



## Joint Declaration

Dublin, 23 April 2015

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### **Green Gas Initiative of European gas transmission operators Energinet.dk, Fluxys Belgium, Gasunie, GRTgaz, Swedegas, Gaznat and ONTRAS**

#### **“We aim to establish a 100% CO<sub>2</sub>-neutral gas supply by 2050”**

The independent gas infrastructure companies Gasunie (Netherlands), Fluxys Belgium and Energinet.dk (Denmark) signed a joint declaration on 14 June 2012 to commit themselves to taking a proactive role in order to support a 100% carbon-neutral gas supply in their network infrastructures in 2050.

GRTgaz and Swedegas decided to actively support this initiative by joining the cooperation the 24 April 2013 and Gaznat on 20 May 2014. Today, The German ONTRAS Gastransport is joining, too.

The companies emphasise that in the coming decades gas infrastructure will play a key role in the solution for reducing CO<sub>2</sub>-emissions in the European Union. The gas systems not only offer excellent opportunities to secure an affordable energy supply to European citizens and companies and, at the same time, facilitate the increase of the share of renewable energy and enable the development of a low-carbon economy towards 2050. Rather, for years the gas networks already contribute for environmental improvement by an increasing integration of renewable gases.

The companies recognise that climate change requires urgent action, and that the ultimate challenge is to carry out the required transition without unacceptable financial burdens for EU citizens and without jeopardising EU energy security. The availability of well-developed gas networks in Europe and the complementary function of gas vis-à-vis other energy forms make gas and gas infrastructure well positioned to meet this challenge. An intelligent convergence of power and gas networks will be twofold essential: First to optimise necessary investments and second to achieve the maximum efficiency in CO<sub>2</sub> reduction.

The companies acknowledge that their front-runner position as independent gas infrastructure companies provides an incentive to strive for innovation. As infrastructure operators, the companies have a long strategic planning scope, in which the green vision of Europe in 2050 is already taken into account. Sustainability is therefore already an important part of their company strategy.

The common goal can be realised by working on a number of options, where the mix of options can vary as the specific energy situation differs for each country.

## Main routes to a CO<sub>2</sub>-neutral gas supply in 2050

- The share of sustainable green gas in the infrastructure will be increased through biomethane by fermentation and through Synthetic Natural Gas (SNG) produced by “gasification” of solid biomass. Since biomethane and biomass originate from living material that is grown by absorbing carbon from the atmosphere the natural carbon cycle is almost completely closed, so there are no negative effects on the climate. In a number of European countries the production of green gas is growing rapidly and so is the associated know-how.
- With the increase in the share of variable renewable energy sources in electricity production, the need for flexibility and back-up will increase. Renewable energy sources such as solar and wind have an intermittent character, leading to both surpluses and shortages in supply: the wind will blow and the sun will shine not only when the electricity is needed, and vice versa. Gas and gas infrastructure, like no other form of energy, provide the flexibility that these sustainable forms of energy cannot provide on their own. Gas functions as an instantly available *back-up* in case of shortages and as an efficient *storage medium* in case of surplus. For example, by converting excess electricity into hydrogen, or even Synthetic Natural Gas (“methanisation”), which allows the reuse of CO<sub>2</sub>, electricity can actually be stored in gas networks and storage installations. In this way, gas helps the electricity networks to accommodate the large future volumes of sustainable energy supply and helps prevent sub-optimal use of costly sustainable energy. Furthermore, recent studies emphasise that cost for changing energy supply towards CO<sub>2</sub>-neutrality will diminish by billions of Euros when using the gas infrastructure as storage medium.
- Since the resources for renewable energy vary per country (wind, sun, area available for biomethane or biomass), part of the CO<sub>2</sub>-neutral or renewable gas will need to be exchanged across borders, both within the European Union, as well as with countries outside the European Union. This requires sufficient capacity across border points. Since natural gas typically crosses a number of borders between supply source and demand, most of this capacity is already available.
- Great steps towards higher energy efficiency and a cleaner environment can be made by substituting oil by CNG in personal transportation and by LNG in the heavy transport sector (trucks/ships). New infrastructure has to enable this development. In 2015 the focus will be on supporting national/regional authorities in preparing the national policy frameworks for the market development of alternative fuels and their infrastructure as required by EU Directive 2014/94.
- The gas system may provide an alternative to long-distance transportation of electricity since gas can transport energy up to 20 times more efficiently than electricity.

