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ViewPoint

The Challenge for European TSOs:

Transporting Natural Gas in a Decarbonising World

Gas Strategies

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The Challenge for European TSOs:
Transporting Natural Gas in a Decarbonising World

A brief history of canals

From 1791-1794 Britain experienced something akin to a gold rush in canals: the first canal was opened in 1761, and in four years at the start of the last decade of the 18th Century 42 canals were built. For the next 50 years canals were the network of the Industrial Revolution: by 1840 there were 4,000 miles of navigable waterways in Britain, transporting bulky goods such as iron and coal from source to factory.

Canals were much better suited to moving the raw materials of the Industrial Revolution than the alternative of horse and carriage on muddy roads; ironically, it was canals' quality as a transporter of bulky materials across the country that also sealed their fate.

One of the main uses of iron was to build railway tracks following the opening of the Stockton to Darlington railway in 1825. Railways used steam engines fired by coal and transporting goods by rail was much quicker than by barge: the journey by canal from Manchester to Liverpool took 36 hours; when the railway line along this route opened in 1830 the same journey was completed in a couple of hours. The public liked what they saw: in its first year of operation, as well as transporting goods that one line carried more than 400,000 passengers.

Both canals and railways required large capital investments, and by the 1840s the money was all going one way. Canals tried to resist: there were mergers, joint railway-canal companies were set up (an early example of an integrated transport policy) and there were even proposals to lay railway lines on the existing canal network (this never happened).

A long decline began: subsidies, leakages as canals fell into disrepair and investment was uneconomic, closures and more recently rehabilitation: some working canals do still exist but in the main canals are now home to holiday barges or incorporated into industrial museums, a curiosity from a different age.

A brief history of gas to 2008

Another network in Europe requiring large capital investment boomed at the end of the 20th Century, has particular qualities that make it more attractive than the available alternatives and is well established today: gas transmission.

History never really exactly repeats itself, but there are parallels between the position of European gas transmission networks and their operators (Transmission System Operators: "TSOs") today and that of canals 200 years before. Still evolving changes to the World in which gas operates mean the challenge for TSOs is clear: how to survive and thrive and avoid a repetition of the long, slow, painful decline of the canal.

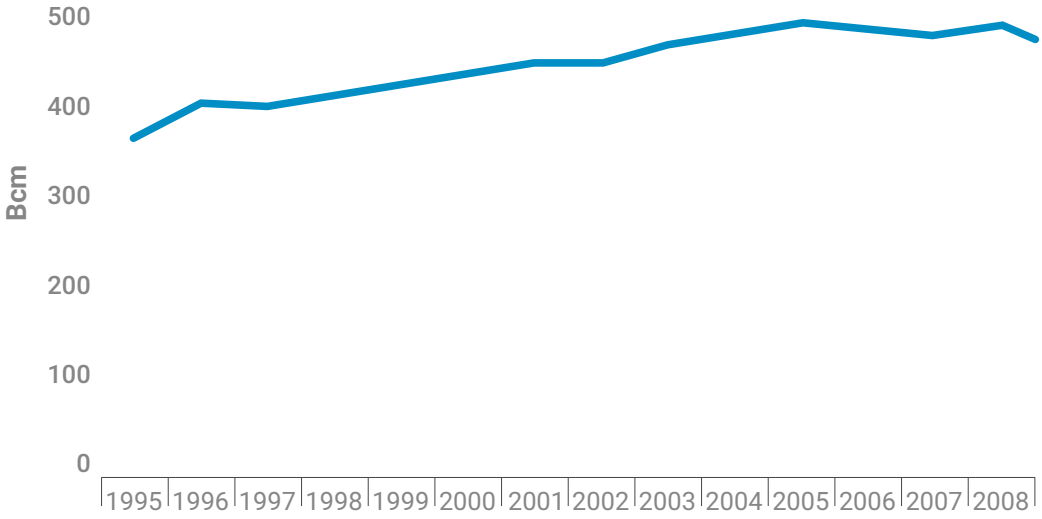
For 40 years in Europe gas was the go to fuel substituting for coal and oil in the industrial, home heating and power sector and by the first decade of the 21st Century it seemed as if this would continue long into the future. Large quantities of this clean energy source were available to be transported across Europe, and TSOs built out networks to supply gas across their supply areas and increasingly across national boundaries to support the creation of a single European gas market. As a result, gas could more easily be delivered within an integrated European market with broadly consistent regulation to where demand was highest: gas was set for the future.

