

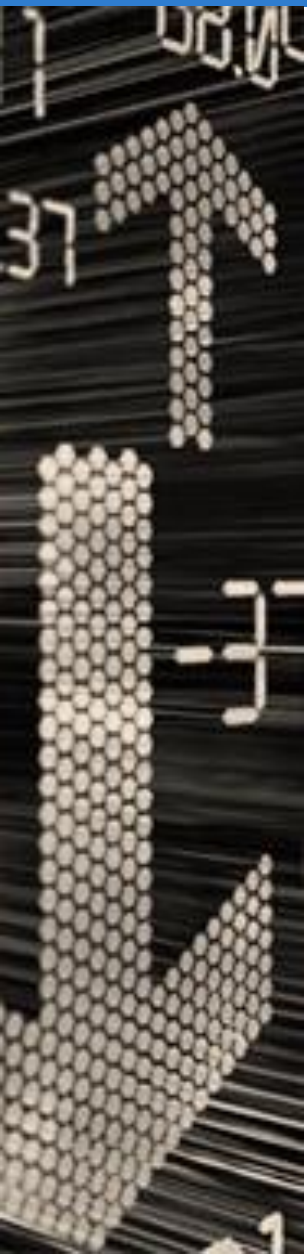
Gas

Gas storage and swing report

No 42 – April 2024



Storage and swing contract developments



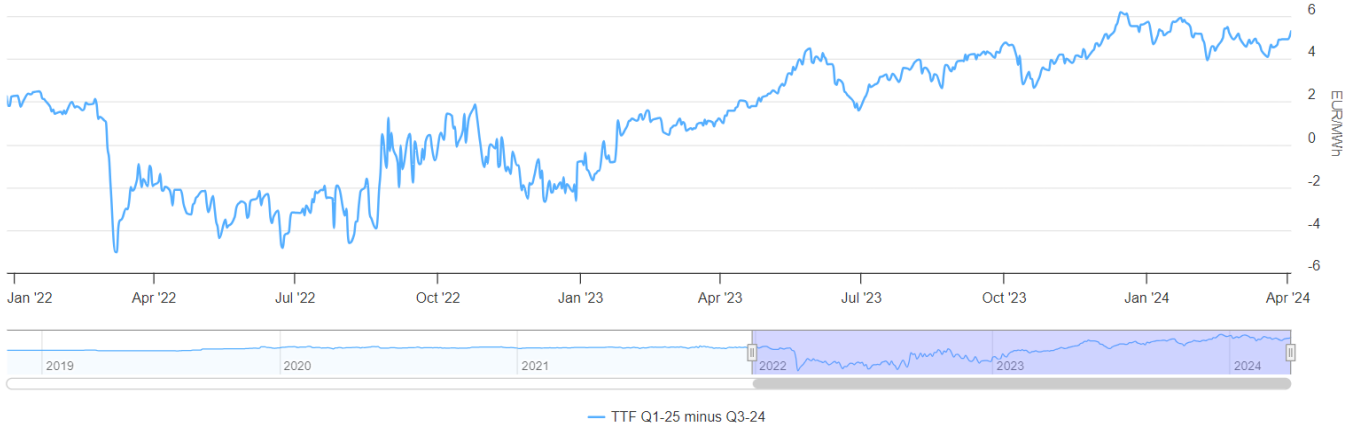
Storage	Market	Product	Period	Cycle Cost	Intrinsic	Rolling Intrinsic		Option	
						Average	10%	Average	10%
	TTF	30/30	SY2025	0.50	1.82	12.67	8.49	14.79	11.21
TTF	60/60	SY2025	0.50	1.77	7.91	5.71	9.14	6.81	
TTF	60/120	SY2025	0.50	1.69	5.62	3.98	6.87	4.92	
NBP	30/30	SY2025	1.00	11.27	39.70	30.23	42.83	34.07	
NBP	60/60	SY2025	1.00	11.15	25.70	21.02	27.73	21.77	
NBP	60/120	SY2025	1.00	10.75	19.93	16.42	21.92	17.23	

Swing	Market	Max/day	Min/Max	Period	Price	Intrinsic	Rolling Intrinsic		Option	
							Average	10%	Average	10%
	TTF	4	360/360	2025	38.26	-0.02 ⇔	1.50 ▲	0.22 ▲	2.09 ▲	0.75 ▲
TTF	1	0/365	2025	38.26	0.00 ⇔	5.06 ▼	0.56 ▲	4.75 ▼	1.96 ▲	
TTF	4	360/360	2025	MA	-0.02 ⇔	2.16 ▼	0.81 ▼	3.35 ▼	2.29 ▼	
NBP	4	360/360	2025	102.19	-0.02 ⇔	4.11 ▲	0.66 ▲	5.24 ▲	2.12 ▲	
NBP	1	0/365	2025	102.19	0.00 ⇔	12.50 ▼	1.77 ▲	11.59 ▼	4.40 ▲	
NBP	4	360/360	2025	MA	-0.02 ⇔	6.27 ▼	2.63 ▼	8.87 ▼	6.20 ▼	

