



EREGG recommendations on the 10-year gas network development plan

An EREGG Public Consultation Paper

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Information Page

Abstract

This document E08-GNM-04-03 is an ERGEG's public consultation on 10-year gas network development plan, which includes at Annex the consultation questions.

This document seeks to initiate discussion and provide input to the Agency to develop guidelines for ENTSOG to work on long term infrastructure development in Europe.

Target Audience

Energy suppliers, traders, electricity/gas customers, electricity/gas industry, consumer representative groups, network operators, academics and other interested parties.

How to respond to this consultation

Deadline: **29 May 2009**

Comments should be sent by e-mail to 10-year-plan@ergereg.org.

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All responses (except "confidential appendices") will be published on the website www.energy-regulators.eu.

Treatment of Confidential Responses

In the interest of transparency, ERGEG:

- i) will list the names of all respondents (whether confidential or not)
- ii) requests that any respondent requesting confidentiality to submit those confidential aspects of their response in a "confidential appendix". ERGEG will assess in co-ordination with the respondent explicitly requesting confidentiality which information or data within their response should not be made public in the evaluation of responses. The non-confidential aspects of the response will nonetheless be published.

For further information on ERGEG's rules, see ERGEG Guidelines on Consultation Practices.

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Executive summary

Under the third energy package (3rd package) proposals, the European Network of Transmission System Operators for Gas (ENTSOG) shall publish a Community-wide 10-year gas network development plan¹ every two years. The 10-year gas network development plan shall include the modelling of the integrated network, scenario development, a generation adequacy report and an assessment of the resilience of the system. The 10-year gas network development plan shall, in particular, build on national investment plans and on the Guidelines for Trans-European Energy Networks. The 10-year gas network development plan shall identify investment gaps, notably with respect to cross border capacities. The Agency for the Cooperation of Energy Regulators ("the Agency") will have an important role in the preparation of the 10-year gas network development plan by ENTSOG.

This paper sets out the European Regulatory Group for Electricity and Gas (ERGEG) recommendations for the development of the 10-year gas network development plan with a view to provide some guidance to the ENTSOG in its preparation during the interim period. Although there is no legal requirement in the 3rd package to develop guidelines on the 10-year gas network development plan, the proposal for a Directive amending Directive 2003/55/EC identifies the 10-year gas network development plan as a priority. The 10-year gas network development plan is also among the three ERGEG priorities (transparency and capacity allocation mechanisms) related to natural gas set out in the 2009 Work Programme.

Objectives of the 10-year gas network development plan

The present document aims to provide some input to the Agency to develop guidelines for ENTSOG to work on long term infrastructure development in Europe.

The 10-year gas network development plan should ensure the objectives of non-discrimination, effective competition and the efficient functioning of the market. ERGEG sees the 10-year gas network development plan as a key tool to improve competition and security of supply. It should provide a shared vision of the future to all the stakeholders. It has to be built on an assessment of the obstacles to gas transit across Europe and address priority developments and Transmission System Operator (TSO) projects. The gas supply disruption from Russia has further highlighted the need to improve security of supply. This underscores the need for the plan to anticipate potential gas deficits and infrastructure bottlenecks, to assess the need to diversify current gas supplies as well as the capacity of the European gas system to cope with emergency procedures and solidarity mechanisms.

The scope of the 10-year gas network development plan mainly concerns investments of a broader European dimension which involve at least two Member States or have an impact on cross border systems. The 10-year gas network development plan at the European level should mainly focus on congestion at cross-border entry-exit points and on internal bottlenecks that have a cross border impact. This includes storage and Liquefied Natural Gas (LNG) projects. It should also include modelling of the integrated transmission network to develop simulations of different scenarios as well as assess the resilience and deliverability of the integrated systems. These development plans should make it possible to identify investment gaps in relation to cross border capacities.

The 10-year gas network development plan must be a consensual effort, gathering information on long term demand dynamics, the evolution of gas supplies in Europe

¹ The ten year investment plan shall be referred to as the 10-year gas network development plan, as per the Council's common position.

(domestic production and imports) and the announced projects of new entry/exit points within the system which potentially impact upon cross border trade. The aim is to draw a picture of the supply/demand balance in Europe addressing in particular the impact of the EU's growing import dependency on cross border gas exchanges. The 10-year gas network development plan should not address how the projects will be carried out.

Investment procedures are not within the scope of the 10-year gas network development plan which should be understood as an "early stage" of the investment process addressing the infrastructure needs. Evidence indeed shows that cross-border investment decision-making differs from case to case, raising issues such as compatibility of regulations, risk estimation, calculation of remuneration, etc. In addition, several routes are sometimes possible for a given transportation service; it is necessary to be aware of the potential competition between projects while the market should decide which route may be preferred.

ERGEG considers that the 10-year gas network development plan should be indicative for ENTSOG. The plan should be published every two years and should include a progress review from the prior plan, explaining the deviations between what was foreseen and what has been achieved.

Role of the Agency

Pursuant to the Commission's 3rd package proposals, the Agency shall provide a duly justified opinion to the Commission where it considers that the draft annual work programme or the draft 10-year investment plan do not ensure non-discrimination, effective competition and the efficient functioning of the market. The exact role of the Agency in relation to the 10-year gas network development plan (review, provide an opinion, approve it, including the power to seek additional information where appropriate) remains to be specified following the 2nd reading. ERGEG considers that regulators have an important role in investments both at national and European level (through the Agency under the future arrangements) and, therefore, should be involved in the process.

