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Energy Monitor

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Gas market has turned global depressing prices

- **TTF gas price forecast revised lower (again) based on continued large supply**
- **Henry Hub natural gas prices have only limited upside potential, unless…**
- **Geopolitics makes gas markets more and more a global market instead of a regional play**

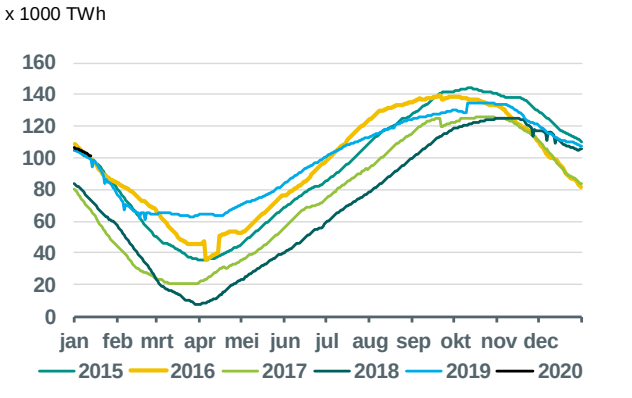
TTF gas prices under pressure due to mild winter and large supply

The traditional seasonal patterns have become less certain over recent years. Gas demand is still higher during the winter season than in the summer. But traditional price spikes at times of cold winter weather conditions, as we usually experienced(grey columns in the graph below), haven't been experienced last winter (2018-2019). Also this winter such a price spike seems unlikely. As shown in the graph below, the TTF gas price has already gained in September and reached the highest level in five years' time, almost touching EUR 30/MWh. Market expectations of possible shortages due to low inventories, rapid production decline in Groningen and limited LNG imports led to an extreme backwardation (spot price higher than prices of future delivery). Nevertheless, due to mild winter supply disruptions did not occur, TTF gas prices dropped and gas inventories were build sooner than normal during the summer of 2019.

TTF gas price

Source: Bloomberg

Gas inventories The Netherlands



Source: Gas Infrastructure Europe

Because of the current mild winter (2019-2020) in combination with high gas inventories (see graph above), the TTF gas price (1st active monthly contract) has dropped to a level below EUR 11/MWh. This is extremely low for this time of the year. Maybe a bit too low. The 2021 year-contract is trading slightly below EUR 16/MWh. The prices for 2022 up to 2024 are a bit higher, EUR 16-17/MWh. In the past, prices of these month and year contracts were close to each other. However, last year – and possibly also this year – this price difference will remain substantial. In our price forecasts we

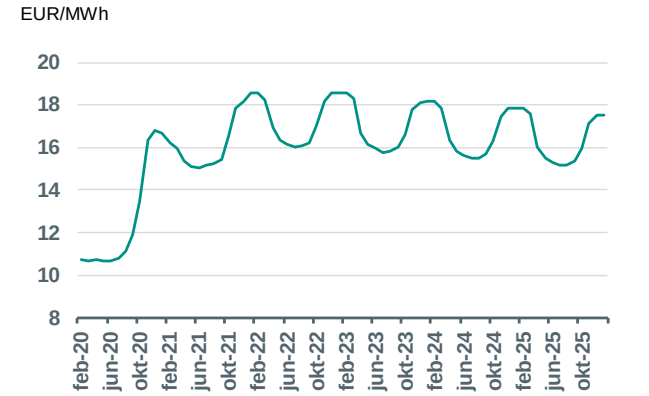
use the monthly contract as a base?. However, due to the huge price differences, we will also include our expectation that monthly and annual contracts will near each other in the course of 2020 and 2021.

Prices pushed too low due to oversupply

It will be difficult to assess whether it will be a harsh winter or a mild one and what this will do for gas demand. However, the biggest change of trend can be found in gas supply. The TTF gas benchmark is a Dutch benchmark. It is also the gas benchmark which draws more and more liquidity and has become the largest benchmark in Europe. Developments in the Dutch gas market have triggered some price effects, especially the announcement to lower the Groningen gas production. This initially led to a rise of TTF gas prices. However, this was only a temporary effect. In fact, developments in the Dutch gas markets have become less relevant. One of the main reason for this is that higher gas import capacity has resulted in more guaranteed future gas shipments towards Europe.

What does this mean for future TTF gas prices? In the near term inventories are high and import capacity is abundant (both via pipelines and per LNG shipment). This has weighed on gas prices. The lower gas production in the Netherlands is balanced by higher imports. Furthermore, due to the mild winter, demand is relatively low. Are gas prices pushed too low? We think that the price of the 1st month contract has been pushed down too far. If we look at the Forward Curve (current price for future deliveries), market participants seem to agree with us.. A steep contango (low prices for delivery in the near term, higher prices for future deliveries) signals that there is no shortage at the front end. The steepness of the curve signals that the prices may be now too low.

