BELGIUM

KEY FACTS:

- Natural gas demand dropped by 13% from 2010 to 2017
- Entirely dependent on gas imports
- Dense gas network and well-diversified import sources
- Major trade hub (trading 80 bcm – 6x more than domestic consumption)
- Plans to extend Zeebrugge LNG terminal + Bunkering facility in Antwerp

1. GAS DEMAND

According to EU data:[1]

- Gas represented 25% of Belgium's energy mix in 2016.
- Belgium consumed 17,02bcm of gas in 2016
- Gas demand has dropped by 13% in Belgium since 2010.[2]

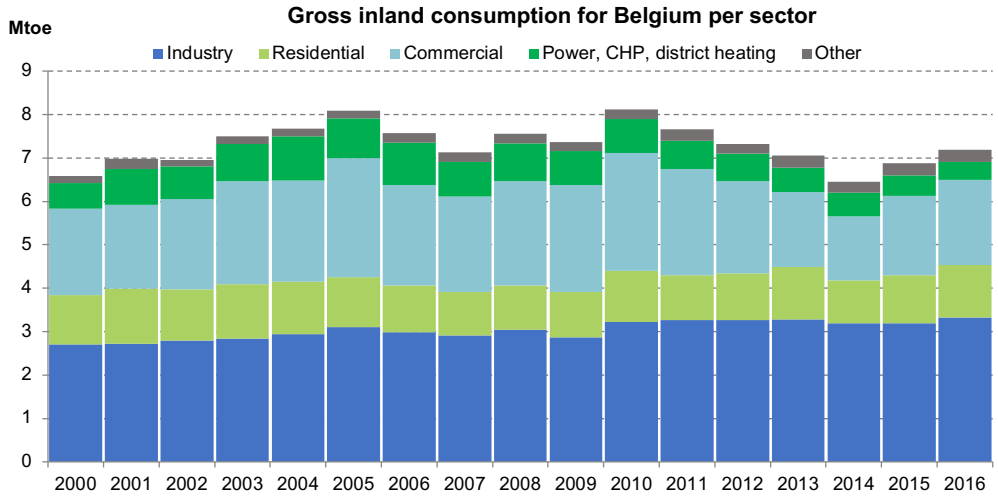
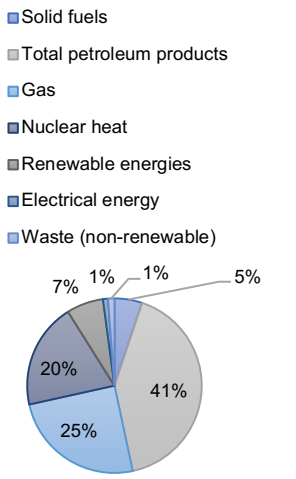


