Fossilflation

How oil and gas prices drive inflation and how households can be protected



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Executive Summary

The cost of living is rising again in 2026, and fossil fuel prices are once again a major driver. This analysis examines the extent to which oil and gas prices contribute to inflation in the euro area.

The results are clear. Before the pandemic, changes in energy prices accounted for 71 percent of fluctuations in the overall inflation rate in the euro area. The exceptional period from 2020 to 2023, when the pandemic, supply-chain disruptions and Russia's invasion of Ukraine produced unusually large movements across multiple components of inflation, changed this pattern temporarily. Since 2024, however, energy prices have once again accounted for 97 percent of fluctuations in the headline inflation rate in the euro area. This means that price stability is significantly influenced by factors beyond the direct control of central banks, including OPEC decisions, geopolitical conflicts and developments in global fossil fuel markets.

The current inflation episode demonstrates this vulnerability in real time. Between January and August 2026, the headline inflation rate in the euro area increased by 1.5 percentage points, with the entire increase accounted for by energy. Without the oil price shock, the estimated inflation rate in August would have been 2.2 percent in the euro area rather than 3.2 percent.

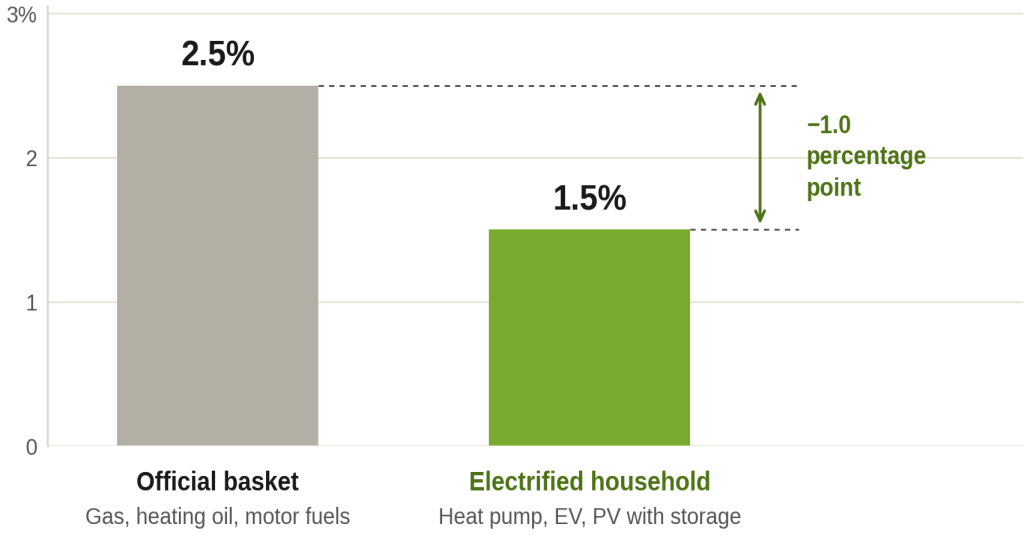
Fossil fuels dependence is not inevitable. A simulation of an alternative consumption basket for a fully electrified household in Germany shows that its price level would have been 2.6 percent lower since 2020, equivalent to 0.4 percentage points less inflation per year. So far this year, through August, the electrified household would have faced a price increase of 1.5 percent instead of 2.5 percent, a full percentage point less than the official basket of goods. These findings point to two policy conclusions. First, economists, central banks and governments should recognise fossil fuel price shocks as a recurring source of inflationary pressure and economic instability, rather than treating them as temporary energy-related events. Second, reducing dependence on oil and gas is the most direct way to reduce this vulnerability. As long as economies remain heavily exposed to internationally traded fossil fuels, price stability will remain vulnerable to geopolitical crises and other disruptions beyond the control of monetary policy.

Some central banks, including the People's Bank of China and the Hungarian National Bank, have already begun incorporating this insight into their policy frameworks by promoting green lending and investment in decarbonisation. Expanding electrification and renewable energy can therefore do more than reduce emissions: it can reduce exposure to fossil fuel price shocks and help protect households and economies from recurring bouts of inflation when crises disrupt the fossil fuel system.

Decarbonisation is not only a climate imperative. Replacing fossil fuels with renewable energy and electrification is also a way to reduce one of the recurring sources of inflation and strengthen long-term price stability.

Inflation since the start of the year

Inflation rate 2026 (YTD), Germany



Source: Destatis; own calculation · Greenpeace e. V.

1 Introduction: The Incomplete Inflation Discourse

Inflation is not an abstract economic phenomenon. It determines what people can afford to eat, how much they pay to heat and cool their homes, the cost of getting to work and whether household budgets can keep pace with rising prices. Across much of the world, people have faced sustained increases in the cost of living since the beginning of the decade. Energy prices have been a major driver of these increases.

The latest energy shock, driven by the war on Iran, is the clearest and most recent example of how exposure to fossil fuels can feed inflation. When conflict threatens oil and gas supplies, prices rise rapidly. Those higher energy costs then flow through economies, increasing the cost of transport, manufacturing, food and other goods and services. Families and communities ultimately pay the price. Meanwhile, oil and gas companies benefit from higher prices and the windfall profits that follow.

This is not an isolated phenomenon. The fossil fuel system is inherently exposed to geopolitical conflict, supply disruptions and volatile commodity markets. Over the years, these and other shocks have repeatedly sent fossil fuel prices higher, with consequences far beyond the countries where the disruption occurred. These shocks are often treated as temporary disturbances to an otherwise stable energy system. But their recurrence points to a deeper problem: economies that depend on volatile fossil fuels are structurally exposed to fossilflation.

