposed to weather conditions and that long-duration electricity storage systems, acting as buffers, still face challenges to large-scale implementation due to their capital intensity, profitability issues, legislative hurdles, and technical complexities.[46]

While increased volatility in electricity prices needs to be addressed, hourly price volatility is less relevant from a macroeconomic perspective than sustained average price increases. This is also evident in the regulation of the EU electricity market design, which defines an electricity price crisis as occurring when wholesale electricity prices reach at least two and a half times the average price over the previous five years, and this situation is expected to persist for at least six months.[47] This, however, has only been observable for fossil-fuel-based energy sources, which have witnessed both sustained price volatility and increases. In 2022, gas price volatility rose to an all-time high, with volatility of the Dutch TTF, peaking at 226% above the average observed between 2010 and 2019. In 2024, it was 50% above the average.[48] It is thus fossil fuel dependency, not renewable energy volatility, which creates a price crisis, for two important reasons.

First, as already described, fossil fuel dependence means geopolitical dependence. In 2022, 98% of oil and gas used in Europe was imported.[49] This translates an energy crisis abroad to an energy crisis at home. As the EU Commissioner for Energy and Housing, Dan Jørgensen, has noted, 30 days of Israeli and US attacks on Iran have already added €14bn to the Union's fossil fuels import bill.[50] At the same time, European governments can often exert little to no influence.

BOX 1: RENEWABLE ENERGY IN SPAIN

Spain is a good example of the transformative effect of the transition to renewable energy generation for wholesale electricity prices. Having gone from having the strongest influence of fossil generation on power prices in 2019, the country ranked as the lowest among gas-reliant countries in 2025. While fossil fuels determined power prices 75% of the time in the first half of 2019, this figure fell to 19% in the same period in 2025. Consequently, wholesale electricity prices in the first half of 2025 were 32% lower than the EU average. This was due to the rapid rollout of renewable energy. Between 2019 and 2025, Spain doubled its wind and solar capacity.[51] Similarly, the Banco de España, Spain's central bank, estimates that wholesale electricity prices would have been 40% higher in 2024 if wind and solar generation had remained at 2019 levels.[52] It also predicts that prices could fall by a further 50% by 2030 if the targets set out in the National Energy and Climate Plan are met. Due to the merit order pricing system, however, this effect is non-linear. While an increase of the renewable energy share from 20% to 30% would only have marginal effects, an increase from 50% to 60% could reduce prices by around 25%. This demonstrates the need for large-scale investment and deployment to reap the benefits of renewable energy.

Second, renewable energy is less susceptible to financialisation, and thus speculatively inflated prices. This is inherent in its characteristics: renewable energy's continuous inputs, such as wind and sun, cannot be traded on spot markets. Oil and gas, on the other hand, have become primarily financial assets; today, most of their trade on commodity markets is never physically delivered. The financialisation of oil can accelerate price increases. When investors expect the price of oil to rise, they invest in crude oil derivatives, which in turn pushes the price up. This can happen apart from any corresponding increase in physical demand or shortage of supply, creating a price rise detached from extraction or consumption.[53] A recent academic study, for example, found that speculation in the crude oil market has been responsible for between 24% and 48% of the increase in West Texas Intermediate crude oil prices between 2020 and 2022.[54] While it is important to note that there is a debate over the significance of financialisation on energy prices,[b] it is clear that renewables are shielded from these sorts of fluctuations.

While questions of price volatility are more acute for fossil fuels, they still need to be tackled to realise the large-scale benefits of renewable energy for electricity prices. Especially in regions with a fragile political consensus for net-zero policies and high living costs, even small price volatility needs to be addressed, as it can significantly impact consumers' perception of the benefits of renewable energy deployment. To achieve this, at least seven key areas need to be strengthened:

- **Speed up renewable energy deployment expansion**. Self-evidently, this would ensure greater and more stable supply. As the constraints on deployment differ by country, varying from permitting processes to administrative capacity, measures should be evidence-based and targeted accordingly, rather than applied uniformly across member states. The European Commission's assessment of Bulgaria's National Energy and Climate Plan, for instance, flagged delays and an inability to meet the renewable energy demand due to insufficient staffing capacity within public authorities.[55]

