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Accompanying document to the

Proposal for a

REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

concerning measures to safeguard security of gas supply and repealing Directive 2004/67/EC

ASSESSMENT REPORT OF DIRECTIVE 2004/67/EC ON SECURITY OF GAS SUPPLY

{COM(2009) 363}

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1. INTRODUCTION

Dynamic gas market development increased the importance of security of gas supply. The European Union has created an internal gas market. In order to strengthen the security of gas supply in the internal market the Council Directive 2004/67/EC of 26 April 2004 concerning measures to safeguard security of natural gas supplies (thereafter referred to as "the Directive") was adopted. This Directive is consecutive to in the internal gas market Directive 2003/55/EC[1].

Objective of the Directive as stipulated in Recital 19 pursues two main goals, namely "… *ensuring an adequate level for the security of gas supply, in particular in the event of a major supply disruption,"* and *"contributing to the proper functioning of the internal gas market…"*

As provided for in the Directive, the Commission shall present in 2008 to the European Parliament and to the Council the evaluation report on the implementation of the Directive by Member States. The presentation of this report has been delayed in order to follow the timing of the Second Strategic Energy Review.

The Report shall analyse the effectiveness of instruments put in place by Member States, the effects of security of gas supply instruments on the internal gas market, as well as their effect on the development of competition on the internal gas market.

The Directive in particular underlines the importance of defining the role and responsibility for market players. Member States shall define roles and responsibilities in the area of security of gas supply.

The Directive also defines the minimal security of supply standards, which determine the conditions, during which the gas supply for households' customers shall be maintained. Scope of these standards may be broadened by extending the affected customers to Small and Medium Enterprises, to customers who cannot switch gas to other fuel and to significant power generators from gas.

The Directive also increases the scope of the reporting obligations for security of supply purposes for the internal gas market by Member States, and requires the monitoring of the security of gas supply issues by the Commission.

A Gas Coordination Group was established according the Directive. Its role is to facilitate the coordination of security of gas supply measures, to provide a forum for discussions between the Member States and the source of information for the industry about the security of gas supply in Europe. The important role of this group was confirmed during the gas supply problems in the course of last three years. The Gas Coordination Group was convened seven times for extraordinary meetings.

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[1] Directive 2003/55/EC of the European Parliament and of the Council of 26 June 2003 concerning common rules for the internal market in natural gas and repealing Directive 98/30/EC (OJ L 176, 15.7.2003, p. 57–78)

2. TRANSPOSITION OF THE DIRECTIVE 2004/67/EC

Member States had to communicate to the Commission the texts of national legislations transposing the Directive and the correlation tables between such legislation and the provisions of the Directive by 19.05.2006. Member States had to communicate to the Commission also their national emergency measures.

Transposing provisions

The provisions transposing the Directive have been communicated to the Commission by 26 Member States. Two countries (Malta and Cyprus) are exempted from application of this Directive, because they are not using gas in their energy mix; nevertheless Malta had transposed the Directive into its national legislation.

5 Member States did not communicate their transposing provisions in time. For 3 Member States (Ireland, Luxembourg and Romania) infringement procedures for non-communication had been opened in 2006 and closed in 2007-2008 after they notified the related national legislation to the Commission.

Most of the MS have transposed the security of gas supply provisions of the Directive as part of their internal gas market legislation, ensuring the coherence between internal gas market and security of gas supply objectives.

Correlation table

Article 10 (1) of the Directive obliged Member States to communicate to the Commission the correlation table between the provisions of the national legislation and the Directive. 13 Member States did not communicate the correlation table in time. Two Member States (Latvia and Luxembourg) are still missing.

This obligation has shown also a problem of inconsistency of correlation table with the transposing provisions of the national legislation. The provisions of the national legislations described by some Member States in the correlation table were not identical with the ones, which transpose the Directive.

National emergency measures

According to Article 8 Member States shall prepare in advance their national emergency measures. They should be published and notified to the Commission.

Member States implemented their national emergency measures in two steps: first, they obliged different market players to develop the national emergency measures, and after this step, the market players have developed the national emergency measures. This approach has created a time delay, due to which the Member States were not able to communicate the national emergency measures to the Commission in time. Only 2 Member States communicated the national emergency measures on time, 9 Member States communicated such measures to the Commission before the end of 2007, and 19 Member States in total have done so far.

3. MAJOR SUPPLY DISRUPTION (ART. 2(1))

Major Supply Disruption (referred to as "MSD") is defined in Article 2 paragraph 2 as *a situation where the Community would risk to lose more than 20 % of its gas supply from third countries **and** the situation at Community level is not likely to be adequately managed with national measures."*

Recital 17 stipulates the foreseeable length of "Major Supply Disruption" to "*a significant period of time of at least eight weeks*". *This Directive should provide rules applicable in the event of a major supply disruption;* In case of a gas supply disruption from 3rd countries, it assess extent and impact of the gas supply disruption, and gives right to the Commission to apply rules as defined in Article 9 of the Directive.

Recital 15 and Article 9 facilitate a coordination mechanism to deal with major supply disruption at Community level, giving the Commission the possibility to convene a special meeting of Gas Coordination Group related to the particular gas supply disruption. Recital 15 also suggests further roles of Gas Coordination Group in case of major supply disruption:

- may assist Member States in coordinating measures taken at a national level,
- should exchange information on security of gas supply on a regular basis, and
- should consider aspects relevant in the context of a major supply disruption.

The guidance how to handle major supply disruption is in Recital 18. It describes a mechanism based on a three step approach, applying rules from Article 9. *The first step would involve the reactions of the industry to the supply disruption; if this were not sufficient, Member States should take measures to solve the supply disruption. Only if the measures taken at stage one and two have failed should appropriate measures be taken at Community level.*

The directive currently defines a major supply disruption as the loss of 20% of gas imports from third countries to the Community for at least 8 weeks. It has been accepted that this indicator is very high and already shortfalls that do not reach this level might require Community response. Comparing to the January 2009 crisis, disruption of 28% lasted 14 days. With the increasing import dependency, it becomes more and more unlikely that this indicator is reached before Community action is needed.

On the other hand, the likely risk of reaching the MSD indicator is defined in Article 9(1) as a trigger to activate measures at Community level. But in reality, 20% of Community gas import from 3rd countries is a volume equivalent to half of Russia or all Norway or all Algeria gas imported to EU. The volume of gas import is increasing, as gas production in EU is declining. Thus also 20% threshold will correspond to higher volumes of gas.

But there is also another possibility to trigger the Community measures. Any Member State can request to the Commission to activate the Community mechanism if it considers that the shortfall of its gas supplies cannot be managed adequately at national level, even if the shortfall does not reach the MSD.

The definition of "Major Supply Disruption" was also discussed in the Gas Coordination Group. The Group concluded that with the accession of the new Member States in 2004 and 2007, the 20% disruption from the third countries is very high and already smaller delivery disruptions may require Community response, especially if this delivery disruption affects more than one Member State.

Conclusions

Gas supply disruptions in EU have occurred on several occasions (the most significant in January 2006 and 2009 with respect to gas supplies from Russia through Ukraine). The 20% threshold of gas supply disruption from 3rd countries was reached in 2009, but lasted "only" 14 days, not 8 weeks. Member States suffered significant gas reduction, which created a base to convene at least 3 extraordinary meetings of the Gas Coordination Group in 2009. The definition of major supply disruption as defined in the present Directive it is now is not appropriate to ensure its role as a trigger for actions at the Community level. It was proved in particular during the events in January 2009 that the 20% of gas supply disruption from 3rd countries is too high, especially after the accession of the EU-12 countries.

4. ROLES AND RESPONSIBILITIES (ART.3)

Article 3(1) of the Directive stipulates: *"In establishing their general policies with respect to ensuring adequate levels of security of gas supply, Member States shall define the roles and responsibilities of the different gas market players in achieving these policies, […]."*

The importance of defining the clear role and responsibility of market players is stipulated in Recital 3: "*Definition of clear roles and responsibilities of all market players is therefore crucial in safeguarding security of gas supply and the well-functioning of the internal market."*

Market player should be "the one who actively operates on the market". However, for the purpose of this Directive, the definition of market players includes all entities - not only those who operate actively on the market, but also those who create the legal framework (the Ministry, the Government) and who supervises the gas market (the regulator). Roles of the Ministry and the regulator for security of gas supply are also specified in the national legislation of Member States.

4.1. The overall responsibility

Member States set the **overall responsibility** to guarantee the secure gas supplies at the country level, as well as **specific responsibilities** for the suppliers, Ministries and regulators.

However, the main role of security of gas supply for Transmission System Operators (TSOs), Distribution System Operators (DSOs), LNG System Operators (LSOs), and Underground Gas Storage System Operators (UGSOs) is very similar in most Member States.

Different market players in Member States were designated to have the central responsibility to ensure the security of gas supply. This so called "overall responsibility" is always defined in the national legislation.

Belgium, Bulgaria, France, Italy, Lithuania, Luxembourg, Poland, Portugal, Slovakia, and Spain identified the relevant **Ministry** as the responsible body to guarantee the overall security of gas supply for the country. This role is given to the **TSO** in the Czech Republic, Estonia, Denmark, the Netherlands, to the **regulator** in Ireland, Finland, Malta and Sweden, to the **suppliers** in Germany, Hungary, Latvia, and Slovenia, and to a **special Coordination commission** in Romania. Greece has stated in its legislation that both the **Ministry and the regulator** are responsible for the security of gas supply**.** In the UK, the overall responsibility to ensure the security of supply is a joint responsibility between the Ministry (Secretary of State) and the Regulator (Gas and Electricity Markets Authority). In Austria the overall responsibility for security of gas supply is shared between the Ministry, Regulator and the so called "Control Area Manager".

4.2. Specific roles and responsibilities

4.2.1. The Ministry

In general, the Ministry for Energy defines the legal framework for energy markets. In Austria, Belgium, Bulgaria, France, Italy, Latvia, Lithuania, Luxembourg, Poland, Portugal, Slovakia, and Spain, the **Ministry** takes the overall responsibility to guarantee the security of

gas supply in the country. Greece and UK defines the joint overall responsibility for both the **Ministry and the regulator.** Romania defines a special **Coordination commission** established by the Government.

In other Member States (Austria, Estonia, Finland, Czech Republic, Malta, the Netherlands, Portugal and Sweden) the Ministry has a security of gas supply role. The Ministry in Bulgaria, Lithuania, Slovakia, Slovenia and Spain **monitor the security of gas supply**, as well as a coordinating commission in Romania. In Germany and Lithuania the Ministry prepares the **internal market report,** while the Slovak Ministry prepares only the part related to the security of supply. The Polish Ministry prepares the security of supply report, which includes the internal market report. The Secretary of State in UK has duty to report annually to UK Parliament on gas and electricity supplies. Energy Market Outlook Report discharges this duty.

The planning of the gas network is worked out by the Bulgarian and Spanish Government. The Estonian and Finnish Government supervise and approve the construction of cross-border gas pipelines.

In Austria, the Netherlands and Portugal, the Ministry prepares **measures for very difficult circumstances,** as well as measures to prevent the natural gas supply disruption. The Ministry takes action, if the system is endangered or breaks down. In Bulgaria, Portugal and Slovakia, the Ministry declares the emergency situation after the advice from TSO.

In Malta, the Ministry instructs the regulator to ensure the security of gas supply. In Bulgaria and Malta, the Ministry shall define the minimum security of natural gas supply standards.

4.2.2. Regulator

The regulators in **Finland, Ireland and Sweden** have the overall responsibility to guarantee the security of gas supply. In Ireland, overall energy policy is formulated by the Ministry, while statutory responsibility for monitoring and ensuring security of gas supply rests with the Regulator, including ensuring security of supply for non daily metered customers and those without the ability to fuel switch. In Finland, the regulator supervises the legal provisions, monitors gas supply-demand balance, as well as quality and maintenance of gas network, and handles with any deficiency in gas supply. The regulator in **Malta** should be instructed by the Ministry to ensure the security of supply and to define security of gas supply standards and national measures.

A close cooperation between ministry and regulator is applied in **Austria** and **Greece**. The regulator prepares recommendations, but the final decision is taken by the ministry. The regulator only monitors and controls the security of gas supply. In Austria the regulator also prepares and coordinates measures, defined in the „Manual to prevent gas crisis". It includes data collection for energy steering measures and practice of emergency actions and measures. However, the overall responsibility is given to the ministry. In Greece the regulator examines and assesses appropriate measures and makes recommendations for the ministry. The overall responsibility is shared both by the ministry and by the regulator.

The regulator in **Bulgaria, Germany, Hungary** and **Poland** monitors the security of gas supply. The regulator in Bulgaria controls also the compliance with rules for natural gas supply, as well as the quality of services´ standards. In Germany the regulator issues

obligations on security of gas supplies and exemptions for specific situation, and is responsible for security of supply, if security of supply is endangered.

Reporting to the Commission: an obligation of the regulators

Most of the regulators prepare national reports on the internal energy market. Article 5 of the Directive 2003/55/EC[2] on internal gas market requires from Member States to prepare the reports on the functioning of internal gas markets and their communication to the Commission. Article 5 of the Directive 2004/67/EC on the security of gas supply requires additional security of gas supply information to be provided to the Commission in these reports.

4.2.3. Transmission System Operator (TSO)

Stable and secure functioning of the gas transmission networks operated by the TSOs is the main task set by Member States to Transmission Gas System Operators. In most of the Member States this goes hand in hands with the responsibility **to ensure the stable and reliable gas supplies** and the gas quality supplied through the networks.

Other tasks for TSOs include the **management of the country's gas system**, **long-term planning, ensure the gas supply in case of emergency and the development of the gas transmission networks**. TSO in eight Member States (Bulgaria, Denmark, Czech Republic, Estonia, the Netherlands and Portugal) manages and ensures the stable and secure functioning and development of the **gas system at the country level.** In Finland the TSOs have the technical responsibility for the gas system, but the regulator by controlling and managing the network is responsible to secure the gas supply in the country.

In five Member States (Czech Republic, Greece, Ireland, the Netherlands, Slovakia), the TSOs prepare an **emergency plan** and have to send it for approval to the overall responsible body (regulator or Ministry).

In the Czech Republic the TSO announces the emergency level of national gas network (including transit), if gas supply disruption occurs. The Czech TSO also manages the entire national gas network in case of emergency. In UK the TSO has also a role of a network emergency coordinator (NEC), and coordinates the entire network in case of emergency. In Denmark, Germany and France, the TSO ensures the gas supply, if supplier is not able to ensure it. For this purpose, the TSO in Denmark owns the gas storage facility. In Sweden, if TSO is not able to supply gas, the ISO orders to reduce the gas supply to specific customers.

In 13 Member States (Bulgaria, Denmark, Estonia, Spain, France, Greece, Hungary, Italy, the Netherlands, Portugal, Slovenia, Sweden, Finland), the TSO makes long term planning of the entire gas network.

Cooperation between market players

Cooperation between TSOs in neighbouring countries, and cooperation between TSO and DSO are defined in the Annex of the Directive as instruments to enhance the security of gas supply. However, this instrument is specified in the legislation of only few Member States. In five Member States (Denmark, Hungary, Poland, Finland and Spain), the TSOs shall cooperate with other system operators to secure the gas supply. All TSOs in Germany have to cooperate with each other. TSOs in Estonia have to cooperate with system operators in

neighbouring countries. TSOs in Slovenia have to provide sufficient transport capacities and cooperation with other TSOs and DSOs in case of emergency. In Estonia, all market players are also so called "balance providers", providing necessary balance information for system operators.

Dispatch services

In four Member States (Czech Republic, Slovakia, Romania, Bulgaria), the **TSOs established a dispatch centre for the gas transit network** to provide the technical management and to balance the gas system. In Austria the same service is provided by the independent market players, so called "Control Area Manager". National Grid's System Control Centre continuously monitors and controls the UK gas network. In five other Member States (Denmark, Italy, Latvia, Spain and Sweden), the TSO directly provides the dispatch services.

4.2.4. Distribution System Operator (DSO)

Stable and secure functioning of the gas distribution network is the main task of **Distribution System Operators (**DSO) in all Member States. In many Member States, the DSOs are also responsible to ensure the stable and reliable gas supplies and the quality of the supplied gas.

DSOs in 3 Member States (Czech Republic, Slovakia, and Greece) shall supply the gas to households during the emergency stage or during the gas supply disruption. In 14 Member States (Bulgaria, Estonia, Denmark, Slovakia, Germany, Hungary, Latvia, France, Portugal, Romania, Sweden, Slovenia, Spain, and Finland), the gas distribution network shall be developed in accordance with the gas consumption forecasts. In 6 Member States (Bulgaria, Slovakia, Czech Republic, the Netherlands, Hungary, Greece), the DSOs have to prepare the emergency plans for their territory to cope with technical failures and sudden disruptions.

Cooperation between DSOs and other market players in case of emergency situation

In 7 Member States (Denmark, Finland, Germany, Portugal, Poland, Spain and Slovenia), the **DSOs** shall according to the national legislation **cooperate with other market players all the time, in particular with LNG operators and gas storage operators connected to their distribution and transmission networks**.

In three other Member States (Czech Republic, Slovakia, and Bulgaria), the DSOs have to establish the technical control/dispatch centre for the distribution network. The dispatch centre shall control interconnected distribution networks during the emergency situation, or prevent the situation to go to that level.

4.2.5. Underground Gas Storage Operator (UGSO)

Stable and secure functioning of the gas storage is the main task of **Underground gas storage Operators (UGSOs)** in nearly all Member States. UGSOs ensure the reliability of gas supply and maintain the quality of supplied gas. Slovenia and Denmark did not define the security of supply role for underground gas storage operators, although both countries use the gas stocks as a measure for security of gas supply. Slovenia has no storage facilities on its territory but stores gas in neighbouring countries (Austria, Croatia).

UGSOs in 6 Member States (Czech Republic, France, Italy, Romania, Slovakia, and Hungary) ensure the emergency supply to the gas network during the emergency situation. In the Czech Republic, the UGSOs have to establish a gas storage dispatch centre. The UGSOs in Slovakia develop the emergency plans for underground gas storages. In 8 Member States (Finland, Slovakia, Italy, the Netherlands, Portugal, Spain, Latvia, Denmark), the UGSOs propose the Development plan for underground gas storages.

4.2.6. LNG System Operator (LSO)

System Operators are responsible also for stable and secure functioning of the LNG facilities and LNG storage facilities in 18 Member States. The use of LNG by system operators is not specifically defined in 8 Member States (Slovenia, Slovakia, Czech Republic, Bulgaria, Luxembourg, Hungary, Romania, and Latvia).

In Poland and the Netherlands, the LSOs guarantee the reliability of gas supply and maintain the quality of gas from LNG. In Denmark and Portugal, the LSOs manage their activities with the linked system operators. In Denmark and the Netherlands, the LSOs prepare the Development plans for LNG.

4.2.7. Suppliers

Infour Member States (France, Germany, Hungary, and Slovenia), the gas **suppliers** (defined as holders of a supply licence) have the overall responsibility to deliver the gas to their final customers. In 13 Member States (Belgium, Czech Republic, Finland, Greece, Italy, Latvia, Lithuania, Luxembourg, the Netherlands, Poland, Portugal, Romania, Slovakia, and UK), the gas suppliers have the obligation to deliver the gas, but overall responsibility for security of gas supply is set to other market players (Ministries or TSOs).

In the Netherlands and France, the gas suppliers ensure the gas supply also in difficult circumstances, during which they are obliged to deliver the gas to their customers. In Luxembourg and Portugal, the suppliers guarantee the gas supplies to households. In Portugal and Italy, the suppliers maintain the minimum security gas stocks defined as a share of their supplies. In France, the gas suppliers make a 5 years planning forecast. In the Czech Republic, all suppliers are obliged by law to guarantee the security of supply standards and stable gas supply. In Hungary and UK, the suppliers´ licence means also an obligation to supply gas.

In UK, the system operator requires the gas supplier to contribute to the security of gas supply and ensure that the industry can safely isolate and reconnect the end users in case of supply disruption. Some Member States also define the suppliers of last resort, who are responsible to supply the final customers under the specific conditions.

Conclusions – differences in the security of gas supply roles of market players

Member States have defined the roles for their market players in a different way, which created a distortion for security of gas supply at the European internal gas markets. The big difference in roles and responsibilities underlines the actual difference of national markets. At the same time it may mean a difference in the burden on market players which might distort competition. There are some common patterns for most (or nearly all) Member States. The main roles given to TSOs, DSOs, LSOs and UGSOs are very similar at the level of Member States. Most of the roles of market players are specified only for their activity within the national gas markets. Only few market players have mentioned specifically in the national

legislation the obligation to cooperate with other countries´ market players (e.g. TSO in Estonia). This "national only support" contributes to the fragmentation of the internal gas market.

5. SECURITY OF SUPPLY STANDARDS (ART.3/4)

The Article 3(1) of the Directive set the obligation for Member States to "*…specify adequate minimum security of supply standards that must be complied with by the players on the gas market of the Member State in question*".

The same paragraph also defines how to apply these standards. "*The standards shall be implemented in a non-discriminatory and transparent way and shall be published.*"

5.1. Security of gas supply standards (for households)

The Directive defines the security of supply standards. **Households are the only category of gas customers, where the Directive requires the Member States to ensure the gas supplies under specified conditions and inside their territory.**

Important role of security of gas supply standards for households is stipulated in Recital 5 of the Directive: "*In view of the growing gas market in the Community, it is important that the security of gas supply is maintained, in particular as regards household customers.*"

"Security of gas supply standards" defines the Article 4(1) of the Directive: "*Member States shall ensure that supplies for household customers inside their territory are protected to an appropriate extent at least in the event of:*

(a) A partial disruption of national gas supplies during a period to be determined by Member States taking into account national circumstances;

(b) Extremely cold temperatures during a nationally determined peak period;

(c) Periods of exceptionally high gas demand during the coldest weather periods statistically occurring every 20 years.

Security of gas supply standards are defined as critical conditions, at which the secured and reliable gas supply shall be still guaranteed for households. These standards create **a set of operational conditions** to be fulfilled, which have the essential impact on gas supplies (e.g. no gas disruption, or normal winter).

Seasonality of gas demand implies two indicators – for the **strong winter gas demand**, and for the **strong daily peak demand**. The third indicator refers to the **volume of the gas supply disruption**.

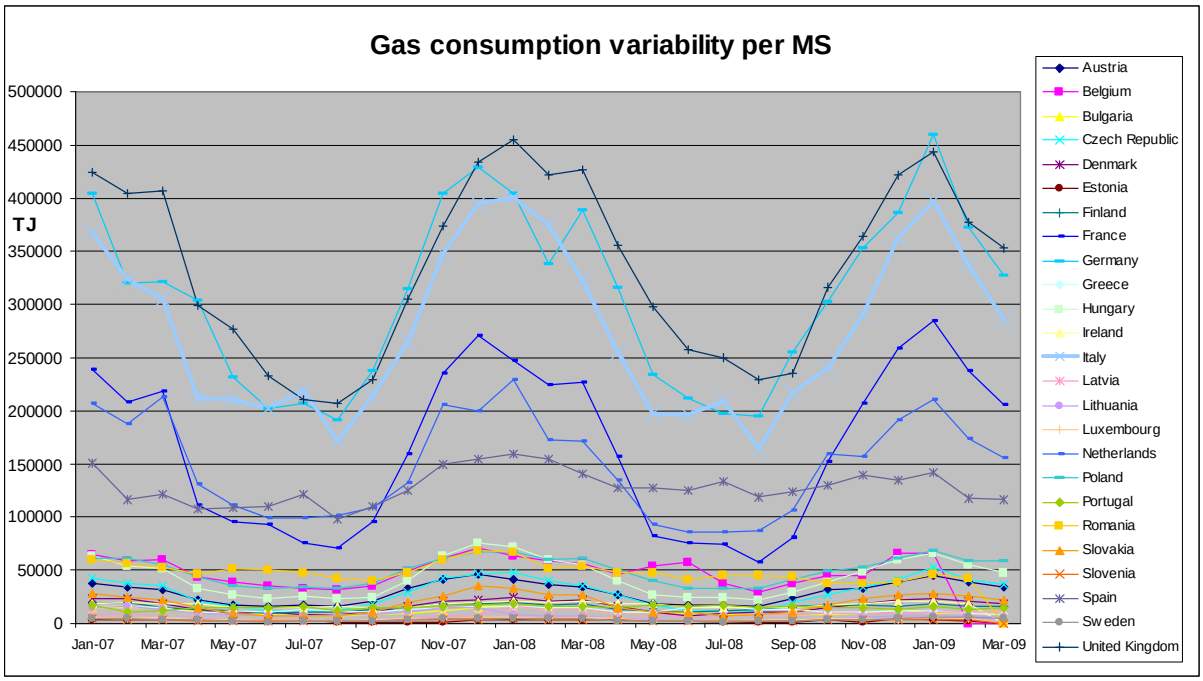
From the principal point, these three security of gas supply standards are correctly defined, because they describe the variability of gas demand in Member States in the basic form.

