

8 August 2022

## Energy in the EU – Unavoidable transformation ahead

### Background

In July, I was delighted to travel to the EU to meet with energy leaders across the sector in order to discuss the subject of energy transition and how this has been impacted by the multiple challenges the EU is currently exposed to.

During my time in the EU, I met with CEOs and Senior Leaders, including the World Energy Council, BDI – Federation of German Industries, Germany’s leading industry organisation representing 39 industry associations and more than 100,000 companies with around 8 million employees, DENA – Germany’s National Energy Agency, Agora Energiewende, Px.Lab and newcomers in the energy sector such as Enapter and Ecoligo Invest. As it was the final week parliament was sitting, I was able to join one of the last get togethers of 2022 – the VKU lobby event – and meet with the CEOs of a number of public utilities.

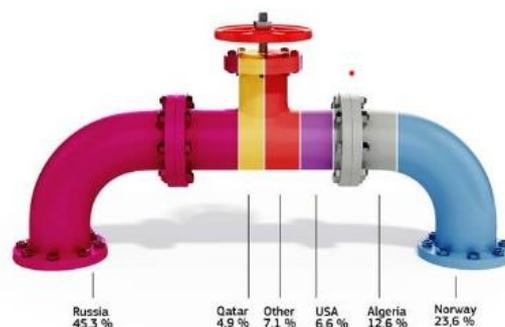
This short briefing will provide some answers to the following questions:

1. What is the current situation’s impact on energy transition?
2. As the war in Ukraine has certainly triggered an energy crisis in Europe, what actions are now needed to successfully accelerate energy transition? Are we seeing accelerating efforts to decarbonise or is the opposite happening? What are the short-term, medium, and longer-term effects?
3. What measures are countries across Europe taking to mitigate the effects of high energy prices and protect (vulnerable) consumers?
4. How can hydrogen help the energy transition?

### 1. ***What is the current situation’s impact on energy transition?***

Multiple events are currently causing shocks to energy systems in Europe and worldwide. Most recently, the conflict in Ukraine has exposed additional vulnerabilities in European energy systems and markets.

Russia’s invasion of Ukraine on 24 February 2022 has intensified the crisis over natural gas supplies to the EU. To put things into perspective, Gazprom has now cut the EU Gas supply by 60%. In 2020, gas made up a quarter of EU energy consumption. For a time, there will also be a fall out for about 1/3 of France’s nuclear power plants. The EU imports 90% of its gas, about 40% of its natural gas, 27% of its oil and 46% of its coal from Russia. Below is Germany’s share of EU natural gas imports in 2021



Source: European Commission

Germany is particularly dependent on Russian imports which, in 2021, accounted for 55% of its gas supply, 35% of its oil and 45% of its coal, compared with 17%, 9% and 26% respectively for France.

The gas crisis has exposed the EU to extremely high energy prices as well as an increased risk of no energy supply. In most cases gas prices have tripled. For example, in the Netherlands, 10% struggled to pay their energy bill before the crises. With the current gas crisis, while about 50% can pay their bills, they can't afford to change their technology away from dependence on gas.

Over the last few years, decarbonisation has been the EU's dominant focus. Talks about the importance of balancing the energy trilemma simply did not occur. Now, for the first time in many years, energy prices and energy security have gained back long-forgotten attention.

A healthy energy system is characterised by a carefully balanced Energy Trilemma of energy security, sustainability, and energy equity. Maintaining this balance in the current context is challenging and risks trade-offs between equally important priorities.

**2. As the war in Ukraine has certainly triggered an energy crisis in Europe, what actions are now needed to successfully accelerate energy transition? Are we seeing accelerating efforts to decarbonise or is the opposite happening? What are the short-term, medium, and longer-term effects?**

This has been a very hot debate over the last months. While a plan is still not fully worked through, the pathway to dealing with this situation seems now a bit clearer: first, reducing gas consumption through efficiency and changing heating practices in buildings; second, reducing through a curtailment of use in industry; third, switching power generation to alternatives (oil in CCGTs, coal); fourth, importing more LNG as far as global supply, price and European infrastructure will allow; fifth, very much accelerating renewables deployment – various policy efforts are happening to help speed up the consenting process, which to date has been the main barrier.

