



10-year network development plan for gas Final EREGG Recommendations

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Executive summary

According to the 3rd Package, ENTSOG shall adopt a non-binding Community-wide ten-year network development plan (TYNDP) every two years. The Agency for the Cooperation of Energy Regulators (Agency) shall provide a duly reasoned opinion, as well as recommendations on the draft Community-wide TYNDP. The Agency shall also monitor its implementation and check its consistency with national network development plans.

In order to help prepare these future requirements of the Agency, ERGEG has elaborated recommendations in accordance with the legislative requirements. They develop advice regarding the scope, objectives and the drafting methodology. They give some guidance on the contents of the Community-wide TYNDP and its coherence with national and regional investment plans.

These recommendations are based on a regular dialogue with ENTSOG and other stakeholders. They include the findings of the consultation launched in March-May 2009 and the discussions during the three workshops organised in coordination with GTE+/ENTSOG. They also consider the results of the study commissioned by ERGEG modelling various demand and supply scenarios¹.

ERGEG recommendations

The Community-wide TYNDP, as defined by the 3rd Package, should provide clear evidence of infrastructure development needs for the whole European Union. If effectively developed, this plan should increase transparency for all market participants and to facilitate the identification of infrastructure gaps and concrete investment projects across Europe. The Community-wide TYNDP will hence be a tool for market integration and for security of supply. This document clarifies also the roles of the stakeholders in the drafting process of the Community-wide TYNDP. All relevant market participants will be requested by ENTSOG to provide some inputs at an early stage of the process.

The coherence of the Community-wide TYNDP should be guaranteed by the combination of bottom-up and top-down approaches. The bottom-up approach shall consist in national plans which will constitute the basis of the Community-wide TYNDP, as well as all the processes of dialogue and consultation at a national level. The top-down process shall ensure the consistency of the Community-wide TYNDP by developing guidelines for data collection at a national level, identifying agreed gas trends and scenarios and developing a methodology for harmonization of data and planning assumptions at an EU level. ENTSOG should in particular elaborate recommendations to take into account security of supply and define the Community-wide scenarios on supply and demand.

Concerning the contents, the Community-wide TYNDP should include detailed description of existing and planned infrastructure for transmission projects and also details for other types of infrastructures (LNG terminals, storage facilities, production projects, import pipelines). The TYNDP should provide maps presenting existing and planned facilities; it should present the main transit routes across the European system and identify bottlenecks and physical congestions particularly at a cross border level.

¹ "Model-based analysis of infrastructure projects and market integration in Europe with special focus on security of supply scenarios", ERGEG consultancy study – EWI Institute of Energy Economics at the University of Cologne, May 2010, available at: http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_ERGEG_PAPERS/Gas/2010/EWI_Study_17062010.pdf

The Community-wide TYNDP shall include supply and demand scenarios providing a picture of foreseeable developments of the European gas market. The underlying assumptions for each scenario and data sources shall be clearly presented and discussed with stakeholders.

ENTSOG shall also develop a model based simulation of the EU network in order to assess the resilience of the EU gas system and its evolution regarding the supply/demand scenarios and investment projects. The network modelling and scenarios for the simulation of supply disruption should be developed by ENTSOG in consultation with the stakeholders and consistently with the Gas Coordination Group.

The TYNDP shall conclude on a monitoring report explaining potential deviations from the previous plan, especially for investments supposed to be executed within the following three years.

1 Introduction

The 3rd Package adopted in 2009 will enter into force on March 3, 2011. This new legislative package, which includes two directives and three regulations, aims at deepening market integration by developing more harmonisation among national regulatory frameworks and improving interconnections. In addition to the creation of European network codes, the 3rd package requires a regular publication of Community-wide ten-year network development plans (TYNDP). The purpose is to facilitate infrastructure development and market integration, as well as strengthening security of supply by providing a consistent picture of EU gas dynamics and identifying where investments are needed.

According to the Article 8 of the Regulation (EC) n°715/2009 on conditions for access to the natural gas transmission networks, the European Network of Transmission System Operators for Gas (ENTSOG) shall adopt a non binding Community-wide TNYDP every two years. This plan shall include the modelling of the integrated network, scenario development, a European supply adequacy outlook and an assessment of the resilience of the system.

The Agency will play an important role in the elaboration process of the Community-wide TYNDP. In Article 9, the Regulation states that ENTSOG shall submit the draft TYNDP, including information regarding the consultation process to the Agency for its opinion. The Agency will have to “provide a duly reasoned opinion as well as recommendations”. The Agency will also have to assess the consistency between national plans and the EU wide 10 YNDP (Article 8-11).

Preparing the future work of the Agency, ERGEG started working on this topic in 2008 and developed regular relations with GTE+/ENTSOG when drafting their first TYNDP. The first version of “ERGEG recommendations on the 10-year network development plan” was published in March 2009 and submitted to a public consultation. The “Evaluation of responses” paper was published in November 2009. ERGEG also organised three stakeholder workshops² in coordination with GTE+/ENTSOG to discuss the proposed orientations and methodology issues.

