

**OPINION OF THE AGENCY FOR THE COOPERATION OF ENERGY
REGULATORS No 06/2017**

of 15 March 2017

**ON THE ENTSOG DRAFT TEN-YEAR NETWORK
DEVELOPMENT PLAN 2017**

THE AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

HAVING REGARD to Regulation (EC) No 713/2009 of the European Parliament and of the Council of 13 July 2009 establishing an Agency for the Cooperation of Energy Regulators¹ (hereinafter referred to as “the Agency”), and, in particular, Articles 6(3)(b), 6(4) and 17(3) thereof,

HAVING REGARD to Regulation (EC) No 715/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the natural gas transmission networks and repealing Regulation (EC) No 1775/2005² and, in particular, Articles 8(3)(b) and (10) and 9(2) thereof,

HAVING REGARD to the favourable opinion of the Board of Regulators of 15 March 2017, delivered pursuant to Article 15(1) of Regulation (EC) No 713/2009,

WHEREAS:

- (1) Pursuant to Article 8(3)(b) of Regulation (EC) No 715/2009, the European Network of Transmission System Operators for Gas (hereinafter referred to as “ENTSOG”) shall adopt a non-binding Community-wide ten-year network development plan (hereinafter referred to as the “TYNDP”), including a European supply adequacy outlook, every two years.
- (2) Pursuant to Article 9(2) of Regulation (EC) No 715/2009, ENTSOG shall submit the draft TYNDP, including the information regarding the consultation process, to the Agency for its Opinion.
- (3) On 20 December 2016, ENTSOG published the draft TYNDP 2017.
- (4) On 5 January 2017, ENTSOG submitted the draft TYNDP 2017 to the Agency for its Opinion.
- (5) On 8 February 2017, ENTSOG completed the submission with information regarding the consultation process.

¹ OJ L 211, 14.8.2009, p. 1.

² OJ L 211, 14.8.2009, p. 36.

- (6) The Agency assessed the draft TYNDP 2017 on the basis of the following main criteria: (i) the TYNDP's essential features as specified in Article 8(10) of Regulation (EC) No 715/2009, as amended by Article 22 of Regulation (EU) No 347/2013³, and (ii) the objectives set out in Article 6(3)(b) of Regulation (EC) No 713/2009 and Article 9(2) of Regulation (EC) No 715/2009,

HAS ADOPTED THIS OPINION regarding, in particular:

- i) The role of the TYNDP as required by Regulation (EC) No 715/2009 and Regulation (EU) No 347/2013;
- ii) The improvements of the draft TYNDP 2017 compared to the TYNDP 2015;
- iii) The identification of the main areas where improvements are still recommended, in particular with respect to the application of the cost-benefit analysis (CBA) methodology to the TYNDP, as well as for the presentation and the interpretation of the analysis and its results in the draft TYNDP 2017.

1. Process and consultation with stakeholders

1.1. Process

The Agency appreciates the stakeholder interaction which took place during the preparation of the TYNDP through a series of public workshops, webinars and stakeholder working sessions organised by ENTSOG between 12 January 2016 and 13 July 2016⁴, followed by presentations of the TYNDP analysis in November and December 2016 during the Regional Meetings for the 3rd selection round of projects of common interest (PCIs).

The Agency appreciates ENTSOG's acknowledgement of the Agency's earlier recommendation that ENTSOG submit the TYNDP in draft to the Agency, along with the results of the public consultation, for its Opinion, and publish the final TYNDP after considering the Agency's Opinion and the results of the public consultation. The Agency also takes note of ENTSOG's clarifications regarding the delayed start of the public consultation which prevented ENTSOG from submitting to the Agency the results of the public consultation together with the draft TYNDP.

The Agency acknowledges the good communication and collaboration with ENTSOG, *inter alia* by providing an opportunity to the Agency to express views at working level on proposals for improving the TYNDP in different working sessions organised by ENTSOG, even if divergent views may persist. Furthermore, the Agency welcomes that national regulatory authorities (NRAs) had the opportunity to support the process by reviewing key TYNDP data

³ OJ L 115, 25.4.2013, p. 39.