Forward curve TTF gas prices



Source: Bloomberg

International gas imports will keep inventories high

For the annual contracts and the monthly contracts for the second half of this year and beyond, prices are trading between EUR 15-19/MWh. Due to the abundant supply and available import capacity, this could indeed indicate what could and should be the top of the expected price range for 2020 and 2021. Certainly now that the "gas transit" contract between Russia and Ukraine has been extended for five years, Turkstream - the gas pipeline that brings gas from Russia, via Turkey to Eastern Europe - has been opened, and gas via the Nordstream 2 - despite sanctions from the US and therefore with some delay - will still become available at the end of 2020 or the beginning of 2021. There is a small reservation for the LNG flows that come from the US to Europe. As a result of the trade agreement, which also includes Chinese gas and oil purchases worth USD 50 billion, the supply of LNG for Europe could turn out to be somewhat lower than initially thought, because these flows may go to China. Still, the Chinese will not pay more than necessary and the prices of other LNG suppliers are competitive.

After 2021, the demand side will play a more important role

For the years 2021 and further out, there are interesting dynamics on the demand side as well. European gas demand will probably increase further. This is the result of climate policy. Nuclear and coal-fired power stations are projected to be closed and cannot be replaced 1-on-1 by solar and wind energy. Gas-fired power stations will therefore generate the required back-up capacity at times when solar and wind capacity are not sufficient for electricity generation. Also demand for gas for heating will not change soon, let alone decrease. An important last factor is the demand for gas from Asia, in particular, demand from China and Japan. Higher demand in China and Japan could attract the LNG vessels that are currently sailing to Europe as soon as the Asian gas demand rises and the JKM LNG price is higher than in Europe. So higher demand for gas will result in an upward pressure on gas prices from 2022 onwards. But as LNG conversion and transport capacity will likely increase as well, this also automatically limit the upside price potential.

TTF gas price forecast (again) adjusted downwards

All in all, we have adjusted our TTF gas price expectations downwards again after having done that earlier in August. We now think that the TTF gas price will remain low for longer. This translates into a lower-than-consensus vision. Below are our new and old (August) price expectations.

2020				2021				2022				
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	
17	18	20	23	19	21	23	25	19	21	23	25	old
13	13	14	15	15	14	15	17	18	17	18	21	new

The price of Henry Hub has little upside potential ...

As described in our Energy Monitor for gas in August, US gas inventories are also large. In addition, gas production in the US is constantly increasing. This is not only in the form of conventional and shale gas production, but also as a by-product in oil extraction: the so-called "associated gas". That in itself is remarkable since drilling for new oil and gas wells in both gas production and oil production have fallen sharply in recent months. Although it might be expected that supply growth will also slow down, there are still no signs of it. For the first time since 2016, the floor of USD 2/mmBtu was broken once again last week.

Henry Hub natural gas price

Source: Bloomberg

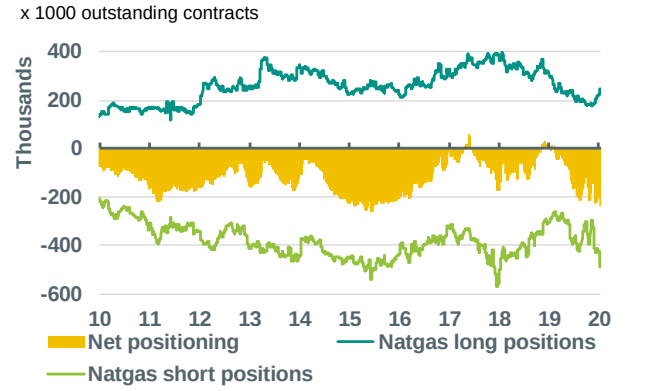
History shows that Henry Hub gas prices below USD 2/mmBtu are unsustainable. The price level is below the average production costs and many gas producers will not continue to produce at a negative rate for long. In addition to the low price, the biggest bottleneck to further increase production is also the capacity limit on the current infrastructure to use gas in local power plants and to transport it to the coast to convert it to *liquefied natural gas* (LNG) and prepare for

export. An expansion of this infrastructure capacity offers an opportunity for production expansion (would add pressure to prices), but also for higher exports (supportive for prices). Nevertheless, the upside price potential is also limited due to the large available global supply. We believe that the Henry Hub price will not structurally trade above the price of USD 2.75 / mmBtu in the winter months and around USD 2.25 / mmBtu in the summer in 2020 and 2021.

