ENTSOG Summer Supply Outlook 2014

Executive Summary

As part of its obligation under Art. 8(3)(f) of Regulation (EC) 715/2009, ENTSOG has undertaken an assessment of the European gas network to analyse whether the grid is able to meet both demand and injection needs during Summer 2014 (April to September). The conclusions are:

The European gas network is sufficiently robust in most parts of Europe to enable:

- **Planned maintenance in order to ensure infrastructure reliability on the long term**
- **At least 90% stock level in preparation of the upcoming Winter**
- **Flexibility for network users**

The report also confirms the following particular situations:

- **The dependence of Central and Eastern Europe on Russian gas for both meeting gas demand and injection in storages**
- **The dependence of Iberian Peninsula and Southern France on LNG imports to achieve high stock level**
- **The reliance of high stock level at the end of the season in Denmark and Sweden on the use of interruptible capacity from Germany**

Based on ACER opinion on Summer Supply Outlook 2013 and the fact that aggregated stock level (AGSI scope) at the end of September has continuously decreased from 93% in 2011 to 78% in 2013, the report considers a Reference target of 90% stock level.

A sensitivity analysis has been carried out to further illustrate the ability of the network to enable high injection under a wider range of supply patterns. The analysis also includes cases related to Ukraine situation as recommended and defined by European Commission.

Introduction

This Outlook builds on previous Summer Supply Outlooks and TYNDP 2013-2022. It aims to assess the ability of the European gas network to provide sufficient flexibility to shippers during their storage injection season.
The summer months provide shippers the opportunity to refill storage in anticipation of the winter months ahead. The level of injection targeted by shippers varies from one country to the other and from time to time due to climatic, price and legal parameters.
Modelling has been used to confirm the ability of the European gas network to provide additional flexibility for injection under different supply scenarios.

As previous reports, the Summer Supply Outlook 2014 has checked if the capacity of the European gas network is sufficient to face demand and to achieve a high stock level by 30 September 2014. The Reference target has been reduced from 100% to 90% in order to reflect the evolution of storage level at the end of last summers and to take into account ACER opinion on last Summer Supply Outlook.

In order to encompass the range of possible supply patterns, an additional sensitivity study has been carried out around a Reference Case (see paragraph "Sensitivity analysis"). The sensitivity analysis aims to assess the impact on injection levels across Europe when decreasing the share of a given supply source compared to the Reference Case.
As part of this analysis, the impact of potential disruption cases linked to Ukrainian crisis on the injection season has been assessed following the recommendation of European Commission.

Assumptions and results of modelling

Taking into account the ACER opinion advocating a better consideration of seasonal specificities and short term trends, the supply and injection approaches are based on actual values of last two summers.

> <u>Reference Case</u>

Injection and supply under this Reference Case have been defined essentially based on the situation of last two summers. Actual injection and supply mix will in fact result from shippers' decision.

The overall "Summer injection" is defined as the quantity of gas necessary to reach an aggregated 90% stock level on 30 September 2014 starting from actual stock level on 28 March 2014. Monthly injections are derived using the weight of each month in the summers 2011 and 2012 (Summer 2013 profile was too uncommon due to the very low stock level at the end of winter 2012/13 as illustrated on figure 3 of page 5 and in the Review of Summer 2013).

Monthly supply levels are defined as the sum of:

- the monthly demand forecast by TSOs
- the monthly injection as defined above

First National Production is set according to TSO forecast then the share of each import source for each month is derived from the supply mix of the last two summers (analysis of these last two summers is provided in the Summer Review).

Figure 1 shows the level and composition of supply for each month (refer to Annex B for the supply shares of import sources) for the Reference Case:

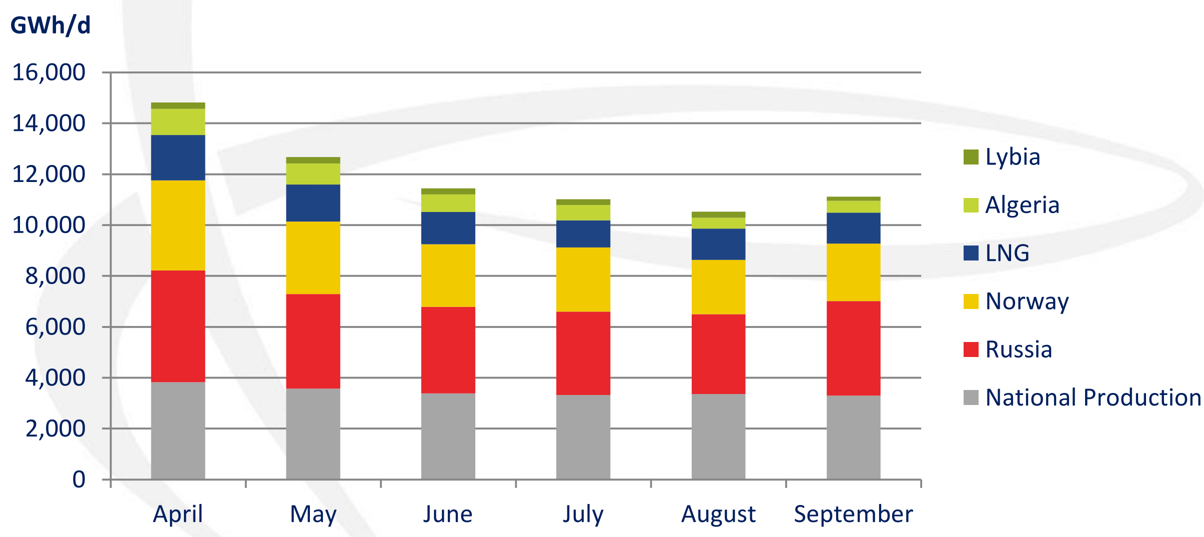

Figure 1 - Supply level and mix

Based on these assumptions (further detailed in Annex A and B), modelling has been used in order to check if any physical congestion or over dependence on an import source may limit the injection.

The 183 daily simulations show that a 90% stock level may be achieved by 30 September 2014 in most of the Zones. The only identified limitation is for Denmark and Sweden where the target could be reached with the use of interruptible capacity from Germany to Denmark.

Figure 2 shows the breakdown of transported gas for each month (average daily values for each month including export to Kaliningrad and Turkey) for the Reference Case:

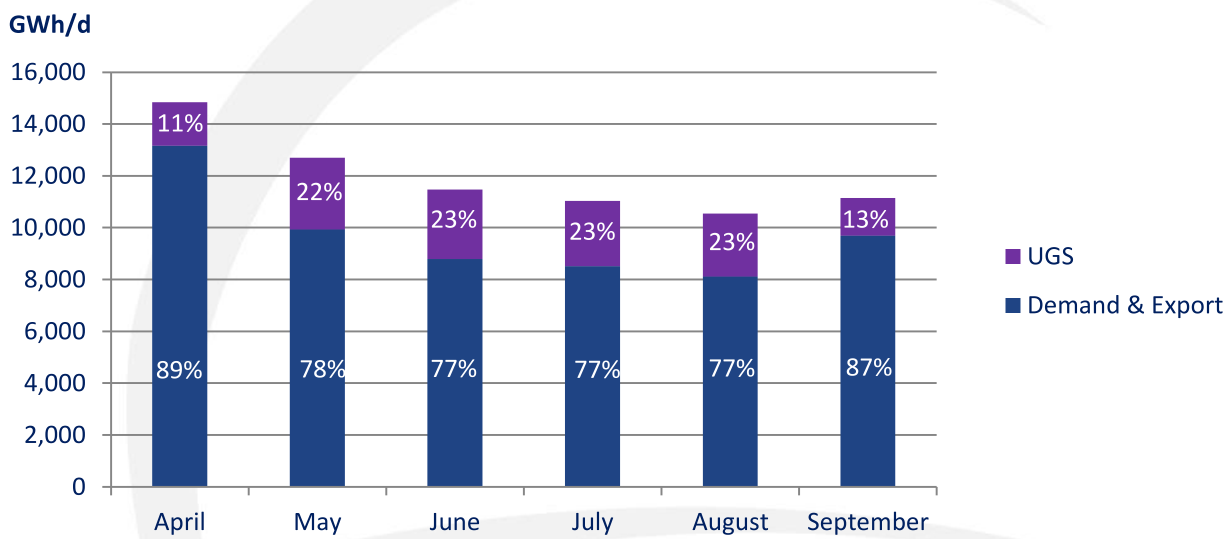

Figure 2 - Transported gas

> <u>Sensitivity-analysis - Level of stock</u>

As the level of stock at the end of the season is mostly defined by the behaviour of market participants and therefore cannot be anticipated, two alternative levels of storage have been considered: 80 and 100% on 30 September 2014.

The definition of the monthly injection and supply is following the same rules than for the Reference Case.

Figure 3 provides the daily aggregated stock level evolution curve as resulting from the modelling of Summer Supply Outlook 2014 (actual injection curve will derive from shippers' behaviour) and actual aggregated curves of last two summers:

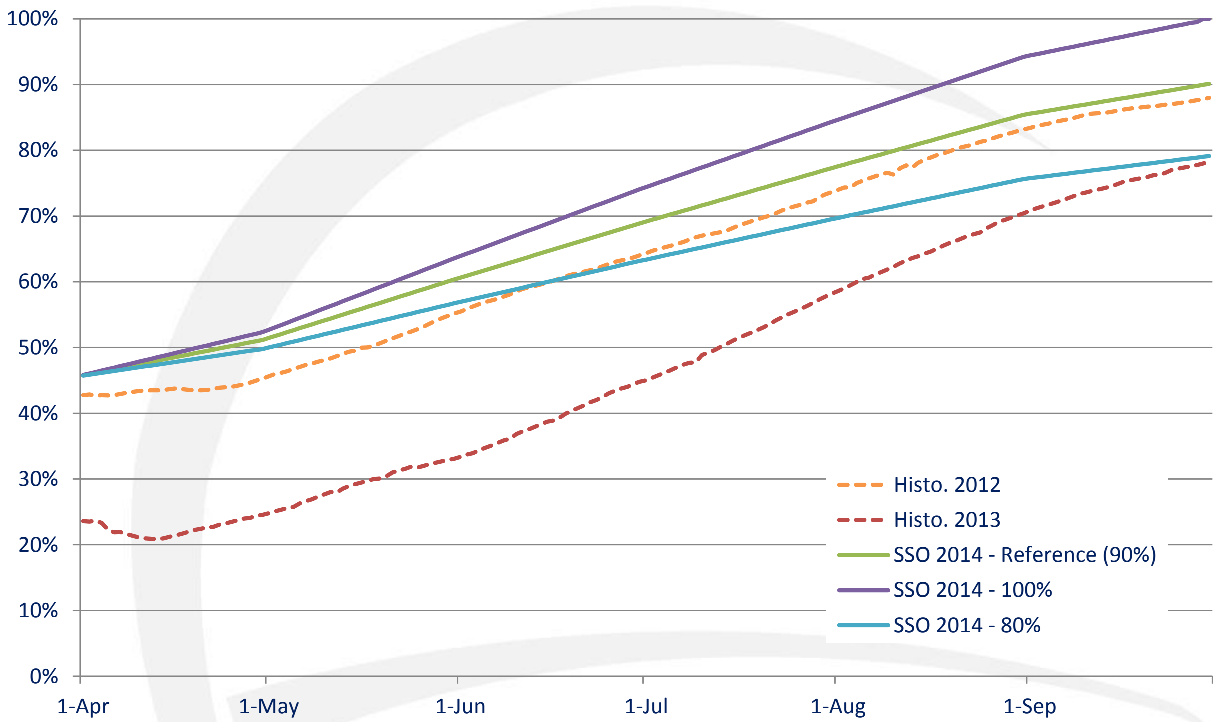

Figure 3 - Stock level development curve

The Reference Case injection profile obtained through modelling is very similar to the actual aggregated profile of Summer 2012. The very low stock level at the end of March 2013 and the low temperature in April 2013 explain the initially decreasing and then steep profile of 2013 stock level.

The table below compares the dates at which intermediate stock levels are reached according to the modelling of Summer Supply Outlook 2014 with historical data of last two summers:

Cases	Date of x% filling achievement at EU aggregated level				
	70%	80%	90%	100%	Remarks
Reference case	4 Jul.	10 Aug.	30 Sep.		Without the use of interruptible capacity, Denmark and Sweden reach a maximum level of 59% on 30 September
100%	18 Jun.	18 Jul.	18 Aug.	30 Sep.	
80%	2 Aug.	30 Sep.			
Historic 2013	30 Aug.	8 Oct.			70% for Denmark and Sweden with use of interruptible capacity
Historic 2012	21 Jul.	20 Aug.	18 Oct.		80% for Denmark and Sweden with use of interruptible capacity

> Sensitivity analysis - Supply minimization

In order to capture the influence of supply sources on the ability to reach full injection on 30 September, each supply source share has been decreased one-by-one by 10% then 20%. The other supply sources have been increased based on their monthly shares in the Reference Case. Subsequently, modelling has been used to identify the potential change in stock level on 30 September.

