LUXEMBOURG

KEY FACTS:

- Gas demand fell by over 42% between 2010 and 2017.
- No domestic production (imports from Norway (75%) and Russia (25%)).
- No storage capacity or ability to transit gas to other countries.
- Potential PCIs to increase the existing interconnection with France and Belgium

1. GAS DEMAND

According to EU data:[1]

- Gas represented 17% of Luxembourg's energy mix in 2016.
- Luxembourg consumed around 0.85bcm of gas in 2016.
- Gas demand dropped by 42% between 2010 and 2017.

Between 2005 and 2015, Luxembourg reduced its primary energy consumption by 13.1% to 4.15Mtoe and during the same time, final energy consumption fell by 10.9% to 3.99Mtoe. In the same period the GDP of the country has seen an increase of 37%.[2] However Luxembourg remains very dependent on oil products that represent 63% if its total energy mix.

The 350megawatt (MW) combined-cycle gas turbine (CCGT) **plant in Twinerg consumes one-third of all fossil gas in Luxembourg**. Since the plant was commissioned in 2002, the transformation sector has accounted for some 40% to 45% of all gas used in the country.[3] The oversized and inefficient power plant stopped operating in 2016. However, a Luxembourg company plans on building four gas power plants in Belgium and aims at running it with LNG from Qatar.[4]

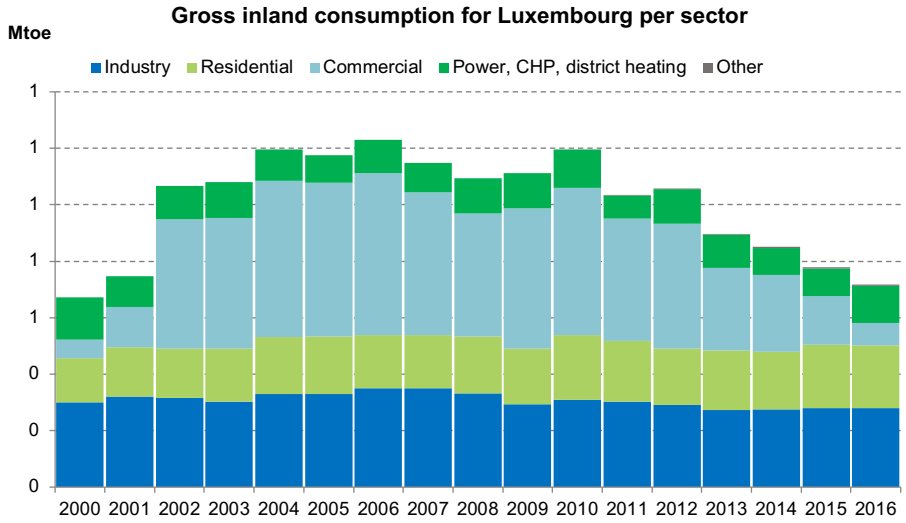
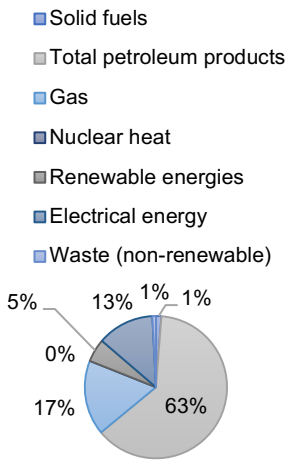


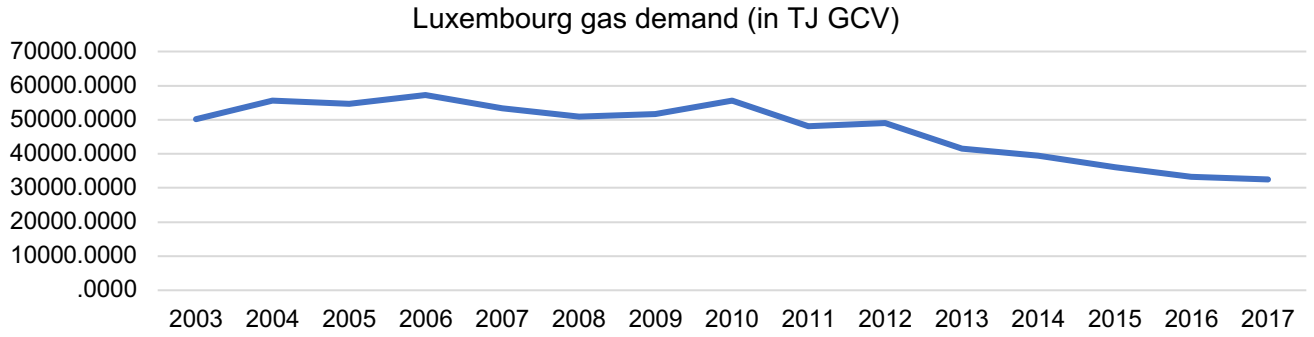
Figure 1: Luxembourg 2016 Energy Mix



2. GAS SUPPLY

Luxembourg has no indigenous gas production and therefore relies on imports to supply all of its domestic requirements. In 2014, Norway was the main gas supplier, representing 63% of all gas imports, while imports from the Russian Federation account for most of the remaining total – see chart (numbers for supply countries in 2016 and 2017 – which are almost identical).[5]