However, the Member States were given a **wide discretion to specify the details and the protected customers of these standards.** They have the possibility to define the volume and the duration of partial gas supply disruption and the duration of peak periods of increased gas demand. The variability of implementation of security of supply standards related to national circumstances in Member States is described in Annex 2.

Two of these standards take into account climate conditions. They are related to seasonal variability of gas demand, because gas is used in many Member States as a primary heating fuel during winter. In the winter period, the gas demand is higher by around 20-30 %, in comparison to the average annual gas demand. For some Member States (e.g. France, Germany, UK) the difference between summer and winter gas demands is more than 100% (double gas demand in winter than in summer).

Gas is also used for power generation, which multiplies the security of supply concern for both gas and electricity. Electricity has also higher demand in winter. Electricity demand for air conditioning during summer in southern Europe, increases the annual demand and leaves less time to prepare for the next winter period (for example to fill the gas stocks for the next winter).

The summer-winter difference of gas demand shows the variability on an annual basis for many national gas markets. For Member States, which use the gas for heating and electricity generation, this difference is a precondition for definition of their security of supply standards and national emergency measures. The partial gas disruption is more critical in winter, because of the increased gas supply during this period. This also describes the clear link between the gas supply disruption and the weather conditions, both defined by security of supply standards.



a) Partial disruption of national gas supplies during a period determined by Member States taking into account national circumstances

The “partial disruption” is not defined in the Directive. Some Member States were inspired by the definition of “major supply disruption” (Article 2(2) of the Directive), but both "disruptions" differ in purpose. The partial disruption describes a disruption at MS level, while the MSD is set for at EU level.

Four Member States (Malta, Ireland, Bulgaria, and Luxemburg) have so far only set the obligation to define the security of supply standards, but the standards have not been communicated to the Commission yet.

Some Member States (Czech Republic, Estonia, Malta, Slovenia, and Romania) define the partial disruption as a **20% gas supply disruption** in the country, and Slovakia as of **30%.** The time duration for partial disruption ranges from 2 weeks (Slovenia) to 10 weeks (Slovakia).

Finland, France and Lithuania define the partial disruption as a **disruption of one supplier** for the period of 4-6 months (according to the diversification, the disruption of one supplier for Finland and Lithuania represents 100% of their gas supply, but for France it represents only around 20-30% of gas supply).

Some Member States, instead of defining the standards, impose **mandatory gas stocks** and mandatory use of gas from gas stocks for households (Hungary - 45 days of gas demand, Poland - 30 days of gas import, Portugal – 15-20 days of gas demand).

Spain defines security of supply standards in a different way. Partial disruption is defined as a **disruption of one entry point** to the gas network by the "N-1 vulnerability criteria". The remaining entry capacity must be big enough to ensure the 100% gas demand of a normal winter day and at least 90% of all CCGT (gas turbines) power plants consumption. This measure is combined with the mandatory gas stocks of 20 days of gas consumption.

In addition, 2 Member States (Bulgaria, Estonia) set a period of **technical gas disruption**, which lasts 2-3 days.

If there is a partial disruption of certain share of gas imported by pipelines, it may influence gas supply not only in one country, but two or more countries on a pipeline chain. Real experience shows that the countries along one gas pipeline (like Brotherhood, Yamal, Western Balkans, as well as Finland and Baltic Countries) are affected simultaneously in a similar way, only differentiated by the level of ability of the previous country in the chain to mitigate the supply disruption. Gas supply disruption on the Brotherhood pipeline in winter 2006 showed the following disruption pattern as reported by MS in the Gas Coordination Group: Slovakia (20%), Hungary (30%), Austria (20%), Czech Republic (20%), Italy (15%), Poland (10%), Germany (6%) and France (gas pressure drop). In 2009, both Brotherhood and Western Balkan pipelines were empty for 14 days.

Seasonal variability standards

b) Extremely cold temperatures during a nationally determined peak period

Nationally determined peak period defines the duration of extreme cold temperatures event. Member States are given the flexibility to set this duration. However, the duration of peak winter event shows similar patterns within climate regions. Therefore, differences in the peak duration in neighbouring countries within the affected area are not justified. The difference in determination of the peak period duration by Member States is described in Annex 2.

According the statistical data, the lowest average annual temperatures - **annual peak periods** - occur in the same time in calendar in **every winter**.

The **extreme cold temperature event** does not necessarily occur during the annual peak period. According the statistical data, these **extreme peak periods** occurred only **3 times during last 50 years** in Europe - in February 1956, December 1962 and in January 1985. For example in January 1985, the temperature quickly dropped by 15-20°C to -20°C and -30°C and rested at these very low temperatures for couple of days. Heating demand during these days was extremely high. This event is usually defined by industry and in some national legislation as a **1-in-50 rule** and describes the ability of gas network to supply extreme high volumes of gas during a short period of time - extreme peak demands. Member States can not predict when this 1-in-50 event will happen again.

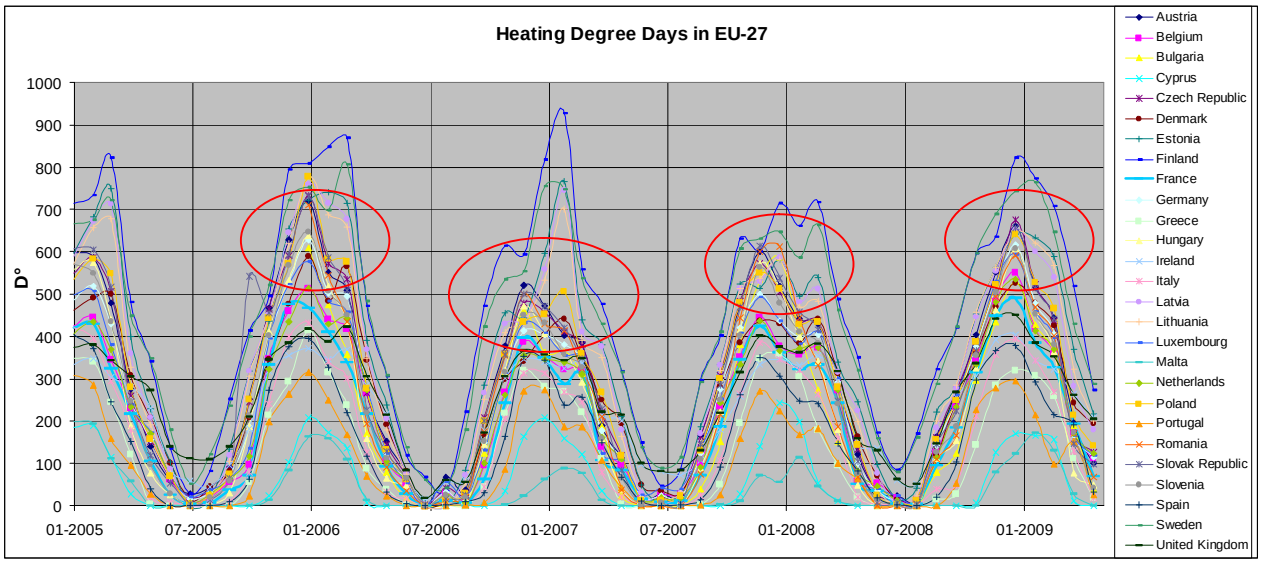
This event describes how much gas could be delivered by the network during certain time period (e.g. Nm^3 per one hour or one day).

c) Periods of exceptionally high gas demand during the coldest weather periods statistically occurring every 20 years

The period of exceptionally high winter demand (1-in-20 rule) is the coldest winter period, which statistically occurs every 20 years. Gas demand during this winter period is higher than during the normal winter period. This defines the ability of gas network to be able to supply the higher gas volumes during the all winter period's time.

For example, all system operators in Spain have to prepare the operational plans for every winter by the end of October, and send them to the TSO. These plans predict winter gas consumption. Entry Capacity to the Spanish Gas Systems must be sufficient to ensure the annual peak gas demand plus all the gas turbines power plants' (CCGT) consumption (1-in-50), and plus 10% of over-capacity to guarantee the gas demand in case of annual peak demand increases more rapidly than foreseen in several years (1-in-20).

High share of gas is used for heating purposes. Gas consumption increases, when the temperature drops. This is referred to as **seasonal variability** determines the **annual demand for heating**. It depends on daily temperatures (described by heating degree days). Seasonal variability of gas demand is covered by the security of gas supply standards.



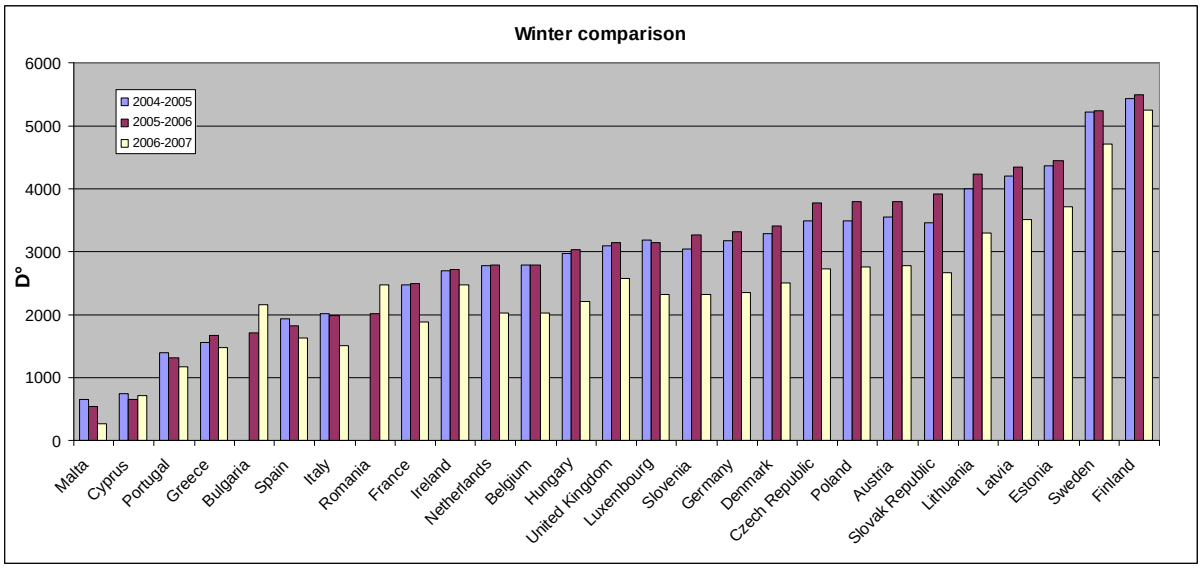
Heating degree days based on the Eurostat methodology are calculated by the Joint Research Centre (JRC IPSC/Agrifish Unit/MARS-STAT) at regional (NUTS 2), national and European levels. Heating degree days express the severity of cold temperatures in a specific time period, taking into account the outdoor temperature and the room temperature. To establish a common and comparable basis, Eurostat uses the following method to calculate heating degree days:

$D° = (18\ °C - T_m) \times d$ if $T_m \bullet$ 15 °C (heating threshold)

$D° = 0$ if $T_m > 15$ °C

Where $T_m = ((T_{min} + T_{max})/ 2)$ - outdoor temperature over a period of **d** days.

The heating demand differs amongst Member States. Neighbouring countries and countries of one region show a similar pattern. Finland has the highest heating degree days, and therefore the highest demand for heating. Sweden follows the similar pattern with lower values. The three Baltic States are very close to each other. Countries with the lowest degree days are Malta, Cyprus, and Portugal.



The winter 2006-7 was the mildest winter in Europe ever. It had the lowest heating demand for most Member States, but not for Bulgaria, Romania, Cyprus and Greece. The average gas demand was about 2% lower than the nominal winter gas demand.

Cooling degree days are used to calculate demand for cooling, especially with regard to electricity generation and cooling in Southern European countries in summer.

Conclusions

Member States have set very heterogeneous security of supply standards. The **partial disruption** differs in duration ranging from 2 days to 24 weeks and in volume (20%-30%, 1 supplier). In some Member States, the definition of standards has not been done. These differences may create a barrier to solidarity mechanism and to the finalisation of internal gas market. Some sort of standardisation is desirable, at least for regions or along the same

pipeline. Also in order to avoid different burden on market players, hence least distort competition.

The standard **"Extremely cold temperatures during a nationally determined peak period"** is giving the flexibility to Member States for the areas, where the same situation happens in most of the Member States in very similar way. Correlation of this standard at least on regional level is appreciated. Transposition is not very clear and sometimes the standards are difficult to recognise. The standards are defined in a very general way, which downgrades their importance for security of gas supply. Adequate implementation of the security of supply standards is essential to create a proper and well correlated framework. Member States took into account their national circumstances, but this created a variation of implemented standards to such extent, that the standards are incomparable.

5.2. Extension of scope of the security of supply standards to other gas customers

Article 4(2) of the directive allows extending the scope "*… in particular to small and medium-sized enterprises and other customers that cannot switch their gas consumption to other energy sources, including measures for the security of their national electricity system if it depends on gas supplies."*

5.2.1. Guaranteed supplies for SMEs and for non-fuel switch customers

Member States may choose and protect other vulnerable gas customers – SMEs and customers they can not switch fuel. Eight Member States have extended the scope of the protection beyond households.

Two Member States (Ireland, Malta) have taken the opportunity and guaranteed the gas supply for SMEs. Three Member States (Czech Republic, the Netherlands, and Portugal) extended the coverage of security of gas supply standards to all small customers consuming less than 100.000 (PT), 170.000 (NL), or 400.000 (CZ) cubic metres per year.

UK has an intermediate category of non-domestic "priority gas consumers" (e.g. boarding schools), which includes the issue of safety (if the life/health were at risk). They would continue to receive gas supplies for as long as possible without jeopardising supplies to households.

Romania extended the scope of guaranteed gas supplies to medical services institutions, education units, social assistance institutions for children, for elder persons, or for persons with various degrees of handicap, as well as to public institutions at central and local level, cultural and religious institutions and nongovernmental institutions of public interest.

Further gas customers, which could be covered by the security of gas supply standards, are the customers, who **have not the fuel switch possibility** and depend uniquely on gas fuel. These customers are covered by the security of supply standards in Czech Republic, Hungary, Ireland, Malta, and Poland. In Estonia the non-fuel switch customers covered by security of supply standards are limited to heat producers for households and in Romania to all heating producers.

5.2.2. Gas for electricity

The Directive gives the possibility to extend the security of supply standards to electricity production from gas fired power plants, if this production is significant in a Member State. Member States did not use this possibility.

It needs further examination if alternative security of supply measures exist (*like fuel switch obligation, compulsory stockpiling of alternative fuel or excess non gas-fired electricity generation capacities*) in those countries, where gas-fired power generation is predominant and no gas security of supply obligations are foreseen.

Conclusions for extended scope of significant gas consumers

Only few Member States use the possibility given by the Directive to include significant gas consumers in terms of SMEs, non-fuel switch possibility and of power generation. The importance of these categories is set by Member States itself.

6. SECURITY OF GAS SUPPLY INSTRUMENTS (ANNEX OF 2004/67)

The Annex of the Directive presents the non-exhaustive list of instruments, which should enhance the security of gas supply, as referred to in Article 3(3) and 4(3).

Instruments mentioned in the Annex consist of:

- working gas in storage capacity, and withdrawal capacity in gas storage,
- provision of pipeline capacity enabling diversion of gas supplies to affected areas,
- liquid tradable gas markets,
- system flexibility,
- development of interruptible demand,
- use of alternative back-up fuels in industrial and power generation plants,
- cross-border capacities,
- cooperation between transmission system operators of neighbouring Member States for coordinated dispatching,
- coordinated dispatching activities between distribution and transmission system operators,
- domestic production of gas and production flexibility,
- import flexibility,
- long term contracts,
- diversification of sources of gas supply,
- investments in infrastructure for gas import via regasification terminals and pipelines.

Recital 6 to the Directive includes another instrument, which could be used for security of gas supply: "*A large choice of instruments is available for the industry and, if appropriate, for Member States, to comply with the security of supply obligations. Bilateral agreements between Member States could be one of the means to contribute to the achievement of the minimum security of supply standards, having due regard to the Treaty and secondary legislation, in particular Article 3(2) of Directive 2003/55/EC.*"

Annex of the Directive does not provide any further specifications or details of the suggested instruments, their importance, and any relation between them, their impact on the security of gas supply or any preferences towards a particular measure.

In this chapter, the similar or related instruments from Annex are put together, and their role for the security of supply, as well as their utilisation by Member States, is shortly described.

In general, all mentioned instruments in the Annex of the Directive are used for security of gas supply purposes in Member States. The different structure of national gas markets is the prerequisite between the uses of instruments as emergency measures.

6.1. Gas Storage Facilities

Gas storage is one of the most used instruments for security of gas supply by Member States. This is the only instrument, which is specifically addressed in the Directive. 19 Member States have together around 100 bcm of gas storage capacity, which represents 14% of EU annual gas consumption.

There are 4 types of gas storages used in Europe: 3 underground types - salt cavities, aquifers, and empty gas reservoirs, and 1 type on surface - LNG storage type, usually used for "Peak shaving". LNG storage does not require any specific geology; it can be built in every Member State.

Development of underground gas storage depends on geological conditions. Underground gas storage is used in all Member States, who have the geological conditions. 21 Member States use gas storage as an instrument to increase security of gas supply. **Two of them store gas only in other countries.**

Article 4(4) gives Member States the possibility to use the gas storage facilities "*in an appropriate degree*" to achieve the security of supply standards. This gives the freedom to choose, if the gas storage will contribute to their security of gas supply. *Member States, having due regard to the geological conditions of their territory and the economic and technical feasibility, may also take the necessary measures to ensure that gas storage facilities located within their territory contribute to an appropriate degree to achieving the security of supply standards.*

According to the Directive (Article 4(5) and Recital 13), gas storage facilities create a possibility to develop solidarity between Member States in case of gas supply reduction. Provided that adequate interconnection is available, Member States may, in line with the bilateral agreements, take appropriate measures to utilise the gas storage located within other Member State for security of supply purposes. Such measure shall not impede the proper functioning of the internal gas market.

Although the Directive does not mandate any gas storage targets, it puts a strong emphasis on this instrument. It is the only instrument facilitating security of supply, to which the Directive refers to greater extent in its operative part (Recital 7 and Article 4(4) to 4(6)). The Directive suggests that indicative minimum targets for gas storage could be set by Member States or by the industry. Those indicative targets, if set, should not create any additional investment obligations. If such minimum storage targets are imposed, the Directive requires their publication for transparency reasons.

Despite the "soft" approach in the Directive, the gas storage requirements have spread well around Europe. In some Member States this measure is mandatory.

The Directive creates a possibility for Member States to store the gas outside their territory. This also means that interconnection capacity between the two countries concerned shall be available to use the gas storage, when it is needed. Utilisation of Latvian gas storage

Incukalns by all Baltic countries is an example of such solidarity cooperation within the whole region.

Gas storage in Member States

Legislation

Some Member States set an obligation to the supplier to store the gas. Mandatory levels of gas stocks for supplier were set in **Poland** (30 days of average daily import), **Spain** (20 days of consumption – 10 days as strategic, and 10 days as commercial storage), and for stockpiling association in **Hungary** (45 days). In **Portugal** the mandatory gas stocks are at least 15 days of the average consumption of non-interruptible gas for electricity producers and 20 days of other non-interruptible customers including households.

France adopted different approach, where at the beginning of winter the gas storage has to be filled to at least 85% of its capacity. In **Bulgaria**, the level of stocks is defined by market players themselves. In **Romania**, the suppliers maintain the gas stocks, but their levels are defined annually by the regulator according the predictions of gas consumption, weather forecasts and level of existing storage capacity.

Czech Republic, France, Italy, Portugal, Romania, and Slovakia have obliged UGSOs to ensure the emergency supply during the emergency situation.

In the German legislation is written that the storage volume in Germany could last for 80 days, but if suppliers use gas storage, there is no storage volume required.

Suppliers in Italy are obliged to keep gas stocks of 10% of the annual imported gas volume. Italy has very strong legislation for gas storage. It defines various types of winter according the gas demand. It also defines the strategic gas stocks and their use, if there is a real strong winter and not enough gas to cover the country's gas demand. It also set the exact time period for gas injection and gas withdrawal.

Gas storage facilities used to enhance the security of gas supply

Gas demand fluctuations vary over time, across years, seasons, weeks and days. Gas storage is the primary measure to meet these fluctuations.

The Directive describes gas storage use by two indicators – working gas capacity and withdrawal capacity. *Working gas capacity* describes the maximum gas volume, which could be withdrawn from the gas storage at the nominal parameters to the gas system, representing also the difference between total gas storage capacity and cushion gas capacity (gas used to operate the gas storage).

Withdrawal capacity of gas from storage describes the rate at which gas could be taken out from gas storage for a certain period of time. In other words how quickly gas can be taken out from the storage. This represents the deliverability of gas storage, or the volume a gas, which could be injected into the gas system from the storage over a certain time period.

Combination of both parameters describes the time period, during which the gas storage could supply the gas to the network.

Strategic gas stocks refer to the stockpiling of natural gas which is destined to be used exclusively in emergency situations, hence inaccessible under normal market conditions. Stockpiling of natural gas is expensive: the cost per unit of energy is much higher than for oil (approximately 16.7 MEUR per PJ, compared to 3.33 of oil[2]). Geological conditions may also limit in certain areas the development of gas storage facilities.

Member States have different levels of exposure to risks and hence different gas supply security requirements. A country with a diversified gas import or high share of own production, good level of interconnections with neighbours, developed market and high fuel-switching possibilities (high share of industry or power generation consumption) may be less exposed to risks and may develop less expensive measures than strategic stocks to deal efficiently with supply shortages.

However, it needs to be recognised that strategic stocks might be the preferable or only mid-term solution, particularly for countries with single-source dependence and high share of uninterruptible demand. If a Member State chooses the strategic gas stocks as a national measure, the use of strategic stocks has to be carefully regulated to avoid market distortions: strategic stocks should not be released in non crisis situations to influence the value of storage and other flexibility instruments that are developed under competitive market conditions.

Different types of gas storage

LNG storage (Peak Shaving) - is used when high deliverability is required with a small working volume. This storage is reserved for a few extremely cold winter days. Subsequent refilling of LNG tanks may take a half-year or longer. Storage of gas in liquid form is very expensive compared to the storage of the same volume of gas in underground storage. A typical LNG storage would have a volume of 50 Mm^3, an output duration of 100 hours, a storage cost of 0.4 €/m^3/y and a deliverability cost of 40 €/m^3/y^3. LNG storage facilities are used because of their high send out capacity, making them ideally suited to cover the extreme winter peaks. On other hand the LNG Storage facility is expensive to maintain.

Gas salt caverns are facilities created in salt layers. They have less working volume than depleted field storage facilities and are mainly used for peak supply. A typical send out period is 10-30 days. Generally, a gas cavern facility consists of a number of individual salt caverns, each with a working volume of 30-70 million cubic meters and a send out capacity of about 2-4 million m^3/day. Gas caverns are used to cover the coldest days. Due to their small scale, cavern storage facilities require less investment and can be built in stages, one after the other, with limited incremental costs for each new cavern.

Depleted oil or gas fields and **aquifer storage** facilities are mainly used for summer-winter seasonal balancing. They have large working volumes (typically 2.5 bcm) but relatively little output capacity. They are filled in the summer over the curse of typically six months and emptied in the winter over a period of two-three months.

