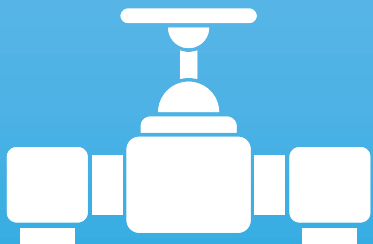




Gas Infrastructure Europe

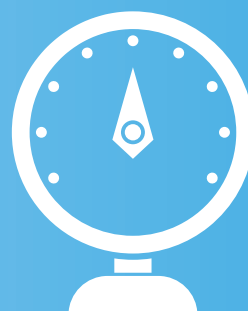
# Investments in Infrastructure in Europe

Challenges and Opportunities for Transmission System Operators



# Investments in Infrastructure in Europe

## Challenges and Opportunities for Transmission System Operators



**Gas Infrastructure Europe (GIE)** is an association representing the interests of European natural gas infrastructure operators active in natural gas transmission, storage and LNG regasification. 30 Transmission System Operators (TSOs) from 25 countries are members of GIE. They are committed to actively contribute to the design and implementation of a transparent, secure, sustainable and competitive gas market in Europe underpinned by a stable and predictable regulatory framework as well as by a sound investment climate.

This paper presents the thoughts of GTE members with regard to the Investment Climate for gas transmission infrastructure in Europe. We outline what we see as the issues affecting investment, our hopes for the industry and our belief in the positive benefits that TSOs can bring to Europe particularly in achieving the Energy and Climate goals of the European Union (EU) as set out by the European Commission (EC) throughout a number of legislative proposals.

Natural gas has much potential that is yet to be fully realised:

- Increasing Natural Gas in the power generation mix can significantly reduce CO<sub>2</sub> emissions;
- Compressed Natural Gas (CNG) and Liquefied Natural Gas (LNG) present road and maritime transport sectors with significant opportunities to reduce costs while also significantly reducing CO<sub>2</sub> emissions;
- Gas-fired micro combined-heat-and-power (CHP) generators can provide local heating and electricity at high efficiency factors;
- “Power to Gas” technology can store energy in large volumes.



## Gas Infrastructure Europe

In order to realise the full potential of gas transmission infrastructure, GTE believes that a number of key areas of energy policy need to be addressed. These include:

- Clear, consistent, and enduring policies are required from EU Policy makers that Natural Gas has a key role in the future of the EU Energy mix;
- GTE agrees that a single, legally binding greenhouse gas emission reduction target of 40% is appropriate;
- The EU Emissions Trading Scheme (ETS) should remain as the primary EU mechanism for CO<sub>2</sub> reduction as, under the right conditions it can facilitate the most cost-effective path to carbon reduction:
  - Appropriate and equivalent measures are also required for the non-ETS sectors;
- Subsidies for mature renewable technologies in the power generation sector should be eliminated. They distort the Internal Energy Market and can even be counter-productive as they divert capital from R&D support for new lower-carbon technologies e.g. Power to Gas.

## The Current Investment Climate

GTE agrees that a market-based approach should be the cornerstone of investments in gas infrastructure. Regulated infrastructure has long been an attractive investment option for investors who value the stable, long term returns on investment. Regulated Natural Gas Transmission Infrastructure is typically depreciated evenly over a 40 to 60 year period and should therefore be ideally placed to attract long-term investment. However, this situation is being undermined by a number of factors at the current time, including contradictory National Energy Policies and Strategies that are creating market distortion and which are not in-line with the ambition to create an internal EU energy market. GTE would distinguish here between investors who are prepared to provide capital for new, long term investment rather than those who would purchase existing, mature infrastructure and seek to extract returns over a five to ten year timeframe.

GTE believes that Natural Gas and the Natural Gas Transmission Sector in particular can substantially contribute to achieving the goals of the EU Energy Policy both now and long into the future if some of fundamental issues highlighted above are sufficiently addressed.

## Recovery of Long Term Investment in the Low Carbon Economy and Long Term Viability for Investors

Regulatory consistency and predictability are essential to attract investors. For Regulated companies, it is the governing ministry and the National Regulatory Authorities (NRAs) that are best placed to provide this certainty. The ministries set the National policy objectives, which are then implemented and enacted by the NRAs. GTE believes that both the EC and ACER have a vital role to play in ensuring that EU Energy policy is consistently applied in member states and GTE would like to see NRAs and governing ministries working together to set clear, long-term policy objectives that ensure that vital gas transmission pipeline infrastructure is viable into the future. Regulatory certainty can provide reassurance to capital providers that their investments will be sustainable and will lead to lower financing (and refinancing) costs for TSOs, the benefits of which will flow to end-consumers. Some examples of this can be found in the reaction of Ratings Agencies and Investment Firms to the proposed Regulatory Settlement from the Northern Ireland Authority for Utility Regulation for Phoenix Natural Gas Limited in 2012.