ERGEG investigations showed that there is a wide range of processes for investment decision-making among EU Member States, from central planning to market-based approaches. The differences between investment processes are the result of various parameters related to system maturity, the structure of markets (liquid versus concentrated), the regulatory culture, etc. In addition, gas infrastructure investments are mainly long term and of huge financial value and particularly sensitive to uncertainty.

The present document is a revised version of 2009 ERGEG recommendations based on the results and findings of the consultation and the various discussions with stakeholders. It also builds upon the lessons learned from the 2009 ENTSOG TYNDP and the scenario modelling study³ commissioned by ERGEG. In particular, it appeared that, at least for the early versions, the elaboration of the plan will be a learning-by-doing process.

²http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_CONSULT/CLOSED%20PUBLIC%20CONSULTATIONS/GAS/E09-PC-37/Tab2

³ “Model-based analysis of infrastructure projects and market integration in Europe with special focus on security of supply scenarios”, ERGEG consultancy study – EWI Institute of Energy Economics at the University of Cologne, May 2010

Starting from the legal context and EREGEG expectations, this document focuses on the scope and objectives of the plan, the roles and responsibilities of all parties involved and gives some recommendations on the methodology and contents of the plan.

2 Legal background and justification

From the early stages of the preparation of the 3rd Package, investment planning was considered as a priority for an effective coordination of Transmission System Operators (TSOs). The elaboration of the Community-wide TYNDP includes different principles which have to be consistent with other regulatory developments: the project for a new regulation on gas security of supply and the project for a new regulation on the notification of investments in energy infrastructures. This gives the TYNDP a particular importance in the current European energy context where market integration and security of supply are obvious priorities.

The proposal for a Regulation of the European Parliament and of the Council concerning measures to safeguard security of supply⁴ stresses in its recitals 9 and 10 the importance of developing sufficient investments for securing gas supplies and tackling supply interruptions. It states that investments in new gas infrastructure should be strongly promoted and should enhance the security of gas supply while ensuring the proper functioning of the internal market in natural gas. Furthermore, it establishes that, where an infrastructure investment is of cross-border nature, the Agency and ENTSOG should be closely involved in order to take account cross-border implications.

The project for a Council Regulation concerning the notification to the Commission of investment projects in energy infrastructure within the European Community⁵ states that the new energy context requires significant investment in infrastructure in all energy sectors, and that greater attention should be paid to investment in energy infrastructure in the Community, in particular with a view to anticipating problems, promoting best practices and establishing greater transparency on the future development of the energy system in the Community (recitals 4 and 5).

Following to the Second Strategic Energy Review, the European Commission announced the publication of the Energy Infrastructure Package in November 2010. Focusing on the six priority infrastructure actions identified in the Second Strategic Energy Review, this Package aims at identifying the issues that prevent energy infrastructure in and towards the EU from being built and proposing solutions to tackle those difficulties. The Community-wide TYNDP will be a valuable input for this Energy Infrastructure Package, by providing clear indications for gas infrastructure development needs for the whole European Union.

These regulatory developments represent the prospective exercise of the future European transmission network and its adequacy for supplying demand, the risk mitigation in securing supplies in normal and emergency situations, the monitoring of the development of new investments in gas infrastructure and finally the identification of investment needs for the coming decade and beyond (2020-2030).

⁴ (2009/0108 (COD))

⁵ (2009/0106 (CNS))

2.1 Network development plans in the 3rd Package

The Directive 2009/73/EC concerning common rules for the internal market in natural gas, the Regulation (EC) n°715/2009 on conditions for access to the natural gas transmission networks and the Regulation (EC) No 713/2009 establishing an Agency for the Cooperation of Energy Regulators set up the elaboration of investment plans by TSOs at different geographical scales, namely Community-wide, regional and national.

- According to Article 8 of Regulation (EC) n°715/2009, “*ENTSOG shall adopt and publish a non-binding Community-wide TYNDP every two years. The Community-wide TYNDP shall include the modelling of the integrated network, scenario development, a European supply adequacy outlook and an assessment of the resilience of the system*”. In article 10, it states that, for carrying it out, ENTSOG shall conduct a consultation process involving all relevant market participants.
- According to the Article 12 of the same Regulation, TSOs shall establish regional cooperation within ENTSOG, to contribute to ENTSOG tasks. “*In particular, they shall publish a regional investment plan every two years, and may take investment decisions based on that regional investment plan.*”
- The Directive 2009/73/EC foresees the development of national and individual investment plans by TSOs under the Independent Transmission Operator (ITO) model (Article 22).