Utilisation of gas storage

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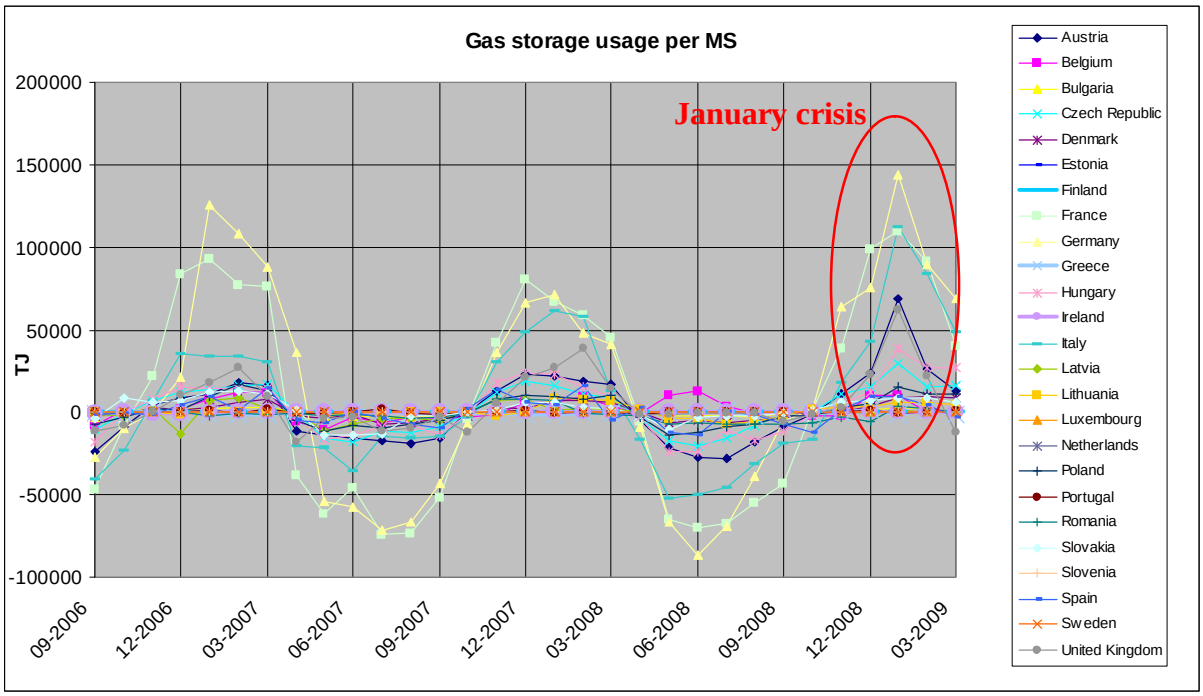
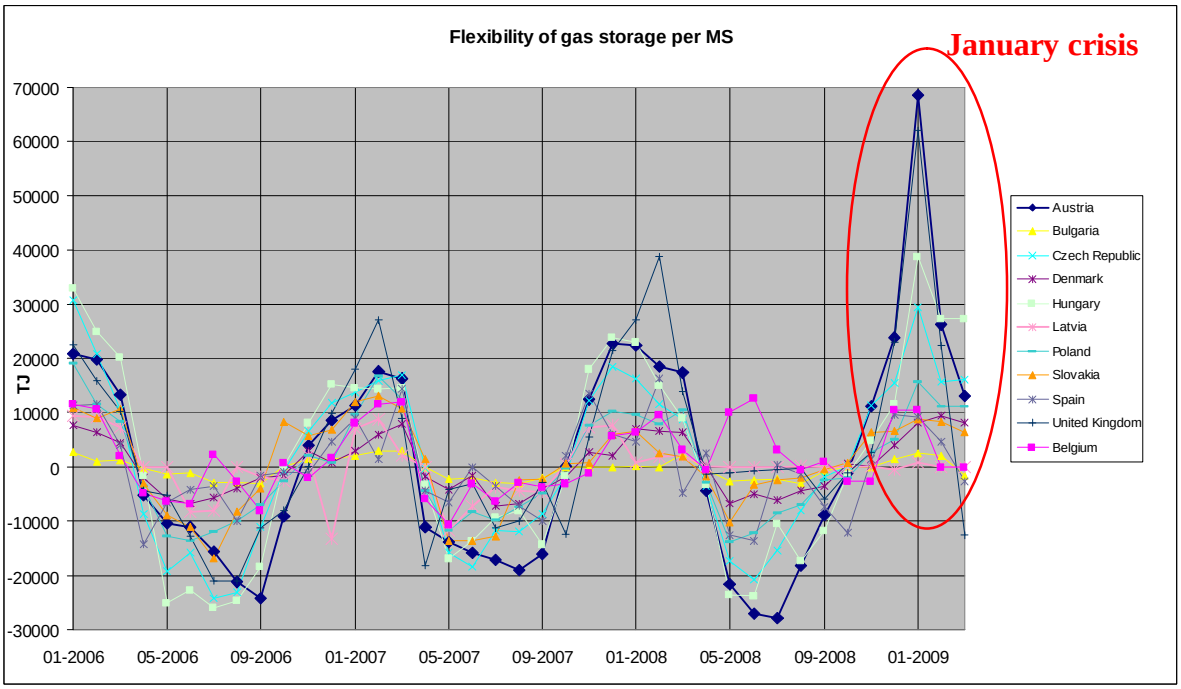
2 Study on natural gas storage in the EU, European Commission DG Tren, October 2008

3 *Study on Interoperabiliy of LNG facilities and Interchangeability of gas and advice on the Opportunity to set up an Action Plan for the Promotion of LNG Chain Investments , MVV, 2008*

Utilisation of gas storage facilities is different in Europe (see graphs below).



These two graphs show the use of gas storage in Member States. Italy, Germany and France use the gas storage as main tool to cover the seasonality of gas demand. Most countries show similar use of gas storage - gas withdrawal in winter and gas injection in summer. It indicates that security of gas supply depends very much on gas storage in these countries during the winter period. Especially in Italy, where the supply - demand balance is very tight. The dependency on storage and its flexibility was clearly demonstrated in January 2009, where most MS doubled the gas supply from their storages in comparison to January 2008.

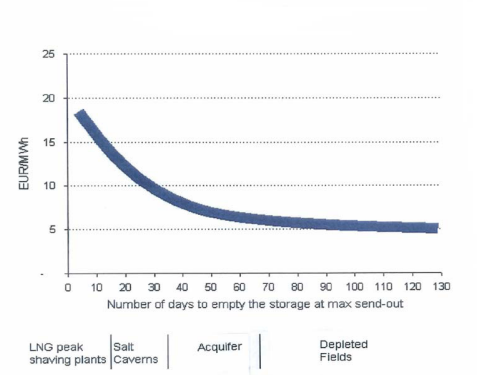


This is the same graph as above, but in a different scale. It shows the similar winter-summer patterns of the utilisation of gas storage facilities for other Member States.

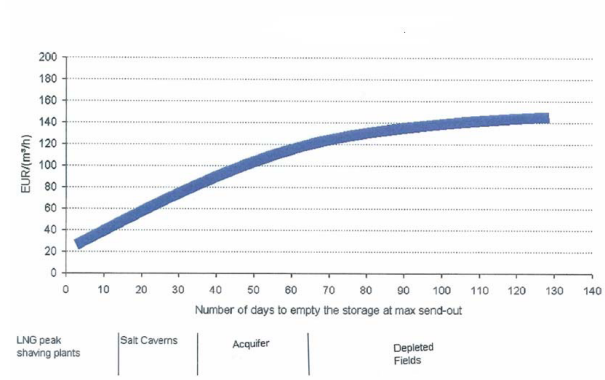
Some Member States have no gas storage on their territory (Slovenia, Estonia, Finland, Sweden, and Luxembourg). Slovenia and Estonia are storing gas in neighbouring countries for their own security of supply purposes. Greece stores gas in a LNG terminal, but only to balance the demand/supply of the system, and not for security of supply purposes.

Economic and technical feasibility of gas storage

Cost Comparison of Storage Costs by Working Volume



Cost Comparison of Storage Costs by Deliverability



Source: Study on Interoperabiliy of LNG facilities and Interchangeability of gas and advice on the Opportunity to set up an Action Plan for the Promotion of LNG Chain Investments, DG TREN, 2008

Conclusions

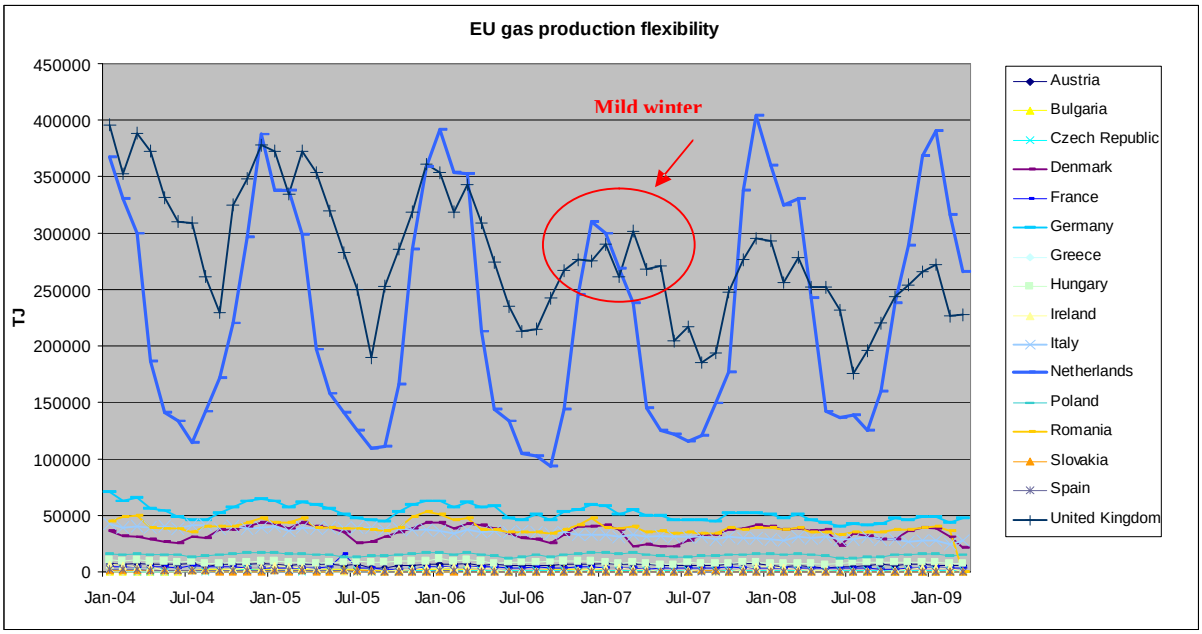
The significance of gas storage for security of supply purposes is clearly highlighted by the use of this measure in all Member States where it is possible

Development of commercial storages should be encouraged. Beyond their role in balancing and price hedging, they can enhance market liquidity and thus increase security of supply. While preparing the in-depth analysis of the measures described in chapter 3.1, the Commission shall examine whether the current development of commercial storage is sufficient and whether other options on storage are necessary to support the Community action, such as for example the development of EU Community strategic stocks or other measures to promote investment in commercial storage.

6.2. Production flexibility

Production flexibility is used only in Member States with gas production, in particular gas export countries (The Netherlands, UK and Denmark). They have enough gas reserves to develop the flexibility of gas production, which contributes significantly to their security of gas supply. Production flexibility is also one of the instruments indicated in the Annex of the Directive.

The Netherlands as a gas producer has developed a very flexible gas production from its gas fields (especially Groningen), which are used in similar winter-summer patterns as the gas storage in other Member States.



Similar pattern is also shown in the UK, however during the last two years the gas production has fallen, negatively influencing the UK production flexibility as an instrument for security of gas supply.

Other significant producing countries like Germany, Italy, Romania, and Denmark also use their production flexibility to cover (partly) the seasonality of gas demands. In Germany, the production flexibility is not as important as storage or import flexibilities.

Production flexibility decreases with the decline of gas production in EU. Affected Member States have to find an alternative. Denmark and the Netherlands are planning their gas future with the reality in domestic production.

6.3. Long-term supply contracts (Art. 2(1))

Article 2(1) defines for the purpose of this Directive long-term gas supply contract as "… *a gas supply contract with a duration of more than 10 years*."

The significance of long-term supply contracts in European gas market is stipulated in Recital 11 "*Long-term contracts have played a very important role in securing gas supplies for Europe and will continue to do so. The current level of long term contracts is adequate on the Community level, and it is believed that such contracts will continue to make a significant contribution to overall gas supplies as companies continue to include such contracts in their overall supply portfolio."*

Definition of long-term supply contracts as of the Directive is used by eight Member States (Germany, Latvia, Malta, Poland, Portugal, Romania, Slovakia, and Slovenia). Hungary has set the time duration of the contract to 5-10 years. Other Member States use the term "long-term contract" in their legislation, but without definition. Long-term contracts are used both in LNG and pipeline gas, however for LNG the usual length of contract is shorter as for the pipelines.

Long-term contracts are also included in the Annex as an instrument to increase the security of gas supplies. Many Member States use long-term contracts to ensure the gas supplies for a certain period in longer time frame (usually 5-20 years). During the last three years most Member States importing gas from Russia prolonged their long-term contracts to another 10 to 20 years. Long-term contracts may also influence the gas supply forecasts to the market, showing the amount of gas, which is contracted for the future, and which will be available for the market.

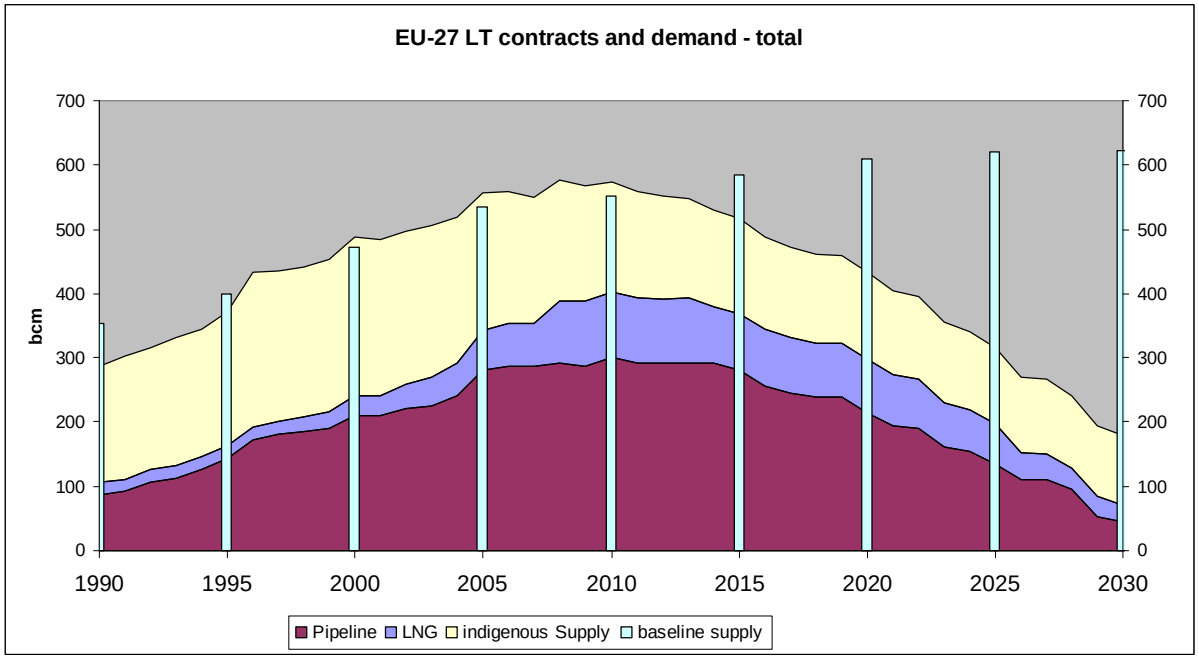
The impact of long-term contracts on the internal market is twofold. The positive side is the increase of gas supply stability to the market, and at least some guarantee for a longer period that the gas will come to the market. The negative side of the use of long-term contracts is if the volumes of transport capacity are only contracted but not used, which may foreclose the market to other suppliers. Usually higher than normal consumption volumes of gas supplies with some flexibility are prescribed in contracts for longer periods (e.g. month) , due to ensuring the gas supply during an exceptionally strong winter or other unpredictable events.

Further disadvantage is that existing long-term supply contracts between producers and dominant player in the market could lead to barriers to entry by new players into the market and potentially could restrict the development of liquid trading hubs.

Most of the long-term contracts are "take-or-pay" type. The importer is obliged to pay for contracted but not actually delivered volumes of gas. Lithuania and Luxembourg defined in their legislation "take-or-pay contracts" but without specific time frame.

The chart below shows the evolution of long-term gas supply contracts (2007 contract level), comparing the baseline gas demand scenario. The level of long-term gas supply contracts has increasing tendency, and since 1995 the volume of gas contracted with the long-term gas supply contracts has been higher than the actual gas consumption in EU-27. This trend continues and the current long-term contracts are of higher volume than the forecast of 2010 gas consumption in the baseline scenario (without any reductions in alternative scenarios, e.g. RES, energy efficiency, or 20-20-20 scenarios).

Long term supply contracts for Europe divided to pipeline and LNG, vs. the baseline scenario.



Source: Gas Strategies and PRIMES 2005

Comparing the available transport capacities to contracted volumes could adjust the real flows and real volumes in a pipeline system. It also enables to define the free available capacity, and adjust the ratio between the contracted and imported volumes, as well as the ratio between the long term contract deliveries and spot deliveries. According to the LNG study, the ratio between spot market and long term market in LNG market shifts towards the spot market, however the long-term contracts will still prevail.

6.4. Import flexibility

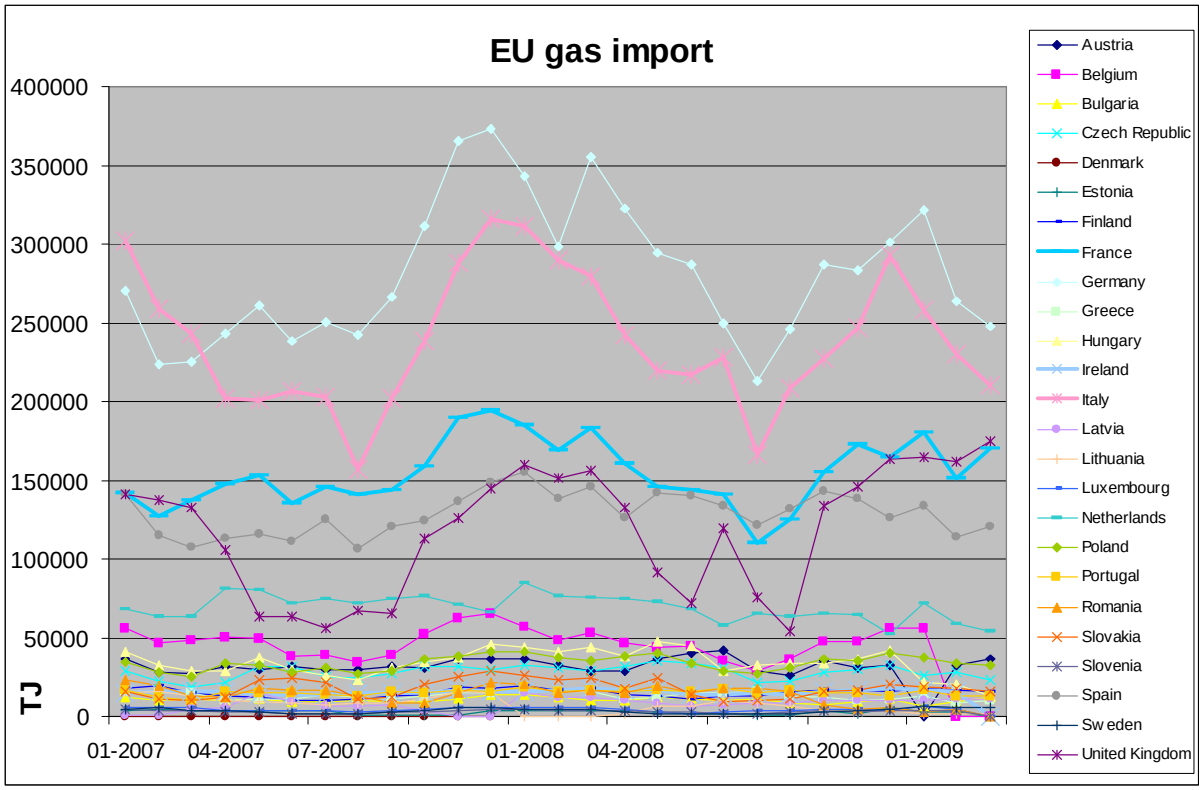
Import flexibility is an important instrument also included in the Annex. Import flexibility means the ability of gas supplier to periodically increase or decrease the gas imports to the most appropriate volumes.

LNG is particularly important for the short term flexibility. Main elements contribute to this flexibility: the possibility of LNG transport ships to be docked in different ports where it is mostly needed, and any additional spot LNG ship can bring additional gas to desired destination, if it is needed. LNG terminals are utilised in less than 50% of their projected annual capacity in the EU.

Pipelines flexibility is the possibility to divert the gas to other pipelines if there are more pipelines connected to the market. This also increases the diversification of gas routes, which means also the diversification of sources. Actual available capacity and the ability to increase or decrease the gas volumes in a very short time are important parameters for pipelines. Both pipelines and spot LNG cover the seasonal variation of gas demand. The seasonal flexibility of imported gas volumes is included in the import contracts.

Gas storage can be the most preferable measure during the short term disruption, as it is located closer to the markets or along the pipelines route. Additional gas from external

producers could be only delivered within significant time delay depending on the distance from the field (1-10 days) or from extra LNG cargo.



6.5. Interruptible contracts, fuel-switch possibility

Interruptible contracts enable to cut-off the gas customers under specific circumstances (e.g. gas supply disruption), but in the same time, they can not have any negative impact on customers. These contracts are used in industry and power generation, where the gas is not the main/important fuel of industrial production, or industry constructed or maintains the alternative fuel stocks.

Some countries have also introduced voluntary interruptible contracts with industry. Gas supplies are cut off above certain price levels. This practice is adopted only by the largest market players in France, Germany, and UK and depends on daily gas prices.

Interruptible contracts are used by industry also in combination with the fuel switch possibility (e.g. power generation). Support for interruptible contracts is given in Italy through the legislation creating the incentives for additional interruptibility by extra fee. This fee depends on the time period during the day in a winter season.

Romania introduced a voluntary interruptible contracts used by so called "interruptible customers" with only limitation to the security of supply for household consumers in the situations represented by the security of supply standards. Interruptible customer has minimal gas consumption 30,000 m3/h in winter and could be cut-off for 24 hours without affecting its technical security.

According to the European Gas Flexibility Report 2007[4], which analysed interruptible contracts in 14 Member States, the present use of interruptible contracts is about 14 bcm of industry gas consumption and 25 bcm of power generation in 2005. It represents about 7% of the annual gas demand of these 14 Member States. According this report, the trend in Europe is to reduce the proportion of interruptible gas, because of environmental constraints of alternative fuel, and because of declining ability to maintain the backup oil systems.

Fuel switch possibility is introduced by important gas customers. In case of gas disruption, company could switch from gas to another fuel and follow operation. As for gas the most used alternative fuel is light fuel oil.

This is used by power producers, which have to maintain other fuel stocks, or have some stocks already constructed (e.g. older gas power plants with fuel oil as a backup fuel). For example in Bulgaria, gas fired power generation plant has to maintain 5 days of liquid stocks.

The Commission asked the Member States about their possibility to switch fuel, if a gas supply disruption occurs. This instrument is used in a very different way by Member States. With regard to the share of gas consumption, Finland has 90% possibility to switch from gas to another fuel, Sweden 30-40%, 6 other Member States (Belgium, Denmark, France, Germany, Ireland, Italy, Lithuania, Slovenia) between 6-18%, 3 Member States (Austria, Poland, Slovakia, have not any fuel switch possibility and 6 MS (Bulgaria, Czech Republic, Luxembourg, the Netherlands, Portugal, Spain) have not such information. Other 2 MS (Greece, and Latvia) did not reply yet. The detailed results are in Annex 4.

6.6. Cooperation of System Operators

Coordinated dispatching activities between DSO and TSO

The coordination of various system operators is defined in the national legislation. The coordination of the dispatching activities an obligation for Czech, Slovak and Bulgarian TSOs, through the establishment of dispatch centres for the gas transit network. Austria and Estonia created independent market players, called regional zone rulers or balance providers. Apart from different name, the main role of all these bodies is the technical management and balancing of the gas system. Spanish TSOs are directly responsible for technical management of the network to ensure the proper coordination. Denmark, Poland, Slovenia and Finland TSOs shall cooperate with other system operators to secure the gas supply. In Germany all TSOs have to cooperate.

