Gas

No. 29 • January 2021

Gas Storage and Swing Report

	Market	Product	Period	Cycle Cost	Intrinsic	Rolling Intrinsic Avg	Rolling Intrinsic 10%	Option Avg	Option 10%
Storage	TTF	30/30	SY2021	0.50	1.19 ▼	5.05 ▲	3.21 ▼	6.50 ▲	3.21 ▼
	TTF	60/60	SY2021	0.50	1.19 ▼	3.47 ▼	2.36 ▼	4.25 ▼	3.36 ▲
	TTF	60/120	SY2021	0.50	1.07 ▼	2.71 ▼	1.94 ▼	3.39 ▼	2.67 ▼
	NBP	30/30	SY2021	1.00	9.30 ▼	22.50 ▲	16.63 ▲	24.60 ▲	21.00 ▲
	NBP	60/60	SY2021	1.00	9.30 ▼	16.53 ▲	13.13 ▼	17.72 ▲	15.32 ▲
	NBP	60/120	SY2021	1.00	8.93 ▼	13.97 ▼	11.67 ▼	15.02 ▲	13.02 ▲

	Market	Max/ day	Min/Max	Period	Price	Intrinsic	Rolling Intrinsic Avg	Rolling Intrinsic 10%	Option Avg	Option 10%
Swing	TTF	4	360/360	2022	17.87 ▲	0.10 ▼	0.42 ▼	0.26 ▼	0.53 ▼	0.26 ▼
	TTF	1	0/365	2022	17.87 ▲	0.00 ▼	1.59 ▲	0.17 ▼	1.79 ▲	0.50 ▼
	TTF	4	360/360	2022	MA	-0.02 ⇔	0.88 ▲	0.41 ▲	1.55 ▲	1.07 ▲
	NBP	4	360/360	2022	51.65 ▲	-002 ▼	0.92 ▼	-0.02 ▼	1.50 ▼	0.22 ▼
	NBP	1	0/365	2022	51.65 ▲	0.00 ▼	3.98 ▲	0.56 ▼	4.28 ▲	1.05 ▼
	NBP	4	360/360	2022	MA	-0.02 ⇔	3.03 ▲	1.50 ▲	4.48 ▲	3.14 ▲

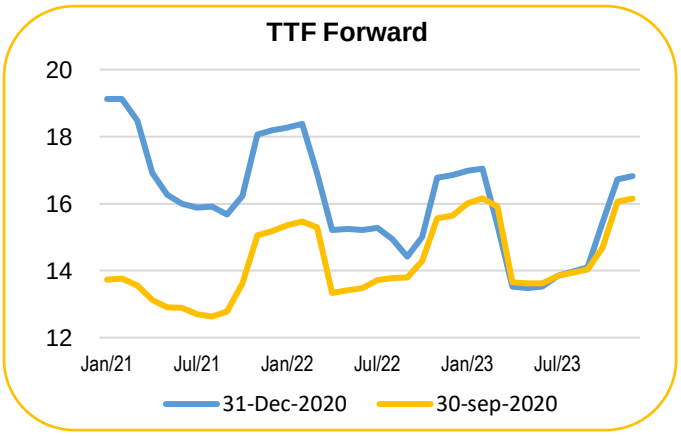
TTF Price History

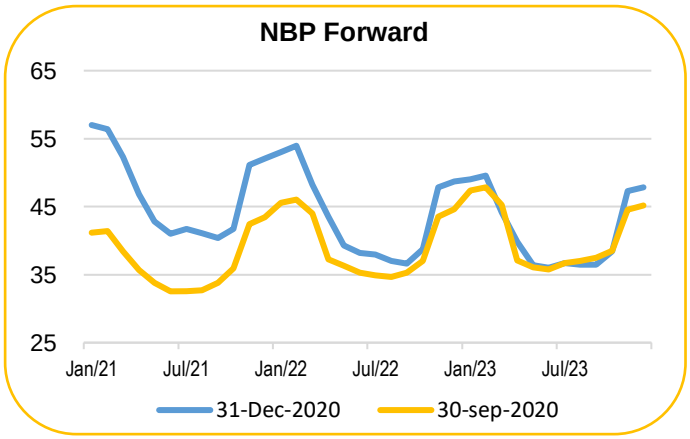
NBP Price History

Volatility

Market	Spot Volatility					Year-ahead Forward volatility				
	1m	3m	6m	12m	KYOS sugg.	1m	3m	6m	12m	KYOS sugg.
TTF	36% ▼	74% ▼	92% ⇔	84% ▼	62% ▼	32% ▲	28% ▲	26% ▼	30% ⇔	30% ⇔
NBP	56% ▼	57% ▼	75% ▼	94% ▼	66% ▼	36% ▲	29% ▲	27% ▲	31% ▲	31% ▲
GPL	33% ▼	83% ▼	93% ▲	84% ▼	62% ▼	31% ▲	27% ▲	25% ▼	28% ⇔	28% ⇔
NCG	39% ▼	83% ▼	94% ▲	82% ▼	62% ▼	31% ▲	27% ▲	25% ▼	28% ⇔	28% ⇔
PEG	34% ▼	76% ▼	92% ▼	86% ▼	62% ▼	32% ▲	28% ▲	26% ▼	29% ⇔	29% ⇔