This analysis examines the contribution of energy prices to inflation and shows why fossil fuel price shocks matter far beyond the energy sector. The evidence demonstrates the central role that energy prices play in driving fluctuations in inflation and the extent to which changes in fossil fuel prices feed through to the wider economy.

The conventional economic response to inflation focuses on monetary policy, fiscal dynamics and expectations, wages and business cycle developments.[1]Central banks generally have limited ability to directly influence fossil fuel prices, and their response to energy price shocks has therefore tended to be restrained. Because these shocks are often expected to be temporary, central banks may look through them and focus on so-called core inflation, which excludes the effects of energy and food prices.[2]

That approach misses an important part of the problem. The fact that central banks cannot directly control fossil fuel prices does not make those prices irrelevant to inflation, nor does it make repeated fossil fuel price shocks merely temporary events. If energy prices are a major source of inflationary pressure, then the structural dependence of economies on volatile fossil fuels is an economic and political problem that demands attention.

The forecasting practices of central banks themselves demonstrate how central fossil fuel prices are to the inflation outlook. The European Central Bank's (ECB) macroeconomic projections, for example, are technically conditional on futures prices for oil and gas. In its September 2026 projections, the ECB assumed, based on the futures curve, that oil and gas prices would peak at US$88 per barrel in the third quarter of 2026 and €60 per megawatt hour in the fourth quarter before declining. On that basis, the ECB projected a temporary rise in inflation before inflation returns to its 2 percent target in 2028.[3]

In other words, the path of inflation is materially dependent on what happens to fossil fuel prices. Yet the fossil fuel price dependence underlying this exposure receives far less attention than the inflation it helps create, precisely because it is not one of the central bank's direct control variables.[4]

This needs to change. Central bankers should not treat recurring fossil fuel price shocks simply as external events that economies must absorb. They should address the underlying source of that vulnerability: dependence on an energy system built around volatile, internationally traded fossil fuels.[5]

The solution is not to increase or diversify fossil fuel supply in the hope of making the system more resilient. More fossil fuel infrastructure and production cannot eliminate the geopolitical, market and price risks inherent in fossil fuels. Instead governments should reduce economies' exposure to these shocks by accelerating the transition to decentralised renewable energy.

Renewable energy does not depend on fuel that must be continuously extracted, transported and traded through volatile global commodity markets. Combined with storage, electrification and more resilient, decentralised energy systems, renewables can reduce exposure to the price shocks that repeatedly transmit fossil fuel crises into household budgets and the wider economy.

This is the central argument of this analysis: fossilflation is not simply the result of occasional energy shocks. It is a recurring vulnerability built into the fossil fuel system. The war in Iran is the latest demonstration of the costs of that vulnerability.

[1]Significantly shaped by the work of Friedman, M. and Schwartz, A. J. (1963), whose statement that "Inflation is always and everywhere a monetary phenomenon" founded this school of thought.

[2]During a panel discussion hosted by Harvard University in March, former Fed Chair Jerome Powell stated, according to CNN: "The tendency is to look through any kind of supply shock. A crucial aspect, however, is that you have to keep a careful eye on inflation expectations."

[3]ECB staff macroeconomic projections for the euro area, March 2026; ECB Staff Macroeconomic Projections for the Euro Area, September 2026.

[4]This reticence appears all the more questionable given that central bankers – such as Jens Weidmann, former President of the Bundesbank – have quite explicitly criticised policy areas that lie outside their sphere of influence, such as an allegedly undisciplined fiscal policy, because of the associated inflation risks (Quoted in Süddeutsche Zeitung 2012: Bundeshaushalt: Chef der Bundesbank rügt Koalition.).

[5]Some researchers have proposed a dual interest rate, under which the central bank offers a reduced interest rate for green investment projects. This proposal is not new. The People's Bank of China launched a green lending programme in 2021, while the Hungarian central bank adjusted its capital requirements according to green criteria.

2 The Direct Link Between Fossil Energy Prices and Price Instability

2.1 Methodological Note

The following analysis focuses on the drivers of price fluctuations rather than the level of inflation itself. The distinction matters because a stable, moderate rate of inflation is generally less harmful to society than unexpected changes. Economic actors can incorporate a stable inflation rate into decisions such as setting nominal interest rates, negotiating long-term supply contracts and collective wage agreements. Sudden changes in the price level, by contrast, can cause unexpected income losses and make economic planning more difficult.[6]

This is why central banks pursue positive but moderate inflation targets, such as the ECB's 2 percent target. At these levels, fluctuations in inflation are more important to economic stability than the level of inflation itself.[7] The analysis below therefore examines what drives changes in the inflation rate, with particular attention to the contribution of energy prices.

2.2 The Descriptive Picture

Figure 1 breaks down the headline inflation rate into two components relevant to the analysis: the contribution from energy and the contribution from all remaining components, including food. It shows developments over the past thirteen years in descriptive terms.

In the relatively stable period from 2013 to 2020, the contribution from the non-energy components forms an almost flat plateau. Every movement in the headline rate is accounted for by the energy contribution, which moves above and below the zero line.

The inflation surge of 2021–22 was different. The headline rate reached 10.6 percent in the euro area in October 2022 and 11.6 percent in Germany. During this period, all major components increased simultaneously. A combination of factors, including the COVID-19 pandemic, supply-chain disruptions and war-related shocks, caused inflation to broaden from 2020 onwards.