As environmental awareness increased, the virtues of gas became more apparent. Gas had the best emissions profile of any fossil fuel: carbon emissions can be cut and the impact on air quality of burning fossil fuels can be immediately curbed. Technological advances mean not only that gas is a strong energy-efficient performer, but also that it can be used as a transport fuel with the potential to substitute for higher emitting oil products.

Added to these environmental benefits, it seemed likely that the supply of cheap gas was secure, given that the development US shale fields would be replicated elsewhere. In a private session as late as 2013 the EU's trade commissioner told oil executives that the US shale revolution was a paradigm shift: fracking raised hopes of energy independence through a relatively cheap fossil fuel, with a reduced climate impact. There was even a spoof TV news bulletin by EU civil servants about shale gas being discovered beneath the European Commission's Brussels HQ.

By 2008, like canals in the mid 1820s, both supply and demand of gas had grown and were projected to continue to grow into the future in an increasingly open market with streamlined regulation.

Figure 1 EU Gas Demand Growth 1995 – 2008 (Bcm)

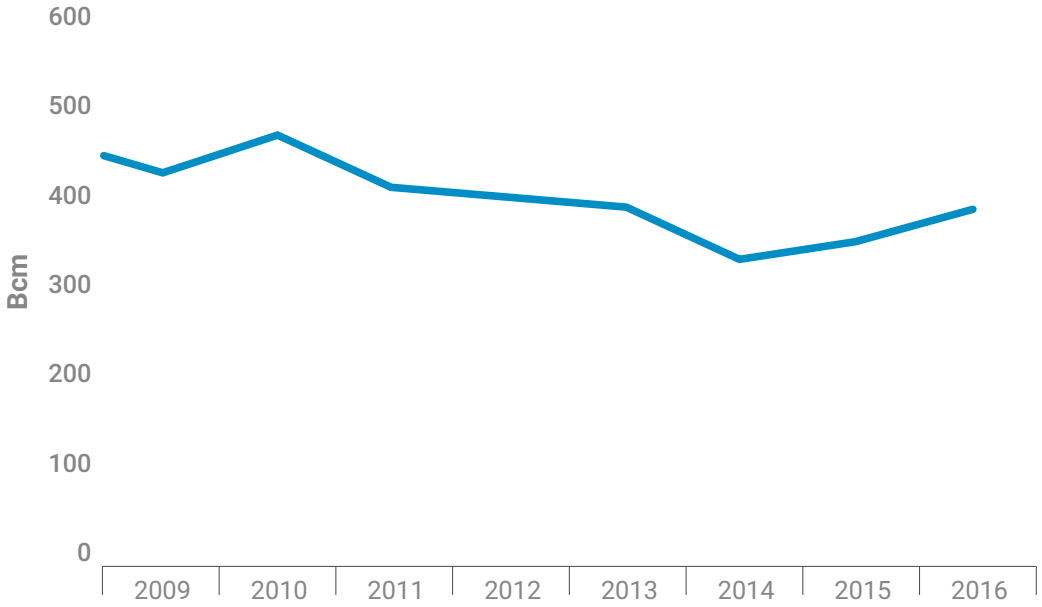


Source: BP Statistical Review of World Energy, 2017

Gas today

Yet the attractions of gas haven't resulted in increased demand. Instead there was a levelling off of European Union (EU) gas demand from 2005-2010. This could have been explained by the long period of economic recession from 2008 onwards, if it wasn't for what happened in the following years: there was a 4.3% ***annual*** decline in EU gas demand from 2010-2015.

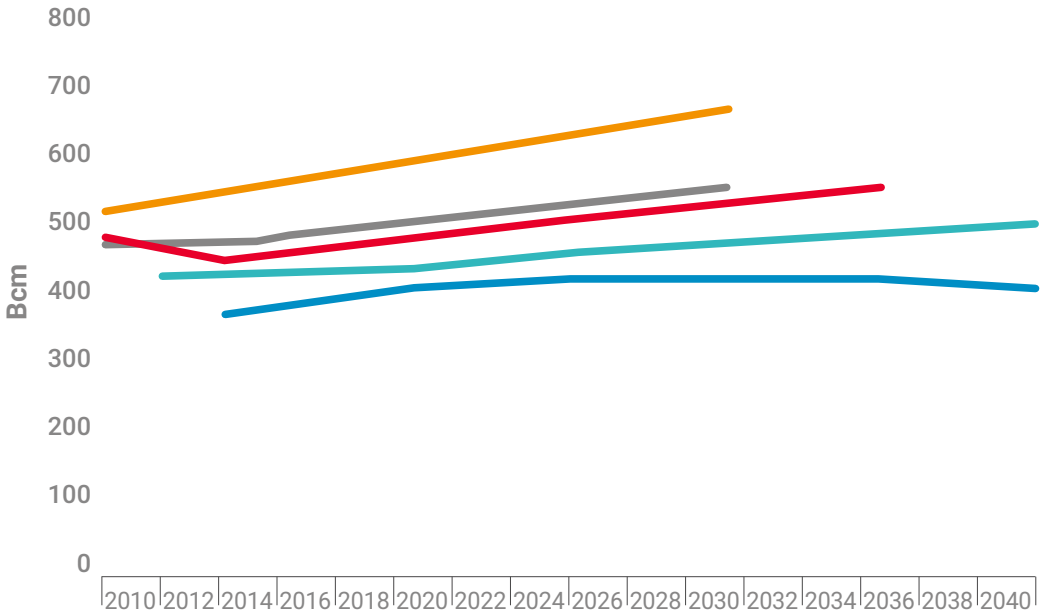
Figure 2 EU Gas Demand Decline 2008 – 2015 (Bcm)