Concerning individual TSO plans, different provisions and obligations apply according to the unbundling model chosen by the Member State:

- In case the Member State chooses the Independent System Operator (ISO) model, the ISO has “*to comply with a ten-year network development plan monitored by the regulatory authority*” (Article 14 of Directive 2009/73/EC). Section 4 of this article specifies that each ISO shall be responsible, among other tasks, for “*operating maintaining and developing the transmission system, as well as for ensuring the long-term ability of the system to meet reasonable demand through investment planning. (...) The ISO shall be responsible for planning (including authorisation procedure), construction and commissioning of the new infrastructure, acting as a TSO in accordance with this Chapter.*”
- For Member States applying the Independent Transmission Operator (ITO) model for their TSOs, the Article 22 of Directive 2009/73/EC establishes that TSOs shall submit every year to the regulatory authority a ten-year network development plan based on existing and forecast supply and demand, after having consulted all the relevant stakeholders, containing efficient measures in order to guarantee the adequacy of the system and the security of supply. This article requires National Regulatory Authorities (NRAs) to consult all actual or potential network users on the ten-year development plan in an open and transparent manner, and publish the results of this consultation process; examine whether the ten-year network development plan covers all investment needs identified during the consultation process and whether it is consistent with the Community-wide TYNDP, allowing NRA to require the TSO to amend its plan; and monitor and evaluate the implementation of the ten-year network development plan. Furthermore, according to the article, in circumstances where the TSO does not execute an investment, which, according to the ten-year network development plan, was supposed to be executed in the following three years, Members States shall ensure that the NRA has the obligation to take several measures to ensure that the investment is realised.

- In case the Member States chooses the ownership unbundling option, the Directive does not specify any obligation for the concerned TSO to publish a network development plan, but they are obliged to cooperate with ENTSOG.

In any case, EREGEG recommends that all TSOs, regardless their status (ownership unbundled, ISO or ITO), publish a TYNDP.

National regulators have an important role in this process: according to Article 41 (g) of Directive 2009/73/EC, they have to monitor investment plans of TSOs and provide in (their) annual report an assessment of the investment plan of the TSOs as regards their consistency with the Community-wide TYNDP. Such assessment may include recommendations to amend those investment plans.

In addition, the Article 8 of Regulation (EC) n°715/2009 refers to national ten-year network development plans without clarifying whether national plans correspond to the aggregation of individual TSOs plans when Member States have several TSOs and, if so, who will be responsible for its preparation and publication. Potential coexistence of TSOs with different status adds to the complexity of this issue. One of the possible options could be to assign this task to a specific body responsible at least for the coordination of the work.

As a conclusion, the relationship and articulation between these different plans (national, regional and European) should be defined, especially that their legal status and the obligations deriving for TSOs are not always clearly explained.

2.2 Role of the Agency regarding the Community-wide TYNDP

The Community-wide TYNDP will be a useful tool for regulators and stakeholders since it will provide a greater visibility on the long-term market dynamics. The role of the Agency in the elaboration of this plan is clearly stated in the 3rd Package. It basically consists on providing recommendations on the draft Community-wide TYNDP, monitoring its implementation and checking its consistency with national network development plans.

The role of the Agency is detailed in Article 6 (4) of Regulation (EC) n°713/2009, establishing an Agency for the Cooperation of Energy Regulators (EC), and Article 9 (2) of the Regulation (EC) n°715/2009. The Agency shall *“provide a duly reasoned opinion, as well as recommendations to the ENTSOG, the European Parliament, the Council and the Commission, where it considers that (...) the draft Community-wide TYNDP does not contribute to non-discrimination, effective competition and the efficient functioning of the market or a sufficient level of cross-border interconnection open to third-party access.”* The Article 9(2) of the Regulation n°715/2009 specifies that the Agency will have two months from the day of receipt to provide *“a duly reasoned opinion as well as recommendations”* to ENTSOG and the Commission.

The role of the Agency is also mentioned in the Gas Regulation (EC) n°715/2009 (Article 8), which establishes that it *“shall review national ten-year network development plans to assess their consistency with the Community-wide TYNDP”*. If it identifies some inconsistencies, the Agency shall recommend amending the national plan or the Community-wide plan as appropriate. If such national plan is elaborated in accordance with Article 22 of Directive 2009/73/EC (ITO model), the Agency shall recommend that the competent national regulatory authority amend the national ten-year network development plan in accordance with Article 22(7) of that Directive and inform the Commission thereof.

Furthermore, the Recital 14 of the Regulation (EC) n°713/2009 states that *“the Agency should contribute to the implementation of the guidelines on trans-European energy networks (TEN-E projects, as laid down 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) in particular when providing its opinion on the non-binding Community-wide TYNDP.”*

According to the Article 6 (8) of Regulation (EC) No 713/2009, the Agency shall also monitor the implementation of the Community-wide TYNDP. *“If the Agency identifies inconsistencies between this plan and its implementation, it shall investigate the reasons for those inconsistencies and make recommendations to TSOs, NRAs or other competent bodies concerned with a view to implementing the investments in accordance with the Community-wide TYNDP.”*

3 Findings from ERGEG and ENTSOG work on TYNDP

3.1 Findings from ERGEG consultation and workshops

Preparing the future involvement of the Agency in the Community-wide TYNDP, ERGEG started to work on recommendations from 2008 and published a first version of “ERGEG recommendations on the 10-year network development plan” on 25th March, 2009. This document was submitted for a public consultation. The aim was to discuss with stakeholders their expectations of the TYNDP. ERGEG presented these recommendations and the results of the public consultation during three workshops organised in collaboration with GTE+⁶. These workshops gathered most of the stakeholders and benefited from the participation of representatives from the European Commission.