From 2023 onwards, inflation began to normalise. The negative contribution from energy pushed the headline rate down rapidly, while the energy-adjusted component also declined but remained around two percent, within the ECB's target range.

[6] Among others, Fischer, S., 1996: Why Are Central Banks Pursuing Long-Run Price Stability or Judson, R. and Orphanides, A., 1999: Inflation, Volatility and Growth have examined these effects in detail.
[7] When inflation rises, the volatility of inflation generally rises as well. See, e.g., Okun, A. M., 1971: The Mirage of Steady Inflation.

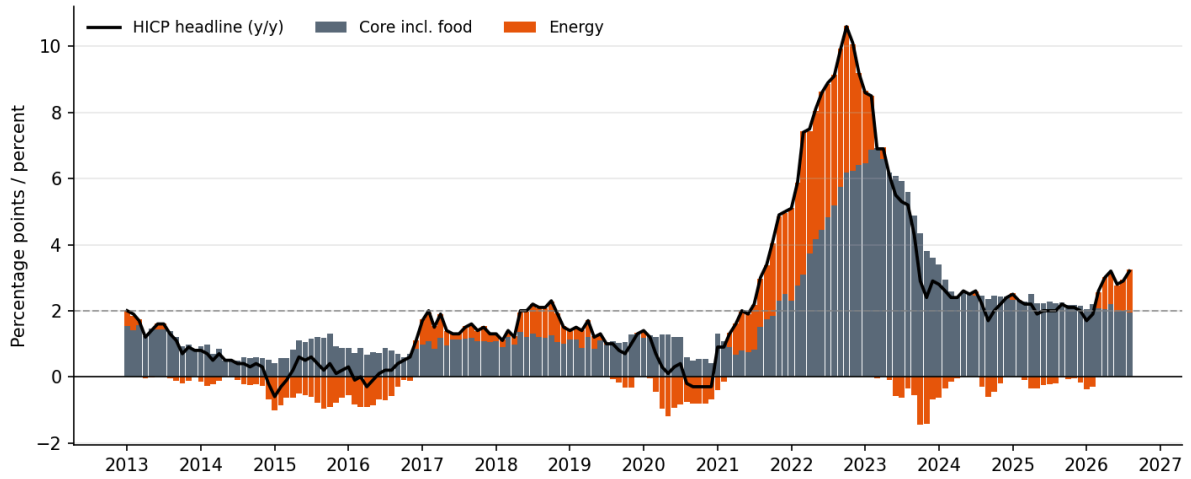


Figure 1: Contributions of the main components (energy as well as core including food) to the headline HICP rate in the euro area, January 2013 to August 2026. Positive contributions are stacked upwards from the zero line, negative ones downwards; the sum corresponds to the black headline line. Data: Eurostat, ECB.

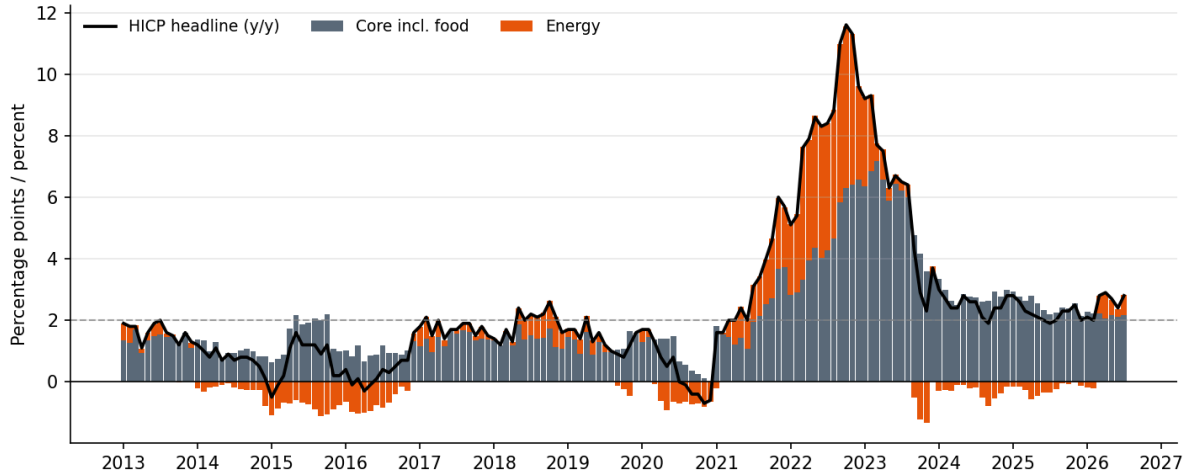


Figure 2: Contributions of the main components to the headline HICP rate in Germany, January 2013 to August 2026. Positive contributions are stacked upwards from the zero line, negative ones downwards; the sum corresponds to the black headline line. Data: Eurostat, ECB.

In 2026, energy has again become the dominant contributor to the movement in headline inflation, as it was before the pandemic. Between the start of the year and August 2026, the headline rate in the euro area increased by 1.5 percentage points. The energy contribution also increased by 1.7 points, meaning that the increase over this period was entirely accounted for by energy. In Germany, the pattern is even more pronounced: the energy contribution increased by 1.0 percentage points against an overall increase of 0.8 percentage points, with the remaining components having a slightly dampening effect over the same period.