Source: BP Statistical Review of World Energy, 2017

Added to this, EU gas demand projections have been revised downwards repeatedly by forecasting agencies over the last ten years: by 2016, the IEA's projected demand in 2030 was 240 Bcm less than the equivalent projection in 2007.

Figure 3 IEA EU Gas Demand Projections 2007 to 2016



Source: World Energy Outlook 2007, 2009, 2012, 2014 and 2016

Many explanations for this reversal in the fortunes of gas are advanced. Three factors stand out: uncertainty about the credibility of gas' green credentials, worries over security of supply, and government policy.

1. **Gas is no longer regarded as a green fuel.** Two different but related points are at play here: the first is that as the dominant fossil fuel in power generation gas is now seen as considerably less "green" than renewable generation; the second is that in Europe fracked shale gas has become synonymous with environmental risk and methane leakage and is regarded as anything but green.

The EU roadmap developed out of COP21 in December 2015, suggests that, by 2050, the EU should cut its emissions to 80% below 1990 levels through domestic reductions alone (i.e. rather than relying on international credits). In effect this requires a process of "decarbonising" the EU economy and a "dash for green"; like all fossil fuels, gas now looks like being overtaken by renewables to meet COP21 targets. Happily for COP21 signatories, the cost of renewables is reducing, and advances in electricity battery storage mean wind and solar power may overcome previous problems of renewables with intermittency of supply.

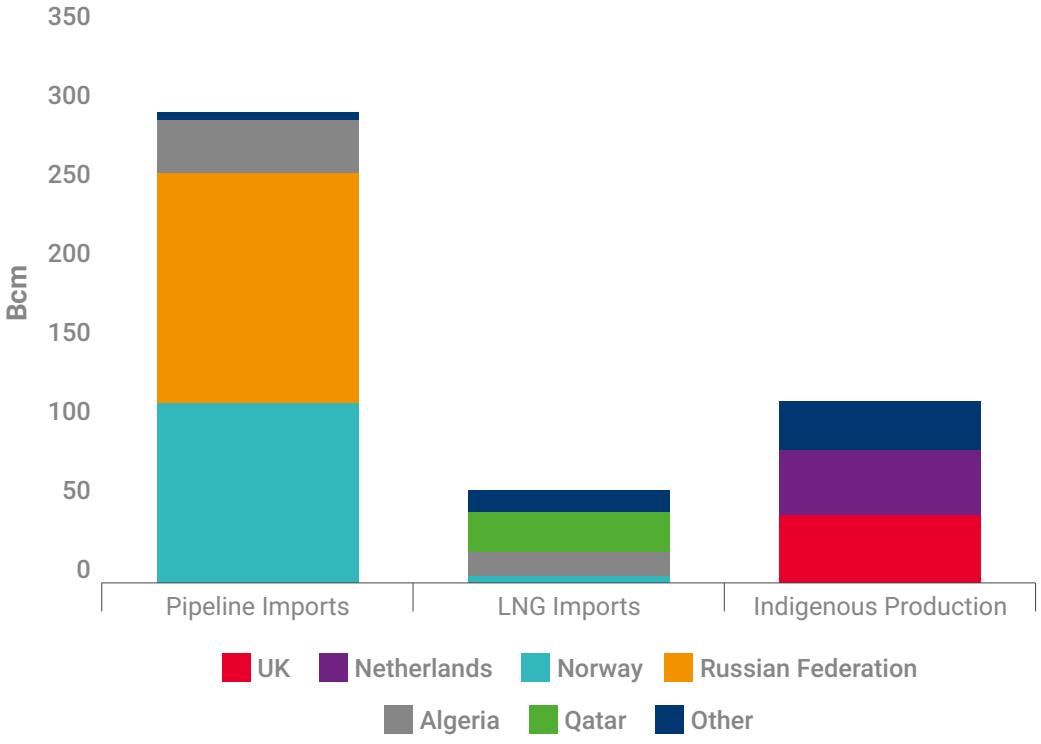
While the demand for gas is projected to fall, there are also gas supply issues to address. Europe is geographically and culturally different from the USA: population density is higher, and people are not used to living in close proximity of gas production fields. In addition there are (much debated) reports that a shale boom would raise global temperatures by as much as 3.5 degrees centigrade as a result of methane leakage.

