



Gas Storage Europe

How to enhance Security of Supply: The role of Natural Gas Storage in the internal gas market

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GSE President

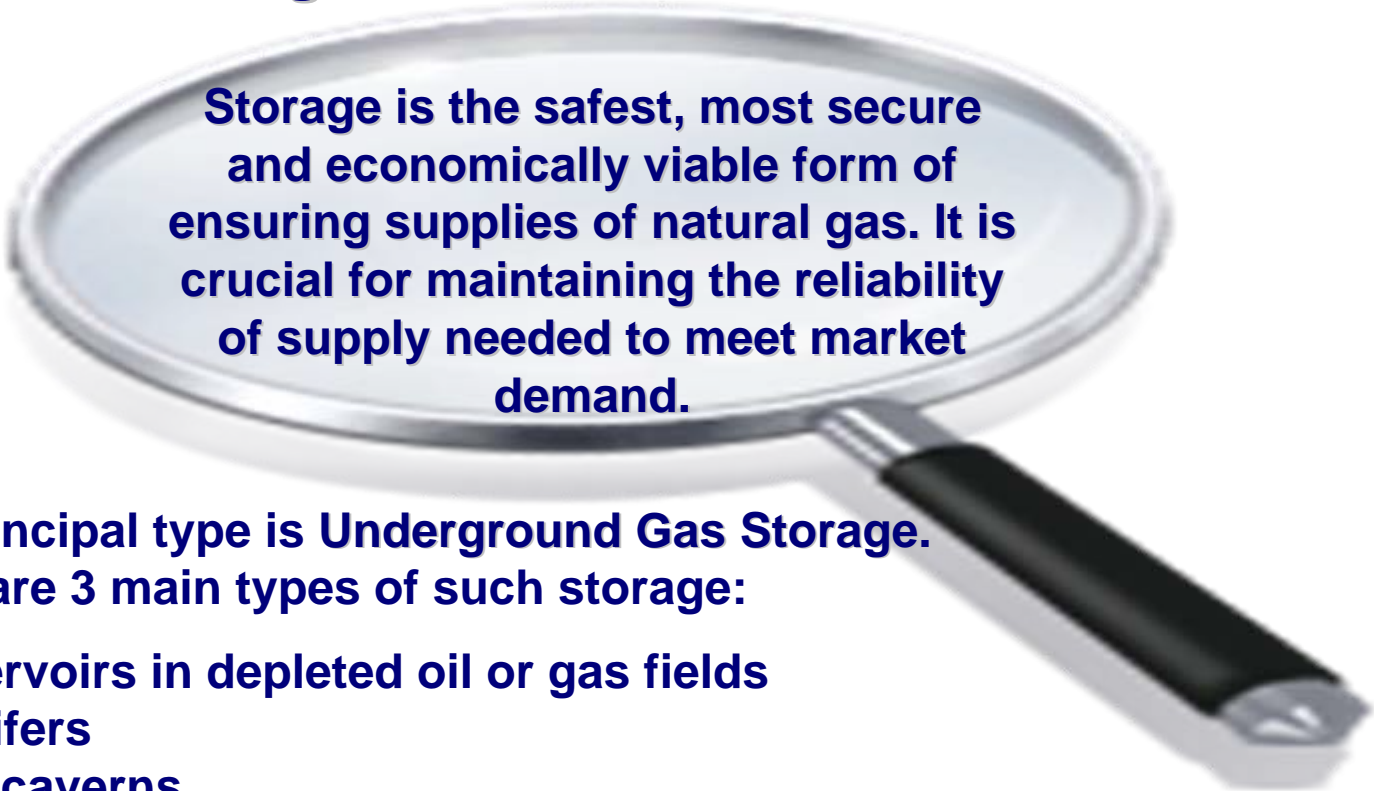
European Energy Forum

Strasbourg, 17 June 2008

Agenda

- 1. What is storage**
- 2. The role of storage**
- 3. Enhancing storage development**
- 4. GSE initiatives**

1. What is storage?

A large, silver magnifying glass with a black handle is positioned over the text. The lens of the magnifying glass is centered over the main definition of storage.

Storage is the safest, most secure and economically viable form of ensuring supplies of natural gas. It is crucial for maintaining the reliability of supply needed to meet market demand.

The principal type is Underground Gas Storage.

