Consultation on an EU strategy for gas storage

New planned underground gas storage facilities in SE Europe

Question 16: Do you have any analysis or view on what an optimal level/share of storage in a Member State or region would be? What kind of initiatives, if any, do you consider necessary in terms of infrastructure development in relation to storage?

In the long term, the doubling of storage facilities is planned in Europe. There are many European countries that want such a development, for different reasons, such as energy security. The need for additional gas storage capacity becomes even more evident considering predictions that Europe will increase its dependence on imported gas to 70% by 2030. The gas consumption in Europe, up to 2030, is estimated to reach 640 billion cubic meters (bcm), while imports and storage capacity are estimated to rise to 490 and 140 bcm respectively. Regarding to the new underground facilities, most are planned in Britain, Germany and Italy. However, countries of SE Europe are expected to be active in the coming years, developing some new gas storage facilities.

The countries of SE Europe, considering the importance of gas storage sites, plan to build new facilities in the near future. **Bulgaria**, **Croatia**, **Romania**, **Turkey**, **Serbia** and **Greece** have plans to implement new projects within the following years.

Bulgaria and Croatia have announced their intentions to upgrade their storage facilities. In **Bulgaria**, there is today gas storage capacity of 500 mcm in an underground site in Chiren, which is capable of providing 4,2 mcm on a daily basis. The target is the facility's upgrade so as the new capacity to reach 1 bcm and the withdrawal rate to be 10 mcm/d. Following this development, Bulgaria would cover in addition to its domestic needs and those of neighbouring countries. The required investment for the upgrade is more than 200 million euros, according to a relevant study of 2011. The **Croatian** state company Podzemno Skladiste Plina (PSP), having already completed the preparatory actions, will proceed with the construction of a much needed new gas storage facility, which is expected to greatly help in dealing with fluctuations of domestic gas consumption. The new facility will be located in the east of the country and specifically in the area Grubisno Polje, will have a gas

storage capacity of 25-40 mcm, while the construction cost will amount to 27 million euros. The project completion schedule extends to four years.

Romania already counts eight (8) storage sites, the capacity of which (3,1 bcm) corresponds to 20% of domestic consumption. In September 2014, Romgaz announced that it has completed an investment of 27 million euros to upgrade the underground gas storage facility in Urziceni, from 250 mcm to 350 mcm, thereby increasing the company's overall gas storage capacity to 2,8 bcm.

Serbia has an underground gas storage facility in Banatski Dvor with a capacity of 450 mcm. It started its operation in 2011 by a consortium of Russian Gazprom and Serbian Srbijagas. Many of Serbia's plans to develop new storage infrastructure were based on the construction of the South Stream pipeline. Before the cancellation of the project, there was a thought that the Serpski Itebej field is to be exploited. This field belongs to the oil energy company NIS Gazprom Neft. The Serbian government had begun looking for a strategic partner to finance the conversion of the field in Itebej to a gas storage facility with a capacity of 1 bcm. As an alternative, the extension of the existing underground storage in Banatski Dvor is being examined, so as the new capacity to be upgraded from 450 mcm to 1,2 bcm.

The only possible gas storage project in **Greece** is the depleted gas field in South Kavala. This project is expected to enhance the country's security of supply, to contribute significantly in dealing with demand fluctuations and to secure gas volumes at better prices, taking advantage of opportunities in times of low demand. The underground storage will "collaborate" with both the existing LNG terminal station at Revithoussa and the planned FSRUs (Kavala and Alexandroupolis), jointly contributing to the smooth operation of the gas network. The working gas capacity can reach, according to Gas Storage Europe (GSE), 360 mcm. The daily withdrawal and injection rate is estimated at 4 and 5 mcm respectively. According to a study by Technip, the investment cost is estimated at 400 million Euros.

In conclusion, the total underground gas storage capacity of SE Europe is estimated to increase from 13,64 bcm today to 23,5 bcm in the coming years. The following table summarizes the new possible gas storage projects in SE Europe:

Table 7. New planned Underground Gas Storage Facilities in SE Europe

#	Country	Location	Capacity (bcm)	Predicted start date
1	Bulgaria	Chiren	0,5 (upgrade)	2018/19
2	Croatia	Grubisno Polje	0,04	2019
3	Romania	Urziceni	0,1 (upgrade)	2015
4	Turkey	Tuz Golu	1	2018/19
5	Turkey	Kuzey Marmara	1,66 (upgrade)	NA
6	Serbia	Itebej / Banatski Dvor	1 / 0,75 (upgrade)	NA
7	Greece	South Kavala	0,36	NA

NA – There is no reliable information on the scheduled starting date

In order to achieve enhanced energy security across Europe, a series of key infrastructure related developments should take place in the coming years. In addition, the single energy market should be completed, a significant increase in energy efficiency should be recorded and furthermore, supply sources needs to be further diversified. All these should be combined with the construction of new infrastructure projects such as interconnectors, reverse flows and underground storage facilities. At the same time, EU countries must be able to respond to supply crisis situations. In this context, the European Commission announced on May 28, 2014 the new EU Energy Security Strategy, which includes actions, both in the short (conducting energy security stress tests) and in the medium to long term. According to the evaluation report, in all scenarios of gas supply disruption, the countries of Eastern and Southeastern Europe will be most affected[1]. These countries are required to develop emergency plans, with the liquefied natural gas (LNG) expected to be the main alternative in order for supplies to increase in case of serious deficiencies.

For example, the supply of natural gas in Greece is based by 75% on pipeline gas and therefore is exposed to the risk of potential supply disruptions from Russia. The country's gas infrastructure does not comply with the infrastructure Rule (N-1 standard), such as resulting from Regulation 994/2010. The gas system operator, DESFA, is responsible to implement emergency measures in case of a natural gas supply crisis. Moreover, the LNG terminal at Revithoussa, which is the only storage facility in the country, can cover up to 7 days of natural gas demand (the average daily demand was 12 mcm in 2012), considering that its capacity can reach 80 mcm.

In today's gas supply environment, gas storage facilities in SE Europe countries are of critical importance. Their role is multilevel, as they can contribute to enhance countries' energy adequacy, ensure the necessary strategic stocks, deal with the seasonal fluctuations of gas demand, increase the flexibility of supply, strengthen the stability of the Gas Transmission Systems and exploit opportunities in the market for better deals/prices.

The strategic role of storage facilities is further enhanced by the fact that over the coming years significant quantities of gas will pass through the SE Europe's region.

Most European countries give great attention to underground natural gas storage facilities. Today, their total capacity is 110 bcm, while the global one is estimated at about 300 bcm. During the period 2010-2014, a significant increase in the capacity of storage facilities in Europe has been recorded, including countries in SE Europe. In Europe today, 158 gas storage facilities are under operation, 17 of which are in the

[1] See IENE study: "Gas Storage in underground facilities and alternatives supply routes with LNG in Greece and SE Europe

region of SE Europe, while 69 are estimated to be the new planned storage projects. In SE Europe, Hungary, Romania, Croatia, Serbia, Bulgaria and Turkey have today active underground storage sites, the total capacity of which approaches 14 bcm.

In the region of SE Europe, there is a clear intention for further gas storage infrastructure to be developed. At least six countries in the region (Bulgaria, Croatia, Romania, Turkey, Serbia and Greece) are planning to build new facilities in the near future, considering the importance of gas storage sites. The region's total gas storage capacity is expected to exceed 23 bcm over the next few years. The need for additional storage capacity becomes even more evident, considering the predictions that Europe will increase both the consumption of natural gas (gas demand is estimated to reach 640 bcm in 2030) and its dependence on imported gas (70% by 2030).