



Webinar: situation of EU gas storage

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Agenda



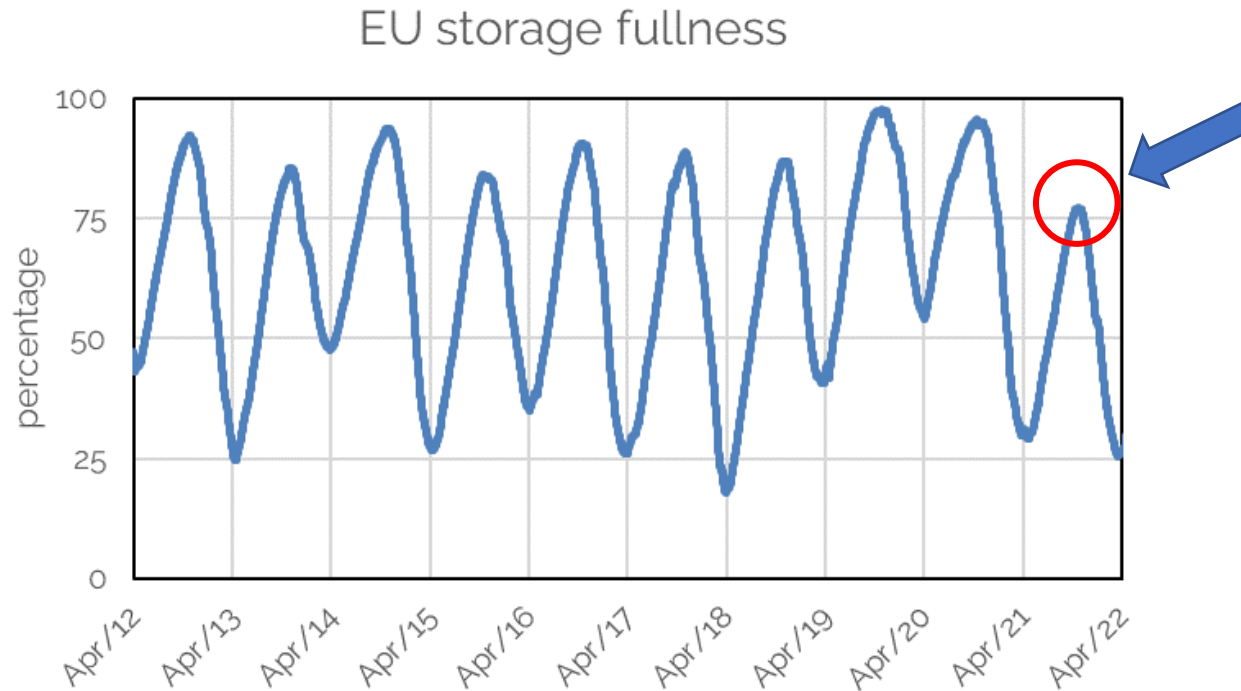
- Looking back at 2022
 - Measures by EU/member states
 - Impact on prices in 2022
 - Where are we now?
- Looking forward to 2023
 - Large variability in potential storage levels end of winter
 - Impact on prices in 2023
 - Storage valuation challenges
- Q&A



What happened this year?



Bad start of previous winter



EU level: Only 75% full on 1 November 2021!

Mainly driven by (large) storages with significant role of Gazprom:

Rehden:	44 TWh = 9%
Haidach:	33 TWh = 20%
Bergermeer:	48 TWh = 30%

Major concerns about sufficient gas injections over Summer 2022

EU got involved



- June 2022: new EU regulation on gas storage
- Most importantly:
 - Requirement for minimum fill levels.
 - 1 November 2022: 80%
 - As of 2023: 90% by 1 November
 - With intermediate targets

	1 February	1 May	1 July	1 September	1 November
Germany	45%	10%	30%	65%	90%

- Reduction of targets for countries that supply other countries.
 - E.g. for NL this means a 1 November fill target of 73% as of 2023
- Regulation lists different measures that member states can apply to reach targets