Generally, the flexibility of the European transmission system is high enough to allow for different supply patterns while reaching the same stock level at the end of the Summer 2014. Some exceptions have been identified when investigating the influence of a decrease of LNG imports. Unlike in Summer Supply Outlook 2013, no particular limitation appeared when reducing Russian Supply by 10 and 20%. This comes from the change in the injection target (90% instead of 100%) and the higher storage level at the end of the winter (39% instead of 17%).

The following table identifies the impact of a reduction of LNG delivery to Europe:

Minimized supply source	10% reduction		20% reduction	
LNG	PT/ES/ FRt/FRs 85%	Maximum use of FRn>FRs Higher Algerian supply to Spain would mitigate the reduced injection in those Zones	PT/ES/ FRt/FRs 77%	Maximum use of FRn>FRs Higher Algerian supply to Spain would mitigate the reduced injection in those Zones

These findings are consistent with those of TYNDP 2013-2022 under the Supply Source Dependence assessment.

These decreases in the maximum stock level represent only the influence of alternative supply patterns. In any case, the availability of transmission capacity to reach a 90% storage level is the same as under the Reference Case.

> Sensitivity analysis – Russian supply

The political situation in Ukraine since the beginning of the year has had no impact on delivery of Russian gas through the different import routes. Nevertheless it has increased the focus on the importance of Russian gas in both the supply of European gas demand and the injection season.

In order to increase the awareness of stakeholders and institutions, European Commission has defined additional cases to be included by ENTSOG in this report. They should not be understood as a forecast by ENTSOG but rather as a "what if" exercise on the basis of an optimum use of gas infrastructures and supply (see page 16 for assumptions). These cases are defined by the nature of the potential disruption and its duration.

Disruption	Duration	Demand disruption (GWh/d average on the period)	Stock level reached in impacted countries *	Fully used infrastructures
Transit through Ukraine	Summer	BG/FYROM (21)	BG (0%) HU/RS (20%) PL (82%) RO (75%)	RO>BG UGS>BG AT>HU DEg>PL
	May	BG/FYROM (5)	none	RO>BG UGS>BG
Russian supply	Summer	BG/FYROM (21) FI (77) EE/LV/LT (64) PL (94)	AT (59%) BG (0%) HR (88%) DEg/CZ/SK (84%) HU/RS (17%) LV (0%) PL (0%)	RO>BG DEg>PL DE>AT IT>AT IT>SI NO>DEg BE>DEg NL>DEg DEn>DEg
	May	BG/FYROM (5) FI (77) LT/RUk** (33)	none	RO>BG UGS>BG LV>LT

(*): the distribution of the missing gas (compared to a 90% stock level) between these countries may result in different stock levels at the end of the season (the total missing gas is unchanged).
(**): Kaliningrad

Above results show that a one month disruption (May has been selected as being the month of highest demand after report publication) has no impact on the stock level that can be reached at the end of the Summer 2014.

In case of events lasting the whole summer, the two types of disruption strongly differ in term of scale and magnitude of their effects:

- The disruption of transit through Ukraine has a South-East regional impact on storage level but only Bulgaria is not able to meet its summer demand (in the second half of the season)
- The disruption of all Russian supply has a significant impact on most of storages in Central and Eastern of Europe. In addition to Bulgaria, both Poland and Baltic states are not able to meet their gas demand.

The above impacted areas are consistent with the list of countries identified as dependent from Russian gas under the Supply Source Dependence indicator of TYNDP 2013-2022.

Regarding transport of gas to non-EU countries it is important to consider that:

- with the exception of a disruption of Russian supply throughout the season, a physical reverse flow from Slovakia to Ukraine of 200 GWh/d has been considered (the transmission infrastructures of EUstream, the Slovak TSO, are ready to handle such flow only under the condition of the implementation of an interconnection agreement with Ukrtransgaz and consistent with EU laws). Without any physical flow from Ukraine the physical reverse flow from Slovakia to Ukraine of 859 GWh/d is technically available (Congestion Management Procedures should enable that sufficient gas arrived from the western border of Slovakia),
- such reverse flow could be put in place without impact on the UGS storage level at the end of the season,
- any disruption of transit of Russian gas through Ukraine would result in the complete interruption of transit through Romania and Bulgaria to Turkey and of Turkish exports to Greece.

Summer Supply vs. TYNDP supply

This section aims at building a bridge between Supply Outlooks and ENTSOG TYNDP 2013-2022 where three Potential Supply Scenarios have been introduced for each import source.

For every import source, the Figure 4 makes the comparison between:

> the yearly level[1] derived from the Reference Case which is based on last two summers
> the three Potential Supply Scenarios exogenously defined in TYNDP, for the year 2014.

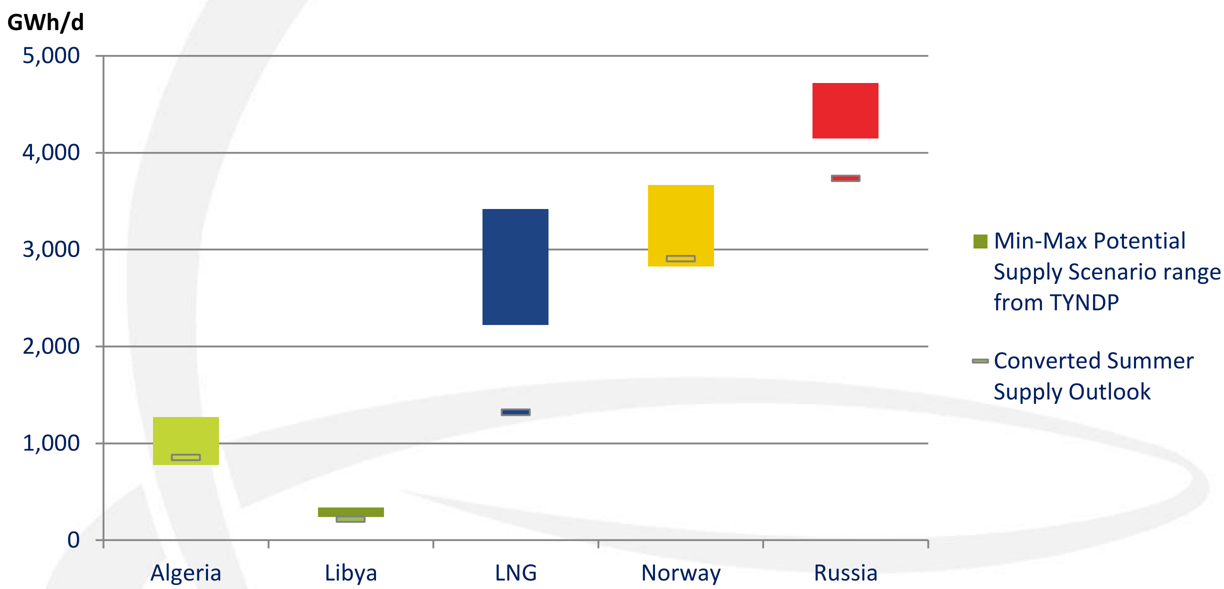

Figure 4 - Summer Supply Outlook vs. TYNDP for 2013

[1] A Summer/yearly ratio based on last 2 years has been used to convert imports used in this report into daily average for the whole year.

Conclusion

According to the ENTSOG modelling and supply assumptions, this Summer Supply Outlook confirms the ability of the European gas network to enable shippers to reach at least a 90% stock level in underground gas storage by the end of the Summer 2014 while ensuring the proper maintenance of the system. In Denmark and Sweden the use of interruptible is still necessary before the commissioning of a project autumn 2014[2]. The supply minimization has also confirmed the dependence of Iberian Peninsula (plus South of France) on LNG supply to meet the targeted stock level.

The specific cases defined by European Commission following Ukraine crisis show that the resilience of the European system is satisfactory when facing a one month event. In case of an event lasting the whole summer, most countries of Central and Eastern Europe would see their stock level strongly impacted. This would endanger the demand coverage for the winter 2014/15. In addition, a certain number of countries would not be able to meet their demand.
Such situation mostly results from a lack of infrastructure from West to East and along a North-South axis in Eastern Europe (especially in case of disruption of transit through Ukraine). TYNDP 2013-2022 includes already several FID[3] and non-FID infrastructure projects mitigating this situation. The high storage level in Western Europe would be ensured by additional LNG imports.

Findings of this report are in line with previous Summer Supply Outlooks and TYNDP 2013-2022.

Please note that the integrated flow patterns used in this report are hypothetical and have been produced for the purposes of this Summer Supply Outlook.

ENTSOG plans to provide a review of Summer 2014 dynamics in spring 2015 together with the next Summer Supply Outlook.

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[2] The cross-border congestion identified for Denmark is known to be related to the low level of firm capacity from Germany to Denmark. Two FID projects already exist to overcome the challenges in the Danish market in terms of border point capacity, diversification and security of supply that have been identified in previous reports.

[3] The Hungary-Slovakia Interconnector and the reverse flow from Greece to Bulgaria have not been considered in the modelling as being under commissioning but still not under commercial operation.

Legal Notice

ENTSOG has prepared this Summer Supply Outlook (including cases related to Ukraine situation as defined by European Commission) in good faith and has endeavoured to prepare this document in a manner which is, as far as reasonably possible, objective, using information collected and compiled by ENTSOG from its members and from stakeholders together with its own assumptions on the usage of the gas transmission system. While ENTSOG has not sought to mislead any person as to the contents of this document, readers should rely on their own information (and not on the information contained in this document) when determining their respective commercial positions. ENTSOG accepts no liability for any loss or damage incurred as a result of relying upon or using the information contained in this document.

Annex A - Methodology

Modelling tool

Modelling has been carried out using ENTSOG NeMo Tool based on linear programming of flows. The network/market topology used in this report is the similar to the one used in ENTSOG TYNDP 2013-2022 released in February of this year.
The considered level of transmission capacity is based on the annual firm capacity reduced according maintenance schedule where relevant.

In order to ensure maximum stock level in each Zone, priority has been given every day to the slowest storage facilities (bigger ratio between the volume still to be injected on the injection capacity).

Modelling enables the identification of potential capacity and supply limitation preventing the reach of the targeted stock level in each European storage by 30 September 2014. NeMo Tool also indicates on which date intermediate stock level may be reached.

Reference Case and 80-100% stock level targets

Modelling is based on 183 daily simulations taking into account the decrease of injection capacity with storage filling. The different parameters are defined as below:

> Demand

Average monthly demand as the addition of TSO's forecast.
Within each month the demand is considered flat.

> Injection

First the total quantity of gas to be injected from 1 April to 30 September 2014, is defined as the difference between:

- the sum of the working volume of all European UGS
- the sum of the stock level of European UGS on 28 March 2014 (source: GSE AGSI platform)

Then this quantity is split per month based on the weight of each month in the injection profile based of last two summers (source: GSE AGSI platform). The overall injection within a month is considered flat and daily injection is limited by the below injectability curve.

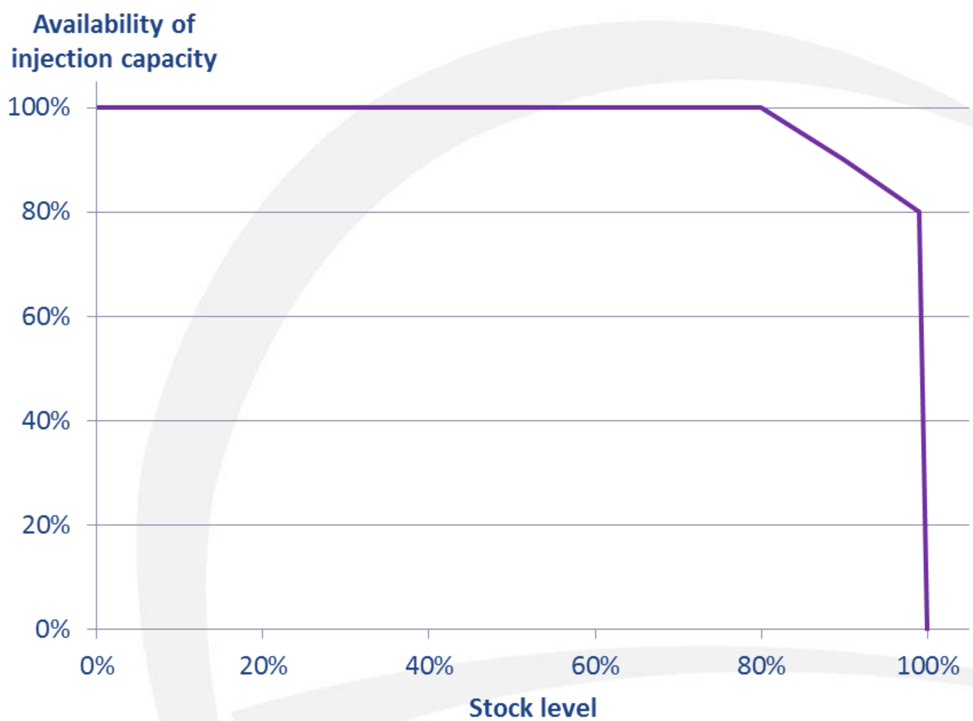


Figure 5 - Injectability curve

> Supply

For each month the level of supply results from the sum of demand and injection as defined above.
The share of National Production results from the TSOs' monthly forecast. For each month, the difference between the total supply needed and the national production is then split between import supply sources according to their share over the relevant month of last two summers.