Drafting process

The challenge in the 10-year gas network development plan is to combine both a broad analysis of gas dynamics in Europe and detailed information on possible investment projects. For that purpose, it is proposed to articulate both a top-down and a bottom-up approach. The top down approach will require ENTSOG to address the general methodology of the plan, provide the elements related to the context and broad gas dynamics in Europe as well as the issues related to security of supply, market integration and competition development. The bottom-up relates to the collection of information required for the identification of projects, estimation of costs as well as the probability of investment in the various projects. It is proposed, for instance, that TSOs provide investment perspectives for their own network associated with national, as well as regional demand forecasts.

The approach developed by GTE+ covers a large part of the 10-year gas network development plan, in particular as far as investment needs compared to demand evolution are concerned. However, ERGEG's approach is more ambitious. In addition to GTE+ plan, it includes a long term vision of the gas market dynamics taking into account EU security of supply. The plan should provide a comprehensive assessment of ongoing and announced projects related to international pipelines, re-gasification terminals, storage facilities and big consumers with a focus on power generation.

The European Commission will provide an opinion on the plan. The market will also be informed and may be consulted on the plan itself. Alternatively, market consultations could be carried out at a more decentralised level (regional and national), in the framework of investment procedures.

ERGEG's recommendations on the drafting process

With full awareness of the importance and long term relevance, especially of the issues covered by the Technical and Market codes cf. Art. 2c of the proposed amendments to Regulation (EC) No 1775/2005, ERGEG has undertaken (under the 2009 WP) to:

- (1) Develop recommendations on all the issues concerned;
- (2) **Consult publicly on those** recommendations and adjust them accordingly by taking into account the interests of all stakeholders, most notably, the interests of the European customers;
- (3) Provide the **formal ERGEG advice to the EC** on these issues, where appropriate in 2009 (depending on the completion of specific deliverables such as the ERGEG Consultation Documents); and
- (4) Use the results of this work and projects' deliverables eventually for the definition of **regulatory criteria** by which the work to be done by the ENTSOG according to Article 2c will be assessed and judged upon in the future.

The 3rd Package as proposed by the European Commission in 2007 does not include a legal requirement for the Agency to provide recommendations for the 10-year gas network development plan. However, as the Agency will be required to approve the plan (EP first reading) or provide an opinion on it (Council common position), ERGEG considers that it is important for the energy regulators to prepare a document to provide guidance to the ENTSOG on their views.

1 Background and justification

1.1 Third energy package

Promoting investment is among the regulators' duties stated in the third energy package² (3rd Package). In the European Commission's proposal amending Directive 2003/55/EC, the explanatory memorandum includes investment planning within the priorities for effective coordination of transportation system operators as follows (p. 14):

Investment planning. So as to make sufficient transmission capacity available to meet demand and to integrate national markets, network operators would need coordinated long-term planning of system development with a view to planning network investments and monitoring the development of transmission network capacities. The idea is that the European Networks of Transmission System Operators will publish network development plans, to include the integrated network modelling, scenario development and an assessment of the resilience and deliverability of the integrated system. These development plans should be sufficiently forward looking (e.g. at least 10-years) so as to allow for the early identification of investment gaps, more especially with cross-border capacities in mind.

This focus on investment is also addressed in the explanatory memorandum of the Commission's proposal amending Regulation (EC) 1775/2005. Among the powers of national regulators, it is proposed to strengthen their duties in the review of "the investment plans of the transmission system operators, and provide in its annual report an assessment of how far the transmission system operators' investment plans are consistent with the European-wide 10-year gas network development plan."

In sum, 10-year gas network development plan should be useful for both **securing supplies** and **promoting competition**, which include developing gas flows between adjacent networks.

References within the proposed changes to the Gas Directive (2003/55/EC) within the 3rd Package after the first reading of the European Parliament³ are the following:

In Article 24b, "Policy objectives of the regulatory authority", the Commission project of Directive reminds that regulatory authorities shall take all reasonable measures to, among other objectives, promote a competitive, transparent and secure gas market. Concerning investment related issues, they are requested to suppress restrictions to trade between Member States notably by developing cross-border transmission capacity, in particular "to enable unrestrained natural gas flow across the Community" (paragraph c). Regulators must ensure "that network operators are granted adequate incentives in both the short and the long-term to increase efficiencies in network performance and foster market integration" (paragraph e).

In Article 24c, "Duties and powers of the regulatory authority", paragraph 1.f states that regulators have to review "investment plans of the transmission system operators, and providing in its annual report an assessment of the investment plan of the transmission

² http://ec.europa.eu/energy/gas_electricity/third_legislative_package_en.htm

³ Reference COM(2007)0529 – C6-0317/2007 – 2007/0196(COD)

system operators as regards to its consistency with the European-wide 10-year gas network development plan mentioned in Article 2c of Regulation (EC) No 1775/2005”.

Role of the Agency in the EU-10-year gas network development plan

The 10-year gas network development plan will be a useful tool for regulators. It will provide greater visibility on the long-term dynamics of the markets. The Agency should be clearly involved in the drafting process from the beginning and should have the power to require additional information if necessary. ENTSOG shall provide this information upon written request.

According to the 3rd Package proposals, the Agency will be required either to provide an opinion or to approve the plan. The initial proposal of the Commission (Article 2d) suggests that the Agency provides an opinion to ENTSOG within 3 months. The Agency shall provide a duly justified opinion to the Commission where it considers that the draft 10-year gas network development plan does not ensure non-discrimination, effective competition and the efficient functioning of the market.

The first reading of the Parliament suggests that the ENTSOG shall agree and submit to the Agency the 10-year gas network development plan for approval. Article 2d was amended by the Parliament: “The Agency shall monitor the implementation of the (...) 10-year investment plan and shall include the results of that monitoring in its annual report. In the event of non compliance with (...) the 10-year investment plan (...) of the ENTSOG, the Agency shall provide information thereof to the Commission” (COM(2007)0532 – C6-0319/2007 – 2007/0199(COD)).