Figure 3 quantifies this relationship using a simple variance decomposition. Before the pandemic, energy accounted for 71 percent of the movement in the headline inflation rate in the euro area and 67 percent in Germany. When the pandemic years are included, the picture for 2013–2026 is different: energy accounts for 42 percent of the movement in the euro area and 45 percent in Germany. Energy therefore remains a major contributor, but the core and food components also move substantially during this period.

The difference is largely associated with the exceptional period from 2020 to 2023, when the pandemic, supply-chain disruptions, extensive fiscal responses and Russia's invasion of Ukraine coincided with unusually large movements in inflation. These crisis years therefore represent a distinct period in the data and should not automatically be treated as representative of normal conditions.

After 2023, the relationship returns closer to the pre-pandemic pattern. Since 2024, energy accounts for 97 percent of the fluctuation in the headline rate in the euro area and 62 percent in Germany. The German figure may have been dampened by measures including the fuel discount introduced in May and June.

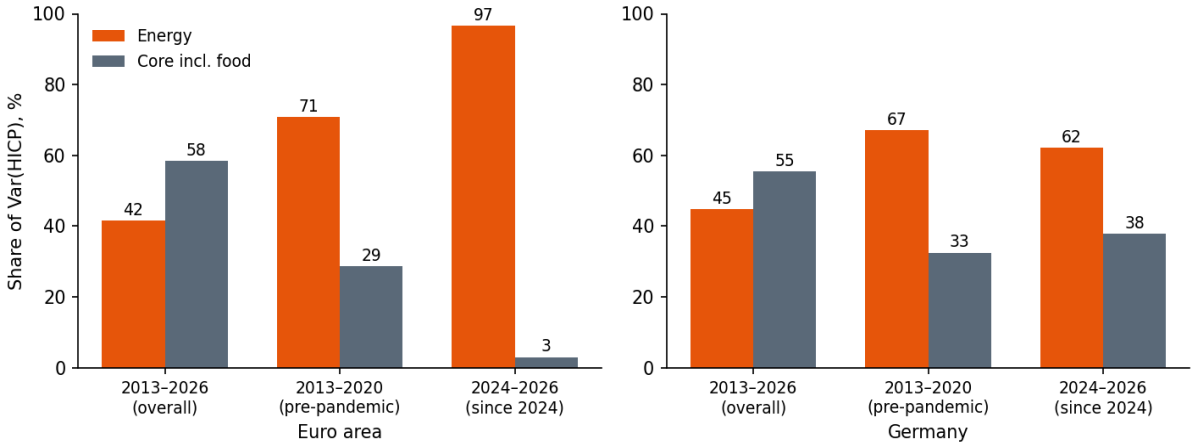


Figure 3: Share of energy in the fluctuation of the headline HICP rate, by sub-period. Left: euro area; right: Germany. Euro area up to August 2026, Germany up to July 2026. Data: Eurostat, ECB; own calculations.

2.3 Second-Round Effects of Energy on the Core Rate?

To determine the overall impact of energy prices on inflation, the effects on the core rate - the so-called second-round effects - must also be taken into account. After all, higher energy prices have a delayed impact, for example through wage adjustments, on components not included in the energy category.

To examine these effects, the analysis uses local projections following Jordà (2005). Over the full period from 2013 to 2026, the results show a pronounced second-round effect: an energy shock of one percentage point is associated with a 3.06 percentage-point increase in the headline rate in the euro area after twelve months, of which 1.50 percentage points are attributable to core components including food. In Germany, the corresponding figures are 2.56 and 1.49 percentage points.

However, the results change when the analysis is separated into sub-periods. Outside the pandemic phase, the analysis does not find a statistically significant second-round effect from energy prices on the core rate. In the pre-crisis period from 2013 to 2020, the estimated core response after twelve months was 0.06 percentage points in the euro area and 0.14 percentage points in Germany. In both cases, the estimates are statistically indistinguishable from zero.

The overall second-round effect is therefore concentrated in the exceptional crisis period from 2020 to 2023. The analysis treats this as a distinct regime associated with the pandemic and its associated disruptions, rather than assuming that the relationships observed during this period apply to current conditions. It is consequently excluded from the subsequent calculations.

2.4 What Share of the Energy Contribution Is Oil-Driven?

The analysis next examines the specific contribution of oil prices. Brent crude, measured in euros, is influenced largely by factors outside the European economies, including OPEC decisions, geopolitical conflicts and other external developments.

Energy contribution as a function of Brent in euros (y/y), lags 0–3	R^2	n	+10% oil price
Euro area, 2013–2026	0.714	163	+0.31 pp
Euro area, 2013–2020 (pre-pandemic)	0.871	85	+0.21 pp
Euro area, 2024 – August 2026	0.773	32	+0.22 pp
Germany, 2013–2026	0.591	164	+0.29 pp
Germany, 2013–2020 (pre-pandemic)	0.768	85	+0.20 pp
Germany, 2024 – July 2026	0.675	31	+0.13 pp

Table 1: Explanatory power of the oil price for the energy contribution. (See regression table in the appendix).

The OLS regression (see Table A1) finds that a 10 percent year-on-year increase in the Brent price in euros is associated with a 0.31 percentage-point increase in the energy contribution in the euro area. The oil price alone explains 71 percent of the movement in the overall energy component. In Germany, the corresponding figures are 0.29 percentage points and 59 percent.