The main results from the analysis of the responses received to the consultation and from the workshops are the following⁷:

- The core expectations from the market of the Community-wide TYNDP are the contribution to improve transparency, market integration and security of supply at an EU level. A common view is shared on the overall aim of the Community-wide TYNDP to identify where infrastructure is required and encourage necessary investments. Furthermore, the stakeholders expect that the plan contributes to the development of a shared vision of EU gas dynamics and gas system functioning, as well as their evolution. Beyond the information on infrastructure developments, expectations about supply and demand are very high, both from suppliers and big consumers. However, while the TYNDP has to contribute to completing the single energy market, some stakeholders underlined that the plan should not introduce undue distortions in the competition among non-regulated or import projects. The Community-wide TYNDP should not formally influence market dynamics but essentially contribute to developing a sound investment climate. For ERGEG, the plan should focus on the development of infrastructure within the evolution of the gas market (supply, demand, imports, etc.), informing about progress of other private initiatives.
- Respondents have a predominant positive impression of the potential impact of the plan on security of supply. Stakeholders stressed that investment in principle should be market driven and addressing security of supply should not be detrimental to this market driven investment. The Community-wide TYNDP will identify investments required for coping with supply disruptions and physical bottlenecks according to network simulations. Many stakeholders also considered that this work would have to be coordinated with the activities of the Gas Coordination Group, within the framework of the future regulation on security of supply.

⁶ These workshops were organised in Brussels on 29th April, 27th October 2009 and 26 January 2010. All presentations are available on ERGEG website <http://www.energy-regulators.eu/>

⁷ For more details, see the original document: “ERGEG recommendations on the 10-year network development plan: Evaluation of Responses”, published on 11 November 2009.

- The scope defined by ERGEG, based on the Regulation (EC) 715/2009, is largely supported in the consultation. The Community-wide TYNDP shall include an integrated modeling of the EU gas network. ERGEG considers also that the scope must include projects such as LNG terminals and storage facilities, since they have an impact on cross border gas flows. Furthermore, according to many respondents, the Community-wide TYNDP should reflect the evidence of improved cooperation and coordination between TSOs and between regulators.
- Regarding methodology, respondents agree with the combination of the top-down and bottom-up approaches in order to have a comprehensive and consistent picture of the EU gas system. However, ERGEG recognises that ENTSOG is not in a position to arbitrate between infrastructure projects but considers it is necessary to include in the Community-wide TYNDP a technical and economic description of the projects, as well as an indication of the state of play for each project and in particular if a final investment decision (FID) has been taken.
- Many respondents consider that ENTSOG should have some flexibility to revise and adjust the drafting methodology and contents. ERGEG acknowledges that the drafting process of the Community-wide TYNDP is a learning-by-doing process. The drafting methodology and the contents have to be adapted according to the experience, while covering the provisions of the Regulation (EC) 715/2009.
- On data collection, a large majority of respondents consider that ENTSOG should collect data via individual TSOs. For ERGEG, the bulk of information shall actually be collected at a national level, but it is necessary to ensure its consistency at a cross border level and to develop a regional and a European assessment. ERGEG concludes that ENTSOG will have to carry out this task and consult the market on the final harmonised aggregated data.
- Concerning scenarios, a large number of respondents highlighted the necessity to harmonise assumptions. This request was also expressed by many stakeholders during the workshops. ERGEG supports the harmonisation of definitions and assumptions but recognises the complexity of this task. ERGEG therefore recommends selecting a small number of scenarios including one based on national forecasts and others on Community-wide models and considers that governments may be associated to the general drafting process. The assumptions should be published.
- There is a broad consensus about the relevance of including a monitoring report on the reasons for deviations between executed and planned investments in each Community-wide TYNDP.
- Regarding the consultation procedure, respondents requested a relevant balance between the consultations on national and European level. ENTSOG will consult stakeholders on the data collected as stated in Regulation (EC) 715/2009. ERGEG also recommends that ENTSOG harmonises the data and organises workshops regularly during the drafting process, as already done by GTE+/ENTSOG. ERGEG recommends in order to offer online consultations to lower the burden for stakeholders and allow a more efficient process for ENTSOG.

3.2 The network modeling project initiated by ERGEG

ERGEG has tendered, commissioned and financed the consultancy study “Model-based analysis of infrastructure projects and market integration in Europe with special focus on security of supply scenarios⁸”. The objective of the study was to have a complementary reference for the future assessment to be made by the Agency on ENTSOG’s proposal for a Community-wide TYNDP. The objective was not to replace nor interfere with ENTSOG responsibilities.

This study, carried out by EWI⁹, aimed at increasing regulators’ know-how on European infrastructure, providing ERGEG and future Agency with a tool which contributes to develop a European perspective on infrastructure needs in the coming decade, to help evaluating the GTE+/ENTSOG work on the Community-wide TYNDP.

The application used in the project is an economic-based network flow model (Transport Infrastructure for Gas with Enhanced Resolution: TIGER model) that calculates cost-optimized gas flows under a set of hypothesis and scenarios on gas prices, supply, demand and infrastructure. It assumes that the European downstream market is working efficiently, with efficient capacity management and that TSOs optimize gas flows exploiting all relevant gas swaps. The study is based on two different demand scenarios and six infrastructure and supply scenarios. The expected gas flow changes and localization of existing or potential bottlenecks were analysed under concurrent peak day demand situations and two further stress scenarios with prolonged supply disruptions, in order to evaluate physical market integration and security of supply.

