

# Report on the situation on the Austrian flexibility and storage market pursuant to section 98(2) Natural Gas Act 2011

31 August 2015

### **Table of contents**

1	Legal basis for drawing up the report on the situation on the Austrian flexibility and				
sto	rage	marl	ket	1	
2	Un	dergr	ound storage facilities in Austria	2	
	2.1	.1	Ownership structures	4	
	2.1	.2	Expansion of storage capacity since 2010	5	
2	2.2	Lega	al framework for the regulation of storage activities	9	
	2.2	.1	European legal framework	9	
	2.2	.2	National legislation	10	
3	Ass	essm	ent of competition on the storage market	17	
3	3.1	Pro	duct market definition	17	
	3.1	.1	Market definition in competition procedures	17	
	3.1	.2	Types of flexibility	19	
	3.2	Geo	graphic market definition	30	
	3.3	Mar	rket definition: summary	31	
3	3.4	Dev	elopment of competition among storage products	31	
	3.4	.1	Offer of storage products	31	
	3.4	.2	Demand for storage products in Austria	32	
	3.4	.3	Prices for storage capacity	42	
4	Cor	nclusi	ion: Assessment of competition in the Austrian flexibility market	59	

### List of figures

Figure 1: Underground storage facilities in Austria 2
Figure 2: Working gas volume in Austria (comparison 2010 and 2015)6
Figure 3: Deliverability in Austria (comparison 2010 and 2015)7
Figure 4: Connection of storage facility 7Fields, the Tauern Gas Pipeline project was not
implemented in the end
Figure 5: Connection of Haidach storage facility to the Austrian and German transport
networks
Figure 6: Storage discounts for transport tariffs
Figure 7: Domestic gas consumption and production, 2013 to May 2015 (in GWh)
Figure 8: Monthly domestic production from 2012 to 2014 (in GWh)
Figure 9: Monthly gas imports (in GWh) via Slovakia from 2010 to 2015
Figure 10: Annual consumption, storage movements and imports from Slovakia (in GWh)
from 2013 to 2015
Figure 11: Natural gas balance in Austria in 2013 and 2014 (in GWh)
Figure 12: Trade development at the CEGH in the OTC market and at the gas exchange 25
Figure 13: OTC trading volumes development at the CEGH (in TWh) since 1 January 2013 26
Figure 14: Trading volumes development (single products) at the gas exchange (in TWh) 26
Figure 15: ICIS Heren Score: Tradability Index
Figure 16: Fulfilment of the infrastructure standard in Austria, status of 2014
Figure 17: Development of hourly peak load (in MWh/h)
Figure 18: Development of daily peak load (in GWh/d)
Figure 19: Monthly gas consumption trends (in GWh)
Figure 20: Number of degree days from 2010 to the first quarter of 2015, red line: linear
trend
Figure 21: Trend in working gas volume of gas storage facilities in Austria and of domestic
gas consumption (in GWh)
Figure 22: Filling levels in storage facilities connected to the eastern market area, since 1
January 2013
Figure 23: Import price trends since 1 January 2013
Figure 24: Supply-side HHI for the storage market (working gas volume) in 2009 and 2015. 39
Figure 25: Published storage fees for standard bundles in Austria, one-year contract (in
EUR/MWh WGV per vear)
Figure 26: Published storage fees for standard bundles in Austria, one-year contract (in
EUR/MWh/h withdrawal rate per vear)
Figure 27: Summer/winter spread at NCG (in EUR/MWh) from 2011 to 2015
Figure 28: Overview of index formulas used in auctions

#### List of tables

Table 1: Storage system operators and storage capacity in Austria as at 1 April 2015
Table 2: Implementation of the GSE Transparency Template by Austrian storage system
operators
Table 3: Natural gas production in Austria 2014    20
Table 4: Specifics of storage products offered by Austrian storage system operators
Table 5: Withdrawal period of standard bundles offered 42
Table 6: Overview of auctions held in the last two years (non-exhaustive list)
Table 7: Information on storage products available on storage system operators' websites 56

#### List of abbreviations

AGGM: Austrian Gas Grid Management AG Astora: Astora GmbH & Co KG CAM: capacity allocation mechanisms **CEER:** Council of European Energy Regulators CEGH: Central European Gas Hub CMP: congestion management procedures EconGas: EconGas GmbH EGS: E.ON Gas Storage GmbH ERGEG: European Regulators' Group for Electricity and Gas EC: European Commission FCFS: first-come first-served GGPSSO: Guidelines of Good Practice for Storage System Operators GSA: GSA LLC **GSE:** Gas Storage Europe HHI: Herfindahl-Hirschman Index MAM: market area manager NCG: NetConnect Germany OGS: OMV Gas Storage GmbH OTC: over the counter Gazprom Export: OOO Gazprom Export RAG AG: Rohöl-Aufsuchungs Aktiengesellschaft **RES: RAG Energy Storage GmbH** TTF: Title Transfer Facility VTP: virtual trading point

WGV: working gas volume

#### 1 Legal basis for drawing up the report on the situation on the Austrian flexibility and storage market

In line with Directive 2009/73/EC and its transposition into Austrian law by way of the *Gaswirtschaftsgesetz* (Natural Gas Act) 2011, the regulatory authority must, pursuant to section 98(2) Natural Gas Act 2011, draw up a report on the situation on the Austrian flexibility and storage market. On the basis of this report, the Federal Minister of Science, Research and Economy may issue an ordinance pursuant to section 98(1) Natural Gas Act 2011 to introduce regulated access to natural gas storage facilities instead of the current negotiated access regime. Section 98(3) Natural Gas Act 2011 requires the regulator to draw up such a report at least every three years.

This is the background against which the report at hand re-evaluates the relevant parameters: pursuant to section 98(2) Natural Gas Act 2011, the regulatory authority must assess the level of competition on the storage market by referencing price comparisons, the range of products on offer and their use, the market concentration (supply and demand side) with consideration of the availability of alternative sources of flexibility, and the availability of storage capacity compared to demand for it.

New legal foundations regarding monitoring and transparency provide improved data, allowing for a detailed analysis. For example, on 3 March 2011, the transparency provisions for storage system operators pursuant to Article 19 of Regulation (EC) No 715/2009 entered into force. The *Gas-Monitoring-Verordnung* (Gas Monitoring Ordinance), which entered into force on 1 March 2013, also covers storage and obligates storage system operators to submit their data. Furthermore, storage system operators must send the regulatory authority all storage service contracts right after they are concluded and must give any necessary explanations (section 101 Natural Gas Act 2011) and they must publish the general terms and conditions for use of their facilities and the storage charges once a year and each time they are changed (section 105(1)(3) Natural Gas Act 2011).

To honor the storage system operators' right to comment on the report, they were consulted before the report was issued, in July 2015. Comments were taken into account. Pursuant to section 98(3) Natural Gas Act 2011, we herewith present the final report.

#### 2 Underground storage facilities in Austria

All Austrian gas storage facilities are located in the eastern market area, in the concession areas of the two gas and oil producers OMV Aktiengesellschaft (OMV AG) and Rohöl-Aufsuchungs Aktiengesellschaft (RAG AG). They are depleted gas fields (pore storage facilities) that have been technically converted into storage facilities.



Figure 1: Underground storage facilities in Austria

Source: Gas Connect Austria GmbH, http://www.gasconnect.at/en/Market-Area-Manager/Market-area-data

The basis for the use of these depleted gas fields as storage facilities are storage licences.<sup>1</sup> The *Mineralrohstoffgesetz* (Mineral Resources Act) is the legal basis for the storage of hydrocarbons. In the case of storage in hydrocarbon (natural gas) bearing geological structures, the storage right is linked with the right of exploitation. Owner of hydrocarbon-bearing geological structures is the Austrian federal government. It does not, however, exercise this right of exploitation nor the storage right, but transfers them to companies by way of "contracts for the exploration, production and storage of hydrocarbons" for certain concession areas. For this transfer of rights, the companies pay the federal government fixed rates (section 69 Mineral Resources Act).

<sup>&</sup>lt;sup>1</sup> see Karin Aust, Federal Ministry of Economics and Labour, Section IV/6 (Mining – Legal Affairs), presentation at the autumn meeting of *Österreichische Gesellschaft für Erdölwissenschaften* (Austrian Society of Petroleum Sciences) in Salzburg 2007, *Genehmigungsverfahren für Erdgasspeicher in Österreich am Beispiel des Erdgasspeichers Haidach* (Permitting procedures for the storage of natural gas in Austria using the example of the Haidach gas storage facility), http://www.oegew.org/herbst07/15%20Aust.pdf (German only).

OMV Austria Exploration Production GmbH and RAG AG are natural gas producers and therefore have signed such contracts for the exploration, production and storage with the federal government. This means that converting gas reservoirs into gas storage facilities is only possible in co-operation with OMV Austria Exploration Production GmbH or RAG AG.

Storage capacity in Austria is offered on the market by five storage system operators: OMV Gas Storage GmbH (OGS), RAG Energy Storage GmbH (RES), E.ON Gas Storage GmbH (EGS), Astora GmbH & Co. KG (Astora) and GSA LLC (GSA). Of these, only the storage capacities of OGS, RES and EGS are directly connected to the virtual trading point (VTP) in the eastern market area; in order to use the storage capacities of Astora and GSA, transportation out of the German market area NetConnect Germany (NCG) into the Austrian eastern market area must be organised and paid for.

In addition, the Slovak storage facility Láb 4 (working gas volume (WGV): 6,947,000 MWh, withdrawal rate: 3,027 MWh/h, injection rate: 3,027 MWh/h)<sup>2</sup> and the Lab complex (WGV: 26,990,000 MWh, withdrawal rate: 16,917 MWh/h, injection rate: 14,125 MWh/h) are connected to the Austrian transmission system and the VTP.<sup>3</sup> POZAGAS a.s., a subsidiary of NAFTA a.s. (35%), SPP (35%) and GDF Suez (30%) are storage system operators for the Láb 4 facility, while the Lab complex is fully operated by NAFTA a.s. To what extent these storage facilities are used for the Austrian market we do not know. The guaranteed design capacity available at the MAB pipeline was 7,280 MWh/h on 1 April 2015, i.e. this was the maximum which could be transported from the storage facilities in Slovakia to the eastern market area in Austria.<sup>4</sup> Storage facilities in Slovakia are taken into account in the calculations of the market concentration figures in chapter 3.4 (Development of competition among storage products).

OGS is Austria's largest storage system operator with 30% of the total storage capacity (in terms of working gas volume); if we look at the eastern market area only, OGS holds 45% of the total working gas volume.

<sup>&</sup>lt;sup>2</sup> see information by POZAGAS: <u>http://www.pozagas.sk/en/ungsf-lab-4/</u>.

<sup>&</sup>lt;sup>3</sup> see information by NAFTA: <u>https://isod.nafta.sk/yCapacity/#/?nav=ss.od.sc&Ing=EN</u>.

<sup>&</sup>lt;sup>4</sup> see Gas Connect Austria, Online Capacity Booking System, <u>http://www.gasconnect.at/en/Fuer-Kunden/Sales-</u> <u>Transmission</u>.

Storage system operator /	Injection rate in	Share in total	Withdrawal	Share in total		Share in total
facility	MWh/h	injectability	rate in MWh/h	deliverability	WGV in MWh	WGV
OMV-Schönkirchen	7,306		10,790		20,614,000	
OMV-Tallesbrunn	1,405		1,798		4,496,000	
OMV-Thann	1,293		1,461		2,810,000	
Total OMV facilities	10,004	28%	14,049	32%	27,920,000	30%
RAG-Puchkirchen	5,800		5,800		12,140,000	
RAG-Haidach 5	224		224		180,000	
RAG-Aigelsbrunn	560		560		1,460,000	
RAG-Nussdorf/Zagling	681		681		1,310,000	
Total RAG facilities	7,265	21%	7,265	17%	15,090,000	16%
Eon Gas Storage - 7Fields	6,742	19%	10,112	23%	19,415,000	21%
Facilities connected	24.011		21 426		62 425 000	
to market area	24,011		51,420		62,425,000	
Astora-Haidach	3,733	11%	4,133	9%	9,900,000	11%
Gazprom-Haidach	7,467	21%	8,267	19%	19,800,000	21%
Total	35,211	100%	43,826	100%	92,125,000	100%

#### Table 1: Storage system operators and storage capacity in Austria as at 1 April 2015

**Source: Company websites:** www.omv.com; www.rag-energystorage.at; www.astora.de/speicher.html; www.eon-gas-storage.de; http://www.gsa-services.ru

#### **2.1.1 Ownership structures**

When Article 15 Directive 2009/73/EC was transposed into national law, all storage system operators which were part of vertically integrated gas undertakings had to be made independent at least in terms of their legal form, organisation and decision making from other fields of activity not relating to transmission, distribution and storage (section 107 Natural Gas Act 2011). This meant that storage system operators, i.e. operators offering storage services for third parties, had to unbundle in terms of corporate law and establish independent storage operators (see section on Unbundling below).

