



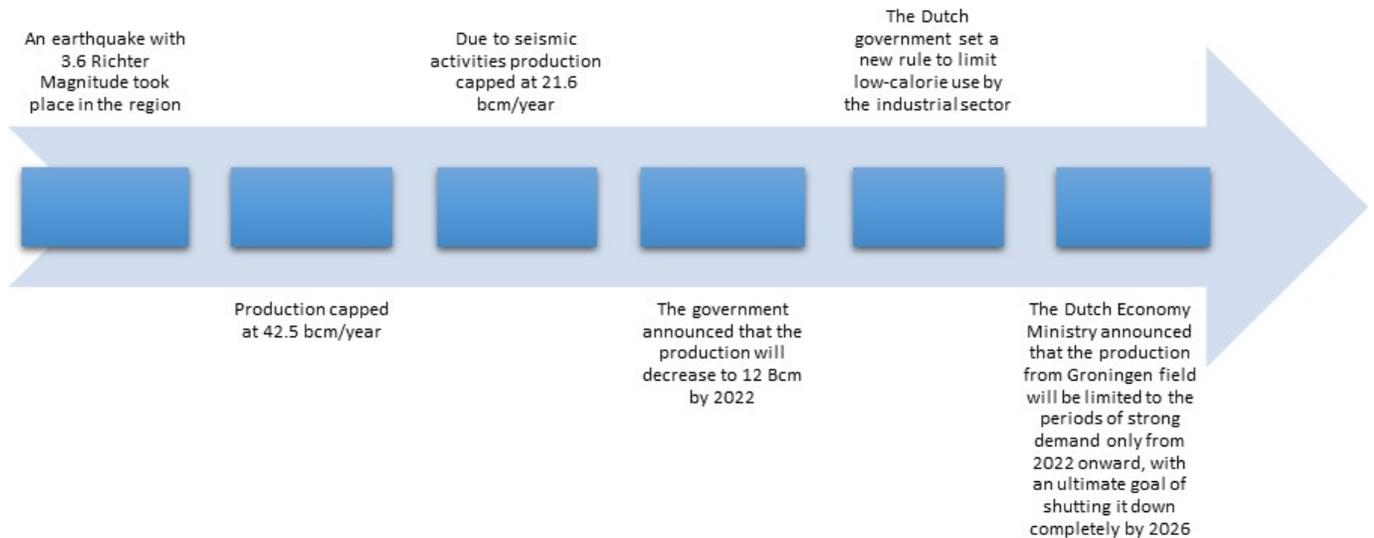
The Impact of the Groningen Gas Field Closure on Northwest European Gas Market

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The Groningen gas field has been one of the main sources of European domestic gas supply since its discovery in 1959. However, after recurrent earthquakes and impacts of seismic activities, the Dutch government decided to cap the natural gas production from the field. The first cap was set in 2014 and since then the Groningen field output and its share in Dutch's total gas production has been diminishing. Thereafter, in September 2019, the Ministry of Economic Affairs and Climate Policy of the Netherlands announced that the production from the Groningen gas field will be limited to the exceptionally cold winter days only, from 2022 onward, with the ultimate goal of shutting it down completely by 2026. Such a decision is resulting in a complete abolition of natural gas output from the field, and it will not only affect the Netherlands domestic gas market, but also the European market that used to a more than 10% of gas supplies reliance from the Groningen gas field, in 2013.

The process of dismantlement of Groningen gas field is illustrated in figure 1 below.

Figure 1: the Groningen Gas Field Closure Timeline



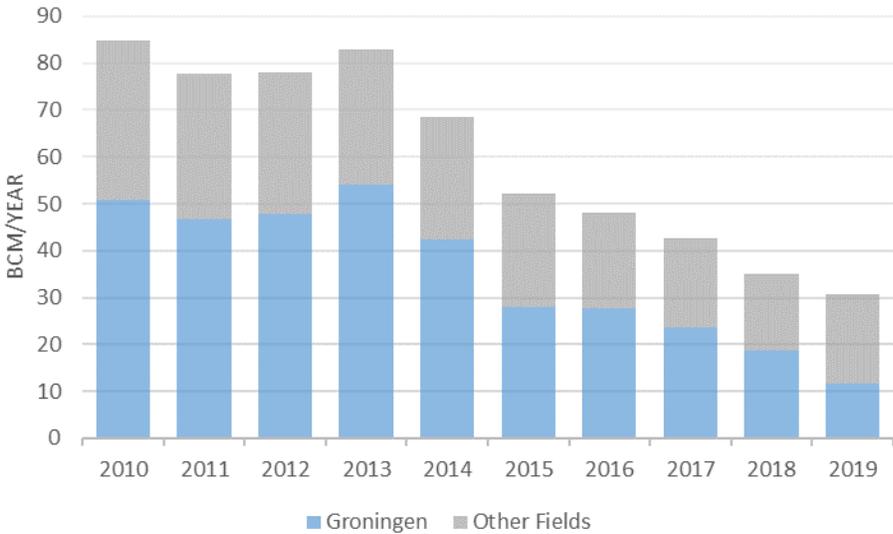
Source: GECF based on research

Since the imposition of the cap on Groningen gas output in 2014, the production from the field dropped by 73% from 42 Bcm in 2014 to 11 Bcm in 2019. Also, the share of the Groningen gas field in total Dutch production decreased from 62% in 2014 to 38% in 2019.

