

ENTSOG Winter Supply Outlook 2010-2011

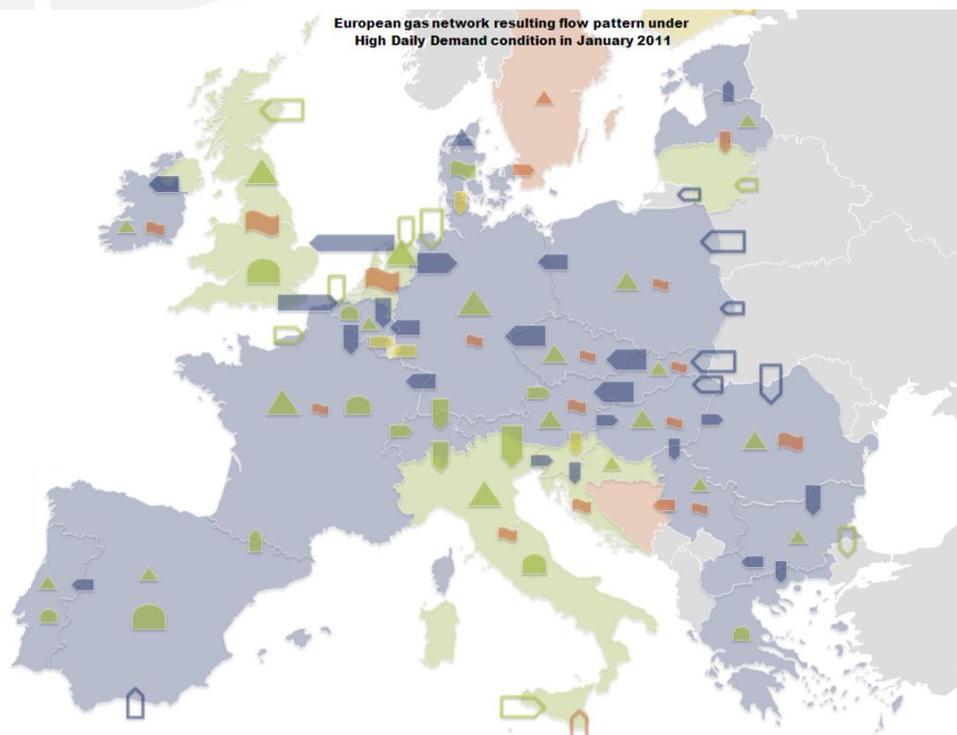
Executive Summary

ENTSOG has undertaken an assessment of the European gas network to meet the daily market demand under High Daily Demand condition in January 2011. The conclusions are:

In most parts of Europe under such extreme conditions, the network still offers sufficient capacity to enable network users to optimize their supply strategies to a certain extent. The supply overview of the last two winters illustrates the potential flexibility range of each supply.

The integrated flow pattern used in the analysis is a hypothetical case developed specifically for this Winter Supply Outlook, and uses ENTSOG modelling and supply assumptions. The model uses information collected and compiled from ENTSOG members, from stakeholders and from other sources. The simulation produces a realistic solution for the supply demand balance of each country.

The integrated flow pattern shows functioning capacity / demand balance under a High Daily Demand situation in January 2011 with considerable flexibility in most countries. A graphical representation of the resulting European network flow pattern (capacity and load factors) can be seen below.



Context

After the adoption of the Third Legislative Package for the EU internal energy market, ENTSOG (European Network of Transmission System Operators for Gas) was established on 1 December 2009. Among the tasks of ENTSOG is the adoption of annual summer and winter supply outlooks (Regulation (EC) 715/2009, Art. 8 (3)(f)).

In recent years, ENTSOG's predecessor organisation GTE+ has already published GTE+ winter outlook. With this report, ENTSOG presents its first Winter Outlook, even before Regulation (EC) 715/2009 becomes applicable (3 March 2011). This will enable ENTSOG to continue the dialogue with stakeholders, and to lay the foundation for continuous improvement of future outlooks. ENTSOG therefore welcomes feedback on this Winter Outlook 2010-2011 to be able to better cater for the needs of the market in the future.

Objective

Gas transmission systems bring gas to the markets. Gas markets' demand patterns are influenced by different factors, among which seasonal temperature differences are important. In winter, demand in most Member States is high and gas is withdrawn from storage facilities. The European transmission systems are designed to cope with such high demand, which has been shown in recent GTE+ winter outlooks.