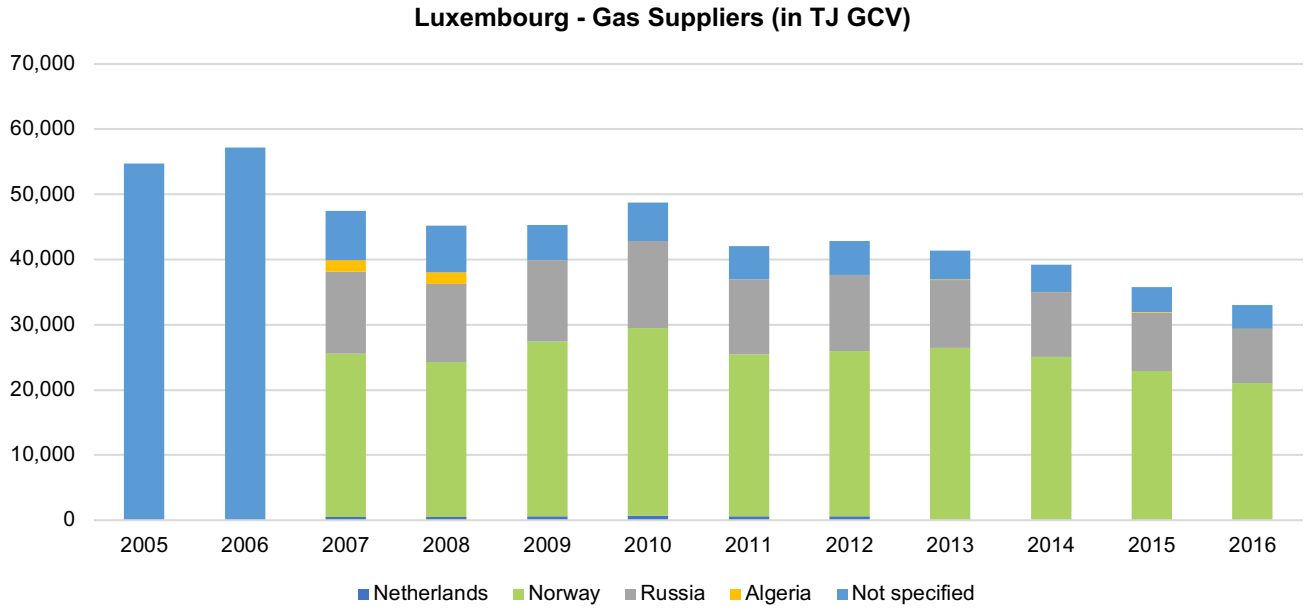
[1] E3G compilation of data extracted from Eurostat
[2] https://ec.europa.eu/commission/sites/beta-political/files/energy-union-factsheet-luxembourg_en.pdf
[3] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Luxembourg.pdf
[4] https://www.montelnews.com/en/story/investment-firm-plans-35-gw-gas-plants-in-belgium-/1010015
[5] https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2c.html



Energy security is of crucial importance to Luxembourg's energy policy, as the country has little domestic energy production and imports nearly all its needs in oil, gas and electricity. **Luxembourg is dependent on single fuel types** to meet its transport and heating needs, oil products, and gas respectively - which exposes the country to energy security risks as well as environmental challenges.[6] Luxembourg also applies a reduced Value Added Tax rate of 8% on natural gas which has adverse effects on energy consumption.[7]

Being almost 100% dependent on imports, the EU-Commission concludes that the gas sector would alleviate security of supply concerns by reinforcing the interconnections with neighbouring countries. Firm entry capacity in Luxembourg remains limited, and a better congestion mechanism would help to address this issue.[8]

With about half of its gas supplied through Germany, Luxembourg **does not comply with the N-1 rule, which means that it could not satisfy total gas demand during a day of exceptionally high gas demand due to an outage from its single largest gas importer**. [9]



3. GAS INFRASTRUCTURE

Luxembourg's gas pipeline network is not designed for transit with other countries. It does not have a compressor station and thus **depends on the compressors in Belgium and Germany** and has no substantial line pack. **There is no PCI foreseen on Luxembourg's territory but a project to enable reverse gas flows in the TENP pipeline between France and Germany might impact the country**.[10]

[6] http://www.iea.org/Textbase/npsum/Luxembourg2014SUM.pdf
[7] https://ec.europa.eu/info/sites/info/files/file_import/2019-european-semester-country-report-luxembourg_en.pdf
[8] https://ec.europa.eu/energy/sites/ener/files/documents/2014_countryreports_luxembourg.pdf
[9] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_France.pdf
[10] http://ec.europa.eu/energy/maps/pci_fiches/pci_annex2_5_10_en_2017.pdf

The gas pipeline network consists of 380km of transmission system network and some 2300km of distribution system network. The transmission network interfaces with four distribution systems and directly with some large industrial customers. There are four entry points to the gas network with a total theoretical maximum capacity of 10.3mcm per day; two from Belgium (Petange, with a maximum capacity of 3.8mcm/d and Bras with 1.4mcm/d), one from France (Audun with 0.5mcm/d) and one from Germany (Remich with 4.6mcm/d).[11]

The company SOTEG owns and operates the transmission system and supplies the majority of the market. In 2009, SOTEG merged with Cegedel to form a new cross-regional energy player, Enovos International SA.[12]

CONTRIBUTING AUTHORS (2019)
Antoine Simon, *Friends of the Earth Europe*
Frida Kieninger, *Food & Water Europe,* fkieninger@fweurope.org
Andy Gheorghiu, *Food & Water Europe*, agheorghiu@fweurope.org
Noëlie Audi-Dor, *Gastivists*
Nessim Achouche, *Food & Water Europe*
Eilidh Robb, *Food & Water Europe*

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[11] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Luxembourg.pdf
[12] https://www.iea.org/media/freepublications/security/EnergySupplySecurity2014_Luxembourg.pdf