⁴ 11th (Kick-off) TYNDP/CBA Workshop, on 12 January 2016, in Brussels
1st SJWS for development of TYNDP 2017, on 13 January 2016, in Brussels
2nd SJWS for development of TYNDP 2017, on 26 January 2016, in Brussels
3rd SJWS for development of TYNDP 2017, on 9 February 2016, in Vienna
4th SJWS for development of TYNDP 2017, on 23 March 2016, in Brussels
5th SJWS for development of TYNDP 2017, on 10 March 2016, in Brussels
12th (Final) TYNDP/CBA Workshop, on 11 May 2016, in Ljubljana
6th SJWS for development of TYNDP 2017, on 13 July 2016, in Brussels

for the purpose of helping to avoid the use of potentially incorrect or misleading project-related information in the draft TYNDP. The Agency encourages ENTSOG to consider the project-specific comments of NRAs as listed in Annex II to this Opinion.

The Agency welcomes that ENTSOG, for the first time and in compliance with Regulation (EC) No 715/2009, submitted the draft TYNDP 2017 to the Agency for its Opinion, and notes ENTSOG's willingness to consider both stakeholder feedback and the Agency's Opinion for the adaptation of the draft TYNDP before its final publication, expected by April 2017. The Agency encourages ENTSOG to release the final TYNDP only after duly considering stakeholder feedback and the present Agency's Opinion on the draft TYNDP 2017, in particular as regard to its short-term recommendations.

The Agency recommends ENTSOG to plan future TYNDP processes better, in order to make sure that the submission of the draft TYNDP to the Agency contains the information regarding the consultation process as required by Article 9(2) and Article 10 of Regulation (EC) No 715/2009. The Agency positively notes that ENTSOG committed to provide an analysis of the responses to the public consultation in a separate document, which will be posted on ENTSOG's website with the final TYNDP 2017, including references to the Opinion of the Agency.

1.2. Consultation with stakeholders

ENTSOG conducted a public consultation on the draft TYNDP 2017 from 20 December 2016 until 3 February 2017, during which 21 responses were received.

The Agency appreciates that ENTSOG conducted a public consultation on the draft TYNDP 2017 and provided an analysis of the responses. The Agency positively notes that the level of feedback increased in comparison to the TYNDP 2015.

The Agency notes that the online public consultation included numerous (61) questions, mainly asking stakeholders to provide views on specific improvements of the draft TYNDP 2017, as well as on general demand, supply and infrastructure aspects. The Agency notes that stakeholders generally welcomed new TYNDP 2017 elements, such as the introduction of a TYNDP map, using the notion of "advanced" project status, the inclusion of national development plans (NDPs) codes denoting projects, and the better alignment with the scenarios used by ENTSO-E. The Agency notes that stakeholders have differing views regarding the demand scenarios, and that most stakeholders are of the opinion that treating liquefied natural gas (LNG) as a multi-source supply would add value to the TYNDP assessments.

However, the Agency considers that most of the questions related to the TYNDP 2017 improvements did not target the collection of stakeholder input on certain other important aspects, such as a more comprehensive assessment of infrastructure needs, or how TYNDP outputs, including the results of CBA, serve the purpose of selecting PCIs and other stakeholder requirements. The Agency is of the view that the consideration of stakeholder feedback is important for making the TYNDP a document properly reflecting not only the TSO perspective, but also the views of regulators, policy makers, shippers and other key affected stakeholders, including those involved or interested in EU-wide gas infrastructure development.

The Agency welcomes that ENTSOG followed an open and transparent processes in developing the draft TYNDP 2017. The Agency notes Regulation (EC) No 715/2009⁵ requires that a balanced approach is applied by ENTSOG to the standpoints of all key groups who have a major stake in efficiently developing and using gas infrastructure across the EU. For future TYNDPs, the Agency recommends ENTSOG to analyse the input received from stakeholders and from the Agency at an earlier stage in the elaboration of the TYNDP, and to continue organising interactions and workshops aimed at engaging a wider range of stakeholders. In particular, it is essential better to incorporate the market (shippers') perspective on infrastructure gaps, and the degree to which the projects included in the TYNDP could serve to close such gaps.

