



Deep Dive Webinar – Europe's Energy Strategy in Flux

Introduction

Europe faces difficult choices as it seeks to meet Paris climate goals and reduce its consumption of Russian energy at a time of huge turbulence on the international markets.

The European Union's (EU) energy outlook was looking challenging before Russia's invasion of Ukraine in February, with a tight oil and gas market and Paris decarbonisation goals looming. But decisions to move away from Russian oil and gas has imposed additional challenges into the future.

International energy markets

The REPowerEU plan, which is the European Commission's response to the crisis with Russia, explores how it's going to meet environmental goals while weaning itself off Russian energy imports. The plan doesn't change the 'Fit for 55' destination – to reduce greenhouse gas (GHG) emissions by 55% by 2030 from 1990 levels. But The REPowerEU plan changes the composition of how it will be achieved by increasing energy savings and renewable energy capacity to offset and rebalance coal and natural gas use.

The plan's most salient features are first an accelerated reduction in natural gas, limiting its use as a transition fuel by 27% by 2030, compared with today. The EU used 552bcm gas in 2021, with Fit for 55 targeting a reduction of 149bcm a year by 2030 but spread across all sources. REPowerEU targets savings of 163bcm a year but almost entirely focused on Russian gas imports, which last year totalled 155bcm.

The second feature is to increase the Energy Efficiency Directive's binding energy efficiency target from 9% to 13% and renewable energy targets from 40% to 45%. The caveat is that some existing coal capacity may be used for a longer period than initially expected, with assumptions that there will be less gas but more coal use to 2030. Plan also proposes €10bn of new gas infrastructure investment to improve interconnectivity of European gas system to allow LNG to reach more European gas markets. This is effectively about reordering the gas supply structure of gas imports, which is a reminder that the plan is about energy security first and foremost, with environmental issues having to share space with energy security. This will inevitably mean trade-offs.

We can expect accelerated developments in key areas of the energy transition. Energy efficiency is very important with action required from citizens from the residential market right up to industry.

Solar power: There are ambitious targets for the increased use and deployment of solar power that go way beyond existing manufacturing capabilities. This will mean increased reliance on manufacturing capacity in Asia and particularly China.

Wind power: There are no new targets for wind power reflecting the sector's underperformance relative to targets at present.

Biomethane: The EU wants to save 17bcm of natural gas demand through increased biomethane production by 2030. The EU currently produces 18bcm of biogas of which only about 3bcm is biomethane. An additional 17bcm biomethane would require 30bcm of biogas. It is only cost effective when compared against recent record high prices of natural gas and there are big questions around the availability of agricultural feed stock, including resources like manure.

Hydrogen – the plan increases the EU's hydrogen ambition to include 14 million tonnes of additional green hydrogen and/or ammonia production, 10 million tonnes of which will be imported and 8 million tonnes of which will replace gas. It is very expensive to produce and would need bulk hydrogen markets which don't exist and would need considerable state support to emerge. It would also need significant investment outside of Europe in the hope that Europe would then put in place capacity to consume these large amounts. In a natural gas scarcity environment, the production of blue hydrogen is much less likely, which had the capacity to jump start bulk hydrogen markets at a much lower cost than green hydrogen markets.

Heat pumps – the plan is to double heat pump production to 50m units by 2030. The Commission estimates this would save 35bcm of gas a year. The EU had 17 million heat pumps at end of 2021 with 2.5m likely to be installed this year, rising to 4m units annually by 2026. The effect of this is to shift gas to electricity demand, which increases pressure on the need to lower the carbon intensity of power generation. There is also concern about manufacturing capacity for heat pumps and skilled worker availability to meet this target.

The hope is that saving more energy, reducing gas use, increasing renewable capacity, and continuing some coal use will all balance out to achieve the Fit for 55 target or even exceed it. But this is hope, not fact. Europe faces a long period of high gas prices and gas will continue to set the price of electricity. Reality is that all targets are very ambitious and will be made more difficult if there are cold winters across Europe and Asia, which will add pressure to the global LNG market.

