

## Q1 2017: TTF volatility commentary

In our Q4 2016 commentary we set out 5 key factors to watch over the current winter. As winter draws to a close, we return to these factors in our Q1 2017 commentary to review what happened. We also look forward to assess the impact of two key drivers of volatility in 2017:

1. The impact of the power sector driven recovery in European gas demand
2. The potential loss of further significant flexible gas supply infrastructure.

### Winter 2016/17 in review

There is a significant element of uncertainty involved in the behaviour of gas prices and volatility each winter. The risks of a volatile winter looked to be increasing in Q4 last year. But it often takes a combination of several factors (e.g. cold weather, upstream outages, low storage inventories) to drive a high volatility outcome.

Winter 16/17 has not delivered the more extreme ‘volatility event’ that many feared. However Chart 1 shows a noticeable rise in ‘30 day’ volatility across the current winter months.

**Chart 1: Evolution of the ‘30 day’ Energystock volatility indices**



In Table 1 we review the 5 key factors we set out in Q4 for an insight on what has been driving TTF volatility across the current winter.

**Table 1: Review of factors driving volatility over the current winter (2016-17)**

Volatility factor	Assessment
<b>Rough impact</b>	<p>The performance of the UK’s key seasonal storage facility at Rough has been a focus point for the North West European gas market, since Centrica Storage Ltd announced a major curtailment of flexibility last summer.</p> <p>An injection outage since last summer meant Rough carried a low inventory volume into the current winter. However Rough’s withdrawal capability suffered less of a handicap across the winter than initially feared, helping to prevent any major volatility events. That said, Rough curtailment helped to contribute to relatively high NBP volatility levels across the winter, with the UK market ‘exporting volatility’ to the TTF hub.</p>

<b>Higher CCGT swing demand</b>	<p>Major nuclear outages in France in Q4 2016 caused a sharp tightening in North West European power markets and a jump in power sector gas demand. This was a key driver of higher gas price volatility in the UK in Q4.</p> <p>However the French and UK driven capacity crunch had less of an influence on the Dutch power market and TTF gas price volatility. This was primarily because of lower power sector gas burn in the Netherlands and Germany, given the availability of large volumes of cheaper coal and renewable generation.</p>
<b>Groningen</b>	<p>The Groningen field is now working within the new production cap (24 bcma) and Dutch government rules to reduce the seasonal production profile. This is resulting in a much lower and flatter production profile.</p> <p>The impact of lower Groningen production has had little impact so far on seasonal price spreads at TTF, which have remained below 2 €/MWh. There has also not been any clear evidence of higher volatility as yet, although the loss of Groningen flex is one of a number of factors that may be supporting a broader recovery in spot volatility at European hubs.</p>
<b>LNG imports</b>	<p>LNG flows were a significant driver of the Winter 16/17 increase in TTF prices and volatility. Asian LNG spot prices surged from just above 7 \$/mmbtu at the start of December towards 10 \$/mmbtu in early January. This opened up a significant premium over North-West European hub prices, signalling Asia's requirement for incremental cargoes. Then in early Jan, Southern Europe had its own LNG shortage with a substantial price divergence opening up versus TTF</p> <p>The diversion of LNG supply away from North West Europe in Dec and Jan helped to support TTF prices and volatility. But this was relatively short lived. Asian and Southern European spot prices re-converged towards TTF in early Feb. These price declines have been a factor behind the recent decline in TTF volatility that can be seen in Chart 1.</p>
<b>Weather/outages</b>	<p>A colder start to winter saw a faster than usual decline in gas storage inventories across Europe. Low storage inventories can often be a strong contributor to price volatility in late winter (e.g. Feb, Mar). But the risk of this subsided this winter as LNG flows returned to Europe in Feb, power sector demand eased and gas prices softened.</p>

## Two key factors to watch in 2017

### 1. Gas demand & the power sector

Perhaps the most interesting story in the European gas market in 2016 was a pronounced recovery in demand, which rose 27 bcma (5.4%) relative to 2015. 20 bcma of this was driven by higher