Additionally, the Groningen field has a low-calorific gas due to its high nitrogen content. Meanwhile, the home appliances in the residential sector and the industrial consumers in northwest Europe have been adapted to use low-calorific gas. Therefore, the withdrawal from the gas supplies of around 50 bcm of Groningen's low-calorific gas affects the natural gas balance in terms of its heating value in northwest Europe. To offset the impact of decreasing low-calorific gas, the Netherlands increased the conversion capacity of low-calorie gas to high-calorie gas by blending nitrogen. In addition, the Dutch government set a new rule to limit low-calorie use by the industrial sector in March 2019. Based on the new rule, the industrial consumers with more than 100 million m³ of natural gas consumption of low-calorific gas have to switch to high-calorific gas.

Figure 2 below represents the trend of total Dutch natural gas production and the contribution of Groningen gas field to it.

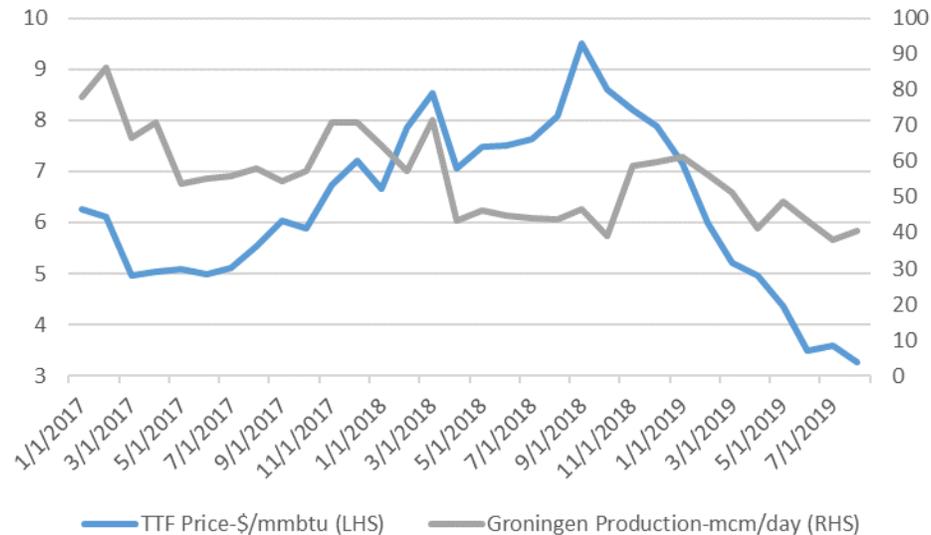
Figure 2: Total Dutch Yearly Natural Gas Production



Source: GECF based on Refinitiv

To better understand the impact of the Groningen gas field closure on the Netherlands natural gas market, we have observed the impact of the production cap from the gas price perspective. A dataset of monthly production of the Groningen gas field and TTF prices as an indicator of the Netherlands domestic natural gas prices and a Hub in Europe, have been observed (see figure 3 below). In the first step, a correlation analysis has been conducted (the results are reflected on table 1), that shows a negative relationship between the production level of the Groningen gas field and the TTF prices, in the sense that a negative correlation coefficient is observed. This means that the production decrease from Groningen field puts upward pressure on TTF prices. However, the correlation coefficient (-0.36) between the Groningen field gas output and TTF prices is close to zero, therefore we can conclude that the two above-mentioned variables are weakly correlated.

Figure 3: Monthly Groningen Production and TTF Prices



Source: GECF based on Refinitiv

Table 1: Correlation Test between Groningen Gas Production Level and TTF Price

Covariance Analysis: Ordinary
Included observations: 24

	Groningen	TTF
Groningen	1.000	
TTF	-0.362	1.000

Source: GECF Analysis based on Eviews

The closure of the Groningen gas field does not affect significantly the TTF prices, as the caps were implemented gradually and are not considered as supply shock to the markets. In addition, as the share of Groningen gas field represented around 2% of the total volume of traded natural gas in TTF Hub, these have been easily replaced by other supplies from the market (LNG and pipeline gas).

What we have observed in fact, is that the market could adapt itself by accommodating the shortage of supplies from the Groningen gas field from alternative supply sources and no significant disruption was observed. It means that the volumes of natural gas due to the production cap on the Groningen gas field was well substituted with other sources such as LNG or pipeline gas. Massive pipeline gas from GECF is coming to Europe (more than 100 Bcm of annual capacity) in upcoming years, in addition to significant LNG volumes from GECF and Non GECF exporters driven by the commissioning of new LNG exports facilities from Russia and the US.

While the indigenous production declines in the medium-term in Europe, driven by the depleting gas fields, the demand for natural gas will remain almost constant. Therefore, it is expected that the gap between domestic natural gas production and consumption will increase in the medium-term. As a result, more piped gas and LNG is required to meet the growing differential between supply and demand in Europe.

The current situation of very low spot prices in Europe, well below 3 US\$/MMBTU for volumes traded on TTF and NBP, is posing challenges to the newcomers to the European market, where the demand is the real unknown that brings opaqueness to the investors in the gas value chain. At such level of prices, the sustainability of the LNG business of new producers may be challenged.

Currently, GECF is supplying almost the entire European pipeline gas imports, and more than 90% of imported LNG of the continent, these figures illustrate the vital role of GECF as a resilient supplier of natural gas to Europe; and GECF Member Countries will remain reliable and resilient suppliers to the continent with a solid historical partnership.