This is a negative, albeit realistic take on the market. More optimistically, if REPowerEU results in early investment today in the necessary infrastructure, it might at least create the basis for more rapid energy transition post 2030.

European nuclear capacity

About half of EU countries are using nuclear power – generating in most cases between 20 to 35% of their energy needs. France is the exception with 70% provided by nuclear power generation. All these countries will continue to operate power plants: the power has been delivered for many years, and has been agreed politically, is financially secure and backed up by the logistics and regulations. In the short term, therefore, nothing much will change.

But in medium to long term, the climate change discussion and the Paris agreement will have an impact because it requires countries to achieve carbon emission neutrality by mid-century. There will have to be a massive fuel switch – nuclear shares are currently large but not overwhelming, and many countries generate electric power by burning coal. For countries like this, they will have the prospect of building additional nuclear power investments and switching to nuclear.

The lifetimes of nuclear plants are legally limited. By 2035, without something changing, the EU will lose about half of its nuclear capacity and by mid-century almost all nuclear capacity will be history. This will contribute to energy constraints and will drive nuclear investment into the future – as countries face decommissioning plants.

There is also growing demand for electricity. Demand for electricity will increase to produce hydrogen and for electric vehicles – nuclear power could contribute to this. On the surface, the EU committed to phase out nuclear power in the long term, as it's not considered a truly renewable resource, but there is discussion of whether nuclear is a bridge technology to renewable sources. Regardless of plans to shift away from fossil and nuclear to renewables, the Commission is still relying on having a share in nuclear power. And it will still be a large share because of the need to compensate for losses elsewhere, the growth in demand and difficulties in jurisdictions where renewables have stalled due to bottlenecks, political opposition or lack of expertise.

Most of the nuclear investment in coming years will be in countries that already have nuclear power plants and experience. Countries will not want to embark on nuclear afresh unless conditions are fulfilled, including public acceptance. In most countries, investment in nuclear is likely greater if they are shifting from coal to nuclear, as they are both base-load energy generators, which makes it easier. Where peak-load gas is used, however, it is not an easy fit. It would require government and industry commitment to accept many years of project and political risk.

France is clearly the most likely candidate for considerable expansion of its nuclear power because it has massive industrial experience and is the only vendor industry. But since 1990s, there has been loss of capacity in France and very few projects. If you don't continue to build nuclear power plants, you risk losing capacity and industrial memory. After a doldrum of many years, French industry has carried out two new projects, one in France and another in Belgium but both went severely over budget and schedule. There are also questions around robustness of the technology – as France's nuclear infrastructure is aging. Investment needed to renew nuclear infrastructure would take time.

In Eastern Europe, there seems to be increasing resolve to invest in nuclear power, despite a Russian attack on a nuclear power plant in Ukraine. The war will compel these states to cut industrial ties with Russia and those using Russian technology will increasingly look to non-Russian sources. It will take years to achieve that transition.

In the likely event that decision making on electricity sources remains in the hands of individual EU member states, each country will decide for itself. Growing demand for power, responses to climate change and non-nuclear sources and gas will all inform the debate around nuclear.

Macroeconomics of the energy transition

Energy markets as well as popular opinion are having huge impact on the macroeconomic context. The European Central Bank (ECB) recently presented its revised forecast for the coming year against a backdrop of an 8.1% inflation rate for May, which is four times higher than ECB's target for future inflation. It is therefore up against enormous pressure to get prices under control. The ECB is frank that rising inflation is due to the energy markets and the cascading impact on food prices because of a shortage of fertilisers and the impact of war.

Accelerating inflation will extend beyond the forecast period, which means that the ECB must map the conditions for normalisation of monetary policy. It openly acknowledges that it needs to shift its policy instruments to get inflation under control when growth is slowing because inflation is increasing due to uncertainty over energy prices caused by supply chain disruption due to both the war and residuals from the pandemic.