## Additional options towards a green gas system

- Natural gas can be made CO<sub>2</sub>-neutral by using internationally accepted green certificates, such as defined by the Clean Development Mechanism agreed under the Kyoto protocol. This makes it possible to reduce CO<sub>2</sub>-emissions in countries outside the European Union.
- Natural gas can be made CO<sub>2</sub>-neutral by employing Carbon Capture and Storage (CCS), though this is not expected to be deployed on a significant scale before 2030. In the long run CO<sub>2</sub> can be used for producing Synthetic Natural Gas (SNG) from excess electricity from variable renewable energy sources such as wind and solar, thereby closing the natural carbon cycle.
- Finally, the energy system 40 years ago looked much different. Over the past 40 years technologies have emerged that were not foreseen 40 years ago. Similarly, it can be expected that over the next 40 years new technologies will emerge that will help reduce CO<sub>2</sub> emissions from natural gas. A continued focus on innovation, supported by a clear vision on where we aim to be in 2050, will help to get such technology options developed.

## **Role of gas infrastructure companies**

Gas infrastructure companies, and especially Transmission System Operators, have an important facilitating and initiating role to play in greening the use of gas. Providing and connecting infrastructure to biomethane and Synthetic Natural Gas systems, taking care of gas quality issues, and promoting the efficiency of natural gas usage are among them. However, using gas systems in a low-carbon economy will need a combined effort from many market participants.

The variable nature of renewable energy sources will cause more volatility in the use of the natural gas infrastructure, whereby yearly gas volumes could decrease while the demand for peak capacity could increase due to the need for back-up electricity generation.

European energy policy, for example through the Energy Roadmap 2050, sees a key role for gas until 2030 due to the inherently cleaner nature of natural gas versus other fossil fuels, and the large potential for very efficient use.

## **Strengthened cooperation across borders**

Swedegas, GRTgaz, Gasunie, Fluxys Belgium, Energinet.dk, Gaznat and ONTRAS have agreed to work together in the following areas to realise their joint commitment to the green gas system:

- Publication of a joint declaration with concrete steps that have to be taken in order to help develop the CO<sub>2</sub>-neutral gas system.
- Exchange knowledge and know-how on the above-mentioned technologies in order to develop solutions that are most suitable for the individual markets – possibly including establishing joint demonstration projects.
- Facilitate establishment of a well-functioning renewable gas certificate market in Northern Europe.

With these strategic actions, the signatories will -through their gas infrastructures- promote a more sustainable Europe and proactively work together to reach this goal.

In addition, we will annually communicate the initiatives we have taken in order to remain promoters of a low-carbon economy.

Signed by:

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## Specific interests

- Gasunie will in particular focus on:
  - Facilitating the growth of green gas along the whole value chain, including certification, in both the Netherlands and Germany. Cross-border cooperation to develop green gas production elsewhere will also be sought. Innovation will be stimulated for large-scale production technology by gasification of biomass.
  - Optimising the strengths of the gas and power value chain by developing energy storage systems such as the power-to-gas concept.
  - Unlocking the potential of LNG for the transport sector through making LNG available as a clean fuel for small/mid-sized ships and heavy duty trucks.
- Fluxys Belgium will focus on:
  - Developing small scale LNG in the transportation sector (trucks, ships);
  - Developing CNG in the transportation sector (cars, trucks);
  - Reducing CO<sub>2</sub> and NO<sub>x</sub> emissions of its gas infrastructure;
  - Contributing to the development of green gas and power-to-gas through R&D projects.
- Energinet.dk will in particular focus on:
  - Facilitating developments that ensure 5% of the Danish gas consumption is covered through renewable gasses in 2020. This requires changes in the market setup and in the rules for the gas system.
  - Facilitating developments that ensure that the Danish gas consumption in 2050 can rely only on renewable gasses. This requires integration between the power, gas, heating and transport systems - as well as further regional development of markets and certification schemes.
  - Ensuring that the market setup, the rules for using networks, the tariffs and other framework conditions facilitate the integration of renewable gasses.
  - Coordinating and analyzing DSO and TSO network development in order to support production and consumption of renewable gasses in relevant sectors.
  - Ensuring that future smart grid development also focuses on integration of the energy systems: power, gas, heat and transport.
- GRTgaz will in particular focus on:
  - Actively promoting the image of gas, its evolution towards renewable gas and the role of the gas network to support the energy transition using the opportunity of the French “Energy transition debate” ending this year to increase political and public awareness.
  - Supporting the injection of biomethane in the gas transmission grid with first injection in 2015 and an objective of 1 TWh by 2020.
  - Supporting the development of power to gas concept developing a pilot project in France and carrying economical studies to demonstrate the economical viability of the concept, extending the economical analysis to all types of renewable gas to assess the cost of the evolution towards a 100% carbon-neutral gas supply.
  - Promoting CNG in the transportation sector.