- → OGS is a wholly owned subsidiary of OMV Gas & Power GmbH, which is also shareholder of EconGas GmbH (as gas trader; EconGas) and holds a 80.9% participation in Gas Connect Austria GmbH (transmission system operator).
- → RAG AG is 100% owner of RES and is itself 100% owned by RAG-Beteiligungs-Aktiengesellschaft,<sup>5</sup> whose shareholders are EVN AG (50.025%), E.ON Exploration & Production GmbH (29.975%), Energie Steiermark Kunden GmbH (10%) and Salzburg AG für Energie, Verkehr und Telekommunikation (10%; Salzburg AG).
- → WINGAS GmbH is 100% owner of Astora and is in turn owned by W & G Beteiligungs-GmbH & Co. KG, whose shareholders are OAO Gazprom and Wintershall Holding GmbH, a German oil and gas producer, that own 50% each.

- → GSA is a subsidiary of OOO Gazprom Export (Gazprom Export), which is a wholly owned subsidiary of OAO Gazprom.
- → EGS is a wholly owned subsidiary of E.ON Global Commodities SE. In Austria, EGS is represented by its branch Gas Storage Austria.

#### 2.1.2 Expansion of storage capacity since 2010

The working gas capacity at gas storage facilities located in Austria has increased by nearly 81% since 2010 (from 50.85 TWh to 91.59 TWh). All this additional storage capacity was built in concession areas of RAG AG.

The construction of the Haidach natural gas storage facility was a joint project of RAG AG, Gazprom Export and Wingas GmbH & Co. KG. RAG AG planned and built the storage facility and is now its technical operator. Storage capacity is offered on the market by the unbundled storage system operators GSA (before that directly by Gazprom Export) and Astora. The first stage was commissioned on 4 July 2007. The implementation of the second stage had started at the end of 2008 and was completed on 1 April 2011.<sup>6</sup> These stages more than doubled existing capacity at the facility.

The start of operations at the underground gas storage facility 7Fields increased storage capacity in Austria by nearly 30%. The 7Fields facility is another joint venture project of RAG AG, in this case with EGS. Once again RAG AG assumed the role of planner, constructor and technical operator. Capacity is offered to the market by EGS.<sup>7</sup>

In 2011 and 2014, RES also increased the gas storage capacity they offer directly on the market: operation of the storage facility Aigelsbrunn, with a working gas volume of around 130 million cubic metres (mcm) and an injectability and deliverability of around 50,000 cubic metres per hour (cu m/h), started on 1 April 2011. The underground gas storage facility Nussdorf/Zagling was built in the framework of the 7Fields project in 2011-2014 and was commissioned in April 2014. In this storage facility, RES has a working gas volume of 117 mcm of natural gas and an injectability and deliverability of 60,600 cu m/h.<sup>8</sup> These projects have upped these facilities' working gas volume by 33% and the withdrawal rate by 20% since 2010.

During this time period, OGS notably increased its working gas volume by 7%.

Overall, working gas volume has increased by 81% and withdrawal rate by 71% since 2010. The working gas volume of OGS and RES alone has increased by 15% in this time period.

In order to connect the additional storage capacity to the Austrian gas network, significant investment projects in the eastern market area involving more than EUR 200 million (m) in

<sup>&</sup>lt;sup>6</sup> <u>http://www.rag-austria.at/en/business-area/store/joint-venture-gas-storage-facilities/haidach.html</u>.

<sup>&</sup>lt;sup>7</sup> <u>http://www.rag-austria.at/en/business-area/store/joint-venture-gas-storage-facilities/7fields.html</u>.

<sup>&</sup>lt;sup>8</sup> <u>http://www.rag-austria.at/en/business-area/store/rag-gas-storage-facilities.html.</u>

the distribution network were included in the long-term plan of AGGM Austrian Gas Grid Management AG (AGGM) and have since been realised. Even so, during the winter period of 2014/2015, there was some withdrawal congestion, especially in storage facilities situated in Upper Austria. In some cases, this led to restrictions of storage schedules, while firm capacity that was contractually guaranteed to storage facilities remained unimpeded at all times. Measures for improving the connection of storage facilities to the VTP will be evaluated during the approval procedure of the 2015 long-term plan.



Figure 2: Working gas volume in Austria (comparison 2010 and 2015) Source: Company websites, own calculations



Figure 3: Deliverability in Austria (comparison 2010 and 2015) Source: Company websites, own calculations

## Connection of 7Fields and future connection of Haidach to the eastern market area

The 7Fields storage facility is situated in Upper Austria and started operating in 2011. It was only connected to the German gas system at first. In 2012, connection to the Austrian transmission network (Penta West) was established at the Überackern point and on 1 January 2014, connection to the Austrian distribution network through Zagling point followed. Nowadays, storage customers both from Germany and from Austria can access the 7Fields facility. This even enables them to withdraw gas in Austria that was injected into the 7Fields storage facility in Germany and vice-versa.



Figure 4: Connection of storage facility 7Fields, the Tauern Gas Pipeline project was not implemented in the end. Source: E.ON Gas Storage<sup>9</sup>

In addition to the 7Fields facility, cross-border storage use is also possible for the storage facilities Láb 4 (POZAGAS) and Lab complex and will in future be possible also for the Haidach facility. There are plans to connect Haidach in the eastern market area to the distribution network, and the corresponding preparations have been made in accordance with the long-term plan. However, the storage operators GSA and Astora have not yet made an investment decision.<sup>10</sup>

<sup>&</sup>lt;sup>9</sup> <u>https://www.eon-gas-storage.de/cps/rde/xbcr/egs/7Fields\_EN.pdf</u>.

<sup>&</sup>lt;sup>10</sup> <u>http://www.e-control.at/documents/20903/26585/Erlaeuterungen-3.-GSNE-VO-2013-Novelle-</u> 2014 Beschlussfassung.pdf/55c796c1-f23b-403d-b9fa-0434023598fb (German only).



Figure 5: Connection of Haidach storage facility to the Austrian and German transport networks Source: RAG<sup>11</sup>

#### **2.2** Legal framework for the regulation of storage activities

#### 2.2.1 European legal framework

Directive 2009/73/EC includes provisions regarding access to storage facilities and the unbundling of storage system operators; these were transposed into national law with the Austrian Natural Gas Act 2011. Regulation (EC) No 715/2009 includes rules on capacity allocation and congestion management procedures as well as rules on the transparency requirements for storage system operators.

In addition, the European Regulators' Group for Electricity and Gas (ERGEG) developed Guidelines of Good Practice for Storage System Operators (GGPSSO) in 2005; this is a voluntary code of conduct, which was supplemented by more specific rules on capacity allocation mechanisms (CAM) and congestion management procedures (CMP) in 2011.<sup>12</sup> The European umbrella organisation of storage system operators (Gas Storage Europe, GSE) recommended them to its members for implementation.

<sup>&</sup>lt;sup>11</sup> published at <u>http://www.rag-austria.at/uploads/tx\_templavoila/haidach\_kern\_doppel\_110428\_3\_01.pdf</u>. <sup>12</sup> see

http://www.ceer.eu/portal/page/portal/EER\_HOME/EER\_PUBLICATIONS/CEER\_PAPERS/Gas/2005/ERGEG\_GGPSSO\_Appro\_ved2005-03-02%20updated%202011\_07\_14%20Clean.pdf.

#### 2.2.2 National legislation

#### Choosing a regulatory regime

Pursuant to section 98(1) Natural Gas Act 2011, Austria has a negotiated access regime for natural gas storage. However, the Austrian Federal Minister for Science, Research and Economy may prescribe storage access on a regulated basis by ordinance. This may regard the methods for calculating storage charges, the general terms and conditions for storage access and/or the capacity allocation mechanisms and procedures.

When choosing which regulatory regime to apply, the report pursuant to section 98(2) Natural Gas Act 2011 and any infringements of the provisions laid down in sections 101 to 105 Natural Gas Act 2011 must be taken into account. These provisions concern the submission of contracts (section 101 Natural Gas Act 2011), the general terms and conditions (section 102 Natural Gas Act 2011), the rules regarding capacity allocation mechanisms (section 103 Natural Gas Act 2011) and congestion management (section 104 Natural Gas Act 2011) as well as general obligations of storage system operators (section 105 Natural Gas Act 2011).

#### Capacity allocation mechanisms and congestion management

The principles of capacity allocation mechanisms, congestion management procedures and trading of capacity rights are enshrined in Articles 17 and 22 of Regulation (EC) No 715/2009. Capacity allocation mechanisms and congestion management are also governed in sections 103 and 104 Natural Gas Act 2011.

Pursuant to section 103(1) Natural Gas Act 2011, the mechanism that best ensures nondiscriminatory and transparent capacity allocation must be chosen. Whenever demand exceeds the capacity available, auctions must be held. In any case, all planned capacity allocation procedures must be notified to the regulatory authority in a timely manner and, if the regulator requests it, must be adjusted or redesigned.

Regarding congestion management, section 104 Natural Gas Act 2011 stipulates that the storage system operators have to establish or cooperate in the establishment of an overarching market platform for secondary market capacities. Contracts must contain measures that prevent capacity hoarding. In addition, in cases of congestion, storage users must resell their unused contracted capacities on the secondary market platform to third parties.

#### **Obligations of storage system operators**

Pursuant to section 97(1) Natural Gas Act 2011, storage system operators that manage natural gas storage facilities have to grant access to their facilities to parties entitled to storage access at non-discriminatory and transparent conditions. According to section 105(1) Natural Gas Act 2011, storage system operators are obliged to publish the general terms and conditions governing the use of their facilities and the storage charges once a year and each time

they are amended; they must also publish numerical information on the contracted and available injection and withdrawal rate and the contracted and available working gas volume on the internet on a daily basis and in a user-friendly and standardised way.

#### Transparency and monitoring

Article 19 of Regulation (EC) No 715/2009 aims to increase transparency on the storage market and for this purpose includes provisions for storage system operators regarding the publication of data on storage use. Such data (level of working gas volume, injections and withdrawals) is to be published on the internet on a daily basis (see also section 105(1)(4) Natural Gas Act 2011).

The Gas Monitoring Ordinance obliges market participants to periodically (monthly, annually) supply data on a number of market and competition aspects. Moreover, the transparency provisions include requirements regarding the publication of the services offered and information on tariff derivation.

Storage system operator	Template implemented	Missing data
OGS	Yes, for the most part	Not all storage fees published
		Not all storage fees published;
Actora	Voc in part	historical data of the last five years
Astora	res, in part	available only on request, only
		data from the previous year
GSA	No, not a member of GSE	Partly inconsistent information
		Available WGV missing, currently
		only injection/withdrawal rate,
RES	Yes, in part	historical data of the past five
		years available only on request;
		not all storage fees published
		Not all storage fees published; for
E.ON Gas Storage	Yes, for the most part	indexed products only price formu-
		las available

Table 2: Implementation of the GSE Transparency Template by Austrian storage system operators

The Council of European Energy Regulators (CEER) and GSE have jointly created a template specifying the data to be published by storage system operators (the so-called "GSE Transparency Template").<sup>13</sup> The Austrian storage system operators have implemented the GSE Transparency Template only in part (s. Table 2). At first glance, it seems as if the transparency provisions had been complied with, but in reality information publication should be improved, in particular based on E-Control's interpretative note.<sup>14</sup>

<sup>&</sup>lt;sup>13</sup> see GSE's website: <u>http://www.gie.eu/index.php/maps-data/gse-transparency-template</u>.

<sup>&</sup>lt;sup>14</sup> see <a href="http://www.e-control.at/documents/20903/-/-/02bd5063-1845-45b4-82b8-04c1225f6350">http://www.e-control.at/documents/20903/-/-/02bd5063-1845-45b4-82b8-04c1225f6350</a>.

The data on the use of storage facilities connected to the eastern market area (EGS, OGS, RES) are published by the market area manager (MAM) on the MAM online platform with one day delay. This data includes the maximum technical working gas volume, the available withdrawal and injection capacity, the storage filling level as well as the withdrawals and injections per day. GSA on the other hand publishes only the level of working gas volume and the daily withdrawals and injections on its website and complies with its reporting obligations from the Gas Monitoring Ordinance by sending E-Control the data mentioned above.

How storage charges are determined depends on the access regime (negotiated or regulated). Section 99(2) Natural Gas Act 2011 provides that if access is negotiated (which is currently the case), the published storage charges may not exceed the average rates for comparable services within the European Union by more than 20%. If they do, the regulatory authority must specify the cost basis for the storage rates, applying the principles of cost causality and cost orientation.

Under a regulated access regime, the methods used to calculate storage charges are subject to approval by the regulatory authority pursuant to section 100(1) Natural Gas Act 2011. The methods may specify that storage charges be set by way of market-oriented processes such as auctions. In any case, storage system operators must publish their methods on their websites and, if necessary, be able to present supporting documentation at the request of the regulatory authority.