As a result, and with the commitments under COP21 in mind, fracking has met considerable opposition in Europe and in France, Germany and Scotland it is banned. In Romania, attempts to set up a shale industry ended in mass protests in a country with a considerable track record of onshore oil and gas production.

With the possible exception of Spain, the UK is now the last likely place where a shale gas industry may be developed in Europe, and even here there is much opposition. If it is developed, it may be on a much smaller scale than may have been imagined ten years ago when the shale "revolution" was predicted to be replicated across the World.

2. **Gas has perceived security of supply issues.** Worries over security of supply have increased as EU production has declined as domestic reserves have been depleted and reliance on Russia, as the dominant supplier of pipeline gas together with Norway, has increased.

Figure 4 EU Gas Supply by Type and Source



Source: BP Statistical Review of World Energy, 2017

The two Russia/Ukraine gas crises of 2006 and 2009 followed by heightened East-West tensions and sanctions after Russia's annexation of Crimea in 2014 have increased these fears; in particular, in 2009, European countries lost Russian supplies for over half a month and this caused significant problems in some countries in South East Europe.

The extension of certain provisions of the Third Directive to cover import pipelines (or at least the sections of import pipelines that fall within EU territory) may also create barriers to the development of new Russian import projects (Nord Stream 2 included). Historically, these projects have relied on long term contracts with Gazprom to underwrite financing which would be inconsistent with the Directive.

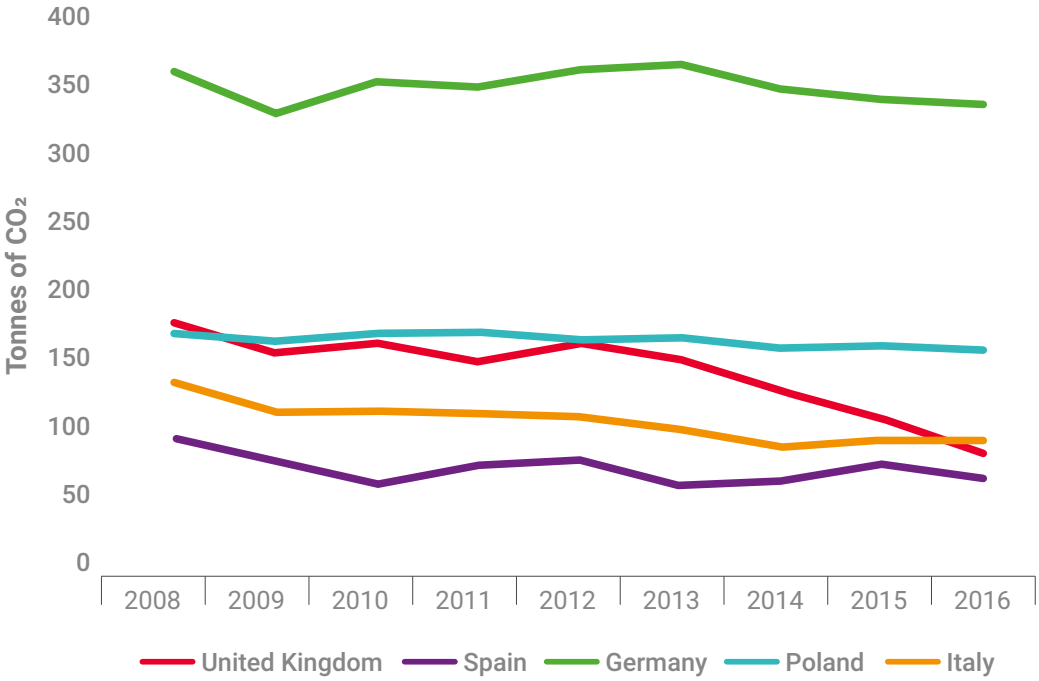
Fears about security of supply and about Russian dominance may be overstated or misplaced (they ignore the existence of LNG as an alternative to Russian gas, for example) but nonetheless they undermine political confidence in gas and limit the enthusiasm of legislators to promote gas.