*Regulation (EU) 2022/1032

Some countries already had fill restrictions

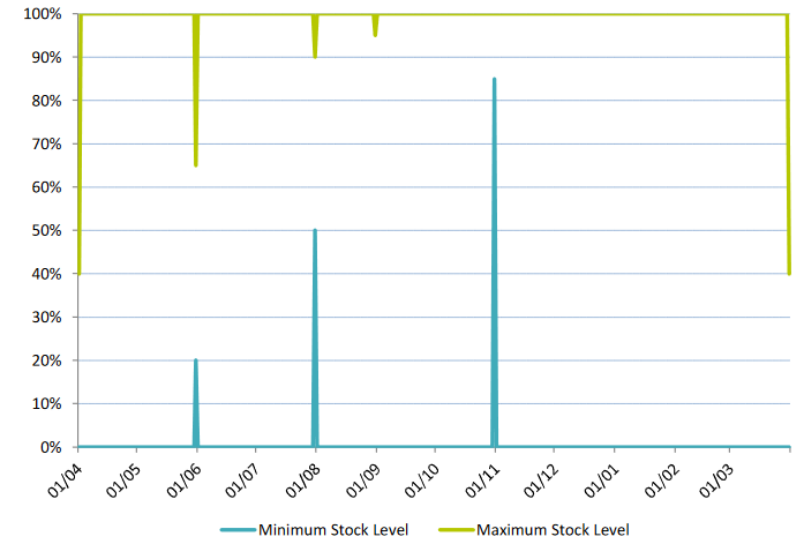
Examples

- France

- Fill restrictions applied to storage capacity holders
- Regulator sets allowed revenues for SSOs
- Difference between capacity fees and allowed revenues (positive/negative) reconciled via TSO tariffs.

- Belgium

- Best endeavours to have 90% on 1 November and 30% on 15 February
- Regulator can step in in case of security of supply situation.
- Tariffs for SSO regulated
- Currently: restrictions in-line with EU regulation



Similarity: both countries have regulated storage tariffs/revenues

Germany – change to gas law



- Includes fill targets in law
- SSOs should include these targets in new and existing storage contracts!
- Foresees three levels of measures to ensure filling

THE offering SSBO

UIOLI of storage capacity +
SSBO

THE will fill storages

Strategic Storage Based Option (SSBO)

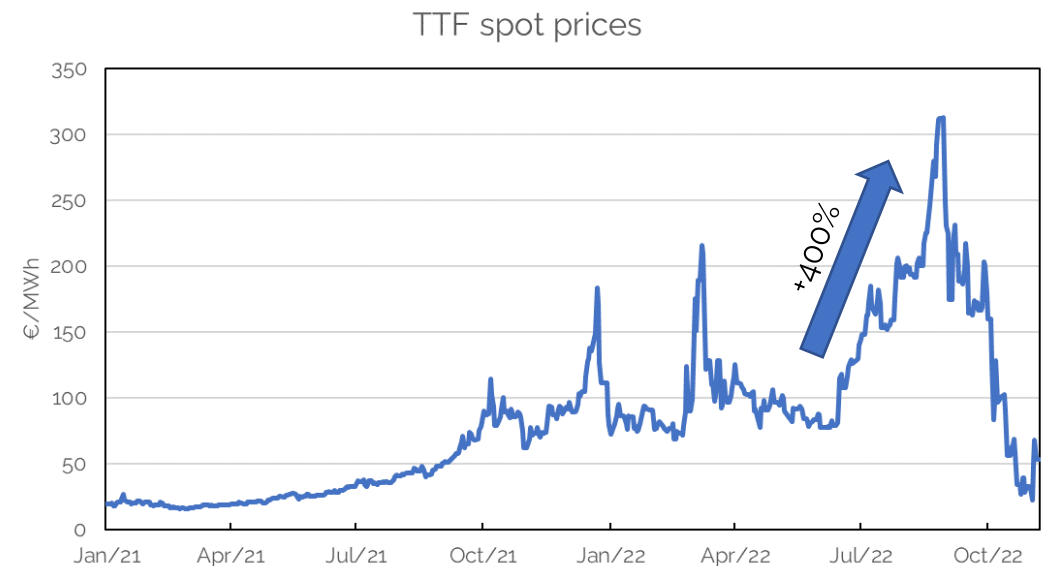
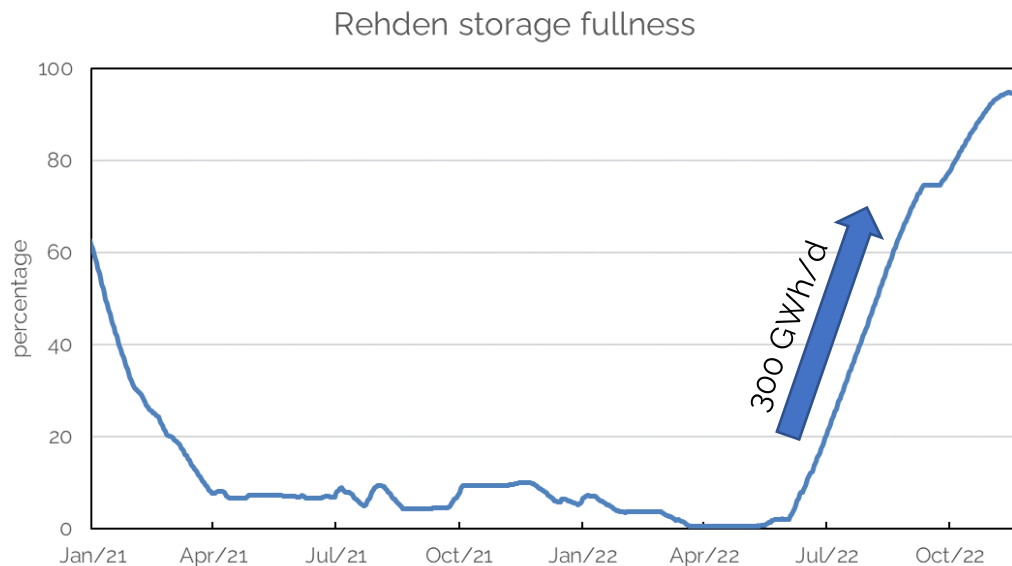
- Injection and keeping in storage of agreed quantity of gas
- THE can call up to 20% of quantity of gas to ensure security of supply
- Pricing model:
 - Service Fee to keep gas in storage
 - Capacity Charge to ensure availability of call quantities
 - Commodity Charge on top of spot index when quantities are called by THE