Transparency of storage charges is limited. Prices for standard bundles are published by all storage system operators, while those for non-bundled or interruptible products are only published to a limited extent. Prices for bundled products achieved in auctions are also not published.

#### Network access for storage facilities and system charges

Section 27(1) Natural Gas Act 2011 is the legal basis for network access by storage facilities. It states that the system operator to whose system the relevant storage facility is connected must grant access to the party entitled to system access under the general terms and conditions and at the system charges set by ordinance.

An essential adjustment has been made regarding the booking of transport capacity for storage facilities. Since 1 January 2013, pursuant to section 16 *Gas-Marktmodell-Verordnung* (Gas Market Model Ordinance) 2012, it has been the storage system operator (not the storage customer, as previously) that is required to make annual bookings with the system operator for the maximum injection and withdrawal capacity to be reserved in the following calendar year. System operators are obliged to permanently reserve the capacity booked in a year for the next year. The annually booked capacity can be increased by way of system access applications in accordance with section 13 Gas Market Model Ordinance 2012. The 2014 amendment to the Gas Market Model Ordinance 2012 introduced the possibility to conclude system access contracts with durations of 15 years. No storage system operator has chosen this option so far.

System utilisation charges (rates in EUR/kWh/h per year) only apply for exits from the network into storage. A distinction is made between charges for storage facilities connected to the transmission network (7Fields and the Láb facility in Slovakia) pursuant to section 4 *Gas-Systemnutzungsentgelte-Verordnung* (Gas System Charges Ordinance) 2013 and charges for storage facilities connected to the distribution network pursuant to section 12 Gas System Charges Ordinance 2013. For the former, section 4(2) sets a rate of 0.36 EUR/kWh/h; the rate for the latter is 0.49 EUR/kWh/h pursuant to section 12(2) of that Ordinance.

In order to ensure that cross-border storage use is based on the principle of cost causation, corresponding charges for storage facilities that can also be used across borders (7Fields, Láb) were set in the third 2014 amendment to the Gas System Charges Ordinance 2013.

In addition and pursuant to section 76 Natural Gas Act 2011, a system provision charge is payable for storage facilities that are being connected to the network for the first time or whose connection capacity is being increased, covering past and future network development measures necessary to enable such connections (in particular for investments caused by the implementation of relevant projects from the long-term plan).

Likewise, charges for firm, freely allocable capacity as well as for dynamically allocable capacity have been set out. In order to inject gas into a storage facility, it needs to be fed into the market area at an entry point in the first place, and an entry charge has to be paid. Subsequently, the gas can be transported into the storage facility, in which case the charge pursuant to section 4 Gas Market Model Ordinance 2013 applies. The law does not foresee extra charges for feeding the gas back into the transmission network, but of course, the storage system operator (in its role as system user) has the right to withdraw gas from storage in accordance with the capacities agreed in the system access contract. The corresponding exit charges become payable only after the natural gas has been withdrawn from the transmission network.

The 7Fields facility can be used for injections and withdrawals at NCG and the VTP (crossborder storage use). Storage customers making use of storage across borders have to be treated in the same way as system users that carry out transports at cross-border interconnection points and are obliged to pay the respective charges at these points. Therefore, additional provisions for this kind of system utilisation have been introduced.

Sections 4(6) Gas System Charges Ordinance 2013 (system utilisation charge for exits from the transmission network for dynamically allocable capacities) and 4(7) (charges for interruptible capacities) as well as sections 12(4) Gas System Charges Ordinance 2013 (system utilisation charge for the cross-border use of a storage facility in the distribution network for a negative account position) and 12(5) (system utilisation charge for the cross-border use of a storage facility in the distribution set system utilisation charge facility in the distribution network for a storage facility in the distribution network for a positive account position) set system utili-

sation charges that the system operator charges to the storage system operator only in the case of cross-border storage use.<sup>15</sup>

The system utilisation charge for exits from the distribution or transmission network into storage facilities is not included in the storage prices stated and can be levied additionally from the storage customer.

- Storage facilities connected at distribution level (RES, OGS, EGS) are charged 0.49 EUR/kWh/h. Compared to the published storage charges, this represents about 2-3% of the total storage charges. Depending on the storage fees actually paid, these shares may be higher.<sup>16</sup>
- The system utilisation charges for storage facilities connected to the transmission network (EGS, Láb storage facility) are 0.36 EUR/kWh/h per year for freely allocable capacity and 0.14 EUR/kWh/h per year for dynamically allocable capacity.
- For cross-border use of the storage facility 7Fields, rates of 1.05 EUR/kWh/h (for use in Germany) and 0.42 EUR/kWh/h (for use in Austria) apply, whereas the rates for the use of the Láb storage facility (over the MAB pipeline) amount to 0.22 EUR/kWh/h (for use in Slovakia) and 0.19 EUR/kWh/h (for use in Austria).

As opposed to a large part of other European countries, no transport charges apply for injecting gas from storage into the network in Austria. Moreover, discounts apply to the transport costs for withdrawing gas from the transport system so as to inject it into storage (Figure 6).

<sup>&</sup>lt;sup>15</sup> <u>http://www.e-control.at/documents/20903/26585/Erlaeuterungen-3.-GSNE-VO-2013-Novelle-</u> 2014 Beschlussfassung.pdf/55c796c1-f23b-403d-b9fa-0434023598fb (German only).

<sup>&</sup>lt;sup>16</sup> Current storage fees for indexed storage products indicate that the shares of transport in overall storage costs are significantly higher.

2010/01/02/01	Storage Discount (Storage E/E≑ Discount * E/E tariff)			
Country	From Storage to Network	From Network to Storage		
Austria	Free of charge	Highly discounted		
Belgium	No discount	Free of charge		
Bulgaria	70%	70%		
Croatia	No discount	90%		
zech Republic	No discount	No discount		
enmark	Free of charge	Free of charge		
rance	85%	85%		
Sermany	No discount applied by most of TSOs	No discount applied by most of TSOs		
lungary	and the second s	E servered on a server		
reland	No discount on capacity change	No discount on capacity change		
taly	Applied when costs are allocated to each pipeline (14%)	Applied when costs are allocated to each pipeline (14%		
atvia				
letherlands	25%	25%		
oland	80%	80%		
ortugal	No discount	Free of charge		
Romania	No discount	No discount		
Slovakia	No discount	No discount		
pain	Free of charge	Free of charge		
weden	Free of charge	Free of charge		
ук	No discount on capacity charge, free of charge from commodity charge	No discount on capacity charge, free of charge from commodity charge		
stonia				
inland				
freece	No stora	ne facility		
ithuania	No storage facility			
uxembourg				
lovenia				

### Storage discount varies across MSs notentially leading to

#### Figure 6: Storage discounts for transport tariffs

Source: Presentation by PwC and Strategy& at the Madrid Forum, 20 and 21 April 2015, "Harmonised Transmission Tariff Structures for Gas", published at http://ec.europa.eu/energy/en/events/madrid-forum , see "Presentations", presentation 03.A.80.

Unbundling

When Article 15 of Directive 2009/73/EC was transposed into national law, all storage system operators that were part of vertically integrated gas undertakings had to be made independent at least in terms of their legal form, organisation and decision making from other fields of activity not relating to transmission, distribution and storage (section 107 Natural Gas Act 2011), i.e. storage system operators had to implement legal and organisational unbundling. Measures such as separation from a vertically integrated natural gas undertaking in terms of company law, sufficient resources, independence of action of the executive staff, establishment of a compliance programme and designation of a compliance officer (section 107(1) and (2) Natural Gas Act 2011) and the confidential treatment of sensitive business information (section 11 Natural Gas Act 2011) are meant to guarantee the storage system operator's independence. Furthermore, the general prohibition of discrimination pursuant to section 9 Natural Gas Act 2011 (Article 13(1)(b) Directive 2009/73/EC) also applies to storage system operators (see also the specific non-discrimination obligations arising from sections 97(1), 99(1) and 103(1) Natural Gas Act 2011 as well as Articles 15(1)(a), 15(4), 17(2) and 19(3) of Regulation (EC) No 715/2009).

At the time this report was compiled, all storage system operators active in Austria had already been unbundled (see the section on Ownership structures above). E-Control takes regular measures to further improve the situation as part of its evaluation of the compliance reports which storage system operators must submit annually to the regulatory authority.

#### **3** Assessment of competition on the storage market

In order to maintain the balance between gas supply and gas demand, with its seasonal and daily fluctuations, the gas value chain must contain possibilities for temporary storage and adjustment to demand patterns (structuring). Gas traders gain access to this kind of flexibility through storage, through purchase contracts with offtake flexibilities, and – as short-term trading develops – through trading in spot and futures products. Production and storage offer first-hand physical flexibility, while trade products possess this kind of flexibility by nature and are therefore qualified as secondary flexibility.

#### **3.1 Product market definition**

The issue of the right market definition has already been discussed by the European Commission (EC) and investigated by national competition authorities.

#### 3.1.1 Market definition in competition procedures

#### Market definitions by the European Commission

The EC has previously identified a separate storage market.<sup>17</sup> A further distinction between pore and cavern storage facilities was also discussed but is not relevant here: all of the underground storage facilities operated in Austria are former gas fields (i.e. pore storage facilities), there are no cavern storage facilities.

In its DONG/Elsam/Energi E2 merger decision of 14 March 2006, the EC distinguished between seasonal flexibility, short-term flexibility and emergency supply flexibility.<sup>18</sup> Furthermore, it divided the flexibility instruments (or flexibility products) into five groups:

- storage in dedicated storage facilities;
- interruptibility or other modulation of customers' demand, e.g. of central combined heat and power plants;
- flexible supply contracts (based on imports, domestic production or secondary domestic supply contracts);
- flexible trading in gas on hubs or bilaterally (forward looking or ad hoc);
- linepack, i.e. storage in transport pipelines by increasing or decreasing the gas pressure in those pipelines.

<sup>&</sup>lt;sup>17</sup> see for example EC, Decision COMP/M.4890, Arcelor/Ferngas, 22 November 2007, p. 3, <u>http://ec.europa.eu/competition/mergers/cases/decisions/m4890\_20071122\_20310\_en.pdf</u>.

<sup>&</sup>lt;sup>18</sup> see EC Merger Case M.3868, DONG/Elsam/Energi E2, Decision of 14 March 2006, p. 15.

As a next step, the availability of these flexibility services in each market must be analysed. With regard to the Danish market, the EC found that "for the different types of flexibility needs there are differences as to the adequate degree of substitutability of the different means of obtaining flexibility."<sup>19</sup> A definition of the product market, however, was left open.

In its Gazprom/Wintershall merger decision of 3 December 2013, the EC pointed out that the applicants identified an additional market that encompassed all types of flexibility instruments. However, this was not investigated any further.<sup>20</sup> In this decision, the EC also interviewed storage customers in Austria, who stated that they generally source storage capacity from multiple storage operators and that switching between suppliers is possible.<sup>21</sup>

In summary, we can say that a reliable definition of the flexibility and storage market has not yet been established by the EC.

#### Market definition by the German Federal Cartel Office

In the Gazprom/VNG<sup>22</sup> merger decision, the German Federal Cartel Office also discussed a definition of the storage market. It concluded that at least the different types of storage (pore and cavern storage) form part of the same market.<sup>23</sup> However, it was left open whether the storage market constitutes a separate product market or represents part of a larger flexibility market, because time restrictions made it impossible to determine if the demand side can switch between storage products and other gas products (e.g. through structured acquisition on the hub).

#### Market participant evaluation: CEER public consultation on storage vision

In May 2015, CEER published its paper "CEER Final Vision on Regulatory Arrangements for the Gas Storage Market".<sup>24</sup> Among other issues, this document addresses the role of gas storage in the European gas market, how to ensure fair and equal conditions for sources and instruments of flexibility and how to ensure that security of supply is appropriately valued in the market. Before drawing up the final document, CEER consulted stakeholders, who had the chance to complete a questionnaire that collected their views on different aspects of the above-mentioned topics.

- <u>http://www.bundeskartellamt.de/SharedDocs/Entscheidung/DE/Entscheidungen/Fusionskontrolle/2012/B8-116-</u> <u>11.pdf? blob=publicationFile&v=4</u> (German version),
- http://www.bundeskartellamt.de/SharedDocs/Entscheidung/EN/Fallberichte/Fusionskontrolle/2012/B8-116-11.pdf? blob=publicationFile&v=3 (English case summary).
- <sup>23</sup> see German Federal Cartel Office in 2012:

<sup>&</sup>lt;sup>19</sup> see EC Merger Case M.3868, DONG/Elsam/Energi E2, Decision of 14 March 2006, p. 19.

<sup>&</sup>lt;sup>20</sup> see EC Merger Case M.6910, Gazprom/Wintershall/Target Companies, Decision of 3 December 2013, p. 7.

