



Policies for ensuring sufficient gas storage levels

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Berlin/Kyiv, March 2017

Summary

- Having no storage policy is not credible
- Three policy approaches: strategic storage, storage obligation, other security requirements
- We recommend
 - an obligation on importers/producers
 - to maintain a certain level of “flexibility options” (storage, import capacity, production flexibility, demand side response)
 - Release of flexibility only triggered in case of emergency
- Volume of this obligation should be annually determined in a transparent stress-test

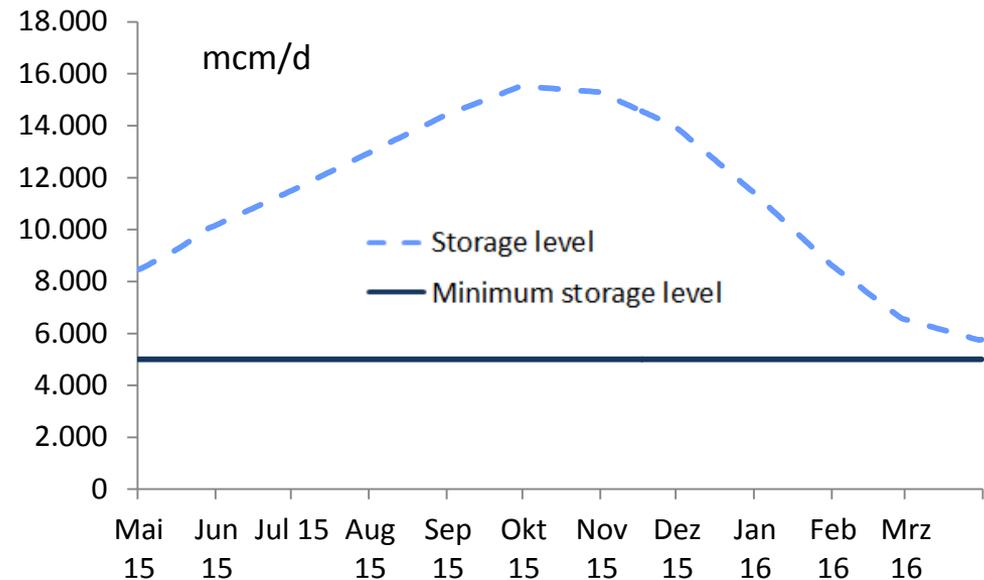
Structure

1. Policies for ensuring sufficient gas storage levels
2. Determining the desired storage level
3. Recommendations for Ukraine

The Issue

- In a cold winter Ukraine consumes much more gas (165 mcm/d) than it produces (57) and can import (50) from the West
- An appropriate storage level before the heating season is needed to prevent disruption

Example: Ex ante scenarios for Winter 2015/16 (here: medium imports (40 mcm) and less consumption (-10%))



Source: PB 08/2015: Can Ukraine secure enough gas for the winter 2015/16? A scenario analysis

Current Situation

- Naftogaz is informally required to maintain an appropriate storage level
- For this purpose, it is obtaining financing from EBRD and World Bank
- That is, Naftogaz acts partly outside of the market
- This is not compatible with the intended competitive market and will need to be replaced by a transparent, non-discriminatory scheme

Different reasons for storage

Normal demand and supply fluctuations (incl seasonality)

- Are reflected in price fluctuations (winter price higher)
- Market players can make money from storage
- A market only solution (like in Germany) for keeping sufficient storage for seasonal fluctuations works

Crisis (Political and large infrastructure risk)

- Full storage coverage would requires sometimes large storage volumes that are only used in exceptional circumstances -> cannot be provided by market
- One key risk for Ukraine would be a policy-induced reduction in import volumes -> a policy to protect vulnerable consumes in this situation is needed

Three alternative approaches

- **Strategic reserve**

- A specific stakeholder has to maintain a certain storage level for emergency situations.

- **Storage obligation**

- Each supplier has to store a certain fraction of the gas it has committed to supply.

- **Security of supply requirements**

- Specific stakeholders (e.g., TSOs, DSOs or suppliers) are responsible for gas security of supply. They are flexible in how they ensure security, but face a penalty (e.g., loss of license) if they do not.