- **Broaden demand-side management**. Given that renewable energy supply fluctuates depending on weather and light conditions, controlling demand by incentivising shifts in both level and pattern of electricity consumption can help balance the market. This could include increasing energy efficiency or incentivising use of electricity at specific times of the day, via for example time-of-use tariffs or smart metering infrastructure. A study of smart metering technologies across Europe, for example, finds that their deployment significantly reduces demand during peak hours by between 3 and 19%.[56]

- **Prioritise energy efficiency and sufficiency.** Whereas demand-side management reshapes when electricity is used, efficiency and sufficiency measures reduce how much is needed in the first place. Because gas so often sets the marginal price, cutting peak demand disproportionately reduces the hours in which the most expensive fossil plant clears the market. Efficiency policies include building retrofits, heat-pump rollout, and appliance standards. Sufficiency policies go further, lowering demand by reconsidering how much energy is needed at all, through prioritising public and active transport over private cars, extending product lifetimes via repair and reuse, and favouring warm-home standards over ever-larger floorspace.[57] Such measures cut exposure to fossil price shocks at source and reduce the total volume of energy the system must supply, store and secure.

- **Increase storage capacity.** Fluctuations in electricity provision can be further countered by expanding battery energy storage systems. Yet current capacity falls short, with the EU requiring around 200 GW of storage capacity by 2030, which is just under four times what it currently has (55 GW).[58] Increased capacity includes a variety of technologies, ranging from pumped hydroelectric storage to battery systems and thermal storage, which provide the flexibility required to balance supply and demand in real time.[59]

b A good overview of the differences within the literature can for example be found in Feng et al. (2022).

- **Expand grid capacity**. Contrary to common belief, there is no evidence that renewable energy sources make power grids less reliable or more prone to blackouts.[60] However, large-scale investment in infrastructure is necessary to prevent the grid becoming the "weak link" in the energy transition, as the International Energy Agency (IEA) says it could.[61] Grid connection bottlenecks are currently causing delays in the rollout of renewable energy of over €100bn in Europe while substantially increasing integration costs.[62]

- **Strengthen cross-border interconnectivity.** Interconnectivity between European states helps balance supply and demand, optimise the use of renewable energy, and reduce curtailment. Europe needs to double its current interconnection capacity over the next ten years to meet its climate and energy objectives, yet current plans fall short of meeting this target.[63] A recent report by the European Union Agency for the Cooperation of Energy Regulators shows that enhancing market integration and cross-border coordination reduces local price volatility and converges cross-zonal prices . They estimate that balancing integration has led to welfare gains of €1.6bn in 2024.[64]

- **Invest in digitalisation**. Investment in digitalisation is essential for the reliable and stable expansion of the energy transition. Digital technologies can aid the monitoring, operation, and maintenance of renewable energy assets more effectively, reducing costs while enabling greater integration into the energy system.[65] The IEA estimates that improved digitalisation of the energy grid could reduce curtailment of solar photovoltaics and wind power from 7% to 1.6% in 2040, cutting 30 million tonnes of carbon dioxide emissions.[66]

Together, these factors can help unleash the positive effects of expanding renewable energy while stabilising Europe's power supply disruptions.

3.2 INTEREST RATE HIKES DELAY THE TRANSITION AND MAKE IT MORE EXPENSIVE

While today's inflation is driven by our dependence on fossil fuels, increased interest rates risk stalling the energy transition required to achieve long-term price stability. The policy rate is an untargeted tool, and when it is deployed against a cost-push shock, it works indiscriminately. In the energy sector, the effect is asymmetric compared to fossil-fuel-based energy production.

A study of 28 European countries between 2001 and 2024 found that a 25-basis-point rise in rates led to decreases of 3.2% and 5.3% in onshore wind and solar PV capacity, respectively. Meanwhile, the capacity of fossil fuels, hydropower, and nuclear technologies remained unaffected by monetary policy contractions.[67] These findings are supported by a study of German renewables, which predicts that raising policy rates to 4% could increase the LCOE of these technologies by 25%.[68] Therefore, renewable energy technologies benefit more from decreased rates. Rising rates, on the other hand, risk undermining the viability of renewable energy investment and installation.