2. Input data and scenarios

2.1. Demand assumptions

The Agency notes that ENTSOG's TYNDP **gas demand outlook** is mainly dependent on the TSOs' interpretation of different "storylines"⁶. Four storylines were discussed during the TYNDP elaboration process. Under the "Slow Progression" storyline, the EU would fall short of the European energy climate targets and experience low economic growth, leading to a stagnant overall gas demand. "Blue Transition", according to ENTSOG, means that the EU would be in line with climate goals, and would demonstrate moderate economic growth, increasing gas demand and gas substitution for coal in the power sector. The "Green Evolution" storyline involves reaching more ambitious environmental goals, strong economic growth and a decrease of gas demand, while the "EU Green Revolution" storyline assumes the strongest cooperation of Member States in pursuit of the environmental targets, high energy efficiency gains, and a significant decrease of gas demand after 2020. Three out of these four storylines were retained for the TYNDP analysis. ENTSOG discarded the "Slow Progression" storyline for not being in line with the EU environmental targets. The Agency agrees with ENTSOG on not considering a storyline which assumes the abandonment of the energy and environmental targets and policies of the EU, and encourages ENTSOG to continue the practice of aligning the TYNDPs with these EU targets and policies in the future.

The Agency notes that Annex C1 of the draft TYNDP 2017 contains the aggregated results of gas demand analyses on Member State level, and in this sense provides "derived data" which is dependent on the information in Annexes C2 through C4 and the assumptions and models adopted by the TSOs for the analyses of gas demand in the Member States. ENTSOG provides a breakdown of gas demand in the residential, commercial and industrial sectors, as provided by the TSOs under different scenarios for their market areas, while gas demand scenarios for

⁵ Article 10, Consultations: "While preparing the network codes, the draft Community-wide network development plan and the annual work programme referred to in Article 8(1), (2) and (3), the ENTSO for Gas 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, in accordance with the rules of procedure referred to in Article 5(1). That consultation shall also involve national regulatory authorities 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".

⁶ TYNDP 2017, pp. 12-16 Executive Summary, and Chapter 2 of Main Report, pp.18-71.

power generation are based on data sourced from ENTSO-E's TYNDP 2016, Visions 1, 3 and 4. The Agency notes that the alignment with ENTSO-E's views regarding gas demand is not absolute⁷.

The Agency notes that ENTSOG considers for the analysis that all gas across Europe is of exactly the same quality, an assumption which at least does not take into account the existence of L-gas, and may also not reflect the use of gas odourisation in the transmission system of some Member States.

The Agency appreciates that ENTSOG compared its gas demand projections to data from the European Commission and the International Energy Agency (IEA)⁸, but it remains unclear whether ENTSOG used this comparison for fine-tuning the gas demand scenarios actually used for TYNDP assessments.

The Agency notes that the TSOs submit gas demand outlooks according to individual interpretations of the storylines by each TSO, and consequently that there might be misalignments in such interpretations. The Agency recommends ENTSOG to provide increased transparency and justification of assumptions used by each TSO for gas demand projections.

The Agency notes that gas demand data collected by ENTSOG from the TSOs for the purpose of preparing the TYNDP should, as a minimum, be consistent with the gas demand projections used for preparing national gas infrastructure development plans, and – should data be divergent – provide the reasons due to which differing data was used.

The Agency notes that data shows that EU's overall and peak (daily and 2-week) gas demand has significantly decreased since a historic maximum reached several years ago. Such changes may be primarily driven by short-term climatic variations, for example warmer than usual winters, or by power generation circumstances (e.g., maintenance resulting in down time at nuclear power plants, surplus or deficit of stored water in reservoirs impacting output from hydropower plants). Specifically, daily peak and 2-week gas demand peaks have decreased respectively by 17.4% and 25% between the winter seasons of 2011/2012 and 2015/2016⁹. The Agency notes that peak gas demand is one of the main drivers for network developments.