Figure 1: Belgium 2016 Energy Mix



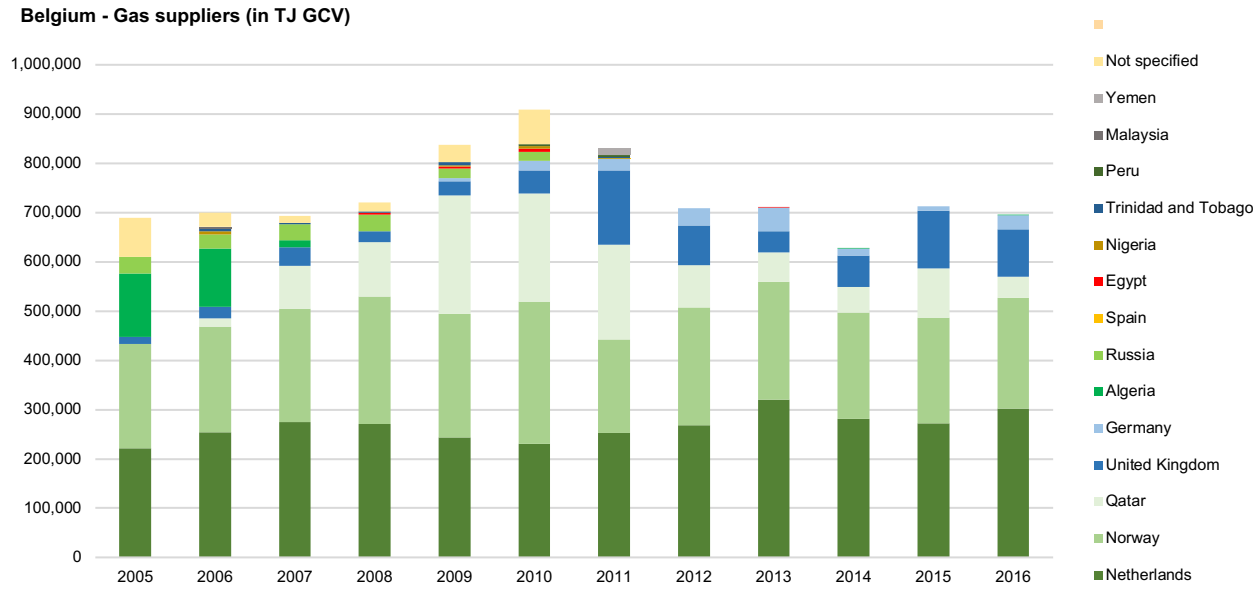
2. GAS SUPPLY

Belgium does not produce any of its own gas. Therefore, to satisfy its gas demands, **Belgium relies entirely on imports**. It has become a **major hub for gas flows, transiting around 80bcm of gas per year**, while its domestic consumption only represents about a fifth of this 80bcm.[3]

Belgium imports its gas from many **diversified sources**: such as the Netherlands, Norway, United Kingdom, Qatar, Germany (see graph below) and notably, part of the gas imported from the Netherlands and Germany originates from Russia.[4] Belgium therefore easily met the diversification objective set by the European Commission. In 2017, the main three countries from which Belgium imported gas were The Netherlands (~43%), Norway (~29%) and the UK (~15%).[5]

There are two **qualities of gas consumed in Belgium**: Mainly high calorific H-gas and in a separate infrastructure network, low calorific L-gas.[6] **L-gas** from Groningen in the Netherlands accounts for around **30% of Belgium's total gas consumption**. As there is no other source of L-gas, Belgium prepares to shift to H-gas in order to tackle the unexpected high output caps of Groningen gas.[7]

[1] E3G compilation of data extracted from Eurostat.
[2] Eurostat data February 2019: http://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=nrg_cb_gas&lang=en
[3] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Belgium.pdf
[4] https://www.iea.org/publications/freepublications/publication/Energy_Policies_of_IEA_Countries_Belgium_2016_Review.pdf
[5] https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2c.html
[6] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Belgium.pdf
[7] https://www.iea.org/publications/freepublications/publication/Energy_Policies_of_IEA_Countries_Belgium_2016_Review.pdf

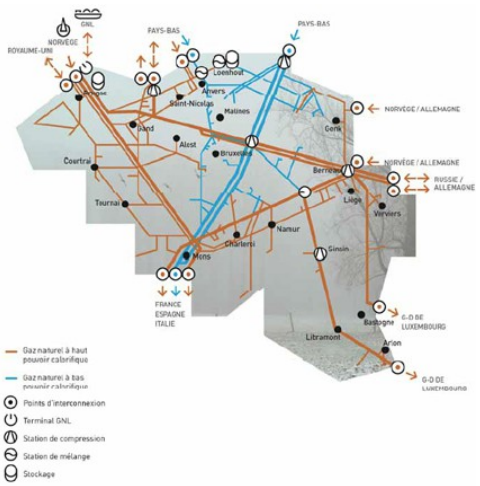


3. GAS INFRASTRUCTURE

The Belgian transmission system operator, Fluxys, maintains a network of more than 4,000km of pipelines with **18 interconnection points for consumption and transit**. Belgium, located between the two biggest gas producers in Europe (the UK and the Netherlands) hosts important gas connections to feed Western Europe. Pipelines in Belgium link France with the Netherlands, the UK with the North Sea, and the UK with Germany. In total, **Belgium has 113bcm of import capacity and 82bcm of export capacity**[8] - for perspective, Belgium's yearly domestic gas use is only about a fifth of this capacity.

The Belgian gas system operator Fluxys faces growing criticism concerning its investments abroad. For example, regarding the disputed Trans-Adriatic Pipeline, in which Fluxys has a 19% interest. A majority of Fluxys is also controlled by Publigas, which is held by Belgian intermunicipalities (union of municipalities).

Belgium currently has **one LNG facility: In the Zeebrugge port** with an import capacity of **9bcm/y**, which is also a strategically important port for gas flows from Norway and the UK. Moreover, it provides loading services, meaning that if LNG prices are high enough in another part of the world, LNG could be shipped there from Zeebrugge (the process of liquefying and regasifying entails significant energy consumption as well as emissions, and transporting the LNG overseas also demands significant energy use). However, the Zeebrugge energy terminal is largely underused. Between 2011 and 2018 the average daily utilization rate only attained 10%. In 2019, the facility got the green light to finalize new long-term contracts up to 2044.[9]



Belgium has only **one facility exclusively for gas storage: Loenhout,** with a capacity for 725mcm of H-gas. There is currently **no L-gas storage** in the country.[10] Still, the country is surrounded by states with sufficient gas storage and gas operators can make use of this storage.

