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The future is electric

The world is going through a vast transition. We must reduce emissions by more than half by 2030 and become zero-emission societies by 2050. Fossil fuels must be decarbonised or replaced by renewables. Green industry must grow. Old industry must decarbonize. Power is becoming the main input factor, and electrification is the key to success.

Russia's invasion of Ukraine has brought havoc to European energy markets. Right now, oil, gas and coal are back in fashion, and Norway's role as a leading provider of gas to Europe and the UK is more important than

ever. But with prices spiking, even in Norway, our dependency on fossil fuels must end.

Becoming independent of Russian imports of oil and gas means Europe's energy transition will need to accelerate, rather than slow down. After all, we are not vulnerable to Putin's energy war because we have built too many solar and wind farms in Europe, but because we have built too few.

There will be a need to sustain Norway's gas exports for quite some time. For that to happen, we need to continue exploration and production activities on the Norwegian continental shelf. However, all our petroleum activities must take into account that we are subject to the EU Emission Trading Scheme (ETS). The EU has recently passed new legislation, whereby emissions within the ETS will be reduced by 62% by 2030, and 100% by 2040, compared to 2005.¹

That means that both the production and consumption of Norwegian oil and gas in Europe will be subject to strict emission regulations. Norway has had a CO₂-levy on oil and gas activities since the early 1990s, and this will increase to approx £200 per tonnes CO₂ by 2030.² Our oil and gas companies therefore have a strong financial incentive to reduce emissions from production activities. Any prospect of continuing to develop our oil and gas resources will rest on our ability to cut emissions in line with our climate obligations. That is our licence to operate. Failing to put in place adequate measures to curb emissions would perversely be a blessing in disguise for the climate. One such measure is to electrify our offshore platforms – preferably with offshore wind. That is also sensible economics. Roughly speaking, 1 terawatt hour (TWh) of electricity offshore saves about 3 TWh of natural gas, depending on the efficiency of the turbines.

There are three great opportunities that arise from a clean and green offshore sector – and all are best pursued in collaboration and partnership with the UK. The first one is carbon capture, utilisation

and storage. The UK and Norway combined have the potential to store 150 billion tonnes of CO₂ in the North Sea. Norway has already captured almost a million tonnes of CO₂ every year for more than 25 years at the Sleipner oil field.³ The first commercial contract for storing CO₂ has been signed, between the fertiliser giant Yara and Northern Lights, a government-backed storage company owned by several of the companies on the Norwegian Continental Shelf. The UK and Norway need to explore this potential together, in close partnership with industries and regulators in Europe. Norway has 8000 kilometres of pipelines along our shores. We now need to start serious work on efficient value chains for transporting CO₂ – either by pipelines or ships.

Natural gas and CO₂ storage is also a key to another big opportunity – the production of blue hydrogen. In many hard to abate sectors, hydrogen is going to be key. In 2050, it is expected that hydrogen can cover around 20 per cent of the world's decarbonisation needs and around 22 per cent of people's energy needs.⁴ For such energy carriers to be real alternatives, they must be produced with very low or zero emissions, and they must be available, competitive and safe. Production from natural gas with CCS is one way of achieving that.

In the short term, renewable energy will likely go towards producing electricity in Europe, and the amount of excess electricity available to produce green hydrogen will likely be limited for quite some time. We therefore need to be agnostic about the colour of hydrogen – be it blue or green – and focus on emissions and commercially viable hydrogen supply chains. Green hydrogen is no longer the only and preferred option in Europe. Blue is on the agenda, and rightly so. Blue hydrogen will be a lot easier to produce at scale in the short and medium term, compared to green, although gas price hikes mean that we have to be mindful of its longer term cost competitiveness.

The third opportunity that arises from our present activities on the Norwegian Continental Shelf is floating offshore wind power. The UK has come a long way in bottom-fixed facilities. Together we can lead the technological journey towards cost-competitive floating wind power. We can build on our unique offshore competencies and technologies, we have excellent wind resources and we are in close proximity to a bigger market. The world's biggest offshore floating wind farm, Hywind Tampen, is now in operation in Norway.

That said, we need to move forward on common grid solutions. Right now, some blame our interconnectors for the high electricity prices in Norway. At the same time we aim to build 30 GW of offshore wind power. It is quite clear to me that we need to be connected to other markets to make that work. After all, 30 GW is almost as much as our present electricity capacity through hydropower.

