FSR REGULATORY POLICY WORKSHOP SERIES 2018-2019

How many Gas Markets?

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15 November 2019

Sala Europa - Villa Schifanoia, Via Boccaccio 121 - Florence

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Introduction

The EU decarbonisation strategy is based, inter alia, on a massive penetration of renewable energies. In the electricity sector, this requires the system to become more flexible, to accommodate the greater variability of renewable-based generation. Technological development is enabling new sources of flexibility – such as, for example, demand response and electricity storage; additionally, it seems clear that the gas sector could also contribute to the decarbonisation process in this respect. Therefore, while natural gas, as a fossil fuel and at least in its non-decarbonised form, is bound to play a shrinking role in the energy mix in the long run, in the short and medium run gas-based generation could represent an important source of the necessary flexibility for the electricity system.

Moreover, gas is easier to store and cheaper to transport over long distances. Therefore, gas and gas infrastructure can also play a role in providing an alternative to electricity storage and transmission. (Electricity and gas) sector coupling is meant to promote the synergies between the two sectors. Such synergies might, for instance, be achieved through power-to-gas transformation and the storage of the resulting gas. Power to gas through electrolysis results in hydrogen which can be stored, used as such – in industry, transport or, in the future, in power generation – or further transformed into methane. Hydrogen can also be blended, up to a certain extent, with natural gas and thus used in the existing gas infrastructure. Technological development is likely to change the landscape here as well, with greater percentages of hydrogen blending being permissible in gas infrastructure and in many gas uses, including electricity generation in existing power plants.

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Renewable and decarbonised gases will also have to play a greater role in the future. Biogas, for instance, is still produced in very limited volumes in the EU (covering less than 5% of total EU demand for gas), but can easily be upgraded into "biomethane", whose use and physics do not differ much from natural gas'. Hydrogen is also another promising resource and can be produced by curtailed renewable electricity via electrolysis (green hydrogen); it can also be produced from natural gas (grey and blue hydrogen) with release or capture/sequestration of CO2.

All these developments depict a future in which different types of gases will co-exist, to a greater extent than today. From a system operation perspective, one of the main questions is to what extent these different gases will be able to use the same (existing) infrastructure or whether they would need to be segregated in different networks. For instance, each EU country has set its own limitations and regulatory provisions for the injection of hydrogen – which can differ significantly even between neighbouring countries. From a market perspective, the main question is how many different markets will be needed in order to promote the efficient use of the different gas types and the optimal resource allocation. It is clear that trading in the same market requires a degree of homogeneity of the products and this is likely to imply the fact that the products could use the same infrastructure.

Therefore, the operational and market dimensions are linked and they both need to refer to a taxonomy of the different types of gases that has to recognise the different chemical compositions, but also the potential for transformation. Following the Madrid Forum in June 2019, the Florence School of Regulation has been working on developing such a taxonomy, bringing together the work and contribution of stakeholders.

Once this taxonomy is established, the future market structure for "gases" could be addressed. In this respect, it is important to note that, even if the conclusion of this assessment were, as it is likely to be the case, that different markets are needed to cover the full spectrum of gases in the future, some of these markets would be linked through the transformation potential between the corresponding gases. These transformations and the arbitrage opportunities that they create will determine the extent to which prices in the "linked" markets will be able to diverge and which forces will operate towards price convergence.

Against this background, the Workshop will explore the future technological and market landscape for gases, used as energy media and as feedstock for industrial processes. Starting from a future-proof taxonomy, it will assess to which extent different gases will be able to share the same infrastructure, and under which conditions (e.g. retrofitting). It will then go on to identify the implications for market design.

To address these and other related issues, the Workshop will be structured in two sessions:

- **Session 1** will investigate the technological and system operation dimension of the future gas sector, in its widest notion (i.e. including all types of gases and their uses as energy media and feedstock). In particular, it will explore to what extent different gases could share the same infrastructure and under which conditions, and where, instead, different networks are needed to transport different types of gases. It will also aim at recognising the technical links between these networks and the transformation processes linking them.
- **Session 2** will look at the market implications of the results of Session 1, and in particular how many markets will be required to cover the whole spectrum of gases in the future and the opportunities for coupling them, and for coupling these with the electricity market in its different timeframes.

Programme

15 November

08.30 - 08.45 *Welcome coffee*

08.45 - 08.55 Welcome Address

Jean-Michel Glachant | Florence School of Regulation

08.55 - 09.10 Introduction to the workshop

Alberto Pototschnig | Florence School of Regulation

Klaus-Dieter Borchardt | EU Commission

SESSION I – THE TECHNOLOGICAL AND SYSTEM OPERATION DIMENSION

Chair: **Ilaria Conti** | Florence School of Regulation

09.10 - 09.35 A taxonomy for gases in the new decarbonising energy sector

Ilaria Conti | Florence School of Regulation

09.35 - 10.35 Clustering gases according to technological and system operation requirements

Torben Brabo | Gas Infrastructure Europe

Peter van Wesenbeeck | EASEE-gas

10.35 - 11.00 *Coffee break*

11.00 - 12.15 Contributions from the FSR Donors

Nadia Henry | EDF

Francisco Pablo de la Flor Garcia | Enagas

Francisco Casañas Sanchez | Endesa

Claude Mangin | ENTSOG

Stefan Wagenhofer | GasConnect

Christophe Poillion | GRTgaz

Neil Rowley | National Grid

Gideon Saunders | Ontras

Oliver Altenhoff | Open Grid Europe

12.15 - 12.30 General discussion

12.30 - 13.30 *Lunch*

SESSION II – THE MARKET IMPLICATIONS: HOW MANY GAS MARKETS?

Chair: **Andris Piebalgs** | Florence School of Regulation

13.30 - 14.20 The views of market operators and traders

Christian Baer | Europex

Doug Wood | EFET

14.20 - 15.10 The regulatory perspective

Dennis Hesseling | ACER

Pedro Verdelho| ERSE

Massimo Ricci | ARERA

15.10 - 15.30 General discussion

15.30 - 15.50 Wrapping-up the day: the policy-making take-aways

Klaus-Dieter Borchardt | European Commission

15.50 - 16.00 Concluding remarks

Alberto Pototschnig | Florence School of Regulation