3. **Government Policy.** Indeed, in some EU countries there appears to be no enthusiasm for gas, regardless of its benefits of environmental friendliness and availability.

For a period in the recent past governments could easily imagine they were making a short term choice between cheap energy over which they had perceived control and less dirty energy whose supply was less certain and more expensive. Low carbon prices from the EU emissions trading scheme and a period of relatively high gas prices from 2011-14 resulted in gas being squeezed out of the energy mix in favour of coal and renewables.

By way of contrast (and proof that government policy can have an impact), the UK carbon price floor has progressively driven coal out of the fuel mix for power generation in 2015-16 with notable effects on CO_2 emissions.

Figure 5 CO_2 emissions from Power Generation (2008 - 2016)



Source: Eurostat

Some countries have an explicit policy of favouring coal regardless of environmental concerns: the World Health Organisation ranked 33 Polish towns as being amongst Europe's 50 most-polluted in 2016, and yet in his recent inaugural speech to parliament in December 2017 the Polish prime minister Mateusz Morawiecki stated that "coal is the foundation of our energy sector and we cannot and do not want to abandon it". Accordingly, his proposed programme for Silesia includes two new coal mines.

As important as the antipathy towards gas of some governments at certain times is the lack of a discernibly consistent set of government policies. It is hard to overstate the extent to which gas infrastructure is a long-term business. Making investment decisions is very difficult when there remains considerable uncertainty over policies towards gas at a pan European and national level. TSOs need a clear idea of how natural gas demand will evolve in the years leading up to 2050 and consistently described and consistently applied government policy is a large contributory factor to that clarity. Worse still, gas is often ignored in policy discussions where the attention is all on electricity.

Tipping point: Environment of Uncertainty

A combination of falling gas demand where once it was projected to rise, the stated policy outcome from COP21 of a decarbonised future, and a sometimes incoherent approach by government towards gas places immense pressure on European TSOs. Added to this, recent changes in capacity buying patterns may make TSOs question whether they are running a stable, long term business.

Capacity demand is more than ever short-term and volatile. Buyers of gas are unwilling to enter new 15-25 year purchase or ship pay contracts having had problems with existing long-term oil-linked gas contracts and where they are uncertain what their demand will be in 10 years' time: increasingly natural gas is bought on a short-term basis at gas trading platforms. As a result, there has been a shift towards short-term capacity bookings as gas transmission users optimise their capacity portfolio based on the exact capacity they estimate they will need to supply their customers.

The regulations that underpinned and drove EU gas market liberalisation were designed to break up monopolies and provide access to existing infrastructure. In a world where utilisation may fall and capacity is booked short term the industry and regulators will have to come to new settlements that support continued capacity provision recognising the new realities.

In the future, the amount of capacity sold will become more volatile in line with short-term needs – this is a substantial challenge for TSOs who have a regulated infrastructure where the cost basis remains the same regardless of how much capacity is booked.

Just as canals were faced with a tipping point once Stephenson's Rocket won the Rainhill Trials held by the Liverpool & Manchester Railway in 1829 to choose the best design to power the railway, so TSOs face a tipping point now. Caught between legislators who want a decarbonised World yet still favour coal, the public who no longer regard gas as a clean fuel, with a changing market in which customers think short term when gas infrastructure is a long term business, TSOs must act now to secure their future.

TSOs should not wait while regulated returns remain strong; it is already apparent that this may not last, and the changes to gas transmission businesses may be so significant that they will take time to implement. Delaying may mean projected demand has fallen to a point at which running a gas network is uneconomic at a price that will allow the network to be maintained to meet safety standards.

Gas' Response

Gas as a Transition Fuel

An oft-repeated response of TSOs to their current situation is to restate gas' green qualities and its continued role in Europe's future low carbon economy. There is a case to be made here, notwithstanding the risk that, like canals, the very quality of gas (its good emission profile relative to other fossil fuels) will lead to gas' downfall.

"Fluxys continues to believe that natural gas and natural gas infrastructure are to remain key in tomorrow's low-carbon economy because natural gas has the best emissions profile of any fossil fuel."

(Fluxys Annual Report 2016)

"The use of natural gas as a major energy source allows us to minimise sulphur oxide and particle emissions."

(Snam 2016 Sustainability Report)

"We believe in a sustainable future with a balanced energy mix and a lasting role for diversified gas."

(Gasunie Vision)

"Natural gas and natural gas infrastructure harbour enormous potential when it comes to becoming and remaining the partner to renewable energies in the energy system of the future... in a way that is environmentally friendly and spans different sectors (electricity, heat, mobility, industry)."