- Swedegas will concentrate on:
  - Increased injection of biogas into the transmission system – enabled by an improved policy framework for large scale biogas production, distribution and usage.
  - 20% biogas in Swedegas transmission system by 2020 and 100% by 2050. Exploring the opportunities for Power to Gas, i.e. utilising any synergies of available renewable electricity for a more sustainable, robust and efficient gas market.
  - A Power to Gas demonstration plant available in Sweden within 3 years.
  - Bring small scale LNG to shipping, industries located outside the gas grid and transportation sectors so as to allow their transition from oil and coal, and where possible, also look for synergies for regional development, such as local grids which benefits are made available for several utilities.
  
- Gaznat will in particular focus on :
  - Actively supporting research in the field of carbon capture/storage. As such, Gaznat (through its subsidiary Petrosvibri) sponsors a chair of geo-engineering at the Swiss Federal Institute of Technology in Lausanne.
  - Actively supporting research in the manufacture of synthetic fuels and chemical products from CO<sub>2</sub>. Gaznat sponsors a chair of geo-energy and carbon chemistry at the Swiss Federal Institute of Technology in Lausanne.
  - Contributing to the development/implementation of biogas injection projects into the gas grid, and potentially also into the transportation networks.
  - Participating in power-to-gas pilot projects. Gaznat (through Swissgas) has an ownership interest in the power-to gas unit in Falkenhagen, Germany.
  - Developing and promoting CNG-Mobility with regards to both infrastructure and vehicles.
  
- ONTRAS will focus on:
  - Facilitating developments that help to increase the production of biogas and biomethane e. g. supporting biogas plant operators to connect their plant directly to the pipeline network. Recently, ONTRAS operates 19 biogas feed-in plants feeding up to 155 mio m<sup>3</sup>/a into its network, among them Güstrow, the largest facility of its kind in the world with annually up to 46 million m<sup>3</sup> of biomethane.
  - Contributing to the interoperability of gas and electricity networks by putting great effort into the development of power-to-gas projects. Two power-to-gas facilities feed hydrogen into the ONTRAS network. A third one is currently in the planning stage.
  - Promoting the use of CNG and biogas in the transportation sector. Developing the opportunities of technical services along the whole value chain of CNG and biogas to facilitate the growth of green gases before 2020.
  - Optimising the rules for using networks for developing a better market integration between the electricity and gas markets before 2050 in order to improve the market integration of renewable energy
  - Enhancing dialogue and knowledge exchange across national borders to promote the role of green gas-related topics and develop future joint codes and standards.

## A few words about the stakeholders

### **Gasunie**

Gasunie (N.V. Nederlandse Gasunie) is a European gas infrastructure company. Gasunie's network ranks among the largest high pressure gas pipeline grids in Europe, consisting of approximately 15,500 kilometers of pipeline in the Netherlands and northern Germany, dozens of installations and approximately 1,300 gas receiving stations. Gasunie offers transport services via its subsidiaries Gasunie Transport Services B.V. (GTS) in the Netherlands and Gasunie Deutschland in Germany. With its cross-border gas infrastructure and its services Gasunie facilitates TTF, which has developed into a leading and strongly growing European gas trading hub. The company also offers other services in the gas infrastructure field, including gas storage and LNG.