ENTSOG's "Blue Transition" scenario¹⁰ assumes an upward gas demand trend from 2017 to 2035, resulting in a 10% increase in overall EU gas demand, mainly driven by expectations for an increased use of gas in power generation (+49%). This trend in gas demand is consistent with the "storyline" described by ENTSOG, but is generally more optimistic than the gas demand assessments provided by other institutions.

The Agency sees the "Blue Transition" scenario as potentially overestimating the level of future gas demand.

⁷ TYNDP 2017, Annex C 4, p. 5 "TSOs were given the option to use the Thermal Gap approach, raw ENTSO-E data or for TSOs to submit their own data, to reflect the fact that ENTSOG was not involved with the development of the scenarios for the electricity TYNDP 2016".

⁸ TYNDP 2017, pp. 69-71.

⁹ Ibid., p. 25.

¹⁰ Ibid., p. 56.

2.2. Methodology for demand/supply assumptions

The Agency notes that the draft TYNDP 2017 contains chapters on gas demand and supply (pp. 18-113), including a supply adequacy outlook section (pp. 152-154). However, the Agency notes that there is scant information about the model(s) or methodologies used by the TSOs to assess gas demand and supply and interpret the different “storylines”, and no clear disclosure of the factors to which the reported levels of gas demand are most sensitive. It is also not clear how the TSOs assessed gas demand beyond the 10-year time horizon of their network development plans.

The draft TYNDP 2017 does not provide an assessment of the degree to which past estimates of gas supply and demand volumes used for previous TYNDPs correctly predicted subsequent actual levels of gas demand and patterns of gas supply. Consequently, it is difficult to determine whether the methodologies or models used in the past for assessing gas demand and supply reflect actual trends. The Agency is of the view that an analysis of the reasons of past gas supply and demand forecast errors (if any) would be informative for the calibration of the methodologies or models used for assessments of gas supply and demand, as well as for adjusting any assumptions used for the current TYNDP. The build-up and use of such series of data (projected vs. actual) could help more accurately assess the factors on which future gas supply and demand depend, especially if the data series look at peak day demand and annual gas demand with a breakdown per sector (e.g., power generation, industrial, residential, other) as well as at gas supply patterns, including aspects related to L-gas supply.

The Agency sees the need for a “reality check”, performed by comparing past assumptions and projections of gas demand and supply to actual developments, for the sake of not only improving the quality of the future TYNDPs, but also for enhancing the transparency, robustness and credibility of ENTSOG’s work. The Agency recommends the inclusion in the TYNDP 2017 of a review section containing a “reality check” and lessons learned, in particular via the comparison of actual data for the past period(s) with the estimated (assumed) data used for the preparation of the previous TNYDPs and the current TYNDP.

2.3. Commodity prices and their role in the TYNDP

The Agency notes that ENTSOG uses the commodity prices for gas, other fuels, and CO₂ as provided in the IEA’s 2015 World Energy Outlook (WEO). The Agency finds the use of this data source by ENTSOG reasonable and welcomes its general alignment with ENTSO-E’s data used for the electricity TYNDP 2016, but notes that, according to ENTSOG¹¹, the electricity TYNDP used an older version of the WEO.

In the TYNDP analyses, ENTSOG uses “standardised supply configurations”, whereby the price of gas from each import source is assumed to move up or down by exactly the same, arbitrarily assumed, discrete amount from a price level thought to be identical for all sources, while keeping this latter price level constant for all the other gas import sources¹². The Agency finds the use of such arbitrary, discrete price configurations very far from reality and therefore not adequate for the purpose of the analyses underpinning the draft TYNDP 2017.

¹¹ Ibid., p. 46.

¹² For details, please see Section 3.1 below.

The draft TYNDP 2017 introduces a specific price configuration based on the *status quo* of markets and observed gas prices, named “import spreads price configuration”. This latter configuration is closer to reality when applied to the evaluation of projects intended to improve competition and market integration on the markets of Member States, given that it has as its starting point the actually observed gas prices.