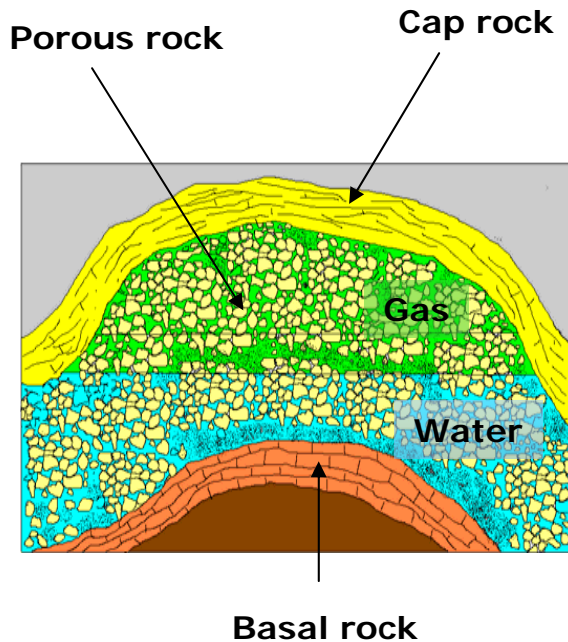
There are 3 main types of such storage:

- ✓ **reservoirs in depleted oil or gas fields**
- ✓ **aquifers**
- ✓ **salt caverns**

Additionally, Above-ground Storage facilities can be built (i.e. LNG peak shavers). These differ from the Underground Storage in that they have significantly smaller capacity although higher deliverability rates.

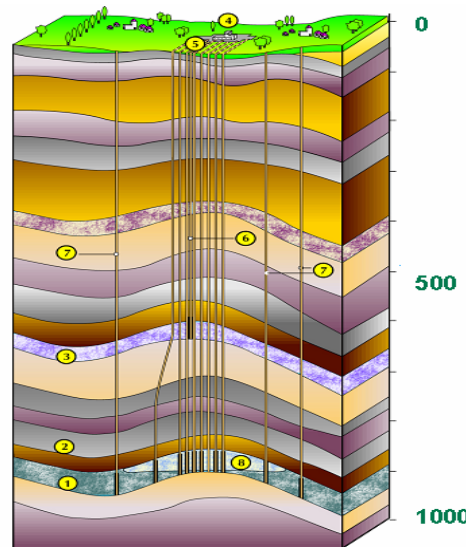
Underground storage

Depleted field



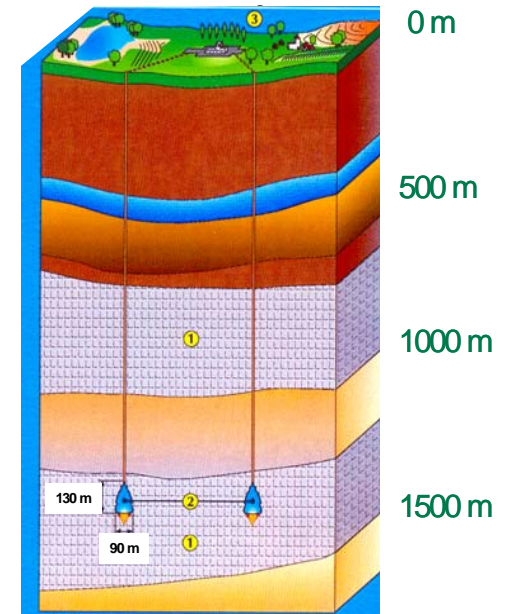
Depleted Fields are the most commonly used underground storage sites because of their availability.

Aquifer



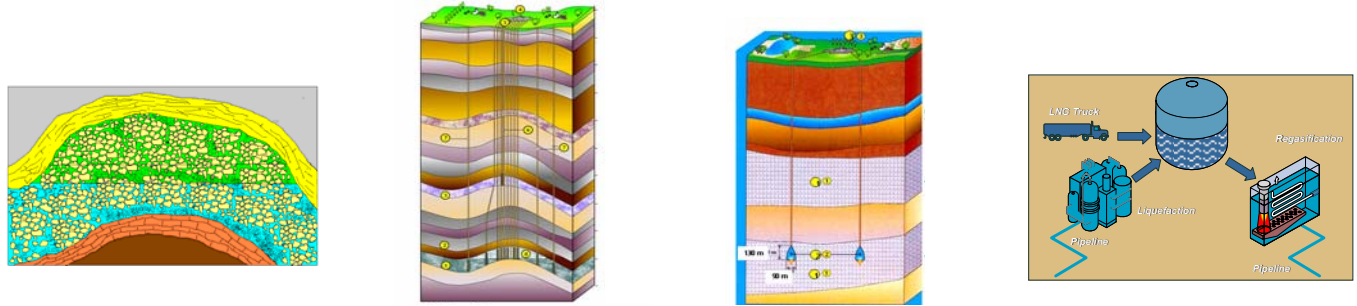
Aquifers are used in some areas to store natural gas if the formation is overlain by an impermeable layer.










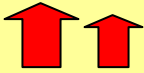
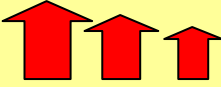
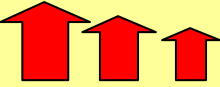
Salt cavern



Salt caverns are “artificial” structures created in some underground salt domes.