So far:

- THE organized 2 SSBO tenders
- 84 TWh was awarded
- At fixed fee of €852 mln
- Or about 10€/MWh

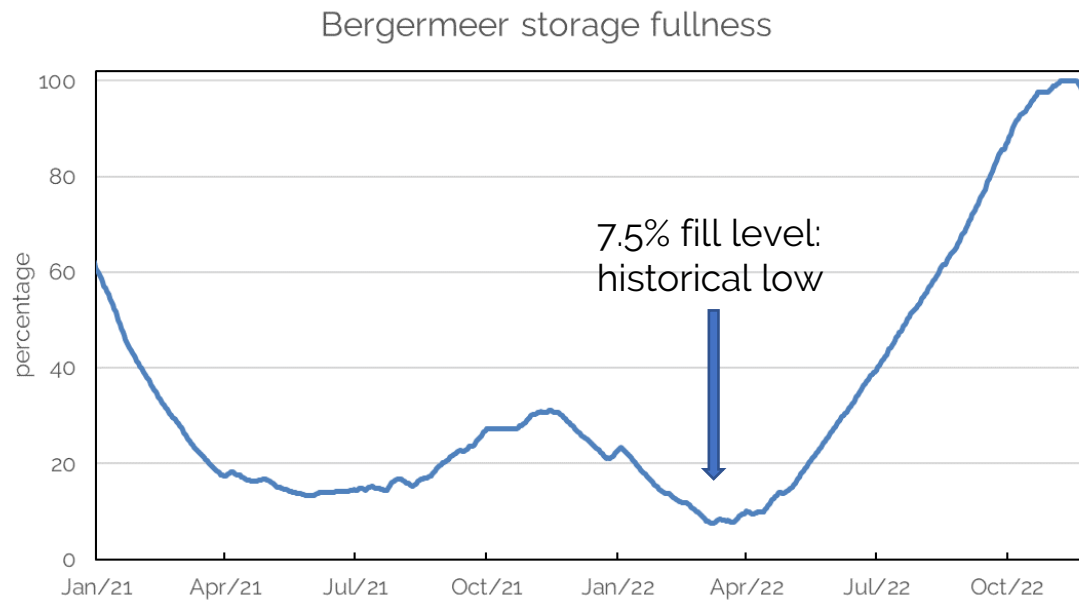
Germany – other actions

- June 2022: Ministerial decree to fill Rehden
- THE ordered to fill Rehden
- Jun-Aug: on average over 300 GWh/day injected, total 41 TWh injected
- Added to a lot of pressure on DA
- THE has only been hedging exposures since 5 October 2022. Large price risk!
- Gas to be withdrawn before end of winter. But how certain is this?