*"Unfavourable tariff settlements or changes to the regulatory regime could increase the sector's business risk in the long term, leading to negative rating action."*  
– FitchRatings<sup>1</sup>

*Some risks fall squarely on providers of finance to a regulated asset, such as the exercise by a regulator of discretionary powers within the agreed parameters of a settled regulatory system" – iCon Infrastructure LLP<sup>2</sup>*

GTE believes that close co-operation in terms of policy development, between Government, NRAs and TSOs can greatly enhance the future for gas transmission infrastructure which will significantly contribute to broader EU energy policy objectives. In this respect, it would be very beneficial if some Member States follow best practices from other Member States who have a specific forum in place for this cooperation to take place.

## Natural Gas: Advantages and Challenges

TSOs are convinced that Natural Gas should play a significant role in the future EU sustainable energy mix and will provide a valuable contribution in the move towards a low-carbon energy system by replacement of oil and coal.

GTE believes that there is a much greater role for Natural Gas than simply a flexible balancing and capacity backup to RES in a properly constituted and functioning internal energy market. Natural Gas is acknowledged as the strongest enabler of Renewable Energy Sources (RES). Natural Gas Power Plants are flexible (time to full power generation capacity) and produce substantially less emissions (CO<sub>2</sub>, CO, NOx, Particulates<sup>3</sup>) than their coal or oil equivalents. **Switching coal-fired power plants to natural gas, EU power sector CO<sub>2</sub> emissions would be reduced by almost 60% (810 million metric tonnes)<sup>4</sup>**. This is a key benefit that gas infrastructure in general can provide to EU power sector decarbonisation initiatives **and** could provide a significant **step-change reduction in CO<sub>2</sub>** and other Green House Gas (GHG) emissions.

As the most efficient and least emitting conventional generation fuel, Natural Gas should be seen as both the transition fuel for the low carbon economy and also as an enduring base-load fuel. **At the end of 2012, Natural Gas had proven worldwide reserves (at current production rates) of 56 years<sup>5</sup>** which will ensure that

<sup>1</sup> [http://www.competition-commission.org.uk/assets/competitioncommission/docs/2012/phoenix-natural-gas-limited/fitch\\_ratings.pdf](http://www.competition-commission.org.uk/assets/competitioncommission/docs/2012/phoenix-natural-gas-limited/fitch_ratings.pdf)

<sup>2</sup> [http://www.competition-commission.org.uk/assets/competitioncommission/docs/2012/phoenix-natural-gas-limited/icon\\_infrastructures\\_submission.pdf](http://www.competition-commission.org.uk/assets/competitioncommission/docs/2012/phoenix-natural-gas-limited/icon_infrastructures_submission.pdf)

<sup>3</sup> <http://www.gasnaturally.eu/uploads/Modules/Publications/air-qualityfinal.pdf>

<sup>4</sup> <http://www.gasnaturally.eu/uploads/Modules/.../eu-policy-july-2011.pdf>

<sup>5</sup> Source: BP Statistical Review of World Energy June 2013

# Investments in Infrastructure in Europe

## Challenges and Opportunities for Transmission System Operators

Natural Gas can continue to be a vital supply source for the EU Power Generation system. It is important to note that the reserves to production ratio for gas, has remained stable over the past 20 years. The discovery of gas has kept pace with increasing production and use. Worldwide reserves are readily accessible to the EU through existing import pipelines, interconnectors and LNG import terminals and could become even more accessible under suitable regulatory conditions, i.e. full implementation of the internal market and a regulatory environment that acknowledged and promoted a viable long term future for natural gas infrastructure.

The existing natural gas system facilitates the transition to a low-carbon economy at sustainable energy prices in new areas of usage by rolling out new technologies, e.g:

- **Use of gas as a road transport fuel is a proven technology** with significant environmental advantages over conventional fuels (25% less CO<sub>2</sub>, 60% less NOx)<sup>6</sup>. In addition, the use of **LNG in maritime transport** is an area with significant potential for fuel and emission cost savings;
- Gas-fired micro combined-heat-and-power (CHP) generators can be installed in residential settings to provide electricity locally reducing the need for costly electricity grid expansion. Distributed gas generation can be an **complementary technology to decentralised RES** electricity generation;
- “Power-to-gas” technology enables the “storage” of RES in the natural gas system by using RES to produce synthetic gas from CO<sub>2</sub> and H<sub>2</sub> which can then be injected into the natural gas system. The **big advantage is that energy in the form of gas can be transported over long distances on a more economically and environmentally-friendly way than in the form of electricity. Energy in the form of gas can be also stored in large volumes.** Natural Gas pipelines are also subject to less public opposition than over-ground infrastructure.