... but a period of cold temperatures can - temporarily - reverse the positions

We are still in the middle of the winter season. Gas inventories will therefore be closely monitored in the coming weeks. As the market is still strongly positioned for further price declines (see chart below). We expect that as soon as stocks fall, speculators will take profit will on these speculative positions. A first sign that winter is really arriving in the US can lead to more gas consumption, lower stocks and thus a significant price peak. Despite the current price pressure and a possible rapid recovery, we leave our price estimates for Henry Hub natural gas unchanged.

Henry Hub speculative positions



Source: Bloomberg

Gas markets become more and more a global commodity play…

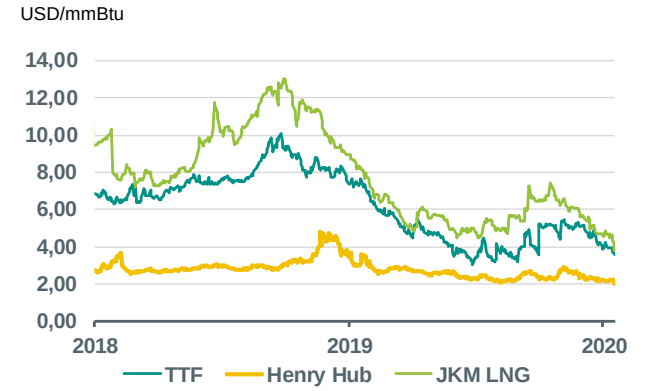
The gas market was for a long time primarily a regional play. Gas pipelines are not built overnight and once they are installed, both the consumer and the producer have a mutual interest in the proper functioning of this pipeline. The history of the last fifteen years, however, shows that tensions are also rising here, particularly with regard to renewing gas transport contracts between Russia and Ukraine. This has sometimes led to disruptions in the transit of gas from Russia to Eastern Europe. The European gas demand will increase further in the coming years due to the closure of coal and nuclear power stations and the drop in European gas production. Extra import capacity is needed in order to be able to meet this extra demand. This capacity is being built in the form of liquefied natural gas (LNG) import terminals and an expansion of the pipeline capacity for gas from Russia: Nordstream 2 (pipeline from Russia to Germany) and Turkstream (pipeline through Turkey as a replacement for the previously planned Southstream via Bulgaria). Both pipelines are expected to be ready this year. However, they are controversial because both alternative pipelines can lead to less dependence on the gas transit through Ukraine. So far this accounts for about 80% of gas imports to Europe. The alternative gas pipelines also further increases our dependence on Russia.

…and thus more exposed to geopolitics

With LNG as an alternative to pipeline gas, the geopolitical aspect has entered the gas market even more. The regional players are suddenly confronted with players and developments on the world market. The demand for gas from Asia and the supply of gas from the United States are suddenly factors that are important in the pricing of gas in Europe. On December 20, we saw a new geopolitical development in the gas market. President Trump signed a law imposing

sanctions on companies working on the construction of Nordstream 2. The US is thus trying to "limit the European dependence on Russian gas, and thereby limit Russia's influence on European policies."

Gas prices are drawn to each other



Source: Bloomberg

The US does come up with an alternative: "Freedom gas" - or LNG from the US. From a European perspective, the name was chosen unluckily for several reasons. It also does not affect the absolute dependence on gas. However, there is a big difference between gas from Russia and gas from the US. The gas from Russia cannot go quickly to other consumers - such as China - as long as there is no pipeline capacity. LNG from the US will go to Asia as soon as the price of gas there is a fraction higher than in Europe. Freedom gas may therefore mean a little too much freedom from the European point of view of security of supply.

Forecasts oil and gas prices

End of period		20-jan	mrt-20	jun-20	sep-20	dec-20	mrt-21	jun-21	sep-21	dec-21	mrt-22	jun-22	sep-22
Brent	USD/bbl	*65,52*	60	55	55	60	60	60	65	65	60	65	65
WTI	USD/bbl	*59,07*	55	50	50	55	55	55	60	60	55	60	60
Natural Gas (HH)	USD/mmBtu	*1,93*	2,50	2,25	2,25	2,75	2,50	2,50	2,50	2,75	2,50	2,50	2,50
TTF	EUR/MWh	*10,55*	13	13	14	15	15	14	15	17	18	17	18

Average		2019	Q1 20	Q2 20	Q3 20	Q4 20	2020	Q1 21	Q2 21	Q3 21	Q4 21	2021	2022
Brent	USD/bbl	64,17	63	58	55	58	58	60	60	63	65	63	65
WTI	USD/bbl	57,00	58	53	53	50	53	55	55	58	60	58	60
Natural Gas (HH)	USD/mmBtu	2,53	2,25	2,50	2,25	2,50	2,40	2,75	2,50	2,50	2,75	2,60	2,60
TTF	EUR/MWh	14,55	12	13	14	15	14	15	15	15	16	15	19