The results delivered by these simulations highlight a lack of market integration and identify bottlenecks, and potential needs for investment. The final report of the study also puts the results into relation with ENTSOG’s first TYNDP, focusing on the methodology applied in both cases and some selected results. The results were consistent with the ENTSOG study.

Beyond the results of the modelling exercise, this study showed that ENTSOG should develop a tool enabling to investigate various possible evolutions of the EU gas system (scenarios). This tool should make it possible to test the impact of important projects like new import pipelines or new LNG terminals. It should also clearly highlight the evolution of cross-border flows and indicate expected potential bottlenecks. ENTSOG should therefore focus on developing a technical, infrastructure based flow model including economical parameters related to infrastructure costs, in order to efficiently address security of supply aspects and indicators for market integration within Europe.

3.3 ENTSOG first 10-year network development plan

The 1st European 10 YNDP prepared by ENTSOG has been mainly built on national development statements. It was structured in three successive phases with a workshop at the end of each phase to present the project status and the interim results of the work.

In the first phase, GTE+ published the “European Capacity Development Report”¹⁰, a capacity development report for all relevant interconnection points from 2008 to 2017. In a second phase, a stakeholder survey was conducted on a European level to obtain inputs for demand scenarios. As a result of this consultation, an analysis of demand compared with the

⁸ http://www.energy-regulators.eu/portal/page/portal/EER_HOME/EER_PUBLICATIONS/CEER_ERGEG_PAPERS/Gas

⁹ <http://www.ewi.uni-koeln.de/>

¹⁰ Published in November 2008 Ref: 08GTE+298

capacity report was published (GTE+ Demand Scenarios vs Capacity Report¹¹). Finally, ENTSOG – constituted from GTE+ on the 1st December 2009 –completed the process by adding information on supply in the third phase and published the First European Ten-Year Network Development Plan 2010-2019 on 23rd December 2009. ERGEG welcomes ENTSOG efforts during the interim period before the 3rd Package becomes applicable.

ERGEG acknowledges the important challenge, which this work has represented for GTE+/ENTSOG that have developed their plan in parallel to a process of dialogue with stakeholders. The whole drafting process has been particularly instructive for all actors involved. ERGEG would like to make the following comments on the methodology adopted by GTE+/ENTSOG :

- One of the major positive features of the process is the open dialogue ENTSOG / GTE+ has maintained with stakeholders throughout the process. This dialogue has been mainly based on bilateral meetings with stakeholders, as well as on periodic workshops where all stakeholders had the opportunity to express their expectations, suggestions and questions on the development of the plan.
- ENTSOG collected the data from a high number of sources (TSOs, ministries, project sponsors; DG TREN IEA etc). In line with its recommendations, ERGEG highlights here the necessity for ENTSOG of adopting a certain top-down harmonisation that guarantees homogeneity and coherence in the information used for the plan, as in the case of demand, where a number of divergent assumptions have been used from different sources.
- ENTSOG also experienced a lack of available data, e.g. on the development of gas production in the upstream gas area and difficulties in harmonising the data coming from a high number of providers (peak demand scenarios). Tackling these information gaps and getting the needed data will be a major challenge for future plans. The contribution from all stakeholders, in particular gas producers, would be most appreciated. This is one of the main improvements that can be made in future plans.
- ERGEG welcomes the initiative of ENTSOG to include a chapter on changes in relation to the previous plan, which constitutes a preliminary step towards a Monitoring Chapter, as recommended by ERGEG.
- ERGEG sees ENTSOG “Peak Day analysis – analysis of Potential Supply / Demand vs. Capacity” as a first attempt of performing a simulation or modelling of the European gas network and its adequacy for supplying the forecasted demand taking into account the existing and planned capacities. It is expected that this exercise will be largely improved in the next plan already.

Lessons from the first ENTSOG plan

The preparation of the first plan was a hard process where GTE+/ENTSOG had both to build a large database of existing infrastructure and combine it with demand and supply forecasts. The next step will consist in deepening the harmonisation of data to make upcoming plans even more than an aggregation of individual TSOs plans. The development of a model of the EU gas system will also be a necessary task.

For the future processes, the dialogue with stakeholders, the Commission and Member States will be a key feature. A continuous and organised framework should be adopted, based on regular multilateral meetings, as a complement to proper consultation procedures. This approach would enable completing the plan with all the necessary data and would help homogenise the considered assumptions. This will be particularly important for common work on network modelling.

¹¹ Published on 31 July 2009, Ref: 09GTE+14

4 ERGEG recommendations

The Community-wide plan as an information tool increases transparency for all market participants and facilitates identification of bottlenecks and investment gaps to transport gas across Europe. The Community-wide TNYDP should provide a consistent picture of European gas dynamics.

In this perspective, ERGEG sees the elaboration of the plan as a task of general interest which should have a collective dimension. While it is absolutely clear that ENTSOG will be responsible for the plans, it should work in close cooperation with all relevant stakeholders, including network users and gas producers/importers.