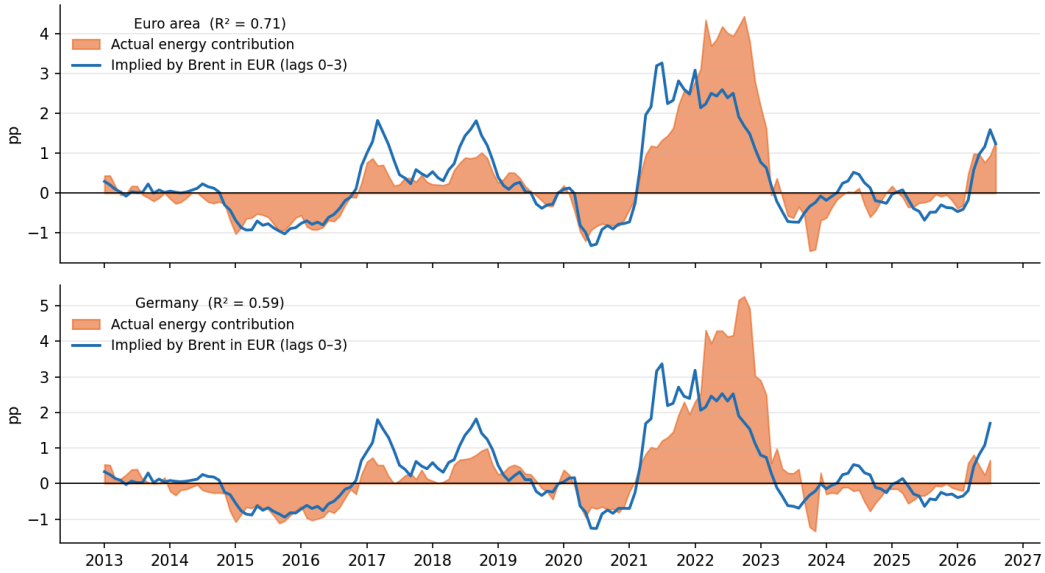


Figure 4: Actual energy contribution and path estimated from the Brent price (OLS estimate), 2013 to 2026.

Outside the pandemic period, the relationship is even stronger. In the pre-pandemic period, the coefficient of determination in the euro area reached 0.871. This relationship is important for interpreting the results: the energy component, which accounts for a large share of movements in headline inflation, is itself strongly related to fossil fuel prices.

Europe is also exposed to movements in gas prices. Unlike the United States, where the domestic gas market is more insulated from international markets, a considerable share of European gas pricing is linked to the Dutch TTF trading hub. The model is therefore extended to include the annual rate of change in the TTF gas price.

Adding gas prices increases the explanatory power of the model from an R^2 of 0.71 to 0.77 in the euro area and from 0.59 to 0.66 in Germany. This represents an increase of around six and seven percentage points respectively in R^2, or roughly eight and twelve percent relative to the original explanatory power. The improvement is particularly pronounced from 2022 onwards, when including gas prices provides a better explanation of the further increase in the energy component.

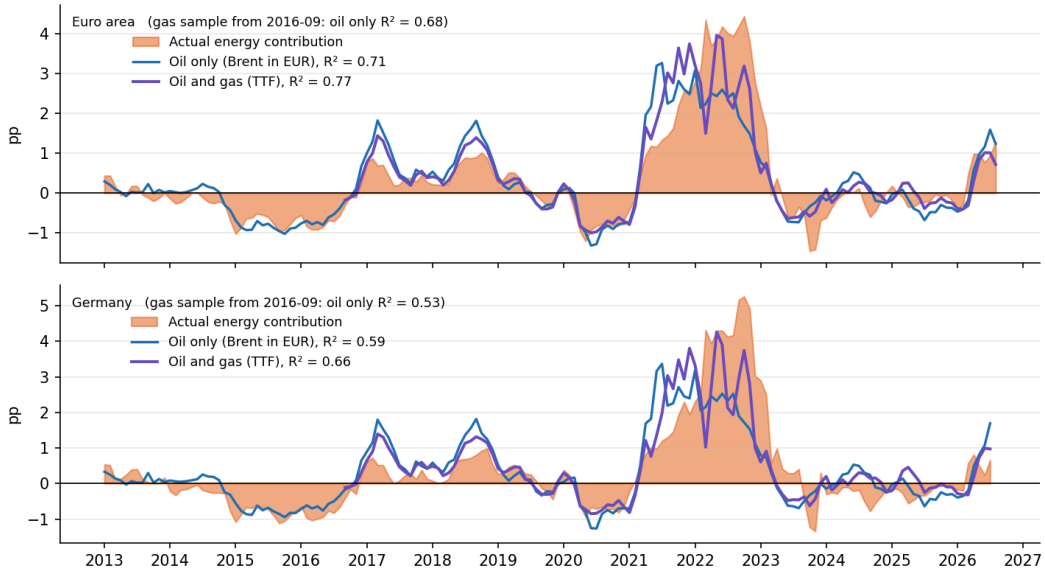


Figure 5: Actual energy contribution and path estimated from the Brent price and the TTF gas price (OLS estimate), 2013 to 2026.

2.5 What Impact Did the Oil Price Shock of Spring 2026 Have?

The analysis can now be applied to the recent rise in inflation. The headline rate in the euro area increased from 1.7 percent in January 2026 to 3.2 percent in August. In Germany, it increased from 2.1 percent to 2.9 percent over the same period.