The draft common position of the Council on 15 October 2008, proposes that the ENTSOG “shall submit the draft non-binding 10-year gas network development plan, including the information regarding the consultation process, to the Agency for its opinion. Within two months from receipt, the Agency shall provide a duly justified opinion as well as recommendations to ENTSO and to the Commission where it considers that the draft non-binding 10-year gas network development plan submitted by ENTSO does not contribute to non-discrimination, effective competition, the efficient functioning of the market or a sufficient level of cross-border interconnection open to third party access.”

1.2 Status of the EU 10-year gas network development plan

The EU 10-year gas network development plan shall be built on scenarios and assumptions regarding the future evolution of the European network. The scenarios and assumptions used have to be harmonised across the EU. The plan will include investment projects that reflect the dynamics of the European market and the need to secure energy supply issues. The main benefit of the 10-year gas network development plan is that the plan will provide regularly updated and reliable information about market needs and dynamics in a broader European context. The intrinsic uncertainty in a long-term plan means the plan will require periodic revisions to update the hypotheses, parameters and scenarios.

EREGG considers that binding decisions over the implementation of the 10-year gas network development plan should concern national authorities and that binding parts of the planning process should be dealt with on a national level. The Community-wide plan as an information tool increases and ensures transparency for all market participants and facilitates identification of bottlenecks and investment gaps to transport gas across Europe. The overall

aim of the 10-year gas network development plan is to promote investments and hence competition through the establishment of a more liquid wholesale market.

However, deviations from the 10-year gas network development plan will have to be explained by ENTSOG in a monitoring report published every two years.

The 3rd Package provides powers to NRAs to make investment decisions: “Every year, TSOs shall submit to the national regulatory authority a 10-year gas network development plan, based on existing and forecast supply and demand after having consulted all the relevant stakeholders. The plan shall contain efficient measures in order to guarantee the adequacy of the system and the security of supply”⁴. This Article also requires that the NRA:

- consults network users on the 10-year development plan in an open and transparent manner;
- examines whether the 10-year gas network development plan covers all investment needs identified during the consultation process and whether it is consistent with the Community wide 10-year gas network development plan. “If any doubt arises as to the consistency with the Community wide 10-year gas network development plan, the NRA shall consult the Agency. The NRA may require the TSO to amend its plan”;
- monitors and evaluates the implementation of the 10-year gas network development plan.

Furthermore, according to the 3rd Package, in circumstances where the TSO does not execute an investment, which, according to the 10-year gas network development plan, was supposed to be executed in the following three years, Member States shall ensure that the national regulatory authority has the obligation to take at least one of the following measures to ensure that the investment in question is made:

- (a) require the transmission system operator to execute the investments in question in coherence with the annual financial plan referred to in Article 12f; or,
- (b) organise a tender procedure open to any investors for the investment in question.

However, even if the 3rd Package provides powers to the NRAs to monitor the application of the investment decisions, the Agency should have a crucial role for ensuring the cooperation between NRAs for decisions related to investments involving two or more Member States. According to the draft of the Agency Regulation⁵, it is stipulated that when the Agency considers that binding rules on such cooperation are required, it shall make the appropriate recommendations to the Commission.

Therefore, ERGEG considers that a successful integration between different gas systems requires a high level of coordination on the investment decisions between two or more TSOs and the concerned NRAs.

⁴ Revision of the Gas Directive 2003/55/EC, this is based on the preliminary text of the 1st reading and could be subject to changes after the finalization of the 2nd reading.

⁵ http://ec.europa.eu/energy/electricity/package_2007/doc/2007_09_19_acer_regulation_en.pdf

1.3 GTE+ approach to the 10-year gas network development plan

TSOs will have a central role in preparing the community wide 10-year gas network development plan: ENTSOG will be responsible for gathering all the information related to infrastructure development and market dynamics. It will have to take into account the positions and needs of the stakeholders.

Current milestones of the European 10-year gas network development plan prepared by GTE+

The European 10-year gas network development plan of GTE+ will be built on national development statements. “Based on supply/demand scenarios and capacity evolutions at all interconnection points the European 10-year gas network development plan that will be developed by GTE+ is intended to identify capacity gaps/mismatches not only for cross-border capacity, but also for European relevant within-country interconnection points between TSOs” (GTE+ First consultation document: Ref: 08GTE+169).

GTE+ has planned to structure the European 10-year gas network development plan in three phases. In November 2008, a capacity development report for all relevant interconnection points from 2008 to 2017 was published, using data provided by TSOs (Phase 1). These inputs received from TSOs, as well as other sources, will be used to develop demand scenarios in order to assess the ability of the networks to meet the requirements. A stakeholder survey will be conducted on a European level to obtain inputs for demand and supply scenarios. An analysis of the demand scenarios compared with the capacity report will be published in July 2009 (Phase 2). These scenarios and capacity developments will provide a global picture of the ability of the European networks to meet the demanded requirements. The European Ten Year Development Statement is expected to be published in December 2009 (Phase 3).

In November 2008, GTE+ published the European Capacity Development Report (Ref: 08GTE+298). For each EU Member State, the report provides a description of the existing network and gas flows, current processes for investment and relevant publications, expected capacity development for the next ten years, planned open seasons or possible network development projects. Based on this data, the report also includes an evaluation of European capacity development, the planned European import capacity and cross-border interconnection capacity development projects.

1.4 ERGEG’s approach to the 10-year gas network development plan

ERGEG’s view on the 10-year gas network development plan is that it should provide a shared vision of European gas dynamics. For that purpose, the plan shall build upon two complementary processes: firstly, EU-wide scenarios and dynamics and secondly a precise assessment of infrastructure and projects country by country. This will require both top-down and bottom-up approaches.