Compared to previous Summer Supply Outlooks, a wider range has been given at import route level (as the supply source minimization already highlights the dependence of some country on a particular source):

- Pipe gas: 10-95% range based on capacity
- LNG terminal 10-80% range based on send-out capacity

Sensitivity analysis - Supply minimization

Demand and injection parameters are the same as for the Reference Case. For supply, the monthly level is the same but each import source share is decreased one-by-one by 10% then 20% compared to Reference Case while increasing the other sources according to their share. These changes in the level of supply sources are passed onto import routes, keeping them high enough to cover gas demand and exports to Turkey and Kaliningrad.

Modelling enables the identification of lower stock levels induced by the alternative supply mixes.

Summary of Summer Supply Outlook 2014 assumptions

	Reference Case & 80-100% targets	Supply minimization
Demand	Average monthly demand forecast provided by TSOs	
Monthly injection	> European aggregated injection over the Summer: quantity necessary to reach injection target (80%, 90% or 100%) on 30 September 2014 > Monthly injection based on the Summer one to which is applied the average monthly profile of summers 2011 and 2012 > Injection per Zone is a result of the modelling	
Overall supply	Sum of demand and injection for every month	
Supply shares	Average of summers 2012 & 2013	-10% / -20% for the minimized source
Import routes	10-95% range of pipe import capacity & 10-80% range of LNG send-out capacity	
Cross-border capacity	Firm technical capacity as provided by TSOs taking into account reduction due to maintenance	

Summary of alternative assumption for cases on Russian supply

	Disruption of transit through Ukraine	Disruption of Russian supply
Injection	Maximization of injection in every country	
Withdraw	Used to ensure the balance of demand in each country once every other supply has reached its maximum	
Pipe imports	Ranging from Reference Case level and the highest level reached on 183 consecutive days over last 2 years	
Russian imports	Maximum diversion	No flow
LNG import	Ranging from Reference Case level to 80% of send-out capacity of each LNG terminal (model is defining the lowest level within this range ensuring a maximization of injection)	
Import routes	10-95% range of import capacity for pipe gas and 10-80% range of send-out capacity for LNG	
Reverse-flow toward Ukraine	200 GWh/d from Slovakia	No flow

Annex B - Data for Summer Supply Outlook 2014

Supply share by source

Ref. Case	April	May	June	July	August	Sept.
National Prod.	26%	28%	30%	30%	32%	30%
Import	74%	72%	70%	70%	68%	70%

Ref. Case	April	May	June	July	August	Sept.	Summer/ yearly ratio
Algeria	9%	9%	9%	8%	6%	6%	79%
LNG	16%	16%	16%	14%	17%	16%	101%
Libya	2%	3%	3%	3%	3%	2%	106%
Norway	32%	31%	31%	33%	30%	29%	91%
Russia	40%	41%	42%	43%	44%	47%	96%

Import levels used in the Reference Case and Supply minimization (Summer average)

GWh/d	Reference Case	Algeria		LNG		Libya	
		-10%	-20%	-10%	-20%	-10%	-20%
Algeria	671	604	537	683	696	673	674
LNG	1,336	1,348	1,360	1,203	1,069	1,340	1,344
Libya	229	231	232	233	237	206	183
Norway	2,629	2,652	2,674	2,678	2,727	2,636	2,643
Russia	3,601	3,632	3,662	3,668	3,736	3,611	3,621

GWh/d	Reference Case	Norway		Russia	
		-10%	-20%	-10%	-20%
Algeria	671	701	732	720	769
LNG	1,336	1,397	1,457	1,436	1,535
Libya	229	239	249	245	262
Norway	2,629	2,366	2,103	2,823	3,018
Russia	3,601	3,763	3,925	3,241	2,881

Declared UGS storage Working Gas Volume capacity and level at the end of Winter 2013/2014

Country	DTMS* (GWh)	Stock level on 28 March 2014	Country	DTMS* (GWh)	Stock level on 28 March 2014
AT	39,886	35%	IE	2,398	46%
BE	7,755	54%	IT	182,556	47%
BG	6,050	37%	LV	25,520	46%
CZ	29,656	41%	NL	11,550	39%
DE	230,649	61%	PL	19,997	71%
DK	11,110	58%	PT	1,881	67%
ES	29,689	63%	RO	34,100	29%
FRn	77,957	24%	RS	3,300	46%
FRs	31,174	24%	SE	110	46%
FRt	27,918	37%	SK	31,570	41%
HR	7,119	46%	UK	52,316	52%
HU	67,870	20%	Total	**932,131**	**45%**

Source GSE AGSI Platform as seen from 28 March 2014 for reported countries

(*): Declared Total Maximum Technical Storage as defined on the GSE AGSI platform using a uniform GCV of 11 kWh/m^3 for conversion (Mm^3 into GWh)

(**): replacement values (see below)

When the information on stock level at the end of March was not accessible for a given country a level of 46% has been considered (average of GSE AGSI scope).

Average monthly demand and export forecast

Code	April	May	June	July	August	September
AT	236	160	138	123	128	164
BE	519	405	342	308	307	369
BG	80	65	58	45	42	52
HR	75	51	47	47	59	57
CZ	224	145	112	81	98	135
DK	105	70	55	40	50	55
EE	20	13	8	7	7	9
FI	108	77	60	58	71	88
FRn	264	204	170	157	141	187
FRs	675	522	435	400	360	478
FRt	78	50	37	31	26	38

DEg	1,273	896	756	709	714	889
DEn	1,366	925	772	742	751	1,007
GR	71	74	70	115	101	115
HU	223	122	116	110	102	144
IE	134	117	120	99	96	117
IT	1,806	1,321	1,278	1,490	1,269	1,434
LV	37	20	16	16	16	20
LT	73	52	41	40	41	48
LU	45	28	21	16	14	21
MK	2	1	1	1	1	1
NL	1,092	833	743	613	619	740
PL	420	340	280	260	280	335
PT	137	139	141	143	109	152
RO	278	191	164	158	164	194
RUk*	52	43	45	43	45	55
RS	46	41	36	32	33	41
SK	145	75	76	68	69	77
SI	23	17	16	15	15	17
ES	823	843	809	829	754	822
SE	42	19	17	15	16	20
CH	63	48	40	37	37	43
TK*	280	230	310	328	258	251
UK	2,352	1,791	1,465	1,340	1,320	1,517
Total	**13,166**	**9,930**	**8,793**	**8,514**	**8,111**	**9,694**

(*): Exports to Kaliningrad and Turkey

ENTSOG Summer Review 2013

Executive Summary

ENTSOG has completed the review of the European gas supply and demand picture for Summer 2013 (April to September). The seasonal Reviews aim at a deeper comprehension of the development of the demand and supply in the previous seasons and the identification of trends that cannot be captured at national or regional level. They also help to build experience and a solid background for the assumptions considered in the Summer Outlook. Such knowledge is also factored in the recurrent TYNDP process in order to ensure consistence and continuous improvement of ENTSOG reports, and will be factored in the ongoing R&D plan.

The key findings of this review are:

> **Seasonal Gas demand in Europe was 2.5% lower than the one from previous summer.**
> **The main driver for demand decrease is the power generation sector.**
> **The low stock levels in the UGS at the beginning of the summer were compensated with higher injections and an extension of the injection season beyond September.**
> **There has been a significant decrease in LNG supplies compensated by an increase of Russian imports.**
> **The review also includes a summary of the cross-border flows during the season.**

Stakeholders' comments on this seasonal analysis are welcomed and would enable ENTSOG to improve its knowledge of seasonal and market dynamics influencing the use of infrastructure. Comments would serve as basis for the R&D plan and be beneficial to the quality of further reports.

Introduction

This review, as part of the ENTSOG Annual Work Program 2014, is published on a voluntary basis and aims at providing an overview of the demand and supply balance during Summer 2013. The report brings transparency on the internal analysis carried out by ENTSOG for the purpose of developing the seasonal Supply Outlooks and the Union-wide TYNDP, as well as for the ongoing R&D plan.

The report aims to provide an overview of European trends that could not be captured at national level and to build experience for future reports. This report should not be seen as a direct review of previous Seasonal Outlooks as outlooks do not aim to provide a forecast but to better explore infrastructure resilience.

Regarding European dynamics, the report highlights the wide heterogeneity of national demand profiles and supply sources. These differences are linked among others to physical rationales such as climate, demand breakdown or producing field flexibility for example.

Seasonal Overview

Some occurrences on the European gas market caused fluctuations in the supply and demand balance during the period between April and September 2013, the major ones being:

- Two weeks shut down (planned maintenance) of Nord Stream (June 13)
- Reduced exports from Norway (June 13)
- Restart of Statoil’s Hammerfest LNG after one month halt (June 13)
- Continuing reduced production capacity at Norway’s Troll field (Aug 13)
- Halted Russian exports via Belarus due to pipeline maintenance (Aug 13)
- Still shut down at Norway’s Njord field (to mid-2014) (Sep 13)
- 17 days maintenance of UK’s Roughs storage (Sep 13)

Demand

> **European seasonal gas demand**

Gas demand was 1,728 TWh in Summer 2013, slightly lower (-2.5%) than in previous summer.

The average demand levels between April and September were very close to those from the previous summer while significant differences were experienced in the maximum levels reached in April due to the long lasting winter. The maximum daily demand was 20% higher in April 2013 than in April 2012.

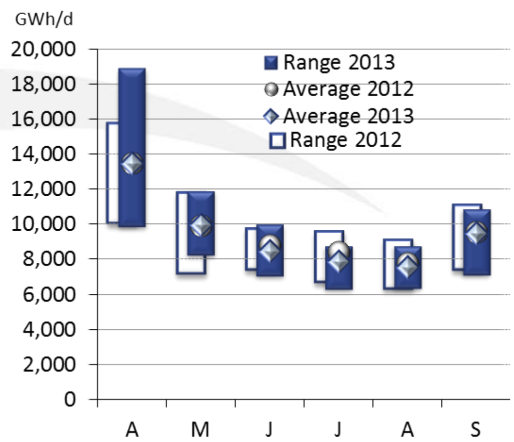


Figure 6 Total gas demand

As shown in the graphs below, for the countries where the demand breakdown is available, the Residential, Commercial and Industrial sector represented 78% out of 1,340 TWh, showing an increase of +5.3% in comparison with previous summer. The reduction followed by the power generation sector (-19%) motivated the decrease of the overall demand for these countries of 1.3%.