Therefore, ENTSOG has decided to define the objective of this Winter Outlook 2010-2011 as to provide an overview of the ability of both the European gas network and potential supply to face winter demand. For that purpose, the report provides a review of the last two winters (2008-09, 2009-10) supply demand balance and an outlook for High Daily Demand¹ conditions in January 2011. It assesses in particular the capacity of the transmission system to transport these volumes under severe climatic conditions with sufficient flexibility.

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¹ Whenever in this document, incl. the Annexes, High Daily Demand is mentioned, reference is made to the 1-in-20 climatic conditions coming from the future Regulation concerning measures to safeguard security of gas supply (to be applicable as of 2 December 2010); it is to be noted that the same Regulation allows Member States to apply more severe conditions. Within this report Dutch demand has been provided according to such more severe criteria.

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Review of the last two winters

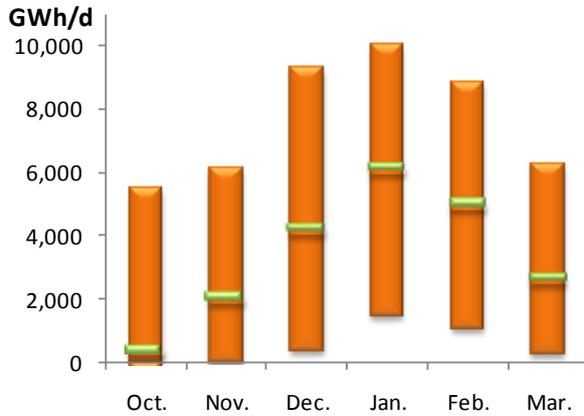
The following diagrams give an overview of the market demand and supply for the last two winters through the range of daily flows and the average value. As maximum and minimum values do not occur simultaneously across Europe, the resulting range is wider than the actual one. However, it still gives an overview of supply versatility. For comparison purpose, the demand graph also mentions the forecasted level of High Daily Demand occurring in November, January and March.

Demand

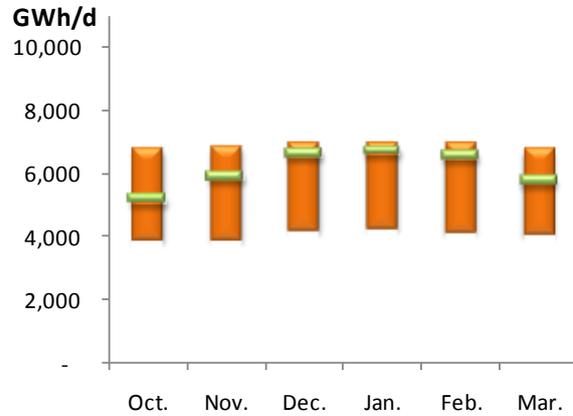


Following graphs both illustrate the overall European supply of the last two winters and the used flexibility of each source. It appears that most of the flexibility came from indigenous sources (storage and National Production) and LNG terminals due to their ability to work as short term storage facilities.

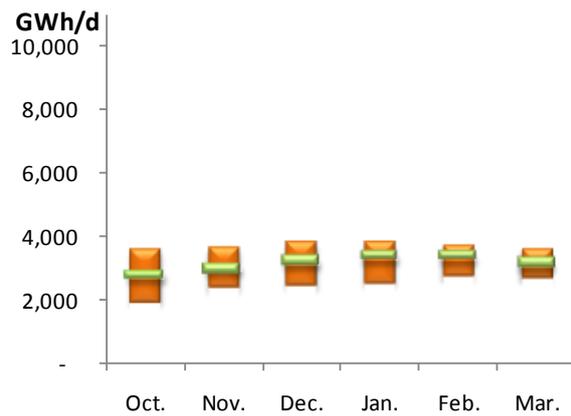
Storage (withdrawal)