(Open Grid Europe (OGE) website – Future of the Energy Market)

"Foresee a more economical, greener and more interconnected world in this new energy world, complementarity between electricity and gas systems will play a key role".

(Interview with Thierry Trouvé, Chief Executive Officer GRTgaz, Activity and Sustainable Development Report 2016)

If these statements were the only evidence of TSOs commitment to a carbon-free Europe they would be treated with justifiable cynicism – words are cheap and it will take more than well-chosen phrases to correct the impression held by many that gas is a fossil fuel and all fossil fuels are bad, therefore gas is bad.

However, this is not a binary choice of gas versus no gas. There is a long transition phase to go through before the COP21 commitments are met in 2050. A good summary of this transition is set out in Sweden's energy policies (which shape Swedegas's activities):

2020: 20 per cent more effective energy use and a 40 per cent reduction in emissions of greenhouse gases.

2030: fossil-free road transport.

2050: climate neutral. Being able to utilise wind energy in the gas grid is an initiative that can contribute to making this vision a reality.

Accordingly, TSOs have taken the first steps in developing new technologies consistent with gas's involvement in a low carbon World. These fall into two main types: biogas and power-to-gas.

Biogas

Biogas is a mixture of largely methane and carbon dioxide predominantly utilized for heat production and power generation. With an additional step (and cost) to remove carbon dioxide at site, biomethane can be produced to inject into the national grid network to blend with fossil fuel derived natural gas. Biogas production is usually derived from the breakdown of organic material or feedstocks in the absence of oxygen through a process known as anaerobic digestion. Biogas is a particular focus of European TSOs.

Gasunie, with SCW Systems BV, is piloting the extraction of biogas from wet biomass by means of supercritical water gasification, with the intention of showing that the new technology can successfully be applied on an industrial scale. Gasunie has also established a joint venture for a biogas network in Twente. Completed at the end of 2016, it is capable of producing 4 mln m3 biogas.

Italy is currently the third largest producer in the World of biogas from agricultural sources with approximately 2.4 billion cubic metres produced per year. Snam, together with the Consorzio Italiano Biogas and Confagricoltura, has described a strategic role for biogas as renewable energy (for heat, electricity, biofuels and bioplastics) that can be generated from agricultural and agribusiness biomasses and has proposed establishing an annual biogas target to be introduced

into the network by 2030; the updating of national laws and regulations on advanced biofuels; and the introduction of a system that enhances and develops the role of the biogas business segment in the overall CO_2 emission reduction strategy.

Swedegas has established the Jordberga biogas facility, the largest anaerobic digestion plant in Sweden. The surplus biogas from Jordberga is injected into Swedegas' transmission grid. Biogas from GoBiGas, Göteborg Energi's Gothenburg Biomass Gasification Project, will be fed into the Swedegas gas grid; when the plant is fully operational, it will supply 800–1,000 GWh.

GRTgaz supports project owners seeking to convert household, agricultural or industrial organic waste into biogas and inject it into the GRTgaz grid. In 2016, GRTgaz signed a convention with the French national farmers' union (FNSEA) and the chambers of agriculture to encourage agricultural biogas production. In 2016, GRTgaz signed 5 new biogas design agreements and 6 connection agreements. In 2017, GRTgaz foresaw the connection of 6 new facilities to the transmission network, followed by 5-6 further connections in 2018.

Substantial volumes of biogas seem unlikely to be developed until 2030 and beyond; although Italy is a relatively large producer of biogas, this contributes less than 4% of its total gas consumption.

The development of biogas in Germany has benefited from a strong legislative push promoting the deployment of renewable energy sources through the introduction of feed-in-tariff mechanisms. Growth slowed in recent times following a change in policy that removed incentives for use of energy crops: over 8% of German arable land was being used to farm maize as a feedstock for biogas plants giving rise to concerns over whether this could be adequately managed. Despite this, by the end of 2016, around 10,000 plants were producing raw biogas in Germany. However, only 200 plants were actually producing biomethane for injection into the natural gas grid and total energy injected was c. 8.5 TWh/year – less than 1% of total natural gas consumption.

Power-to-Gas

Power-to-gas is the conversion of electric power to a gas form (e.g. hydrogen). This allows excess renewable electricity, especially in the summer months,

to be stored as "green gas" for transportation through the national gas grid. Several TSOs are undertaking exploratory power-to-gas projects. Each of these is at an early stage and short-term ambitions are for small amounts of output only, with any significant output many years away.