 <sup>&</sup>lt;sup>21</sup> see EC Merger Case M.6910, Gazprom/Wintershall/Target Companies, Decision of 3 December 2013, p. 8-9.
 <sup>22</sup> see German Federal Cartel Office in 2012:

http://www.bundeskartellamt.de/SharedDocs/Entscheidung/DE/Entscheidungen/Fusionskontrolle/2012/B8-116-11.pdf?\_\_blob=publicationFile&v=4, p. 62-64 (German only).

<sup>&</sup>lt;sup>24</sup> see <u>http://www.ceer.eu/portal/page/portal/EER\_HOME/EER\_PUBLICATIONS/CEER\_PAPERS/Gas/2015/C15-GWG-119-03\_CEER%20\_Vision%20gas%20storage%20market\_25\_May\_2015.pdf</u>.

The consultation included the question "Do you agree with CEER's observation that storage competes within a wider flexibility market (e.g. with LNG, interconnection and virtual products)?" The responses showed that the market participants agreed with the observation that storage competes with other flexibility instruments<sup>25</sup> and that a narrow focus on the storage market alone would not reflect the true situation and the extent of pressure that competitiveness puts on storage system operators.

#### **3.1.2** Types of flexibility

In general, we can distinguish between the following sources of flexibility:<sup>26</sup>

- (1) Seasonal flexibility: balancing of seasonal volume variations and arbitrage with summer/winter spread. These variations in volume are usually predictable as they follow an alternating rhythm.
- (2) Short-term flexibility: balancing of short-term imbalances between supply and demand; these are unpredictable for the most part.
- (3) Emergency supply flexibility: bridging of supply disruptions; these imbalances are unpredictable for the most part.

The above-mentioned flexibility instruments can be used in order to provide this kind of flexibility. Flexibility through LNG contracts or interruptible contracts with final customers is not available on the Austrian market. Gas suppliers and traders have access to linepack through the balancing market.

#### Seasonal flexibility on the Austrian gas market

#### **Production flexibility**

sion Gas Storage/RR.

There are two enterprises engaged in gas production in Austria, namely OMV Austria Exploration & Production GmbH and RAG AG. The year 2014 saw a natural gas<sup>27</sup> production of approx. 1.235 billion normal cubic metres (bcm), which amounts to approx. 20% of domestic gas consumption. Most of it (approx. 81%) was produced by OMV Austria Exploration & Production GmbH (

<sup>&</sup>lt;sup>25</sup> see answers to the public consultation, question 4, "Do you agree with CEER's observation that storage competes within a wider flexibility market (e.g. with LNG, interconnection and virtual products)?", published at <a href="http://www.ceer.eu/portal/page/portal/EER">http://www.ceer.eu/portal/page/portal/EER</a> HOME/EER CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/CEER Vi

<sup>&</sup>lt;sup>26</sup> see also Frontier Economics; Research into gas flexibility services; 2008, A REPORT PREPARED FOR DTE, <u>https://www.acm.nl/nl/download/bijlage/?id=8674</u>.

<sup>&</sup>lt;sup>27</sup> The term natural gas refers to associated and non-associated gas.

Table 3).

	in million n cu m	in %	% vs 2013
OMV Austria Exploration & Production	998.315	81%	- 10.94%
RAG AG	236.515	19%	- 0.58%
Total	1.234.830	100%	- 9.13%

#### Table 3: Natural gas production in Austria 2014

Source: Geological Survey of Austria,

https://www.geologie.ac.at/fileadmin/user\_upload/dokumente/pdf/erdoel\_erdgasdaten/ erdoelref\_2014.pdf

We do not have detailed information on flexibility options in national production or the contractual terms and conditions agreed between domestic gas producers and gas undertakings. Monthly domestic output is fairly stable (see the period 2013 to May 2015 in Figure 7 and Figure 8 as an example).

Daily production is not subject to significant fluctuation either.<sup>28</sup> Within the context of preparing the stress test carried out by the EC in August 2014, producers in Austria indicated that a substantial increase in hourly output would not be possible. Energy intervention data available to E-Control lead to the same conclusion. Furthermore, domestic production has seen a decline in the past years (partly because of an unfavourable economic environment due to an increase in production royalties); this might at least have an impact on the amount of seasonal flexibility on offer.



Figure 7: Domestic gas consumption and production, 2013 to May 2015 (in GWh) Source: E-Control

<sup>&</sup>lt;sup>28</sup> see AGGM, network capacity utilisation data, <u>http://www.aggm.at/en</u>.



Figure 8: Monthly domestic production from 2012 to 2014 (in GWh) Source: E-Control

#### Flexibility from contracts with foreign producers

Austrian gas traders import gas from Russia, Norway and Germany to Austria. This kind of import is still mainly based on long-term contracts containing minimum offtake obligations. The contracts also partly include offtake flexibilities (daily, seasonal). We know that only few gas wholesale dealers apart from EconGas hold long-term contracts with Russian and Norwegian producers and thus have access to flexibilities from these contracts.<sup>29</sup>

Imports from Russia via Baumgarten (in eastern Austria) account for a significant proportion of the import volume from long-term contracts. Precise data on the development of these imports for the Austrian market are not published. E-Control statistics comprise all imports from Slovakia via Baumgarten; thus, volumes that are afterwards exported to Italy and Germany are included as well. The total annual volume ranges between 350,000 GWh and 440,000 GWh, with no significant trend identifiable in the past years. Between 2010 and 2013 a seasonal trend can be observed: import volumes in summer were lower than in winter, which means that seasonal flexibility was probably provided through import contracts.

<sup>&</sup>lt;sup>29</sup> see press releases, <u>http://www.gazpromexport.ru/en/partners/</u>; <u>http://www.econgas.com/austria/eng/unternehmen/08/econgas\_news\_22112013.htm</u>.

This, however, does not apply to 2014. Since September 2014, imports have declined (Figure 9) due to the fact that nominations by customers of Gazprom Export and Gazprom Austria GmbH had been cut. This approach limited the flexibility options of customers of Gazprom Export and Gazprom Austria and hence any possibility to substitute flexibilities from storage with imports. In such an event of limited flexibility from import contracts, storage capacity must be held available in winter in order to satisfy demand. The storage movements since September 2014<sup>30</sup> (Figure 10) also show that volume needs were mainly covered by means of storage withdrawal.



Figure 9: Monthly gas imports (in GWh) via Slovakia from 2010 to 2015 Source: E-Control

Thus, at least 2014 saw a decline in flexibility from import contracts. In June 2015, Gazprom Export announced that they would adapt the flexibilities in import contracts as their customers had more need of price adjustments and hub indexation given that flexibility was already sufficiently available in Western Europe.<sup>31</sup> Therefore, it is likely that flexibility in import contracts will decrease in the medium term.

<sup>&</sup>lt;sup>30</sup> see E-Control, *Betriebsstatistik* (operational statistics) at <u>http://www.e-control.at/en</u>.

<sup>&</sup>lt;sup>31</sup> see Argus Gas Connections, 17 June 2015, "Gazprom to revise contractual flexibility", p. 1; this article mentions a contractual flexibility price of \$ 70/1000 cu m, i.e. EUR 0.65/MWh.





#### Flexibility through storage

Storage use data from recent years<sup>32</sup> reveal the importance of storage facilities for seasonal flexibility in Austria: seasonal differences between gas supply from gas producers and demand on the Austrian gas market are primarily balanced by means of storage (Figure 10 and Figure 11). Neither variations in production nor imports can deliver the same extent of flexibility, as can be seen in Figure 11.

In recent years, the amount of storage capacity on offer and hence the flexibility offered have grown significantly (see Figure 2 and Figure 3 on page 6).

<sup>&</sup>lt;sup>32</sup> see E-Control website, *Betriebsstatistik* (operational statistics).



Figure 11: Natural gas balance in Austria in 2013 and 2014 (in GWh) Source: E-Control

#### "Secondary" flexibility: trade products and balancing energy

#### • Flexibility through the hub

Enterprises that have import contracts, contracts with producers or storage and transport contracts can offer their available flexibility to third parties, for example through hub trade. Since 2008, the importance of these trading platforms in western Europe has increased significantly.

On 1 January 2013, a "virtual trading point" (VTP) was established in the eastern market area. It is operated by Central European Gas Hub AG (CEGH). Until 1 January 2013, trades through CEGH were handled at different physical handover points in the transmission network. The gas exchange opened in December 2009, initially limited to spot trading. In November 2010, the futures market followed. With the introduction of the new market model in January 2013, CEGH became the operator of the VTP and trade in within-day products started (also with the purpose of handling the balancing market).

Various products are traded at CEGH, either over the counter (OTC) or via the exchange. There is a distinction between spot products (day ahead, within day) and futures products (month ahead, winter, summer, quarters, years). The products do not contain offtake flexibilities, i.e. they have a minimum offtake obligation of 100%. However, a portfolio of different products can produce seasonal flexibility and purchasing spot products can generate

daily flexibility. The providers of flexibility products on hubs are gas traders, some of whom are also storage customers at the same time.

The establishment of the VTP at the beginning of 2013 led to a significant rise in the number of registered traders at CEGH (currrently more than 180); trading volumes have also increased significantly in recent years, both on OTC and on the gas exchange (Figure 12 and Figure 13). The range of products on offer and hence the liquidity over time have also increased in the past years (Figure 14).

Overall, CEGH has gained in importance as a trading venue and procurement market not only for Austria but also for neighbouring countries such as Italy, Slovakia, Slovenia and Hungary. However, compared to the Title Transfer Facility (TTF, the VTP in the Netherlands) and NCG, CEGH is rather less developed, particularly regarding trade in long-term gas products (Figure 15). For this reason, the possibility of purchasing gas from other trading points presents is important for Austrian gas traders.



Figure 12: Trade development at the CEGH in the OTC market and at the gas exchange Source: CEGH, www.cegh.at, see "Presentations"



Figure 13: OTC trading volumes development at the CEGH (in TWh) since 1 January 2013 Source: CEGH, www.cegh.at, see "Presentations"



Figure 14: Trading volumes development (single products) at the gas exchange (in TWh) Source: CEGH, www.cegh.at, see "Presentations"

Besides gas purchases through CEGH, the procurement of products via NCG has also grown in importance. The implementation of the third liberalisation package has brought along certain measures that have improved access to transport capacity at the Oberkappel entry point. This in turn helped Austrian gas traders diversify their purchasing portfolio.

Since 1 April 2013, the European platform PRISMA has marketed all primary capacities at transmission level, which has led to increased transparency and efficiency in capacity management and thus improved access to transport capacity. A joint marketing platform also provides transmission system operators with a much easier way of offering bundled capacity products at cross-border interconnection points. Furthermore, pursuant to section 11 Gas Market Model Ordinance 2012, a short-term use-it-or-lose-it mechanism was put in place on 1 October 2013, leading to a considerable increase in firm day-ahead capacity offered at all entry/exit points with contractual congestion. This in turn has a positive impact on short-term gas trade.



Figure 15: ICIS Heren Score: Tradability Index Source: CEGH, www.cegh.at, see "Presentations"

Figure 15 shows that in a Europe-wide comparison, the Austrian VTP is one of the most developed hubs after the Dutch TTF, the British NBP (National Balancing Point) and the German hubs NCG and Gaspool. The Heren Tradability Index<sup>33</sup> is a tool to measure the hubs' trade

<sup>&</sup>lt;sup>33</sup> For a detailed description of the methodology, see <u>https://s3-eu-west-1.amazonaws.com/rbi-icis/wp-</u> content/uploads/2013/10/European-Gas-Hub-Report-Methodology-September-2013.pdf.

quality; it is a score index and is based on the price evaluations of the traders gathered by ICIS Heren. It surveys and evaluates the bid-offer spreads (price differences between the lowest and the highest offer of a seller) for all products traded at the hub in one day. The smaller the bid-offer spread (less than 0.3 EUR/MWh), the higher the score. To have an impact on the score, such low spreads need to be observed for more than ten contract offers during the entire day, not only for single offers.

The development of the VTP enables gas enterprises which are not storage customers to access flexibility. It is unclear to what extent trade and storage products can be considered substitutes. Given that some traders at CEGH are also storage customers, their trade products probably also contain storage products as primary products.

#### Short-term flexibility

Hourly or daily fluctuations in consumption can be compensated by means of storage withdrawal and procurement of balancing energy. As stated above, we do not know to which extent hourly or daily flexibilities are included in import or production contracts.

#### • Flexibility through the balancing market: access to linepack

The implementation of the new market model on 1 January 2013 entailed a change: a daily balancing model was introduced, with differing specifications, at the market and distribution area level. A daily balancing system was introduced for consumers with a contracted connection capacity of up to 10,000 kW/h,<sup>34</sup> including household customers. This means that suppliers can deliver constant amounts of gas to these consumer groups throughout the day and only need to take care that their supply during the day covers daily demand. They do not need to concern themselves with balancing demand peaks during the day anymore. Thus, the suppliers do not need within-day or hourly flexibility. The primary source used to cover within-day consumption swings is linepack (storage capability in the transport system) that exists in the distribution area and also in the transmission network. However, for daily balancing, suppliers need flexibility products such as storage or trade products.