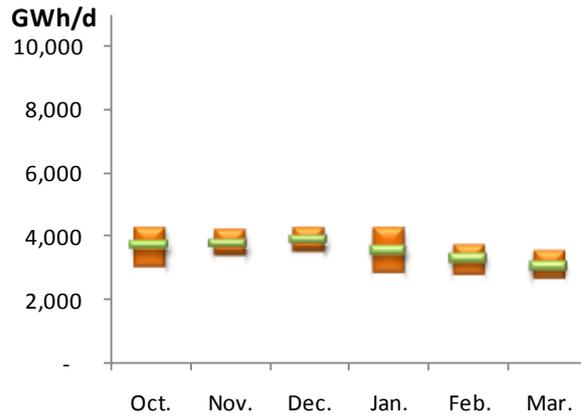
National Production



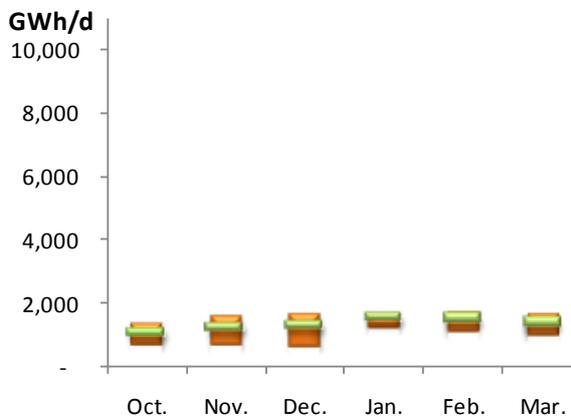
Norway



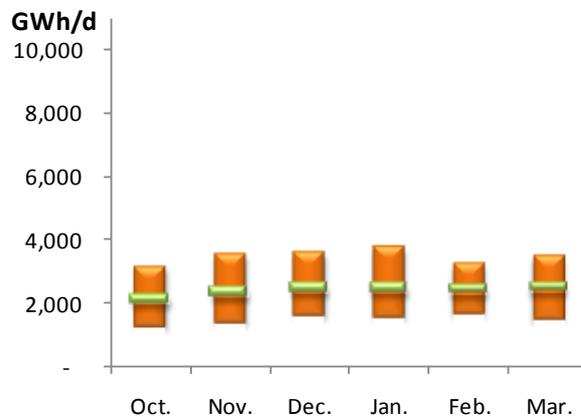
Russia



North Africa



LNG



Results of modelling of a High Daily Demand in January 2011

A simulation of the European network based on rules and assumptions (as defined in Annex A) has been carried out and a realistic solution has been found for the supply demand balance of each country. The integrated flow pattern shows functioning capacity / demand balance under High Daily Demand situation in January 2011 with considerable flexibility in most countries (such map can be found in Annex B).

The below chart provides the remaining flexibility (as define in Annex B) of each country deriving from the found solution.

Country	Remaining flexibility	Country	Remaining flexibility
Austria	32%	Italy	13%
Belgium	37%	Latvia	30%
Bosnia and Herzegovina	0%	Lithuania	18%
Bulgaria	51%	Luxembourg	1%
Croatia	16%	Netherlands	16%
Czech Republic	62%	Poland	28%
Denmark	32%	Portugal	35%
Estonia	28%	Romania	26%
Finland	4%	Serbia	28%
FYROM	62%	Slovakia	42%
France	30%	Slovenia	13%
Germany	36%	Spain	27%
Greece	46%	Sweden*	0%
Hungary	28%	UK	24%
Ireland	36%		

(*): for Sweden the use of interruptible capacity from Denmark, available under low temperature will lead to a remaining flexibility of 6%

Conclusion

According to the ENTSOG modelling and supply assumptions, this Winter Supply Outlook assesses the ability of the European gas network to face the daily market demand under High Daily Demand conditions in January 2011.

In most parts of Europe under such extreme conditions, the network still offers sufficient capacity to enable network users to optimize their supply strategies to a certain extent. The supply overview of the last two winters illustrates the potential flexibility range of each supply.

Please note that the integrated flow pattern used in this report is a hypothetical case just for the purposes of this Winter Supply Outlook.

ENTSOG plans to review the results of this report on the basis of actual flows in spring 2011.