## GTE Position

**GTE believes that EU and member state policies are in a number of areas inconsistent with, and contradictory to the overall policy aims of a low-cost, low-carbon economy.** The EC have acknowledged that the EU's Emissions Trading System is not having the desired effect of encouraging the most use of the most cost-efficient and low carbon technologies available. The current low traded price of carbon that pertains due to the surplus of credits is enabling highly polluting coal/lignite to displace Natural Gas from the Power Generation mix. **These plants emit in the range of 170% to 340% of the CO<sub>2</sub> [tonnage equivalent] of the equivalent Gas fired CCGT plant.**<sup>7</sup>

The infrastructure to achieve the step change reduction in CO<sub>2</sub> emissions by reversing the move from gas to coal/lignite in power generation is already in place. The facts show that some relatively new CCGT plants are being mothballed, and in some cases being decommissioned due to lack of utilisation with other CCGTs in all EU countries operating at low utilisation levels<sup>8</sup>. Gas transmission infrastructure can satisfy the potential demand arising from the utilisation of the gas power plants in place. Indeed the existing pipelines are designed and built to meet the potential peak energy requirements of the market. The peak requirements of flexible gas generation plant are likely to increase further as RES continues its penetration levels throughout Europe leading to a consequent requirement for further investment in Natural gas infrastructure. The available gas transmission infrastructure is also **a major enabler of energy storage** as it connects UGS to the gas grid which will continue to be a significant and important backup to the Electricity Generation market.

In order to improve the investment climate for future investment for Gas Infrastructure, the returns on existing infrastructure must remain sustainable for investors. If policy makers do not adopt policies that demonstrate to the markets that there is a strong future for natural gas, Transmission System Operators businesses will be, as a result, less attractive.

GTE's view is that the poorly functioning ETS market is being worsened by the provision of subsidies not sufficiently reduced and re-scaled in accordance with the maturity of RES technologies. This is leading to a suboptimal achievement of a low-cost, low-carbon economy, and this subsidisation has increased energy

<sup>6</sup> European Commission Communication: Clean Power for Transport: A European Alternative fuels strategy, pg. 6

<sup>7</sup> Gas Naturally, Gas:Cleanest Fossil Fuel" 2012

<sup>8</sup> RWE Supply & Trading 2011, Gersteinwerk power plant





prices and reduced EU competitiveness with respect to other regions and markets. A technology independent, single approach to CO<sub>2</sub> reduction based on market economics, backed by a properly functioning ETS will deliver the EU emission reduction targets in the most cost efficient manner. In such an environment, all low carbon technology can compete on an equal footing and the case for natural gas will be strong thereby improving investment conditions.

The EC Energy 2030 Framework gives the EU **a significant opportunity** to examine and reform the ETS for the benefit of all consumers. **GTE welcomes the focus that the 2030 Framework and associated papers are putting on the functioning of the ETS** but we believe that the proposals may fall short of what will be required to assist in delivering the overall policy objectives of the Framework.

GTE agrees with the view of the EC that market failures are often a barrier to the investment in energy infrastructure, particularly where the benefits of the infrastructure typically occur over a significant period of time as is the case with Natural Gas Transmission. Given that a 'user pays' tariff is generally applied to regulated infrastructure, market players will often not support investment that will increase those tariffs. It therefore falls to policy makers to look to the long-term future and to security of supply on behalf of all market participants and make appropriate decisions in that regard. The EC estimates that significant investment (>€70bn) will be required up to 2020 to facilitate the completion of the internal market for gas and also to deliver significant SoS requirements on a national, regional and European basis.

