S&P Global
Ratings

Europe Braces For A Bleak Winter

Germany faces recession if gas rationing is required

Aug. 29, 2022

This report does not constitute a rating action

Key Takeaways

- EU countries are in a race against time to reduce gas consumption by 15% to protect households and businesses from power cuts and rationing this winter.
- Germany and Italy are most exposed given their heavy reliance on Russian gas.
- Under our downside scenario of a full Russian gas cutoff and mandatory EU rationing, Germany would fall into recession and eurozone growth would weaken by 1.4 percentage points.
- Inflation would surge initially and then stay higher for longer, forcing the ECB to raise the refinancing rate to 3% by early 2024 against 2% under our baseline.

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Europe faces a winter in flux. Given continuing uncertainty about the physical war in Ukraine, the proxy economic war with Russia involving sanctions, energy, food, and other materials only appears to be escalating. With no end to the conflict in sight, and Russia tightening the noose on natural gas flows to Europe, the Continent is bracing for a bleak winter ahead.

Consequently, Europe is in a race to fortify its energy security to protect households and businesses from power cuts and rationing this winter, which would likely result in a slowdown in more vulnerable countries. Even without an energy supply shock, European governments face the dilemma of protecting households and businesses from exorbitantly high gas and electricity prices or allowing wholesale prices to be passed through to consumers at the cost of higher inflation. Allowing the price mechanism to achieve the necessary demand destruction to rebalance the gas and electricity markets could minimize the inevitable disruption and economic costs associated with any power cuts or government-imposed rationing on industry--with some targeted support for the most vulnerable households. Given the politics of higher energy prices, however, governments may settle on a halfway solution by using a portion of this year's revenue windfall, from the inflationary effects on tax receipts, to smooth the rise in energy costs on the real economy.

European Countries' Dependency On Russian Energy Varies Widely

Italy and Germany are the two large European countries most vulnerable to a gas supply shock given their heavy use of natural gas and significant dependency on Russia.

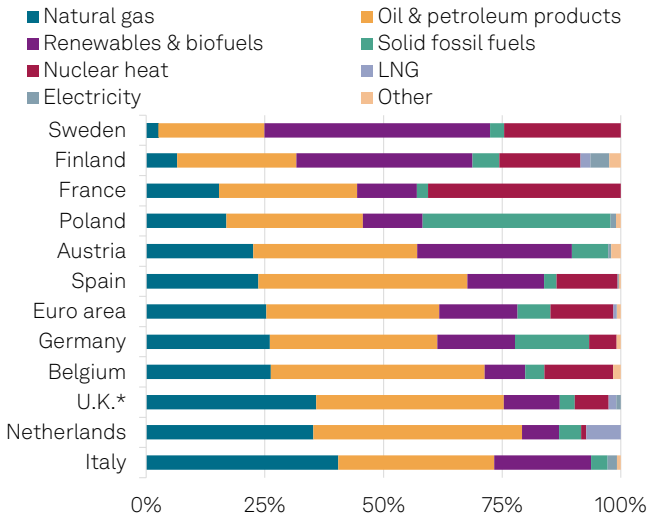
In Germany, natural gas provides 26% of overall energy requirements, with about 15% of electricity generation dependent on natural gas. However, over many years Germany developed an overreliance on a single supplier, and in 2020 almost 60% of its natural gas supply was piped in from Russia largely on long-term contracts. Given the size of the German economy, this represents a significant volume of gas

- 55-60 billion cubic meters (and 15.3% of gross available energy). In comparison, France imported only 16% of its natural gas from Russia, and the U.K. only about 6%, all in the form of liquefied natural gas.

Chart 1

Sources of Energy by Country (2020)

Italy and Netherlands heavily reliant on natural gas ...

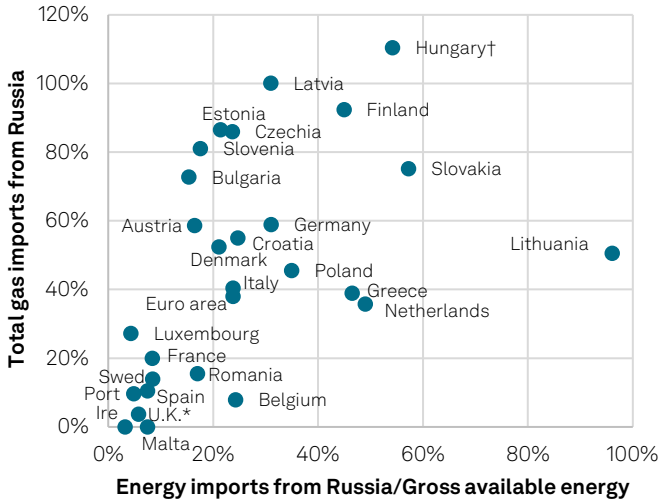


Source: Eurostat. *2019.