Netherlands – subsidy

- Bergermeer ended last winter at historical low level
- Winter/Summer spreads were negative, not incentivizing capacity holders to inject
- Gazprom holds approx 40% of Bergermeer capacity
- Dutch state decided to act:
 - Subsidy Scheme
 - Appoint EBN to fill unused capacity

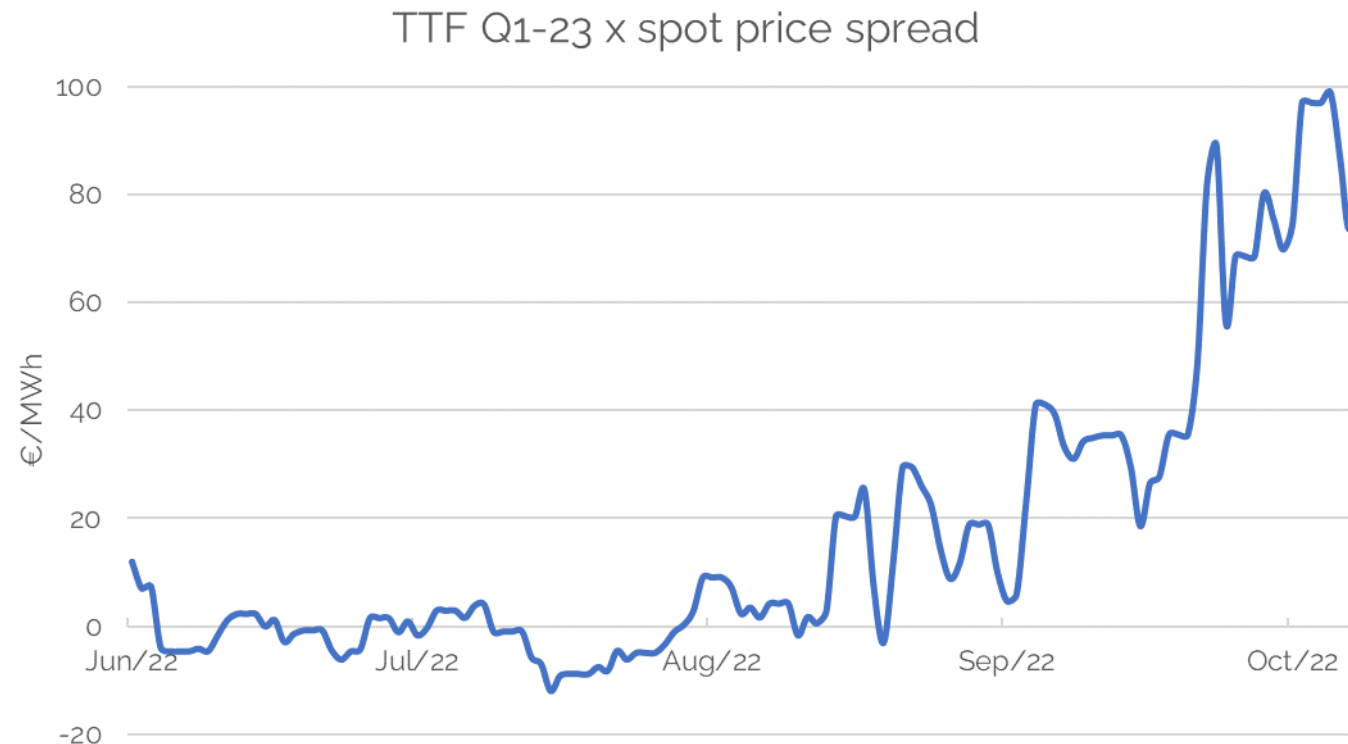


Subsidy scheme

- Compensated for negative, realized Q1-23 x spot spread during injection season
- Parties could bid additional discount on top of this spread (to cover additional costs).
- In return: 100% injected at 1 November 2022
- 2 tenders (sold/unsold capacity)
- 12.6 TWh successfully tendered

Netherlands – results: no subsidy

- A total of €366 mln was allocated to this subsidy scheme
- Price development was very positive
 - Average Q1-23 x spot price spread over +15€/MWh
- No subsidy will have to be paid out by the Dutch state



- EBN successfully filled unused capacity
- Most likely locking in positive spread
- Positive outcome for Dutch state
- 100% fill level reached