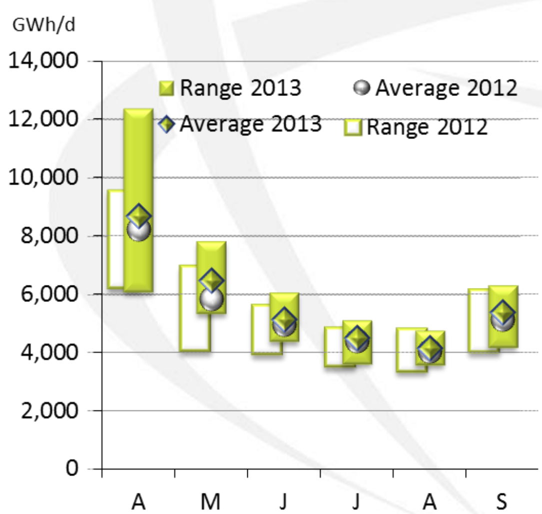


Figure 7 - Residential, commercial and industrial (*)

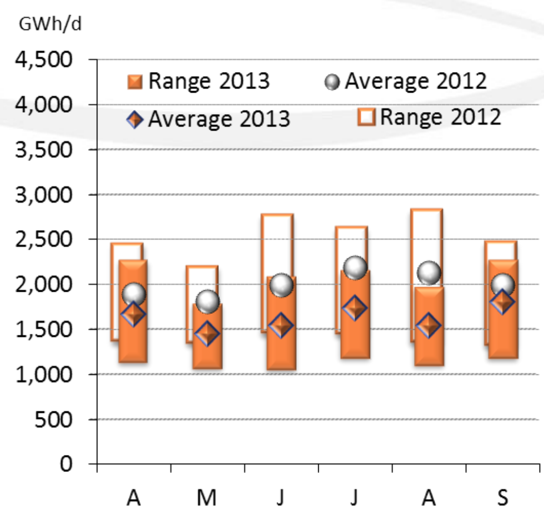


Figure 8 - Power generation

(*) These graphs refer to the countries for which demand breakdown is available (Belgium, Croatia, Czech Republic, Denmark, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden, and United-Kingdom)

The following two graphs show the evolution of gas prices in Europe during Summer 2013:

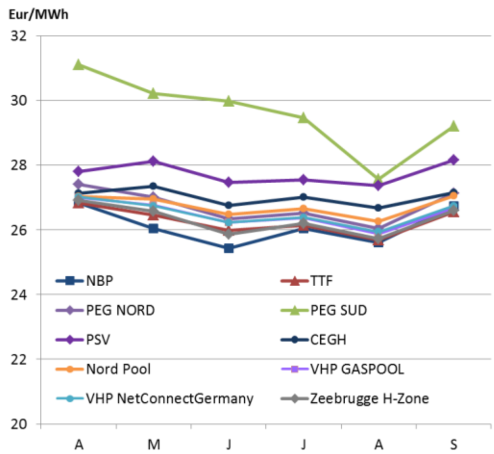


Figure 9 - Month-ahead average price by hub

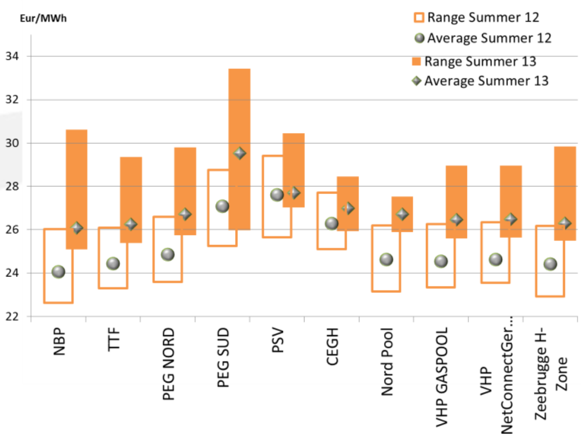


Figure 10 - Month-ahead average price (*)

(*) Average price calculated as non-prorated average of the hubs detailed in figure 9

Figure 9 compares the month-ahead summer average prices of the main gas hubs and figure 10 shows the maximum range described by the month-ahead average price for the different hubs in Europe (source Platts) for the last two summers. In contrast to demand figures, the average gas price in summer 2013 was slightly higher than in previous summer, an increased volatility was observed in many of the hubs.

- **Power generation from gas**

The generation of electricity from gas has followed a significant (-28%) fall since Summer 2011.

This decrease follows both the increasing generation from RES sources and the continuing preference for coal generation against gas.

The data does show a continuous decline in the thermal gap (the volume of power production coming from fossil fuels).

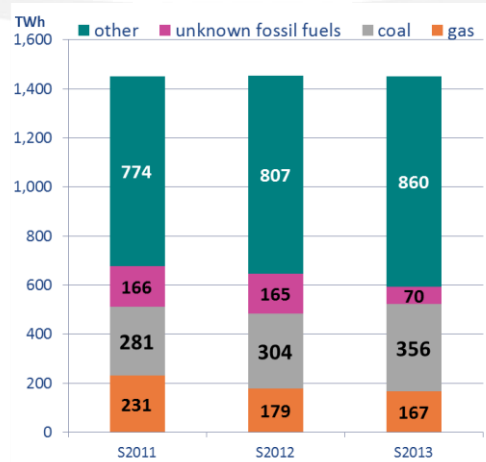


Figure 11 – Gas and coal in the electricity mix Summers 2011-2013

Source: Own elaboration based on data provided by ENTSO-E

The 12 TWh decrease in the power generation from gas between Summer 2012 and 2013 does not represent a significant change in the shares of electricity produced by gas as shown in the following graphs..

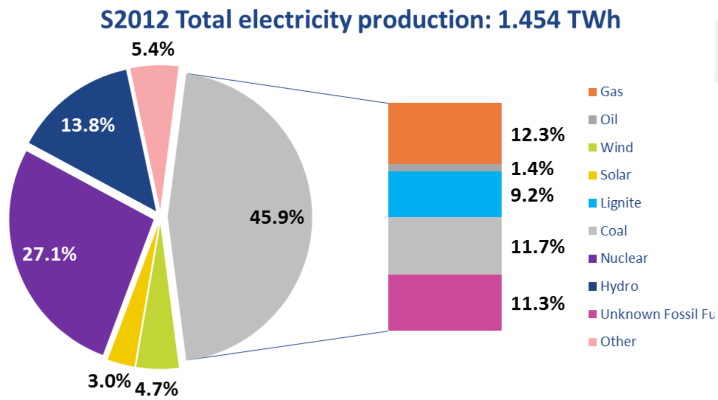


Figure 12 – Summer 2012 Electricity generation mix

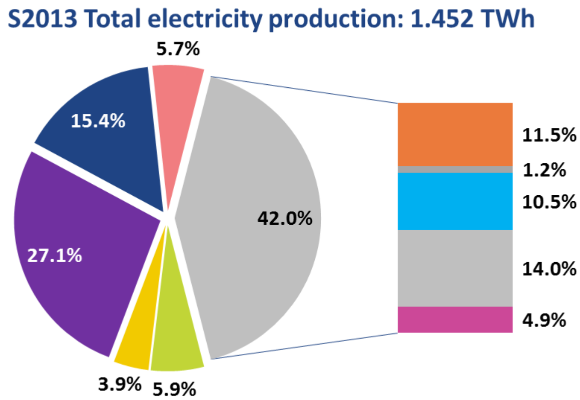


Figure 13 – Summer 2013 Electricity generation mix

Source: Own elaboration based on data provided by ENTSO-E

As shown in the graphs above, the increase in RES (Hydro, Solar and Wind) sources derived in a decrease of the segment of fossil fuels from 45.9% to 42%.

- **Summer demand evolution 2009-2013**

Summer gas demand has decreased for the third year in a row. The accumulative decrease since the maximum reached in summer 2010 is 11%.

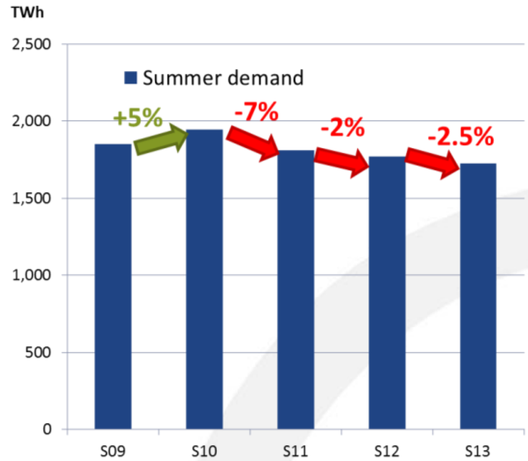


Figure 14 - Total consumption Summer 2009-2013

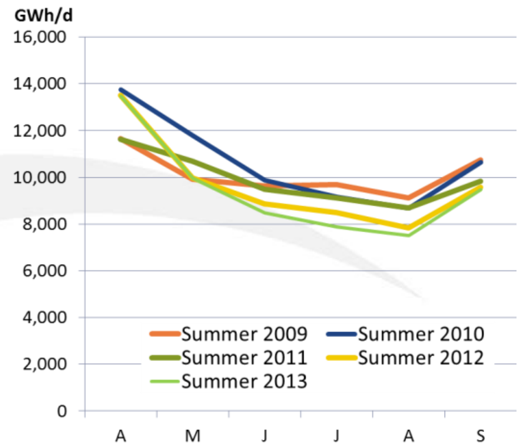


Figure 15 - Demand. Monthly average. Summer 2009-2013

By sector, for those countries where the demand breakdown is available, while the Residential, Commercial and Industrial consumptions have recovered the growing trend after the decrease suffered in 2011, the gas demand for power generation has followed a continuous fall due to the increasing shares of RES in the yearly electricity mix and the preferred use of cheaper coal to fill the thermal gap. After three years of consecutive fall, the accumulative decrease in the gas demand for power generation reaches -43%.

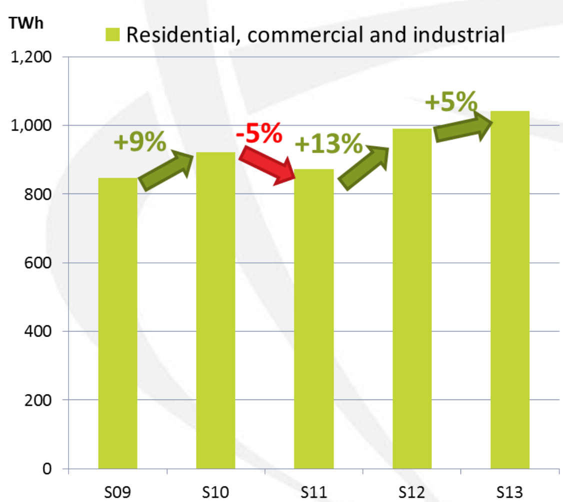


Figure 16 - Residential, commercial and Industrial consumption. Summer 2009-2013 (*)

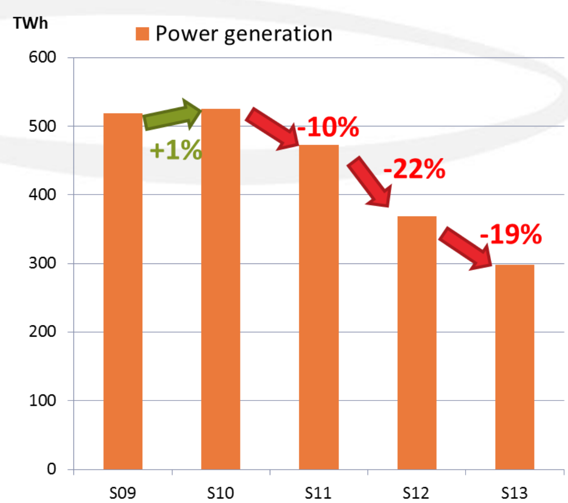


Figure 17 - Gas consumption for power generation. Summer 2009-2013 (*)

(*) These graphs refer to the countries for which demand breakdown is available (Belgium, Croatia, Czech Republic, Denmark, Finland, France, Greece, Hungary, Ireland, Italy, Lithuania, Netherlands, Portugal, Slovakia, Slovenia, Spain, Sweden, and United-Kingdom)

- ***Country detail***

The evolution of gas demand compared to previous summer was geographically heterogeneous with significant variations in both directions.