Chart 2

Total Energy and Gas Dependency on Russia (2020)

...with Germany and Italy significant buyers of Russian gas

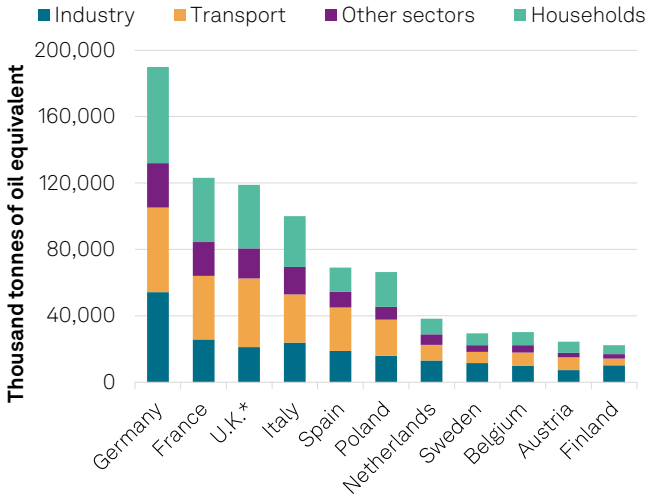


Source: Eurostat, ONS. *2021. †A percentage above 100% indicates the country imports more than it needs for domestic consumption and exports a different energy product.

Chart 3

Domestic Energy Consumption by Sector (2020)

Industry and households are key sectors that consume gas

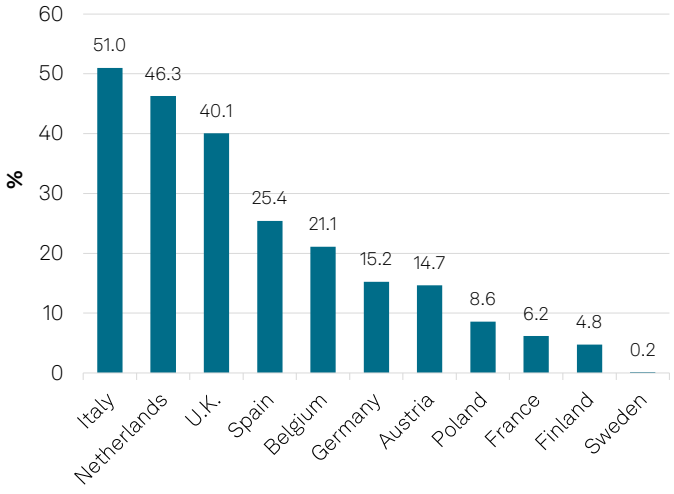


Source: Eurostat. *2019.

Chart 4

Share of Electricity Production from Gas

...and gas is important for power generation in Italy and the Netherlands



Source: Our World In Data.

Italy is even more dependent on gas, which provides slightly over 40% of its total gross energy supply and generates half of its electricity, not helped by the worsening drought limiting hydropower output. However, Italy has made more progress than Germany in diversifying its

sources of gas, with over three-fifths of its gas now coming from non-Russian sources, principally Algeria. This of course does not shield the Italian economy from the higher cost of gas from non-Russian producers.

A Race Against Time To Secure Energy Supply For The Winter

Since Russia's invasion of Ukraine in February 2022, Europe has been on a mission to diversify away from Russian energy. While this has been possible for coal, and shipped oil cargo sanctions will take effect from the end of 2022, natural gas has not yet been subject to EU sanctions. In fact, quite the reverse, as since mid-June Russia has claimed that technical difficulties were leading to the reduction in the flow of gas through the key Nord Stream 1 pipeline. It has been widely seen as a bid to put economic pressure on European governments and undermine EU political support for Ukraine. Flows are currently running at 31 million cubic meters per day, only 20% of capacity, and next due to be cut off, at least for three days between Aug. 31 and Sept. 2.