### Incentives for New Investments in Regulate Transmission Assets

The ACER Network Code on CAM limits auctions of Capacity at interconnection points to a time horizon of 15 years. This mechanism reduces the certainty for TSOs operating the related assets which are typically depreciated over 40-60 years. If long term capacity contracts are no longer possible, then TSOs will require long term visibility and certainty from policy makers and NRAs. **Stable regulatory commitments and long term visibility for gas and gas infrastructure are key to ensure the sustainability of regulated investments by TSOs.**

In a situation where such conditions do not exist, there are different options to incentivise investments on gas transmission assets while dealing with the risk of future low assets' utilisation. Some of the incentives that could be applied on a case-by-case basis are:

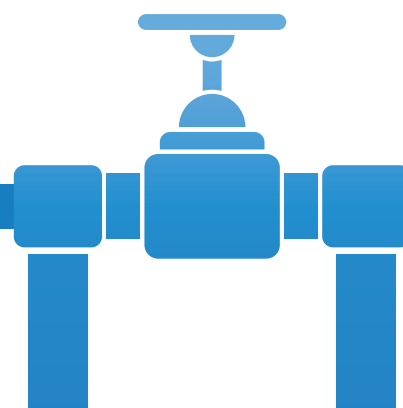
- Shorter depreciation curves;
- Premiums (WACC surcharge);
- Early recognition of costs;
- Longer regulatory periods;
- Stability arrangements;
- Cost plus regulation;
- Exemptions from efficiency gain requirements.

GTE believes that the decision to choose one or more measures should be jointly explored on a case-by-case basis and on a jointly manner by Policy makers, NRAs and TSOs, but always having in mind a minimum European approach which ensures some degree of consistency and avoid distortions or undesired effects.

GTE would **welcome engagement with Policy makers and Regulators** to assist in putting policy measures in place that will increase the long term certainty for both TSOs and their customers.

GTE believes that there must also be recognition that the need for gas transportation infrastructure may not alone be driven in all cases by direct market demand. Increasingly the need is also being driven significantly by other criteria such as Market Integration and Security of Supply (SoS) requirements. The benefit of the SoS does not just accrue to the gas industry but to the energy industry (including electricity and renewable sectors) and to society and industry as a whole. Policy makers should recognize these benefits and GTE is ready to play its part in communicating this message.

A recognition and implicit underwriting of the long term benefits that existing and future investment in Gas Transmission Infrastructure provide to the EU Energy Market as a whole may mitigate the need to adopt additional incentives for new investments.



# Investments in Infrastructure in Europe

## Challenges and Opportunities for Transmission System Operators

### Future Evolution of Load Factors in Transmission Assets

GTE acknowledges positive benefits that increasing penetration of RES into the energy mix has brought to the EU. In this new scenario, the need for flexibility is increasing while the load factors are decreasing. Variable RES imposes a stress on both the electricity and gas networks which is translated in high fluctuations, the need for flexible infrastructure and low utilisation factors. This situation endangers the investment recovery for TSOs which see lower capacity bookings but higher flexibility requirements potentially necessitating further investment.

GTE believes that benefits and flexibility provided to European Energy markets and particularly to the RES sector by gas pipeline infrastructure should be recognised by Governments and policy makers and remunerated as such.

The increasing penetration of RES, as well as the influx of cheap coal due largely to the changing energy mix in the US, has reduced the load factors of gas fired plant pushing them down the merit order even to the position of peaking plants. In some cases relatively new plant having entered service in 2011 were mothballed in 2013<sup>9</sup>.

**As the load factors have reduced, so too has the willingness of Natural Gas Shippers to reserve longer term capacity from TSOs. Shippers are increasingly relying on shorter monthly, daily and within-day capacity products which is putting pressure on the recovery of allowed revenues by TSOs. The inevitable result of decreased bookings is increased prices which exacerbate the situation by making gas less competitive. This is a vicious cycle that must be broken.**

We believe that the Network Code on Tariffs currently being developed, based on the Framework Guidelines from ACER confer **undue advantage on short term users** of Gas Transportation networks to the detriment of customers booking long term capacity on networks. **This is a further threat to long term revenue recovery of TSOs.**

The short term multipliers as proposed, capped at only 1.5 times the annual reserve prices, will enable increased short term capacity bookings, profiling of bookings and day-ahead booking in a manner that is unacceptable to TSOs as it **substantially shifts significant economic risk between users categories** and gives increased room for **free-rider behaviour**<sup>10</sup>. A balance must be found between long term and short term bookings that is reflective of the benefits and services provided to system users.

GTE believes that in the interest of fairness and cost reflectivity short term multipliers must be revisited and adjusted accordingly to appropriately allocate costs among network users. GTE also views the pricing of Virtual Reverse Flow (VRF) Capacity at the marginal cost of the service as disadvantaging those system users who are booking other capacity products. Users of VRF get effectively the same benefit as those booking physical capacity while paying substantially less for the service.

The above issues notwithstanding, GTE is supportive of many aspects the network codes (NCs) being developed by ENTSOG. The Congestion Management Procedures (CMP) guidelines and Capacity Allocation Mechanisms (CAM) NC will help to optimise the use of existing assets at interconnection points. GTE members will also contribute positively to the development of rules relating to 'Incremental Capacity' which is currently being undertaken by ACER and ENTSOG as we believe these rules can contribute to increased certainty for investment in Transmission Infrastructure.