Variation (+/- %)	*Total*	*Res&Com&Ind*	*Power generation*
AT	-2.40%	n.a.	n.a.
BE	-5.31%	0.50%	-17.62%
BG	-0.40%	n.a.	n.a.
HR	-4.27%	5.47%	-30.70%
CZ	8.98%	8.98%	-
DK	-16.83%	-12.56%	-48.76%
EE	33.51%	n.a.	n.a.
FI	-2.24%	-2.84%	0.62%
FR	2.03%	3.85%	-44.12%
FYROM	24.27%	36.41%	-50.51%
DE	10.22%	n.a.	n.a.
GR	-0.96%	1.75%	-1.86%
HU	-9.14%	0.06%	-41.93%
IE	-5.67%	-6.31%	-5.29%
IT	-12.03%	-1.56%	-24.16%
LV	9.37%	n.a.	n.a.
LT	-19.10%	-21.95%	-11.50%
LU	-35.38%	-5.12%	-86.74%
NL	-0.37%	-0.08%	-2.21%
PL	10.22%	n.a.	n.a.
PT	-3.44%	18.63%	-73.42%
RO	-16.32%	-18.69%	-3.12%
SK	-3.42%	0.73%	-37.74%

Figure 18 - Demand variation (Summer 2013 ref. Summer 2012)

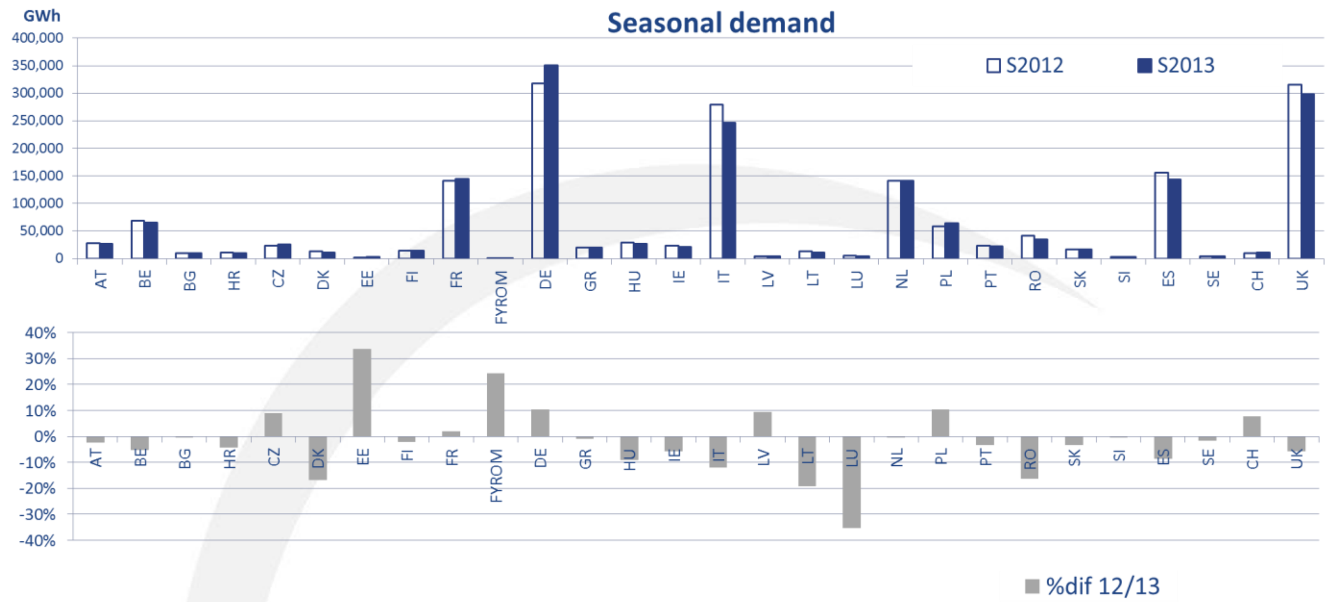


Figure 19 - Summer demand. Country detail

- **Seasonal modulation**

The pattern followed by summer demand is linked to the climatic conditions in April and September.

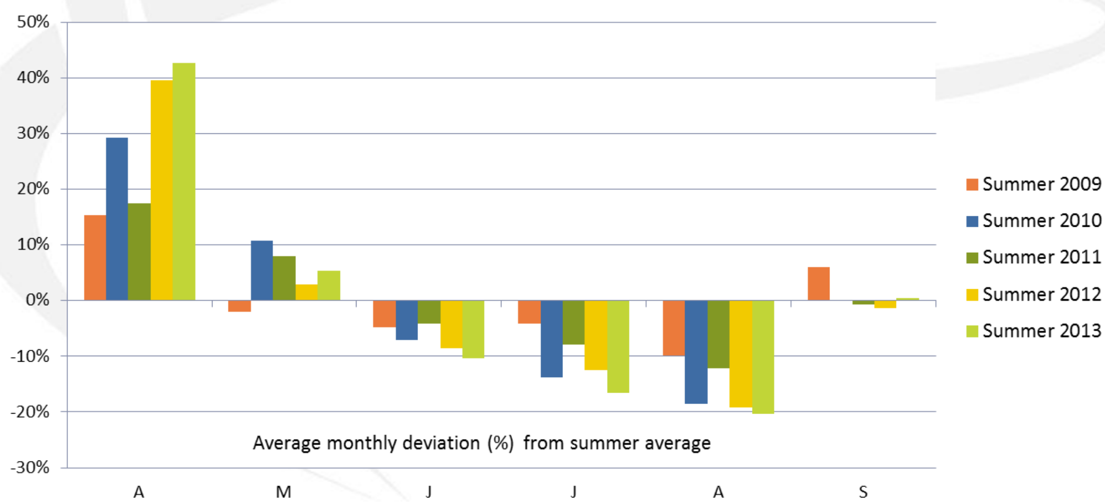


Figure 20 - Summer modulation 2009-2013

The graph above shows the deviation of the monthly average demand from the summer average for each of the last four summers:

- April has been regularly the month with the highest demand
- The gas demand in June, July and August has been systematically lower than the average
- September gas demand has been very close to the summer average for the last four years.

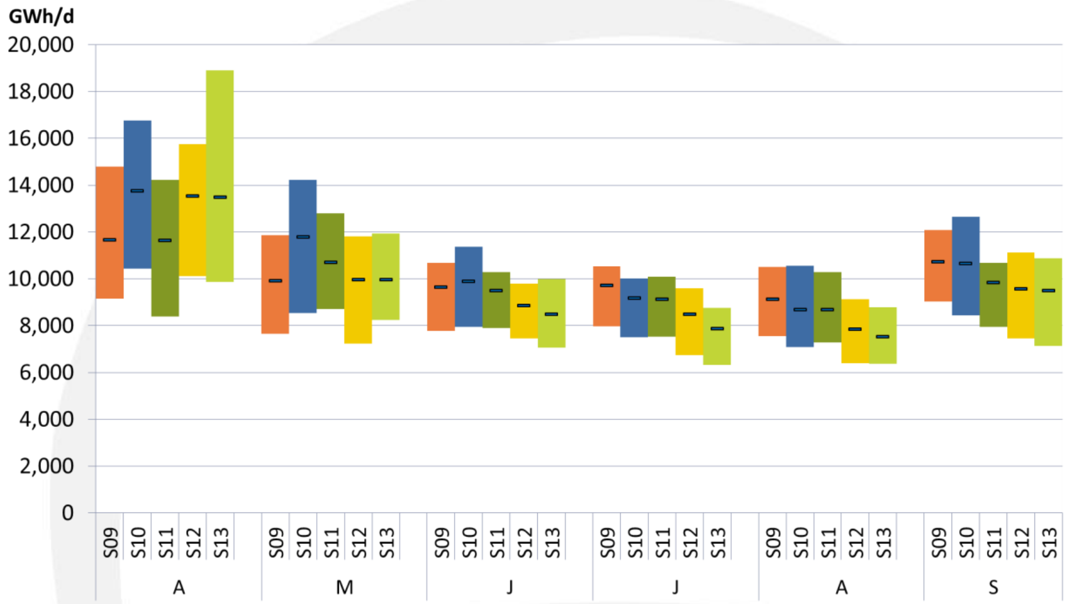


Figure 21 - Monthly demand: average and ranges

The figure 21 shows the monthly variation between the maximum and minimum daily demand.

Supply

- **European seasonal gas supply**

As seen in Figure 22, the evolution of the aggregated gas supply in Europe during the summer 2013 followed the high demand level in April, with additional UGS withdraws during the first half of the month.

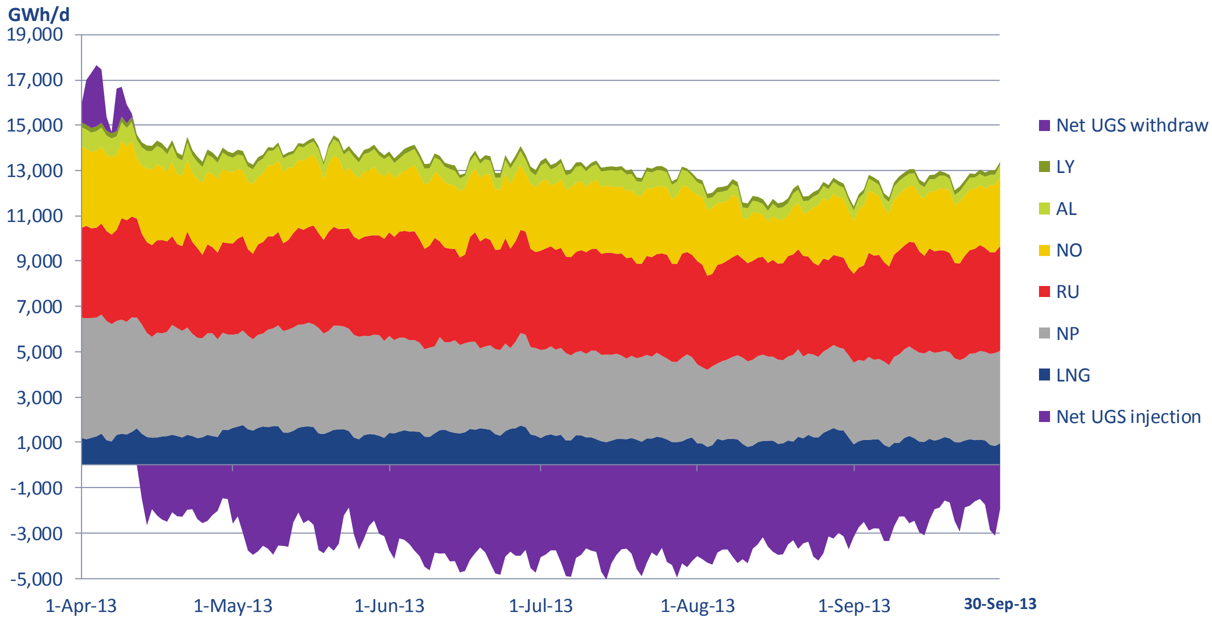


Figure 22 - Summer 2013 supply profile

The next graphs give an overview of Imports and National production supply shares during summers 2013 and 2012 in both absolute and relative terms.

Total Summer Supply: 2,428 TWh

Figure 23 shows the seasonal supplies by source for the last two summers in absolute figures.

While the variation in the Norwegian and Libyan imports are about 5%, important decreases in LNG (-22%) and Algerian imports (-22.4%) were replaced by a relevant increase in Russian imports (+20%) and National production (+6.7%).

These variations implied a significant change in the supply shares, as shown in the Figures 24 and 25.

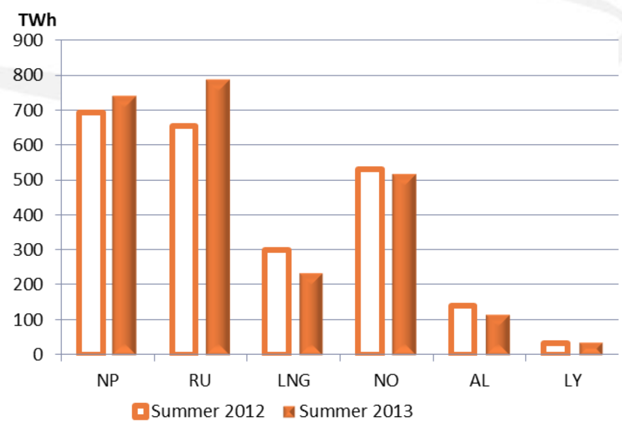


Figure 23 - Seasonal supply

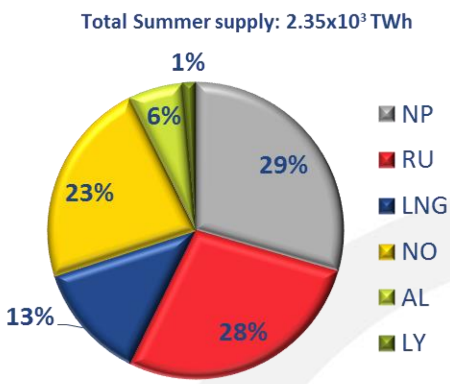


Figure 24 - Supply shares. Summer 2012

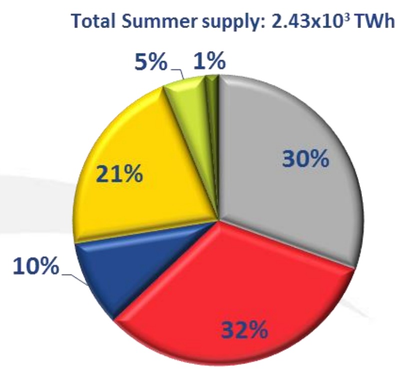
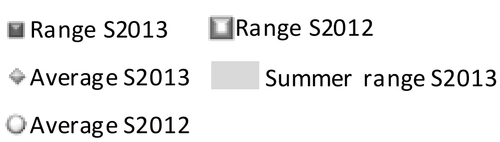


Figure 25 - Supply shares. Summer 2013

The LNG import has followed on its continuous decrease, following the divergence of gas prices between Europe and Asia, which fosters cargo redirection and limits the arrival of spot cargos. The decline of LNG supplies has been compensated with a significant increase of Russian supplies. On the Algerian side, the total decrease of 22.4% comes along with the redistribution of flows between the Italian and Spanish routes. While the flows from Algeria into Spain increased during summer 2013 by 42%, Algerian flows into Italy decreased by 63%.