4.1 Scope and objectives of the Community-wide TYNDP

The scope of the Community-wide TYNDP to be developed by ENTSOG shall concern investments 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, on the available cross-border capacity between countries or market areas and on the development of the European network should be included. The plan should include all infrastructure projects, a supply adequacy report and a simulation of potential disruptions of major EU supply sources.

According to the Article 8(10) of Regulation No 715/2009, the Community-wide TNYDP shall include the modelling of the integrated network, scenario development, a European supply adequacy outlook and an assessment of the resilience of the system. In particular it shall , build on national investment plans, taking also into account regional plans, and including the Guidelines for Trans-European energy networks.

The Community-wide TYNDP shall address the development of interconnections and the impact of new entry points, storage and LNG facilities on the EU network. The plan shall also address the main weaknesses of the EU gas system as well as infrastructure gaps which would require investments either for security of supply or market integration purposes. The Community-wide TYNDP does not need to cover secondary transmission networks¹².

The supply adequacy outlook shall be built upon a picture of international projects and information about imports from countries external to the EU. If comprehensive and reliable information is available, investment and production plans of non-European countries should be considered.

4.2 Drafting methodology

The coherence of the Community-wide TYNDP shall be guaranteed by the combination of bottom-up and top-down approaches. The bottom-up approach shall consist in national and individual TSOs plans which will constitute the basis of the Community-wide TYNDP, as well as all the processes of dialogue and consultation at a national level. The top-down process shall ensure the consistency of the Community-wide TYNDP by developing guidelines for data collection at a national level, identifying agreed gas trends and scenarios and developing a methodology for harmonization. The transparency of the top down process will be essential for Agency work on monitoring the consistency between national, regional and Community-wide TYNDP as required by the 3rd Package.

¹² 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.

4.2.1 Top-down approach

The methodology followed by ENTSOG must guarantee the coherence of the Community-wide TYNDP regarding its structure, the level of details and its consistency with national and individual TSOs plans; they shall promote the harmonisation of planning assumptions throughout Europe. ENTSOG shall therefore establish how it will guarantee the homogeneity of the information included in the plan by:

- Determining the information TSOs to be provided about their own transmission systems and the content of individual TSO plans. ENTSOG should, in particular, provide recommendations to adjacent TSOs to ensure they consistently address common cross-border infrastructure projects;
- Determining the information to be provided by the sponsors of relevant infrastructure (LNG, storage, import pipelines, large consuming facilities, etc.);
- Defining the Community-wide scenarios on supply and demand to be included in the TYNDP to ensure the effectiveness of the TYNDP and, in particular, of network modelling and simulations aimed at estimating system's resilience and the need for network reinforcement;
- Harmonising and publishing the assumptions regarding peak day estimations and parameters related to security of supply.

Infrastructures needs related to security of supply shall be part of the top-down approach. They should follow the requirements of the Directive 2004/67/EC concerning measures to safeguard security of natural gas supply and the new gas Security of Supply Regulation. The estimation of additional needs of capacity 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.

The plan shall also be consistent with the Energy Infrastructure Package and with the Guidelines for trans-European energy networks (TEN-E Guidelines) which identify projects of common interest and priority projects, including those of European interest, among trans-European electricity and gas networks. These guidelines provide a worthy orientation of the main drivers and expectations from ENTSOG network development plan.

4.2.2 Bottom-up approach

According to the Directive 2009/73/EC concerning common rules for the internal market in natural gas, TSOs under the ITO model have an obligation to submit every year to their NRA a TYNDP, based on existing forecast supply and demand after having consulted all the relevant stakeholders. For Member States applying the ISO model, the TSO has to comply with a TYNDP monitored by the regulatory authority.

ERGEG recommends that even TSOs which do not have a legal obligation to prepare a TYNDP according to the 3rd Package should do so, in order to allow ENTSOG to prepare a consistent picture in its Community-wide TYNDP. Besides the individual plans, the most recent common national plan, if existent (see section 2.1), should also be delivered to ENTSOG for developing the Community-wide TYNDP.

When preparing their TYNDP, TSOs shall collect the data at a national level following the recommendations of ENTSOG and in accordance with national regulations. National TSOs shall collect from market undertakings (including LNG system operators, storage system operators, distribution system operators, supply undertakings, traders and producers) all the information needed.

4.3 Roles of the stakeholders

The realisation of the Community-wide TYNDP is an ENTSOG task. However, it shall include a collective dimension involving a significant number of actors with different roles and responsibilities notably relating to data collection and scenario development. Stakeholders' inputs will be required at an early stage of the elaboration of the Community-wide TYNDP for the collection of the necessary data. In a second stage, the Community-wide TYNDP will be submitted to consultation at a European level.

More generally, ERGEG recommends that the elaboration of the Community-wide TYNDP is based on a regular dialogue with stakeholders, through the organisation of workshops and meetings on the preliminary results and during key milestones as the work progresses.

The European Commission and Member States also have a role to play in the process by giving overall support to this work, providing complementary prospective information at a European and national level and contributing to provide top-down orientation.