Cooperation between transmission system operators of neighbouring Member States

In case of a gas supply disruption, Transmission System Operators should cooperate. Regional approach allows different levels of market development to be taken into account with the common goal of realising the single market. Bilateral and multilateral projects for improving cross-border integration have been set up, such as the Regional Initiatives of ERGEG, government cooperation within the Pentalateral Forum in North West Europe and MIBEL/MIGAS for the Iberian countries. Unlike other initiatives, the Energy Community increases regional cooperation on a legally binding basis. These projects play a useful role in the development of best practices.

[4] European Gas Flexibility Report, Global Insight, 2007

Gas regional Initiative (GRI)

On 25 April 2006, ERGEG launched a Gas Regional Initiative (GRI), made up of three gas Regional Energy Markets (REMs). Focusing on more cooperation and harmonisation at cross-border issues, each regional gas market has defined the priority actions in the areas of Balancing markets and quality, transparency, interconnections of primary capacity and secondary capacity markets, hubs indicating the market liquidity, investments and regulatory coordination. The Regional Initiative Groups consists of the Regional Co-ordination Committee, together with the Implementation and Stakeholder Groups. A Lead Regulator has been appointed for each REM to chair and co-ordinate work within the region.

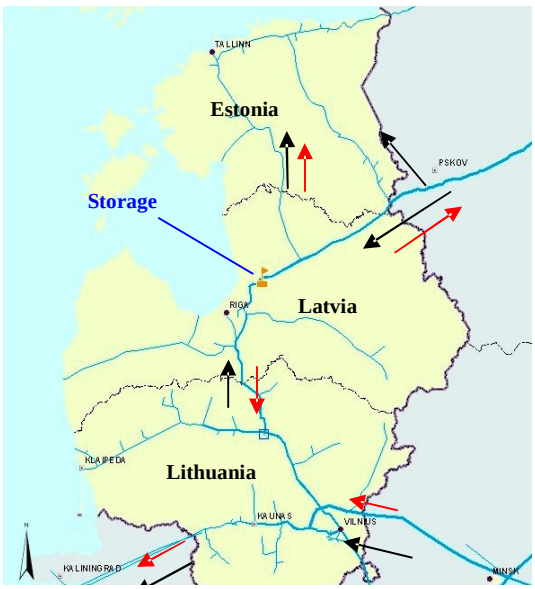
Overall aim of Gas Regional Initiative is to push forward at a practical level, the development of regional gas markets in collaboration with industry, Member States, the European Commission and other stakeholders. At the regional level, the gas REMs tackle barriers to competition, such as the lack of market integration, transparency and balancing issues, highlighted in DG Competition's energy sector inquiry.

North-West regional gas market participating countries are Netherlands, Belgium, France, Ireland, Great Britain, Germany, Denmark, Sweden, and Northern Ireland. Norway is an observer. The main priorities are transparency and capacity interconnections for cross-border trade.

South South-East regional gas market participating countries are Austria, Bulgaria, Czech Republic, Greece, Hungary, Italy, Poland, Romania, Slovakia and Slovenia. The South South-East (SSE) REM is co-chaired by E-Control (Austria) and AEEG (Italy). This region contributes significantly to the security of energy supply in the UE since nearly half of the European transit capacities are transported through the countries of the South-South East Region. Monitoring the proper implementation of the European gas regulation, the survey and analysis of the regional market and its problems, as well as transparency and interoperability issues are the main priorities.

The **South regional gas market** is led by the Spanish Energy Commission (CNE) and aims to integrate Portugal, Southern France and Spain into one gas regional market. The South REM contributes to both the European security of energy supply and diversification of energy sources. It is one of the main entries for the natural gas coming from the north of Africa, and for the LNG coming from a variety of origins. Interconnection capacity, interoperability and transparency issues are the three key priorities.

Pentalateral Energy Forum



The energy cooperation framework has been established in 2005 between France, Germany, and the three Benelux countries. "Pentalateral Energy Forum" gathers Governments, regulatory authorities, Transmission System Operators, power exchanges and market participants. The goal is to ensure the better integration of the energy markets between these countries, which are natural energy trading partners. Better integration of energy markets, through "flow-based market coupling", serves to enhance reliability, security of supply,

and economic efficiency. Resources are pooled for forecasting and capacity planning.

Baltic states cooperation during winter period

Pipeline import from Russia is regularly disrupted every winter in some of the Baltic countries. During this period the gas is supplied from the Latvian underground gas storage Incukalns (2.3 bcm capacity) to cover the most of the gas demand in Latvia and Estonia, but also part of the gas demand in Lithuania, Russia (Kaliningrad area) and sometimes also in the St. Petersburg region. Therefore, all gas consumed during the year (both summer and winter) has to be imported during a period of about six months in the summer season and stored in Latvia. Therefore one of the most significant risks to gas supplies in the Baltic countries is a failure of the Inculkans storage facility

→ Summer flows

→ Winter flows

Map: Gas flows in Baltic States in summer and winter periods

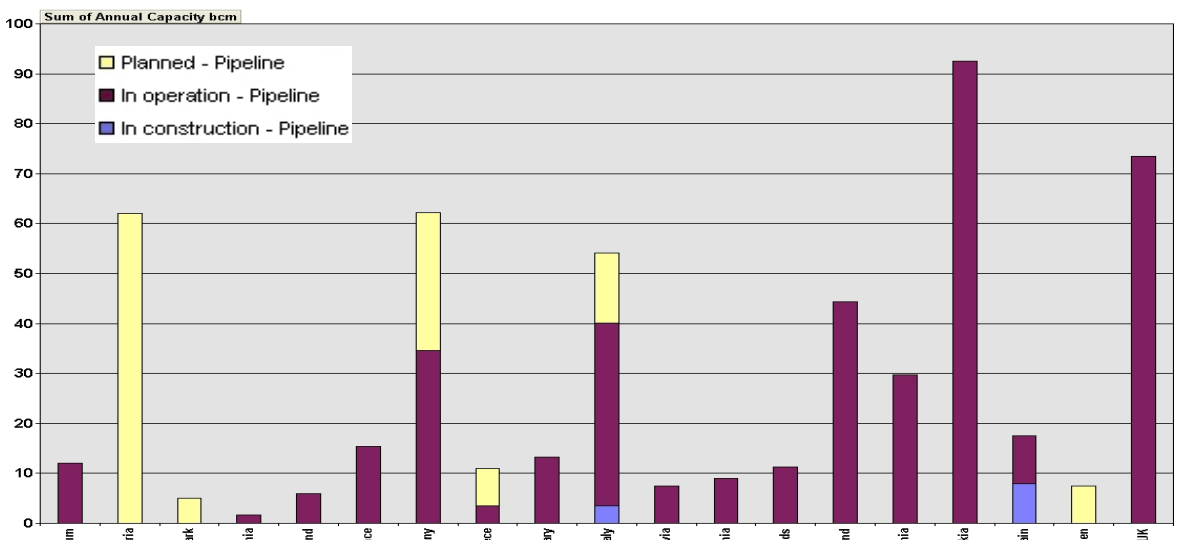
6.7. Cross-border capacities

Proper planning of cross-border capacities is essential for security of gas supply as well as for the internal market. The gas network shall be able to deliver all the gas demanded in Europe. It has to withstand very high gas demand during strong winter. Sufficient capacity shall be able to deliver enough gas in future, following the consumption patterns in EU. The cross-border capacity planning shall be done in line with the annual gas demand scenarios for winter consumption, both at the country levels and at the EU level, and both from the point of gas import and of domestic consumption.

Entry points to European Union

Europe has 38 gas entry points. 25 pipelines (from Russia 3 pipelines directly, 4 through Belarus and 5 through Ukraine, 9 from Norway, 1 from Tunisia, 1 from Morocco, 1 from Libya, and 1 from Turkey) and 13 LNG terminals. The entry capacity of gas pipelines is around 370 bcm (e.g. 190 bcm from Russia, 38 bcm from Algeria and 127 bcm from Norway) and around 100 bcm of existing LNG terminals.

The main entry point to the EU is at the eastern border of Slovakia importing the Russian gas to Europe through Ukraine. Other important entry points of Russian gas to Europe through Ukraine are in Romania, Hungary and Poland. Poland and Lithuania imports Russian gas also through Belarus. Finland, Estonia, and Latvia have direct gas connections to Russia. New



pipelines creating additional import capacity for gas from Russia to EU are planned.

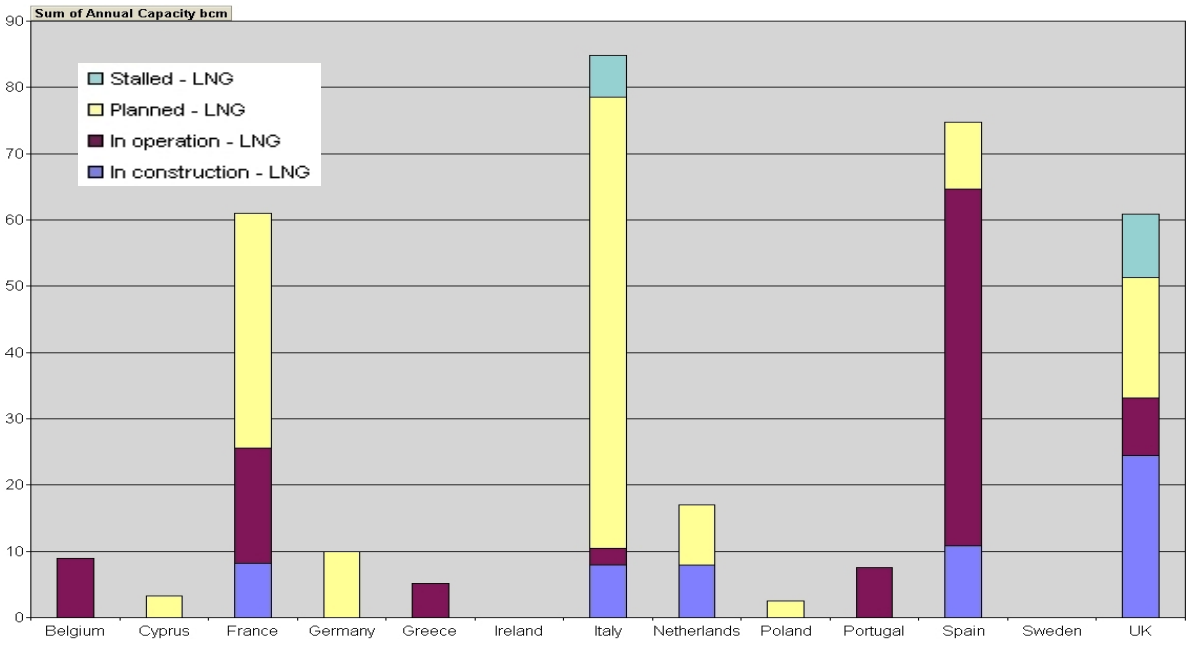
Chart: Annual capacity of pipeline entry points to the EU (bcm)

Source: GIE, MS reporting, European Commission

Norwegian gas is imported to Europe through gas pipeline connections to UK, Germany, the Netherlands, Belgium and France. A new pipeline is planned to connect Sweden and Denmark. Algerian gas is imported by pipelines to Spain and Italy. A new pipeline to Spain is under construction and another is planed to diversify the route to Italy. Italy is connected to Libya by a pipeline. One new pipeline bringing gas to Europe (Medgas) and one extension of import capacity (Algeria-Italy) are already under construction.

Greece imports gas from Caspian area via Turkey. Several pipelines are planned in the 4th corridor (Caspian / Middle East to the EU): Nabucco, ITGI, Trans-Adriatic pipeline and White Stream. There are also Black-sea LNG or CNG options on the table.

Chart: Annual capacity of LNG terminals in EU (bcm)



Source: GIE, MS reporting, European Commission

Spain has the biggest capacity of LNG terminals. Spain operates 6 and France 3 LNG terminals. Belgium, Greece, Portugal, Italy and UK operate LNG terminal. Seven LNG terminals of 57bcm capacity in total are under construction in four MS (France, Italy, Spain and UK). However, two of them (1 in Italy and 1 in UK) are already behind the schedule of the construction and the operation start is postponed by couple of years.

France, Italy, Spain, and UK also plan to extend the capacity of existing LNG terminals. Other Member States like Cyprus, Germany, Ireland, Malta, Netherlands, Poland, Sweden, and some Baltic countries plan to construct new LNG terminals. The Netherlands have already started the construction. However, the experience shows, that only some of these plans will materialise.

Conclusions

There is only one new gas pipeline bringing gas to Europe under construction. All other pipelines are still only plans, how to bring the gas from Russia, Norway, Algeria, and through the 4th Corridor. The LNG terminals are in a better position in Europe compared to pipeline projects. Strong increase of LNG availability in the world market has given the potential to develop the LNG regasification terminals in Europe. So far 7 new LNG terminals are under construction and other 20-30 are planned (including expansion of existing LNG terminals).

Proper planning of gas demand scenarios is necessary, because the construction of new pipelines and LNG terminals takes 2-5 years. Without enough capacity at the EU border points, it might be impossible to bring sufficient additional gas to Europe. Enough gas at the market is the precondition to running the internal gas market properly.

6.8. Diversification of gas supplies

In Poland, Spain and Portugal the diversification of gas supply is stipulated in the national legislation as an obligation, maximum 60% of gas supply can come from one supplier.

Eight Member States (Sweden, Finland, Ireland, Latvia, Lithuania, Estonia, Bulgaria, and Slovakia) fully depend on gas imports from only one gas supplier. In addition, Estonia, Finland, Latvia and Lithuania have no domestic gas production. Bulgaria, Ireland and Slovakia have only marginal domestic production. Romania has also only one gas supplier, but an important domestic production covering more than half of its gas demand. Poland, Czech Republic, Hungary, Austria, Slovenia, Greece, UK, and Italy constructed additional pipeline connections, thus diversified their routes of gas supplies in the last 15 years.

Portugal and Greece introduced natural gas into their energy mix only in the last 15 years, and diversified their gas supplies by LNG terminal. Ireland is planning to do so, as well as the Netherlands, Germany, Poland, and Sweden.

6.9. Investment support

Investment in infrastructure is one of the instruments from the Annex of the Directive. There are many projects through Europe to build new or to expand existing pipelines and storage facilities, including interconnections. Investment in infrastructure for gas import via regasification terminals and pipelines is necessary (see explicitly in the Annex of the Directive). But it is also necessary to invest in interconnections and downstream infrastructure to reaching the customers. Investment in infrastructure can only help security of supply if the gas is physically available and able to flow.

EU financial instruments

Basic financial instrument supporting the European gas infrastructure are **Trans-European Networks for energy infrastructure** (TEN-E). The EC Treaties of Rome (1957) and Maastricht (1993) laid the foundation for the creation of the internal market allowing the free movement of people, goods and capital. This includes European internal energy market. Article 154 (ex Article 129b) in the treaty with regards to **Trans-European Networks** set out the objectives of Community action: *"Contributing to the establishment and development of Trans-European networks in the areas of transport, telecommunications and energy infrastructures."*

European Community Guidelines for TEN-Energy were adopted for the first time in the year 1996, comprising the list of projects of common interest. Financial rules specify the financial procedures involved. Trans European Energy Networks budget line is managed in accordance with Regulation (EC) No 2236/95 of the Council amended by Regulation (EC) No 1655/1999, No 788/2004 and No 807/2004.

Guidelines on Trans European Energy Networks specify which projects are eligible for funding. The list of projects has been revised four times, in 1997, 1999, 2003, and 2006. The last one in Decision No 1364/2006/EC of the European Parliament and of the Council of 6 September 2006 laying down guidelines for trans-European energy networks and repealing Decision 96/391/EC and Decision No 1229/2003/EC.

Commission defines in the Guidelines three categories of projects - Projects of European Interest, Projects of common interest, and Priority projects.

Table of the allocated budget from TEN-E to gas sector projects

	Nb of proposals funded, of which:	***Works***	***Studies***	**Total Amount allocated**
2002	6	*0*	*6*	11.078.300 €
2003	6	*0*	*6*	12.364.700 €
2004	8	*0*	*8*	9.901.590 €
2005	6	*0*	*6*	11.543.140 €
2006	4	*1*	*3*	8.808.900 €
2007	5	*1*	*4*	6.024.500 €
2008	8	*1*	*7*	12.467.183 €

Other EU financial instruments

There are several European Community financial instruments which may come into play for financing gas infrastructure.

Structural funds as part of Cohesion policy

European Regional Development Fund (ERDF) contributes to the financing of the Trans-European Energy Networks. Funds have been allocated from the Community Support Frameworks (CSF I and II) and the Community initiatives (REGEN, INTERREG II).

For the first time in the Financial perspective 2007-2013, Structural funds (ERDF) enabled direct allocation of budget for gas infrastructure projects. They defined two special categories: Category 36 "TEN-E gas" supporting big TEN-E interconnection projects. Category 35 "Natural gas" supports other projects than TEN-E, like distribution networks or underground gas storage facilities. 8 Member States allocated structural funds to finance their gas infrastructure projects in total. 4 Member States allocated structural funds to the TEN-E gas projects.

Allocated budget from structural funds for the period 2007-13 for the gas projects

Member State	Category 35 - Natural gas	Category 36 - TEN-E gas

	(EUR)	(EUR)
Bulgaria	51.040.633	0
Lithuania	26.698.052	0
Poland	418.188.665	198.900.000
Romania	21.069.687	47.885.653
Greece	81.337.500	60.150.000
Italy	32.044.065	0
Portugal	18.067.152	0
Spain	9.835.957	55.012.432
Cross border cooperation	304.687	0
Total	658.586.398	361.948.085

European Investment Bank (EIB) loans and loan guarantees

The EIB finances, through loans up to 50% of the total cost, many TEN Energy projects, particularly in electricity, with the aim of contributing to the Community's TEN policy. Between 1999 and 2007 around **80% of a total of € 32 billion spent by the EIB in the energy field went to EU projects**, which amounts to an annual bank lending of € 3.25 billion.

The main purpose of the EIF (funded 40% by the EIB, 30% by the Commission and the remaining 30% by banks and other financial institutions) is to make available, subject to fees, guarantees for loans concerning TEN projects.

European Bank for Reconstruction and Development (EBRD)

Since its establishment in 1991, EBRD has financed 209 projects in the energy sector providing total finance of € 6.5 billion and supporting investments of approximately € 22.1 billion. EBRD focuses on the **development of private sector** and finances relatively **few gas infrastructure projects**. Pipeline financing has increased in the recent year for countries outside the EU, in particular Ukraine (3 gas pipeline projects) and Azerbaijan (2 gas pipeline projects).

European Economic Plan for Recovery (EEPR)

EU adopted in 2009 its European Energy Plan for Recovery of nearly € 4 billion to finance the development of a fully integrated energy market as well as to cope with the challenges of the security of supply. The amount is divided into three sub-programmes:

- 2,365M€ is earmarked to gas and electricity infrastructures – also known as interconnections

- 565M€ to carbon capture and storage (CCS)

- 1,050M€ to offshore wind energy.

Cooperation programmes with third countries

Since 2007 EC assistance to the countries participating in the European Neighbourhood Policy and Russia is provided under the **European Neighbourhood and Partnership Instrument (ENPI)**. The Instrument replaces the assistance previously provided to the countries of Eastern Europe, Russia, Southern Caucasus, Central Asia and the Mediterranean under the TACIS and MEDA programmes and is designed to financially support the political priorities agreed with partner countries through the ongoing political initiatives. For the budgetary period 2007-2013, approximately €12 billion in EC funding is available to support the partner countries. The Instrument includes

the **ENPI Cross-Border Cooperation (CBC) programme**, which could offer some possibilities for local infrastructure development. In the context of the ENPI instrument, the EC continues its assistance previously provided under the **INOGATE Programme** (Interstate Oil and Gas Transport to Europe). INOGATE, initially aiming at promoting the regional integration of the gas and oil pipeline systems and facilitating the transport of oil and gas both within the greater NIS region and towards the export market of Europe, has been extended to cover other energy sectors and projects, including electricity, renewables and energy efficiency.

Finally, the **Neighbourhood Investment Facility** was established at the end of 2007 with the objective to and support lending to ENP partners. The Commission's allocation to the Facility for the period 2007-2013 amounts to €700m and is complemented by Member States' contributions. The Facility is funding projects of common interest focussing primarily on energy, environment and transport.

6.10. Liquid tradable gas markets

Security of supply can be enhanced by a liquid market. One reason for this is greater flexibility in terms of price and volumes available, which enables the gas supplies to be diverted in response to price signals. Flexible use of gas storage facilities also helps to improve the market liquidity. However, the liquid gas markets will help to increase the security of supply if the market will be able to deliver the gas from one side to other.

Important pre-condition for a liquid gas market is adequate infrastructure (pipeline and storage facilities, including interconnections), in order to ensure that gas can be traded where demand arises across Europe. Other important precondition is enough gas on the market.

Market liquidity is a business, economics or investment term that refers to an asset's ability to be easily converted through an act of buying or selling without causing a significant movement in the price and with minimum loss of value. It also defines the ability of market players to trade a market commodity on a spot market.

Good possibilities for all market players to buy and sell even large volumes of gas at any time at a competitive market price is a crucial feature of a well functioning internal market for gas. Liquidity will rise, if the number of players active on the market, the volumes traded and the numbers of trades that take place will increase.

Liquidity could be also defined as a ratio between spot gas volumes and long term gas volumes. Today almost 90% of the volumes are traded on the virtual hubs such as the National Balancing Point (NBP) in the UK, the Title Transfer Facility (TTF) in the Netherlands and the Punto di Scambio Virtuale (PSV) in Italy. Spot market might turn around between 10 and 15% of total gas traded.

LNG has increased its share in the EU gas market gaining more than 12% in 2007. Spot LNG cargo is flexible to reach any LNG terminal in Europe, if it is needed. However, the global aspect also plays its role, to gain the spot LNG cargo, it is necessary to outbid US and Asia markets by higher prices. The LNG Study defines the level of the LNG gas spot and short term market to 15% of LNG cargos to Europe. This share is expected to increase, shifting more towards shorter term and spot contracts. This also increases the liquidity and flexibility of the gas market.

It should be noted, that price volatility in liquid markets can lead to higher prices. This will especially apply in cases of shortfalls of gas or supply disruptions respectively, when the demand for gas will be very high. Thus one of the preconditions is the guarantee to have enough gas on the market.

Provision of pipeline capacity enabling gas supplies diversion to affected areas, could mean the free available capacity in the existing gas pipelines, which could be used if gas supply diversion is necessary. However, it could also mean the need for more investments and construction of gas pipelines and gas interconnections inside the internal market. Supporting the investment and proper planning inside the internal market will help to fulfil this more obligation than instrument.

Conclusion

Liquidity in the gas market increases the security of gas supply in the internal market. However, the precondition for a liquid gas market is a definite volume of gas at the market to creating the liquidity.

6.11. Other instruments identified and used by Member States

The Directive provides only for a non-exhaustive list of instruments, the Member States have the possibility to introduce other security of gas supply measures. Most of Member States defined in their national legislation the secure gas supplies for some categories of customers as a public service obligation. Also the monitoring of security of supply, long term planning of the grid development, and network balancing has been defined as other important elements increasing the security of gas supplies.

6.11.1. Long term planning

One of the important instruments defined by some Member States (Austria, Denmark, France, Ireland, UK) is a planning procedure on a longer term basis. Its main objective is to determine the gas consumption for a certain time period, usually 5-10 years with concrete main projects to develop the gas infrastructure to meet the gas demand.

This task is usually centrally coordinated by the body responsible for overall security of supply. This task is also given to the system operators to make a planning for the development of their own parts of the network, and which are in line with long-term development plans and

gas demand. Also the gas suppliers have to prepare their own supply-demand forecast and provide it to the coordinating body.

For example, France and Denmark have to prepare a multi-annual indicative plan, which will ensure the supply-demand balance in gas for next ten years, by defining the investment priorities, long-term contracts and the emergency measures in a long-term. Ireland's Gas Capacity Statement takes 20 years forward forecast, in addition to regular 7 years.

The **third package on IEM**[5] has partially addressed this issue by the introduction of the **TSOs co-operation** in long-term network development planning.

6.11.2. Public Service Obligations

Public Service Obligations are obligations which would not be assumed (or would not be assumed to the same extent) by undertakings operating under market conditions and considering their own commercial interests[6]. Nevertheless, Member States may wish to ensure that certain obligations are fulfilled for the common economic interest.