Over the next few years, we will see increased investment in wind and solar, programmes of electrification of mobility and low-temp building heat and some high-temp industrial heat, building insulation, grid reinforcements, green fuels, and – yes – some balance between investment opportunities and price impact on affordability.

During my visit, the German Government published changes to the Renewable Energy Sources Act (EEG) including new transition targets - clean energy providing 100% by 2035 and comprising 80% of the electricity mix by 2030. Currently, about 40% of Germany's electricity mix comes from renewable energy sources. Changes also include scrapping the renewable surge charge which has certainly contributed to higher electricity prices for households over recent years.

**Short term solutions in Germany:**

- **Filling up the gas storage:** When full, the gas storage should last for about 2 months and bridge a mild German winter. Gas storage is currently filled by about 70% and is expected to be at 95% in November.
- **Diversify natural gas supplies:** This is particularly done through the diversification of piped gas and liquefied natural gas (LNG) imports. Importing LNG from, for example, Qatar (but not before 2025). However, although dependence on Russian imports is more pronounced in Central and Eastern European countries, current LNG terminals are mainly located in Western European countries (Spain, France, and the UK in particular).
- **Implementing LNG floating terminals:** An expensive but effective short-term solution is to build floating LNG import terminals. Later, these LNG terminals could be converted into hydrogen import terminals long-term.
- **Replacing the missing gas with coal in the electricity system:** The extension of nuclear powerplants is not an option, due to a lack of readily available uranium as well as of an experienced workforce

- **Reducing gas demand:** A survey undertaken by the German BDI has shown that industry is able to reduce gas demand by about 8%. The government is looking into rationing the gas supply for industry. The use of gas in households is harder to control. Households also can't be disconnected from the gas supply.
- **Reducing temperatures in households:** The Government is proposing regulation to reduce temperatures in homes to mitigate the gas shortage

#### Medium to long term solutions:

- **Boosting alternate gases:** Boosting hydrogen production and imports to 20mt by 2030. Boosting biomethane production to 35bcm by 2030.
- **Accelerated increase of renewable energy sources:** Another medium-term measure to deal with the gas deficit is to build additional renewable energy capacity such as wind and solar faster. For example, solar rooftops front loading up to 15 TWh within a year. However, building the current pipeline of renewable generation can't keep up with the growing demand for solar energy. A lack of available technology and of a skilled workforce are slowing things down. As a result, the costs for renewable technologies have increased.
- **Insulate/retrofit houses:** Insulating the existing housing stock will be part of the medium-to long-term solution. 6 billion euros for building insulation and heating modernisation have been announced to help accelerate efforts.
- **Increased use of heat pumps:** Heat pumps that use ground heat, water or circulating air to generate heat will be used more as a substitute for gas. However, demand is high and has pushed up prices substantially. Also, suppliers can't cope with the demand and delivery times have now extended to up to 6 months - or more.
- **Electrification:** The current situation seems to have strengthened the pathway to electrification. Hydrogen is being hugely investigated in relation to its storage and flexibility.
- **Banning gas heating systems from 2024:** Originally the German government proposed to fully ban the installation of gas heaters from 2024. However, this has since changed with the focus now on the type of gas that can be used. Only green gas such as biogas, can be used in heating systems from 2024.
- **Decommissioning the gas network:** Although Germany is planning on phasing out of gas long-term, the decommissioning of the network will be a challenge and will require coordination if done district by district.

More measures can be found [here](#).

### 3. **What measures are countries across Europe taking to mitigate the effects of high energy prices and protect (vulnerable) consumers?**

As previously pointed out, the gas crisis has exposed the EU to extremely high energy prices as well as to an increased risk of no energy supply. In most cases gas prices have tripled. For example, in the Netherlands 10% struggled to pay their energy bill before the crisis. With the current gas crisis, while about 50% can pay their bill, they can't effort to change technology away from dependence on gas. In the UK, the number of homes spending more than 10% of total income on energy jumped 8 million this year as energy bills increased by around 60%. This number is predicted to go up to 15 million by 2023.

In the Netherlands, all households receive 800 euros to offset the increased energy prices. Additional low-income households receive an extra 500 euros to cover their energy bills.