The Agency appreciates ENTSOG’s use for the first time in the TYNDP 2017 of an “import price spread configuration” as a complement to the so-called “standardised” supply configurations referred to earlier. This “import spread” price configuration uses data from the European Commission’s Quarterly Reports and other publications, depicting differences in the pricing policies of gas suppliers vs. different countries. The Agency finds that this new approach is a step in the right direction, as it allows ENTSOG’s analyses of market integration needs to be based on more realistic assumptions and data. In the future, ENTSOG could also enrich its analysis by using wholesale and retail gas pricing data available from the Agency’s market monitoring reports and from the European Commission, and gas infrastructure tariffs data available from ENTSOG’s own constituency.

The Agency welcomes the use of an “import price spread” configuration based on actually observed gas prices and complementing the so-called “standardised” supply configurations, an improvement which represents a reasonable proxy for a “real life” case analysis of the potential benefits of the TYNDP projects in terms of market integration and competition.

The Agency appreciates the improved process of alignment of commodity prices in the electricity and gas TYNDPs, but urges the ENTSOs fully to align input data scenarios (sources, values and timestamps) as required by Regulation (EU) No 347/2013¹³, for their use in the TYNDPs 2018, and to provide full transparency of this alignment.

2.4. Scenarios and treatment of uncertainty

The Agency notes the reduction of the number of possible demand and supply configurations under which TYNDP projects are analysed. The Agency recalls the importance of public workshops in the context of gathering the views of key stakeholders - in addition to TSOs - regarding scenarios, such as, for example upstream and downstream industry, market players, researchers and academic experts, for the determination of the scenarios as one of the key steps for the next TYNDP. The Agency notes the methodological improvements related to the use of a common input data set and assumptions about their evolution over time (usually known as “scenarios”) for the electricity and gas markets, for both electricity and gas TYNDPs, and appreciates the joint work of the ENTSOs on scenario determination for the TYNDP 2018.

For the draft TYNDP 2017 analyses, ENTSOG takes into account various gas demand scenarios, noting that forecasts of gas demand for power generation are particularly uncertain, given its high dependency on the evolution of power generation from coal-fired plants and from renewable energy sources (RES). A sensitivity analysis with respect to these uncertainties, however, in the sense of determining which modelling outcome depends most strongly on which input parameters, is generally not present in the analysis.

¹³ Article 11(8). See also the Agency’s letter to the ENTSOs on the interlinked model, pp. 5-6
http://www.acer.europa.eu/Official_documents/Other%20documents/ACER%20views%20on%20a%20consistent%20and%20interlinked%20electricity%20and%20gas%20market%20and%20network%20model.pdf

The Agency notes ENTSOG's consideration of gas demand as inelastic to prices in the modelling, where different gas demand levels are considered in the scenarios, i.e. as exogenous to the modelling. ENTSOG provides a narrative description of the parameters¹⁴ determining the different storylines and the gas demand levels associated with the storylines.

The Agency recommends ENTSOG to consider the use of scenarios which would be based primarily on physical flow patterns hypotheses.

The Agency recommends that ENTSOG carry out a robust determination of scenarios, and that ENTSOG reveal the factors on which the variability of such parameters is mostly dependent, by carrying out the required sensitivity analyses. The Agency notes that the TYNDP scenarios should be in line with scenarios used in the preparation of gas infrastructure national development plans ("NDPs") and with electricity sector scenarios. The Agency also invites ENTSOG to consider carrying out further work towards the definition of the most relevant scenarios for the assessment of a given project at both EU and regional level.

The Agency welcomes the ENTSOs' common process for scenario determination for the TYNDP 2018.

3. Criteria and methodology

In the view of the Agency, as already indicated in its Opinions on the TYNDP 2015¹⁵ and on the draft 2015 PCI list¹⁶, an appropriate CBA methodology is of utmost importance for the development of the TYNDP and for the selection of PCIs. In the following sections, the Agency presents its detailed views on different aspects regarding the application of the CBA methodology to the draft TYNDP 2017.