<sup>9</sup> [https://www.eon.com/content/dam/eon-com/ueber-uns/publications/Facts\\_and\\_Figures\\_2014.pdf](https://www.eon.com/content/dam/eon-com/ueber-uns/publications/Facts_and_Figures_2014.pdf)

<sup>10</sup> Natural Gas Transmission Infrastructure is constructed to meet peak demand and to be available year round and for the long term. The majority of customers at domestic and commercial level utilise the systems on this basis and pay accordingly. "Free rider" behaviour occurs when a Network user does not pay for the continuous availability of the network but rather operate on a "pay as you go" basis where the price paid does not contribute to the long term costs of maintaining the network.

## Summary and Conclusions

Natural gas has a large range of advantages which makes it the fuel of choice for sustainable economic growth in the foreseeable future. It has also many challenges that need to be solved. Displacement of coal with gas fired power plants will reduce CO<sub>2</sub> emissions by 810 million tonnes relative to 1990 levels.

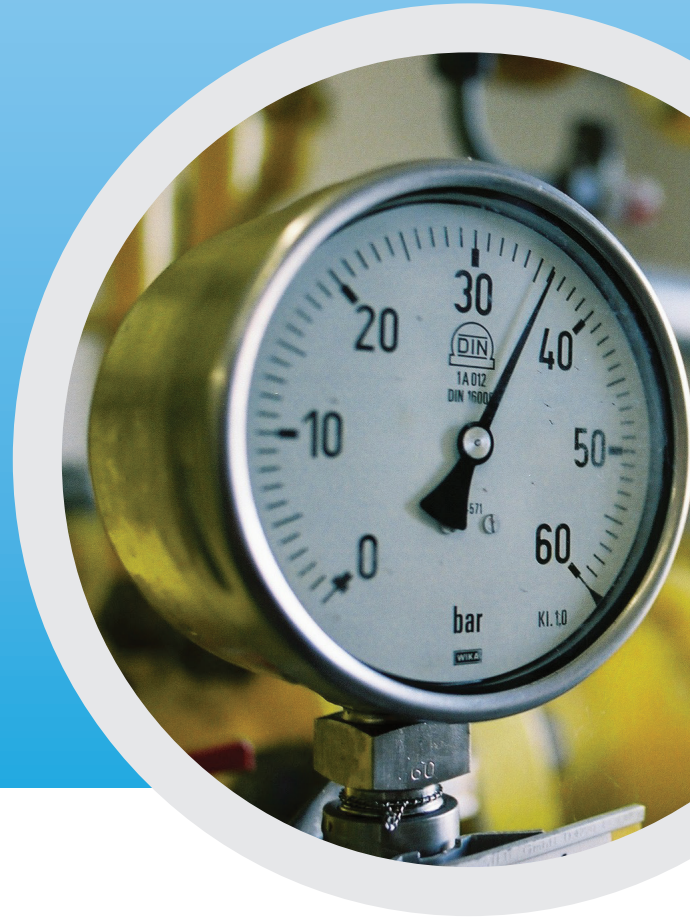
Whether natural gas is going to have a relevant role in the future EU energy mix or not, depends to a large extent on the gas industry itself. The gas industry must do its best efforts to offer competitive, sustainable, innovative and secure energy to the society. There is no doubt about that. However, the gas infrastructure operators need the understanding and support of policy makers and regulatory authorities.

A long-term capital intensive business such as gas infrastructure will have a bright future only if the right policies and regulations are in place. Only in that case, the gas industry will be able to continue investing and innovating without barriers, uncertainties and delays. Our aim is to deliver the maximum benefits for the whole society. For this reason, GTE believes that EU institutions must not be indifferent to the current uncertain investment climate that TSOs are facing. GTE has seen how the EU energy policy has had a great impact on the energy market, and it will most likely decide the shape of the EU energy market after 2020.

Gas Transmission operators need specific and well-targeted EU policy and regulatory measures which provide investors with certainty about the recovery of their capital intensive, long-term investments in gas transmission assets. Many options are possible (stronger role for gas in the EU energy mix, strengthening the ETS, investment incentives and risk mitigators, close integration of gas and electricity system, completion of the internal market, compliment [consider options] with renewables, adaptation of remuneration schemes to low load factors and higher flexibility needs, support for deployment of new/innovative technologies, etc.). In this sense, GTE is always open for cooperation and fruitful discussions with EU policy makers and the regulatory authorities.



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