In response, the European Commission coordinated a crisis plan, "Save Gas for a Safe Winter," on July 20. The central element of this program is a target for member states to reduce gas consumption 15% between Aug. 1, 2022, and March 31, 2023, with provision for it to become mandatory if necessary. Proposed measures include energy savings by lowering heating and air cooling; fuel substitution where feasible; and acceleration of renewables investment.

One Study Shows How Germany Might Make Ends Meet

A recent study focused on Germany ("How it can be done," ECONtribute: Policy Brief No. 034), published Aug. 5, 2022, estimated that if Russian gas supplies through Nord Stream 1 are cut off imminently, demand for gas in Germany would have to fall 210 terawatt-hours (TWh), or 25%, between August and the end of April 2023, even assuming that two floating storage regasification units come onstream early in 2023. Taking into account some substitution by alternative energy sources, the authors estimate that a 20% reduction in gas demand across industry, households, and the public sector would still be required to avoid mandatory rationing. This is very aligned with the German regulator's recent statements ("Germany must cut gas use by 20% to avoid winter rationing, regulator says," Financial Times, Aug. 14).

To achieve the necessary reduction in demand, the authors focus on the three key wholesale uses and users of gas: power generators, gas for heating, and gas used by industry. They estimate that switching to coal- and lignite-fired power stations could potentially save up to 60 TWh. However, that is not guaranteed because gas-fired power plants would still need to back up renewables as necessary. A decision not to extend the life of the last three nuclear power plants still operating beyond year-end would also limit the potential to reduce annual gas demand for power generation another 2%-3%.

Economizing on heating over winter could also achieve significant savings of gas. The policy study believes a 2.0-2.5ºC reduction in heating temperatures is potentially feasible, corresponding to a 16% reduction in gas demand (60 TWh) for heating homes and businesses. The challenge here is that gas contracts protect consumers from higher prices and provide little incentive to save. However, this is changing rapidly with the German government recently announcing a levy of 2.419 cents/kWh (24.19 €/MWh) that will be charged from Oct. 1, 2022, on all gas contracts. While designed to compensate gas importers for losses incurred as they replace cheap Russian gas with expensive spot market purchases, it will also create stronger incentives for consumers to economize. This contrasts strongly with government policy in other member states such as France and Italy, where consumers continue to be heavily subsidized to protect them against higher energy prices.

On this basis, residual savings of 90 TWh would still be required by industry to hit the overall 20% demand reduction target, and it could be higher if heating demand and power generators do not cut

back gas demand sufficiently. Given industrial demand for gas in Germany has recently averaged around 330 TWh between August and April, industry would need to cut gas demand by a little more than 25%.

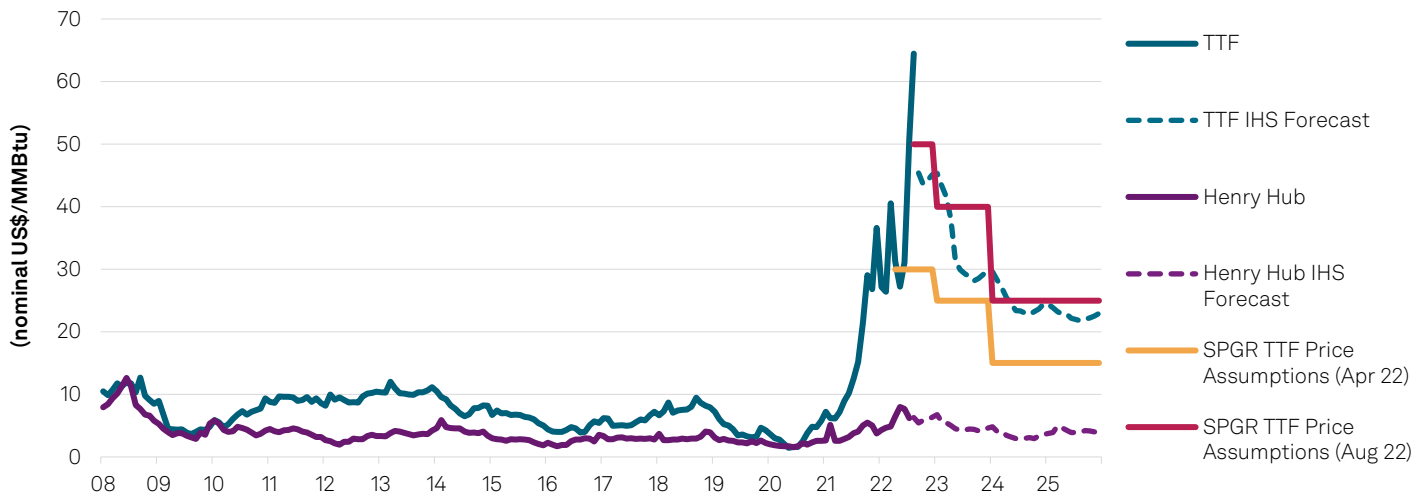
What Would Happen If Russia Completely Stopped Supplying Europe With Gas?