3.1. TYNDP 2017 model and modelling

The Agency notes that the commodity prices indicated in the WEO are an input to the model used by ENTSOG for the CBA analysis in the TYNDP. The monetised and simulation-based part of the TYNDP assessment looks at the overall EU gas supply bill¹⁷ and the resulting marginal prices at country level under different supply source and infrastructure configurations. The default TYNDP modelling assumption is that the gas price is the same for all gas sources and import points, and the modelling builds contrasted supply curves from this baseline equilibrium by altering (increasing or decreasing) prices from a source from this default price value while keeping the price of gas from other sources at the default value. Gas is priced by default equally for each gas source independently of the route, and LNG is considered as one source. As a result, if the gas price for supply from a source is set lower than the default price, gas supply from this source is maximised vis-à-vis the others, since the optimisation function maximises the use of this comparatively cheaper source in order to bring the "EU gas supply bill" down. For the purpose, the model uses a solver that seeks gas demand and supply balances

¹⁴ See TYNDP 2017, p. 43 for detailed description of demand scenario parameters.

¹⁵ Agency's Opinion No 11/2015 on TYNDP 2015.

¹⁶ Agency's Opinion No 15/2015 on the draft regional lists of proposed gas PCIs 2015, Section 1.1 key findings

¹⁷ TYNDP 2017, Annex F, p. 11. TYNDP refers in occasions to "EU bill" in terms of "EU gas supply bill", with the latter defined as the sum of commodity cost (gas supply bill), weight of disruption, and weight of infrastructure used.

in each country, according to the submitted gas demand projections of the TSOs, while maximising gas supply from a “cheapest” gas imports source. The output is a quasi-marginal price per balancing zone. The price up/down swing vs. the default price level is used to trigger various potential gas supply mixes and monetise the “EU gas supply bill” savings for each potential gas supply mix. The price variations are arbitrary (+/-5 €/MWh from the default value) and are not corrected for infrastructure tariffs which would have to be paid when flowing gas from a source across Member States to satisfy demand in other Member States. No market analysis is conducted or referred to regarding the possible price spreads for gas from different supply sources.

The modelling used in the draft TYNDP 2017 assumes the existence of a perfect capacity (infrastructure services) market, with the service priced at zero, i.e. no tariffs are charged by the infrastructure operators. A perfect natural gas (commodity) market is also assumed to exist, where gas import switching from one import supply source to another is instantaneous and infinitely elastic to changes in price (perfect competition in gas supply). The modelling thus does not take into account neither contractual (commodity and capacity) constraints, nor infrastructure tariffs when modelling potential gas flows, nor the actual levels of competition in gas supply.

The topology of the system considered for the modelling is nodal where each node is an entry-exit zone. The nodes are connected by “arcs” representing the transmission capacities between zones as informed by the TSOs. Demand off-take, supply potential and prices, and national indigenous production are defined “per node”, while the arcs connecting the nodes use existing and planned capacity data. The model does not include a detailed network topology and cannot be used for hydraulic modelling of the network.

In contrast, gas NDPs elaborated by ENTSOG’s members generally use topology-based network modelling supported by hydraulic modelling software, and market studies for planning and simulating the precise effects of additional infrastructure. The use of hydraulic simulations, for which a detailed network topology data is required, and which is not available to ENTSOG or at least not used in its network modelling (NeMo) tool, makes the TSO assessments of NDPs generally different from TYNDP assessments when it comes to identifying physical system bottlenecks and “real life” simulated operational conditions of the gas infrastructure network. The Agency notes that NDP simulation tools are generally well suited to accurately identifying investment gaps and simulating possible solutions.

The Agency recommends ENTSOG to build a market model as required by Regulation (EU) No 347/2013, which is closer to reality, instead of assuming a perfect market functioning based on the assumption of perfect competition. Such a market model should aim to capture major gas price determinants for end users, including the infrastructure tariffs for the use of gas transmission networks, gas storage facilities and LNG terminal services.