The Gas Directive requires only that if customers are connected to the gas system, Member States should ensure that they are informed about their rights to be supplied with natural gas of a specified quality at reasonable prices. Contrary to the Electricity Directive, there are no universal service obligations (meaning that there is no duty to connect each customer who wishes to be supplied with gas). This different approach results from the significant difference between gas and electricity, namely the fact that natural gas is more easily substitutable source of energy, whereas there are no reasonable substitutes for electricity.

Therefore, the imposition of Public Service Obligations on gas undertakings may include obligations relating to:

- Security, including security of supply;
- Regularity and quality of supplies;
- Affordability;
- Environment and climate protection;
- Long term planning (with regard to security of supply, energy efficiency, demand-side management and for environmental goals).

Despite the lack of obligation of universal (complete) territorial coverage for gas networks, most Member States impose Public Service Obligations in order to ensure the security of gas supply. The security of gas supply is the part of Public Service Obligations defined in 11 Member States (Austria, Bulgaria, Finland, France, Greece, Italy, Lithuania, Latvia,

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5 Third internal market package

6 The definition of "public service obligation" is contained in Council Regulation 1191/69 (OJ L 156 of 28 June 1969) on action by member States concerning the obligation inherent in the concept of a public service in transport by rail, road and inland waterway. Regulation 1191/9 has recently been repealed Regulation 1370/2007/EC; however the definition of PSO remains very similar

Luxembourg, Portugal, and Slovenia) in the common interest[7]. Those obligations are imposed to various system operators (TSO, DSO, LSO, UGSO), as well as to the suppliers. Furthermore, in most cases the imposed Public Service Obligations are related to the quality of delivered gas, quality of gas supply service, regularity of gas deliveries, and to ensure the gas supply in case of gas supply disruption or any similar accident. Sometimes the gas supply has to be guaranteed for a certain period of time.

In Belgium the Public Service Obligation is imposed to transit and suppliers to develop adequate gas network. In France the Public Service Obligation is imposed to every supplier, who has to store the gas of amount of at least 85% of its gas storage capacity on the 1st of November of each year. In Finland, the obligation is imposed to System Operator to connect customer, storage facility or LNG facility.

The Ministry (Greece, Lithuania, and Slovakia) or the regulator (Malta) have got the power to impose the Public Service Obligations to ensure the gas supply. In Germany the regulator has power to impose public service obligation only in a supply crisis. In Bulgaria the Ministry shall enlarge the scope of imposed public service obligations related to the uninterrupted gas supply. Czech regulator shall extend the scope of imposed public service obligations to prices and to define the supplier as a provider of last resort to provide the gas in the event of supplier contract failure. In most countries (except the Netherlands) Public Service Obligations include also tariff regulation.

6.12. General Conclusions

The balance of various instruments is essential to enhancing the security of gas supply. The most frequent measures are gas storages, long term contracts, flexibility of production and imports and diversifications of gas supply.

The list in the Annex is defined as a "non-exhaustive", thus Member States had the possibility to introduce further security of gas supply instruments. Most of them set long-term planning procedures and public service obligation to guarantee the security of gas supply.

It is often mentioned that the existence of long term contracts may reduce market liquidity on the basis that they do not facilitate gas release to the market for third parties to trade. For example, the "liquid tradable gas markets" does not interact with the "long term contracts". Both instruments complement one another to enhancing the security of gas supply.

Investment support and long-term gas supply contracts are used by all Member States, but not all are mentioned in the legislation. The long-term contracts shall be taken as a tool to guarantee that certain amount of gas will come to the market. In a world of tight supply/demand tension long term supply contracts in the sense of the Directive grant guaranteed volumes of gas with a predictable price calculation method, with less risk of volatility.

Flexibility is very much supported. Production flexibility is important measure for substantial gas producing countries. However, the maximal volume of gas produced in Member States is

[7] The role of Public Service Obligation in the internal gas market is defined in the Article 3 of the Directive 2003/55/EC on the internal gas market

decreasing, which also has impact on flexibility of gas production. The significance of this measure is in slight decrease. Import flexibility is used by all importing Member States.

Both diversifications of routes and of energy mix are developed in the same 15 Member States. The diversification of suppliers, the cross-border capacity planning, and the long term planning of the gas network development are supported in every Member State, usually given to system operators and overall responsible bodies.

Cooperation between TSOs in neighbouring countries and regions is well supported; however the coordinated dispatch service is not exactly mentioned. Fuel-switch possibility, alternative fuels and fuels stocks use, and interruptible contracts are also used in most of Member States. Furthermore, some countries have a very in-depth assessment (and a good control) of their gas supply situation and the effectiveness of their mitigation tools, other countries don't.

Generally we can conclude that the level playing field within the EU has not been reached.

7. GAS COORDINATION GROUP (ART.7)

In order to monitor the security of supply situation and provide a coordination mechanism in case of a supply crisis, the Directive establishes a Gas Coordination Group chaired by the European Commission and composed by representatives of the Member States, representatives of the industry concerned and representatives of relevant customers.

Gas Coordination group was established in line with the Article 7(1): *"A Gas Coordination Group is hereby established in order to facilitate the coordination of security of supply measure (the Group).*" by the Commission Decision 2006/791/EC of 7 November 2006 establishing the composition of the Gas Coordination Group (Text with EEA relevance).

The role of the Gas Coordination Group is stipulated in the Recital 15 of the Directive 2004/67/EC: " *A Gas Coordination Group should be established, which should facilitate coordination of security of supply measures at Community level in the event of a major supply disruption, and may also assist member States in coordinating measures taken at a national level. In addition, it should exchange information on security of gas supply on a regular basis, and should consider aspects relevant in the context of a major supply disruption."* and in similarly worded the Recital 7 of the Commission Decision 2006/791/EC.

The tasks of the Group are defined in Article 2 of the Commission Decision: *"The tasks of the Gas Coordination Group shall be: (a) to facilitate coordination of security of supply measures at Community level, including in the event of a major supply disruption; (b) to examine, and, where appropriate, assist the Member States in coordinating the measures taken at national level to deal with a major supply disruption."*

Composition of the Gas Coordination Group is defined by Article 1 of the Commission Decision in line with the Article 7(2) of the directive. It is composed of "not more than two representatives" from each Member State, from industry represented by industry associations Gas Infrastructure Europe (GIE), Eurogas, and the International Association of the Oil and Gas Producers (OGP), and from consumers represented by the International Federation of Industrial Energy Consumers (IFIEC Europe), Eurelectric, and Bureau Européen des Unions de Consommateurs (BEUC). The Group is chaired by the Commission.

The Group is convened to hold regular meetings 3-4 times a year since 2006. The Group is convened also for the emergency meetings envisaged under the Article 9 of the Directive. In fact the first meeting of the Gas Coordination Group was an emergency meeting in January 2006.

The role of the Group has been discussed also with the members of the Group. The role of the Group its task and its functioning have been judged satisfactory. The main role is to coordinate the security of supply measures, but also to monitor, to predict and to advise Member States in setting emergency measures and actions. According to Member States it is also "a platform for the Commission, Member States and industry to discuss the national security of supply measures".

However, it was also mentioned what better or more precise definitions of many terms of the Directive is necessary. Preparation of guidelines for European coordination to mitigate a

major supply disruption, and the solidarity mechanism in the gas supply are the main tasks of the group for the immediate future.

Conclusions

Gas Coordination Group enables Member States, industry and Commission to discuss the gas security of supply issues in the Community, as well as to develop and shape the instruments and emergency measures for security of gas supply.

Extraordinary meetings of Gas Coordination Group

Article 9(1) of the security of gas supply directive introduces the mechanism, which enables to convene the gas coordination group meetings in an emergency mode "as soon as possible" under the consideration of one of these two circumstances: "*If an event … is likely to develop into a major supply disruption for a significant period of time, or in the case of an event indicated by a Member State according to Article 8(3)…*".

Article 8(3) defines that *"…Member States may indicate to the Chair of the Group events which they consider, because of their magnitude and exceptional character, cannot be adequately managed with national measures.*"

The Commission has already convoked four extraordinary meetings of Gas Coordination Group since 2008, and three in 2009, closely related to the January 2009 gas crisis.

In January 2006, in the course of gas negotiations between Russia and Ukraine, gas supply to Ukraine and onwards to the EU was reduced. The overall reduction amounted to 20% of gas supply through Brotherhood pipeline for period of 2 days. This reduction resulted in a chain reaction affecting Hungary by 30% reduction of gas supplies, Slovakia, Czech Republic and Austria by 20%, Italy by 15%, Poland by 10% and Germany by 6%.

During March 2008, when Russia announced reduced gas supply to Ukraine by 60 mcm/day the Gas Coordination Group run a model scenario showing what could possibly happen if the gas transit through Ukraine was reduced by 60 mcm/day.

These two examples have showed some patterns how gas supply disruptions from Russian through Ukraine affects or could affect Member States. In both cases the 20% threshold of supply disruption from 3rd Countries, defined as a major supply disruption, was not reached, but Member States were or could have been affected significantly.

The January 2009, gas supply crisis confirmed the importance of the emergency meetings approach. Commission was able to provide up-to-date information and analysis of the crisis situation in all Member States and in EU, exchanging best practices and measures used among Member States and industry, and to advise both Member States and industry to take other possible measures helping each other.

Conclusions

The extraordinary meetings mechanism of Gas Coordination Group has been proved as a successful tool even through there was no need yet to set up and apply for the next two steps of the Community approach. The convocation of the extraordinary meetings enabled to discuss the problem, and helped to re-establish the normal relations status between export and

transit countries, to at least the level, which has not endangered any more the transit of natural gas to Europe.

In the disruption in January 2009, the other two steps in three step approach of gas emergency were not used, but the role of the Group as the real coordination and central information body for European emergency situations has been proven.

8. COMMUNITY THREE STEP APPROACH

Recital 18 of the Directive stipulates the importance of the Community approach to help to deal with gas disruption. This mechanism provided by this Directive shall be based "… *on a three step approach. The first step would involve the reactions of the industry to the supply disruption; if this were not sufficient, Member States should take measures to solve the supply disruption. Only if the measures taken at stage one and two have failed should appropriate measures be taken at Community level.*"

It is underlined in the Recital 19 of the Directive, supportive measures shall be done in accordance with the principles of proportionality and subsidiarity as defined in the Article 5 of the Treaty "*Since the objective of this Directive (…) cannot, in all circumstances, be sufficiently achieved by the Member States, particularly in light of the increasing interdependency of the Member States regarding security of gas supply, and can therefore, by reason of the scale and effects of the action, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve that objective."*

The link between national emergency measures and the European/Community level is defined in Article 8(3). This article gives the right to Member States to indicate to the Commission (Chairman of the Gas Coordination Group) any major gas emergency event in their country, which could not be adequately managed by the national emergency measures, because of the magnitude or exceptional character of the event.

The main tasks at the Community level are predefined in Article 9 in the three steps approach:

- First, industry takes measures to deal with a supply shortfall.
- As second step, Member States' national measures are activated.
- Only if the measures taken at the first two levels are not sufficient to cope with the shortfall or disruption of supply, "*the Commission shall convene the [Gas Coordination] Group as soon as possible, at the request of a Member State or on its own initiative*."

The Commission shall convene an emergency meeting of the Gas Coordination Group. This Group shall examine and assist the Member States in coordinating the measures taken at the national level to deal with the major supply disruption. The Group shall take fully into account the measures taken by the gas industry as a first response to the major supply disruption and the measures taken by Member States including relevant bilateral agreements.

Where the measures taken by Member State at the national level referred to the Gas Coordination Group are inadequate (…), the Commission may, in consultation with the Group, provide guidance to Member States regarding further measures to assist those Member States particularly affected by the major supply disruption.

Where the additional measures taken at national level after the advice of the Gas Coordination Group are inadequate (…), the Commission may submit a proposal to the Council regarding further necessary measures.

Any measures at Community level shall contain provisions aimed at ensuring fair and equitable compensation of the undertakings concerned by the measures to be taken.

9. NATIONAL EMERGENCY MEASURES (ART.8)

Member States shall prepare national emergency measures according to the Article 8(1) of the Directive. According to the Article 8(3) Member States shall communicate these national emergency measures to the Commission and also publish them. The prominent role of these measures is in the preparation of Member States **in advance** to any crisis situation. Therefore the national emergency measures shall be prepared in advance, and updated accordingly if it becomes necessary.

Until the end of April 2009, the Commission has received the notification of national emergency measures only from 12 Member States. 7 other Member States (Denmark, Estonia, Greece, Hungary, Ireland, Portugal and Sweden) provided their national emergency measures to the Commission, but these were not communicated thorough the official notification procedure. Other 6 Member States (Belgium, Germany, Latvia, Luxembourg, the Netherlands and Romania) have not yet communicated to the Commission their national emergency measures. Thus the further analysis is not complete, because it is not based on all Member States. However, the most common practices are similar in many Member States.

The national emergency measures shall ensure that market players are given sufficient opportunity to provide an initial response to the emergency situation. Member States have to be ready for that event and have to have in operation all necessary provisions and operational plans how to deal with the gas supply reduction, or the disruption.

Member States transposed these provisions in two steps. At first, they obliged different market players to develop the national emergency measures in their national legislation, and only after this step, the market players have developed the national emergency measures.

Member States realised the obligation to implement the national emergency measures in a different way. Some Member States (Austria, Bulgaria, Czech Republic, France, Greece, Italy, Lithuania, Slovakia, Slovenia and UK) have developed a kind of **emergency scale**, which defines the different emergency stages, as well as enables to decrease the gas demand progressively in a country, without affecting the national economy. The security of supply authority (responsible body) set emergency stages according the importance of gas supply disruption. Consequently all market players (system operators, suppliers, etc) have to follow the emergency procedures as preset in every emergency stage.

Some Member States (Austria, Czech Republic, Denmark, Estonia, Finland, France, Greece, Italy, Slovakia, Sweden and UK) went further in the implementation and created so called "**National Emergency Plans**". After the January 2009 gas disruption Belgium, Ireland, Hungary, Lithuania, Poland, Romania and Slovenia have also introduced emergency plans. The plans include preset roles and responsibilities of market players, who have to operate in case of any emergency level (stage) and created a system for various measures necessary for the operation under the difficult or emergency conditions.

Other aspect taken by Member States is the **role of prevention and preventive measures**. Only few Member States have created so called prevention measures (Austria, France, Lithuania, the Netherlands and Portugal) and defined some of the national emergency measures as preventive measures, which also diminish the risk of the gas supply decrease or

disruption, as well as the impact to the national economy, if the gas decrease or disruption occurs and emergency level shall be set.

Conclusion

Member States took two steps approach to transpose this Article. At first, they set in the national legislation an obligation for some market players to create the emergency measures. The second step after the adoption of the legislation has been up to the defined market players to prepare and put into operation their emergency plans after a certain time period. This approach has created a delay in full transposition of this Article. It also means, that the Commission could assess national emergency measures (national emergency plans) only of 18 Member States. Some of them Commission received only in the last days, thus the assessment is very general.

Most of the Member States have defined their national emergency measures in a systematic way creating the national emergency plans. In these plans they also included prevention mechanisms, nominal level of gas market operation, as well as different pre-emergency and emergency levels defined by disruption volume and by the economic impact.

9.1. Gas emergency scale

Member States have developed and defined in their national legislation a **Gas emergency scale.** Every National Emergency Plan includes emergency scale. It contains various very precisely defined levels of gas consumption, which have to be followed if the different gas consumption level than normal is set.

The emergency scale of gas supply levels/states ranges between Member States from 3 to 12 different levels of predefined gas consumption for different gas customers, but they usually follows these three main levels:

(1) **Normal state, normal level of gas consumption** – is defined as the gas supply/consumption under normal (nominal) market conditions and full/normal gas supply;

(2) **Limited/exceptional gas consumption level** – pre-emergency or potential emergency stage is set by 7 Member States (Austria, Bulgaria, Czech Republic, Greece, Slovakia, Spain and UK);

If different state of gas consumption is declared, the gas supply shall be limited to the specific extent which does not hamper the economy of the country. This limited level of consumption is defined as technological level or exceptional gas supply level.

- Safety technological minimum level – is limited level of gas consumption. The limitation of the gas supply is set as the minimal gas supply which will not hamper the economy of the defined customers (usually industry). It depends on gas appliances and gas equipments of the company, its possibility to fuel switch, different technology for gas is used, and flexibility to run the equipment. Some MS have defined different level of gas customers, for whom this minimum shall be defined. In CZ the safety technological minimum applies to customers with consumption > 400 000 m3/y, or the consumers, which are not covered by security of supply standards

- Exceptional situation - is defined as a situation of exceptional operation in anticipation that the normal condition parameters are not fulfilled, but the situation does not require the declaration of emergency situation. Spain has defined 3 levels (0,1,2) of exceptional situation depending on the severity of event.

(3) Emergency level – Stage of emergency

If restrictions of pre-emergency levels do not ensure safe gas supply, Emergency consumption levels are declared. Stage of emergency is declared if there is a gas supply reduction, which is not possible to be managed without economic impact to the economy.

The roles and responsibilities of market players are predefined in case of stage of emergency. In some Member States, different market players are set as responsible bodies to guarantee the gas supply and to manage the gas system (e.g. Supplier to TSO than to Regulator in Germany, Suppliers to TSO in Denmark and France)

Conclusion

The definition of emergency status, nominal supply conditions, etc., defining the emergency systems in general, shall be at least comparable and understandable in all Member States. The general patterns are already introduced by Member States in the way how they implemented the provisions of the Directive. Proper understanding of national emergency systems will create a base for the European emergency system, mentioned in the Article 8 of the Directive.

9.2. Definition of crisis situations in gas supply

Major supply disruption, national energy crisis, or any other crisis situation in gas supply is defined by Member States in their national legislation in a different way.

Czech Republic defines the emergency situation if partial gas supply disruption for the period of 8 weeks occurs and the volumes of 20% of the total daily supply contracts set to ensure the supply for final customers in the Czech Republic, or for auto-supplier, during the winter period are lost.

Hungary defined a crisis situation in gas supply as a supply disruption of natural gas, which directly endangers persons, assets, nature, environment and supply of majority of customers.

Latvia declares national energy crisis when the energy supply is disturbed in such amount that it may threaten the safety, health of inhabitants and activity of other economic sectors, and such disturbances cover a territory in which the number of inhabitants exceeds one third of the State's population or which covers more than a half of the national territory. Energy crisis is declared when the supply of energy or fuel is threatened or disturbed in such amount that energy suppliers can not forecast and eliminate such threats and disturbances by means of economic activity methods.

Bulgaria defines the outage regime within the national territory as a temporary interruption or limitation of natural gas generation or supply in cases such as "force majeure"; occurrence, or for prevention, and breakdowns of facilities for natural gas production, transmission and distribution.

Romania defines the urgent situation at the national level if the major supplier lost 20% of gas volumes through decreased gas import, or from internal production caused by accident.

Finland defines the emergency condition as a serious threat by hampered or interrupted import indispensable fuels and other energy.

UK defines 5 stages of emergency, and categorise into these 5 stages most expected events. These events are also classified if the emergency stage is related to insufficient gas supply or transportation constraint. The first stage is defined as potential emergency stage. UK has defined also a Protocol setting the order of demand reduction of different customers.

Portugal defines the energy crisis situation as a difficulty of supply or distribution of energy, which requires exceptional measures designed for to ensure supplies for citizens' fundamental needs, defence, operations of state and of priority sectors of economy.

9.3. Emergency measures used by Member States

If different gas consumption level than a normal one is declared, Member States have in their legislation predefined specific steps, to be followed by all market players as defined. Some of them are similar to the instruments described in the Annex of the Directive, but others are of a different origin.

Changing the responsibilities and the roles of market players – the main control is given to the market player, who is capable to deal with gas supply disruption, usually TSO. Sometimes his responsibility stay, sometimes it changes according the ability how the market player can deal with the gas supply disruption. It is also possible to have different responsible bodies for different levels of emergency.

If the supplier is not able to fully ensure its gas supply because of changed market conditions to other than normal level, system operator is declared to be responsible for and to take adequate measures.

Reduction of gas demand is one of the measures used by Member States, who introduced the emergency scale and national emergency plans. The reduction of gas consumption is defined for every emergency level. This reduction depends on the volume of interruptible contracts, importance of the gas consumption for the industry, economic impact of the cut-off gas, season when disruption happens, fuel-switch possibility, volume of gas in gas storages, etc.

The order, in which the gas is reduced, defines the order of action (levels in emergency scale). One of the first steps of the gas demand reduction is the cutting of the gas supply to the **interruptible customers.** These are usually industry type customers, who have interruptible contracts of gas supply. In some Member States (UK, Germany, France, Romania), industrial market players introduced voluntary interruptible contracts.

Specific legislation, protocols, and guidelines are defined – Energy Security Act, special decrees of national emergency measures, technical standards to deal with supply disruption, emergency protocols, or any other specific documents have been adopted by Member States.

Gas stocks are usually used as one of the first emergency measures to act, also in pre-emergency levels. Some Member States have defined mandatory gas stocks for suppliers to be held. Other Member States connected directly the available gas stocks with the security of

supply standards, and these gas stocks shall be primarily used for households in case of emergency measure. Gas stocks are used also to maintain the quality of delivered gas and for the balancing of the gas network.

In case of gas supply disruption or gas reduced supplies in the national system, **linepack** of the gas system, **gas stocks**, and maximisation of gas supplies (production) are the measures used from the point of maximisation of gas supply to the network. From the gas demand side, the reduction of gas demand is also used according the order of gas demand reduction. If the situation is critical, strategic gas stocks could be also used in some countries.

Changing rules to access the gas network - If the emergency situation is declared, some Member States have defined in their national legislation change of the access rules to the gas system, in favour of the predefined categories of gas customers.

Diversification of gas supplies and routes has been introduced by Spain, which set that no more than 60% of total gas imports will be supplied by the same country and no more than 70% of total gas demand will be supplied by the same shipper. The similar approach is also in Poland and Portugal. Also other countries has developed and diversified their gas supplies and gas routes, but the diversification is not directly mentioned in the gas market legal framework, but only in general in the national energy policies.

Conclusion

Specific and proper analysis of all emergency measures used by Member States is needed. Country peer reviews of their emergency measures, plans and procedures could indicate the best practices and the most used means, which should be shared in the Gas Coordination Group. It would be useful to work out on the European emergency scale, which will define nominal, prevention and emergency stages, giving indications which measures should be used, based on the best practices in national and regional circumstances. All this will help to create the European guidelines to deal with emergency in gas supply.

10. MONITORING AND REPORTING (ART. 5/6)

The Directive includes also the monitoring and reporting provisions. The Article 6(3) of the Directive 2004/67/EC asks to review the monitoring provisions implementation experience "*By 19 May 2008 the Commission shall submit a review report to the European Parliament and the Council on the experience gained from the application of this Article.*"

10.1. Reporting to the Commission

Article 5 of the Directive obliges Member States to report to the Commission relevant and important security of gas supply information, defined as the additional information to the ones set out for the internal market report pursuant to the Article 5 of the gas market directive 2003/55/EC. According the Article 5 of the gas market directive 2003/55/EC, the Member States have to report on

- the supply/demand balance on the national market,
- the level of expected future demand and available supplies,
- envisaged additional capacity being planned or under construction,
- the quality and level of maintenance of the networks, and
- measures to cover peak demand and to deal with shortfalls of one or more suppliers.

According the Article 5 of the Directive 2004/67/EC, the Member States have to report the additional information on

- the competitive impact of the measures taken pursuant to Articles 3 and 4 of the Directive 2004/67/EC on all gas market players;
- the levels of storage capacity;
- the extent of long-term gas supply contracts concluded by companies established and registered on their territory, and in particular
    - their remaining duration, based on information provided by the companies concerned, but excluding commercially sensitive information, and
    - the degree of liquidity of the gas market;
- the regulatory frameworks to provide adequate incentives for new investment in exploration and production, storage, LNG and transport of gas, taking into account Article 22 of Directive 2003/55/EC as far as implemented by the Member State.

The table below shows how Member States provided the necessary information in their national internal market reports for the year 2007.