Annex A

Data

The following data, provided by TSOs, were used for the development of the ENTSOG Winter Outlook 2010-2011:

- Capacity data at cross-border interconnection points (IPs),
- Historical monthly market demand for the last two winters
- Historical flows from import sources, LNG terminals, storage and national production for the last two winters (minimum, maximum and average daily value per month)
- Market High Daily Demand for November 2010, January and March 2011

Full availability of withdrawal capacity as 1 October 2010 reflecting the fact that all GSE hub areas' storage level were above 90% as of 1 October 2010²

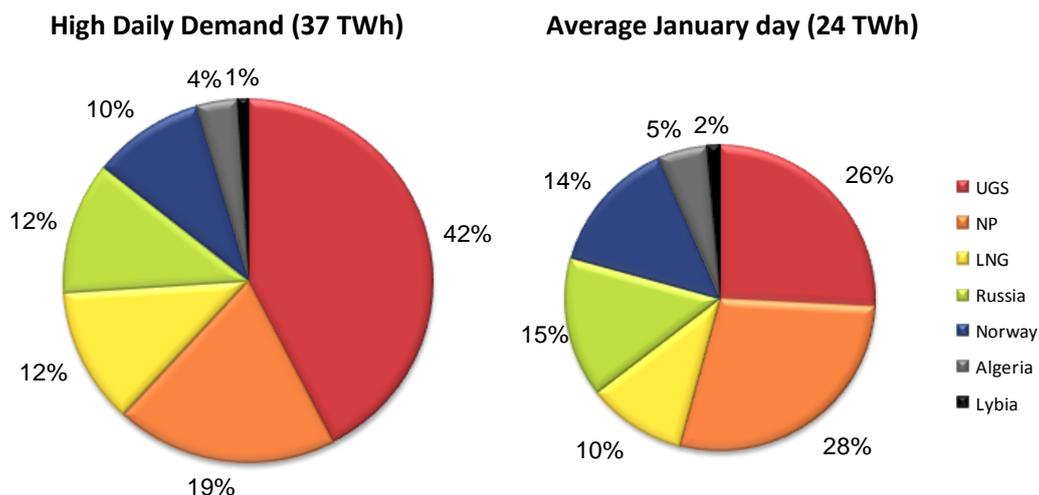
Modelling Rules and Assumptions

To define the European-wide supply, the following assumptions were applied:

- Imports from Russia, Norway and North Africa are based on the maximum daily flow of January 2009 and 2010. For Norway, the maximum daily output is limited to the peak deliverability defined under a 2010 Gas Platform study assessed by Gassco.
- For each country, National Production is based on the maximum daily flow of the last two winters
- Storage and LNG terminals are used as the last resort supply to meet the demand. As LNG terminals include storage facilities, the same load factor is used for these two types of infrastructure.

The graphs below give the assumed share of each supply source as applied in the modelling for High Daily Demand conditions in January 2011 as well as for the average supply of the last two January months for comparison:

² GSE Aggregated Gas Storage Inventory available at <http://transparency.gie.eu.com/>



The following rules and assumptions were used for the modelling of an integrated flow pattern across the European gas network:

- Only Technical Capacities are applicable (except for the connection from Denmark to Sweden where interruptible capacity is required to balance Swedish demand but still available as linked to low temperature). Where capacities are different at the two sides of a cross-border point, the lesser of rule applies.
- Entry flow from a neighbouring country \leq sum of IP entry capacity from the neighbouring country
- Exit flow to a neighbouring country \leq sum of IP exit capacity to the neighbouring country
- Exit flow to neighbouring countries = National Production + Storage send-out + entry flows from neighbouring countries – market demand
- As far as possible an equal load factor is used for import routes coming from the same source
- As far as possible the withdrawal load factor is the same in every country
- Where multiple flow patterns are possible, an average entry load factor is used, country per country, derived from already set flows

Determination of supply flexibility

Considering High Daily Demand conditions in January 2011 (occurring simultaneously in all countries) the objective is to assess the ability of the European gas network to face market demand still offering flexibility from each supply source.

The flexibility is defined as the unused capacity at the entry points of a given country for additional entry flows expressed as a percentage of the total Technical Capacity³ at entry. Such flexibility shall be calculated according to the below formula:

³ Technical capacity means the maximum firm capacity that the transmission system operator can offer to the network users, taking account of system integrity and the operational requirements of the transmission network. (Art. 2(1)(18), Regulation (EC) 1775/2005)

$$1 - \frac{\textit{Flow at entry}}{\textit{Technical capacity at entry}}$$

Such indicator is defined for each type of infrastructure to show the global level of arbitrage between the different national gas infrastructures.

As long as flexibility derives from potential supply, both imports and the internal capacity, it can be assessed only through network modelling. For such purpose ENTSOG has modelled the European gas network using supply information covering the last two winters.