Entry capacity to Belgium was increased in late **2015** through a €1.2 billion **bidirectional gas transmission pipeline, connecting the Dunkirk and the Zeebrugge LNG terminals**, and allowing the LNG Dunkirk terminal to access the German, Dutch and UK gas market, via Belgium. The pipeline has an 8bcm/y transport capacity.[11]

Despite these massive infrastructures largely able to meet domestic demand and transmission needs in a region where gas demand is

[8] http://www.fluxys.com/group/fr-BE/AboutFluxys/AboutFluxys01
[9] https://www.fluxys.com/en/press-releases/fluxys-belgium/2019/190701_press_zeebrugge_long_term_commitment
[10] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Belgium.pdf
[11] http://www.grtgaz.com/en/press/press-releases/news-details/article/canalisation-artere-des-flandres.html

in steep decline, Belgium is still likely to receive support for building more infrastructures through the EU Projects of Common Interest ('PCI List') list.[12]

Adaptation from L-gas to H-gas (PCI)

One of the projects, the adaptation of appliances and the network from low calorific to high calorific gas, by its nature would not normally be a project eligible for the PCI list. However, this project was included on the 3rd PCI List and is considered necessary because traditionally, the majority of gas consumed in Belgium came from the Netherlands, where the biggest gas field in Groningen only provides L-gas. However, the Dutch government plans to significantly cut their output of gas in the Netherlands because gas extraction causes thousands of earthquakes in entire regions. Gas extraction is therefore expected to stop by 2030 with a fast decline in the first few years, and potential acceleration due to the catastrophic impacts of the so-called "gas-quakes".[13] Thus, Belgium will need a shift from low calorific gas to high calorific gas if it wants to continue using fossil gas; making the Belgian low-calorific network suitable for non-Dutch gas would cost around €550 million.[14] This approach obviously fails to recognise the potential of leapfrogging straight to renewable energy sources instead of investing in the upgrade of a fossil fuel system in Belgium.

Extension of the Zeebrugge LNG terminal

Belgium would like to increase the import capacity of its **Zeebrugge LNG terminal** by adding another 3bcm/y of send-out capacity (12bcm/y in total). The necessity for such a project is questionable: the **terminal is currently underused, at only ~12% of its capacity** (average usage between December 2011 and March 2019)[15] and the recent connection to the Dunkirk LNG terminal brings ample capacity to the country to meet its gas needs and ensure the diversification of gas supplies.

The Zeebrugge LNG project aims at building a 3rd jetty as part of the Zeebrugge LNG terminal. However, in 2017 a second Jetty was commissioned[16] with a capacity for receiving small 2,000m^3 vessels up to large LNG vessels with a capacity of 217.000m^3. It therefore already covers the receiving capacity of the 3rd planned jetty and would not add any features to the terminal. Thus, the 3rd jetty will neither increase competition, nor security of supply, nor respond to any needs for diversification of sources in Belgium or other Member States. Fluxys is now building a 5th storage tank to provide transshipment services, notably loading LNG transported by Russian ice breaker LNG carriers from the Yamal gas field on smaller vessels. This is part of a 20-year transshipment contract.[17]

Creation of a new LNG terminal in the port of Antwerp

Fluxys has planned to create a new permanent bunkering LNG facility in the port of Antwerp by the end of 2019. This LNG terminal is aimed to provide alternative fuels for local ships and barges.[18]

Fracking company Ineos plans a €3 billion investment in wet gas facility in Antwerp

Another fossil fuel/petrochemical project is planned in Antwerp, notably the construction of a cracker plant to turn wet gas into plastic pellets which will then be turned into plastic products. It would be the biggest investment in Flanders in 20 years, and Ineos' biggest investment ever. The needed ethane or propane for the petrochemical cracker plant which will cause high levels of pollution (air pollution, CO2, plastic pollution) is planned to be supplied from fracked gas in the U.S.[19]

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[12] https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest
[13] https://www.reuters.com/article/us-netherlands-gas-earthquake/groningen-gas-output-should-be-cut-more-quickly-says-minister-idUSKCN1SS0CC
[14] https://www.oxfordenergy.org/wpcms/wp-content/uploads/2017/05/The-Dutch-Gas-Market-trials-tribulations-and-trends-NG-118.pdf
[15] http://www.igu.org/publications/2016-world-lng-report
[16] http://www.fluxys.com/belgium/en/NewsAndPress/2017/170110_press_jetty
[17] https://www.fluxys.com/en/news/fluxys-belgium/2017/171012-news_30th_birthday_zeebrugge_lng_terminal
[18] https://www.fluxys.com/en/products-services/lng-bunkering
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