- **Supply modulation**

The following graphs illustrate for national production and each import supply source per month, the average flow and the monthly and seasonal range (between the lowest and highest daily flow of each month and for the whole summer).



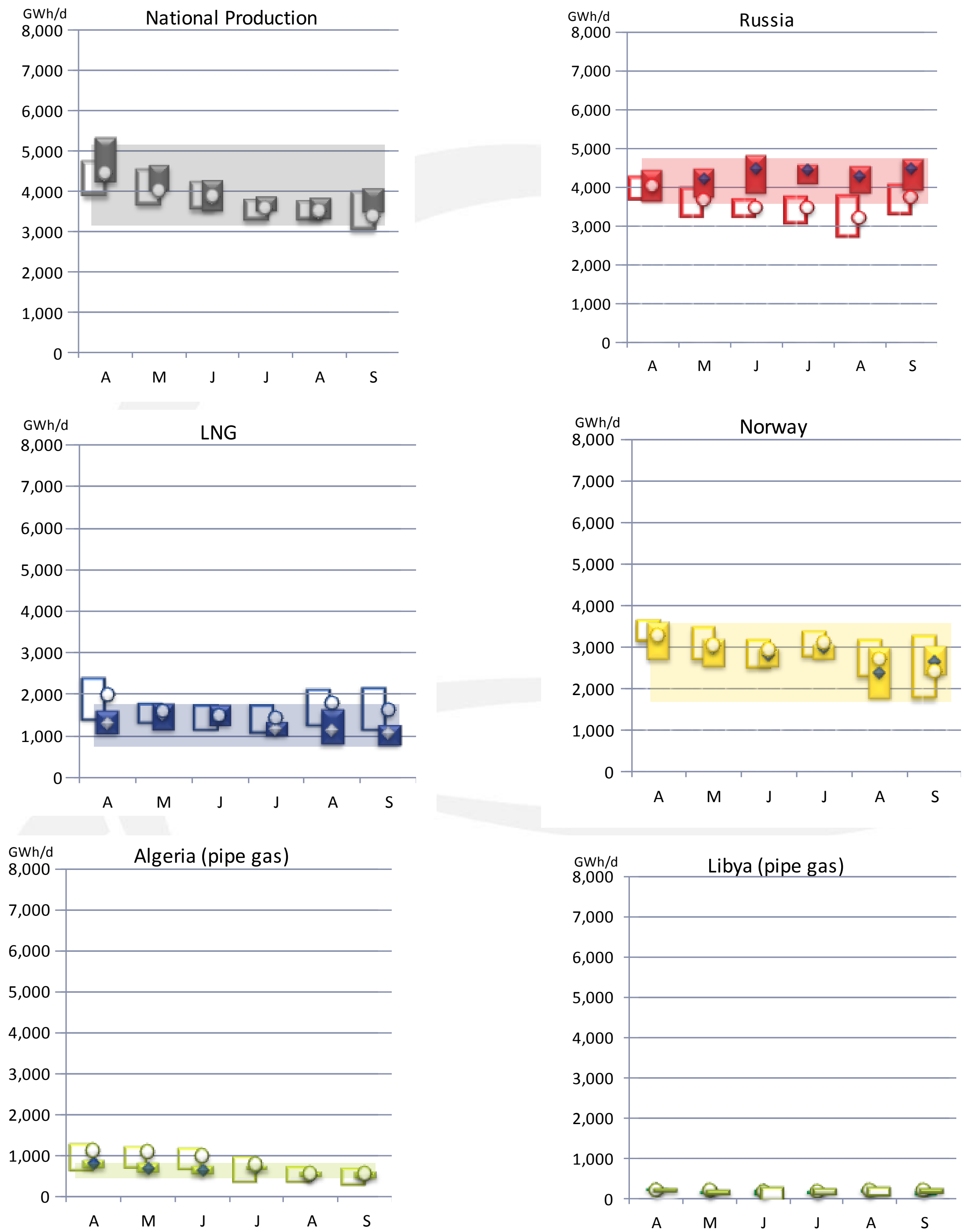


Figure 26 - Supply modulation

- **Underground storages**

The evolution of the injection season depends on many factors, in particular the willingness of shippers to inject gas and the actual amount of gas available for injection when considering gas demand. The first factor may be linked to price signals such as summer-winter spread unless the national regulatory framework implies some mandatory injection. The second one is linked to climatic and economic considerations having an impact on gas demand.

Figure 28 provides the average injection and the daily range between the lowest and highest injection for the whole Europe for every month of the summers 2013 and 2012.

The

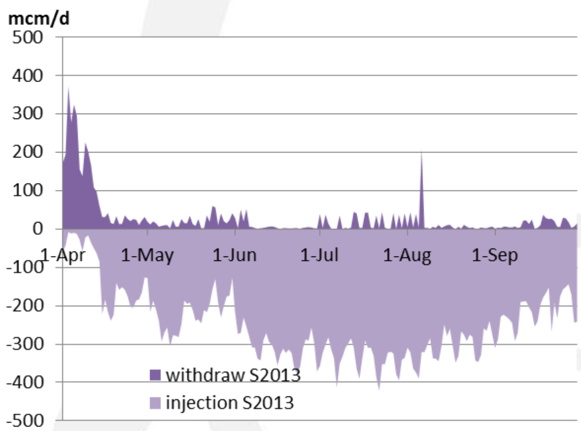


Figure 27 - UGS injection/withdraw profile. Source AGSI

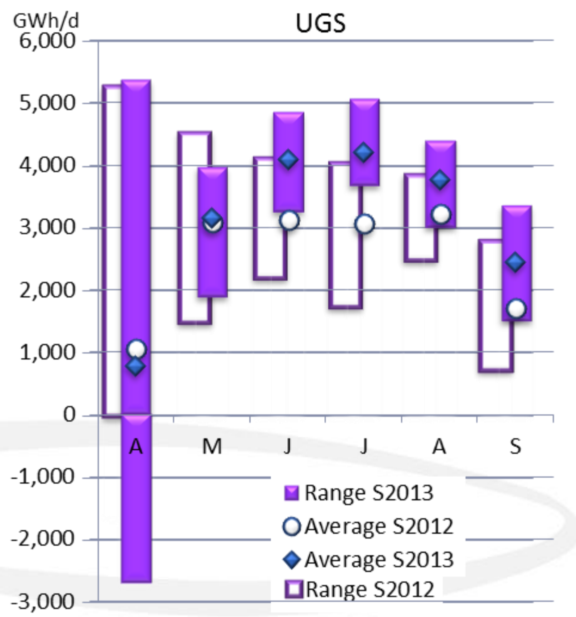


Figure 28 – UGS net injection

Despite the delay in the start of the injection season, the average injection in April and May 2013 was similar to these of April and May 2012, whereas the injection levels achieved between June and September were significantly higher than those of the equivalent months the previous summer.

The next table provides the evolution of the stock level during summer (source GSE AGSI platform):

Country	1-Apr-13	1-May-13	1-Jun-13	1-Jul-13	1-Aug-13	1-Sep-13	30-Sep-13
AT	13.09	11.58	16.5	31.42	52.08	52.08	64.63
CZ	18.84	12.8	33.29	53.21	73.23	73.23	87.88
HU	23.47	23.5	35.25	38.97	42.24	42.24	45.48
PL	65.6	70.15	79.99	86.17	94.11	94.11	99.43
SK	15.95	4.6	24.98	39.72	56.13	56.13	77.04
FR	8.18	11.98	36.22	52.2	65.87	65.87	74.5
DE	21.12	20.72	43.59	62.23	75.09	75.09	83.3
PT	62.5	64.33	70.97	75.94	79.9	79.9	81.26
ES	61.81	63.74	70.5	75.79	80.01	80.01	81.33
UK	5.74	17.01	58.01	72.01	85.22	85.22	86.71
IT	37.43	39.38	58.12	67.69	78.34	78.34	83.9
BG	13.77	13.78	34.5	52.17	64.75	64.75	71.19
DK	21.35	15.36	25.34	39.37	55.28	55.28	70.4
NL	37.89	37.97	43.64	53.28	73.65	73.65	76.11
BE	20.14	26.73	47.33	66.36	78.42	78.42	83.24

Figure 29 - Stock level (% WGV)

Figure 31 compares the stock level evolution curve of the last four summers (source AGSI).

Having started from a significantly lower level than the previous three summers (23.5% on the 1st April), gas withdraws went on during the 1st half of April, reaching a minimum stock on the 13th April (20.9%).

For many operators, the injection season continued in October 2013.

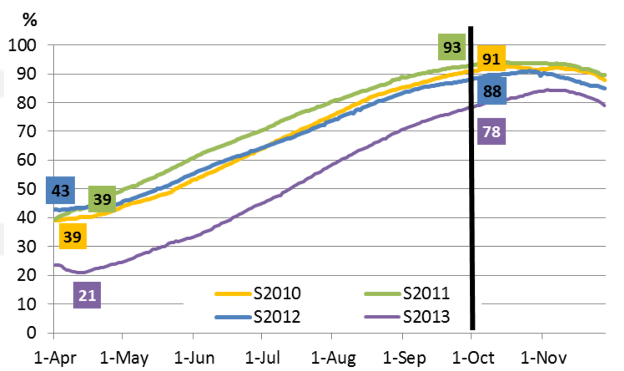


Figure 31 - Evolution of stock level. Summers 2010-2012 (Source AGSI)

The figure 30 shows the stock level on the 30th September in comparison with the maximum stock level setting the end of the injection season.

	30-Sep	maximum stock level	
S2010	90.70%	92.60%	12/10/2010
S2011	92.80%	93.80%	16/10/2011
S2012	88.00%	90.90%	26/10/2012
S2013	78.30%	84.50%	3/11/2013

Figure 30 - Stock level: 30 Sept vs. max Stock level

- **<u>Summer supply evolution 2009-2013</u>**

The following graphs show the evolution of the different supply sources both in absolute and relative terms during the last four summers.

Figure 32 - Evolution of summer gas supplies 2009-2013

Transported Volumes

The overall transported gas at the EU aggregated level is the sum of gas demand, exports and injection for each month.

Figure 33 shows the transported volumes during summer 2013 in comparison with those of the previous year.

With the exception of April, where for a very similar gas demand, the transported volumes were smaller due to the lower injection, and May with almost the same transported volume the same month one year before, Transported volumes in summer 2013 were comparatively higher than those of the previous summer, as a consequence of the significantly increased UGS injection.

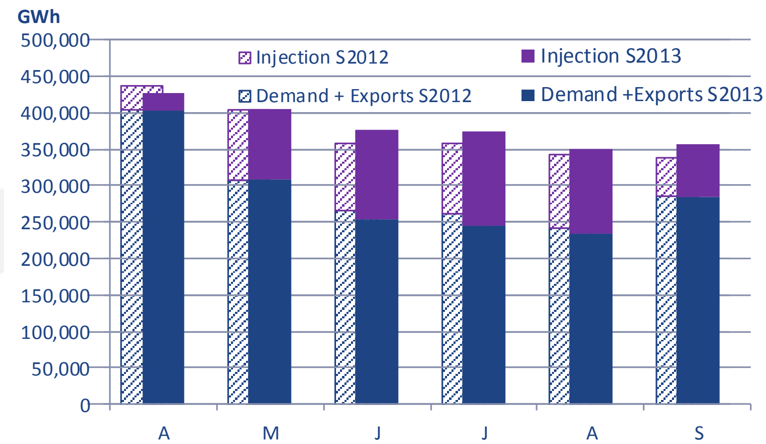


Figure 33 - Transported gas

FLOWS

The following map summarizes the main net flows (daily summer average) entering Europe and through the European cross-borders during summer 2013. The tables below increase the detail, adding the monthly average and the maximum fluctuation within the summer. Commercial flows are not considered.