Price Forward Curves





Market Trend

Gas spot prices continued in the fourth quarter of 2020 the bullish trend started in the previous quarter. After record low prices in the beginning of the Summer (TTF spot just above 3 €/MWh), TTF prices closed 2020 at 19€/MWh. This is not only the highest value seen in 2020 but a level not seen since early February 2019! The main reasons are fears for supply tightness in winter, with less LNG expected to flow to Europe as compared to the previous winter. Spot volatility decreased slightly over the quarter, reflecting the fact the bullish price trend is a rather continuous directional process.

As is more often the case, prompt bullishness had less effect on the longer dated prices. During Q4-2020, the forward curve went from contango into backwardation. The TTF storage spread we watch (Q1-22 x Q3-21) decreased with about one third over this quarter, from 2.67€/MWh to 1.77 €/MWh. On the NBP the storage spread decreased with just over 10% to 10.6p/th.

On average, this resulted in a lower storage value assessment for our TTF storages. The assessment of the full option value of the 60 day storage for example, went down from 4.39€/MWh to 4.25€/MWh. On the NPB storage value increased in general, mainly as a result of the higher overall price level.

Interesting to note here is of course the price movements in the first weeks of 2021. Colder weather in Europe and especially large parts of North-East Asia increased the demand for gas. LNG prices skyrocketed and dragged TTF prices with it. TTF prices peaked on 12 January with one of the biggest day-on-day price moves ever seen for month-ahead contracts. The TTF month-ahead contract increased 4€/MWh. Interestingly enough, TTF spot prices also increased with this amount, indicating that the price peak is not fully driven by immediate supply/demand challenges. Fear for a tight storage situation towards the end of the winter, combined with rumored stop-loss actions by some financial players, resulted in large price movements on the month-ahead contract. These were quite different price dynamics compared to the previous major price peak, at the beginning of March 2018. Back then, the price peak happened at the end of the winter. Very high gas demand due to an extreme cold spell, plus almost empty storages led to very high spot gas prices, but only little impact on the month-ahead prices.

For the assessment of our swing contract, we rolled over to a new contract year. From now on we are going to assess contracts with delivery period 2022.

Explanation

Storage

• Product: 60/120 means 60 days of withdrawal and 120 days of injection capacity.

• The storage values are expressed per MWh (or therms) of working volume.

Swing

Product:

• Max/day is the maximum daily take

• Min/Max are the minimum and maximum annual take

Price

• A fixed price put at Q1-level or

• Month-ahead indexed price (MA)

The swing values are per MWh or therms of contract volume, which is 365 for the daily callable options (max 1 per day) and 360 for other contracts (max 4 per day).

Volatilities

The volatilities are derived from the end-of-day settlement prices of gas spot and futures exchanges. They are calculated with a history of 1, 3, 6 and 12 months. The 'KYOS suggested' volatilities are our expert view, considering the historical estimates as well as recent market developments. These estimates are used for the valuations.

Valuation Methodologies

• All valuations have been performed with KYOS software and models, KyStore and KySwing. They are expressed in €/MWh (TTF) or p/th (NBP). Inputs include the spot and forward volatilities from the table in this report, as well as forward curves and some other settings.

• The trading date for all values is 30 Sept 2020.

• A discount rate of 2% has been applied.

• Intrinsic values are derived from the tradable products in the market.

• Rolling intrinsic and option values are derived from Monte Carlo simulations of spot and forward prices:

  • Rolling intrinsic: the intrinsic value is locked in initially with tradable products; then this position, including spot, may be adjusted daily to capture extra value.

  • Option value: the spot trades are optimized, taking into account the optionality of the asset, based on the least-squares Monte Carlo method. In addition, the position is delta hedged in the forward market to minimize the risk.

  • Of the rolling intrinsic and option value, the table shows the average across the simulations and the 10th percentile, which is a more conservative value estimate.

  • In all trading strategies, the model takes into account transaction costs of 0.02 €/MWh (TTF) or 0.02 p/th (NBP).

Contact us for more information about the models and assumptions underlying this report, or to request a demonstration of the KYOS software.

Contact information: www.kyos.com/contact
KYOS energy asset optimization and valuation: www.kyos.com/energy-asset-optimization
E-mail: info@kyos.com