### **Fluxys Belgium**

Fluxys Belgium is the independent operator of the natural gas transmission and storage infrastructure in Belgium. Through its subsidiary Fluxys LNG the company also operates the Zeebrugge liquefied natural gas terminal. As part of the Fluxys group, it is the company's mission to contribute to security of supply and market liquidity in North-Western Europe by promoting cross-border flows and transfers between gas trading places.

Driven by its first mover approach Fluxys Belgium has developed its infrastructure into a central crossroads for international gas flows in North-Western Europe. The Zeebrugge area plays a key role in this pivotal function: the infrastructure in the area has a throughput capacity of some 50 billion cubic metres of natural gas per year, approximately 10% of the border capacity needed for Europe's natural gas supply. ([www.fluxys.com](http://www.fluxys.com))

### **Energinet.dk**

Energinet.dk is the transmission-system operator for both electricity and gas in Denmark and owns the Danish natural-gas transmission system and the associated gas-storage facilities as well as the Danish electricity-transmission system. Moreover, Energinet.dk has shares in electrical interconnections to Norway, Sweden and Germany.

The network links the Danish and Swedish gas markets to the wider European market and connects to the gas fields in the North Sea.

Energinet.dk is committed to ensuring a high level of security of supply and to helping safeguard an efficient transition to a sustainable energy system, in which renewable gases play an important role. To this end, Energinet.dk helps ensure a healthy investment climate in the energy sector.

Energinet.dk is a non-profit enterprise serving the interests of society. ([www.energinet.dk](http://www.energinet.dk))

### **GRTgaz**

**GRTgaz** is one of Europe's leading natural gas transmission companies and a world expert in gas grids and transmission systems.

In France, GRTgaz owns and operates 32,150 km of underground pipelines and 27 compressor stations to transmit natural gas between suppliers and consumers (distributors or industrial firms directly connected to the transmission system). GRTgaz performs a public service role in guaranteeing security of supply to consumers and sells transmission services to system users.

A significant player in the energy transition process, GRTgaz is investing in innovative solutions to adapt its system and to reconcile competitiveness, security of supply and environmental protection. (<http://www.grtgaz.com/>)

### **Swedegas AB**

Swedegas is a Swedish infrastructure company that invests in smart energy systems. Swedegas is leading the way in the responsible development of the gas market in Sweden. We create sustainable solutions for industry, energy supply and community development.

Swedegas owns and operates the national gas grid, which extends from Dragör in Denmark to Stenungsund in Sweden, and each year, Swedegas transmits energy equivalent to 15 TWh to distributors and directly connected customers. The gas grid supplies natural gas to 33 municipal areas and several combined heat and power plants and companies. Swedegas is currently investing in the development of an infrastructure for biogas and liquefied natural gas (LNG). ([www.swedegas.se](http://www.swedegas.se))

### **Gaznat SA**

Gaznat is a midstream company which supplies and transports high pressure natural gas in western Switzerland. Gaznat is owned by companies and administrative bodies active in the French speaking region. Thanks to a diversified portfolio, Gaznat is able to supply its customers at a competitive price and to reduce shortcut risks. Gaznat's customers include distribution utilities and some large industrial groups.

Gaznat operates a high pressure network of approximately 600 kilometres of pipeline and around 50 delivery stations. Gaznat guarantees third party access to its gas network as defined by law and other rules in Switzerland. The high pressure network is connected to the Transitgas pipeline and to GRTgaz pipelines on the French border. Gaznat also owns storage capacity in Etrez, France.

### **ONTRAS Gastransport GmbH**

ONTRAS Gastransport GmbH is a national gas transmission system operator in the European gas grid, based in Leipzig. The company operates Germany's second largest gas transmission system, with approximately 7,000 km of length and about 450 interconnection points and markets its capacities. ONTRAS links the interests of shippers, dealers, regional network operators and producers of regenerative gases.

We especially support the developments of biogas and power-to-gas projects and already implemented various pioneer projects in these segments. It is our aim to contribute effectively to the integration of renewable energies by realizing the potential of our gas infrastructure. Moreover, we push forward the national and European dialogue concerning these topics by participating in resp. founding various organizations and initiatives.