GTE+ work and publications on the 10-year gas network development plan and winter outlook provide a rich basis for the future ENTSOG 10-year gas network development plan. ERGEG sees, however, this work as the bottom-up part of the process in the sense that GTE+ methodology consists of collecting national data.

ERGEG’s ambition is that ENTSOG should help identify priority projects (based on the Guidelines for Trans-European Energy Networks – TEN-E projects) and provide TSOs with

sufficient information on the major cross-border issues to be resolved. These recommendations will be used as a key input for drafting national investment plans⁶.

2 Factors driving investment planning

Several factors must be taken into account to correctly assess the needs for infrastructures and identify investment gaps on the European network.

Projections of future demand and supply are a key input to estimate the potential infrastructure needs.

2.1 Gas demand evolution

To build a broad picture of gas demand in the EU, the following elements must be assessed or estimated:

- yearly demand evolution;
- seasonal swing related to the pattern of demand;
- evolution of demand profile;
- peak demand: depending on consumers' breakdown by category (households, services, industry, power generation, etc.) and synchronisation of the different peaks;
- level of infrastructure reliability required.

There are several different factors influencing the evolution of energy demand, specifically gas demand. The primary factors are economic and population growth. The price for final consumers is also an important driver, including the price of alternative energy sources. In the current European context, new environment-oriented policies to promote renewable energy sources, energy efficiency and limiting greenhouse gas emissions may have a negative impact on future demand and thus on infrastructure needs.

Forecasting demand is, therefore, a complex exercise which should, as far as possible, take into account all the factors influencing gas use. It is necessary to build several scenarios based on alternative assumptions of prices, gas availability, economic forecasts, environmental policies, taking into consideration the fuel mix.

2.2 Gas supply dynamics and security of supply

The EU is highly dependent on external energy sources to satisfy its consumption needs. The assessment of the gas transport environment in Europe requires a broad analysis of the energy supply dynamics. An outlook of the supply potential of the EU should be presented for the entire period, with an estimation of:

- the EU domestic gas production profile;
- the evolution of the production of the current major EU gas suppliers;

⁶ In this paper, national 10 year investment plans refer to plans drafted by every national TSO.

- an assessment of new potential energy sources.

These estimations should be complemented by an assessment of the potential supply risks. It is necessary to carry out a simulation of the disruption of major supply sources. The analysis of disruption risks should be built upon scenarios to evaluate the security of supply. These scenarios should identify particularly risky points (most likely to be subject to supply disruption) in the European network.

Security of supply is also a key factor in estimating the relevance of an investment. Capacity should be sufficient to ensure a reliable, flexible, secure and competitive market. The estimation of additional capacity needs must satisfy the security of supply criteria established in each Member State and be consistent with the integrity and security of the EU gas system. Improving security of supply may justify developing more capacity than strictly needed for trading purposes and may justify anticipating future transportation needs. The 10-year gas network development plan must, therefore, consider security of supply and solidarity among Member States in the case of a temporary supply shortage as a key objective⁷.

Other complementary issues to be taken into account are:

- integration of the development of production, import projects, LNG projects and storage facilities;
- additional capacity to improve the flexibility of the gas system.

2.3 Creation and development of new entry and exit points

The creation of new entry points in gas systems has an impact on gas flows and, hence, on the architecture of the networks. In gas markets, the supply is relatively concentrated compared to electricity markets. As a result, connecting a new pipeline, LNG gasification terminal or storage site requires important investments to reinforce the core part of the network.

The 10-year gas network development plan should be built upon a comprehensive assessment of shippers' projects and needs, resulting from dialogue with the market.

In order to determine the relevant development of the network, the project sponsors (interconnectors, LNG terminals and storage facilities) must communicate the relevant technical characteristics of their potential projects to ENTSOG.

These inputs, combined with forecasts of demand and supply, are crucial to assess specific needs for new transmission capacity.

2.4 Competition development and gas market integration

The concept of market design must also be addressed in the investment plans. Indeed, the structure of the market has an impact on infrastructure development. Defining the market design falls within the competences of national regulatory authorities (NRAs). The model

⁷ Security of supply and solidarity between Member States are specified in Directive 2004/67/EC concerning measures to safeguard security of natural gas supply. In addition, the 3rd Package (proposed changes to the Directive) states that Member States shall cooperate in order to promote regional and bilateral solidarity, including coordination of national emergency measures, identification and development or upgrading of electricity and natural gas interconnections and conditions and practical modalities for mutual assistance (Article on regional solidarity).

should clarify the nature of competition and the nature of price signals sent by Third Party Access (TPA) pricing to market participants.

Concerning market design, the proposals within the 3rd Package for amendments to the Gas Regulation⁸ state that:

“To enhance competition through liquid wholesale gas markets, it is vital that gas can be traded independently of its location in the system. The only way to do this is to give network users the freedom to book entry and exit capacity independently, thereby creating gas transport through zones instead of along contractual paths. The preference for entry-exit systems to facilitate the development of competition was already expressed by most stakeholders at the 6th Madrid Forum⁹.”

This shows the preference among the stakeholders for adopting entry-exit systems and reducing the number of balancing zones. Promoting gas trade independently of its location has a significant impact on infrastructure development and the volume of investment.

Eliminating congestion

Enlarging balancing zones requires eliminating most of the physical congestion in the market in order to make it possible to have multi-directional gas flows within the system. This would require more transportation capacity (pipelines, compressors) as the predictability of injections, both in terms of volume and origin, would be reduced compared to a point-to-point scheme. It is also necessary to develop cross-border gas trade with a high level of security.