Linepack is used more frequently, yet physical balancing energy is still needed if the linepack available is not sufficient. The distribution area manager AGGM is (still) responsible for the procurement of physical balancing energy. AGGM buys balancing products on behalf and for account of the clearing and settlement agent at the exchange at the VTP. Only if there are no offers available at the VTP or if locational balancing energy is required can AGGM resort to the merit order list of the clearing and settlement agent. This is a list of balancing energy offers sorted according to price and anonymised; if needed, the distribution area manager can call off these offers.

<sup>&</sup>lt;sup>34</sup> Consumers with a contracted connection capacity between 10,000 kWh/h and 50,000 kWh/h are part of the hourly balancing system by default, but they can opt into daily balancing. Consumers with a contracted connection capacity of over 50,000 kWh/h are part of the hourly balancing system.

According to an initial analysis of 2013, the demand for physical balancing energy increased during the first months using the new market model (due to asymmetric balancing energy pricing), followed by a return to normal levels. As Austrian storage facilities can be classified as rather seasonal storage facilities (long withdrawal periods of storage products), we have not detected any fundamental impact on their use by the new daily balancing system so far.

#### "Emergency supply" flexibility

Demand for seasonal or daily flexibility is predictable for the most part due to the gas consumer load profiles available. Supply disruptions or extreme temperatures, however, can only be predicted to a certain extent.

Pursuant to Regulation (EC) No 994/2010, member states are required to have available sufficient infrastructure to compensate failure of their single largest infrastructure. The infrastructure standard in Austria shows which options are available in the event that supplies at Austria's largest infrastructure, Baumgarten, are disrupted.



Figure 16: Fulfilment of the infrastructure standard in Austria, status of 2014 Source: AGGM data, long-term plann

Domestic production and the storage services available are sufficient to cover maximum consumption, i.e. also to compensate for a disruption of imports (Figure 16), as long as storage facilities are sufficiently full so as to enable use of the maximum withdrawal rate. Such a

supply interruption scenario shows again that storage plays a fundamental role in providing the required capacity.

#### Product market definition: conclusion

Flexibility provided through storage generally competes with other flexibility instruments. Seasonal flexibility is mainly provided by means of import contracts and storage products; these are directly interchangeable with each other, as the situation since September 2014 indicates: the majority of supply disruptions have been compensated with storage with-drawals. Other seasonal sources of flexibility are only available to a limited extent in Austria (LNG, flexibility from production). Flexibility products such as gas trade products from the hub or balancing energy are based on flexibility sources like storage and import contracts. Should both the storage capacity offered and the flexibility in import contracts decline, this would likely also affect the flexibilities offered through trade products.

For this reason, we can assume that despite the competition with other flexibility products, storage products cover a large portion of flexibility demand in Austria.

#### 3.2 Geographic market definition

The EC has not yet laid down a clear geographic market definition for the storage market. In the past few years, a number of merger decisions have referred to the national markets as relevant.<sup>35</sup>

In its Gazprom/Wintershall merger decision of 3 December 2013, the EC found the national (i.e. German) market to be the relevant geographic storage market for this merger.<sup>36</sup> The Haidach storage facility was included as well, as its only current connection is to the market area NCG. A narrower market definition was also analysed, as earlier decisions had assumed a radius of 200 kilometres. However, this appears to be a random (and outdated) definition, as it does not consider transport connections and costs.

So, the question of the geographic size of storage markets has not yet been finally settled by the EC.

The German Federal Cartel Office considers the German borders to be the appropriate geographic market definition.

In the interim report for the gas industry investigation in 2005, the eastern control area<sup>37</sup> was found to be the geographically relevant market because the borders with neighbouring

<sup>&</sup>lt;sup>35</sup> see EC, Merger Case E.ON/Endesa, Comp/M. 4110, 2004, S6 and Merger Case E.ON/Mol, Comp/M. 3696, Regulation (EC) No 139/2004, p. 30.

<sup>&</sup>lt;sup>36</sup> see EC Merger Case M.6910, Gazprom/Wintershall/Target Companies, Decision of 3 December 2013, p. 7.

<sup>&</sup>lt;sup>37</sup> There are no storage facilities in the market areas of Tyrol and Vorarlberg.

markets in Germany and Slovakia were congested.<sup>38</sup> Improved regulatory frameworks have since alleviated some of these congestions.

There are thus many reasons to limit the geographically relevant market to all storage facilities (including those in Slovakia) that are connected to the eastern market area or the VTP. Using the Haidach storage facility is possible but means incurring additional transport costs which other storage facilities do not have to pay.

#### 3.3 Market definition: summary

Given that there is a lack of data on other flexibility instruments, it is not possible to find a clear market definition. As the sole purpose of this report is to assess the development of competition on the storage market as part of the flexibility market, we have chosen a very narrow market definition. Our assumption is that an improvement which can be identified within this narrow market definition should also be relevant for the flexibility market as a whole.

#### 3.4 Development of competition among storage products

#### 3.4.1 Offer of storage products

Storage capacity in Austria has increased by 81% (working gas volume) and by 63% (withdrawal rate) since 2010 as a result of the market entry of EGS and the expansion of storage facilities (Figure 2 and Figure 3). Storage capacity available at the start of the storage year has also increased.

Austrian storage system operators allocate storage capacity either on a first-come-firstserved (FCFS) basis, charging published storage fees, or in auctions. In the past two years, most storage capacity in Austria (and in other European countries) was auctioned.

Storage system operators have also started to offer additional products. Beside its standard bundle, OGS has offered other storage products with a shorter withdrawal period in auctions. These products represented a total of 10% of its working gas volume. EGS offers indexed products on top of its standard products. Their prices are linked to the summer/winter spread, and they are also allocated in auctions. Astora has also established auctions as an allocation procedure. These auctions take place at least once a year.

In comparison to 2010, storage products have thus become more available to storage customers on the primary market.

<sup>&</sup>lt;sup>38</sup> see *Branchenuntersuchung Gas* (gas industry investigation), interim report 2005, p. 47-48 (German only).

#### Availability of storage capacity on the secondary market

Storage customers also have the opportunity to resell storage capacity on the secondary market. According to the GGPSSO for CAM and CMP issued by ERGEG, storage system operators should support this option.<sup>39</sup> This does not necessarily mean that the contract between the storage customer and the storage system operator needs to be amended. E-Control therefore does not have access to detailed data on secondary market trading.

We know that European storage customers normally offer virtual storage products from their trading portfolios on trading hubs. Some examples are Axpo Trading,<sup>40</sup> Shell, Gazprom Marketing and Trading,<sup>41</sup> Statoil<sup>42</sup> and Castleton Commodities.<sup>43</sup> In April 2015, Dufenergy offered virtual storage at the Austrian VTP.<sup>44</sup>

#### **3.4.2** Demand for storage products in Austria

#### Development of gas demand as a factor influencing the demand for flexibility

The demand for flexibility is influenced by gas consumption, partly by the average monthly consumption (for seasonal flexibility) and partly by the hourly or daily peak load (for short-term flexibility).

Annual consumption in Austria decreased by approx. 23% between 2010 and 2014. In the past two years, the hourly peak load was also lower than in previous years.<sup>45</sup> The decline in the use of gas in power plants is particularly notable. Between 2008 and 2013, the use of gas in electricity generation decreased by approx. 27%,<sup>46</sup> another significant decline happened in 2014.

<sup>&</sup>lt;sup>39</sup> see Amendment of the Guidelines of Good Practice for Third Party Access (TPA) for Storage System Operators (GGPSSO); Guidelines for CAM and CMP; <u>http://www.energy-</u>

regulators.eu/portal/page/portal/EER HOME/EER PUBLICATIONS/CEER PAPERS/Gas/Tab/E10-GST-14-04 GGPSSO-CAM-CMP 2-Febr-2011.pdf, p. 12.

<sup>&</sup>lt;sup>40</sup> see Energate 28 February 2014 , *Neue Vermarktungsverfahren auf Store-X* (New marketing techniques on store-x) (German only).

<sup>&</sup>lt;sup>41</sup> see Energate 26 February 2013, *Auktionsgeschäft für Speicher boomt* (Storage auctions experience boom) (German only). Energate 26 November 2014, *Gazprom Marketing & Trading bietet virtuellen Speicher an* (Gazprom Marketing & Trading offers virtual storage) (German only).

<sup>&</sup>lt;sup>42</sup> see Energate 17 October 2014, *Statoil vermarktet Kapazitäten auf Store-X* (Statoil markets capacities on store-x) (German only).

<sup>&</sup>lt;sup>43</sup> see Energate 6 February 2015, *Speichervermarktungen auf Store-X und VNG "easystore"* (Storage marketing on store-x and VNG "easystore") (German only).

<sup>&</sup>lt;sup>44</sup> See Energate 16 Februar 2015, *Dufenergy bietet erneut virtuellen Speicher auf Store-X an* (Dufenergy offers more virtual storage on store-x) (German only).

<sup>&</sup>lt;sup>45</sup> see AGGM Annual report 2014, <u>http://www.aggm.at/en/company/annual-reports</u>.

<sup>&</sup>lt;sup>46</sup> see data from the energy balance by Statistics Austria,

http://www.statistik.at/web\_en/statistics/EnergyEnvironmentInnovationMobility/energy\_environment/energy/energy\_bal\_ances/index.html.



Figure 17, Figure 18 and Figure 19 show that the hourly and daily peak load, the monthly gas consumption and the number of degree days in the winter months have declined in the past five years.



Figure 17: Development of hourly peak load (in MWh/h) Source: E-Control



Figure 18: Development of daily peak load (in GWh/d) Source: E-Control



Figure 19: Monthly gas consumption trends (in GWh) Source: E-Control



Figure 20: Number of degree days from 2010 to the first quarter of 2015, red line: linear trend Source: E-Control, Austrian Central Institution for Meteorology and Geodynamics (ZAMG)

In contrast to declining consumption, the storage capacity and storage products on offer have increased (Figure 21). In 2014, capacity was such that 75% of the annual consumption could be stored in storage facilities that are connected to the market area.



Figure 21: Trend in working gas volume of gas storage facilities in Austria and of domestic gas consumption (in GWh) Source: E-Control

There has been an increase in booked storage capacity since 2010 (caused by the total increase of storage capacity). Austrian storage facilities were still booked at 95% to 100% between 2010 and 2014.<sup>47</sup> RES, EGS and Astora still have available capacity for 2015.<sup>48</sup> Similarly, the Slovak storage system operators NAFTA and POZAGAS still offer available storage capacity (representing 7-17.5% of the working gas volume).

Since EGS entered the market, storage capacity available per year and the capacity offered by established storage system operators have increased. For example, since 2013, OGS has auctioned approx. 10% of its working gas volume in short term auctions. This is a significantly higher share than in 2010.

#### Factors influencing the use of storage capacity

The use of storage capacity (in particular the use of storage withdrawal rates) strongly depends on temperatures. We were thus able to identify a heavy use of storage in February 2012, which caused a very low filling level in early March and also meant that facilities were

<sup>&</sup>lt;sup>47</sup> see E-Control, *Bestandsstatistik* (statistics on assets), <u>http://www.e-control.at/en/</u>.

<sup>&</sup>lt;sup>48</sup> see information published in the GSE Transparency Template: <u>http://www.gie.eu/index.php/maps-data/gse-transparency-template</u>.

still not entirely refilled by the beginning of the heating period in October 2014 (Figure 22). After the mild winter in 2014, the storage level was significantly higher than in 2013.

Another factor is the development of wholesale prices for gas. By September 2014, spot prices had declined significantly, thus allowing storage facilities to be refilled to a high level. Similarly, prices for long-term contracts dropped considerably in the first nine months of 2014 (Figure 23).



Figure 22: Filling levels in storage facilities connected to the eastern market area, since 1 January 2013

Source: Data published by the MAM, www.gasconnect.at/en



Figure 23: Import price trends since 1 January 2013 Source: Statistics Austria, E-Control's own calculations

Use of existing storage contracts also depends on the availability of other flexibility products. In the winter of 2014/15, there was limited flexibility in import contracts due to the cuts made by Gazprom Export (as Figure 9 shows). This distortion was mainly compensated for with storage withdrawals. This led to a low storage filling level after the (mild) winter (Figure 22).

#### Development of market concentration

• Supply side

OMV Exploration & Production GmbH, RAG AG, Gazprom Export, Gazprom Austria GmbH and Statoil are providers of flexibility in supply contracts. However, Gazprom Export or Gazprom Austria GmbH are presumed to be the only undertakings whose contracts actually include flexibility, and even their contracts provide less flexibility than storage.

OGS, RES, EGS, Astora and GSA offer flexibility from storage. In addition, also storage customers have the possibility of offering secondary market products.