In this downside scenario, we examine the impact of a complete cutoff of the European economy from piped Russian gas. Since the capacity to replace Russian gas with gas imports from other sources is limited, this would restrict supply specifically for winter heating and industrial production. As a result, and as evident already in recent volatility in TTF pricing (see chart 5), European gas prices would increase significantly above the baseline scenario. Furthermore, some substitutability between fuels would translate into somewhat higher global oil prices.

Chart 5

European and U.S. Benchmark Gas Prices

Aug. 22 TTF average price more than 12x higher than 2015-2020 monthly average



Source: IHS Markit, S&P Global Ratings. Data as of Aug. 22, 2022. Aug 22 TTF average price month-to-date.

In addition, in this situation the EU would likely declare a "Union alert" that would enable mandatory gas rationing to be introduced in all member countries, primarily targeting industry (as households and essential services are protected). This would likely be required to achieve the overall 15% cut in gas demand compared to the average between August and April over the last five years and over and above the modest scaling back reported so far. S&P Global Commodity Insights reports demand through to the end of July has fallen by about 6% year on year on a weather-adjusted basis across the six largest European economies. These restrictions would affect industries most heavily dependent on gas and all downstream sectors. For example, if restrictions were imposed on manufacturers of glass used in the automotive industry, the reduction in supply (and higher prices) would feed through to car manufacturers, even in the absence of direct restrictions there.

Germany would take additional measures. In particular, according to our assumptions, the country implements the levy on all gas consumers, to pass on 90% of the costs currently associated with replacing missing Russian supplies. The levy, together with higher market prices already since the second quarter of 2022, could raise retail gas prices 200% year on year on

average in the final quarter of this year; retail gas prices would then fall only gradually until end-2025. Retail electricity prices would rise in turn, albeit to a much lesser extent.

Apart from the impact on industrial production, higher gas prices across Europe would lead to a further surge in inflation from the end of the year, reducing households' real incomes, consumer spending, and, ultimately, GDP growth.

Despite a more negative impact on GDP, the ECB would raise interest rates above the baseline to prevent imported energy price inflation from becoming embedded domestically.

Downside Scenario Assumptions

- European gas prices (TTF) rise to $60 from $30 per million British thermal units in Q4 2022 and then stay there, more than 100% above our 2024-2025 baseline, until the end of 2025.
- Global oil prices increase 20% in Q4 2022 from our baseline and then remain at these new levels until they gradually decline from 2024.
- The EU rations gas from Q4 2022 to Q1 2023, primarily targeting industry, to cut overall demand to 15% below average winter demand over the last five years.
- Investment aimed at improving substitutability away from Russian gas will not produce a meaningful impact before Q2 2023.
- Germany relaxes consumer protection laws to allow consumers to bear the brunt of higher wholesale gas prices. As a response, these prices jump 200% in Q4 2022 and only gradually decline from late 2023. Other fuel and power prices rise by association but to a much lesser extent. As a result, the energy component of CPI increases by 40% initially.

How To Read The Downside Scenario Assumptions And Results

The downside scenario that we are setting out in this article juxtaposes with the baseline forecasts we published at the end of June (see "Economic Outlook Eurozone Q3 2022: Inflation Dulls The Post-COVID Bounce"). Our baseline forecast was informed by our oil and gas price assumptions published on April 28, 2022. Since then, gas prices have increased further, as reflected in the Aug. 1 update of our European gas price assumptions (see chart 5), and the inflation outlook has deteriorated.

Consequently, the assumptions and results of this exercise reflect both a deterioration in the baseline and the shock from a Russian gas cutoff**.** The next update to our baseline forecast is due to be published in late September, where we will consider the latest macroeconomic conditions as well as energy price assumptions. However, it is all but a foregone conclusion that higher European natural gas prices will play an important role in the forthcoming update, at least in the shorter term.