Quality and details of the information provided	Directive	Provided	Not Provided

Competitive impact of Security of supply measures	**2004/67**	8	17
Storage capacity	**2004/67**	13	12
Long-term supply contracts remaining duration	**2004/67**	4	21
Degree of liquidity	**2004/67**	3	22
Incentive new investments	**2004/67**	3	22
Planned additional capacity	**2003/55**	19	6
Level of maintenance of the networks	**2003/55**	6	19
Supply / demand balance	**2003/55**	18	7
Expected future demand and available supplies	**2003/55**	13	12
Measures to cover peak demand and supplier shortfalls	**2003/55**	6	19

According the Article 5(2) of the Directive 2004/67/EC "*This information shall be considered by the Commission in the reports that it issues pursuant to Article 31 of Directive 2003/55/EC in the light of the consequences of that Directive for the Community as a whole and the overall efficient and secure operation of the internal gas market.*".

Not all MS have all information in the reports as mandated by the Directive. The provisions mandated by 2004/67/EC Directive are not included in the 2007 reports of Belgium, Finland, Greece, Latvia, Luxembourg, Portugal, and Slovenia. This has occurred possibly due to the fact that the security of gas supply has been imposed on the different entities than the ones responsible for the reporting related to the internal market. The Commission benchmarking report[8] concluding the 2007 internal market reports from Member States describes the information on security of gas supply. Member States provided further information concerning the issues to be monitored (long-term contracts and storage capacity) in the framework of the Gas Coordination Group as replies to a questionnaire.

10.2. Monitoring of security of gas supply

According the Article 6(1) of the Directive, the Commission shall monitor, on the basis of the reports referred to in Article 5(1):

- the degree of new long-term gas supply import contracts from third countries;
- the existence of adequate liquidity of gas supplies;
- the level of working gas and of the withdrawal capacity of gas storage;
- the level of interconnection of the national gas systems of Member States;

[8] Benchmarking report 2007, April 2008

- the foreseeable gas supply situation in function of demand, supply autonomy and available supply sources at Community level concerning specific geographic areas in the Community.

Quality and detail of the information provided	Provided	Not Provided
Long term contracts and their remaining duration	**21**	**4**
Adequate liquidity on the market	3	22
Underground gas storage	**20**	**5**
Import dependency	**21**	**4**
Interconnection level	**21**	**4**

To fulfil the monitoring obligation (see chapter above), the Commission distributed a questionnaire in the Gas Coordination Group, which enabled to gather the necessary missing information. The table above shows, that not all Member States (Belgium, Latvia, Luxemburg, Poland, Portugal) have fulfilled the obligation to provide the necessary information. However, Commission's monitoring obligation extends beyond the scope of information, which is provided by Member States in the internal markets reports.

How the parameters are monitored

Degree of new long-term gas supply import contracts from third countries shall be monitored according the Article 5(1)c of the Directive as "*the extent of long-term gas supply contracts concluded by companies established and registered on their territory, and in particular their remaining duration, based on information provided by the companies concerned, but excluding commercially sensitive information, and the degree of liquidity of the gas market*".

If only the extent of long-term contracts is reported by Member States, it is not clear that it includes also volumes of imported gas to be reported. Thus the Commission asked Member States for the additional information on long-term contracts durations from third countries. The duration of long-term contracts and their impact to internal gas market, security of gas supply and market liquidity are mentioned in Chapter 6.3.

Adequate liquidity of gas supplies has also to be monitored, but this information was included only in three reports (Belgium, Germany, and the Netherlands). The reason for this lack in the reporting could be the missing definitions of gas market liquidity and gas supplies liquidity or the confusion with the mandate from the 2003/55 directive to report the level of gas market liquidity. Market transparency is also very low, thus the ratio between the spot operations and long-term contract based operations is not known.

Levels of working gas and of the withdrawal capacity of gas storage, as well as level of interconnection of the national gas systems are not asked to report by Member States, but only monitor by the Commission. These parameters were also asked in the questionnaire.

Foreseeable gas supply situation in function of demand, supply autonomy and available supply sources at Community level concerning specific geographic areas in the Community are three separate parameters to monitor.

Some Member States reported about their future gas demand scenarios, linked to the projects to ensure the gas supply. To have a complete picture, Commission needs more information from Member States.

Commission monitors some geographic areas from both availability of supply sources, and their supply autonomy in case of supply disruption. For example the countries in various pipeline chains from Russia were assessed in the Gas Coordination Group, how the partial disruption could affect them. The vulnerability of some regions (Baltic countries, or Western Balkans gas route) has been identified.

Conclusions

Member States **reporting obligations** are set out in two gas Directives. This obligation, even if properly reported by Member States, does not allow the Commission to monitor the security of gas supply (at least the parameters pursuant to the Article 6(1) of 2004/67/EC) at the European internal market. However, Member States have not prepared their annual internal market report in a proper way and many of the mandated information are not included in these reports. As a consequence, the Commission had to prepare additional questionnaires and data tables to fulfil its monitoring obligation, which created an additional administrative burden for both Commission and Member States.

The obligation, what to monitor, is not sufficient to assess neither the current long-term and short-term, nor any future security of supply situation of the EU and the effectiveness of the mitigation tools. Reporting obligations are limited in frequency and scope (only once a year, mainly focusing on long-term contracts and storage, no information is provided on mitigating tools like the extent of fuel switch/interruptible contracts, capacity utilisation, alternative routes or supply flexibility in indigenous production or import contracts). And even these reporting obligations are not fulfilled by all Member States *(only three Member States provided complete reporting)*. A greater **transparency** is needed.

ANNEX 1: Distribution of responsibility for security of gas supply in Member States

Member States	Overall responsibility	LNG responsibility
Austria	Joint (Ministry, Regulator, Dispatch centre)	system operator
Belgium	Ministry	system operator
Bulgaria	Ministry	not set
Cyprus	Exempted	Exempted
Czech Republic	TSO	not set
Denmark	TSO	system operator
Estonia	TSO	system operator
Finland	Regulator	system operator
France	Government	system operator
Germany	Supplier (Regulator in crisis)	system operator
Greece	Joint – Ministry and Regulator	system operator
Hungary	Supplier	not set
Ireland	Regulator	system operator
Italy	Ministry	system operator
Latvia	Ministry	not set
Lithuania	Ministry	system operator
Luxemburg	Ministry	not set
Malta	Ministry to regulator	system operator
Netherlands	TSO	system operator
Poland	Ministry	system operator
Portugal	Ministry	system operator
Romania	Coordination Commission	not set (LNG not in use)
Slovakia	Ministry	not set
Slovenia	Ministry	not set
Spain	Ministry	system operator
Sweden	Regulator	system operator
United Kingdom	Joint - Ministry and Regulator	system operator

ANNEX 2: Member States definition of parameters for security of supply standards

Member States	Partial /major disruption	Time period	Winter period	1-in-20	1-in-50	Peak days
Austria		During emergency				
Belgium						
Bulgaria	Technical disruption (partial) / to be determined	48 hours	To be Determined	y	y	To be Determined
Czech Republic	20%	8 weeks	1.10-31.3	y	y	5 days
Denmark		60days		Y20	Y20	3 days
Estonia	Technical disruption (partial), 20% major	Max 72 hours	1.10-1.5	y	Just deliver the gas	Just deliver the gas
Finland	miss 1 supplier	4 months	1.10-30.4			
France	miss 1 supplier	6 months		Y50	Y50	3 days
Germany			Long and cold winter (2005-6)	y	y	
Greece	Load Shedding Plan	To be Determined	To be Determined	y	y	To be Determined
Hungary		45 days of stocks	1.11-31.3			
Ireland	To be Determined	To be Determined	To be Determined	y	y	To be Determined
Italy			15.11-31.3	y	y	
Latvia	1/3 of citizens					
Lithuania	Shortfall of one or more suppliers	10 days of stocks (to max 60)	1.9-	y	y	
Luxemburg	To be Determined	To be Determined	To be Determined	y	y	To be Determined
Malta	To be Determined	To be Determined	To be Determined	y	y	To be Determined
Netherlands				y	y	Set by SO as needed
Poland		30 days of stock		y	y	
Portugal	certain	certain	certain	y	y	certain
Romania	20% of import, or production, or 20% higher gas demand	Long period	1.10-31.3	Y20	Y20	
Slovakia	30%	10 weeks	1.10-31.3	y	y	5 days
Slovenia	20%	14 days	1.12-28(29).2	y	y	
Spain	1 entry point, n-1 criterion	35 days of stocks of strong sales, may increase to 60 days	Winter plan	y 10% over capacity	y	Estimate in winter plan, predicted
Sweden			1.12-28.2	y	y	1day
United Kingdom	Obligation for sufficient capacity during 1-in-20 and have enough gas for 1-in-50	-	-	y	y	1 or more days

ANNEX 3: Member States use of security of gas supply instruments

Member States	**Storage**	**Diversity -source, -mix, supplier,**	**Support Investment**	**LT contracts**	**flexibility –prod, -import,**	**Interrupt contract**	**Fuel switch**	**Cross border capacity plan**	**Cooperation-TSOs-DSO-TSO**
Austria	y	yny	y	y	.y	y	n	y	yy
Belgium	y	yyy	y	y	.y	y	y	y	yy
Bulgaria	y	nny	y	y	.y	y	y	y	yy
Czech Republic	y	yyy	y	y	.y	n	y	y	yy
Denmark	n	nny	y	n	y.	y	y	y	y
Estonia	y	nny	y	y	.y	y	y	y	yy
Finland	n	nny	y	y	.y	y	y	y	yy
France	y	yyy	y	y	.y	y	y	y	y
Germany	y	yyy	y	y	yy	y	y	y	y
Greece	n	yyy	y	y	.y	n	y	y	y
Hungary	y	nny	y	y	.y	y	y	y	yy
Ireland	y	nny	y	n	nn	n/a	y	y	y
Italy	y	yyy	y	y	yy	y	y	y	yy
Latvia	y	nny	y	y	.y	y	y	y	y
Lithuania	y	nny	y	y	.y	y	y	y	yy
Luxemburg	n	yyy	y	y	.y	y		y	yy
Netherlands	y	yyy	y	y	y.	y		y	yy
Poland	y	yyy	y	y	yy	y	n	y	yy
Portugal	y	yyy		n	.y			y	y
Romania	y	yyy	y	y	yy			y	yy
Slovakia	y	nny	y	y	.y	n	n	y	y
Slovenia	y	yyy	y	y	.y	y	y	y	y
Spain	y	yyy	y	n	.y	y	y	y	yy
Sweden	n	nny	y	y	.y	y	y	y	y

United Kingdom	y	yyy	y	y	yy	y	y	y	yy

ANNEX 4: Fuel switch possibility and interruptible contracts

Country	fuel switch	Interruptible contracts
Austria	Y (Share not known)	Y (Share not known)
Bulgaria	Y	N
Belgium	Y (15% of industry)	Y (30%industry)
Czech Republic	Y	Y
Denmark	Y (7,5% of consumption)	Y (50% industry, 40% power generation)
Estonia	Y (heat supply 3 days)	Y
Finland	Y (90% of consumption)	?
France	Y (6 % of consumption)	Y (25% industry, 25% power generation)
Germany	Y (10-15% of consumption)	Y (10% industry, 20% power generation)
Greece	Y (35-40% of consumption)	N
Hungary	Y (gas power plants >50MW)	Y10% industry, 50%power
Italy	Y (9% of consumption)	Y1% power, 10% industry
Ireland	Y (all gas fired power plants for 5 days)	Not required
Latvia	Y (Share not known)	Y (Share not known)
Lithuania	Y (all heat and power producers with production for public sector for one year)	Y (Share not known)
Luxembourg	N	Y (Share not known)
Netherlands	?	Y (25% power generation from H-gas)
Poland	N	Y (10% industry, all gas power)
Portugal	?	?
Romania	Y (Share not known)	Y (Share not known)
Slovak Republic	N	N
Slovenia	Y (18% of consumption)	Y (approx. 10% industry)
Spain	?	Y (5% industry, 25% power generation)
Sweden	Y (30-40% of consumption)	?
UK	Y (power stations - 10mcm for 4 days, industry - 1mcm)	Y (10% industry, 30% power generation)

ANNEX 5: The role of gas in EU and Member States

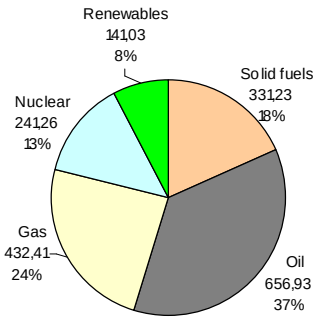
All figures are calculated from the 2007 Eurostat figures

- **Energy mix** is based on the Gross Inland Consumption as defined by Eurostat
- **Electricity mix** expresses the sources used for electricity production as defined by Eurostat
- **Role of gas** is based on the total volume of gas (GIC) divided by all types of use of gas as defined by Eurostat. The right column expresses the Final Energy Consumption.
- **Source of natural gas** means the total volume of gas available on the market, calculated as a "total import to the country" plus "indigenous production". Other two important figures – Stocks change and Total Export were not possible to incorporate into this chart type, thus both are included below the graphic to enable the calculation of the Gross Inland Consumption.

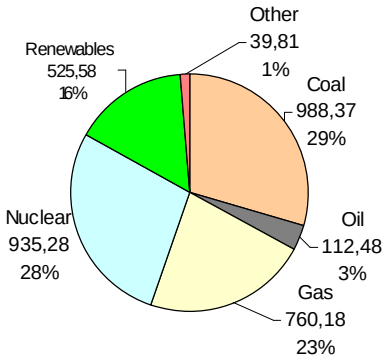
– EU-27 chart takes only into account volume of gas imported to the EU (Extra-EU import).

THE ROLE OF GAS IN EU-27 (2007)

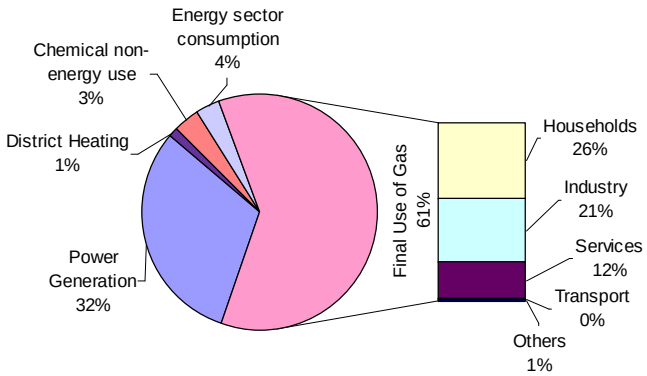
ENERGY MIX (in Mtoe, %) (2007)



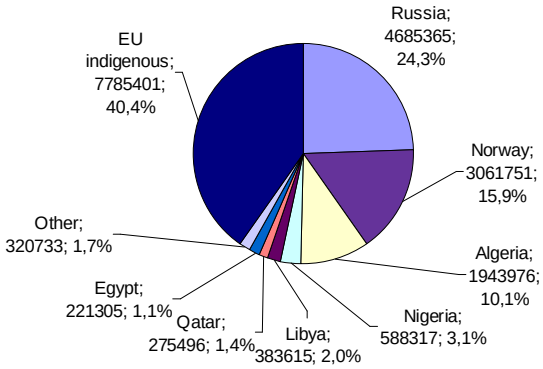
ELECTRICITY MIX (in TWh, %) (2007)

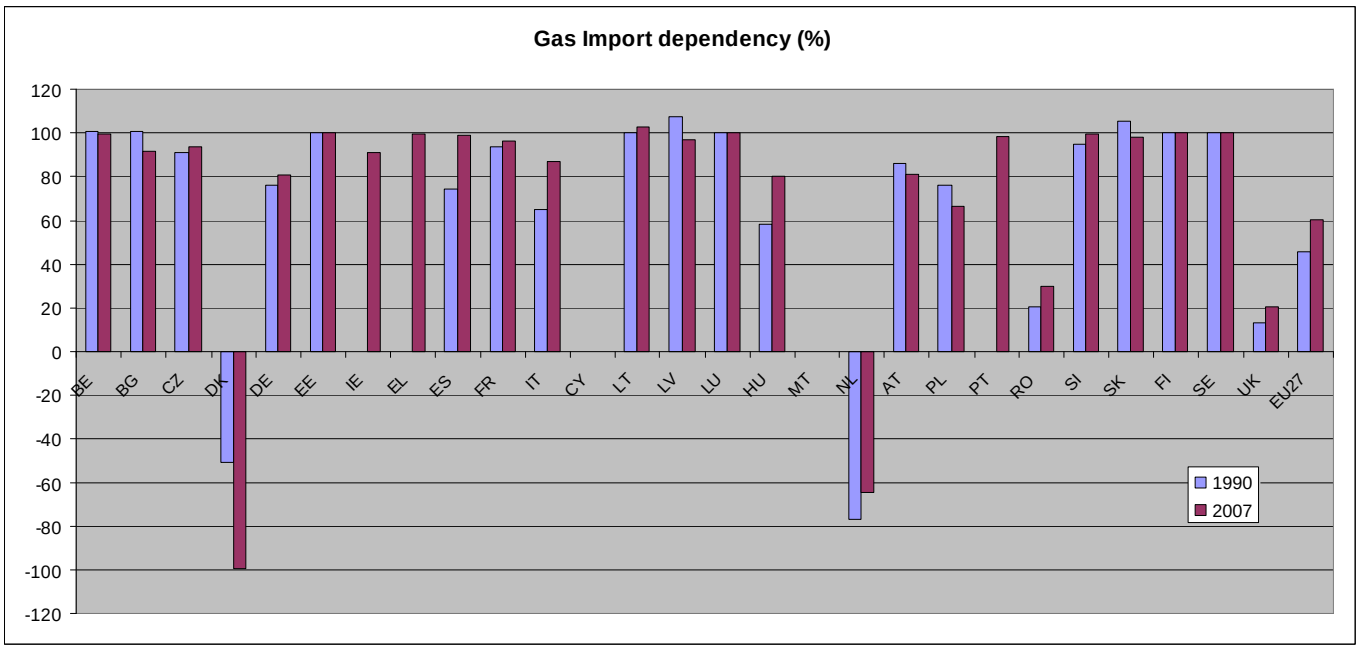


ROLE OF GAS (%)



SOURCE OF NATURAL GAS (%)(2007)

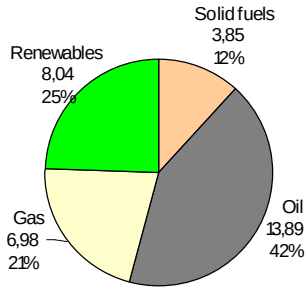




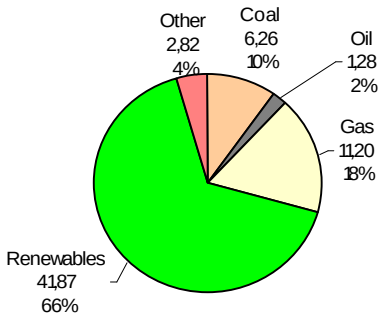
EU gas import dependency increases from 45% in 1990 to 60% in 2007, peaking in 2006. Gas import dependency is around 100 % in 15 Member States, e.g. all or nearly all gas is imported. Denmark and the Netherlands are the only gas net exporters. Ireland, Greece and Portugal started to import gas after 1990.

THE ROLE OF GAS IN AUSTRIA (2007)

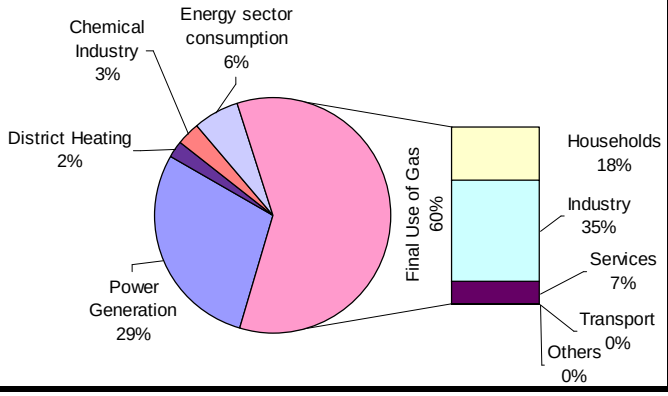
ENERGY MIX (in Mtoe, %) (2007)



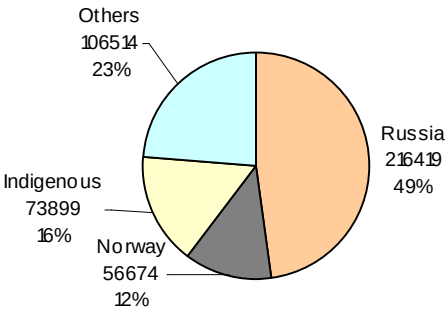
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



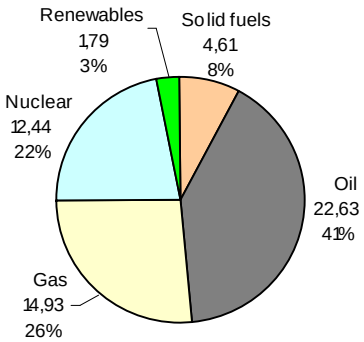
SOURCE OF NATURAL GAS (TJ,%)(2007)



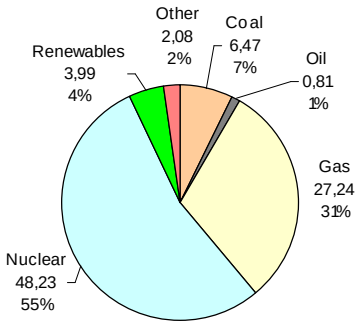
Stocks change:-12122TJ, Export=-116704TJ

THE ROLE OF GAS IN BELGIUM (2006)

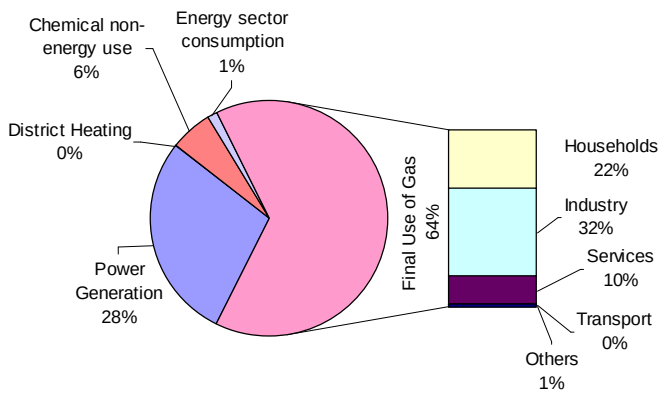
ENERGY MIX (in Mtoe, %) (2007)



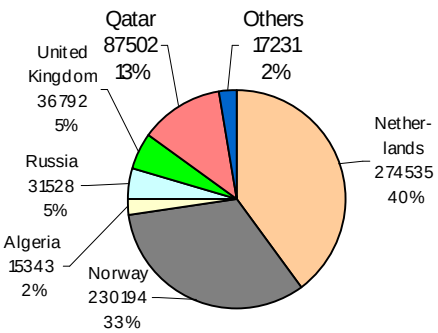
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



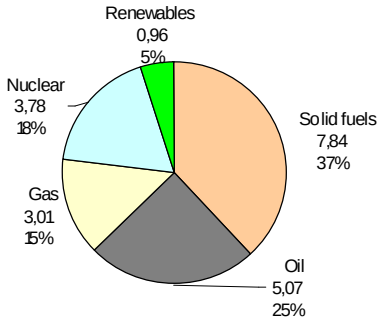
SOURCE OF NATURAL GAS (TJ,%)(2007)



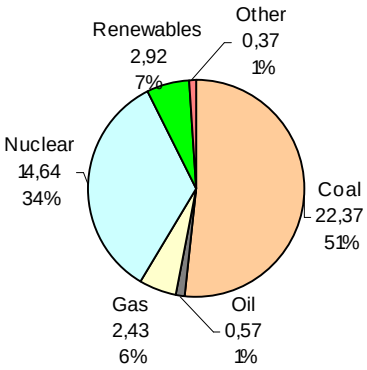
Stocks change:1350TJ, Export=0TJ

THE ROLE OF GAS IN BULGARIA (2007)