When it comes to calculating concentration, we must rely on storage capacity data; data from import and production contracts is not publicly accessible.

With regard to the **Austrian market**, the current supply-side Herfindahl-Hirschman Index (HHI)<sup>49</sup> for marketed working gas volume has decreased from 0.337 in 2009 to currently 0.22. If we only consider the **eastern market area** (excluding the Haidach storage facility), supply-side market concentration for working gas volume has decreased from 0.544 in 2009 to 0.3549 at the moment. Deliverability figures show similar results. This observable decrease in market concentration is likely due to EGS entering the market. Also if we widen the focus and include Slovak storage facilities (by NAFTA, POZAGAS) in the calculations, market concentration for the working gas volume offered is lower than in 2009.



Figure 24: Supply-side HHI for the storage market (working gas volume) in 2009 and 2015 Source: Data published by storage system operators on their websites, own calculations

Although the HHI is above the critical value that describes a highly concentrated market in both market definitions (all of Austria and the smaller eastern market area), we should note that the index has decreased significantly between 2009 and 2015 (Figure 24). We have also observed a decline in the concentration measures CR1 and CR3.<sup>50</sup> Concentration figures would be even lower if we included other flexibility products (trade contracts) in the analysis, as these are also offered by market participants other than storage system operators.

<sup>&</sup>lt;sup>49</sup> The Herfindahl-Hirschman Index (HHI) measures market concentration on a scale from 0 to 1. A fully competitive market has an HHI close to zero, whereas a monopoly scores an HHI of 1. The index increases with decreasing numbers of market participants or if a few actors have large market shares. Several studies use a rule of thumb in which a number between 0.1 and 0.18 implies a moderately concentrated market, whereas an HHI above 0.18 indicates a highly concentrated market.

<sup>&</sup>lt;sup>50</sup> The market share of the largest supplier, OGS, has decreased; the combined market share of the three largest suppliers in Austria has also decreased since 2010.

The decreased market concentration can be interpreted as a sign that competition is intensifying.

• Demand side

The number of storage customers has increased during the last four years. This is partly due to the start of operations of the 7Fields facility, but also due to the allocation of storage capacity in auctions. Storage capacity is no longer booked largely by a single big operator, as was the case in 2009. Storage demand in Austria comes from suppliers of end customers and international gas wholesalers/traders registered with CEGH. Their overall demand for (short-term) storage products has increased since 2013. The demand share of the largest client has decreased since 2010. The HHI and the concentration measures CR1 and CR3 have also decreased since 2010. Market concentration has thus also slowed down on the demand side of the storage market (as part of the flexibility market). Unlike for suppliers, the number of those who demand storage products would not necessarily increase if we expanded the market definition any further (customers who demand trade products are also suppliers of end customers and international gas wholesalers/traders registered with the CEGH). We therefore cannot automatically assume that competition has intensified significantly on the demand side.

The majority of storage capacity is still bound in long-term contracts; however, this share has dropped since 2013.

#### Summary: market concentration

The HHI has declined in recent years. This trend, along with the increased number of storage customers and the changes in the customer structure, indicates that competition on the demand side has improved.

#### Development of storage products

Storage system operators offer different standard bundles, as can be seen in Table 4. Standard products are so-called "bundled products" with a ratio of working gas volume, withdrawal rate and/or injection rate determined by the storage system operators. Bundled products are available with varying withdrawal periods.

OGS changed its standard bundle last year: they reduced the working gas volume and raised the withdrawal period from 83 to 94 days. All other storage system operators left their bundles unchanged. EGS offered two new standard bundles upon market entry.

Unbundled products describe working gas volume, deliverability and injectability separately. By combining standard bundles and unbundled products, storage customers can compile the most useful storage profile for their customer portfolio. Unbundled services are offered by multiple storage system operators. However, prices are often determined in negotiations and are therefore not publicly available. Only OGS, Astora and EGS publish fixed prices for unbundled services.

Storage system operator	Bundled/ standard products	Contract duration	Unbundled products	Contract duration	Interruptible products
OGS	"Classic" WGV: 20.16 GWh Injection rate: 6.72 MWh/h Withdrawal rate: 8.96 MWh/h (fixed/flexible)	Annual contracts starting at a one- year minimum: discounts for long- er-term contracts (up to five years), minimum contract duration one month	WGV, withdrawal and injection rate; minimum booking for storage and injection rate 10 MWh/h, WGV 10 GWh	Daily, monthly or yearly	Daily, month- ly or yearly
RES	Calculation of maxi- mum WGV: injection rate x 24 hours x 70 Injection rate/ with- drawal rate: minimum 894 cu m/h	Minimum contract duration: 3 years	Unbundled capacity is available; however, more detailed infor- mation is not publicly accessible.	No infor- mation	No infor- mation
GSA	WGV: 1,000 cu m Injection rate: 0.43 cu m/h Withdrawal rate: 0.43 cu m/h Minimum booking 30,000 for Long Gaz- prompack, 5,000 for Mid Gaz- prompack and Short Gazprompack	Short Gazprompack: 1 year Mid Gazprompack: 5 years Long Gazprompack: 13 years	Gazprompack Add: approx. 12% of the overall capacities (of the WGV); can only be booked in addition to bundled products	1 year, 5 years, 13 years	No infor- mation
Astora	Astora Pack: WGV: 22,000 kWh Injection rate: 10 kWh/h Withdrawal rate: 10 kWh/h Minimum booking: 2,000 bundles	Minimum duration: one year. Discounts available for multi- year contracts.	<ol> <li>Astora Add: WGV: up to 8% in addition to standard WGV</li> <li>Injection/withdrawal rate: up to 2% in addition to standard rate</li> <li>Astora Part: interruptible offer WGV: 4,000 kWh</li> <li>Injection/withdrawal rate: 10 kWh Minimum booking: 1,000 bundles</li> </ol>	Astora Add has to be booked in addition to the stand- ard offer. The Astora Part offer has to be booked for a minimum period of 1 month.	Monthly
EGS	Type D: WGV 15,000 MWh, withdrawal rate 10 MWh/h, injection rate 4.55 MWh/h Type E: WGV 20,000 MWh, withdrawal rate 10 MWh/h, injection rate 5.56 MWh/h	Discounts available for multi-year contracts	WGV, withdrawal and injection rate	Yearly	Yearly

#### Table 4: Specifics of storage products offered by Austrian storage system operators

Source: Websites of storage system operators

Storage system operator	Withdrawal period of standard bundles in days
OGS	94
RES	70
GSA	97
Astora	92
EGS Type D	63
EGS Type E	83

#### Table 5: Withdrawal period of standard bundles offered

The withdrawal period equals working gas volume divided by withdrawal rate per day.

In addition to these standard products and unbundled products, EGS and OGS offer approx. 10% of their storage capacity in auctions.

#### 3.4.3 Prices for storage capacity

In pricing storage capacity, a hybrid system based on different allocation procedures has evolved: on the one hand, storage system operators publish storage fees for standard bundles. These apply to storage capacity that is allocated on a FCFS basis. On the other hand, storage fees result from auctions. In this case, the published storage fees are irrelevant; rather, the prices reflect the current market value of storage as a flexibility instrument and the storage customers' willingness to pay.

#### Development of published storage fees in Austria

The Austrian storage system operators publish prices for the standard products shown in Table 4. However, the characteristics of the standard products differ, which is why comparability of absolute prices is limited. Figure 25 and Figure 26 show that storage fees for standard bundles vary depending on the length of the withdrawal period, i.e. the period of time during which the working gas volume specified in the contract can be fully withdrawn. OGS offers the lowest storage fee for its standard bundle, but also a withdrawal period of 94 days, which is long compared to the periods offered by other Austrian storage system operators (Table 5).

Compared to 2010, the published storage fees of Austrian storage system operators have decreased with the exception of the storage fees published by RES, which have risen by approx. 4%. OGS has changed the withdrawal period and reduced the fee for its standard bundle.



Figure 25: Published storage fees for standard bundles in Austria, one-year contract (in EUR/MWh WGV per year)

Source: Storage system operators' websites, own calculations



Figure 26: Published storage fees for standard bundles in Austria, one-year contract (in EUR/MWh/h withdrawal rate per year) Source: Storage system operators' websites, own calculations

#### Storage prices in existing storage contracts

In 2013, OGS reduced its storage fees for existing storage contracts.<sup>51</sup>

#### Storage prices in auctions

In recent years, Austria and other EU member states, such as Germany, the Czech Republic, France and Great Britain, have increasingly allocated storage capacities in auctions, i.e. prices have reflected the current market value of storage.<sup>52</sup> Only some auction results are published.

#### Auctions in Austria

So far, OGS, EGS, Astora and GSA have held auctions in Austria. OGS, EGS and Astora use the auction platform store-x for this purpose.<sup>53</sup>

• Auctions by EGS

In 2013, 2014 and 2015, EGS auctioned storage capacity via the platform store-x. The store-x auctions were run using a keyed procedure. The contract durations offered were between two and five years.<sup>54</sup> Working gas capacity in the amount of 1 TWh was offered in bundles. Each bundle consisted of 20 GWh WGV, 10 MWh/h withdrawal rate and 5.56 MWh/h injection rate.<sup>55</sup>

The price of auctioned capacity was determined by means of a formula reflecting the summer/winter spread (price difference) at NCG. Bidders had to bid an auction premium of plus 0.1 EUR/MWh on the summer/winter spread; the respective contractual price was pay as bid.<sup>56</sup> The bids were put in descending order until the quantity offered was allocated. Furthermore, bidders had to place bids for a minimum price.

For each contract year, the average summer/winter spreads from the first quarter (index period January-March before the beginning of the storage year) are used to determine the summer/winter spread relevant for the formula. Figure 27 shows the development of the summer/winter spread at NCG in the last five years.

https://dpm11uzz3cg60.cloudfront.net/gtsevent.com/uploads/2015/03/26142526/Zbynek\_Pokorny\_2015.pdf.

<sup>&</sup>lt;sup>51</sup> see OMV AG Annual Report 2014, p. 49.

<sup>&</sup>lt;sup>52</sup> see for the discussion of the value of storage: GSE, the Value of Gas Storage, June 2014, and GSE, Challenges and Outlook for Gas Storage in Europe - GSE presentation at the Energy Community workshop 28 May in Vienna published at GSE: http://www.gie.eu/index.php/publications/gse; CEER: CEER vision on the regulatory arrangements for the gas storage market, April 2015. For current pricing in auctions: Zbyněk Pokorný, s, RWE Gas Storage, s.r.o. "Appetite for storage capacity: Recent Prices and Contract Duration", presentation at the European Gas Transport & Storage Summit, 23-24 March 2015, Munich, published at:

<sup>&</sup>lt;sup>53</sup> see registered storage system operators at <u>http://www.store-x.net</u>.

<sup>&</sup>lt;sup>54</sup> http://www.eon-gas-storage.de/cps/rde/xchg/egs/hs.xsl/3041.htm?rdeLocaleAttr=en.

<sup>&</sup>lt;sup>55</sup> <u>http://www.eon-gas-storage.de/cps/rde/xchg/egs/hs.xsl/2679\_3132353731353038313235.htm</u> (German only).

<sup>&</sup>lt;sup>56</sup> <u>http://www.zfk.de/gas/speicher/artikel/eon-nimmt-neuen-anlauf-mit-gasspeicher-7fields.html</u> (German only).

The overall storage fees to be paid consist of the price for booking the storage capacity, the system services charge and a fee for variable costs. In addition, transport fees must be paid directly to the relevant system operators.

The auction results are not published. According to EGS,<sup>57</sup> however, they were much lower than the published fees, at least in 2013.



Figure 27: Summer/winter spread at NCG (in EUR/MWh) from 2011 to 2015 Source: Energate, market data and own calculations

• Auctions by OGS

So far, OGS has held five storage capacity auctions.

In June 2013, OGS auctioned a total of 3,000,000 MWh of working gas volume (approx. 10% of the total working gas volume of OGS) through store-x keyed procedures.<sup>58</sup> The bundles auctioned consisted of 30,000 MWh of WGV and 14 MWh/h of both withdrawal and injection rate. The withdrawal period was 90 days. The contract ran from 1 July 2013 to 1 April

<sup>&</sup>lt;sup>57</sup> see Wirtschaftsblatt, 24 March 2013: *Eon mischt Markt für Gasspeicher auf* (EGS stirs up gas storage market) (German only).

<sup>&</sup>lt;sup>58</sup> see ESGM 20 June 2013, Austrian OMV storage sells 3 TWh of capacity, p. 10.

2014. The price was constant for the entire contractual period.<sup>59</sup> The auction was highly oversubscribed.

For the 2014 storage year, OGS held two auctions: one in October 2013 and one in January 2014. In comparison to the auction in June 2013, the bundle offered at these auctions was smaller, consisting of 17,000 MWh working gas volume, 8 MWh/h injection rate and 12 MWh/h withdrawal rate. The withdrawal period was thus 60 days, i.e. 30 days shorter than before. All in all, almost 3.5 TWh working gas volume, representing 12.5% of the total working gas volume of the OGS storage pool, were allocated in these two auctions.