Gasunie's HyStock project, planned for completion in September 2018, will use energy generated by approximately 5,000 solar panels to convert sustainable electricity into hydrogen; this will be the first such installation in the Netherlands with a capacity of at least 1 Megawatt. Gasunie is also working with Vattenfall/Nuon and Statoil to facilitate the use of hydrogen in the Magnum power station in Eemshaven, Groningen.

Swedegas is planning a pilot plant to provide know-how and experience of power-to-gas under Swedish conditions. Through to 2030, Swedegas estimates that 2–3 TWh of gas could be produced through power-to-gas.

GRTgaz funded 40% of the €30 million Jupiter 1000 Power to Gas demonstrator. This project analyses the synergistic management of electricity and gas grids by storing surplus renewable electricity in the form of hydrogen or synthetic gas.

Carbon Capture Storage

Biogas and gas-to-power of themselves will not instantly solve the gas decarbonisation problem; what they may do by providing (as yet uncertain) volumes of a greener form of gas is contribute towards gas acting as a transition fuel during the decarbonisation process.

There has been much talk of harnessing a further new method to deal with decarbonisation: carbon capture storage (CCS). The attraction of CCS compared with biogas or power-to-gas is that it would deliver large-scale decarbonisation of natural gas. Disappointingly, the technologies associated with CCS are widely regarded by the gas industry as too complicated, long term and expensive to develop without government finance (directly or through higher carbon prices). Without this finance or a rethinking of the gas industry's approach, there are unlikely to be any substantive developments of CCS.

New Demand

As well as seeking ways to transmit a decarbonised product, TSOs have worked actively on developing new demand, particularly in transport.

Transport

Using natural gas as a transport fuel results in lower carbon emissions and may provide a solution to the smog problem in cities. So, LNG is being considered as an alternative fuel for ships and long-distance trucks, while compressed natural gas (CNG) is an option for cars, vans and buses.

Italy is the leading European market for the consumption of gas in the automotive industry, with over 1 billion cubic metres consumed in 2015 and approximately 1 million vehicles currently in circulation. Snam believes this number could be tripled, with an overall penetration of 7-8% of the total vehicles in circulation, resulting in an estimated increase in gas consumption of approximately 4-5 billion cubic metres.

As part of a joint initiative with vehicle manufacturers and a service station network Snam plans to invest around €150 million over a 5 year period to promote the development of refuelling stations and ensure they are more evenly distributed throughout Italy. The aim is to double the road and highway distribution network, currently consisting of 1,100 service stations, to reach up to more than 2,000 in 10 years; to improve the quality of the service provided to users; and to ensure a more balanced distribution of stations in the various regions of the country.

Fluxys works with the national gas federation in Belgium, filling station operators and car manufacturers to promote the use of CNG vehicles, but notes that the challenge in supporting a switch to natural gas lies in developing the appropriate infrastructure for cars, trucks and ships to refuel easily with natural gas.

There are only 15,000 NGV vehicles in France and an insufficient network of NGV stations open to the public (only 50 stations around the country, including 13 accessible to heavy goods vehicles). GRTgaz is working with Sigeif Mobilités to build a dozen public NGV fuelling stations in the Île-de-France region and many more are planned across the country.

TSOs' efforts to create new demand, especially for gas in the transportation sector are likely to be small when compared with the potential loss of demand in the power and residential sectors. The intended increase in Italian demand as a result of an expansion in gas use for transportation (4-5 Bcm as referred to above) is less than 10% of current natural gas demand (64.5 Bcm in 2016). Even if natural gas were to capture the entire fuel transportation market in Italy it would still only represent an estimated 30-35 Bcm. Given competition with electric cars, engine efficiency gains and the likely continued use of petrol and diesel in transportation for many years to come the best gas could hope for is likely to be around10 Bcm – material undoubtedly but not enough to replace projected losses of demand in the power, residential and commercial sectors.

Within this context, TSOs may encounter a significant challenge in achieving (yet alone sustaining) top line growth in their core markets. In these circumstances, geographic or product diversification to higher growth markets would be an obvious approach to risk management.

Diversification

Geographic diversification into other regulated gas infrastructure assets in Europe has been a regular feature of recent years. Gasunie bought the BEB network in Germany to establish Gasunie Deutchland, Snam acquired a stake in TIGF in France, Fluxys bought into the TENP and Transit gas pipelines and a number of European TSOs bought into the TAP pipeline (Enagas, Snam and Fluxys). However, more recently TSOs have faced significant competition from financial investors who have increasingly been successful in purchasing network businesses. These have included Macquarie and its consortium partners' acquisition of Open Grid Europe, Allianz's acquisition of a stake in Gas Connect Austria and OMERS' and Allianz's successful acquisition of Net4gas.