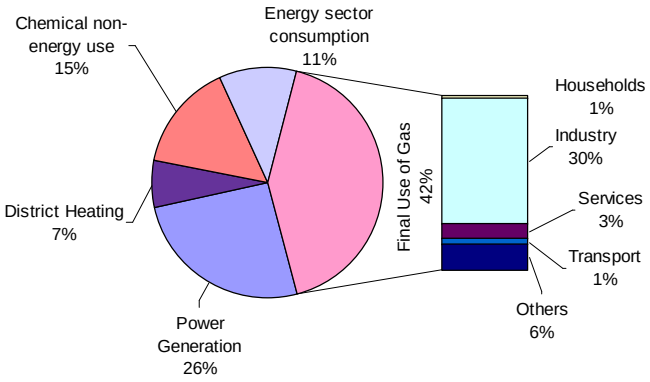
ENERGY MIX (in Mtoe, %) (2007)



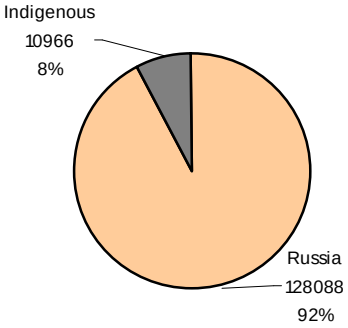
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



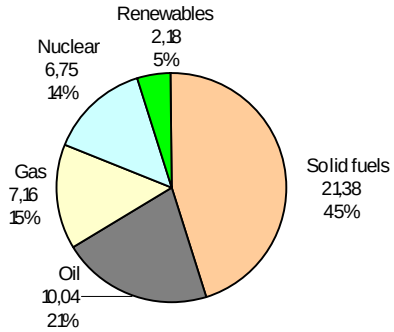
SOURCE OF NATURAL GAS (TJ,%)(2007)



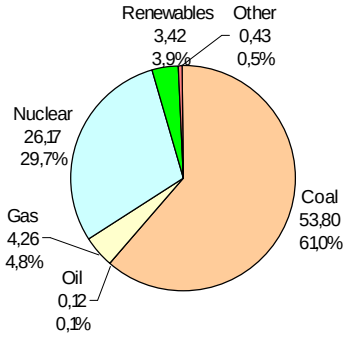
Stocks change:991TJ, Export=0TJ

THE ROLE OF GAS IN CZECH REPUBLIC (2007)

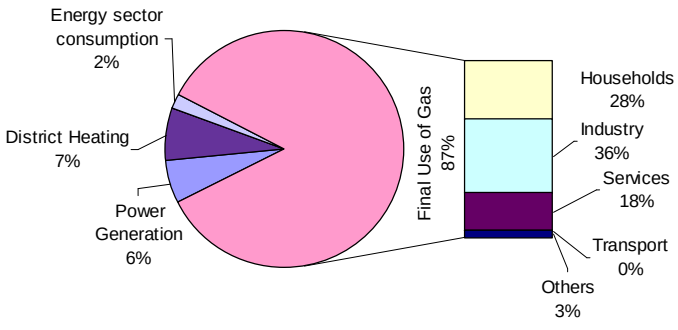
ENERGY MIX (in Mtoe, %) (2007)



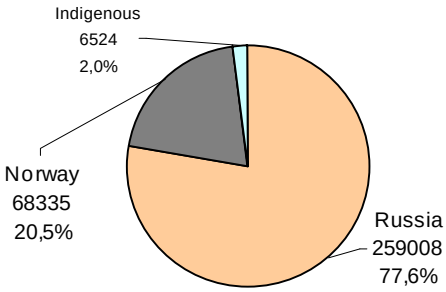
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



SOURCE OF NATURAL GAS (TJ,%)(2007)



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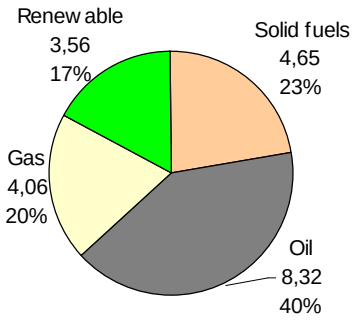
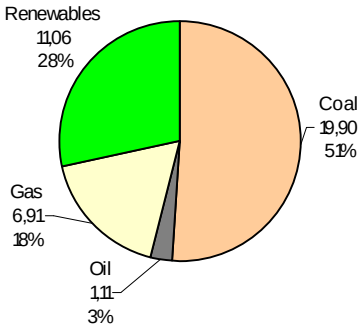
THE ROLE OF GAS IN DENMARK (2007)

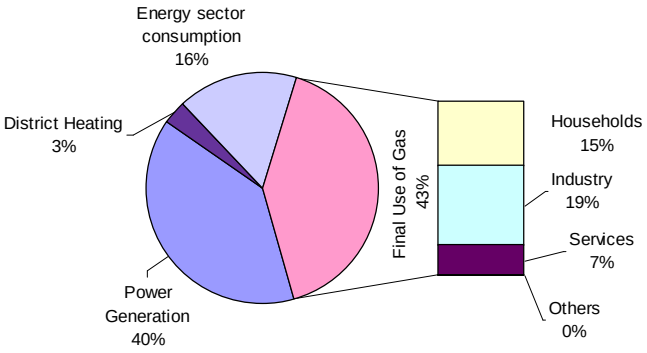
ENERGY MIX (in Mtoe, %) (2007)



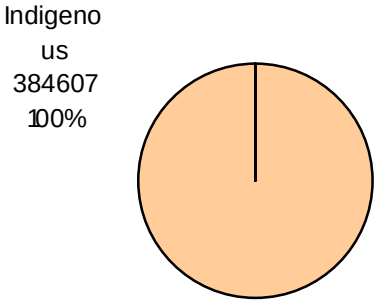
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



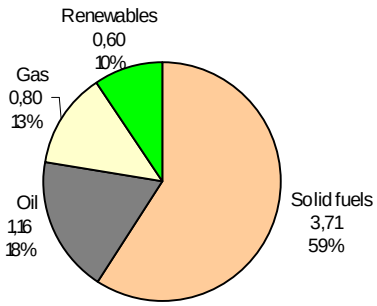
SOURCE OF NATURAL GAS (TJ,%)(2007)



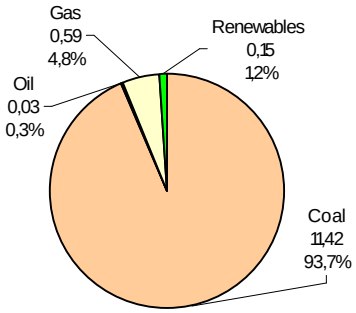
Stocks change:- 7283TJ, Export=-188377TJ

THE ROLE OF GAS IN ESTONIA (2007)

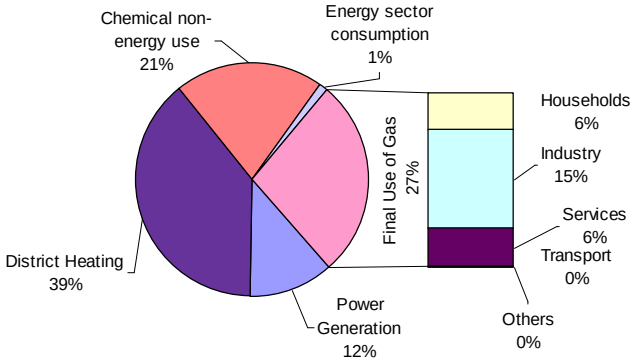
ENERGY MIX (in Mtoe, %) (2007)



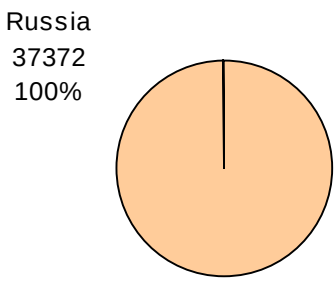
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



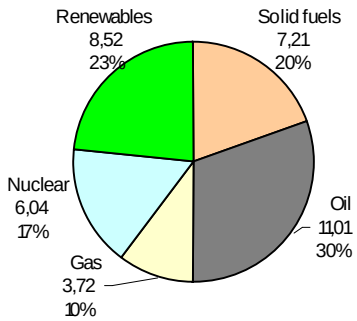
SOURCE OF NATURAL GAS (TJ,%)(2007)



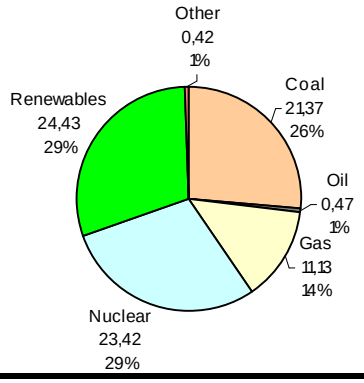
Stocks change:0TJ, Export=0TJ

THE ROLE OF GAS IN FINLAND (2007)

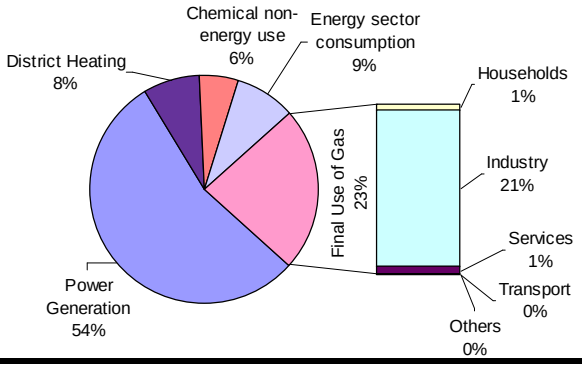
ENERGY MIX (in Mtoe, %) (2007)



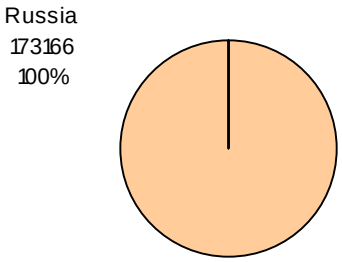
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



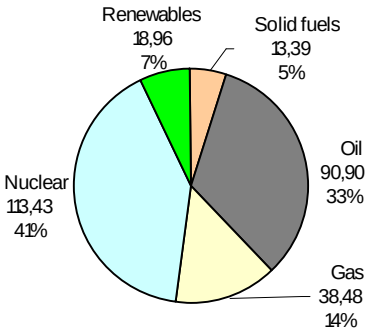
SOURCE OF NATURAL GAS (TJ,%)(2007)



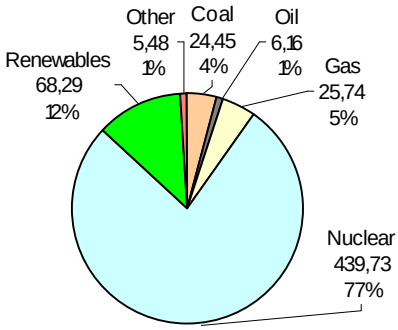
Stocks change:0TJ, Export=0TJ

THE ROLE OF GAS IN FRANCE (2007)

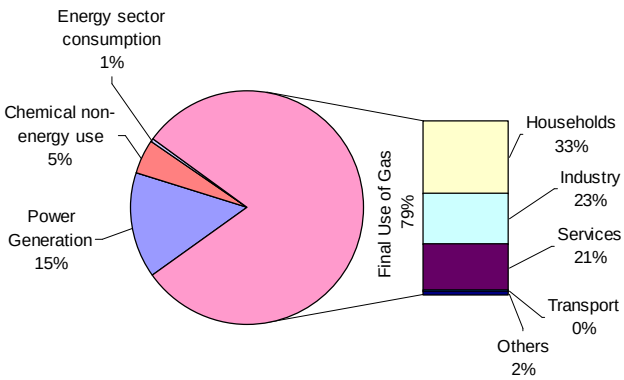
ENERGY MIX (in Mtoe, %) (2007)



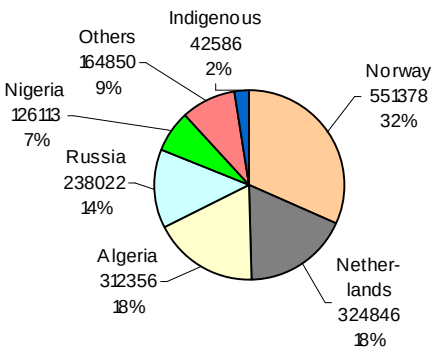
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



SOURCE OF NATURAL GAS (TJ,%)(2007)



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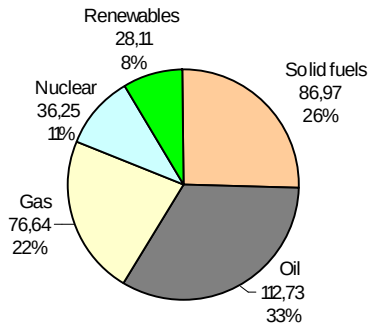
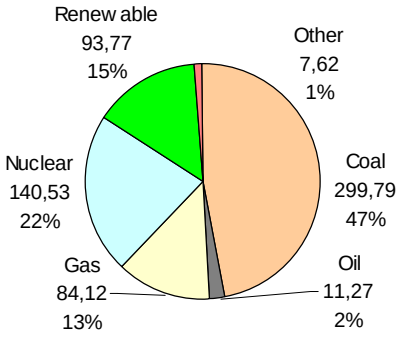
THE ROLE OF GAS IN GERMANY (2007)

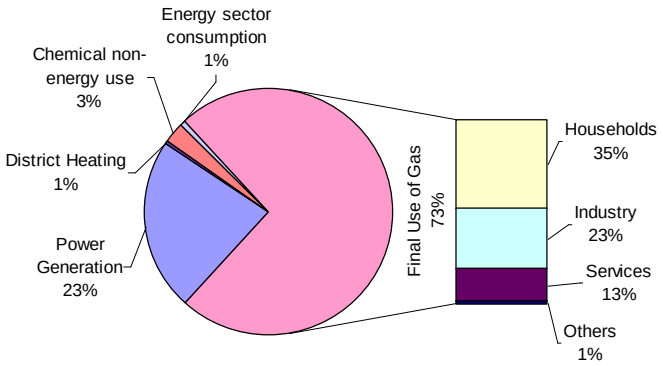
ENERGY MIX (in Mtoe, %) (2007)



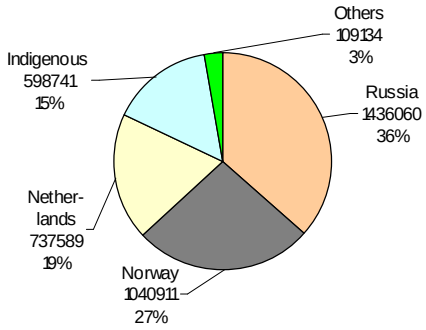
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



SOURCE OF NATURAL GAS (TJ,%)(2007)



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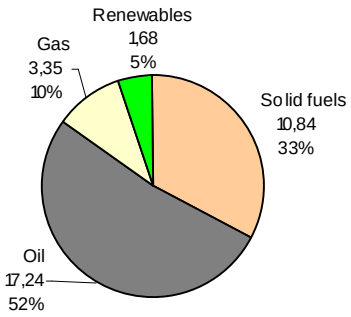
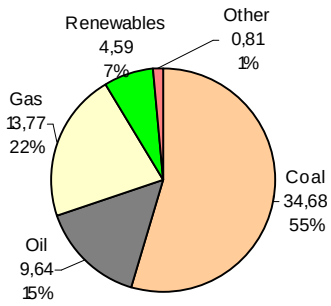
THE ROLE OF GAS IN GREECE (2007)

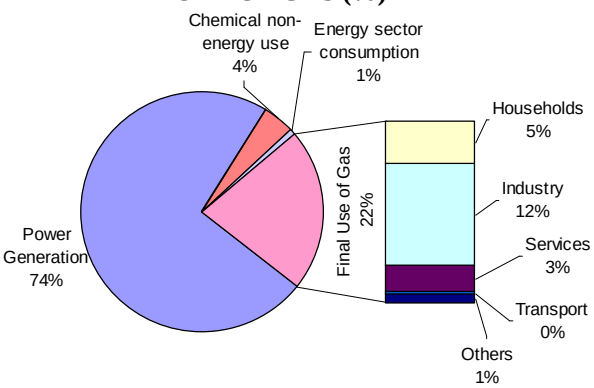
ENERGY MIX (in Mtoe, %) (2007)



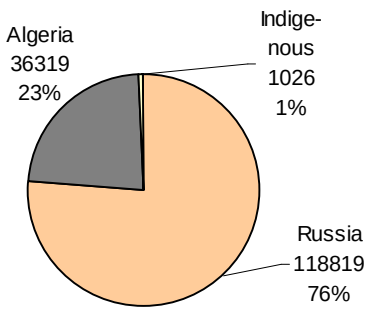
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



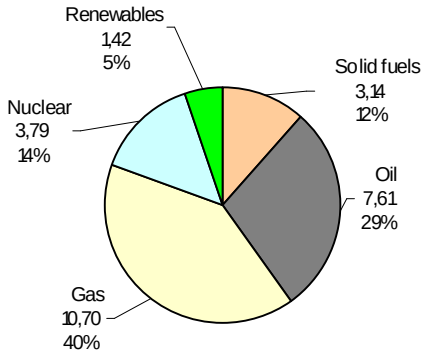
SOURCE OF NATURAL GAS (TJ,%)(2007)



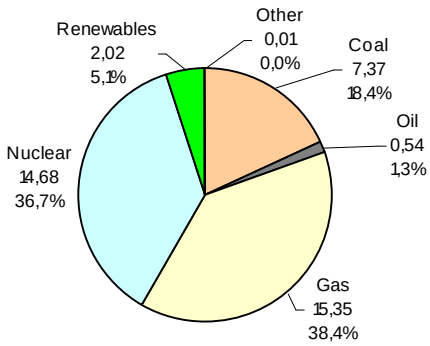
Stocks change:-336TJ, Export=0TJ

THE ROLE OF GAS IN HUNGARY (2007)

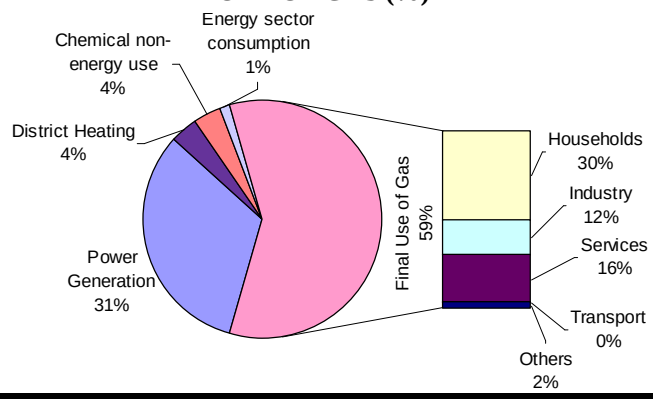
ENERGY MIX (in Mtoe, %) (2007)



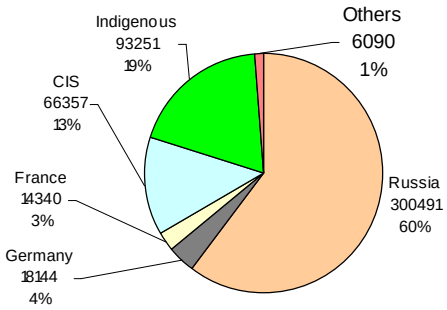
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



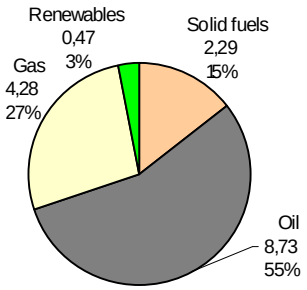
SOURCE OF NATURAL GAS (TJ,%)(2007)



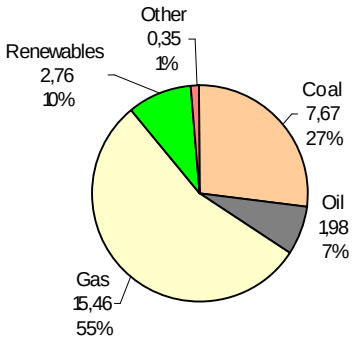
Stocks change:6650TJ, Export=-7334TJ

THE ROLE OF GAS IN IRELAND (2007)

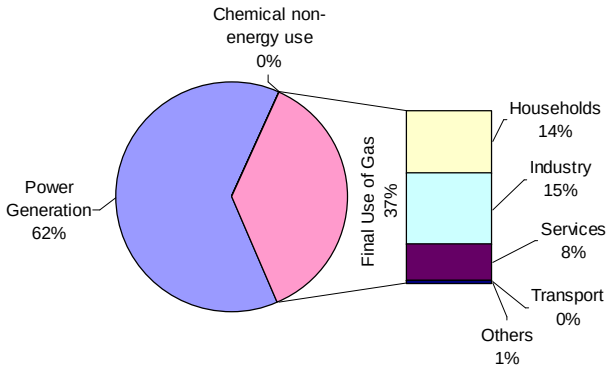
ENERGY MIX (in Mtoe, %) (2007)



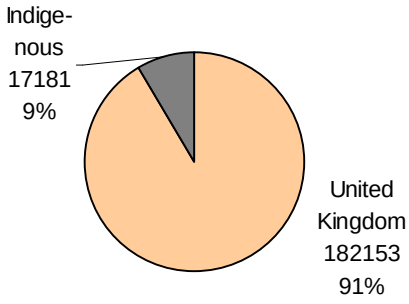
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



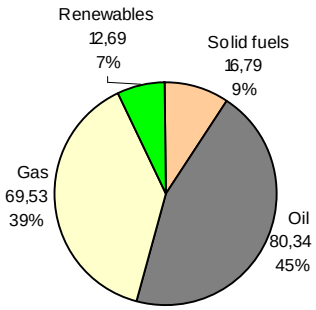
SOURCE OF NATURAL GAS (TJ,%)(2007)



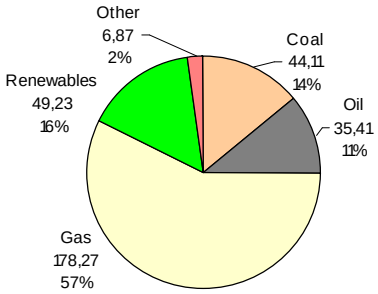
Stocks change:-50TJ, Export=0TJ

THE ROLE OF GAS IN ITALY (2007)

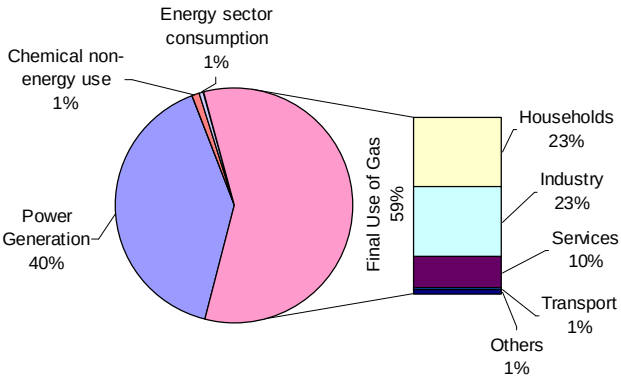
ENERGY MIX (in Mtoe, %) (2007)



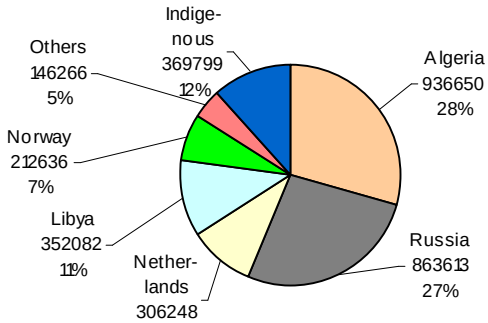
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



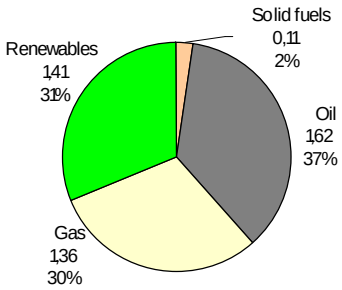
SOURCE OF NATURAL GAS (TJ,%)(2007)



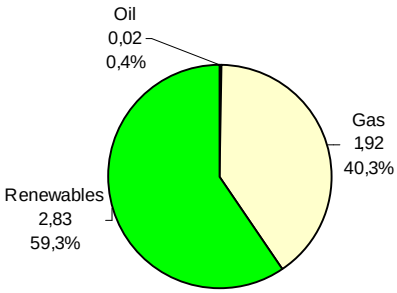
Stocks change:49873TJ, Export=-2591TJ

THE ROLE OF GAS IN LATVIA (2007)