In November 2014 and January 2015, OGS offered one-year storage contracts for the 2015 storage year (1 April 2015 to 31 March 2016). 90 bundles were auctioned, each bundle comprising 17,000 MWh working gas volume, 8 MWh/h injection rate and 12 MWh/h withdrawal rate.<sup>60</sup> Thus, the withdrawal rate was 60 days, which is significantly shorter than the standard bundle with a withdrawal rate of 90 days. Demand was ten times greater than the capacity offered.<sup>61</sup> All in all, 3,060,000 MWh were auctioned, representing a total of approx. 11% of the OGS working gas volume for the storage year 2015/2016. The auction prices were not published.

• Auctions by Astora for the Haidach storage facility

In February 2014 and February 2015, Astora held auctions for the storage facility Haidach through store-x.

All in all, 400 bundles with 6,000 MWh working gas volume, a withdrawal rate of 3 MW and an injection rate of 2 MW were sold through a keyed procedure. The withdrawal rate was 83 days and was thus shorter than that of the standard bundle. The capacity demanded was five times greater than the capacity offered. In a second auction in February 2015, bidders that had been successful in the first auction could purchase non-bundled products to adapt their bundled storage products. The auction was for 750,000 MWh working gas volume (in units of 10,000 MWh), 70 MW injection rate (in units of 10 MW) and 40 MW withdrawal rate (in units of 10 MW). This auction was only in part successful.

• Auctions by GSA

GSA (and formerly Gazprom Export as a storage system operator) conducted auctions for short-term storage products in the first quarters of 2010 to 2015. These auctions, however,

<sup>&</sup>lt;sup>59</sup> According to a trader at the European Spot Gas Market (ESGM), the price ranged from 0.6 to 1 EUR/MWh per bundle and contract; see ESGM 20 June 2013, Austrian OMV storage sells 3 TWh of capacity, p. 10.

<sup>60</sup> http://www.store-

x.net/storexAction.do?param=%2FDcT%2FaKcz4dyVwSSHuRr%2BSLUIf3%2BjGEbKjc0lfYpur%2FCVW6YnwY%2Fl2n%2BNvb6 XI9OsYZyZeIR5xZH4hGNhAic1eRgZloBpCYqhrtqvyEcsYNpTmMNFMKOLJKOGVjj1Y%2B%2B%2Bj20bnTpGyvW8QvDDV%2BsIA %3D%3D&pparam=6c1109e98ed658b048140215b5e4f0ba (German only).

<sup>&</sup>lt;sup>61</sup> see energate 1 December 2014, *OMV mit Speicherauktion auf Store-x erfolgreich* (OGS holds successful storage auction on store-x; <u>www.energate.de</u>) (German only).

only generated little interest. In 2015, GSA was able to auction off its storage capacities. The auction results matched the published storage fees.

Judging from the storage contracts from auction results that are available to E-Control, published storage fees do not reflect the currently achievable market price. Therefore, they are only relevant to a certain extent when it comes to determining the current costs of flexibility from storage and assessing the amount of revenue generated by storage system operators.

#### Auctions in the European Union

As shown in Table 6, the allocation of free storage capacity through auctions has gained in importance in the last two years.

Time	Storage system operator (and storage facility)	WGV auctioned	Bundles	Price formula
Dec. 2012	SWM Infrastruktur (Schmidhausen)	3 TWh	Unknown	Fixed price
Dec. 2012	TAQA (Bergermeer)	3 TWh	Unknown	Auction price based on summer/winter spread
January 2013	Storenergy (Harsefeld)	0.276 TWh	1.152 GWh WGV, 0.3 MW withdrawal rate	Fixed price
January 2013	Storenergy (Uelsen)	2.5 TWh	1.296 GWh WGV, 0.6 MW withdrawal rate	Fixed price
March 2013	RWE DEA (Inzenham-West)	120 GWh	Unknown	Unknown
March 2013	EGS (7Fields)	2.5 TWh	20 GWh WGV, 10 MW withdrawal rate	Indexed to sum- mer/winter spread
April 2013	EGS (Reitbrook)		8.56 GWh WGV, 10.05 MW withdrawal rate (plus interruptible WGV 2.32 GWh)	Indexed to sum- mer/winter spread
April 2013	EGS (Rönne)		4.83 GWh WGV, 10.08 MW withdrawal rate (plus interruptible withdrawal rate 1.66 MW)	Indexed to sum- mer/winter spread
June 2013	Storenergy (Harsefeld)	0.7 TWh		Fixed price
June 2013	OMV Gas Storage (Storage pool Austria)	3 TWh	30 GWh WGV, 14 MW withdrawal rate	Fixed price

Table 6: Overview of auctions held in the last two years (non-exhaustive list)

Time	Storage system operator (and storage facility)	Working gas volume auctioned	Bundles	Price formula
October 2013	OMV Gas Storage (storage pool Austria)	3 TWh	17 GWh WGV, 12 MW withdrawal rate	Fixed price
September 2014	TAQA (Bergermeer)	3 TWh (three-year contracts) 3 TWh (two-year con- tracts) 7 TWh (one-year con- tracts)	Unknown	Auction price based on summer/winter spread
November 2014	OMV Gas Storage (storage pool Austria)	1.53 TWh	17 GWh WGV, 12 MW withdrawal rate	Fixed price
January 2015	E.ON Gas Storage (7Fields)		20 GWh WGV, 10 MW withdrawal rate	Indexed to sum- mer/winter spread
January 2015	Trianel (Epe)		20 GWh WGV, 10 MW withdrawal rate	Indexed to sum- mer/winter spread
January 2015	OMV Gas Storage (storage pool Austria)	1.53 TWh	17 GWh WGV, 12 MW withdrawal rate	Fixed price
February 2015	VNG Gasspeicher GmbH (Etzel)			
February 2015	Astora (Haidach)	2.4 TWh	10 GWh WGV, 40 MW withdrawal rate	Unknown
March 2015	RWE gas storage facility	0.268 TWh	269 MWh WGV, 0.482 MW withdrawal rate (plus interruptible withdrawal rate 0.168 MW)	Indexed to sum- mer/winter spread
March 2015	OMV GAS storage (Etzel)	0.84 TWh	20 GWh WGV, 20 MW withdrawal rate (plus interruptible with- drawal rate 26 MW)	Fixed price
March 2015	E.ON Gas Storage (7Fields)		20 GWh WGV, 10 MW withdrawal rate	Indexed to sum- mer/winter spread
March 2015	EnergyStock (Denmark)			Indexed to sum-

Source: Information from Energate, e.g. 9 March 2015: *Aktuelle Vergabeverfahren für Speicher* (Current allocation procedures for storage) (German only); 20 February 2015: *Neue und abgeschlossene Speichervermarktungen auf Store-x* (New and completed sales activities on store-x) (German only); www.energate.de

Only some of the storage fees obtained in these auctions have been published. The Czech storage system operator RWE Gas Storage publishes the results of all auctions on its website.<sup>62</sup> The auction results of the Dutch storage system operator GasTerra are published by ICE, which conducts them.<sup>63</sup> The published prices from these auctions are lower than the published prices for standard bundles. For example, the auction price of RWE Gas Storage CZ for the storage year 2015/2016 was on average approx. 2.7 EUR/MWh per year or 4,026 EUR/MW withdrawal rate,<sup>64</sup> which is considerably lower than the published storage fees in Austria. The withdrawal period of the auctioned product was 60 days, which is short-

<sup>&</sup>lt;sup>62</sup> see <u>http://www.rwe-gasstorage.cz/en/auction-history/</u>.

<sup>&</sup>lt;sup>63</sup> see <u>https://www.theice.com/publicdocs/GasTerra\_Auction\_Results.pdf</u>.

<sup>&</sup>lt;sup>64</sup> Calculated as weighted average of the auction results for storage bundles, published on the website of RWE Gas Storage: <u>http://www.rwe-gasstorage.cz/en/auction-history/</u>.

er than the withdrawal periods of standard bundles offered by Austrian storage system operators. However, it is similar to the withdrawal period of the storage product on offer by OGS in auctions since 2014 (59 days).

Other results are mentioned in specialist journals. Current results are those of the auction of the Danish storage system operator EnergyStock, for example.<sup>65</sup> Three different storage products with distinct withdrawal periods were on offer. At the auction, bidders made bids for a variable, i.e. a premium on the summer/winter spread, which is used to calculate the average price for the first quarter of 2016. The Bergermeer facility has been in operation since 1 April 2015.<sup>66</sup> Its storage capacity was auctioned in 2014; the storage fees obtained are said to have been 2.076 EUR/MWh working gas volume.<sup>67</sup>

As Table 6 shows in the column "price formula", several storage system operators offered indexed products at these auctions. These are products for several years; their price development is coupled with the summer/winter spread. Figure 28 shows the index formulas used in the auctions. At the auctions, bidders bid on premiums or discounts on the summer/winter spread (or the quarterly summer/winter spread) or on a multiplier with the help of which the contractual storage fees are calculated from the summer/winter spread. This means that seasonal price differences of gas prices at European trading points are always a key issue.

<sup>&</sup>lt;sup>65</sup> see European Spot Gas Market (ESGM), 11 March 2015: Dutch EnergyStock sells 72% of fast-cycle storage capacity, p. 13; and information on the website of EnergyStock <u>http://www.energystock.com/about-energystock/news/energystock-spring-auction-2015-successful</u>.

<sup>&</sup>lt;sup>66</sup> see ESGM, 1 April 2015, p. 14.

<sup>&</sup>lt;sup>67</sup> see ESGM, 1 April 2015, p. 14.

e∙on	<ul> <li>&gt; E.ON GS offers indexed products on standard basis with modifications of the general formula</li> <li>&gt; General formula: P (€/MWh) = A x spread +/- B; where A and/or B are selected individually depending on the product type</li> <li>P (€/MWh) = 1,19 x SW spread + A (in addition, a min price of 1.5 €/MWh set)</li> <li>P (€/MWh) = (1,38 + A) x SW spread -0,7 (Bierwang 2012) (Kraak 2013)</li> <li>P (€/MWh) = SW spread + 0,50 + B (Bierwang 2012)</li> <li>P (€/MWh) = 1,10 x Q4/Q1 - summer spread - 0,05 + A (a min price is set) (Kraak 2014)</li> </ul>
	<ul> <li>Storengy offered an indexed product in January 2013</li> <li>P (€/MWh) = (1+A) * SW spread – 0.50; where A is a variable (bid)</li> <li>In addition, a min (2.2 €/MWh) and max (7.5 €/MWh) price are set</li> <li>Another auctions in December 2014</li> <li>P (€/MWh) = A * 1,19 x SW spread (NCG) + B</li> </ul>
EWE	> EWE offered an indexed product in February 2013 > P (€/MWh) <sub>14/15</sub> = P (€/MWh) <sub>13/14</sub> x (0.3 + 0.7 x (SW spread <sub>14/15</sub> / SW spread <sub>13/14</sub> ))
TAQA	> TAQA made an auction for 2015 – 2018 > P (€/MWh) <sub>14/15</sub> = X – Storage Year Spread; where X is a multiplier stated by bidders
energinet/dk	<ul> <li>&gt; Energinet offered indexed products in April 2014 in two options</li> <li>&gt; P = SW spread + B; where B is a bid to be entered in an auction</li> <li>&gt; P = (1 + A) * SW spread - 0,3; where A is a bid to be entered in an auction</li> <li>- In addition, min (2.0 €/MWh) and max (7.5 €/MWh) price are set and minimum value of B (0.4)</li> <li>&gt; Another auction took place in February 2015</li> <li>&gt; Min price in the auction was the current sum-win spread</li> </ul>
nafta	<ul> <li>&gt; In 2012, Nafta introduced a call option for storage year 2013/2014</li> <li>&gt; The call option was subject to a Take-It-Or-Lose-It condition if spread Q1/2014-Q3/2013 reached the barrier level of 6.20 €/MWh</li> <li>&gt; The price composed of 2 components: (i) a premium (bid) component – proposed by each bidding party (due immediately) and (ii) a fixed component (due only if the option is exercised)</li> </ul>
GasTerra tregging the future	<ul> <li>&gt; GasTerra offered a 5-year product in November 2013</li> <li>&gt; P (€/SBU) = X * sum/Q1 spread + B; where X is a multiplier stated by bidders and B a constant stated by ICE one day before auction</li> </ul>
() POZAÇAS	> Pozagas offered its B.U.I.L.D. product which is based on indexation to spread > P (€/MWh) = SW spread +/- A; where A is a ratio for adjusting the spread according to a pre-defined formula

Figure 28: Overview of index formulas used in auctions

Source: Zbyněk Pokorný, RWE Gas Storage: "Appetite for storage capacity: Recent Prices and Contract Duration", presentation at the European Gas Transport & Storage Summit, 23-24 March 2015, Munich, published at:

https://dpm11uzz3cg60.cloudfront.net/gtsevent.com/uploads/2015/03/26142526/Zbynek\_Pokor ny\_2015.pdf.