Comparison

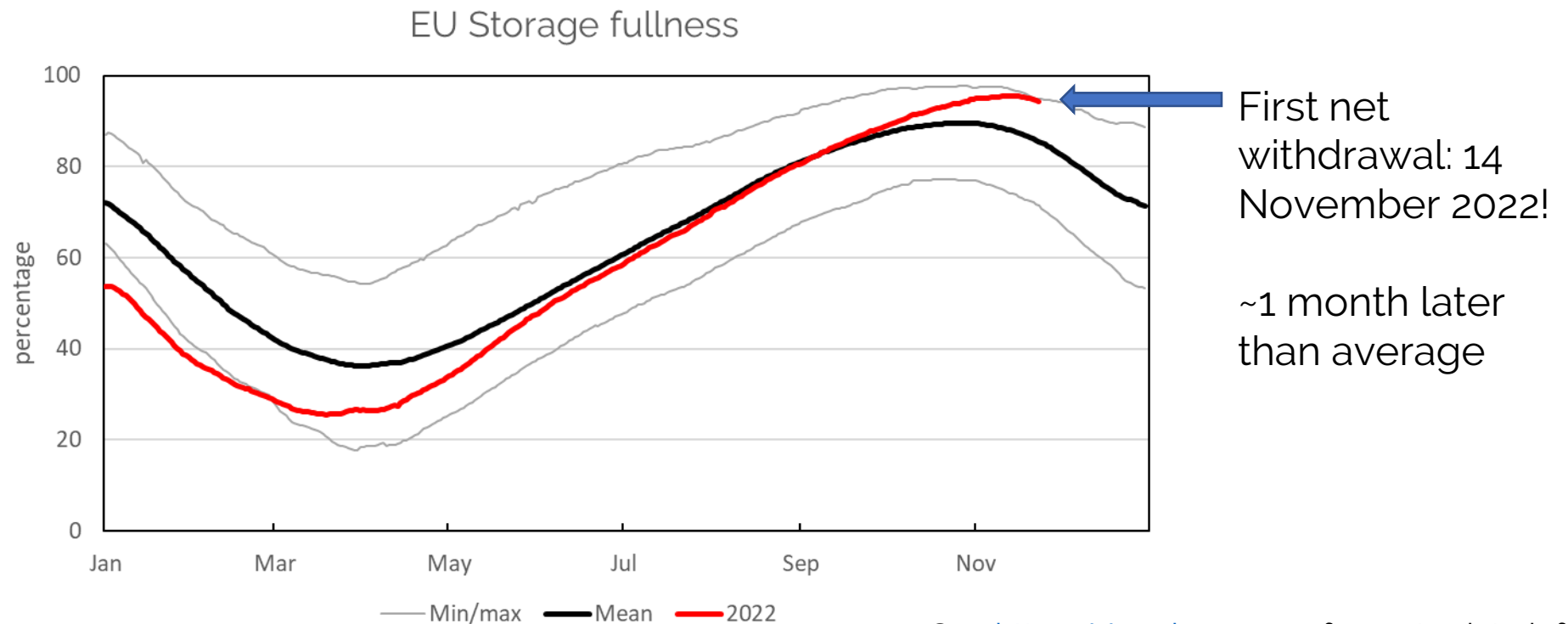


- Germany and The Netherlands followed very different approaches
- Germany puts changes in law, potentially leading to more stability. But, actual implementation still not fully clear.
- The Netherlands did not make any changes to law/regulations. Dutch Subsidy scheme developed for SY2022.
- Germany paid large, fixed fees to ensure storage filling.
- Netherlands used indexed priced scheme, in-line with fill strategy. Covering only in case actual filling became uneconomical.



Current situation

- EU storages well filled
- Mild temperatures during Oct/Nov led to late net storage withdrawal



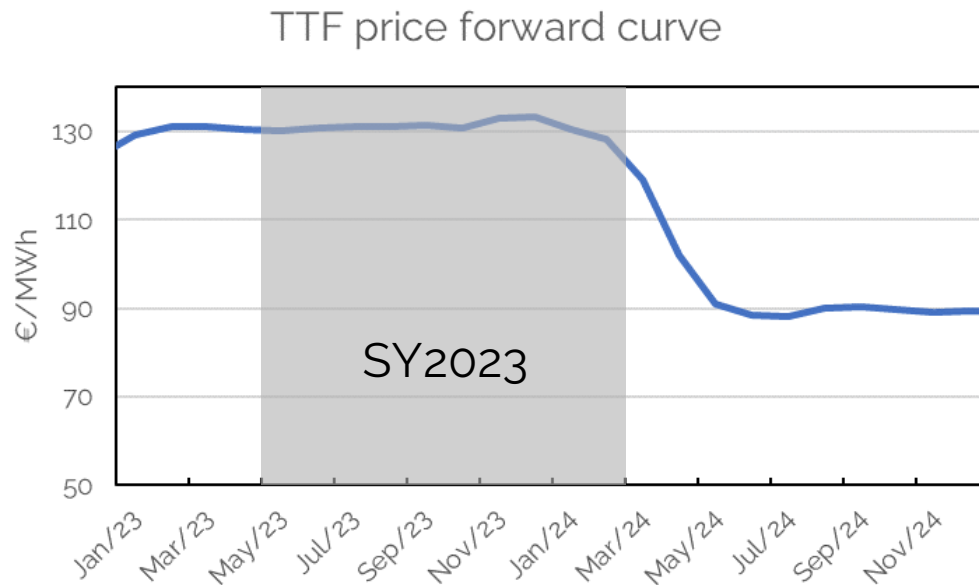
See <https://gas.kyos.com> for up to date information