2.5 Diversity of investment processes in Member States

There are wide-ranging investment decision making processes among EU Member States, from central planning to market-based approaches (see Appendices). The variety of different systems and regulatory approaches to network development relate to the identification of needed infrastructure and additional capacity, the way projects are accepted and how new investments are remunerated and included in the regulated asset basis. These differences have an impact on the status of investment plans at a European level as such plans must be compatible with the current and future national/regional procedures.

Based on the information provided by the regulators, this section illustrates the differences between national frameworks.

The differences existing between investment processes are the result of various parameters related to system maturity, the structure of markets (liquid versus concentrated) and the legal tradition.

In Spain, where gas demand has been rapidly increasing over the past years, infrastructure development follows a planning process developed by the Ministry of Industry, with the cooperation of the Regional Authorities and all the agents operating in the Spanish gas market (LNG operators, TSOs, Distribution System Operators (DSOs), shippers, traders, retailers, and consumer associations). The process includes several public consultations. At a subsequent stage, CNE (the Spanish Energy Regulator) analyses the proposal, and the 10-year new investment plan is approved at a final stage by the Government. The plan is

⁸ Cf. page 3 of the Position of the European Parliament (Ref. EP-PE_TC1-COD(2007)0199) and page 6 of the Draft common position of the Council amending Regulation (EC) No 1775/2005 (Ref. ENER 225 CODEC 9522007/0199 (COD))

⁹ http://ec.europa.eu/energy/gas_electricity/forum_gas_madrid_en.htm

mandatory for major facilities. Several criteria are considered in the development of the plan, including security of supply requirements (i.e. the system is designed with 10% extra entry capacity above the estimated needed capacity). CNE produces a monitoring report every 6 months and surveys possible delays in infrastructure construction. The plan is reviewed every 4 years. Annually a sub-plan is approved for the infrastructure investments contained within the 10-year investment plan which are planned for construction during the following year.

In Great Britain (GB), the system relies on the market and provides sufficient incentives for the TSO to optimise investments. The regulatory framework (Transmission Price Control Review) is based on the RPI – X¹⁰ formula, which provides incentive for the TSO to deliver the required outputs at lower costs than forecasted by the regulator. Ofgem (the energy regulator in GB) set capital expenditure allowances and regulatory asset value for the next price control period. If Ofgem considers that a new investment was inefficient or unnecessary, it could exclude the investment for the regulatory asset value of the next price control period.

The GB system also distinguishes between baseline capacity (which reflects the current demand for network capacity and which sets the volume of capacity that National Grid is obliged to make available for sale to network users) and incremental capacity.

Long-term capacity auctions are used to obtain financial commitments from network users to back up their demand for incremental capacity. This approach provides appropriate investment incentives for National Grid to undertake investment in a timely and efficient manner. It also provides signals regarding network users' future capacity demands backed by their own financial commitment. National Grid produces a ten year statement (among other documents) which is not approved by Ofgem. It represents the basis on which the incremental capacity investment will take place.

In the same manner, central investment planning in gas does not exist **in Germany**. The regulatory framework that will be implemented from 1 January 2009 in Germany will also be a form of incentive based regulation, where BNetzA (the energy regulator in Germany) will approve the network operator's revenues for the following regulatory period. Companies have the opportunity to outperform the targets set by the regulators by increasing their efficiency. BNetzA approves investment budgets to mitigate risks related to scenarios on which investment decisions are made. These approved budgets are assigned to specific projects aimed at resolving weaknesses and achieving network development targets. There is no legal obligation for network operators to publish individual plans.

In Italy, the main TSO (Snam Rete Gas (SRG)) publishes a document summarising the main financial results of the previous year and a concise scenario on the European and Italian gas market outlook, as well as provisions of capital expenditures. SRG also provides AEEG (the Italian energy regulator) with a confidential 4-year investment plan relating to investments for transport and connections to LNG terminals, on an annual basis. This is required to provide the regulator with evidence of the incurred investment costs, expecting such costs to be recovered by the tariffs.

The Austrian and the French TSOs prepare long-term investment plans.

In Austria, AGGM (the Austrian Independent System Operator (ISO) that manages all domestic transmission capacity) is obliged to prepare a five-year investment plan on an annual basis. The planning process begins with the collection of data, which market

¹⁰ RPI-X is an incentive based form of regulation, where annual allowances are allowed to increase by inflation – the Retail Price Index (RPI) less an "efficiency factor" (X).

participants are obliged to provide. AGGM analyses network loads, develops proposals for congestion management and thereafter draws up an application for approval of the plan by the Energy Control Commission. AGGM is entitled to conclude appropriate network expansion agreements with the system operators concerned on the basis of this approval in order to enable action to be taken. If a TSO refuses to complete an approved expansion step, AGGM must issue a request for tenders to find a third-party to make the necessary investment.

In France, in accordance with Article 21 of law 2003-08 of January 3, 2003 amended by law 2006-1537 of December 7, 2006, the two TSOs (GRTgaz and TIGF) investment programmes are submitted annually to CRE (the French energy regulator). 10-year investment programmes are published by the TSO on a yearly basis. GRT-gaz' 10-year investment plan (which covers 80% of the French natural gas demand) describes the main features of the network as well as the essential factors used in designing capacity levels. It presents forecasts concerning the transport environment in Europe and in France. The report describes plans for development and reinforcement in order to meet the market capacity requirements.

These different national investment processes lead to divergent approaches to investment issues, which are closely linked to the characteristics of the gas market in different Member States. The explosive growth of Spanish gas demand has led to a need to build more capacity than initially required (over dimensioning of the projects). The Spanish approach to investment planning is centralized and political authorities are heavily involved in investment planning. At the other end of the spectrum, the GB system remains completely reliant on the market with an ex-post evaluation by the regulator.

