



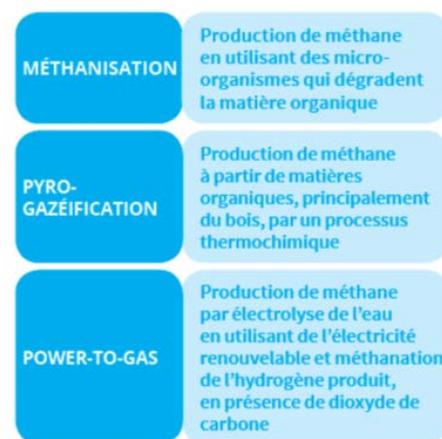
Press Release
30 January 2018

“A 100% renewable gas mix in 2050?” An exploratory study by ADEME, GRDF and GRTgaz

ADEME, GRDF and GRTgaz are publishing the synthesis of a study on the technical and economic feasibility of 100% renewable origin gas¹. At the Assises européennes de la transition énergétique, Bruno Lechevin, President of ADEME, in the presence of Édouard Sauvage, CEO of GRDF and Thierry Trouvé, CEO of GRTgaz, presented the key lessons of this study. Using different assumptions about how each of the production sectors may develop as its starting point and as part of an ongoing process to improve energy efficiency and gain greater control over energy consumption, this study presents 4 scenarios, 3 of which envisage a 100% renewable gas mix.

A theoretical potential of 460 TWh of renewable gas

The injectable renewable gas resource estimated at 460 TWh could cover the gas demand in France in full in 2050 according to all the scenarios. Three large production sectors of renewable gas are studied: methanisation (30% of the resource), pyrogasification (40%), and *power-to-gas* (30%). The technical potentials are based on available resources which do not compete with food uses and raw materials. To ensure that these potentials are accessible in 2050, the obstacles to agricultural methanisation need to be removed, the growing of intermediate crops (temporary crops which protect the soil between two saleable crops) generalised, more agricultural and forestry resources harnessed and the emergence of technologies with strong potential but which are not yet mature (pyrogasification, gasification of algae, etc.) need fostering.



Les 3 grandes filières de production de gaz renouvelable

Gas demand of between 276 and 361 TWh in 2050 can be satisfied by renewable gas for an overall cost of between €116 and €153/MWh

A 100% renewable gas mix would avoid direct emissions of about 63 Mt CO₂/year which equates to 12.6 billion euros for a carbon tax at €200/t of CO₂. France would strengthen its energy independence and improve its trade balance. According to the scenario studied, the study establishes that the cost of renewable gas is between €116/MWh and €153/MWh, which includes the cost of production, storage, use and adaptation of the gas networks².

The investment cost needed to adapt the networks is reasonable. The mass production of renewable gas will involve more decentralised management of the network and the use of still significant underground storage of gas. The study also shows that it is possible to collect most of the resources by planning adaptations to the gas networks to make them bi-directional (reverse-flow facilities in particular).

¹ Several studies have already been published about the electricity vector in 2050: “100% renewable electricity mix? Analyses and optimisations” (Ademe, Artelys, June 2016); “100% RE electricity mix in 2050: what opportunities for decarbonising the gas and heat systems?” (Ademe, Artelys, 2017)

² This assessment does not take into account possible technological breakthroughs or economies of scale between now and 2050.

The complementarity of the gas network with the electricity network is a key success factor in achieving a strongly renewable energy mix

This study reinforces the fact that with a high level of renewable energy production, natural gas and electricity systems will interact strongly and will evolve jointly. *Power-to-gas* will be used to ensure that surplus production of renewable electricity is not wasted by providing inter-seasonal storage capacity in the gas network. Renewable gas will also contribute to balancing the electricity system with thermal power plants by using renewable gas to provide energy during peak periods

To go further:

- [Link to the summary](#)

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ADEME IN BRIEF

The Environment and Energy Management Agency (ADEME) participates in implementing public policies in the areas of the environment, energy and sustainable development. It makes its expertise and advice available to businesses, local authorities, public authorities and the general public to enable them to move forward in their environmental efforts. The Agency also helps fund projects, from research to implementation in the following areas: waste management, soil preservation, energy efficiency and renewable energy, raw material savings, air quality, combating noise pollution, the transition to the circular economy and combating food waste.

The ADEME is a public establishment under joint supervision of the Ministry of Ecological Transition and Solidarity and the Ministry of Higher Education, Research and Innovation. www.ademe.fr



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GRDF IN BRIEF

The main manager of natural gas distribution network in France, every day GRDF distributes natural gas to over 11 million customers, to ensure they have gas when they need it. For heating, cooking, travelling and benefiting from a practical, economic, comfortable and modern form of energy, regardless of their supplier.

To do so, and in accordance with its public service missions, GRDF designs, builds, operates, maintains the largest distribution network in Europe (198,886 km) and develops it in over 9,500 municipalities, while guaranteeing the safety of people and property and the quality of the distribution. www.grdf.fr



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GRTgaz IN BRIEF

GRTgaz is one of the European leaders of natural gas transmission and a world expert of gas transmission networks and systems. In France, GRTgaz owns and operates 32,410 km of buried pipes and 26 compression stations used to ship gas between suppliers and consumers (distributors or industrial companies directly connected to the transmission network). GRTgaz fulfils public service missions to ensure the continuity of supply to consumers and sells transmission services to users of the network. An actor of the energy transition, GRTgaz invests in innovative solutions to adapt its network and reconcile competitiveness with security of supply and preservation of the environment. www.grtgaz.com



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