Strategic reserve

Benefit

- Ensures a precise volume of reserves
- Can be shielded from the market

Cost/Drawbacks

- High cost of stored gas (storage cost + deferred interest)
 $50 \text{ USD/tcm} + 200 \text{ USD/tcm} \times 10\% \text{ interest rate} = 70 \text{ USD/tcm}$
-> 10 bcm of storage would cost up to 700 mn USD per year
- State might not choose the most efficient supplier and storage facility
- Temptation to use the gas when prices are high -> private parties might store less as they cannot hope for high winter prices

Storage obligation

Benefit

- No direct cost to the tax-payer
- Companies have a strong incentive to look for most economic option

Cost/Drawbacks

- depends on compliance of market participants
- cost of stored gas passed through by the suppliers
- Temptation to use the gas when prices are high

Security of supply requirements

Strongly depends on concrete design and enforcement

Benefit

- Can allow more economic options (interruptible contracts)
- Might take into account other bottlenecks (infrastructure)

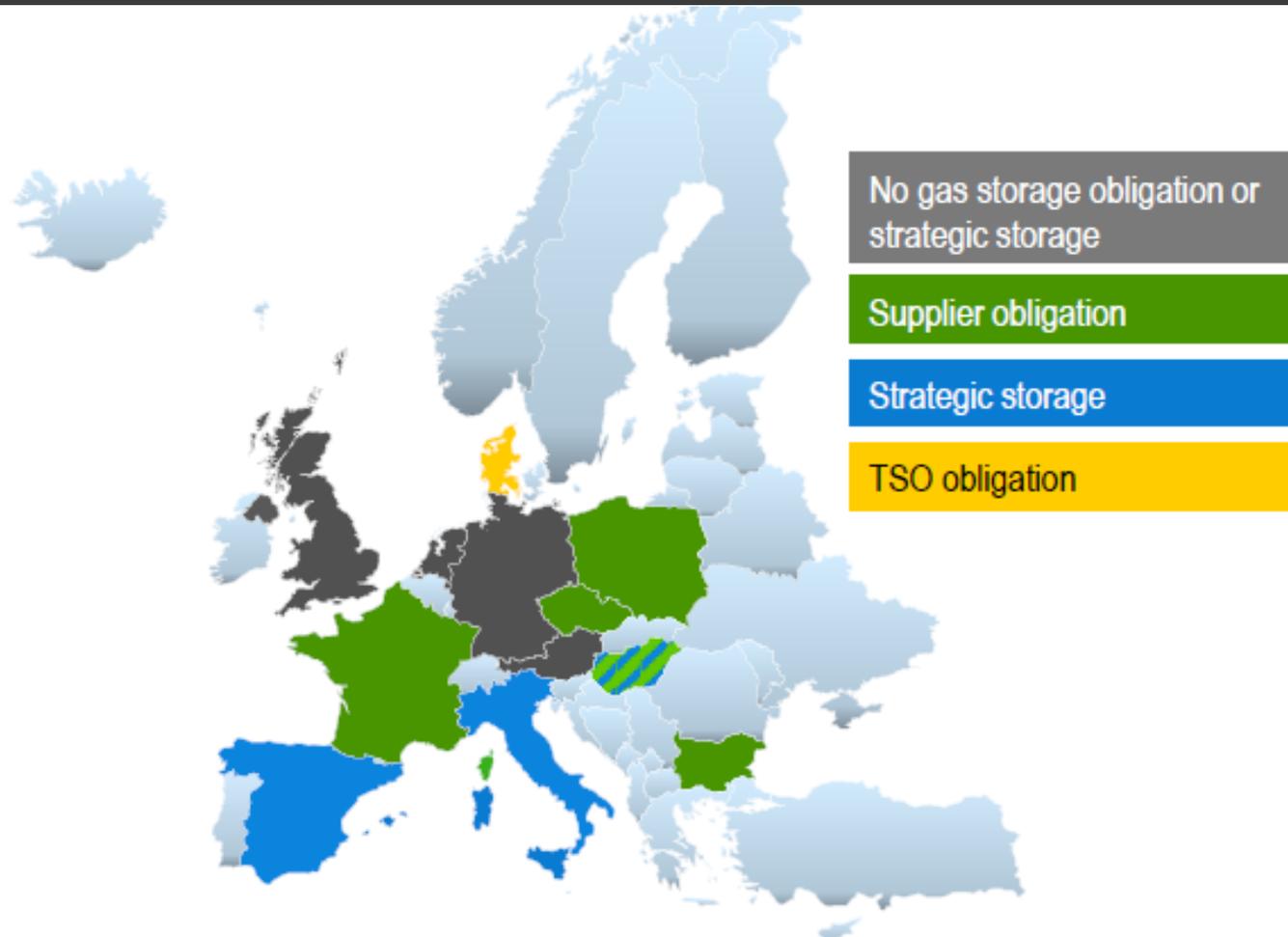
Cost/Drawbacks

- Might ignore systemic risk (moral hazard: if state knows that gas suppliers will go bankrupt in a gas crisis because they have not enough gas, the state will do anything to prevent a crisis)

Each EU country has its own approach

- There are EU minimum requirements for protected customers
- National policies for storage differ
- Optimal policy depend on national conditions
 - Dependence on dominant supplier (yes/no)
 - Role of gas (crucial/substitutable)
 - Structure of the sector (state-owned/private; monopoly/competition)
 - Example: if each plausible crisis scenario can be mitigate by normal market measures, no specific storage policy is needed (like in Germany)

Gas storage-related security-of-supply regimes of selected countries in Europe



Source: European Commission (2015a), *The Role of Gas Storage in Internal Market and in Ensuring Security of Supply*.

Figure from: IEA 2016 *Global gas security review* p.86

Determining the desired storage level

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Policy only determines the security reserve

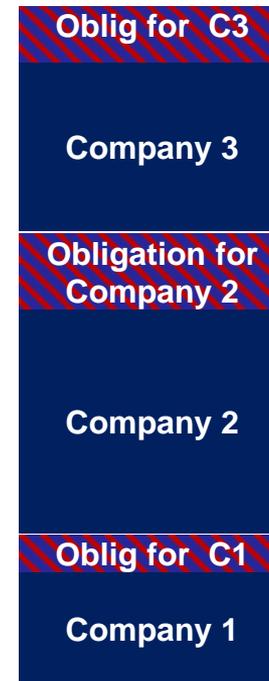