4.3.1 Data communication to ENTSOG

According to Article 10(1) of Regulation No 715/2009, *“while preparing the draft Community-wide TYNDP, ENTSOG shall conduct an extensive consultation process, at an early stage and in an open and transparent manner, involving all relevant market participants, and, in particular, the organisations representing all stakeholders (...). That consultation shall also involve NRAs and other national authorities, supply and production undertakings, network users including customers, distribution system operators, including relevant industry associations, technical bodies and stakeholder platforms. It shall aim at identifying the views and proposals of all relevant parties during the decision-making process.”*

The Article 9(2) of Regulation No 715/2009 also states that ENTSOG shall submit the consultation process to the Agency for its opinion.

If ENTSOG considers that information collected by TSOs needs to be completed, ERGEG recommends that, upon written request, all relevant natural gas undertakings, including TSOs, LNG system operators, storage system operators, distribution system operators, supply undertakings, traders and producers make available to the ENTSOG, within a reasonable period of time, the data it requests. ENTSOG and its members shall design the questionnaires and formally request answers from stakeholders either at national or EU-wide level. Data collection by adjacent TSOs shall be coordinated to avoid potential duplications. Confidentiality of commercially sensitive information shall be guaranteed.

4.3.2 Consultation on the Community-wide TYNDP

As a general principle, an appropriate balance must be found between the consultations at national and European levels to avoid duplication of procedures. Synergies shall be sought between the consultation on the TYNDP at national, regional and EU level.

The consultation processes shall be conducted by TSOs on national or individual TYNDPs, under NRAs oversight. They may be based on formal written communications as well as workshops and bilateral or multilateral meetings. Enough flexibility shall be allowed here with the main goal of integrating all stakeholders in the process and have all the necessary inputs for building the plan.

The Community-wide TYNDP, based on these national and individual TSOs plans, shall be made public to inform all stakeholders. The plan should be discussed within the Madrid Forum with the participation of Member States and DG ENER.

4.4 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 Community-wide plans. National reports should have a compatible structure and follow the same principles as the Community-wide TYNDP. They shall identify infrastructure needs with a wider importance for the EU or for the European regions; they shall include market information and demand trends, which are influenced not only by European energy policies, but also by specific national contexts. The TSOs TYNDP must be coordinated and have the same structure to facilitate comparison and synthesis at the ENTSOG level. Data requested by ENTSOG to prepare the Community-wide TYNDP should be included in national investment plans.

In addition, according to the 3rd Package where the ITO model is applied, the NRA should examine whether the TSO individual TYNDP is consistent with the Community-wide TYNDP. 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 TSOs' TYNDP shall be taken into consideration in the preparation of the Community-wide TYNDP. Nevertheless, the latter shall not be a consolidated version of national plans. National reports will help to identify investment needs with EU-wide importance and will support ENTSOG in preparing the Community-wide TYNDP.

According to the 3rd Package, the Community-wide plan must also take into account regional investment plans. According to Article 12 of Regulation (EC) 715/2009, TSOs are responsible of publishing these plans. Close collaboration needs to be assured with ENTSOG in order to make investment plans at both Community-wide and regional levels consistent and comparable.

4.5 Content of the Community-wide TYNDP

The Community-wide TYNDP shall provide a comprehensive picture of the European gas system as well as reliable perspectives regarding its long term dynamics. It shall therefore include a detailed description of infrastructures and projects as well as scenarios about demand, supply and infrastructure development. Security of supply shall also be estimated by modelling the consequences of supply disruptions and assessing the compliance with security of supply standards, when they are established.

Scenarios shall be an input to the European supply adequacy report which shall be developed according to the Article 8 of Regulation No 715/2009. This supply adequacy report shall assess gas system's capacity to supply current and projected demands for the following five years, as well as for the period between five and ten years.

On the basis of the scenarios, ENTSOG shall simulate the behaviour of the EU gas network under normal condition as well as in "security of supply" scenarios, in case of peak demand and supply disruption from one or several major gas sources.

The Community-wide TYNDP shall include a monitoring report/chapter to track and explain the differences and modifications in projects features or dates since the previous plan.

4.5.1 Description of existing and planned infrastructure

The Community-wide TYNDP shall include a detailed description of existing infrastructure and projects relating to gas transmission as well as production, import pipelines, LNG terminals and storage facilities. It should provide detailed maps presenting clearly existing and planned facilities. It shall:

- present the main transit routes across the European system, providing a clear picture of the dominant gas flows in order to identify the need for cross-border capacity development of the network;
- identify bottlenecks and physical congestions, particularly at cross-border level, that will result from EU demand and supply trends;
- include a list of publications or references to investment plans drafted at national or at regional levels.

Concerning projects description sponsors of interconnectors, LNG terminals and storage facilities shall communicate to ENTSOG the relevant characteristics of their projects. A higher level of details could be required for regulated transmission infrastructure than for other ones. For the latter, it will only be requested to publish the information relevant for assessing the functioning of the EU gas system.

Transmission infrastructure:

The Community-wide TYNDP shall present a technical and economic description of all transmission projects (FID or announced) including:

- a) Technical components of the projects – pipelines, compressor stations, regulation and/or metering stations and other transmission assets;
- b) Cost estimations;
- c) Risks for timely implementation: inter-dependence with other infrastructure projects, route, environmental impacts, and project sensitivity to changes in demand and supply situations, if relevant.