The most optimistic scenario is for inflation to top out at 6.8% overall for 2022, but it will moderate if all goes well. However, there is a downside risk of further supply chain disruptions (if, for example, Russia cuts off gas supply to Europe or because in shifting to LNG, we run into sourcing problems because of competition from Asia). Or other natural disruptions (like the recent explosion at the Freeport plant in Texas) could disrupt LNG markets. We need to accept the scale of the challenge and redirect funds that will be required in that context.

There is not, however, that much fiscal space for governments to explore in this macroeconomic space. There is only £20bn in real new funding for REPowerEU – other funds are repurposed from elsewhere or repurposed from Next Generation EU and operated under the same rules. This means there is a lot of attention on the success of these investments and difficulties of making them work is a recurrent feature. Probably no more than 50% of reallocated money will be rolled out on time and in an effective manner, so there is uncertainty over how successful projects will be.

In addition, European governments will have to engage in a process of fiscal consolidation following the pandemic. They have been living in a state of exception and at some point will have to deactivate the ‘general escape clause’, which remains active to 2023. When fiscal consolidation begins, it will put further downward pressure on growth.

The ECB has been engaged in a series of unconventional monetary policies such as the net purchase of sovereign debt and other assets to inject liquidity into the economy. The time for these net purchases is coming to an end from 1 July, which will mean interest rates will begin to rise on 22 July. There are no concrete proposals as yet as to how stabilise European sovereign debt markets to ensure that all countries have equal access to sovereign credit, which they will need to properly invest in the energy transition. The downside risk is that they will not manage it. Germany and Italy’s 10-year bonds have increasingly spread over the year – the risk is that Italy will lose access to credit when it needs it most to meet energy objectives.

In Italy, the problem of rising energy costs is chipping away at public support for Mario Draghi’s government, fuelling a backlash on part of parties both in government and in opposition on the far right. This has triggered a three-way competition for fiscal resources – between subsidies for households, finance for the transition to new energy resources, and fiscal consolidation. It is unclear where the government is going to wind up and how much pressure it is going to face. A lot of this is being transformed into negative politics against the war, against high energy prices and against the energy transition as a whole. Popular opposition is getting more intense and there are significant rumours that there will be periods of rationing if different elements cannot be brought into place.

Public opinion polls in Italy show people are unwilling to put up with higher energy prices due to the war in Ukraine. Their level of objection to this is only matched by opposition to sending Italians to the Ukrainian battlefield. This will have powerful implications for government policy going forwards – significant political disruption in Italy could fuel disruption we’re already seeing in bond markets

and further worsen the macroeconomic context, just when we really need macroscale investment for the energy transition process.

Q&A

Russian gas supply contracts were staggered with a few expiring at the end of this decade, and others at the start of the next. If Europe must opt for other suppliers, will they be locked in for longer?

This is a problem because Europeans need gas in the short term but are trying to reduce its use by 2050, so they don't want to commit to contracts of 20 or 30 years, but Asians are more willing to make longer-term commitments. Lack of gas over the next decade will be a real challenge as short-term options for new gas are limited because gas can't be rerouted through pipelines that don't exist.

Will reducing Russian gas now be a problem for new nuclear facilities? Will alternatives be needed before new plants can be built or will new gas contracts run on for so long that it will delay new nuclear deployment?

Clearly in the near term, if energy consumers commit themselves to longer-term contracts, it would prevent or deter efforts to switch to nuclear. However, we shouldn't forget that longer term, the kinds of investments that would be engendered as a result of security concerns coming from war or climate concerns will translate into generated electricity no sooner than 15 years. So new gas contracts probably wouldn't have an effect unless they were very long indeed. But energy consumers will have to think about the political and project risk of the nuclear issue. We have a situation where industrial capacity is dominated by one country's industry. In the 1970s and 1980s when first surge in nuclear construction in Europe, there were vendor companies supported by governments in four or five countries. Now we have just one country vendor and it depends on how confident the market is that this vendor can deploy the technology effectively and on time. The evidence so far is not great. The potential for nuclear in the short term is not much greater regardless of the impetus from war and climate change.