With Strategic reserve and storage obligation, the government does not set the total storage level, but only the non-market volumes*

*in some countries government use a formal dialogue to give soft guidance to market players on the desired total volumes

Strategic reserve is certain level (e.g., 10 bcm)



Storage obligation is a share of the expected consumption (e.g., 25%)



Reserve obligations in EU member states

Country	Storage obligations	Security of supply responsibility
Bulgaria	Criteria are not disclosed; Current capacity equals 250 mcm	Bulgargaz
Czech Republic	At least the 20% of supply standards; Current capacity equals 225 mcm	Market parties
Denmark	Criteria are not disclosed; Storage capacity equals 215 mcm	Energinet.dk, with market based tools
France	Starting from 80% of the estimated seasonal storage requirements at the start of the heating season	Market parties
Hungary	Strategic storage and storage obligations by suppliers, totaling 24% of annual consumption	Market parties
Italy	Strategic storage of 4.6 bcm	Ministry sets the volume, storage companies dedicate to strategic storage reserves
Poland	Compulsory stocks of companies equivalent to at least 30 days of average daily imports of the gas brought in	Minister of the Economy and gas suppliers
Spain	Mandatory storage obligations for gas shippers, strategic stocks equivalent to 20 days of their firm sales in the previous natural year (4.78 bcm)	Spanish Government and gas suppliers

Source: Bruegel. Note: mcm = million cubic metres.

Table from: Zachmann and Tagliapietra 2016: Rethinking the security of the European Union's gas supply ([link](#))

Determining the the security reserve

Different approaches in the EU:

- Ad hoc political decision
 - A percentage of expected consumption
 - Days of import
- Based on stress tests (e.g., coldest winter in 20 years consumption; disruption of main import for 30 days)

-> The more sophisticated the methodology, the lower the risk

-> The more stable and transparent the methodology, the better shielded from the market

See also our PB 08/2015: Can Ukraine secure enough gas for the winter 2015/16? A scenario analysis (corresponding excel table available upon request)