As a result, these differences have important consequences in defining the scope and status of the European 10-year gas network development plan. For instance, the GB system is neither compatible with an approval of the investment plan by the regulator, nor with a binding approach of the investments presented in the plan. Indeed, the TSO retains the responsibility to optimise investments.

3 ERGEG recommendations on the EU 10-year gas network development plan

Investment plans are based on demand and supply evolution, identification of congestion points on the network, security of supply needs and the long-term investment in network infrastructure to meet demand, resolve congestion and ensure security of supply. They therefore deal with uncertainty and long-term issues. Thus, ERGEG's primary emphasis in drafting recommendations will be on **the structure of the plan and overriding principles for assessing investment needs, as well as on roles and responsibilities of ENTSOG and other relevant Stakeholders, e.g. LNG System Operators and Storage System Operators.**

3.1 Scope and objectives of the EU 10-year gas network development plan

The 10-year gas network development plan will be developed by ENTSOG. Its scope shall include investments of a broader European dimension requiring a high level of coordination between two or more TSOs. As a general rule, all investments that have a potential impact

on adjacent networks and on the development of the European network should be included. The plan should include both regulated and non-regulated (exempted) investments and should include a simulation of disruption of major EU supply sources.

According to the proposal amending Regulation No 1775/2005, Article 2c (5) ((COM(2007)0532 – C6-0319/2007 – 2007/0199(COD)): “The investment plan shall include the modelling of the integrated network, taking into account storage and LNG facilities, scenario development, a supply and demand adequacy report and an assessment of the resilience of the system. The investment plan, shall in particular, build on national investment plans taking into account regional and Community aspects of network planning including the Guidelines for Trans-European Energy Networks in accordance with Decision No 1364/2006/EC of the European Parliament and of the Council. The investment plan shall identify investment gaps, notably with respect to cross border capacities, and shall include investments in interconnection, in particular, and as a priority, connections between 'energy islands' and gas networks in the EU and investments in other infrastructure necessary for effective trading, competition and security of supply. A review of barriers to the increase of cross-border capacity of the network arising from different approval procedures or practices shall be annexed to the investment plan. The transmission system operators shall implement the published investment plan”.

10-year gas network development plans must be driven by the goal of developing competition and ensuring security of supply. The following objectives can be defined:

- Developing and maintaining capacity according to demand and supply evolution, particularly from the electricity sector, and to new supply, LNG and storage facilities; and
- Eliminating physical congestion where it is considered to excessively hinder the development of cross-border trade.

10-year gas network development plans must address the impact of new entry points, whether or not they are exempted from TPA access, the development of interconnections and the connection of storage and LNG facilities. Furthermore, it is necessary to consider the technical and economic feasibility of expansion projects, as well as an assessment of the resilience of the system.

The investment plan should not cover secondary transmission networks¹¹ and investments linked to security of operation or environmental purposes, which TSOs must carry out in any case. Regional transmission networks could be covered by the regional investment plans as foreseen in Art. 2h Regulation 1775/2005.

3.2 Roles and responsibilities of ENTSOG

EREGG considers that ENTSOG shall publish an EU-wide 10-year gas infrastructure investment plan every two years, in accordance with the proposed amendment to Regulation (EC) No 1775/2005 (COM(2007) 532)) (Article 2c).

In carrying out this task, the ENTSOG shall consult with all relevant natural gas undertakings, without limitation - TSOs, suppliers, producers, traders, storage system operators, DSOs and LNG system operators. The stakeholders should within a reasonable period, make available

¹¹ Secondary transmission networks are a set of high-pressure transport facilities that allow for the transmission of gas from the main network to consumers and distribution networks that are not directly connected to the main network.

to ENTSOG, upon written request, the data required for drawing up the 10-year gas network development plan, especially with regard to assessing existing and potential capacity bottlenecks. Stakeholders shall provide the requested data to ENTSOG according to their legal obligations.

The investment plan must include the modelling of the integrated network, taking into account Storage and LNG facilities, scenario development, a supply and demand adequacy report and an assessment of the resilience of the system. The plan must also include a simulation of disruption of major EU supply sources.

3.3 Methodology for drafting the EU 10-year gas network development plan

The EU 10-year gas network development plan will be built upon, influence, and be influenced by the national and regional investment plans. It shall combine bottom-up and top-down approaches.

Top-down approach

Regarding the top-down approach, ENTSOG should provide TSOs with information on the main cross-border issues to be resolved, including priority projects identified in the Guidelines for Trans-European Energy Networks. The goal of the top-down approach is to build a broad vision of the European dynamics and the congestion points which need to be eliminated as a priority, assess the main gas flows and give recommendations for the integration of national markets and for diversifying current gas supplies. This approach should take into account gas demand and supply scenarios and the modeling of the integrated network.

These recommendations will be a key input for drafting the national and regional investment plans¹², emphasizing priorities at the EU level.

Bottom-up approach

Regarding the bottom-up approach, the following steps are to be considered:

- reporting procedures at TSO levels based on dialogue with all relevant stakeholders;
- joint assessment of investment needs by adjacent TSOs, with the consultation of the market; and
- a synthesis carried out by ENTSOG.

These downstream plans will provide a basis for the ENTSOG 10-year gas network development plan.

3.4 Coherence between national, regional and EU-wide investment plans

It is necessary to have compatible investment plans at a national level to ensure coherence between the national, regional and EU-wide plans. National reports should have a compatible structure and follow the same principles as the EU-wide 10-year gas network development plan. National reports must identify infrastructure needs with a wider

¹² Regional investment plans figure among the requirements of the 3rd Package (Article 12, Gas Regulation, Council Common Position).

importance for the EU or for the European regions; they should include market information and demand trends, which are influenced not only by European energy policies but also by specific national contexts. The TSOs investment plans must be coordinated and have the same structure to facilitate comparisons and synthesis at the ENTSOG level. Data requested by ENTSOG to prepare the EU-wide investment plan should be included in national investment plans, which should take into account information and comments from market participants.