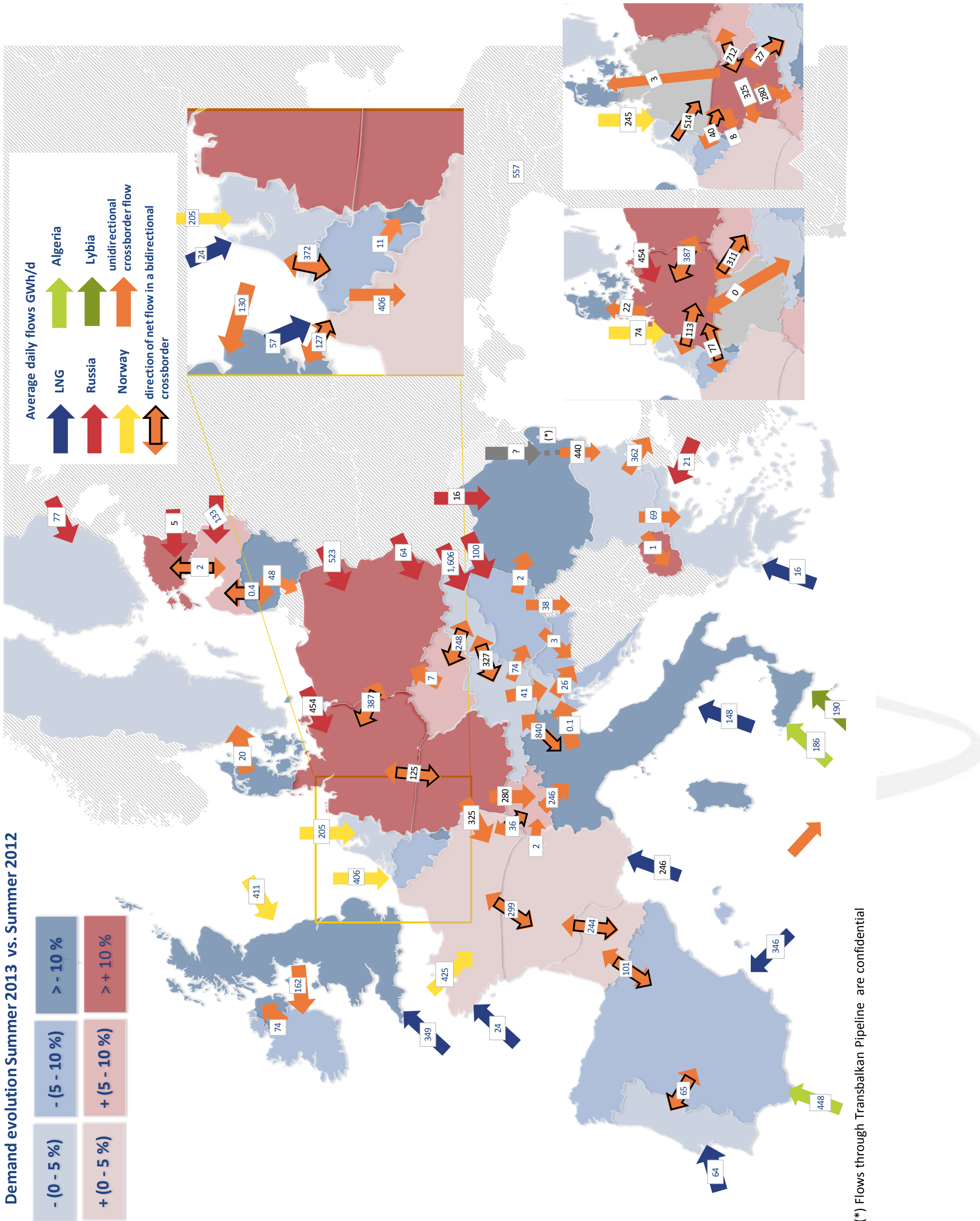


Figure 34 - Net flow pattern (Summer average)

Flows – tables

Legend:

CC: country

Direction: entry into CC; exit from CC

Adjacent InfraType: Hub, Supplier, Interconnector or LNG Terminal

CC	Region	Direction	Adjacent CC	Adjacent Region	Adjacent InfraType	4	5	6	7	8	9	Cap	Avg	Max	Min
AT	CEGH	entry	DE	GASPOOL	Hub	0	0	0	0	0	0	114	0	0	0
				NCG	Hub	52	59	73	101	109	99	249	82	235	0
			IT	PSV	Hub	1	1	3	2	2	2	191	2	46	0
			SK		Hub	299	255	344	347	363	356	1,560	327	443	173
		exit	DE	GASPOOL	Hub	0	0	0	0	0	0	173	0	0	0
				NCG	Hub	62	51	58	60	49	52	294	55	156	0
			HU	MGP	Hub	56	58	77	78	79	96	129	74	113	29
			IT	PSV	Hub	929	891	830	820	758	825	1,137	842	1023	572
			SI		Hub	51	42	43	42	35	33	103	41	59	0
			SK		Hub	0	0	0	0	0	0	248	0	0	0
BA		entry	RS		Hub	0	0	0	0	0	0	18	0	0	0
BE	H-Zone	entry	NO		Supplier	379	413	425	439	348	435	464	406	486	8
			BE	H-Zone	LNG Terminals	40	32	44	34	128	43	461	53	487	19
				L-Zone	Hub	4	3	1	1	2	6	0	3	18	0
			DE	GASPOOL	Hub	14	0	0	0	0	0	86	2	55	0
				NCG	Hub	66	0	0	0	1	0	342	11	259	0
			NL	TTF	Hub	248	215	135	143	178	189	554	185	488	37
			UK	NBP	Hub	82	164	222	207	62	81	630	136	638	0
		exit	BE	L-Zone	Hub	2	1	1	1	1	1	0	1	5	0
			DE	GASPOOL	Hub	52	101	104	115	28	81	136	80	140	0
				NCG	Hub	9	55	72	78	70	22	163	51	216	0
			FR	PEG North	Hub	259	276	250	278	289	312	570	277	366	103
			LU		Hub	17	13	9	8	8	13	30	11	25	4
			NL	TTF	Hub	20	19	45	34	24	19	190	27	190	0
			UK	NBP	Hub	53	1	0	0	7	0	808	10	386	0
	L-Zone	entry	BE	H-Zone	Hub	2	1	1	1	1	1	0	1	5	0
			NL	TTF	Hub	298	220	218	186	167	202	591	215	423	135
		exit	BE	H-Zone	Hub	4	3	1	1	2	6	0	3	18	0
			FR	PEG North	Hub	147	109	147	134	114	125	230	129	249	77
BG	GTNTT	entry	RO		Hub	383	319	389	473	401	479	602	407	568	170
		exit	GR		Hub	55	50	78	84	77	72	108	69	107	17
			MK		Hub	2	1	1	1	1	1	27	1	4	0
			TR	Exports	Hub	443	437	407	317	263	311	468	362	468	208
	NGTS	entry	RO		Hub	35	37	37	35	29	28	151	33	101	0
		exit	RO		Hub	0	0	0	0	0	0	15	0	0	0
CH		entry	DE	NCG	Hub	79	137	500	152	135	691	583	280	1592	0
			FR	PEG North	Hub	14	34	50	60	43	43	223	41	115	0
				PEG South	Hub	3	2	2	2	2	2	0	2	9	1
			IT	PSV	Hub	3	2	1	1	1	1	0	1	4	1
		exit	FR	PEG North	Hub	5						0	5	5	5
			IT	PSV	Hub	68	230	247	313	259	366	633	247	435	0
CZ	VOB	entry	CZ	VOB	Hub	0	0	0	0	0	0	960	0	0	0
			DE	GASPOOL	Hub	542	461	405	369	362	332	960	412	936	0
			SK		Hub	23	84	285	412	349	411	780	261	491	0
		exit	CZ	VOB	Hub	0	0	0	0	0	0	960	0	0	0
			DE	GASPOOL	Hub	97	78	91	114	94	130	266	100	202	48
				NCG	Hub	754	713	725	724	707	654	1,010	713	887	525
			PL	VTP - GAZ-SYSTEM	Hub	27	3	4	4	3	3	4	7	28	0
			SK		Hub	50	30	0	0	0	0	406	13	177	0

CC	Region	Direction	Adjacent CC	Adjacent Region	Adjacent InfraType	4	5	6	7	8	9	Cap	Avg	Max	Min
DE	GASPOOL	entry	NO		Supplier	94	75	62	77	73	65	219	74	331	0
			AT	CEGH	Hub	0	0	0	0	0	0	173	0	0	0
			BE	H-Zone	Hub	52	101	104	115	28	81	136	80	140	0
			CZ	VOB	Hub	97	78	91	114	94	130	266	100	202	48
			DE	NCG	Hub	18	17	19	31	22	9	37	19	43	2
			DK		Hub	6	0	0	0	0	0	29	1	22	0
			NL	TTF	Hub	168	168	148	167	148	157	366	159	232	99
			PL	VTP - GAZ-SYSTEM	Hub	425	437	419	447	364	385	926	413	923	0
			RU		Hub	360	350	300	287	376	298	872	329	1096	0
		exit	AT	CEGH	Hub	0	0	0	0	0	0	114	0	0	0
			BE	H-Zone	Hub	14	0	0	0	0	0	86	2	55	0
			CZ	VOB	Hub	542	461	405	369	362	332	960	412	936	0
			DE	NCG	Hub	145	136	153	143	126	168	354	145	236	73
					Hub	0	0	0	0	0	0	####	0	0	0
			DK		Hub	19	27	17	18	20	36	11	23	50	0
			NL	TTF	Hub	90	58	34	22	21	55	176	46	118	0
			PL	VTP - GAZ-SYSTEM	Hub	13	20	18	17	41	40	49	25	46	0
	NCG	entry	NO		Supplier	222	263	248	284	236	219	774	246	655	0
			AT	CEGH	Hub	62	51	58	60	49	52	294	55	156	0
			BE	H-Zone	Hub	9	55	72	78	70	22	163	51	216	0
			CZ	VOB	Hub	754	713	725	724	707	654	1,010	713	887	525
			DE	GASPOOL	Hub	145	136	153	143	126	168	354	145	236	73
			DK		Hub	12	0	0	0	0	0	4	2	23	0
			FR	PEG North	Hub		4	8		3		0	5	11	0
			NL	TTF	Hub	706	595	493	454	454	640	1,196	556	981	352
		exit	AT	CEGH	Hub	52	59	73	101	109	99	249	82	235	0
			BE	H-Zone	Hub	66	0	0	0	1	0	342	11	259	0
			CH		Hub	79	137	500	152	135	691	583	280	1592	0
			DE	GASPOOL	Hub	18	17	19	31	22	9	37	19	43	2
					Hub	0	0	0	0	0	0	####	0	0	0
			DK		Hub	8	1	0	0	10	12	17	5	22	0
			FR	PEG North	Hub	522	371	258	344	329	156	568	330	592	92
			LU		Hub	12	10	8	7	5	6	39	8	28	2
			NL	TTF	Hub	88	30	39	8	6	79	163	41	217	0
		entry	DE	GASPOOL	Hub	0	0	0	0	0	0	####	0	0	0
				NCG	Hub	0	0	0	0	0	0	####	0	0	0
DK		entry	DE	GASPOOL	Hub	19	27	17	18	20	36	11	23	50	0
				NCG	Hub	8	1	0	0	10	12	17	5	22	0
		exit	DE	GASPOOL	Hub	6	0	0	0	0	0	29	1	22	0
				NCG	Hub	12	0	0	0	0	0	4	2	23	0
			SE		Hub	32	17	17	14	16	25	73	20	55	9
EE		entry	LV		Hub	6	0	3	4	0	0	70	2	32	0
			RU	Mainland	Supplier	19	15	11	9	7	8	72	12	30	0
		exit	RU	Mainland	Supplier	3		18				0	6	19	1
ES	MS-ATR	entry	DZ		Supplier	564	463	450	464	353	395	710	448	597	320
			ES	MS-ATR	LNG Terminals	326	362	328	338	322	402	1,916	346	508	190
			FR	PEG TIGF	Hub	93	73	93	107	129	112	165	101	154	2
			PT		Hub	0	0	0	0	0	0	60	0	0	0
		exit	FR	PEG TIGF	Hub	0	0	0	0	0	0	170	0	1	0
			PT		Hub	97	46	52	83	50	64	164	65	113	1
FI		entry	RU	Mainland	Supplier	113	74	61	59	73	87	249	78	135	44
FR	PEG North	entry	NO		Supplier	399	481	478	460	299	437	585	426	540	14
			BE	H-Zone	Hub	259	276	250	278	289	312	570	277	366	103
				L-Zone	Hub	147	109	147	134	114	125	230	129	249	77
			CH		Hub	5						0	5	5	5
			DE	NCG	Hub	522	371	258	344	329	156	568	330	592	92
			FR	PEG North	LNG Terminals	33	40	37	10	4	19	370	24	83	0
				PEG South	Hub	6	0	0	0	0	0	230	1	77	0
		exit	CH		Hub	14	34	50	60	43	43	223	41	115	0
			DE	NCG	Hub		4	8		3		0	5	11	0
			FR	PEG South	Hub	276	302	313	326	304	279	230	300	416	0
	PEG South	entry	FR	PEG North	Hub	276	302	313	326	304	279	230	300	416	0
				PEG South	LNG Terminals	248	295	264	202	236	237	410	247	369	126
				PEG TIGF	Hub	0	0	0	0	0	0	255	0	0	0
		exit	CH		Hub	3	2	2	2	2	2	0	2	9	1
			FR	PEG North	Hub	6	0	0	0	0	0	230	1	77	0
				PEG TIGF	Hub	160	236	250	268	289	262	395	244	324	6
	PEG TIGF	entry	ES	MS-ATR	Hub	0	0	0	0	0	0	170	0	1	0
			FR	PEG South	Hub	160	236	250	268	289	262	395	244	324	6
		exit	ES	MS-ATR	Hub	93	73	93	107	129	112	165	101	154	2
			FR	PEG South	Hub	0	0	0	0	0	0	255	0	0	0