Synthesis



	Depleted Field	Aquifer	Salt cavity	LNG peak shaver
Working Gas				
Cushion Gas				
Deliverability				



High

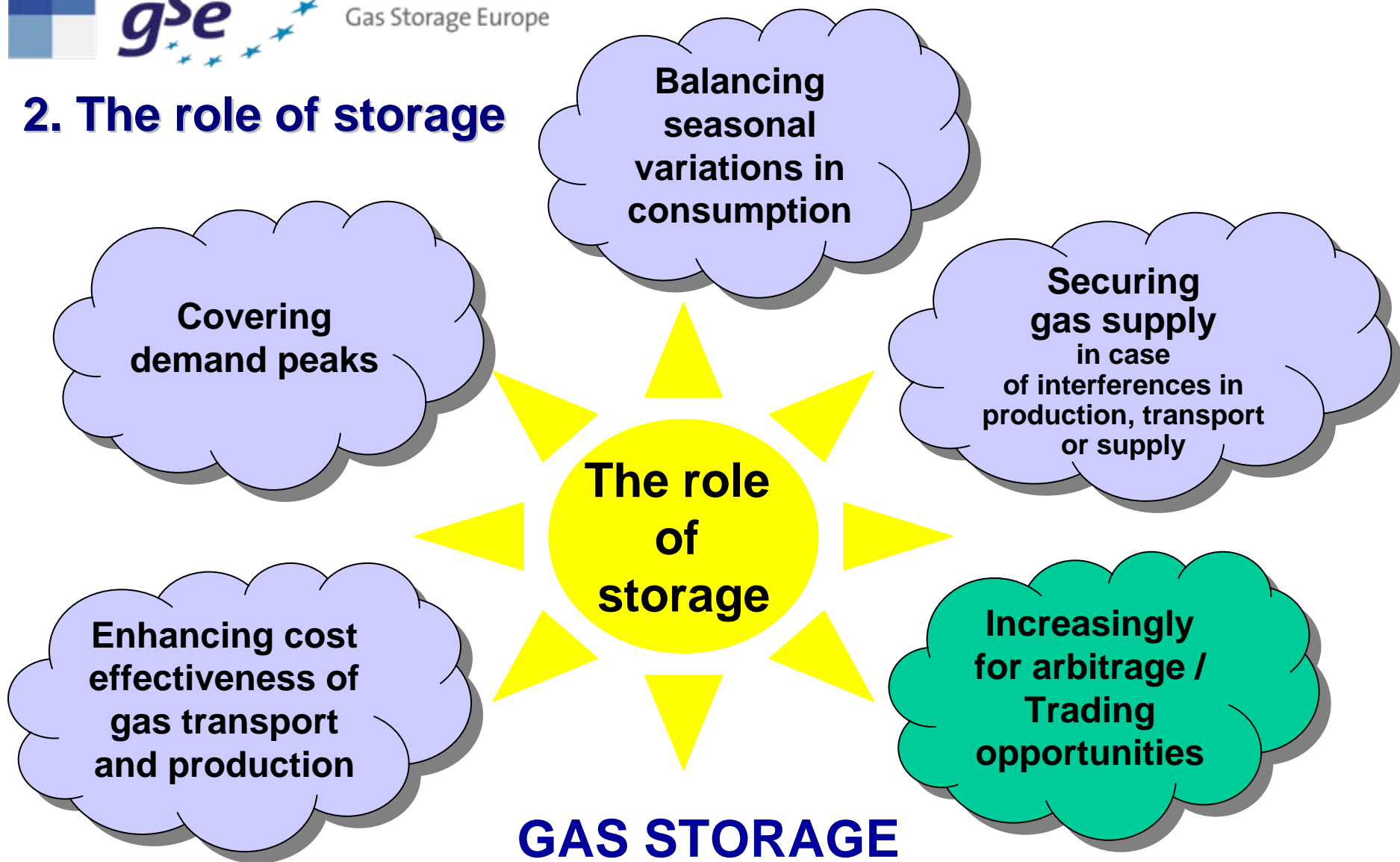


Medium



Low

2. The role of storage



**is an important contributor to the
SECURITY OF SUPPLY!**

Use of storage

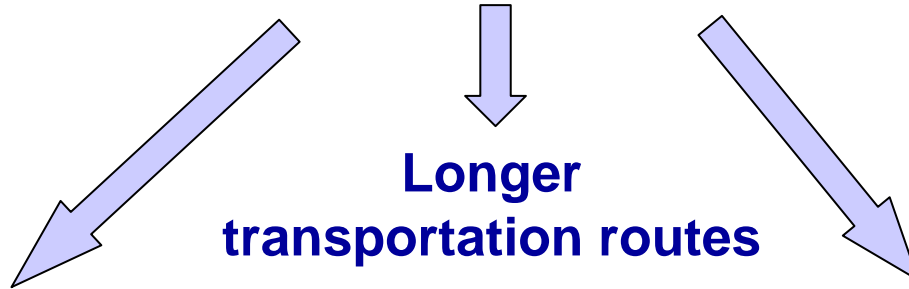
Base Load

- Cover seasonal demand
- Facilities capable of holding enough gas to meet long-term demand
- Lower deliverability rate
- Turn-over rate of 1 year
- Types of storage:
 - Depleted fields
 - Aquifers