Price history



TTF



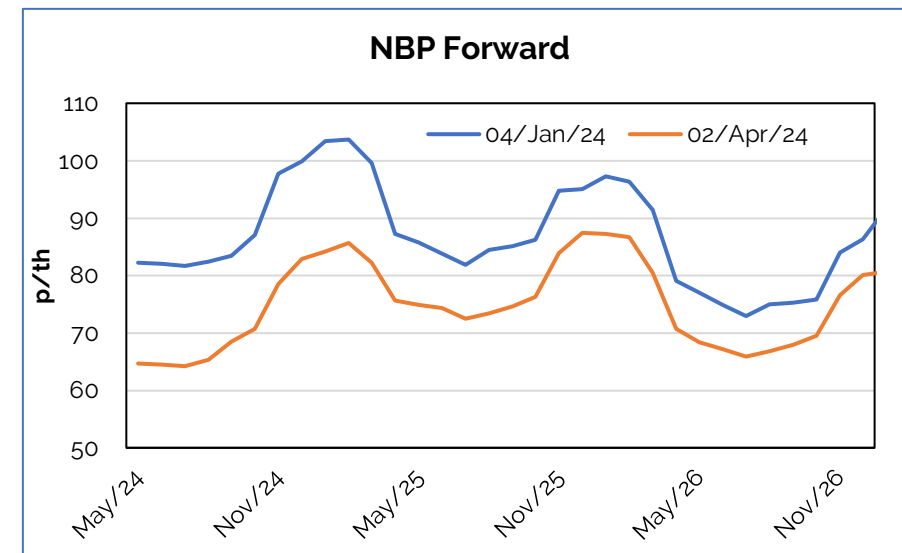
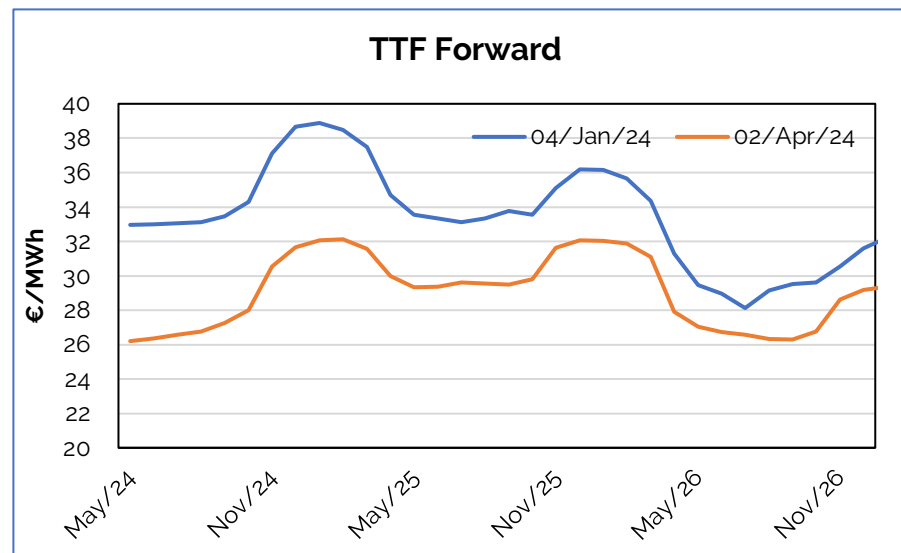
NBP



Volatility and price forward curves

Market	Spot Volatility				
	1m	3m	6m	12m	KYOS sugg.
TTF	21% ▼	33% ▼	60% ▼	65% ▼	65% ⇔
NBP	33% ▼	37% ▼	78% ▼	74% ▼	68% ⇔
THE	11% ▼	34% ▼	63% ▼	66% ▼	68% ⇔
PEG	25% ▼	30% ▼	88% ▼	83% ▼	70% ⇔

Year-ahead Forward volatility				
1m	3m	6m	12m	KYOS sugg.
34% ▼	35% ▼	47% ▼	49% ▼	40% ⇔
35% ▼	36% ▼	48% ▼	49% ▼	40% ⇔
34% ▲	34% ▼	45% ▼	47% ▼	40% ⇔
35% ⇔	35% ▼	47% ▼	49% ▼	40% ⇔



Market Trend



Gas prices continued to decline in the first quarter of 2024. Both the TTF and NBP for next year delivery dropped by 11%, driven mainly by weak structural demand together with mild conditions in Central and Western Europe, especially February was abnormally warm.

Gas burn in the European power sector decreased by 10% compared to Q1-2023, partly thanks to stronger hydro (+27%) and wind production (+6%). As a result, the gas injection season in Europe starts with storage filled at 60% already, despite lower LNG imports in the past 3 months.

With such high inventories, there are no concerns that gas build-up will be enough to secure next winter's demand. Note however that Asian LNG imports have increased and are now back to 2021 levels. This re-balancing could put an end to the downward pressure to European gas prices.

Looking at the seasonal spreads, The TTF Q1-25/Q3-24 remained fairly flat around 5 EUR/MWh while for NBP Q1-25/Q3-24 steadily declined before returning to January levels around 20 p/th. We slightly decreased our forward volatility estimates versus our last release.

We are interested to hear your opinion on our assessments. Where do you see volatility at the moment? Please share your insights at info@kyos.com

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 2 April 2024.
- 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)

Our knowledge center is a great resource for the latest news, where we publish interesting articles and reports.

Do not hesitate to contact us for more information, or ask for a short demonstration: info@kyos.com



Head office and European markets:

Nieuwe Gracht 49
2011 ND Haarlem
The Netherlands
E-mail: info@kyos.com
Tel: +31 (0)23 551 02 21
www.kyos.com

Japanese market:

GRANBIZ Tokyo Nihonbashi 5F, 10-5
Nihonbashi 2-chome, Chuo-ku,
Tokyo, 103-0027
Japan
Tel: +86 3 6386 8327
E-mail: mpx-ml@mpx.co.jp
www.mpx.co.jp