According to the 3rd Package (first reading of the Parliament and common position of the Council), each NRA should examine whether the 10-year gas network development plan is consistent with the Community-wide 10-year gas network development plan. If any doubt arises as to the consistency with the latter, the NRA must consult the Agency and may require the TSO to amend its plan.

As a result, national investment plans shall be taken into consideration in the preparation of the EU-wide investment plan. Nevertheless, the latter shall not be a consolidated version of all national plans. National reports will help to identify investment needs with EU-wide importance and will support ENTSOG in preparing the EU-wide 10-year gas network development plans.

3.5 Stakeholder involvement and consultation

In order to draw up the 10-year gas network development plan and assess the existing and potential capacity bottlenecks, it is necessary that upon written request, all relevant natural gas undertakings, including TSOs, LNG system operators, storage system operators, DSOs, supply undertakings, traders and producers make available to the ENTSOG, within a reasonable period of time, the data required, especially in relation to regulated investments. **For this purpose, stakeholders will be required to complete a questionnaire prepared by ENTSOG. This questionnaire shall include their expected investment projects and their need for transportation across the European market.**

It is also necessary to establish a dialogue with market participants on national and regional levels. The consultation of the market may take different forms. For instance, market participants shall announce investment projects including technical characteristics, target market and expected timing as well as the assessment of the impact on the network by TSOs and ENTSOG.

Consultation process

The consultation process should be developed on national and cross-border levels. A first level of consultation should be organised on the national level, on national 10-year gas network development plans.

In the first phase, stakeholders will have to express their needs for transportation capacity on national and cross-border levels. This information will be included in the drafting of national and regional plans. On a local level, the consultation process may be conducted by the NRA or by the TSO, under NRA oversight.

According to the 3rd Package (Directive amendment):

- TSOs shall consult the relevant stakeholders in order to provide the data required for drawing up the 10-year gas network development plan;

- After submitting the 10-year gas network development plan to the NRA, the latter shall consult all actual or potential users in an open and transparent manner. The NRA shall publish the result of the consultation process; and
- The NRA may require the TSO to amend its plan.

Consultation process for the EU-wide 10-year gas network development plan

The EU 10-year gas network development plan will be based on these national plans and circulated among the representatives of traders, shippers, gas suppliers, customers and other relevant Stakeholders. The plan may be discussed within the Madrid Forum and among representative organisations, such as DG TREN and DG COMP.

3.6 Content of the EU 10-year gas network development plan

The 10-year gas network development plan must give as reliable a picture as possible of the European gas market and the evolution of infrastructure needs. The objective is to provide visibility to the stakeholders, TSOs, regulators and governments. The 10-year gas network development plan also aims to help making investment decisions in a timely manner and coordinating adjacent TSOs for cross-border infrastructure development, even if the investment process may be managed at a regional or national level. All the main issues related to demand, supply, market participants' strategies and projects must be integrated. The uncertainty of the gas market dynamics must also be discussed, assessing, when possible, the probability of occurrences of different events.

The 10-year gas network development plan shall identify congestion at cross-border entry-exit points as well as internal bottlenecks that have/may have an impact on cross-border systems.

The EU 10-year gas network development plan must be focused on the following axes:

- development of entry points into the European market;
- removal of internal bottlenecks and development of interconnection between Member States;
- development of exit points (notably storage facility connections); and
- security of supply and solidarity mechanisms among countries.

1. Scenarios development: provide a picture of worldwide and EU gas demand and supply trends

Long-term forecasts are at the heart of the 10-year gas network development plan. ENTSOG must therefore develop supply and demand scenarios providing a picture of the possible development of the European gas market. The views of all natural gas undertakings, including, without limitation, TSOs, LNG System Operators, Storage System Operators, DSOs, supply undertakings, traders, producers and large consumers (electricity producers) should be taken into account to develop adequate scenarios. In the case of LNG System Operators, Storage System Operators as well as TSOs it is necessary that, at a national level, all the individual Stakeholders are included in the development of scenarios. Upon written request, stakeholders must submit the required data to ENTSOG within a reasonable

period of time, especially with regard to assessing existing and potential capacity bottlenecks. In general it is necessary that the assumptions taken to develop scenarios are coherent throughout Europe.

Scenarios should be developed to estimate demand evolution in Europe:

- a reference case, “business as usual” based on evidence from market dynamics; and
- alternative scenarios (low/high demand/supply and dynamic market).

The two scenarios should include security of supply simulations.

Scenarios must clearly address the following items:

- gas price dynamics;
- upstream gas availability for the European market;
- evolution of the fuel mix at national, European and worldwide levels;
- development of storage and LNG facilities;
- technical and economical feasibility of expansion projects; and
- impact of energy policies and climate change mitigation on gas consumption.

Particular attention should be paid to the evolution of the electricity system: planned production development and competition between natural gas and alternative fuels. Scenarios developed in the electricity sector should be carefully monitored and integrated in ENTSOG forecasts.

The European Commission (DG TREN) regularly publishes long-term energy scenarios (Primes¹³ every two years). For consistency, it is recommended to refer to DG TREN scenarios, including an ad-hoc analysis and critical comments by ENTSOG and the Agency.

2. Description and analysis of the functioning of the integrated network

This section should:

- **Provide a map of existing and decided infrastructure** (both regulated and not), including interconnections with LNG terminals, adjacent transmission operators, and storage facilities.