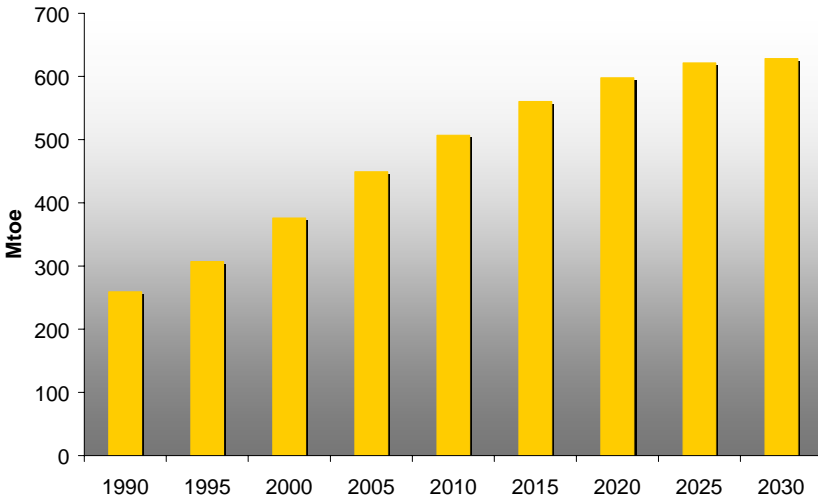
Peak Load

- Meet short-term demand increase
- Smaller facilities
- Higher deliverability and injectability rates
- Turn-over rate of less than 1 year
- Types of storage:
 - Salt caverns
 - LNG peak-shaving

Why storage?

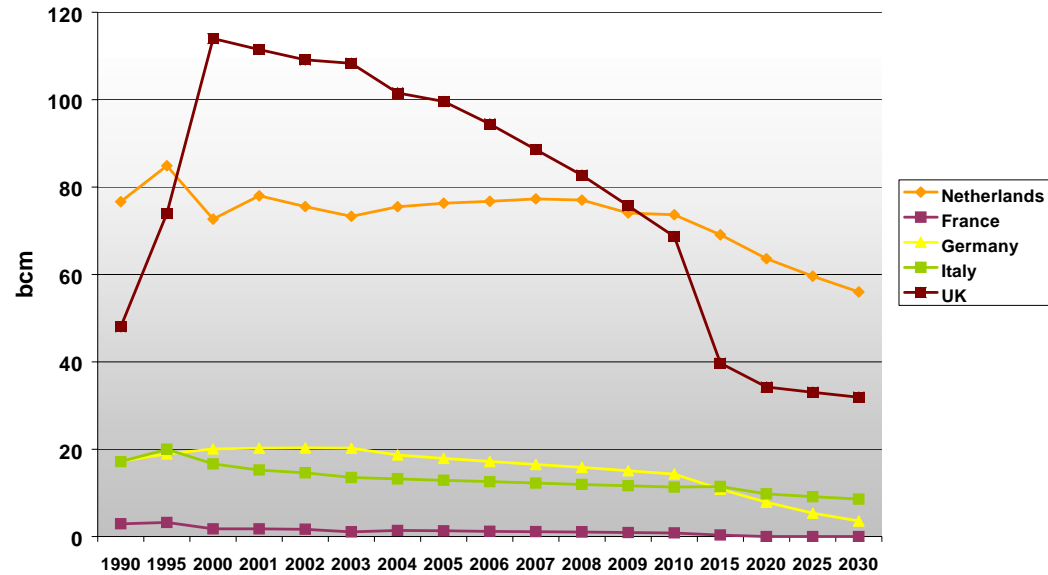


Increasing gas demand in EU-27



Source: European Commission, 2004.