#### Comparison of storage fees on a European level

Considering that the storage products of Austrian storage system operators are only comparable to a limited extent, a better assessment is possible if we also include storage system operators in other EU countries.

We looked at published storage fees (FCFS allocation and auctions) of ten EU countries: Austria, Belgium, Croatia, the Czech Republic, France, Germany, Great Britain, Hungary, the Netherlands and Poland. The data were collected from the websites of the respective storage system operators and, in the case of Gasterra, the website of ICE, through which the auction was handled.<sup>68</sup> We gathered price data for **bundled standard capacity products for one-year contracts**, which contain a fixed ratio between working gas volume, deliverability and injectability. Each storage system operator decides the makeup of its bundles itself, which is why product characteristics are not uniform.

In Belgium, France, Croatia, the Czech Republic and Hungary, access to storage is regulated. In Hungary, Belgium and Croatia, the respective regulatory authority sets storage charges directly. In France and the Czech Republic, storage prices are fixed in auctions.

We do not know whether storage contracts have actually been concluded at the published storage fees in other EU countries when storage capacities were allocated by procedures other than auctions.

Figure 29 and Figure 30 show that longer withdrawal periods make for lower prices per MWh working gas volume per year. This means that seasonal storage with longer withdrawal periods is cheaper in terms of the stored working gas volume. We also found this to be true for the products offered by Austrian storage system operators (Figure 25). In the figures below, the yellow bars represent the published storage charges of Austrian storage system operators. The red bars show the published auction results. The latter are significantly lower than the published storage fees for standard bundles allocated through FCFS.

<sup>&</sup>lt;sup>68</sup> Links to the storage system operators can all be found on the GSE website under "Members": <u>http://www.gie.eu/index.php/about-us/gie-members/gse-members</u>.





- \* allocated in auctions
- **\*\*** plus charges for variables

storage fees in Germany and Austria do not include transport charges

Source: Own calculations on the basis of storage system operators' websites; prices for TAQA from ESGM, 1 April 2015, p. 14



Figure 30: Relation between storage fees and withdrawal period (in EUR/MWh working gas volume per year), standard bundles

Source: Own calculations on the basis of storage system operators' websites; prices for TAQA from ESGM, 1 April 2015, p. 14



Figure 31: Comparison of storage prices for standard bundles in Europe (in EUR/MWh withdrawal rate per year), one-year contracts, as of 1 April 2015

\*allocated in auctions

**\*\*** plus charges for variables

storage fees in Germany and Austria do not include transport charges

Source: Own calculations on the basis of storage system operators' websites; prices for TAQA from ESGM, 1 April 2015, p. 14



Figure 32: Relation between storage prices and withdrawal period in Europe (in EUR/MWh withdrawal rate per year), standard bundles, one-year contracts, as of 1 April 2015 Source: Own calculations on the basis of storage system operators' websites; orices for TAQA from ESGM, 1 April 2015, p. 14

The contrary is the case for storage fees in relation to the withdrawal rate: the longer the withdrawal period, the higher the fee per MW withdrawal rate per hour (Figure 31 and Figure 32). Again, the yellow bars represent the published storage fees of Austrian storage system operators, the red bars the published auction results.

It is striking that in a Europe-wide comparison, the published storage fees determined in auctions (Gasterra and RWE Gas Storage) are considerably lower than the published storage fees for standard bundles which were allocated by means of other procedures. The published auction results show that the storage fees obtained from auctions in the years 2014/2015 reflected summer/winter spreads, which have decreased over the last years (Figure 27).<sup>69</sup>

When comparing published storage charges of Austrian storage system operators to storage fees of comparable products offered by other European storage system operators, this is what we see:

<sup>69</sup> See also <u>http://www.ceer.eu/portal/page/portal/EER\_HOME/EER\_PUBLICATIONS/CEER\_PAPERS/Gas/2015/C15-GWG-</u> 119-03 CEER%20 Vision%20gas%20storage%20market 25 May 2015.pdf; p. 13.

- RES: as they were allocated in auctions, the storage charges of the Czech storage system operator RWE Gas Storage for storage products with a similar withdrawal period are considerably cheaper than the RES standard bundle. According to RES, their published storage charges are to be considered a ceiling; therefore, they are not representative of the actual price range in RES storage contracts.
- EGS: the EGS storage fees used for the comparison are those for one-year contracts. These storage fees for both storage products in 7Fields are considerably higher than the auction results of comparable products (partly also by EGS). However, the contractual storage fees by EGS for 7Fields were determined in auctions in the last two years and were heavily influenced by the summer/winter spread. Thus, these fees are lower than the published charges for one-year contracts.
- OGS: the storage fees published by OGS are lower than other published storage fees for FCFS procedures, but higher than auction prices. However, OGS awards one-year contracts for a bundle with a 60-day withdrawal period through auctions. The fees obtained in these auctions are not published, but they are lower than the published storage fees of comparable products in Europe.
- Astora: the storage fees published fall in between comparable products.
- GSA: this also applies to GSA. The interest in GSA auctions, where the published storage fees were the reserve price, was low.

The storage contracts of Austrian storage system operators available to E-Control<sup>70</sup> show that for the last three years, no new one-year contracts have been concluded at the published storage fees shown in Figure 25 and Figure 26. The storage fees in new contracts are sometimes lower than the published charges. Therefore, the published storage fees do not reflect the price level that could be obtained on the Austrian storage market in the last three years.

#### Storage fees for short- and long-term products

The analysis of prices for short- and long-term products was limited by the fact that not all storage system operators publish them.

Storage system operator	Information on short-term	Information on long-term
	products	products
OGS	Available (min 1 day)	Available (max 5 years)
Astora	Available (min 1 day)	Available (max 6 years)
GSA	Only charges for one-year	Available (max 5 years)
	products	

 Table 7: Information on storage products available on storage system operators' websites

<sup>&</sup>lt;sup>70</sup> Pursuant to section 101 Natural Gas Act 2011, storage contracts are to be presented to E-Control upon their conclusion.

RES	Not available	Charges for three-year con-
		tracts
EGS	Available (min 1 month)- <sup>71</sup> [in-	Available (max 15 years)
	dexed products, day-ahead	
	products]	

Source: Company websites

Storage system operators offer discounted storage fees for long-term bookings. Figure 33 shows the discounts on published storage fees offered by the operators and their relation to contract duration.



Figure 33: Discounts offered by Austrian storage system operators for long-term products Source: Operators' websites

#### Price trends: summary

We have noted an overall decrease in prices for storage products since 2010. This is due to a reduction in published storage fees (with the exception of RES) on the one hand, and to a significant drop in the prices in new contracts for capacity allocated in auctions on the other.

This trend indicates that Austrian storage system operators are under increasing competitive pressure.

Some of the operators have responded by offering different storage products and lowering storage charges. In 2013, OGS changed its overall price and product structure: it lowered storage fees and storage capacity for existing contracts and reduced the fees charged for new contracts.<sup>72</sup> The operators have justified these moves as a reaction to the "current market situation." OMV cites the continuing decrease of summer/winter spreads as a manifestation of said market situation.<sup>73</sup> In its Annual Report 2013, OMV states that it expects gas storage prices to remain very low, further reducing profitability.<sup>74</sup> The company's Annual Report 2014 again mentions that the market remains challenging (due to low summer/winter spreads). OGS, EGS, Astora and GSA allocate storage capacity in auctions: their fees are lower than the published storage charges.

We have also noted a tendency of decreasing storage prices in other EU countries, particularly in the countries with the highest storage capacity. For example, in January 2015 Storenergy announced that it had lowered the fees for several storage facilities.<sup>75</sup> In Germany, more and more operators are allocating storage capacity in auctions. The prices at these auctions follow the development of wholesale price spreads.

<sup>&</sup>lt;sup>72</sup> see OMV Annual Report 2013, p. 44 and OMV Annual Report 2014, p. 49.

<sup>&</sup>lt;sup>73</sup> see OMV Annual Report 2013, p. 46 and 54.

<sup>&</sup>lt;sup>74</sup> see OMV Annual Report 2013, p. 66.

<sup>&</sup>lt;sup>75</sup> see ESGM, 14 January 2015, p. 1 and 2: Storenergy announces discounts, flexibility services.

# 4 Conclusion: Assessment of competition in the Austrian flexibility market

Compared to the conclusions arrived at in the June 2010 discussion paper "A proposal for a competition analysis of the Austrian storage market according to the criteria to be devised in accordance with Article 33 Directive 2009/73/EC",<sup>76</sup> the findings of a second analysis in 2015 indicate improvements.

Recent years have seen an **increase in the availability of storage capacities as an important source of flexibility** for the Austrian gas market. This is due in part to the expansion of storage capacity and hence better access to primary capacity. Part of the increase can also be attributed to the development of liquid trading venues and to operators offering various types of trade products, and thus to the provision of secondary flexibility. Also such secondary products are often based on storage. At the same time, the drop in gas demand and the declining demand for (seasonal) flexibility it entails have reduced demand for storage products.

Moreover, **new storage products** and **allocation procedures** have been developed. New storage products with hub indexation are now available (EGS); storage system operators offer various and modified types of bundled and non-bundled products. Since 2013, auctions have become increasingly important as allocation procedures for available storage capacity.

We have identified new market entries on both the supply and the demand side. Consequently, market concentration on the storage market has **decreased** on both sides. The market for storage products has turned from a sellers' market into a **buyers' market**. This also **affects the development of prices**.

Storage system operators such as Astora, OGS and EGS have referred to the difficult market situation, arguing that storage prices merely cover costs but are not profitable. With regard to the storage auction for the Haidach facility, Astora stated in February 2013 that it was difficult to obtain commercially acceptable prices in the storage market.<sup>77</sup> OMV (as parent company of OGS) has also pointed out that the market was challenging due to consistently low summer/winter spreads<sup>78</sup> and that its profits had dropped.

Several Austrian storage system operators have reacted to the increasing competitive pressure by reducing the prices or services of existing contracts. They have also allocated available storage capacity in auctions, resulting in prices below the published storage fees for standard products.

<sup>&</sup>lt;sup>76</sup> see <u>http://portalapp.e-control.at/portal/page/portal/medienbibliothek/gas/dokumente/pdfs/stellungnahmen-</u> speicherpositionspapier-eng-20-09-2010.pdf.

 <sup>&</sup>lt;sup>77</sup> see Powernews 26 March 2014: *Spass ist etwas anderes* (This is everything but fun) (German only), Powernews 24 July.
 2013: *Neue Absatzwege schaffen* (Creating new trade channels) (German only).

<sup>&</sup>lt;sup>78</sup> see OMV Annual Report 2014, p. 50, published on OMV's website: <u>www.omv.com</u>.

This clearly indicates that **market-based storage prices have gone down in recent years**. The prices that can be observed in the market since 2013 are no longer aligned with published storage fees in Austria. Instead they follow the smaller summer/winter spreads: **published storage charges** are **higher than the storage charges that can currently be obtained in auc-tions**. Consequently, they are also higher than the current market price for storage products since the storage products allocated in auctions account for the majority of storage products allocated in the last three years.

A comparison of published storage charges within the EU has also demonstrated that the storage charges obtained in auctions in the EU in the last two years (2014/2015), where prices follow the summer/winter spreads, are lower than the storage charges published by Austrian storage system operators for standard services.

On the other hand, **storage charges** in new contracts have become **less transparent**, thus bringing down the overall level of price transparency. The study we carried out in 2010 had already found that there was no transparency regarding storage charges in contracts concluded before 2002. This second study in 2015 has highlighted that the same is true of new contracts.

We have found that prices in the majority of new contracts are lower than published storage charges, which have become less important. Some old contracts were found to be more expensive. With regard to the published storage charges, we have observed a decrease and in certain cases even an increase. This would suggest that storage system operators still make considerable profits that enable them to cover their costs in the long term. In reality, new contracts were found to be significantly less profitable for operators.

Article 19(5) of Regulation (EC) 715/2009 stipulates the following: "In order to ensure transparent, objective and non-discriminatory tariffs and facilitate efficient utilisation of the infrastructures, [...] storage facility operators or relevant regulatory authorities shall make public sufficiently detailed information on [...] the structure of tariffs for infrastructure under regulated third-party access." Similarly, pursuant to section 105(1)(3) Natural Gas Act 2011, the storage fees charged for the use of storage facilities need to be published once a year and after each amendment. This transparency does not exist at the Austrian nor at the European level. Conformity with the law should be established, including ensuring price transparency for all available storage products.

Overall, our evidence suggests that competition on the flexibility and storage market as well as the market participants' access to flexibility have significantly improved since 2010. <u>Therefore, E-Control does not recommend transition to a regulated scheme.</u>