Given this challenge, product diversification has proved in some instances a more attractive option for TSOs.

Gas in the Future

Picking a winner from the TSOs at a time of great change, with much uncertainty, is not easy. There are broadly three different routes a European TSO can take that may result in success, or at least improved chances of survival after 2030: implementing compatibility with a decarbonised World at a pace, continuing geographic and product diversification while growing non-traditional demand and managing a decline in revenue, and divesting from European networks. For the first two routes, success will also require regular dialogue and co-ordinated forward-thinking lobbying of policy makers and regulators to give the greatest chance of a successful outcome.

Implement compatibility with a decarbonised World, at a pace

The simplest form of this route requires a change by both TSOs and governments in the current position with regards to development of CCS.

Not only is the gas industry reluctant to adopt CCS without government support, but signals from governments are currently mixed. The UK government's Clean Growth Strategy published in October 2017 recognised the critical role of CCS to reducing CO_2 emissions, and Norway announced in 2016 it will spend approximately NOK 1,314 million (over €130 million) on building their CCS portfolio. However, there is no evidence of government and industry working together to define the steps required to deliver CCS. Indeed in 2015 the UK government's Spending Review and Autumn Statement announced that £1 billion of funding previously committed for CCS has been cut.

This is not the only route to compatibility with a decarbonised World available to TSOs. New technologies for the development of biogas and power-to-gas can continue to be explored. Technology advances are not linear, and TSOs have time, given the long COP21 transition phase up to 2050, to make transformative breakthroughs in this area and whilst current investments are small relative to the industry the same could be said of early renewable electricity projects.

Continue geographic and product diversification and grow non-traditional demand while managing a decline in revenue over the next 30 years

This approach requires recognition that gas in its current form will only ever have a small place in a decarbonised World; this appears to be the default position of European TSOs currently. From this starting point, use of gas

in transport can be developed and capital spending on networks can be controlled in recognition that the network's fixed costs will have limited revenue cover. TSOs will need to review capital programmes line by line and identify any unnecessary investment. This can be coupled with a focus on TSOs' natural advantage (their experience in managing regulated gas assets) to build a diversified portfolio of assets, both geographically and in the products that are offered.

A common theme emerges from these first two options. Both implementing compatibility with a decarbonised World at a pace, and diversification and growing non-traditional demand while managing a decline in revenue must be underpinned by co-ordinated forward-thinking lobbying by TSOs as part of a constructive dialogue with policy makers and regulators. The regulators and industry will need to come to terms with uncertainty, for example the assumption that gas assets will have 40 year asset lives may need to be changed to unlock new investments recognising that there is a risk of redundancy as we move toward a zero carbon world.

Key elements of this lobbying include a statement of certainty of the role of gas as a transition fuel in the move towards decarbonisation and consistent policies and regulations that recognise gas as the most environmentally friendly of the fossil fuels, and financial support to the development of lower carbon alternatives. Channels such as ENTSOG are in place to enable such a dialogue: these channels must be used forcefully now to make the case for gas.

Divesting from European networks

The third option, finding substitute investments in network businesses without the drawbacks of European gas networks, must be tempting for some TSOs. This is the path taken by National Grid in the UK with its recent sale of a 61 per cent stake in its UK gas distribution business to a consortium backed by Macquarie, the Australian investment bank, and China Investment Corporation, China's sovereign wealth fund.

When this deal was announced, shares in National Grid rose 0.4 per cent suggesting a recognition that there were other investments that would give National Grid better returns (for example North American electricity grids).

Whichever approach is taken, TSO decisiveness is essential. Decarbonisation may not be scheduled until 2050, but TSOs will realise that decisions on how to address the future cannot be put off very much longer. The time to act is

now. This creates real challenges for TSOs who will need to learn new skills moving from a world where good engineering and regulatory management were the core competencies to one in which technology, logistics and an ability to compete in a competitive market will be essential for future success.

Decisiveness was not a key trait of the Shropshire Union Railways and Canal Company formed in 1846. Born of a merger of canals in 1846 in response to the rise of railways, it intended to convert a number of canals to railways, but dropped these plans in 1849. Profits declined and while government subsidies sustained them until 1920, most of its canals were closed under the provisions of an abandonment order obtained in 1944. TSOs will not want this particular passage of history to repeat itself.

Gas Strategies is actively working with TSOs and infrastructure investors to assess risk and develop robust strategies for the future. If you would like to understand more about our experience and how we could support your business please contact Chris Walters on **+44 20 733 9943** or **c.walters@gasstrategies.com**.

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