Decreasing EU gas production



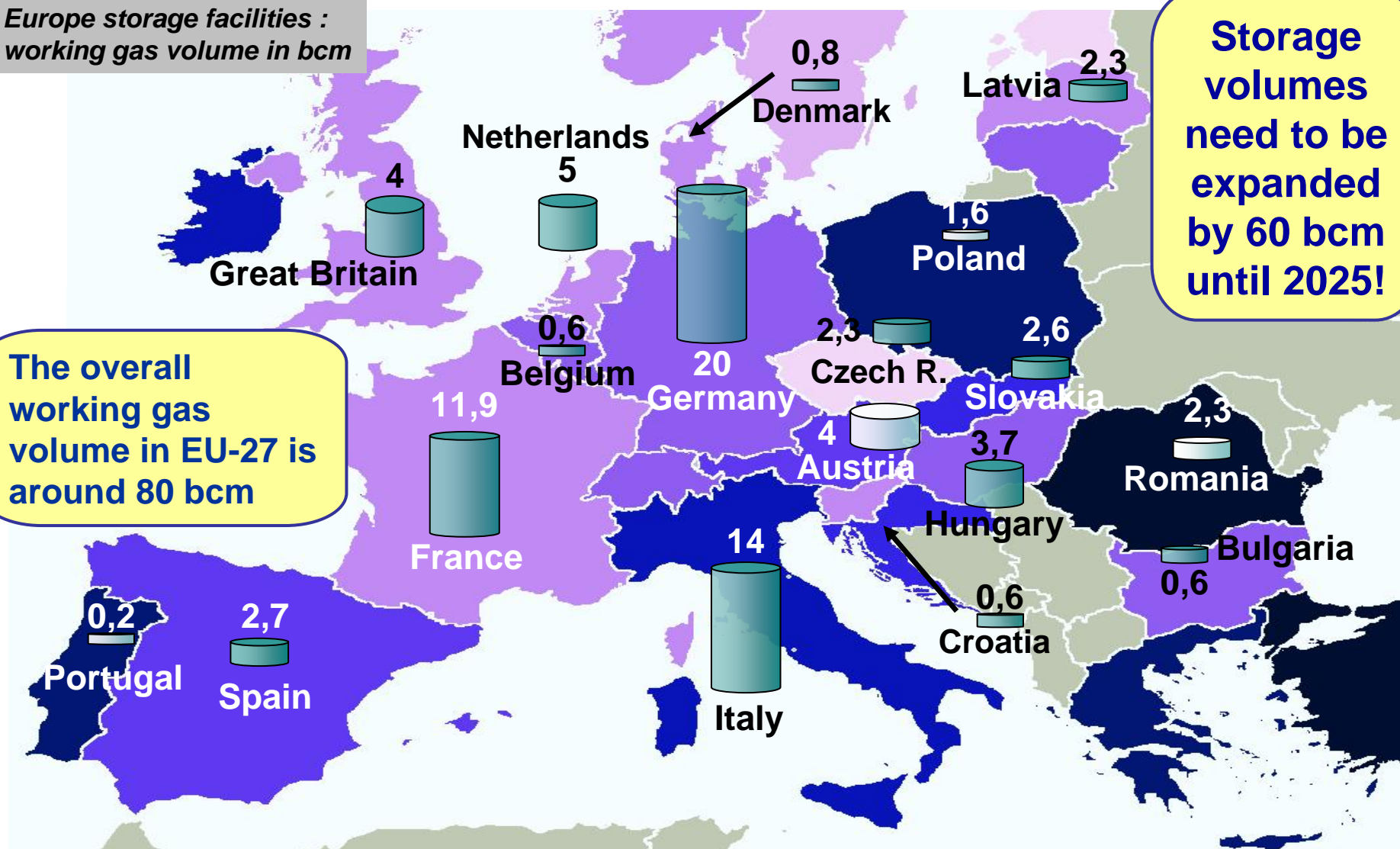
Source: Global Insight, 2004

Storage volumes – present

Europe storage facilities :
working gas volume in bcm

Storage volumes need to be expanded by 60 bcm until 2025!

The overall working gas volume in EU-27 is around 80 bcm



3. Enhancing storage development

Investment is Key!

Investment specificities for underground gas storage

- ❖ Long lead-time between investment decision and the start of operation (also including permitting requirements)
- ❖ Risk associated with exploration (underground), technical and realization tasks
- ❖ High capital immobilisations over long operational lives

The current estimates indicate that Europe will need an additional **60 bcm** of storage capacity by 2025. The GSE Investment Database shows that over **40 bcm** of storage volumes are planned to be developed by 2015.

...provided that proper investment climate is in place....

Preconditions for development of storage market

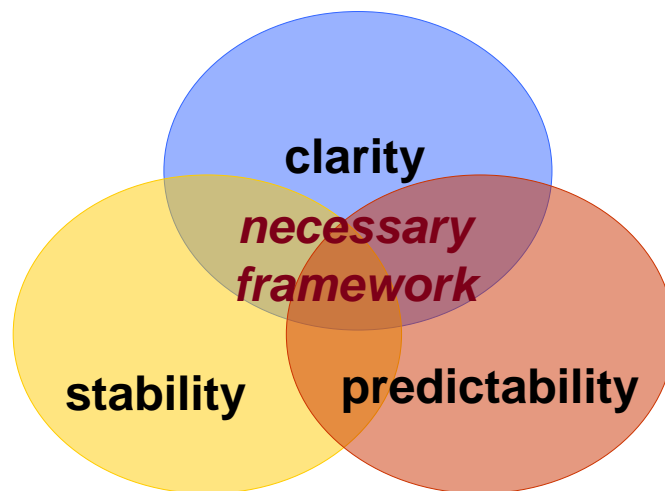
SATISFY USERS' REQUESTS FOR:

- *Non discriminatory and transparent access*

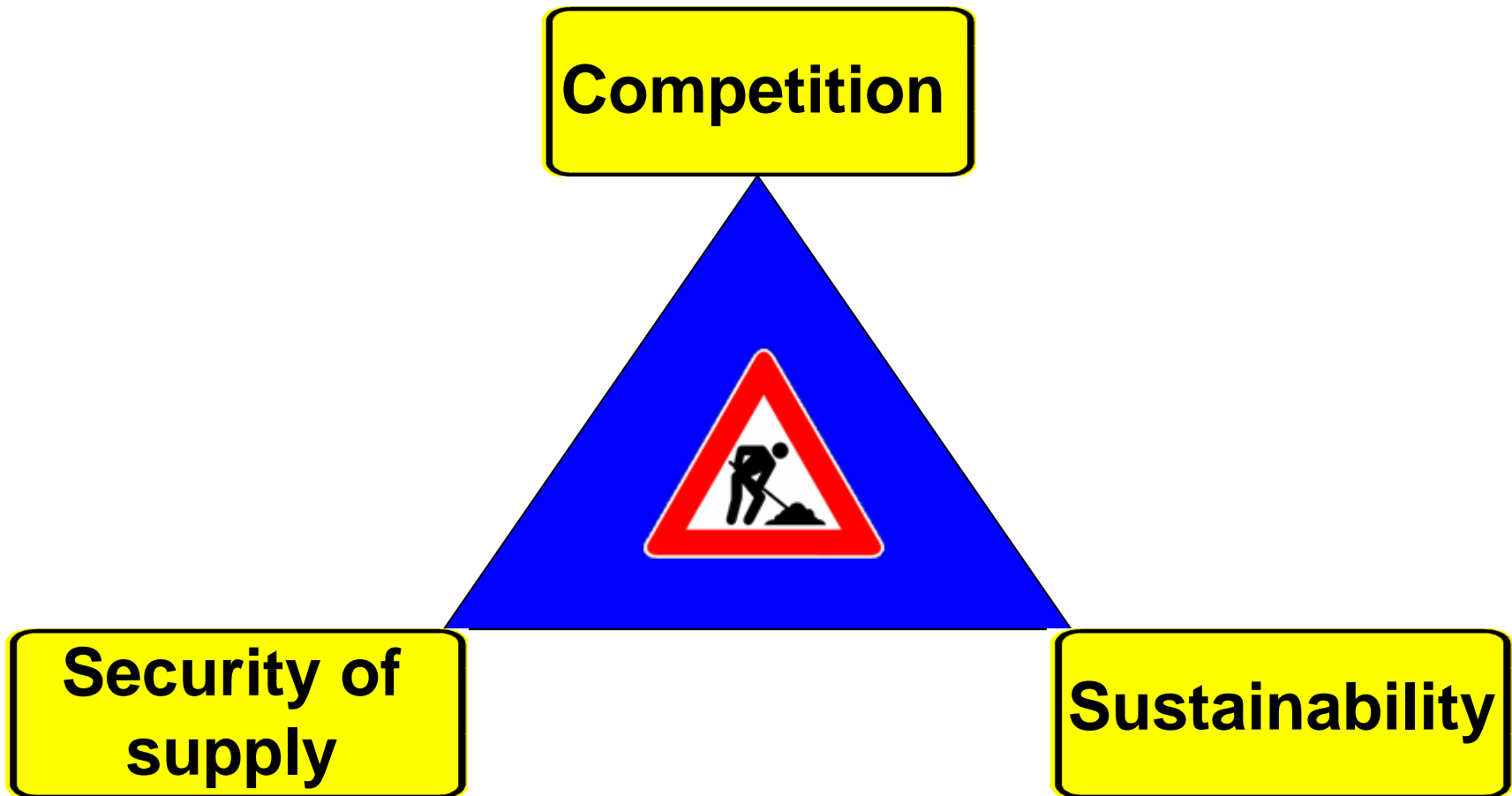
SSOs NEED:

- *Commercial remuneration*

INSTITUTIONS MUST PROVIDE:

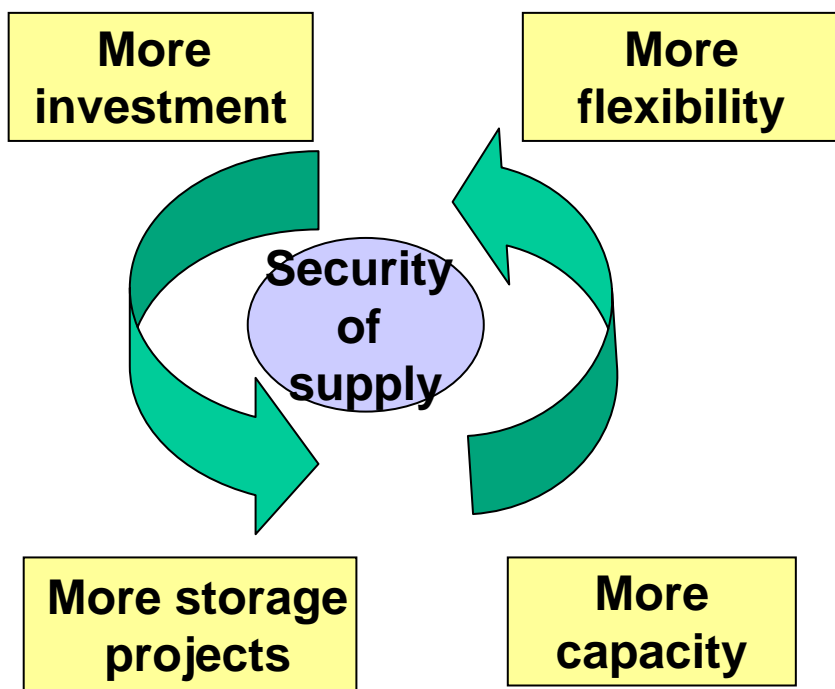


The „trilemma“ of the regulatory approach

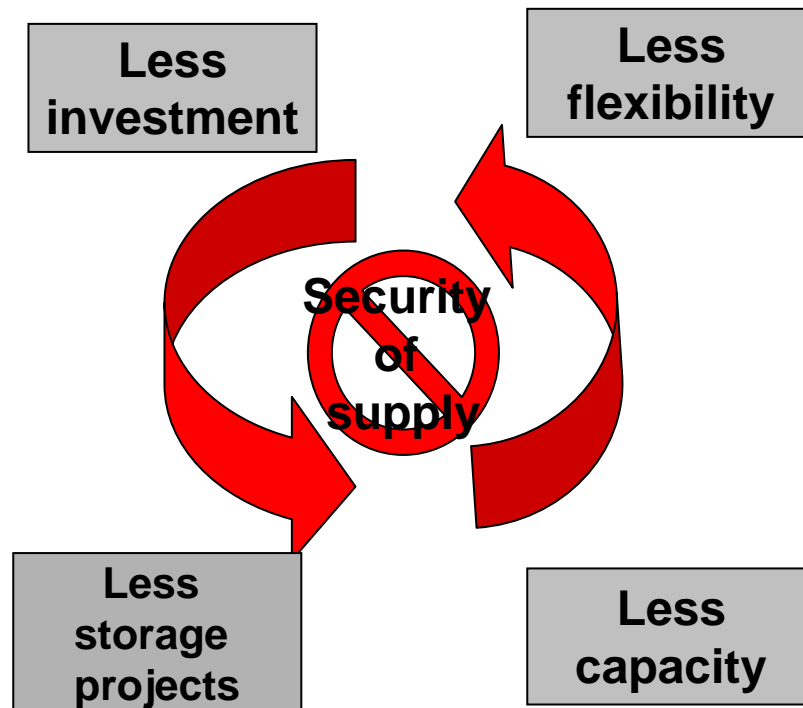


Third Energy Package: How to get it right?

Proper & incentive-driven
regulatory framework



Excessive regulation



**Transparency and Non-discriminatory
treatment is also ensured**



4. GSE Initiatives



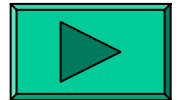
The primary objective of initiatives undertaken by GSE is to enable storage activities to be in line with market expectations and to promote transparency

Recent Initiatives:

- Aggregated Gas Storage Inventory



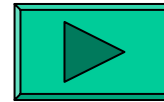
AGGREGATED GAS STORAGE INVENTORY



- Storage Investment Database



gse
Gas Storage Europe
STORAGE INVESTMENT DATABASE



- GSE Position papers:

- ... on strategic storage
- on GGPSSO implementation
- and others

Thank you for your attention !