2023 storage value



Current market view on SY2023

- High absolute price level
- Typical storage spread (Q1-24 x Q3-23) at TTF negative: -5 €/MWh
 - But other spreads lead to some intrinsic value
- Majority of storage value is extrinsic
Volatility and high price levels



KYOS TTF 60/120 storage product*

Trading date 28 November 2022

Intrinsic value

Tradable: 0.2 €/MWh

Option value

Average: 16.5 €/MWh

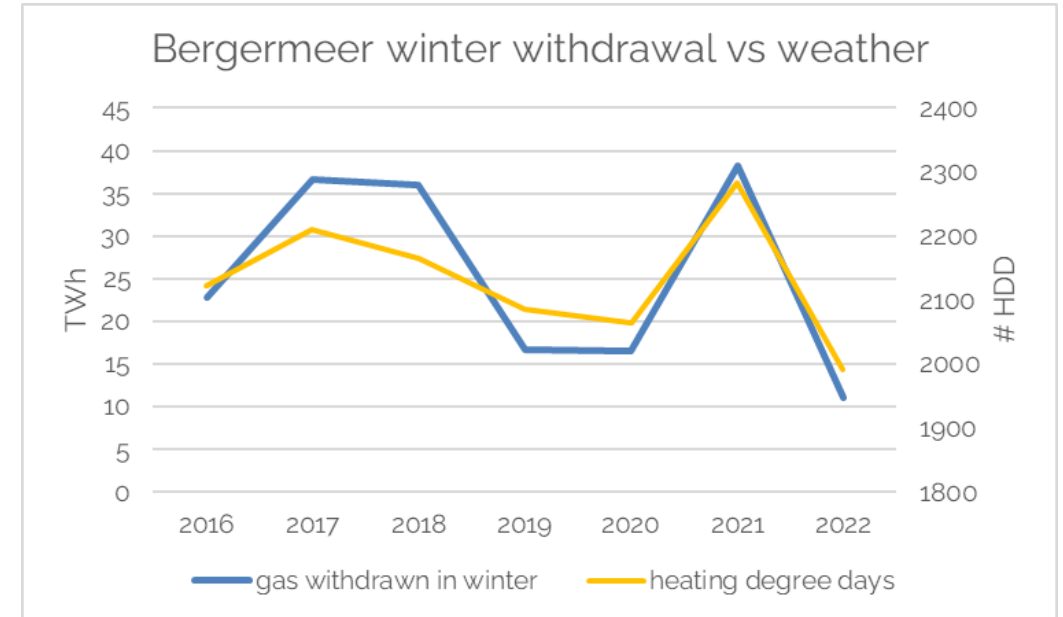
10%: 8.9 €/MWh

Does not include: financing + trading costs

* <https://www.kyos.com/gas-storage-swing-report/>