ENTSOG should publish capacity information at all the interconnection points, based on information to be published by TSOs in fulfilment of transparency requirements:

- nominal transportation capacity;
- rate of use on an annual and monthly basis;
- level of booking by shippers and duration of allocation;
- additional capacity decided to be developed.

Main transit routes across the European system should also be presented, providing a clear picture of the dominant gas movements in order to identify the need for cross-border development of the network.

¹³ Although Primes is not sufficiently detailed and does not take into account peak demand, it provides a useful view of the long-term gas dynamics at a national and European level.

- **Identify physical congestion, particularly at cross-border level, that will result from EU demand and supply trends;**

The investment plan shall identify capacity gaps. For that purpose, a model should be used to proceed to a dynamic analysis of gas flows and simulations taking into account:

- investments to increase or maintain capacity levels on high pressure transmission networks (at entry and exit points as well as inside the network);
- investments in conversion facilities;
- storage and LNG facilities and other major consumption points (including CCGT projects) because these facilities will have a significant impact on transmission capacity demand; and
- security of supply parameters and possible solidarity mechanisms.

The model should be capable of simulating the utilisation of all major European gas-infrastructure (pipelines, LNG terminals, storage facilities) under the employed scenarios. Based on the model-based analysis of the infrastructure projects, ENTSOG shall interpret the data provided by the model to evaluate potential bottlenecks and the resulting lack of market integration under the identified scenarios. The model shall be a European gas infrastructure model which is able to evaluate infrastructure projects within the framework of complex systems.

A description of the model itself, as well as the employed assumptions and scenarios, must be provided in an Annex to the 10-year gas network development plan. To ensure consistency between national, regional and Community-wide 10-year gas network development plans, compatible assumptions and modelling must be used for all three types of 10-year gas network development plans. The Agency needs to be involved in the modelling method of the integrated network from the outset.

- **Include a summary of investment plans as well as investment gaps drafted at national level and of any additional input submitted through the GRIs;**

Supply and demand adequacy report

The 10-year gas network development plan must analyse whether the transmission network, enhanced by the proposed investment projects, is sufficient to satisfy a changed demand/supply situation according to the developed scenarios.

3. Technical and economic description of the projects

This section shall present a technical and economic description of the potential and planned projects, focusing on the following details:

- technical aspects (e.g. transport capacity, date of operation, number of compressor stations, length of the pipeline, operational availability);
- cost components (capital value);

- risks for timely implementation (inter-dependence with other infrastructure projects, route, environmental impacts, how does the project react to, e.g. expansion steps or changes in demand and supply situations); and
- contribution to security of supply and solidarity mechanisms.

Identification of alternative projects

The 10-year gas network development plan should, as far as possible, identify alternative solutions for fulfilling the transportation needs of the market and help select the most efficient option.

In order for regulators, investors and market participants to assess alternative projects, the 10-year gas network development plan should describe, in as much detail as possible, the alternative routes, e. g. by indicating their possible course. The plan may indicate the status of investment decisions, where this information is available. Information on specific aspects of projects (e.g. project costs, implementation risks, possibilities of expansion, environmental impact) should be appropriately detailed.

4. Implementation monitoring report to be included in the 10-year gas network development plan

A monitoring report should be included in the 10-year gas network development plan to identify any deviations from the precedent plan. Any known reasons for such deviations should also be explained in the report. The report should provide an update on delays affecting any investment included in the plan. Furthermore, it is necessary that TSOs provide reasons for not proceeding with certain investments.

4 Roadmap, timing and milestones

10-year gas network development plans will be published every 2 years by ENTSOG. The drafting process should include:

- development of a Ten Year Investment Plan methodology statement by TSOs;
- publication of long-term forecasts and statistics; a map of existing networks and information on capacity use;
- drafting process by TSOs of national 10-year gas network development plans: According to the current 3rd Package proposals, TSOs shall submit to their NRA every year a national 10-year gas network development plan, based on existing and forecast supply and demand. ENTSOG must check that the national and regional 10-year gas network development plans are compatible with each other. These plans must also be coherent with the structure of the EU 10-year gas network development plan to guarantee comparability;
- NRAs shall consult all the relevant stakeholders. The plan shall contain efficient measures in order to guarantee the adequacy of the system and the security of supply;
- stakeholders will provide all necessary data to the ENTSOG for the EU-wide 10-year gas network development plan;

- synthesis process by ENTSOG including:
 - overview of the existing, decided and planned entry points into the European market (new entry points or extensions);
 - planned investments to remove bottlenecks and develop interconnection points between Member States; and
 - planned exit capacity on the basis of the forecasted demand.
- Final preparation of the 10-year gas network development plan.

Annex - Questions for stakeholders

ERGEG welcome respondents' views on suggested approach, in particular views on:

- What would be for you the benefits of the 10-year gas network development plan?
- What is the most important information you expect from the 10-year gas network development plan?
- Do you consider that the 10-year gas network development plan, as proposed by ERGEG, will be beneficial to security of supply?
- Do you consider that the scope proposed by ERGEG is appropriate? Should it be enlarged?
- Do you agree with the combined bottom-up / top down methodology proposed in the document? What would be the most efficient process to achieve the top down approach?
- Would you agree with putting an obligation on market participants to communicate all the relevant information about their future projects?
- What would be the best way for ENTSOG (including its members) to collect data from stakeholders? Should that be carried out at a national, regional or European level?
- Are the scenarios mentioned appropriate? Would you have other proposals?
- What are your views on the proposed EU network modelling and simulation of supply disruption?
- Do you consider the drafting methodology and content relevant? In your view, should ERGEG be more or less prescriptive?
- Do you consider it important to have a monitoring report assessing and explaining deviations from the previous plan?
- Is the consultation procedure for the EU-wide 10-year gas network development plan proposed in section 3.5 appropriate?