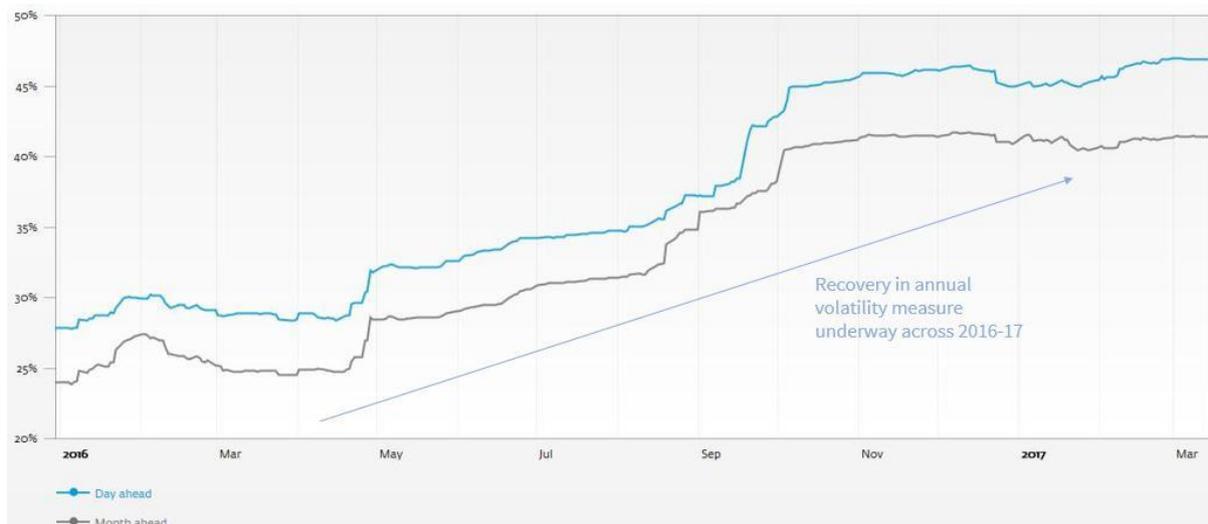
power sector demand. This was primarily caused by the switching of CCGTs for coal plants as coal prices rose relative to gas prices.

Falling gas demand has been one of the key factors suppressing gas price volatility this decade. Was the recovery in gas demand in 2016 the start of a structural recovery, a stabilisation, or just a temporary interruption to a slow downwards trend? The evolution of power sector demand will likely be the key factor that determines the answer to this question. There are two time horizons to consider here:

1. **Near term:** over the remainder of this decade, the relative levels of gas and coal prices will likely be the primary driver of power sector gas burn. The extent to which the LNG glut suppresses European hub prices will be an important factor to watch.
2. **Longer term:** into next decade there is set to be a more structural shift away from closing coal and nuclear power plants, towards new CCGTs. This should be supportive of power sector gas burn.

Chart 2 shows the Annual TTF volatility measure increasing across 2016. The recovery in power sector demand was an important factor contributing to this rise. The extent to which this demand recovery continues will be an important factor to watch in 2017.

**Chart 2: Evolution of the 'Annual' Energystock volatility indices**



The other important consideration for the power sector is the impact of intermittency on gas price volatility. CCGTs are the key transmission mechanism here. The higher are CCGT load factors, the greater the role they play in providing flexibility in response to intermittent wind and solar output. In other words the greater the levels of swing demand required from the gas market. This was also a factor supporting the 2016 recovery in gas price volatility, particularly in the UK power market where CCGTs are dominant.

See [here](#) for more details on power sector demand recovery, gas coal switching and implications for gas price volatility.

## 2. Further loss of flexibility

5 years of depressed seasonal price spreads are hitting the owners of seasonal storage assets hard. Several of Europe's larger storage operators have recently taken substantial impairments relating to weak storage asset revenues (e.g. RWE, Uniper and OMV). Fixed cost recovery is increasingly difficult with forward market TTF seasonal spreads stuck stubbornly below 2 €/MWh.

In addition some operators continue to face substantial technical or capex challenges. For example, Centrica Storage Ltd applied to reduce the minimum capacity of its Rough storage facility to zero for Win 17/18 in late Feb. This is consistent with increasing fears that Rough may not return to service at all, or if it does only in a very limited capacity, given prohibitive costs to restore performance.

A number of owners of seasonal storage facilities are currently undertaking strategic reviews of asset economics. Ongoing weakness in revenues and the 2016 recovery in gas prices, makes the option to close assets and withdraw cushion gas more attractive.

The current absence of a strong seasonal price signal at TTF means that slower cycle storage assets are more focused on responding to short term price fluctuations. In other words they are competing with faster cycle assets to dampen volatility. So the closure of significant volumes of seasonal storage capacity is likely to be another important factor that may support a recovery in volatility over the next one or two years.