But, storage is not the only security option

- When determining storage levels, governments should not ignore alternative flexibility options, which might be more economic:
 - Flexible import contracts
 - Interruptible contracts (incl. through fuel switching)
 - Flexible production
 - Swap contracts
- Those options shall be
 - considered in the assessment of the strategic reserve need
 - or companies shall be allowed to account them to fulfill their storage obligation

Recommendations for Ukraine

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Recommendations

1. Clarify which situations the policy covers
 - Normal seasonality shall be covered by the market
 - the trigger for a release should be a predetermined physical condition (e.g., supply stop from Russia) not a price level
 - Target storage level should be based on a quantitative assessment of the trigger situation
2. Properly isolate storage policies from markets
 - Credibility matters: only release gas when trigger is met, otherwise the market will store less
 - Signals matter: Do not give the market the impression, the gov't is taking care of appropriate storage levels if it is not, otherwise the market will store less

Recommendations

3. Obligation is preferable over strategic storage
 - No fiscal exposure -> less corruption risk
4. Put the obligation on importers/producers
 - Few players
5. Use all flexibility options
 - Reduces cost
 - Instead of storage level, target a level of flexibility margin(incl. demand side)
 - Monitoring crucial

References

- European Union 2014 The role of gas storage in internal market and in ensuring security of supply [<https://ec.europa.eu/energy/sites/ener/files/documents/REPORT-Gas%20Storage-20150728.pdf>]
- IEA 2016 Global Gas Security Review
<https://www.iea.org/publications/freepublications/publication/GlobalGasSecurityReview2016.pdf>
- https://www.bmwi.de/Redaktion/DE/Downloads/Studien/moeglichkeiten-zur-verbesserung-der-gasversorgungssicherheit-und-der-krisenvorsorge-durch-regelungen-der-speicher-kurzfassung-englisch.pdf?__blob=publicationFile&v=6
- <https://www.ofgem.gov.uk/ofgem-publications/40204/gas-sos-report-pdf>



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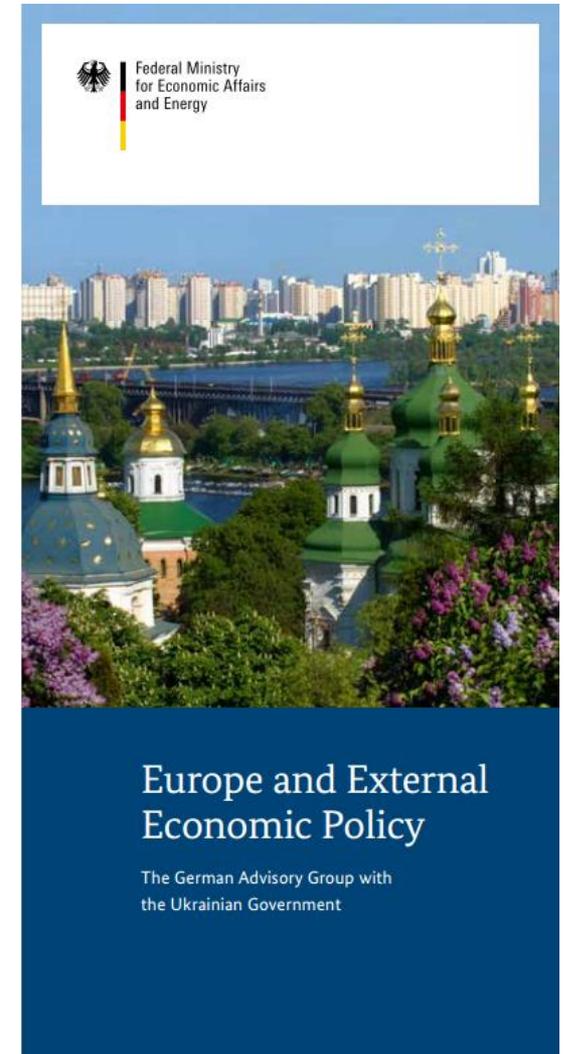
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Other Issues

- There are different types of gas storage – a proper analysis should take differences (location, volume, withdraw rates, etc) into account
- Normal seasonality of demand shall be dealt with by the market, which should see higher prices in winter, BUT, this only works when there is working wholesale competition – otherwise companies with a dominant position might exercise market power