The reasons why renewable energy is disproportionately affected by monetary tightening relate to its specific investment requirements, its life-cycle stage, and its reliance on external financing.[69] The current energy transition requires a shift from technologies with high operating costs to technologies requiring significant initial capital expenditure. A coal plant, for instance, can draw on current electricity revenues to purchase its next shipment of coal, creating a relatively continuous and self-financing cost cycle. Clean energy technologies invert this logic: a solar farm or an offshore wind installation has relatively low operating costs, but requires a large upfront capital commitment. This must be borrowed and repaid over the asset's lifetime, meaning the cost of borrowing at the moment of investment is effectively locked into the electricity price going forward.

Renewable energy projects are thus capital-intensive with long payback periods, making them relatively dependent on external financing.[70] Consequently, their LCOE is disproportionately influenced by the cost of capital, which increases with higher monetary policy rates. For example, a study found that raising the cost of capital from 5% to 10% would increase the cost of electricity from offshore wind by 47%. The cost of onshore wind and utility-scale solar PV would increase by 52–54%, and the cost of rooftop solar by 60%. In contrast, the cost of gas-fired electricity would only increase by 8%.[71] Similarly, the IEA has emphasised that lower base rates have been crucial in reducing the cost of producing offshore wind.[72]

Central banks sometimes disregard the interest rate transmission channel to renewable energy installation capacity, stressing the priority of price stability and arguing that long-term rather than short-term interest rates are decisive. However, this distinction between the short and long term is misguided and relies on a false dichotomy, for three reasons.

First, short-term rates influence long-term ones. Long-term yields effectively represent the market's expectation of the path of short-term rates over time, meaning both current policy rates and inflation expectations feed into long-term borrowing costs. For example, a recent academic study has shown that changes in euro-denominated long-term interest rate swap yields of 2-, 5, 10-, and 30-year tenor are influenced by changes in the short-term interest rate, using 3- and 6-month euro interbank offer rates.[73] The same holds true for the effect of the short-term interest rate on the level of euro-denominated long-term interest rate swap yields.[74] These findings suggest a substantial influence of short-term interest rates on long-term ones.

Second, short-term drops have long-term effects. Even short-term deployment slumps in renewable energy can have long-term consequences, including loss of technological capabilities, knowledge, and layoffs. The IEA refers to this as "forgetting-by-not-doing", whereby interruptions in the use of a technology lead to higher unit costs for each subsequent unit put into service after the disruption. They model that, in a scenario with reduced innovation, the capital costs of critical technologies such as hydrogen electrolysers would rise by almost 10% by 2030 compared to a scenario with faster innovation.[75] This undermines the ability to scale up production while requiring additional government support for longer until the technology becomes competitive.

Third, important spillover effects occur in other decarbonisation sectors, where production capacity and renewable energy prices shape the entire green industrial value chain.[76] Other green technologies, such as green hydrogen and steel, depend on renewable energy. Apart from being subject to the same dynamics as renewable energy in terms of interest rates and innovation, the commercialisation of these technologies also critically depends on the price of renewable energy. This gives them a form of scaled-up exposure. For instance, the IEA finds that an increase of 3 percentage points in the cost of capital could raise the total cost of hydrogen produced from renewable electricity by nearly one-third.[77]

The ECB's current inflation-targeting regime thus risks creating a self-reinforcing loop that fosters carbon lock-in: increased fossil fuel dependency leads to price instability, prompting the ECB to raise rates. This disproportionately affects the deployment of renewable energy and green technology, thereby reinforcing fossil fuel dependency and inflationary risks. In the long term, this could lead to what economists refer to as "hysteresis": a situation in which a temporary economic shock has long-term, persistent effects, resulting in the economy failing to return to its original level. Therefore, the ECB is missing the fact that the risk is not only inflation, but stagnation, in which monetary tightening has long-lasting consequences for Europe's economic potential while impeding the key ingredient in price stability: the green transition.

4. POLICY RECOMMENDATIONS

The EU requires a new macroeconomic settlement that sees much closer coordination between monetary and fiscal policy. The reforms herein approach it from different angles. Some change how the European Central Bank (ECB) uses its existing mandate; others help fiscal and regulatory authorities absorb supply shocks directly; others reduce the shocks themselves. None asks the ECB to abandon its independence or the goal of price stability. Together, they redefine what price stability requires in an economy whose prices are repeatedly set by the cost of imported energy.