Oil prices moved sharply during this period. The monthly average Brent price was €58.7 per barrel in January. Following the war in Iran and the subsequent

closure of the Strait of Hormuz, it rose to €94.3 in April.[8] Following the negotiated ceasefire between the US and Iran, the price fell to €64.2 in June, before rising again to €77.8 in July amid renewed military tensions.

To estimate the contribution of the oil price shock to the inflation picture, the analysis first estimates how the observed oil price path affected the energy component. This is then compared with a counterfactual scenario in which the Brent price in euros remained at its January 2026 level.[9] The difference between the two paths yields the following trajectories:

[8] It should be noted that it was not only the oil price but also the simultaneous rise in refining margins that led to the sharp increase in fuel prices. See the IMK Inflation Monitor from September and IMK Policy Brief No. 224.

[9] Although the TTF gas price also rose noticeably during the period under analysis, it did not do so as sharply as the oil price. Owing to longer-term contracts and heating-season cycles, it also feeds through into inflation with a greater delay. Moreover, the estimation model for gas does not suggest a clear direction across the lags (cf. statistical appendix). For these reasons, we model the shock without gas.

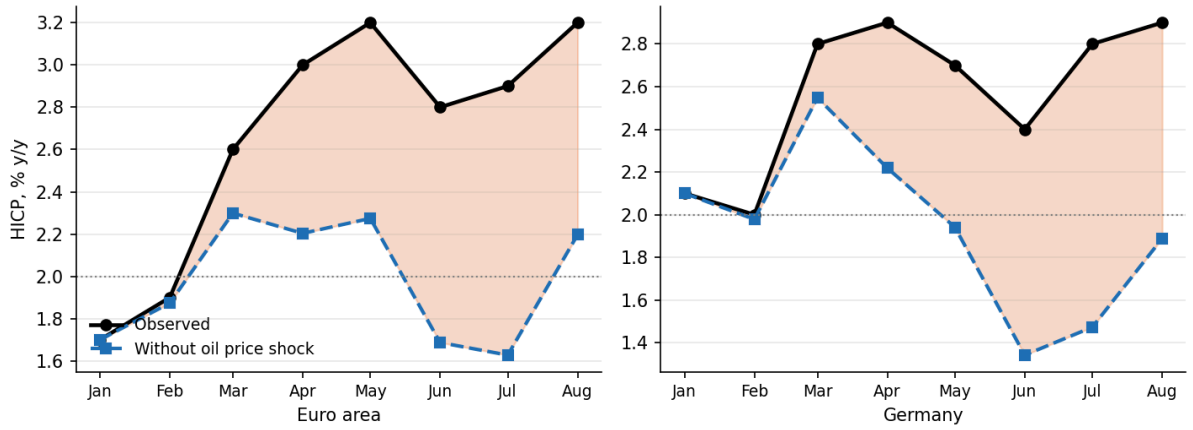


Figure 6: Actual inflation and counterfactual path with a constant oil price, January to August 2026. Left: euro area; right: Germany.

Based on the estimated relationship between oil prices and the energy contribution in Table 2, the headline rate in the euro area was 3.2 percent in August, compared with an estimated 2.2 percent under the constant-oil-price counterfactual. In Germany, the corresponding figures are 2.9 percent and 1.9 percent.[10] The model therefore attributes around one percentage point of the August headline rate to the direct effect of the oil price shock in both economies.

These results show how a sharp movement in a globally traded fossil fuel can feed directly into the energy component of inflation and, in turn, materially change the headline inflation rate. The analysis shows that oil price volatility remains an important channel through which the fossil fuel system can transmit external shocks into European economies.

3 Electrification: How Can Households be Shielded Against Fossilflation

The preceding analysis shows how fluctuations in fossil fuel prices contribute to inflation. Electrification offers households a way to reduce their exposure to these shocks. By switching to electric heating and transport, generating electricity at home and storing it for later use, households can rely less on fossil fuels whose prices are shaped by international markets and geopolitical events.

To estimate the potential effect, we model an electrified household and compare its consumer price index with Germany's official consumer price index. In the baseline scenario, the household has rooftop solar and battery storage, with 70 percent of its electricity needs met through self-consumption. It uses an electric heat pump instead of gas, heating oil, solid fuels or district heating, and has used a battery electric vehicle since 2020. We also model alternative solar self-consumption rates of 50 and 90 percent.

The model adjusts the weights of two groups in the German consumer price index. Under Housing, water, electricity, gas and other fuels, the weights for gas, heating oil, solid fuels and district heating are set to zero and reallocated to electricity. Under Transport, the weight for fuels and lubricants is also set to zero and reallocated to electricity.

[10]Methodologically, the energy component is estimated here with oil prices frozen from January using the estimation model from Table A1, and the difference between the estimate and the actual development of the energy component is subtracted from the inflation rate.

Subgroup	Official weight	Electrified weight
Electricity	2.450	7.415
Gas	1.128	0.000
Heating oil	0.375	0.000
Solid fuels	0.061	0.000
District heating and other	0.330	0.000
Fuels and lubricants	3.071	0.000
Total	**7.415**	**7.415**

Table 2: Reallocation of weights in the basket, as a percentage of the total basket. Basis: 2020 weighting scheme of the German consumer price index. Source: Destatis; own calculations

The model therefore reduces the combined weight of gas, heating oil, solid fuels, district heating and transport fuels from 4.965 percent of the basket to zero. The weight of electricity rises from 2.450 to 7.415 percent.[11]

The model also accounts for solar self-consumption. Electricity prices for the share purchased from the grid follow the official electricity price index. For the share generated and consumed at home, the model holds the price constant at its January 2020 level. In the baseline scenario, this applies to 70 percent of electricity use; the alternative scenarios assume self-consumption rates of 50 and 90 percent. All sub-indices are rebased to January 2020 = 100.