In Germany, we see middle class households getting pushed into energy poverty. The Government spent about 30 billion euros to ease the cost pressure on citizens. Germany has already introduced some measures to deal with raising energy bills, including a one-off 350-euro subsidy for taxpayers to help with rising energy bills, a fuel tax cut of 30 cents per litre for petrol and 14 cents for diesel and a 90- days of public transport ticket at nine euros per month.

On the flipside it seems public utilities (800 public utilities in Germany) won't receive any financial support from the federal government but instead might receive financial support from local authorities if needed. However, the above will depend on the particular circumstances. Financial risk will therefore sit with the public utilities and local authorities directly.

Germany will introduce a new gas levy from 1 October. This levy is set to deal with the extra costs faced by public utilities to source alternative gas suppliers. The levy is expected to be between 1.5 – 5.0 cents per kwh. Depending on yearly consumption, this is likely to be an annual additional cost of 400-1200 euros for a family on top of the already tripled gas prices, placing further pressure on german households.

#### **4. How can hydrogen help the energy transition?**

Several EU countries have national hydrogen strategies, and there's an EU level also, although it is important to note that most agree the priority use sector for hydrogen is heavy industry, and that this is intended to be renewable green hydrogen. High gas prices have changed the situation with respect to blue hydrogen. Overall, there is less consensus about whether hydrogen should replace gas in building heating.

During my trip to the EU I also spoke with Vaitea Cowan, Enapter co-founder and listed leader in Forbes 30 Under 30, about how the current crisis has impacted hydrogen development in Germany and the EU. Enapter also produces a scalable on-site hydrogen AME electrolyser.

While more than ever hydrogen is the heart and centre of the transition, investigation is now particularly focusing on hydrogen storage and flexibility.

At the same time, there is also the dull taste of reality, namely, supply chain issues slowing down the much-regarded acceleration of hydrogen technology deployment. A major barrier related to hydrogen development is the need for a skilled workforce, including identifying what skills are needed.

Overall, hydrogen costs are coming down. However, the production costs of hydrogen very much depend on energy costs. This could be a challenge over the coming years. On the other hand, the ongoing volatility of fossil fuels could also encourage the use of hydrogen.

#### **In short**

Long term, the globally experienced energy crisis will most certainly 'accelerate' our global energy transition. In the interim, there are real challenges ahead, such as the management of gas supply and extreme price shock exposure. The race to alternative energy sources will also leave a bitter after taste for the rest of the world as now everyone is hunting for renewable alternatives which in turn will increase the price short-term. However, it will also lead to an increase in investment in renewable energy technology long-term.

While a plan is still not fully worked through, a pathway to deal with this situation seems now a little clearer. Every card will have to be pulled, and better coordination is urgently needed. This includes the reduction of gas consumption through efficiency and changing heating practices in buildings, a reduction through curtailing use in industry, switching power generation to alternatives (oil in CCGTs, coal), importing more LNG as far as global supply, price and European infrastructure will allow, and very much accelerating renewables deployment (various policy efforts are happening to help speed up the consenting process, which to date has been the main barrier).

More coal will also be needed, particularly within the electricity sector as nuclear power won't be considered a viable option due to the unavailability of fuel and of a skilled workforce. No matter what option is considered, the next 2-3 years will be tough for the EU.

In parallel to challenges such as the war in the Ukraine and post-covid adaptation, Germany has just released its updated Renewable Energy Sources Act (EEG) with many changes including the scrapping of the renewable surge charge which has certainly contributed to higher electricity prices for households over the last few years. That's now gone. Changes also include very ambitious targets such as 100% renewable electricity by 2035, which sounds good on paper but might be quite expensive to achieve, especially now as we see demand in renewable technology spiking. It is also clear that the current pipeline for the building of renewable generation can't keep up with the growing demand.

The EU is certainly not lacking in innovative ideas on how to transition its energy sector. From portable electrolysers to innovative 'you and me' funding ideas for renewable energy projects, it is now all about keeping up the speed of deployment rather than finding solutions to decarbonize energy.

The EU and New Zealand share similar pain points when it comes to renewable energy deployment – notably, staff and supply chain issues. We both depend on people and product parts to make things happen and both are very much affected by geopolitical issues and Covid. Yes! Covid is still with us!