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Position Paper Recommendations for incentivising innovation in the gas DSO sector

This paper sets out the status and challenges facing gas DSOs when investing in innovation. It describes a list of recommendations to establish a regulatory framework, which enhances the investment climate for such innovation. Throughout the paper are examples of real life innovation being carried out by gas DSOs.



Eurogas is the association representing the European gas wholesale, retail and distribution sectors. Founded in 1990, its members are 46 companies and associations from 24 countries.

Eurogas represents the sectors towards the EU institutions and, as such, participates in the Madrid Gas Regulatory Forum, the Gas Coordination Group, the Citizens Energy Forum and other stakeholder groups.

Its members work together, analysing the impact of EU political and legislative initiatives on their business and communicating their findings and suggestions to the EU stakeholders.

The association also provides statistics and forecasts on gas consumption. For this, the association can draw on national data supplied by its member companies and associations.

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Introduction

By investing in innovation, DSOs can continually improve the efficiency of their business, ultimately to the benefit of gas consumers. The benefits, however, can be broader than simply efficiency alone, as the innovation can be guided towards supporting particular policy goals, such as the decarbonisation of the energy system. Innovation forms part of a key pillar of the Energy Union.

Principles and Recommendations

Overarching Principles

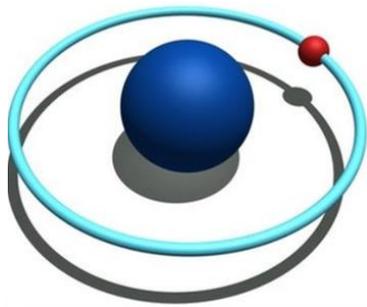
1. **The ultimate goal of innovation for gas DSOs is to provide benefits to their consumers.** To achieve this, the objectives can be broader than cost-efficiency alone and can include for example: the decarbonisation of the energy system and the promotion of an informed and engaged energy consumer, both of which have societal benefits and contribute strongly to the achievement of an Energy Union.



GRDF, France:

Operatives in the field can show real-time images through the glasses they wear to in-house experts, who can then provide analysis and feedback.

2. Innovation is a normal business activity of a gas distribution system operator and should be encouraged.



EU, 30 partners:

Testing admissible Hydrogen Concentrations in Natural Gas System: solutions so natural gas infrastructure can be developed sufficiently to accept the storage and transport of hydrogen.

3. Innovation costs should not be simply treated as operational expenditure and its unique characteristics should be recognised. As the purpose of classical price-based regulation is not constructed with innovation in mind, special treatment may be required to foster and nourish it.

4. Innovation by gas DSOs should focus on areas where private innovation is lacking or needs support, thereby complementing each other. Gas DSOs should take a proactive approach, seeking to cooperate and work with other areas of industry not directly in the gas business.
5. Costs for innovation should not be capped by a price-based mechanism nor subject to a benchmarking exercise, though they should always be incurred in an efficient manner.
6. The regulatory treatment of costs may need to be different for two distinct phases of innovation: (i) research & development and (ii) roll-out.

DSOs' approach

7. Collaboration with other DSOs and other regulated and non-regulated gas chain businesses should be a key element of the DSOs' approach to innovation. Greater collaboration can result in a net cost reduction, a broader implementation of the innovation and a larger group of consumers who benefits.

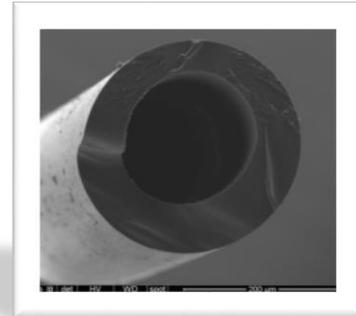


ITALGAS & HERA, Italy:
Evaluation of masking effects of different biomethane samples on standard natural gas odour.

8. By regulatory principle the DSOs are fully transparent on costs that are related to innovation in their cost base.
9. DSOs should spend funds for R&D in a prudent and efficient manner.
10. DSOs should communicate the benefits of their innovation programmes to increase their social acceptance from consumer's perspective and to have greater collaboration from other DSOs.

Research and Development

11. Regulatory frameworks should be designed in such a way that they do not micro-manage the direction of innovation by picking specific projects, rather promote an innovation friendly regulatory environment. The regulator does have a role in the overall direction of the innovation, for example by setting clear criteria and guidance.



EDP-NATURGAS, Spain:

Development of advanced hollow fibres in order to upgrade biogas for its later injection in the gas grid.

12. Where the benefits of R&D are long-term it may be more appropriate to capitalise the costs and add them to the Regulatory Asset Base (RAB) of the DSO. Costs which are simply treated as operational expenditure can become a natural target for short-term saving programmes, with a detrimental impact on potential long-term savings to customers, which might exceed such short-term savings.



GRDF, France:

Testing the use of drones to enhance the surveillance of the gas networks.

13. Including R&D costs might make the DSO appear less efficient in a comparative efficiency analysis with other DSOs, at least in the short to medium-term; this should not be penalised. However, given the scale of the costs, this is unlikely to be a significant proportion of costs.

Roll-out

14. If the project period differs from the regulatory period, regulatory rules may need to be adjusted to ensure the benefit for the consumer is realised. Two mechanisms that support DSOs' innovation are an extended regulatory period (for investments in innovation) and regulatory 'holidays' for innovation.

15. In Member States where the regulatory model is based on outputs, using innovation activity as a key performance indicator may be a possibility.
16. The DSOs' roll out of initiatives with demonstrable benefits must be supported by the regulator also, i.e. it is not simply an issue of research and development.



Gasversorgung Wismar Land GmbH, Germany:
Conversion of an island to gas heating and cooking using natural gas and biogas.