Figure 7 compares the resulting electrified household index with the official consumer price index.

[11]It should be noted that the calculation reflects only the effect on current consumption expenditure. Investment costs, for example for the photovoltaic system, storage and electric vehicle, are disregarded, as is any potential income from feeding electricity into the grid. The results are not a profitability calculation but a measurement of price risk exposure: they show how strongly a household remains exposed to fluctuations in fossil energy prices - and how far it can escape them.

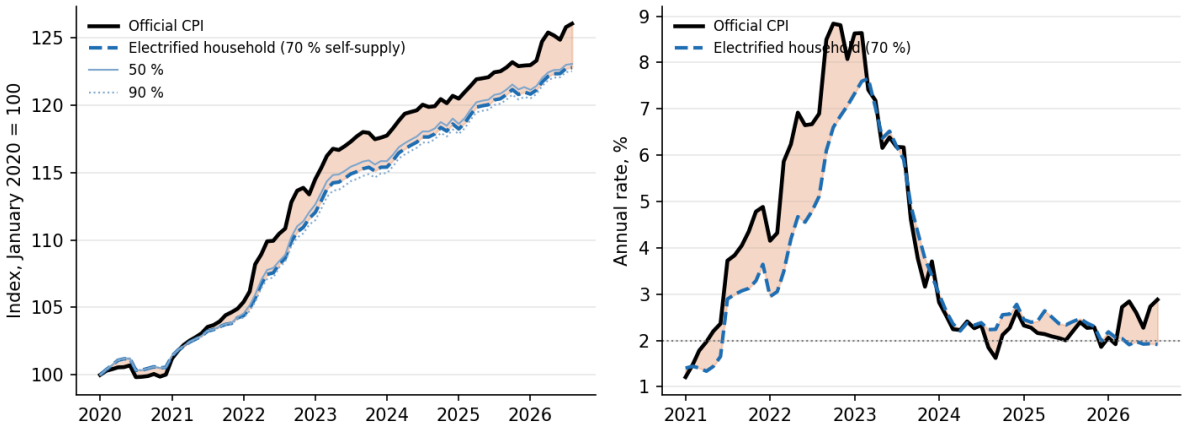


Figure 7: Official consumer price index compared with the index of the self-sufficient, electrified household, January 2020 to August 2026, base January 2020 = 100. Left: price level; right: annual rate. Source: Destatis; own calculations.

The results indicate that households which electrify heating and transport and meet a substantial share of their electricity needs through solar self-consumption can reduce their exposure to fossil fuel price shocks.

Self-consumption rate	Difference in indices since 2020	Annual rates	YTD 2026	Difference from official basket
50 percent	−2.37%	−0.36 pp p.a.	1.42%	−1.08 pp
70 percent (baseline scenario)	−2.58%	−0.40 pp p.a.	1.50%	−1.0 pp
90 percent	−2.80%	−0.43 pp p.a.	1.59%	−0.91 pp
official basket	-	-	2.50%	-

Table 3: Results of the electrified basket.[12]

[12]The ranking here is reversed relative to intuitive expectations: the 50 percent household performs best, the 90 percent household worst. The frozen self-consumption share also masks price declines, and the official electricity price index is falling slightly in 2026 (from 118.0 in July to 117.8 in August). Those who generate more electricity themselves benefit less from this relief.

Since January 2020, the modelled price index for the electrified household has risen less than the official index, leaving it 2.58 percent lower in the baseline scenario. This corresponds to an annual inflation rate around 0.40 percentage points lower.

The difference is particularly clear in 2026. The official basket recorded a year-to-date inflation rate of 2.50 percent, compared with 1.50 percent for the baseline electrified basket, a difference of one percentage point.

These results illustrate how electrification and solar self-consumption can help protect households from fossilflation. By reducing reliance on purchased fossil fuels, households can reduce their exposure to the price shocks that flow through the energy system into the wider economy.

4 Conclusion

This study finds that the contribution of fossil fuel prices to inflation is substantial, and in some periods dominant. Simple regression models attribute 30 to 40 percent of fluctuations in the inflation rate to fossil fuel prices. A more detailed analysis shows that energy has often been the main driver of changes in headline inflation. Before the pandemic, energy accounted for 71 percent of fluctuations in the euro area inflation rate. Since 2024, it has accounted for 97 percent. Oil prices alone explain 71 percent of the movement in the euro area's energy component, rising to 77 percent when gas prices are included. In Germany, energy's contribution to inflation fluctuations since 2024 has been lower, at 62 percent, but remains substantial.

The latest inflation shock, triggered by the war in Iran, demonstrates this vulnerability in real time. **The rise in EMU inflation by about 1.5 percentage point between January and August 2026 is entirely driven by rising energy prices, which were largely caused by oil prices**. Had oil prices remained at their January level, the headline rate would have been an estimated 2.2 percent in the euro area, rather than 3.2 percent, and 1.9 percent in Germany, rather than 2.9 percent. Since the start of the year, the model attributes most of the increase in euro area headline inflation to rising oil prices.

This is not an isolated event. The fossil fuel system is exposed to geopolitical conflict, supply disruptions and volatile international commodity markets. When crises disrupt that system, price shocks can spread through the wider economy, pushing up costs for households and businesses. Calling these episodes temporary energy inflation does not make their consequences temporary for the people who pay the bills. Repeated shocks reveal a structural weakness: dependence on fuels whose prices can be driven sharply upwards by events beyond consumers' control.