- **Energy resilience is key to price stability.** Our analysis shows that the transition is not a secondary concern the ECB may attend to once prices are stable; it is central to price stability itself. Because fossil fuel dependence is the dominant source of the shocks that destabilise European prices, supporting the transition serves the ECB's primary mandate directly over the medium term, the horizon on which that mandate is explicitly defined. Its secondary mandate under Article 127(1) TFEU, which obliges the Bank to support the Union's wider objectives, environmental protection among them, adds a further and independent basis for the same action. The ECB has already conceded the principle through its 2021 strategy review and the tilting of its collateral and asset frameworks to account for climate change.[78] Faster renewable deployment, demand-side management, storage, grid and interconnection capacity, digitalisation, and efficiency and sufficiency are not solely climate policy. Each reduces the frequency and severity of the fossil price shocks that drive European inflation. The ECB should deliberately act on energy security to aid these proposals, through green dual refinancing rates, a decarbonised collateral framework, and credit guidance.

- **Coordinate monetary and fiscal policy around the type of shock**. As we have argued previously, the appropriate instrument depends on the origin of the inflation: interest rates may be suited to demand-driven pressures, but a supply shock is better met by fiscal and regulatory tools that address the cost at source. Coordination lets each authority do what it is equipped to do, with monetary policy keeping financing conditions compatible with the investment needed to achieve medium-term price stability while fiscal policy absorbs the energy shock directly, rather than forcing interest rate hikes to carry a burden it handles poorly. Coordination can also think through what longer-term measures need to be in place, such as strategic buffers or other measures. This is coordination, not subordination, and it certainly need not compromise central bank independence. Clarifying the ECB's secondary mandate, and convening a standing advisory body (which we have called an Economic Coordination Council) to flag where the monetary and fiscal stance pull against each other, would force monetary policy and fiscal policy decision-makers to justify inaction where they decline to do so. More details on NEF's proposals on monetary-fiscal coordination can be found in our report, How do you solve a problem like inflation?[79]

- **Use dual interest rates to fund the green transition.** The core constraint the ECB faces is that a single policy rate must do two jobs at once: govern the aggregate stance and shape the cost of the very investment that would reduce fossil dependence. A dual-rate would help overcome this problem. By setting a separate, lower rate on targeted long-term refinancing tied to green lending, the Bank can keep financing conditions favourable for the transition even while it holds or raises the headline rate to contain demand. The ECB has run three series of targeted longer-term refinancing operations since 2014, and under TLTRO III[c] it lent below its main policy rate for a defined purpose, demonstrating that it can decouple the cost of targeted lending from the headline stance. Sustainable Finance Lab's 2024 report shows a detailed proposal for achieving dual rates.[80]

c With the targeted longer-term refinancing operations (TLTROs), the ECB offers banks longer-term loans at favourable rates.

- **Hold strategic buffers of systemically significant commodities.** Governments should hold physical buffers – strategic reserves of gas and other critical energy commodities – that can be released to blunt a price spike before it propagates through the economy. Weber and Schulken[81] argue that buffer stocks in sectors capable of triggering economy-wide inflation are a form of price-stability insurance that are cheaper than the damage they prevent. They develop the case for food staples but see it applying to other systemically important commodities, such as energy.

- **Strengthen the anti- pass-through toolkit now.** We are likely to experience more supply-side inflation in the coming years due to geopolitical instability, climate change, and other crises. Therefore, pre-emptive measures to stop a supply shock turning into persistent inflation need to be put in place now rather than resorting to emergency improvisation. Stronger competition enforcement, applied continuously, leaves firms with less market power to widen or maintain margins when a shock hits. Ongoing price surveillance is valuable in its own right and means the data and institutions are already in place when a crisis arrives. Other measures include a permanent excess-profits tax on oil and gas, rather than a one-off emergency levy, which captures windfall profits as they arise.[82]

CONCLUSION

Most major inflationary episodes in Europe over the past half-century have run through the price of fossil fuels, and the current one is no exception. The monetary policy framework built in response to the 1970s handed the problem to an independent central bank, mainly using interest rates to manage inflation on the assumption that inflation was fundamentally a matter of government mismanagement and excess demand. The shocks of the 2020s have exposed the limits of that settlement. A supply shock met with a blunt rate delivers weak disinflation at a high and asymmetric cost, suppressing the very transition away from volatile imported fossil fuels that would insulate Europe from the next shock. What an energy shock calls for is a smarter toolkit, and the risk Europe now faces is not inflation held briefly above target, but a self-reinforcing loop of fossil dependence and monetary tightening that entrenches both.

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