Do you think smaller nuclear plants might become part of the mix – like modular plants that are easier to finance and build?

The drive for small or modular plants (SMRs) is driven by developments in the United States, which is a different market. European investment has been for large nuclear power plants, which remain the objective of Europe's nuclear industry. And it's going to be losing a lot of that capacity – sized at 10/15/20GW. When this kind of capacity drops off, small reactors will not be able to fill the gap. Small reactors will be a niche market to produce heat to drive technology developments in other areas in industry. They will not primarily generate electricity.

In Italy, what is the most likely to give way – the promise to move away from Russian gas or the pressure to decarbonise?

It depends on how long Mario Draghi stays in office. While he is here the policy choice is diversification away from Russia even if it costs efforts to go green. They are, for example, trying to shut down the refurbishment allowance to use green tech in order to stop market abuse. There are

voices that want that kind of policy to get priority and would prefer to deal more favourably with Russia and want to push Ukraine to make concessions to achieve peace. Draghi's government will end by March 2023 and in May 2023 there will be new elections. Policy might change quite radically by then.

Brothers of Italy are quite interesting. Not the greenest party so not clear where the balance of their policies will lie, but it is clear that they are creating some distance between themselves and Matteo Salvini: the issue of Russia is a good example of a stick for the Brothers of Italy to beat Salvini with.

Do you think Germany might extend reactors that are due to close next year and reactivate others?

If the German government and stakeholders, including in industry, were to create enough political will, they could probably restart units that have already been shut down and keep reactors operating. I think it's unlikely for number of reasons, though: the political coalition in the government includes Green leaders who are on a roll, and leaders and the ministry of environment and ministry of economics, which are key ministries here, are both Green. The environment minister is fervently anti-nuclear and she'd have to sign off any safety issues on nuclear facilities and that would require a formal assessment of facilities, reporting direct to the Green minister.

Companies and their management in Germany went into overdrive to reinvent their industries for a non-nuclear future and they've been doing that very firmly and with certain amount of dedication for 10 years. They wouldn't go back from a political risk point of view.

It would be a positive result for Germany to do this, but I don't think they can muster the political will for it.

A year or two from now, where do you see Europe in terms of Russian energy supply? Will they stick the course? Does it depend on developments in the war in Ukraine?

Very difficult to say. If there is a quick resolution or some reduction in the conflict, there is always the possibility that some Russian gas would come back. And that would be attractive just because there are limited sources of gas and pipelines out there. That would bring down energy prices in gas and electricity, which would help bring inflation under control.

But if there is no reduction in the intensity of the conflict and European countries remain firm in their commitment to move away from Russia, then we have incredibly difficult situation. We cannot deliver the infrastructure and generation capacity that is needed within two to three years. The REPowerEU plan is aiming at 2027 – which suggests a downside in the macroeconomic context.

Will hydrogen form an increasingly important part of the energy mix as a form of energy storage?

Hydrogen is a fantastic concept and an important element of the energy transition – both as a form of storage as much as a fuel in itself. The shift from electrons to gaseous fuel makes it useable in more applications, particularly in industry. You can store it, so you have that time shift for variable generation sources like offshore wind.

We are at an incredibly early stage of hydrogen production, however. There is no hydrogen market, it is not traded, and to produce it via electrolysis (because there is not enough gas for blue hydrogen) is expensive. You would need to have massive clean generation capacity. We are already struggling to build what we need for Fit for 55 and we would have to go beyond that to produce more capacity as well as the infrastructure to deliver it.

The European gas system took decades to build the infrastructure – we can't do the same for hydrogen in 10 years. Also, are we really going to persuade people in, say, Algeria or Australia to have very strong renewable energy sources to produce hydrogen on the basis that we will be ready to buy that hydrogen? I don't think it's deliverable in a meaningful sense before 2030.