The Challenge

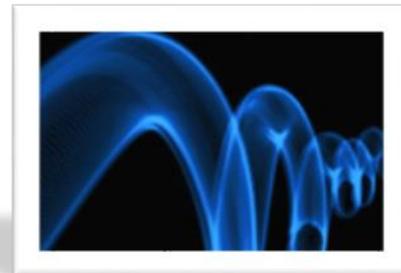
Always customer focussed

Innovation should start and end with the customer. Steve Jobs of Apple was famously quoted as saying "You've got to start with the customer experience and work backwards to the technology".

Classical Regulatory Framework

Classical regulation regimes enable DSOs to conduct Research & Development (R&D) without directly bearing cost risk, as any additional costs are included in the regulatory settlement, by way of higher tariffs.

Often, however, any savings realised from this R&D are reflected in lower tariffs and no additional profits for the company, which can act as a disincentive to the company. It can be that the DSO is allowed to capture any savings for the remainder of the Regulatory Period, which can typically be 3-5 years¹.



Thüga, Germany:
Excess electricity is used to split H₂O to hydrogen and oxygen; hydrogen is injected into the natural gas distribution grid.

Therefore, this can lead to a focus on short-term innovation focussing on efficiencies only. However, the benefits from R&D generally accrue in the medium to long-term, particularly, those with the highest society benefit.

At the beginning of these incentive regulation schemes, there was more likely to be scope

¹ In the UK this is now 8 years.

for reducing inefficiencies, through managerial, organisational and procedural changes. Although with innovation, it is often the case that the companies will reach a point where further efficiency improvements can only be achieved through technical change which can require significant investment.

Case study

Challenge and solution for an innovation friendly regulatory framework: the UK example

In the era of the vertically integrated gas company, the responsibility for and the benefits of research, development and innovation were clear. There was a direct link between supply and utilisation of gas and its distribution, transportation and even production. For example, a vertically integrated gas company would support the development of end-use technology in that it provided a market stimulus for the sale of gas and this contributed directly to the long-term balance sheet of the company.

As a direct result, volumes of gas could be forecast which justified continued long-term investment in maintenance and improvement of the gas networks. Such investment plans in themselves stimulated innovation activities, as cost reduction, efficiency improvement, and safety and integrity assurance and have been shown to be directly related to the long-term implementation of new innovation.

Since privatisation, unbundling and fragmentation of the industry has meant that the role of and responsibility for innovation in the gas chain has become less clear. Strong regulatory frameworks in the industry had the effect of ring-fencing the activities of the different players in the gas chain, and short-term performance and regulatory targets led to a strong focus on the reduction of operational expenditures (Opex).

Research and development activities were often seen as Opex, and so became an early target of cost reductions. The result was a very significant fall off in the level of innovation activity both for transmission and distribution companies. Innovation relating to utilisation often became 'orphaned' as it was outside of the key performance indicators used to measure performance of the transportation companies, particularly as revenue was no longer directly dependent on volumes transported.

In the UK budgets for research and development which peaked at around £100M for British Gas fell to less than £5M over all gas transmission and distribution companies by the middle of the last decade. Much of the remaining investment was devoted to safety related activities, with little focus on innovation to address the role that gas can play in the evolving energy mix.

In recent years however, there has been a significant change to the UK regulatory regime. A performance-based price control scheme for gas and electricity transmission and distribution companies called RIIO² has been introduced. This incentivises innovation in two ways; firstly by allowing a percentage of turnover to be invested in innovation activities and recovered through regulatory pricing regimes on a “use-it-or-lose-it” basis, and secondly by introducing an annual Network Innovation Competition, where gas TSOs and DSOs can put forward major projects that compete for a fixed ‘pot’ of innovation funding. The resources released by this new regime has led to a reinvigoration in innovation by gas TSOs and DSOs flowing from a culture change within these companies. Customers are already receiving the benefits of the innovation in reduced costs and improved service.



SGN, UK:

Field trial of the robot 'Large CISBOT', which has the potential to repair or rehabilitate pipelines under live conditions in a more cost-effective manner than existing methods.



National Grid, UK:

Pilot and commercial projects to demonstrate the technical and economic feasibility of thermal gasification of waste to renewable gas.

² RIIO (Revenue = Incentives + Innovation + Outputs) is Ofgem's performance based model for setting price controls for network companies.



Gas Networks Ireland:
Developing pipe inspection solutions for polyethylene mains to reduce the cost and disruption involved in traditional excavation-based inspections.

Innovation minded Regulatory Framework

Recognition of the different levels of incentivisation needed to turn an initial development into a business innovation needs to be accounted for in the regulatory framework. Mechanisms should ideally be put in place which help to avoid the “valley of death” outcome so often seen, where scale-up of investment costs is significant and ongoing development is often shelved. Cooperation with other DSOs and other industries offers a means to reduce this risk.

In fact, innovation doesn’t really lend itself to the classical regulatory regime for networks.³ For example, the start and end point will most likely not coincide with the regulatory period. Furthermore, like innovation in any sector, it may result in failure. This can accentuate the issue of social acceptance for consumers who see the costs of innovation on their bill.

In many cases, the current regulatory models may not suit these investments in innovation, as compared to the traditional grid infrastructure. In these cases, other models may be warranted, but limited to the specific investment, rather than all of the business activities.



Consortium of Companies, Spain:

Investigation into obtaining biomethane from waste and effluent, for use in the automotive industry or for injection into the gas grid.

³ “The higher risks of innovative smart grids solutions for DSOs compared to conventional network reinforcements should be properly accounted for in regulatory assessments for allowing smart grids solutions to be considered as a viable network planning option”. *Ecorys, the Role of DSOs in a smart grid environment, April 2014.*