ENTSOG shall publish capacity information at all the interconnection points, based on information to be published by TSOs in fulfilment of transparency requirements¹³:

- nominal transportation capacity in both directions;
- rate of use on an annual and monthly basis;
- booked and available capacity in the time scope of the plan;
- additional capacity decided to be developed.

The Community-wide TYNDP should, if relevant, identify alternative solutions for fulfilling the transportation needs of the market and help to select the most efficient option. The plan may also indicate here the status of investment decisions, where this information is available.

Other infrastructures

Data published on storage, LNG and other facilities shall include all decided infrastructure projects (FID taken) and cover the announced projects. The degree of maturity of the projects should be clearly indicated. Commercially sensitive information shall be kept confidential. It shall only be published when necessary and on an aggregated basis.

¹³ Requirements of Section 3.3 in the Annex of Regulation (EC) N° 715/2009.

4.5.2 Scenarios on supply and demand

The Community-wide TYNDP shall include supply and demand scenarios providing a picture of foreseeable developments of the European gas market. The underlying assumptions for each scenario as well as the data sources shall be clearly presented and discussed with stakeholders. In particular, the assumptions on peak day and severe winter conditions shall be published.

Definitions and assumptions used at national and European level should be harmonised as far as possible. For this purpose, ERGEG recommends associating the governments and national competent authorities with the elaboration of scenarios.

Demand scenarios

The Community-wide TYNDP shall include several scenarios based on alternative assumptions corresponding to the foreseeable evolution of different parameters influencing gas consumption. These parameters should cover energy prices, population growth, economic growth and policies promoting renewable energy sources, energy efficiency and limiting greenhouse gas emissions. Scenarios shall provide elements on demand seasonality and peak day consumption.

Considering that national forecasts are generally based on official statistics developed by Member states, ERGEG recommends keeping the aggregation of national scenarios as a reference case.

ERGEG suggests including a reduced set of alternative demand scenarios either using existing simulations (like DG TREN long-term energy scenarios (Primes¹⁴), IEA forecasts, etc.) or specifically developed ones:

- a reference “business as usual” case, based on a continuing trend and an expectable scenario of economic evolution;
- and low/high demand scenario based on different assumptions of the evolution of economy and of market fundamentals.

Supply scenarios

ERGEG recommends to base supply forecasts on:

- forecasts of EU gas production;
- estimations of supply potential of producing countries, namely a realistic range of supply capacity. For instance, such estimation could be based on known and potential import agreements and upstream development projects.

ERGEG suggests that supply is analysed for each demand scenario, arbitrating between the different gas sources. This analysis should take into account a limited number of different infrastructure scenarios on storage development, LNG facilities and import pipeline projects. For each combination of demand/supply scenarios, ENTSOG shall run a modelling/simulation of the EU system behaviour both in normal and “crisis” conditions, namely major supply interruptions.

Security of supply analysis should include an assessment of the potential supply risks and a simulation of the disruption of major supply sources.

¹⁴ 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.

Some guidance can be expected from the new regulation on security of supply on the relevant scenarios to be considered. At this stage, ERGEG considers that both the reference and the alternative scenarios should include security of supply simulations, e.g. of situations of peak demand and a supply disruption from one or several major sources of gas.

4.5.3 Analysis of the functioning of the integrated network

ENTSOG shall develop a model-based simulation of EU network functioning in order to assess the adequacy of capacity developments with demand scenarios and estimate the future compliance with security of supply requirements. The design of the model shall be discussed with stakeholders and with the Gas Coordination Group. The Community-wide model analysis shall be coherent with models applied at a national – and regional – level. The Community-wide TYNDP shall in particular identify congestion at cross-border entry-exit points as well as internal bottlenecks with an impact on cross-border capacity.

Simulations shall take 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);
- storage and LNG facilities and other major consumption points (including CCGT projects) because these facilities will have a significant impact on transmission capacity demand;
- security of supply parameters and possible solidarity mechanisms.

The model developed by ENTSOG should be capable of simulating the utilisation of all major European gas infrastructure (pipelines, LNG terminals, storage facilities) under the selected scenarios. The main objective of the model is to assess the resilience of the EU gas system and its evolution regarding the supply/demand scenarios and investment projects. 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. It should be a Community-wide model, 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 plan. To ensure consistency between national, regional and Community-wide 10-year network development plans, compatible assumptions and modelling should be used for all three plans.

4.5.4 Monitoring report

A monitoring report/chapter should be included in the Community-wide TYNDP to identify any deviations, updates and delays from the precedent plan. This report will allow determining the progress made in the construction of planned investments, improving the robustness of the plan and validating the used methodology. The report should provide an update on delays and cancellations affecting any investment included in the plan. The reasons for such deviations should be explained.

Particular attention shall be put on projects supposed to be developed within three years according to the previous plan, for which detailed explanations shall be provided. Changes related to time horizons of more than three years should only be subject to brief explanatory statements.

This report/chapter should be included in each Community-wide TYNDP. However, if a major investment project with substantial cross-border implications is cancelled or delayed by more than a year, a notice shall be included on ENTSOG's website alongside the document to inform the market. This shall not require the TSO to recalculate or re-issue the plan but just to provide supplementary information to be annexed to its last published version.