It makes no sense that countries like Denmark, the Netherlands, Germany and Belgium – supported by the EU – are working together to build energy islands without including the two countries with the longest coastlines and the greatest potential for offshore wind in their plans. There needs to be a concerted effort among countries around the North Sea basin to develop grid and production solutions that work to the benefit of all.

Abundant and affordable power has been a competitive advantage and a boon for Norway for several decades, and power production must be increased significantly in the coming years to keep it so.

The Norwegian electricity supply is 100 per cent renewable and has been so for decades.⁵ That is one of the reasons why we have the cleanest aluminium production in the world. Norway can produce eight aluminium cans with the same emissions that China uses to produce just one.

That said, electricity only accounts for half of Norway's energy use.⁶ Decarbonising Norway will therefore require a shift from fossil fuels to renewable energy in all sectors, and a vast increase in our electricity production. We need to upgrade our hydropower plants, and build more solar and wind power onshore and offshore. And we need to impose more energy efficiency measures.

The major hurdle seems to be our permitting system. It simply takes too much time to get a permit. 2030 is today. 2050 is tomorrow. We need to start yesterday. Another hurdle is NIMBYism, especially relating to onshore wind farms. There is a real conflict of interest between preserving a pristine natural environment and building more renewable energy, and we need to take that issue very seriously. That said, Norway has a population of 5 million people and more square kilometres than Germany. Pending local approval, it should be possible to produce more power from turbines onshore.

In the transportation sector, we are leading the world. Eight out of 10 new cars sold are now fully electric.⁷ Cities are swiftly introducing electric buses. We have more than 70 fully electric car ferries traversing our fjords. This development is largely due to the combination of heavy taxation on ICE vehicles, and tax exemption and other benefits for EVs. One of my neighbours is a climate change denier. He drives an electric car. When I asked him whether that was a paradox, he answered: "I may not believe in the science, but there is nothing wrong with my calculator."

That is an important point to note. If we are to succeed with the green transition, there needs to be profit in putting people and the planet first. That will start a snowball rolling that cannot be stopped. We saw the same during President Trump's tenure. Despite his best efforts to "make coal great again", Trump was himself trumped by market forces. Renewables became cheaper and easier to build, and cheap shale gas outcompeted coal. Market forces are a powerful tool.

If we use them right, they can accelerate the green transition. A linear development simply will not do. We need exponential curves on renewables, EVs, heat pumps and the like.

Another sector that needs decarbonising is the building sector. In Norway we agreed already in 2012 that fossil heating oil needed to be phased out. We agreed on an outright ban from 2020 and provided financial support to enable households to make the switch from fossil to biofuels, or to heat pumps. One of the reasons why this measure was accepted by the public without much debate was the time frame: eight years gave households predictability and time to make the switch.

More needs to be done to reduce emissions from building materials, construction activities and transport. Reusing building materials could be one of the answers. New buildings in Norway now have to be constructed in such a way that materials can be more easily reused if and when the building needs to be demolished.

Another big emitter is our industry. Most people are only now starting to realise how much electricity will be required just to green our existing industrial companies, let alone provide for new green industries like battery production and the like. Again, I believe an ample supply of electricity is the key.

After all, the future is electric.

ENDNOTES

1. European Union, "Fit for 55: The EU plan for a green transition", <https://www.consilium.europa.eu/en/policies/green-deal/fit-for-55-the-eu-plan-for-a-green-transition/>.
2. Bellona Foundation, "Norway proposes €200 per ton CO2 tax by 2030" (February 2021), <https://bellona.org/news/carbon-accounting/2021-02-norway-proposes-e200-per-ton-co2-tax-by-2030>.
3. Norwegian Petroleum Directorate, "Carbon capture and storage", <https://www.norskipetroleum.no/en/environment-and-technology/carbon-capture-and-storage/>.
4. Hydrogen Council, "Hydrogen for net zero," (November 2021), <https://hydrogencouncil.com/wp-content/uploads/2021/11/Hydrogen-for-Net-Zero.pdf>.
5. Fornybar Norge, "About Renewables Norway", <https://www.fornybarnorge.no/om-oss/in-english/>.
6. International Energy Agency, "Norway electricity security policy" (October 2022), <https://www.iea.org/articles/norway-electricity-security-policy>.
7. Norwegian EV Association, "Norway celebrates another record-breaking year for electric vehicles" (January 2023), <https://elbil.no/norway-celebrates-another-record-breaking-year-for-electric-vehicles/>.