CC	Region	Direction	Adjacent CC	Adjacent Region	Adjacent InfraType	4	5	6	7	8	9	Cap	Avg	Max	Min
GR		entry	**BG**	GTNTT	Hub	55	50	78	84	77	72	108	69	107	17
			GR		LNG Terminals	10	26	12	15	15	15	140	16	82	0
			TR	Imports	Hub	21	13	24	21	20	24	60	21	26	5
HR		entry	**HU**	MGP	Hub	5	2	3	2	2	3	76	3	15	1
			SI		Hub	30	28	28	28	22	18	53	26	35	11
HU	**MGP**	entry	**AT**	CEGH	Hub	56	58	77	78	79	96	129	74	113	29
			UA		Transit	161	176	166	152	122	208	598	164	221	94
		exit	**HR**		Hub	5	2	3	2	2	3	76	3	15	1
			RO		Hub	4	4	3	0	0	0	51	2	5	0
			RS		Hub	29	39	37	39	35	49	140	38	61	8
			UA		Transit	31		49	53	83	85	0	64	100	21
IE	**IBP**	entry	**UK**	NBP	Hub	187	173	160	147	152	157	342	162	244	111
		exit	**UK**	North Ireland	Hub	0	0	0	0	0	0	66	0	0	0
IT	**PSV**	entry	**DZ**		Supplier	219	208	185	226	155	121	1,091	186	271	39
			LY		Supplier	223	169	195	169	202	182	354	190	254	94
			AT	CEGH	Hub	929	891	830	820	758	825	1,137	842	1023	572
			CH		Hub	68	230	247	313	259	366	633	247	435	0
			IT	PSV	LNG Terminals	162	141	171	184	121	110	583	148	231	66
			SI		Hub	1	1	1	1	0	1	0	1	1	0
		exit	**AT**	CEGH	Hub	1	1	3	2	2	2	191	2	46	0
			CH		Hub	3	2	1	1	1	1	0	1	4	1
			SI		Hub	1	1	1	1	1	1	28	1	2	0
			SM		Hub	1	1	1	1	1	1	0	1	3	0
LT		entry	**BY**		Transit	136	97	112	96	96	107	323	107	193	48
			LV		Hub	0	0	0	0	0	0	55	0	0	0
		exit	**LV**		Hub	0	0	1	1	0	0	55	0	3	0
			RU	Kaliningrad	Hub	57	39	53	45	42	51	109	48	82	24
LU		entry	**BE**	H-Zone	Hub	17	13	9	8	8	13	30	11	25	4
			DE	NCG	Hub	12	10	8	7	5	6	39	8	28	2
LV		entry	**LT**		Hub	0	0	1	1	0	0	55	0	3	0
			RU	Mainland	Supplier	54	137	148	126	169	170	200	134	177	0
		exit	**EE**		Hub	6	0	3	4	0	0	70	2	32	0
			LT		Hub	0	0	0	0	0	0	55	0	0	0
			RU	Mainland	Supplier	5	0	0	0	0	0	120	1	50	0
MK		entry	**BG**	GTNTT	Hub	2	1	1	1	1	1	27	1	4	0
NL	**TTF**	entry	**NO**		Supplier	237	241	200	215	171	167	637	205	437	0
			BE	H-Zone	Hub	20	19	45	34	24	19	190	27	190	0
			DE	GASPOOL	Hub	90	58	34	22	21	55	176	46	118	0
				NCG	Hub	88	30	39	8	6	79	163	41	217	0
			NL	TTF	Hub	235	169	97	82	95	87	574	127	354	0
					LNG Terminals	14	21	23	39	36	12	408	24	75	3
		exit	**BE**	H-Zone	Hub	248	215	135	143	178	189	554	185	488	37
				L-Zone	Hub	298	220	218	186	167	202	591	215	423	135
			DE	GASPOOL	Hub	168	168	148	167	148	157	366	159	232	99
				NCG	Hub	706	595	493	454	454	640	1,196	556	981	352
			NL	TTF	Hub	235	169	97	82	95	87	574	127	354	0
			UK	NBP	Hub	239	172	98	82	97	89	494	129	358	0
PL	**VTP - GAZ-SYSTEM**	entry	**BY**		Transit	546	554	536	560	458	486	1,021	523	1037	0
			CZ	VOB	Hub	27	3	4	4	3	3	4	7	28	0
			DE	GASPOOL	Hub	13	20	18	17	41	40	49	25	46	0
			PL	VTP - GAZ-SYSTEM	Hub	141	138	121	111	124	133	165	128	166	27
			UA		Transit	114	97	121	114	104	91	135	107	151	62
		exit	**DE**	GASPOOL	Hub	425	437	419	447	364	385	926	413	923	0
			PL	VTP - GAZ-SYSTEM	Hub	141	138	121	111	124	133	165	128	166	27
			UA		Transit	38	46	47	41	45	38	0	42	71	0
PT		entry	**ES**	MS-ATR	Hub	97	46	52	83	50	64	164	65	113	1
			PT		LNG Terminals	38	87	82	61	61	58	213	64	150	33
		exit	**ES**	MS-ATR	Hub	0	0	0	0	0	0	60	0	0	0
RO		entry	**BG**	NGTS	Hub	0	0	0	0	0	0	15	0	0	0
			HU	MGP	Hub	4	4	3	0	0	0	51	2	5	0
			UA		Transit	16	21	20	13	11	14	753	16	54	0
		exit	**BG**	GTNTT	Hub	383	319	389	473	401	479	602	407	568	170
				NGTS	Hub	35	37	37	35	29	28	151	33	101	0
RS		entry	**HU**	MGP	Hub	29	39	37	39	35	49	140	38	61	8
		exit	**BA**		Hub	0	0	0	0	0	0	18	0	0	0

CC	Region	Direction	Adjacent CC	Adjacent Region	Adjacent InfraType	4	5	6	7	8	9	Cap	Avg	Max	Min
RU	Kaliningrad	entry	LT		Hub	57	39	53	45	42	51	####	0	0	0
		entry	RU	Mainland	Supplier	0	0	0	0	0	0	872	329	1096	0
		exit	DE	GASPOOL	Hub	360	350	300	287	376	298	109	48	82	24
SE		entry	DK		Hub	32	17	17	14	16	25	73	20	55	9
SI		entry	AT	CEGH	Hub	51	42	43	42	35	33	103	41	59	0
			IT	PSV	Hub	1	1	1	1	1	1	28	1	2	0
		exit	HR		Hub	30	28	28	28	22	18	53	26	35	11
			IT	PSV	Hub	1	1	1	1	0	1	0	1	1	0
SK		entry	AT	CEGH	Hub	0	0	0	0	0	0	248	0	0	0
			CZ	VOB	Hub	50	30	0	0	0	0	406	13	177	0
			UA		Transit	1,255	1,294	1,702	1,773	1,714	1,902	2,548	1,606	2192	912
		exit	AT	CEGH	Hub	299	255	344	347	363	356	1,560	327	443	173
			CZ	VOB	Hub	23	84	285	412	349	411	780	261	491	0
TR	Imports	exit	GR		Hub	21	13	24	21	20	24	468	362	468	208
	Exports	entry	BG	GTNTT	Hub	443	437	407	317	263	311	60	21	26	5
UK	NBP	entry	NO		Supplier	814	353	419	310	243	342	1,441	412	1221	11
			BE	H-Zone	Hub	53	1	0	0	7	0	808	10	386	0
			NL	TTF	Hub	239	172	98	82	97	89	494	129	358	0
			UK	NBP	Hub	69	80	113	102	36	43	808	74	647	0
					LNG Terminals	423	511	515	281	209	161	1,727	350	613	97
		exit	BE	H-Zone	Hub	82	164	222	207	62	81	630	136	638	0
			IE	IBP	Hub	187	173	160	147	152	157	342	162	244	111
			UK	NBP	Hub	69	80	113	102	36	43	89	32	51	13
				North Ireland	Hub	39	34	28	25	30	33	808	74	647	0
	North Ireland	entry	IE	IBP	Hub	0	0	0	0	0	0	66	0	0	0
			UK	NBP	Hub	39	34	28	25	30	33	89	32	51	13
SM		entry	IT	PSV	Hub	1	1	1	1	1	1	0	1	3	0
Grand Total						**135**	**128**	**135**	**131**	**119**	**135**	**####**	**131**	**2192**	**0**

Annex – demand modulation

The demand composition and weather specificities determine the curve followed by the demand along the summer months. Defining the "Summer monthly load factor" (SMLF) as the relation between a summer month daily average demand and the summer daily average demand. The "Summer monthly load factor" shows the higher or lower modulation of gas consumption along the summer. Three different demand patterns had been distinguished:

Type 1: Sharp "V" Summer: High share of residential demand in the demand composition combined with cold "summer-shoulder" months (April, May and September; particularly in April in 2012) may explain a well-defined "v" pattern.

Type 2: Soft "V" Summer: Similar to type 1; moderately cold "summer-shoulder" months and a lower share of residential demand in the demand composition, may explain a softer "v" summer pattern.
The shifting between Soft and Sharp "V" is strongly dependent on weather conditions.

Type 3: Flat Summer: Warm "summer-shoulder" months with no heating requirements, combined with both a high share of gas demand for power generation in the demand composition and air conditioning during June, July and August, may explain a quite flat demand during the summer months.

This classification has been based on the qualitative analysis, and has changed from one year to the other. The following figure shows the evolution of the summer patterns followed by during the last four summers:

	2009	2010	2011	2012	2013
AT	Soft''V''	Soft''V''	Soft''V''	Soft''V''	Soft''V''
BE	Flat	Soft''V''	Flat	Soft''V''	Soft''V''
BG	Soft''V''	Soft''V''	Flat	Soft''V''	Soft''V''
HR	Soft''V''	Flat	Flat	Soft''V''	Soft''V''
CZ	Soft''V''	Sharp''V''	Soft''V''	Soft''V''	Sharp''V''
DK	Soft''V''	Sharp''V''	Soft''V''	Soft''V''	Sharp''V''
EE	Soft''V''	Sharp''V''	Soft''V''	Sharp''V''	Soft''V''
FI	Soft''V''	Flat	Soft''V''	Soft''V''	Soft''V''
FR	Soft''V''	Sharp''V''	Soft''V''	Sharp''V''	Sharp''V''
Fyrom	Flat	Flat		Sharp''V''	Soft''V''
DE	Flat	Soft''V''	Soft''V''	Soft''V''	Soft''V''
GR	Flat	Flat	Flat	Flat	Flat
HU	Soft''V''	Soft''V''	Soft''V''	Soft''V''	Soft''V''
IE	Flat	Flat	Flat	Flat	Soft''V''
IT	Flat	Flat	Flat	Flat	Soft''V''
LV	Flat	Soft''V''	Soft''V''	Flat	Soft''V''
LT	Soft''V''	Sharp''V''	Flat	Flat	Soft''V''
LU	Flat	Soft''V''	Flat	Flat	Sharp''V''
NL	Flat	Soft''V''	Flat	Soft''V''	Soft''V''
PL	Flat	Soft''V''	Flat	Soft''V''	Flat
PT	Flat	Flat	Flat	Flat	Flat
RO	Flat	Soft''V''	Soft''V''	Soft''V''	Soft''V''
SK	Soft''V''	Sharp''V''	Soft''V''	Sharp''V''	Soft''V''
SI	Flat	Soft''V''	Soft''V''	Flat	Soft''V''
ES	Flat	Flat	Flat	Flat	Flat
SE	Soft''V''	Soft''V''	Soft''V''	Soft''V''	Sharp''V''
CH	Soft''V''	Soft''V''	Soft''V''	Sharp''V''	Sharp''V''
UK	Soft''V''	Soft''V''	Flat	Soft''V''	Soft''V''
EUROPEAN DEMAND					
1 - sharp "v"	0.0%	11.1%	0.0%	4.8%	5.7%
2- soft "v"	34.1%	58.6%	34.4%	80.3%	87.1%
3- Flat	65.9%	30.3%	65.6%	14.9%	7.2%