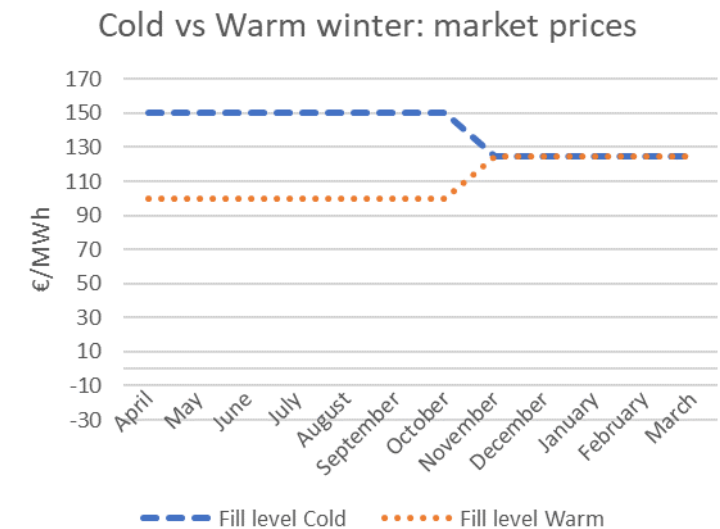
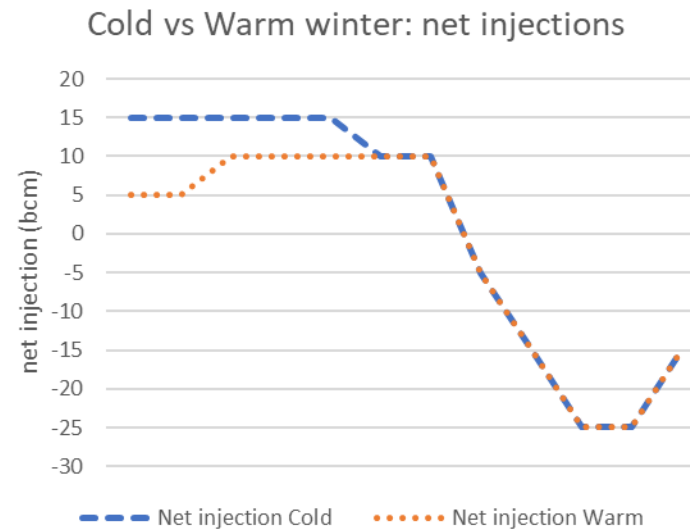
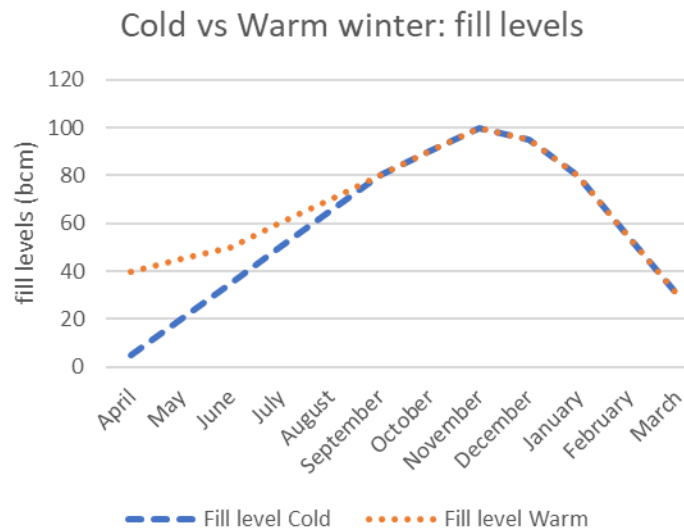
What will drive Summer 2023 prices?

- High Winter demand will lead to more Summer injections
- Mostly weather driven
- For SY23 also important to watch:
 - Russian flows
 - LNG imports
 - Level of demand destruction
- As well as behaviour governments:
 - How will German storages be filled?
 - Additional measures and restrictions?



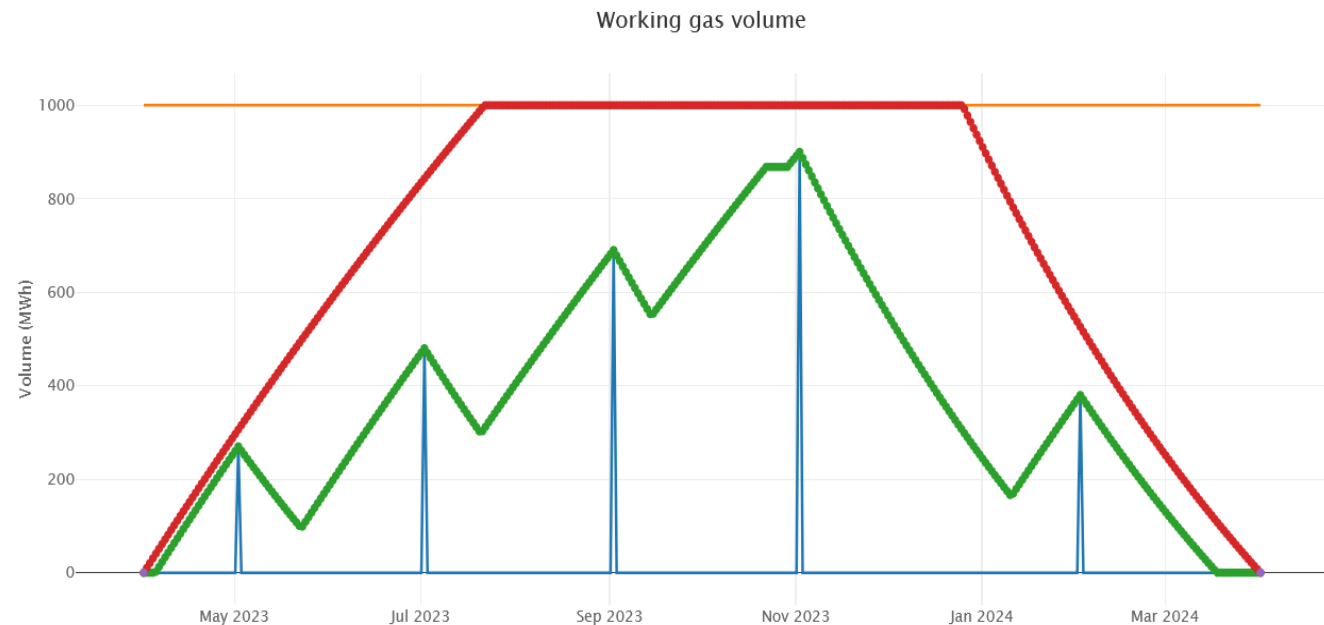
Two possible scenarios: cold or warm winter