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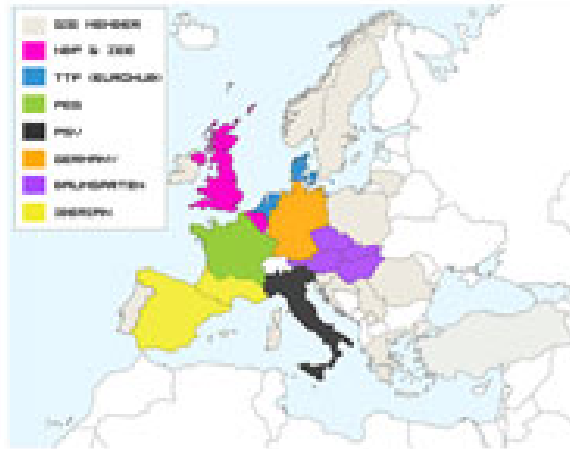
4. GSE Initiatives

Aggregated Gas Storage Inventory



AGGREGATED GAS STORAGE INVENTORY

WEEKLY DATA HISTORICAL DATA INDIVIDUAL DATA



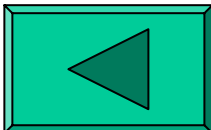
GIE is pleased that its members have agreed on a voluntary basis to publish storage inventory as per Regional Energy Market project areas. This initiative is beyond that required by the GPPSO and Gas Directive and will help provide the information the market needs to operate efficiently and effectively whilst protecting commercially sensitive information.

This information is provided in an aggregated format to guarantee that commercially sensitive information is not disclosed. GIE are therefore unable to further comment on any specific member, country or area.

For non-data related information, please contact the GIE Secretariat at secret@ie.eu.com

Stocklevel status on Monday 11/02/2008 - 5:59am GMT+1

Regional Initiative Area	PREVIOUS WEEK		CURRENT WEEK		
	Stock Level Mon 04/02 - 5:59	Accuracy Level % Mon 04/02 - 5:59	Stock Level Mon 11/02 - 5:59	Accuracy Level % Mon 11/02 - 5:59	% Full Mon 11/02 - 5:59
Baumgarten	5956 mcm	100%	5906 mcm	78%	55%
Germany	7086 mcm	100%	7764 mcm	100%	65%
Iberian	3933 mcm	100%	3517 mcm	100%	63%
BBPAZEE	2512 mcm	100%	2896 mcm	94%	59%
PEG	4568 mcm	100%	4280 mcm	100%	49%
PSV	4806 mcm	100%	4411 mcm	100%	50%
TTT (Eurohub)	886 mcm	100%	815 mcm	100%	59%



4. GSE Initiatives

➤ Storage Investment Database



						HOME PAGE		DATA MENU	
Legend									
Planned		Project at an early evaluation stage							
Committed		Project evaluated by the company with detailed studies and possibly undergoing planning and permitting stages							
Under Construction		Project already started (procurement and physical operations)							
						TOTAL STORAGE CAPACITY ADDITIONS			
						45773			
Country	Company	Name of facility	Type of facility	Investment	Status	Expected Capacity (Mcm WG)	Expected date	Last Update date	Source
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AUSTRIA	OMV Gas	Schönkirchen Tief	Reservoir	New facility	Planned	1000	by 2015	5 July 2007	GSE file
AUSTRIA	BAG/Wingas/Casparm E	Haidach	Reservoir	New facility	Live	0	June 2007		GSE file
AUSTRIA	BAG/Wingas/Casparm E	Haidach	Reservoir	New facility	Under construction	1200	by 2013	now/ST	GSE file
BELGIUM	Fluvis	Loenhout	Aquifer	Expansion	Under construction	100	by 2010	5 July 2007	GSE file
BELGIUM	Fluvis	Poederlee	Aquifer	New facility	Planned	0	by 2015	now/ST	GSE file
BULGARIA	Bulgariangas	Chiren	Reservoir	Expansion	Planned	450	by 2010	now/ST	GSE file
CZECH REPUBLIC	RWE Gas Storage	Not specified		Expansion (various sites)	Planned	770	by 2013	now/ST	GSE file
DENMARK	Dong Storage	Stenlille	Aquifer	Expansion	Under construction	90	by 2010	5 July 2007	GSE file
FRANCE	Gas de France	Cairé La Pommeroye	Aquifer	Expansion	Planned	200	by 2013	5 July 2007	GSE file
FRANCE	Gas de France	Etrech-Moncoeur	Salt cavity	Expansion	Planned	200	by 2013	5 July 2007	GSE file
FRANCE	Gas de France	Hauterive	Salt cavity	New facility	Planned	100	by 2013	5 July 2007	GSE file
FRANCE	Gas de France	Ile de France Nord-Cormais	Aquifer	Expansion	Planned	200	by 2013	5 July 2007	GSE file
FRANCE	Gas de France	Alsace Sud	Salt Cavity	New facility	Planned	100	by 2015	now/ST	GSE file
FRANCE	Gas de France	Trois Fontaines	Reservoir	New facility	Committed	80	by 2010	5 July 2007	GSE file
FRANCE	TGF	Saules-Louagnel	Aquifer	Expansion	Planned	240	by 2015	5 July 2007	GSE file