The analysis also shows how reducing that dependence can help protect households. **A simulation of an electrified, partially decarbonised household energy basket in Germany found that a household using a heat pump and an electric car, generating some of its own electricity through rooftop solar and storage, would have experienced an inflation rate of 1.5 percent this year, compared with 2.5 percent for the reference household.** Since 2020, its inflation rate would have been an average of 0.40 percentage points lower per year. These are results from a specific household simulation, not a guarantee that every household will experience the same reduction. They nevertheless illustrate the potential economic protection offered by replacing fossil fuel consumption with electrification and renewable energy.

Two policy conclusions follow.
First, economists, central banks and governments should recognise recurring fossil fuel price shocks as a significant source of economic instability, rather than treating them as exceptional events with little relevance to longer-term price stability. Central banks cannot control the price of oil or gas through interest rates alone. But that does not mean the inflationary risks created by fossil fuel dependence should sit outside economic policy discussions. Central banks can communicate more clearly about the relationship between decarbonisation and price stability, while governments and finance ministers can accelerate the changes needed to reduce exposure to fossil fuel markets.

Second, policymakers must address the underlying dependence on oil and gas. Diversifying fossil fuel suppliers may change where energy comes from, but it does not remove exposure to volatile international fossil fuel prices. The more durable response is to replace fossil fuels with renewable electricity, electrify transport and heating, and support the infrastructure, storage and decentralised energy systems needed to make that transition work. Some central banks, including the People's Bank of China (PBOC) and the Hungarian National Bank, have already begun incorporating this insight into their policy frameworks. Through programmes that promote green lending, they are seeking to encourage investment in decarbonisation and support greater price stability.

The lesson of fossilflation is that we cannot build lasting economic stability on a system repeatedly exposed to fossil fuel price shocks. Replacing fossil fuels with renewable energy and electrification is essential to reducing that vulnerability, protecting household budgets and tackling the cost-of-living pressures that follow when crises disrupt fossil fuel markets.

Statistical Appendix: Full Regression Results for Section 2.4

The dependent variable is the contribution of the energy component to the annual HICP rate in percentage points. The explanatory variables are the annual rates of change of the Brent price in euros and of the TTF gas price, each with lags of zero to three. HAC standard errors according to Newey and West with six lags in parentheses.

	(1) Euro area oil only	(2) Germany oil only	(3) Euro area oil and gas	(4) Germany oil and gas
Constant	0.18639* *(0.09530)*	0.21451* *(0.12584)*	0.16888** *(0.08131)*	0.22978* *(0.12295)*
Oil, lag 0	0.00575** *(0.00269)*	0.00476 *(0.00339)*	0.00321 *(0.00220)*	0.00219 *(0.00287)*
Oil, lag 1	0.00910*** *(0.00256)*	0.00820*** *(0.00308)*	0.01027*** *(0.00324)*	0.00923** *(0.00402)*
Oil, lag 2	0.00108 *(0.00322)*	−0.00075 *(0.00385)*	0.00139 *(0.00316)*	0.00110 *(0.00416)*
Oil, lag 3	0.01460*** *(0.00482)*	0.01701*** *(0.00660)*	0.00692** *(0.00331)*	0.00668 *(0.00469)*
Gas, lag 0	-	-	−0.00202 *(0.00138)*	−0.00312* *(0.00161)*
Gas, lag 1	-	-	−0.00095 *(0.00175)*	−0.00132 *(0.00213)*
Gas, lag 2	-	-	0.00117 *(0.00085)*	0.00221** *(0.00103)*
Gas, lag 3	-	-	0.00430*** *(0.00129)*	0.00478** *(0.00185)*
Sum of oil lags	**0.03053*** **	**0.02921*** **	**0.02179*** **	**0.01921*** **
Sum of gas lags	**-**	**-**	**0.00250**	**0.00255**
+10% oil (pp)	0.305	0.292	0.218	0.192
+10% gas (pp)	-	-	0.025	0.025
R^2	0.714	0.591	0.772	0.664
adj. R^2	0.707	0.581	0.756	0.640
n	164	163	120	119
Sample	2013-01 – 2026-08	2013-01 – 2026-07	2016-09 – 2026-08	2016-09 – 2026-07

*Table A1: Energy contribution and fossil prices, OLS with HAC standard errors (6 lags). * **p < 0.01,** p < 0.05, * p < 0.10. The significance of the lag sums is based on an F-test of the respective linear combination.*

Reading notes. The lag structure of the oil price shows two peaks - at one and at three months - with a dip at lag 2. This corresponds to the transmission chain: fuel prices at the pump react almost immediately, while heating cost and utility bills follow with a delay.

The sum of the oil coefficients falls markedly as soon as the gas price is included in the equation: in the euro area from 0.0305 to 0.0218, in Germany from 0.0292 to 0.0192. The gas coefficients change sign across the lags: lags 0 and 1 are negative, lags 2 and 3 positive. At 0.0025, their sum is small and not significant on its own, although the four coefficients are jointly highly significant (F-test, see Table 3). It is precisely this constellation that explains why the counterfactual calculation in Section 2.5 sticks with the pure oil model: in terms of goodness of fit, the combined specification is superior, but for projecting a strongly asymmetric price path, the lag structure of gas is not determined with sufficient precision.