- Scenarios are not only about winter temperatures, but all factors determining fill levels by 1st of April
- Fill levels on 1st of April either 5 or 40 bcm.
- Fill levels on 1st of November 100 bcm, so same trends afterwards
- Summer-winter spread either -25 or +25 €/MWh
- Outcomes in between those extremes are also well possible



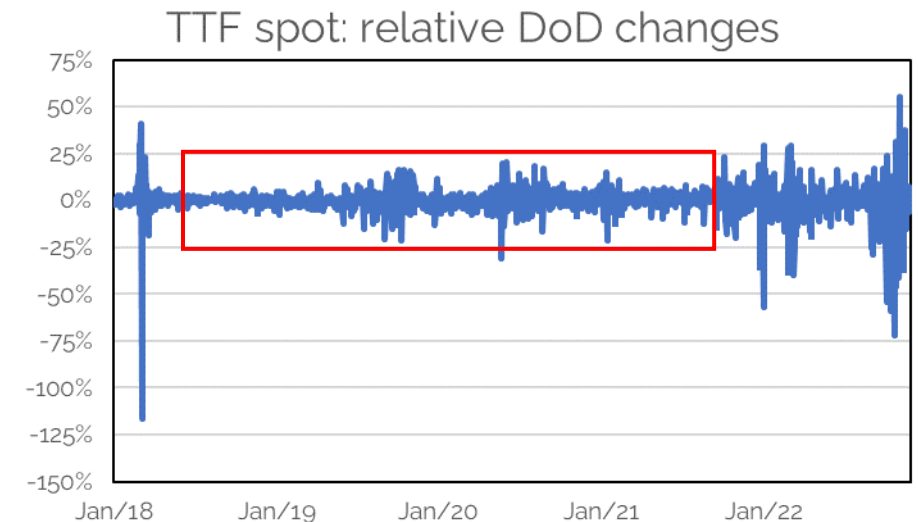
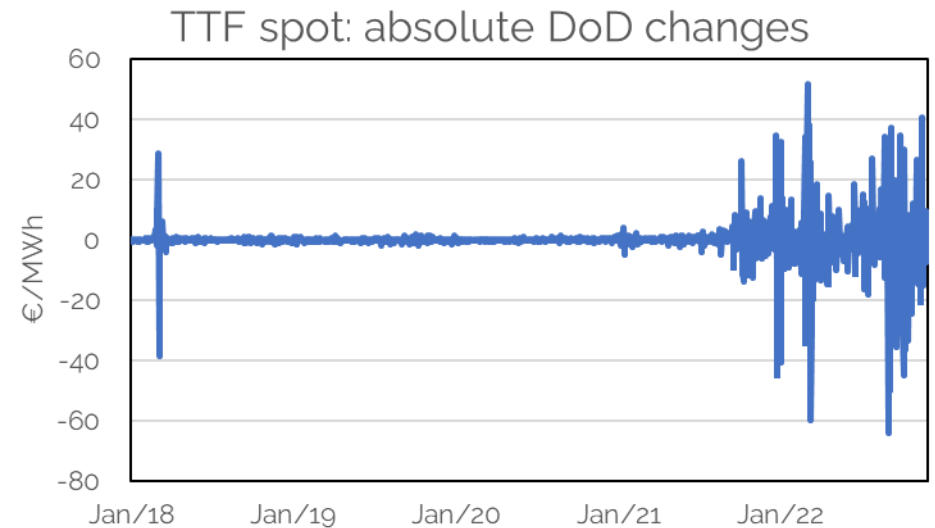
Fill restrictions – economical impact

- Fill restrictions have strong impact on market value of storage
 - Less flexibility to optimize
- Imposing full EU fill trajectories leads to strong value reduction
- In case strict restrictions imposed on SSOs, should this loss in revenues be compensated?
- See France + Belgium where storage tariffs are regulated?



Complication: model calibration in current markets

- Markets show large price fluctuations
- Positive for storage value
- But, how to include this in valuation model?
 - Is current volatility representative for next year?
 - What will absolute price level be?
- Market view is key
 - KYOS view: relative price fluctuations
- Consistent and flexible storage model essential
 - For example KYOS KyStore model: use APIs to run large number of model input scenarios





Thank you

Time for Q&A

For a demo, please contact us on
info@kyos.com