Still, we believe the results provide important guidance, as they indicate downside potential, regardless of whether the economic situation has or has not deteriorated since June.

Results

Under the downside scenario, eurozone inflation more than doubles in 2023, surging to an average of 7.1%, compared with 3.4% in the baseline forecast. In Germany, where the shock is the largest, we see inflation tripling to 12.2% from 4.1%. (See table 1 below for the complete results of the downside scenario.)

Significantly higher inflation weighs heavily on consumer spending, which in 2023, across the eurozone aggregate, reduces private consumption by 1.4 percentage points from our June baseline. This is also reflected in a proportionate hit to GDP growth. In Germany, the blow to consumer spending is much more pronounced because of comparatively higher inflation, driven up by the special levy on top of already increasing retail gas prices. There, household spending growth is almost 3 points less and contracts 0.7%. As a consequence, the German GDP growth rate is 2.4 percentage points lower than our June forecast baseline, resulting in a shallow recession lasting through 2023 with the economy contracting by 0.4% in that year. In the eurozone, the growth rate declines to only 0.5%, supported by Spain and France whose economies are less affected by the energy crisis.

Across countries, the economic impact is generally driven by three factors:

- How much the economy and especially industry depends on natural gas, directly or indirectly;
- The size of the share of Russian gas in total gas use, and
- How much governments are prepared to shield households and businesses from higher wholesale energy costs.

For example, the impact to France's economy is much weaker because industry uses significantly more power from nuclear energy. Also, the French government has capped the increase in regulated household tariffs through at least 2022. Conversely, but as expected, Italy and Germany are the two largest European economies most vulnerable to a cutoff from Russian gas. A key reason why Italy still suffers less than Germany is that Italy does not have a government-sponsored extra pass-through of wholesale to retail prices. Were other European economies to implement measures similar to those in Germany, scenario results would turn out worse for these economies and the eurozone as a whole.

Significantly higher inflation across the eurozone will make it more likely that higher inflation becomes embedded in the domestic economies. In an attempt to curb this effect, if not prevent it altogether, the ECB would raise the refinancing rate above our baseline by an average of 70 basis points in 2023 and a further 40 basis points in 2024, taking it above 3% in early 2024, according to our simulations.

Table 1

Scenario Results and Difference Against Baseline

GDP

-- GDP Growth Rates (%) --									
	Baseline forecast			Downside scenario			Difference versus baseline		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
Eurozone	2.6	1.9	1.8	2.5	0.5	1.4	-0.1	-1.4	-0.4
Germany	1.9	2.0	1.9	1.8	-0.4	1.3	-0.2	-2.4	-0.6
France	2.6	1.7	1.6	2.6	1.0	1.7	0.0	-0.7	0.1
Italy	2.8	1.9	1.5	2.8	0.5	0.6	0.0	-1.4	-0.9
Spain	4.1	2.7	2.5	4.0	2.3	2.0	-0.1	-0.4	-0.5

Inflation

-- CPI Inflation (%) --									
	Baseline forecast			Downside scenario			Difference versus baseline		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
Eurozone	7.0	3.4	2.2	7.9	7.1	2.9	0.9	3.7	0.7
Germany	7.6	4.1	2.3	9.6	12.2	3.4	2.0	8.1	1.1
France	5.2	2.7	2.0	5.5	4.4	2.7	0.3	1.7	0.7
Italy	6.3	2.6	1.7	6.6	4.4	3.4	0.3	1.8	1.7
Spain	7.9	3.4	2.7	8.6	6.1	3.4	0.7	2.7	0.7

Private Consumption

-- Real Private Consumption (%) --									
	Baseline forecast			Downside scenario			Difference versus baseline		
	2022	2023	2024	2022	2023	2024	2022	2023	2024
Eurozone	2.5	1.9	1.7	2.3	0.5	1.0	-0.2	-1.4	-0.7
Germany	3.0	2.2	1.7	2.5	-0.7	0.9	-0.5	-2.9	-0.8
France	2.3	1.1	1.5	2.2	0.2	0.8	-0.1	-0.9	-0.7
Italy	2.7	1.9	1.2	2.7	1.3	0.4	0.0	-0.6	-0.8
Spain	0.4	3.3	2.4	0.3	2.2	1.4	-0.1	-1.1	-1.0

Source: S&P Global Ratings.

The downside scenario was devised by S&P Global Ratings, which used the Global Link Model from S&P Global Market Intelligence's Economics & Country Risk group.