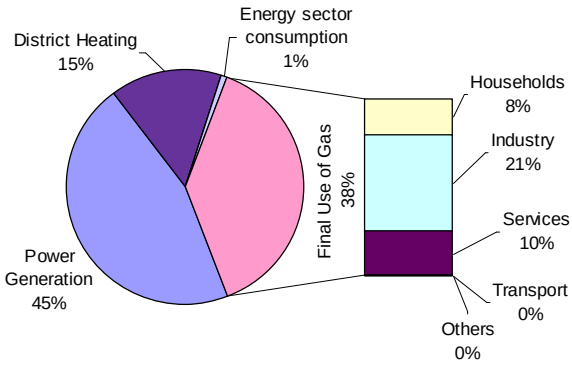
ENERGY MIX (in Mtoe, %) (2007)



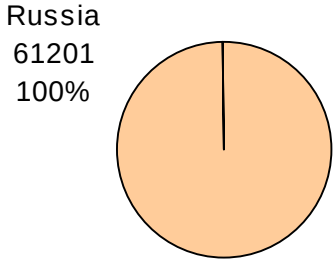
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



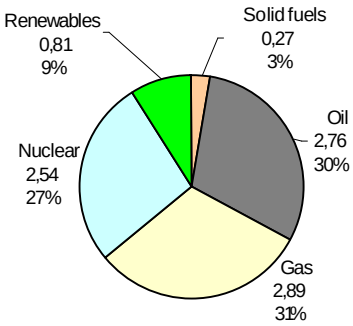
SOURCE OF NATURAL GAS (TJ,%)(2007)



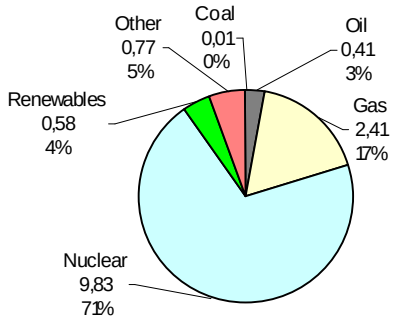
Stocks change:2046TJ, Export=0TJ

THE ROLE OF GAS IN LITHUANIA (2007)

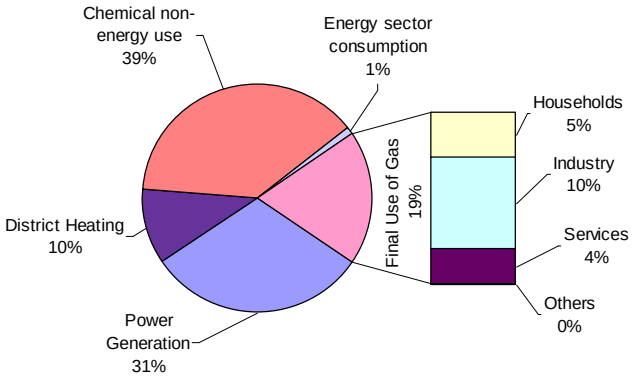
ENERGY MIX (in Mtoe, %) (2007)



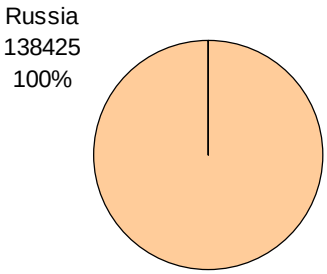
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



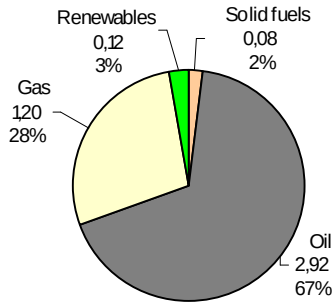
SOURCE OF NATURAL GAS (TJ,%)(2007)



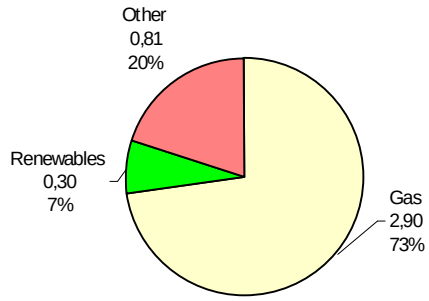
Stocks change:-3907TJ, Export=0TJ

THE ROLE OF GAS IN LUXEMBOURG (2007)

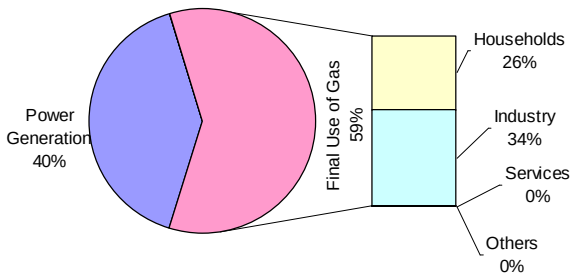
ENERGY MIX (in Mtoe, %) (2007)



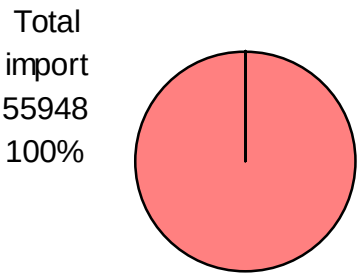
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



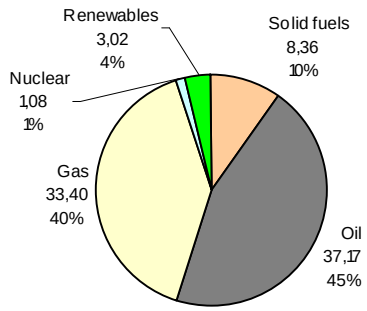
SOURCE OF NATURAL GAS (TJ,%)(2007)



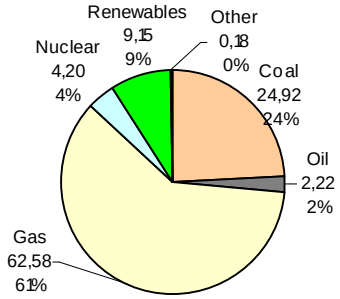
Stocks change:0TJ, Export=0TJ

THE ROLE OF GAS IN THE NETHERLANDS (2007)

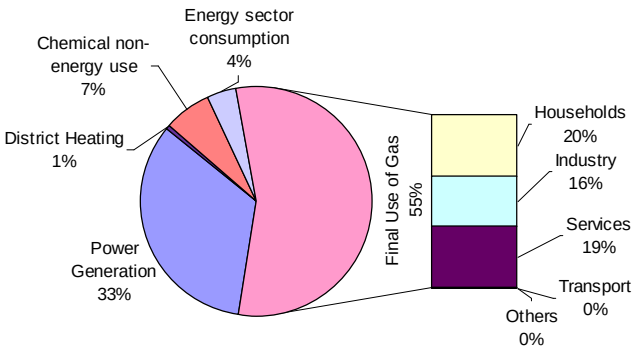
ENERGY MIX (in Mtoe, %) (2007)



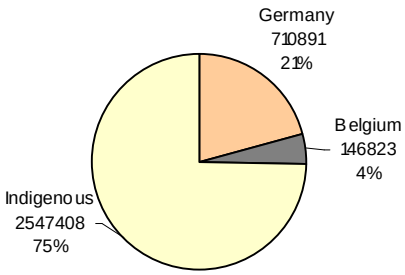
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



SOURCE OF NATURAL GAS (TJ,%)(2007)



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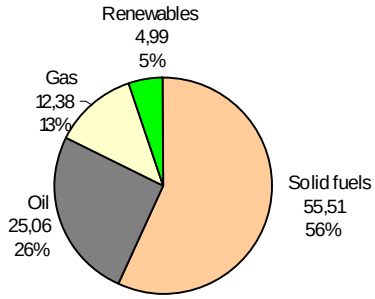
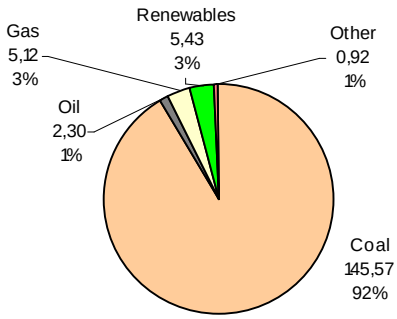
THE ROLE OF GAS IN POLAND (2007)

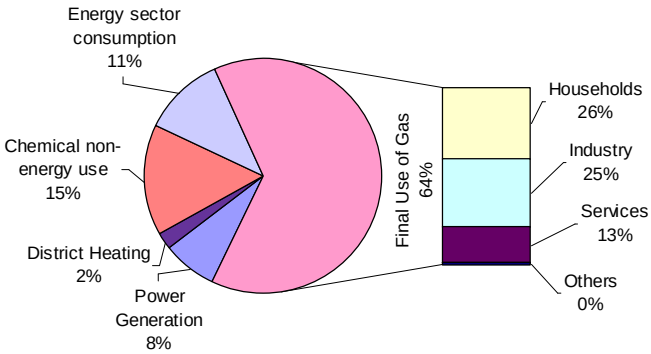
ENERGY MIX (in Mtoe, %) (2007)



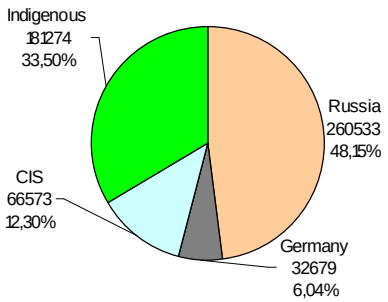
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



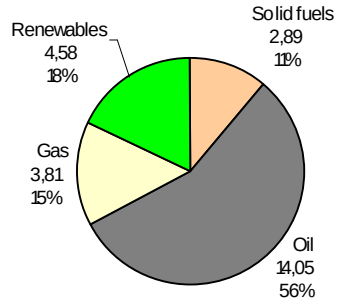
SOURCE OF NATURAL GAS (TJ,%)(2007)



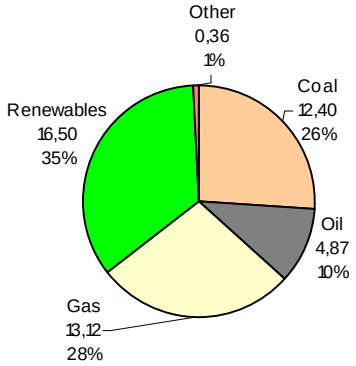
Stocks change:10743TJ, Export=-1677TJ

THE ROLE OF GAS IN PORTUGAL (2007)

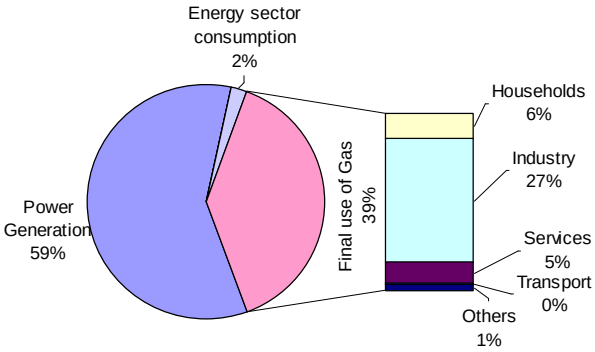
ENERGY MIX (in Mtoe, %) (2007)



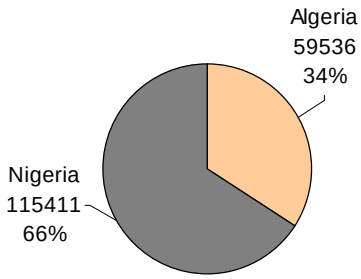
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



SOURCE OF NATURAL GAS (TJ,%)(2007)



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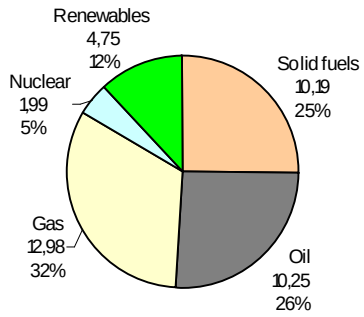
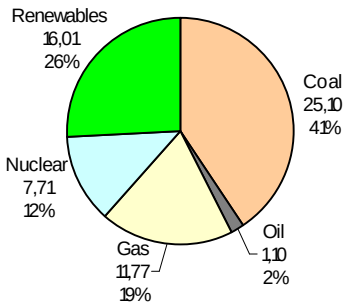
THE ROLE OF GAS IN ROMANIA (2007)

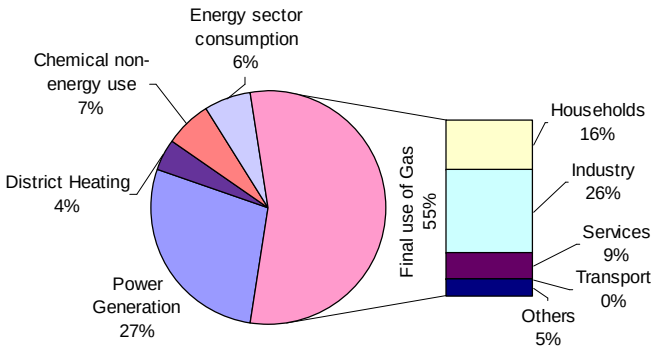
ENERGY MIX (in Mtoe, %) (2007)



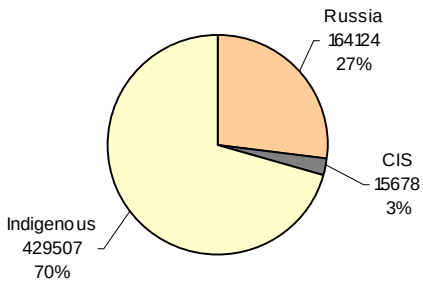
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



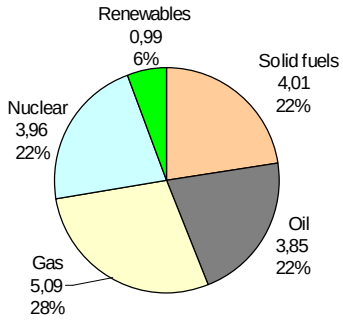
SOURCE OF NATURAL GAS (TJ,%)(2007)



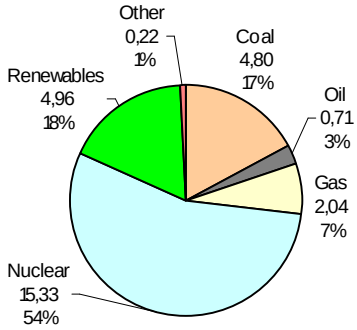
Stocks change:-5387TJ, Export=0TJ

THE ROLE OF GAS IN SLOVAKIA (2007)

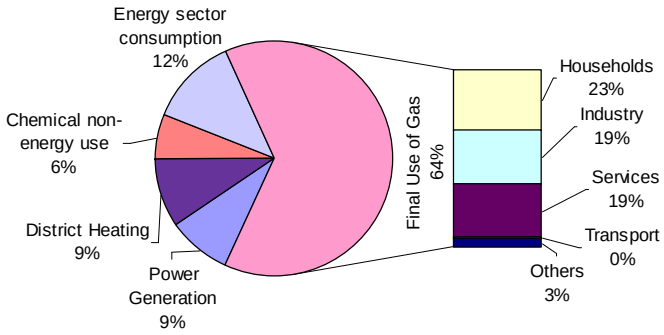
ENERGY MIX (in Mtoe, %) (2007)



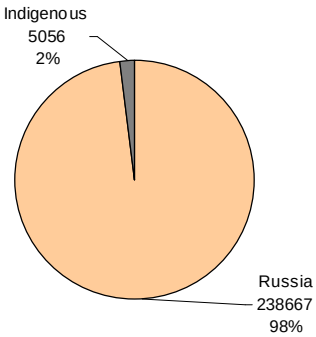
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



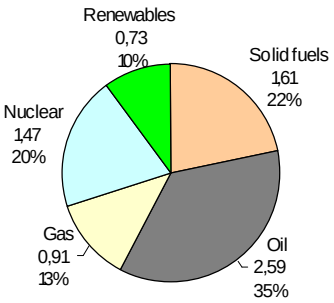
SOURCE OF NATURAL GAS (TJ,%)(2007)



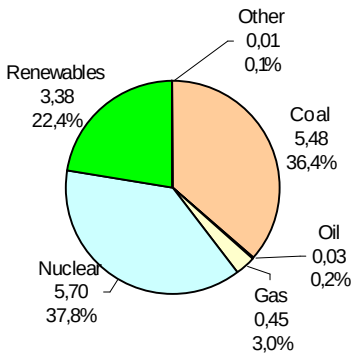
Stocks change:0TJ, Export=-6967TJ

THE ROLE OF GAS IN SLOVENIA (2007)

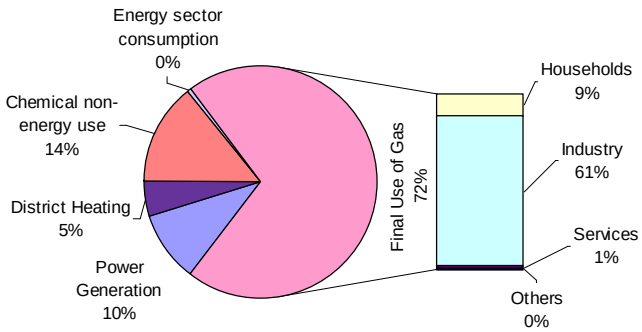
ENERGY MIX (in Mtoe, %) (2007)



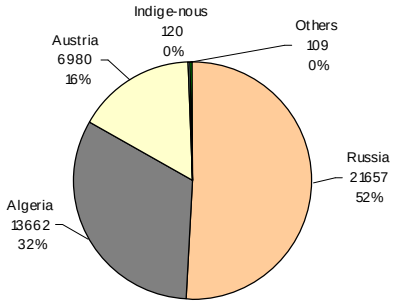
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



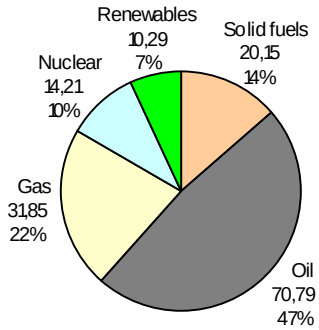
SOURCE OF NATURAL GAS (TJ,%)(2007)



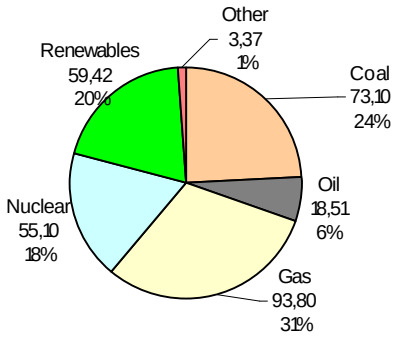
Stocks change:0TJ, Export=0TJ

THE ROLE OF GAS IN SPAIN (2007)

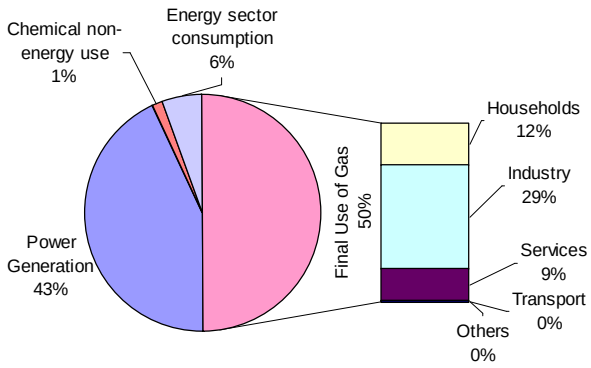
ENERGY MIX (in Mtoe, %) (2007)



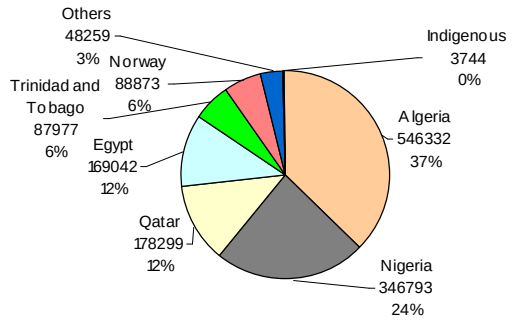
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



SOURCE OF NATURAL GAS (TJ,%)(2007)



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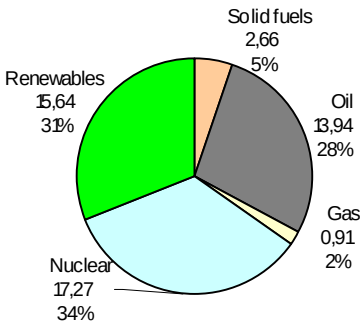
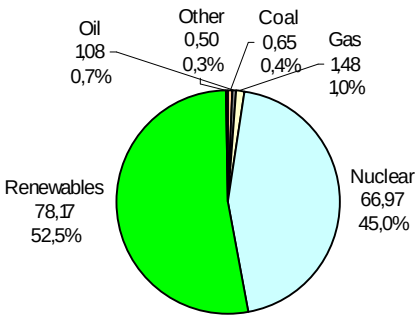
THE ROLE OF GAS IN SWEDEN (2007)

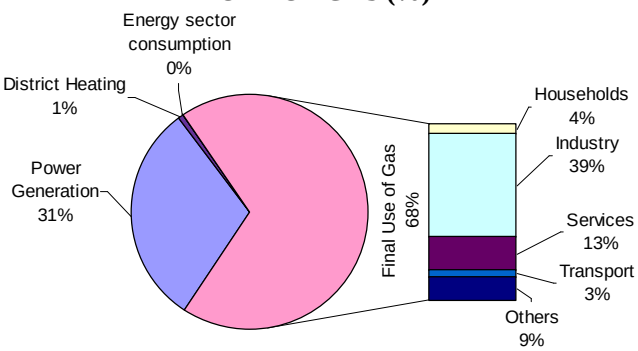
ENERGY MIX (in Mtoe, %) (2007)



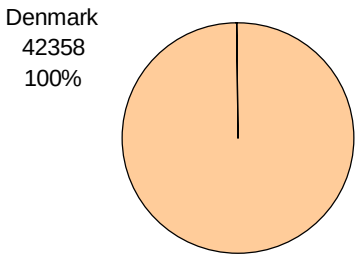
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS (%)



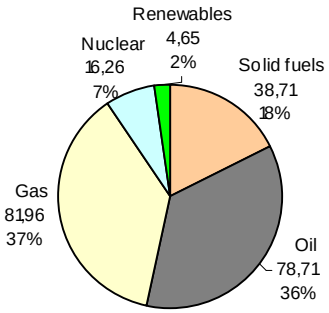
SOURCE OF NATURAL GAS (TJ,%)(2007)



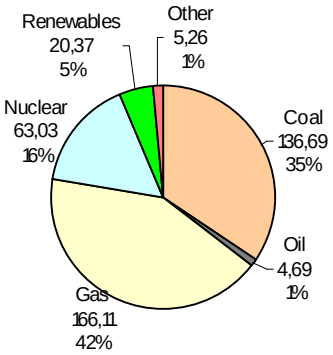
Stocks change:0TJ, Export=0TJ

THE ROLE OF GAS IN UNITED KINGDOM (2007)

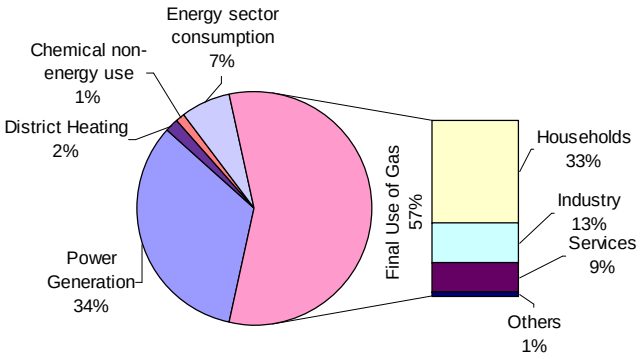
ENERGY MIX (in Mtoe, %) (2007)



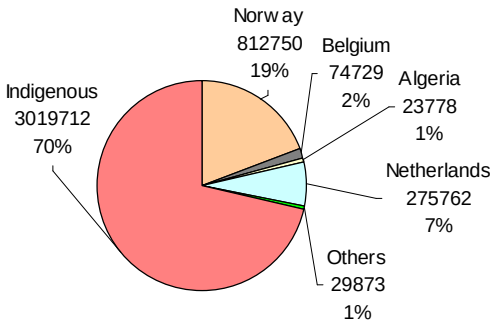
ELECTRICITY MIX (in TWh, %) (2007)



ROLE OF GAS



SOURCE OF NATURAL GAS (TJ,%)(2007)



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