The Agency recommends ENTSOG to improve its NeMo model, as well as the network and market modelling procedures used for the next TYNDPs, by further building on the expertise and the best practices, the models and the tools used by TSOs for developing NDPs. ENTSOG's model used for the TYNDP should consider not only the gas network capacity aspects, but also the operational constraints, such as actual infrastructure tariffs, contractual barriers (if any) which hamper the full use of capacity, odorisation of gas at transmission system level, L-gas and H-gas aspects, internal physical constraints between zones in terms of system capabilities, operational minimum gas flows per interconnection point (IP) for network flow management (flows which are not substitutable), and other actual system and market constraints as appropriate.

The Agency notes that ENTSOG relies for the EU-level network simulation on the hydraulic modelling carried out by individual TSOs for their gas networks. ENTSOG does not possess EU gas system-wide hydraulic simulation capabilities of its own, even though the TYNDP is prepared at EU system level. The Agency considers that sharing TSOs network data and simulation tools with ENTSOG is necessary to enable hydraulic modelling at European level, to improve TYNDP assessments and to help in identifying the best option within a group of infrastructure development alternatives.

The Agency recommends ENTSOG to refine the approach to gas price formation for use in the modelling, by improving the market and network modelling assumptions and algorithms, taking into account also infrastructure tariffs and a more realistic gas market model.

The Agency calls on ENTSOG to provide full transparency of the network and market model(s) used, including a complete description in mathematical terms, in more detail than the one provided in Annex F to the draft TYNDP 2017.

3.2. TYNDP 2017 infrastructure levels

The Agency notes positively the discarding of the unrealistic High Infrastructure scenario used in the past TYNDP 2015 and the use, for the draft TYNDP 2017, of an intermediate infrastructure level ("advanced non-FID projects¹⁸") scenario, containing those projects which have shown progress in their development, but have not yet reached the final investment decision (FID) status.

3.3. Collection of projects and publication of related data

The Agency notes that, for the sake of enabling consistent and fair treatment of all submissions by project promoters, ENTSOG has clearly defined and strictly applied collection periods for the submission of data and projects for this TYNDP.

The Agency notes that ENTSOG collected project information from project promoters by using standard data items, most of which are published in Annex A to the draft TYNDP 2017¹⁹. Although substantial improvements are present in comparison to the data collected for previous TYNDPs, the Agency finds that some project data categories are still missing, notably cost

¹⁸ FID: Final Investment Decision

¹⁹ One relevant exception is cost data of TYNDP projects at aggregated level.

data, the investment needs that projects intend to address and the stakeholders potentially concerned by a specific project.

The Agency welcomes the publication of information used for the TYNDP, but also notes that due to voluminous data in the Annexes²⁰, it is difficult to get an expedient overview of such information.

The Agency recommends that the information regarding TYNDP projects be streamlined into one pdf file and one xls file with a single worksheet, in order to facilitate the TYNDP readers. This is the same approach used by ENTSO-E for the electricity TYNDPs.

Currently, the TYNDP consists of projects submitted by the TSOs and other promoters, rather than being a real outcome of the TYNDP modelling.

The Agency welcomes ENTSOG's provision - for the first time - of a TYNDP project map on its website. The Agency encourages ENTSOG to continue the practice of providing the data on which the TYNDP is built to stakeholders at an earliest opportunity, and making the data public as well.

3.4. Cost-benefit analysis (CBA)

Cost dimension

The Agency notes that the Energy System-Wide Cost-Benefit Analysis (ESW-CBA) focuses on quantifying merely benefits and not project costs (the costs are indicated at an aggregated level, *cf.* below). The Agency reiterates that carrying out any kind of CBA, be it energy system-wide or project-specific, without cost information is a *contradictio in terminis* and is not in line with the TYNDP essentials defined in Regulation (EC) No 715/2009²¹. The Agency draws the attention of ENTSOG to the fact that the TYNDP 2016 prepared by ENTSO-E already provides cost information per project.

The Agency notes that the present modality of CBA applied by ENTSOG, whereby ENTSOG provides aggregated benefits of the projects and allows for costs to be taken into consideration at a later stage, during the project-specific step, does not allow to have CBA results in the TYNDP that would fit the subsequent PCI selection process.

²⁰ 22 different Annexes files: A Infrastructure Projects (A 1 Project Tables; A 2 Project Details); B TYNDP 2017 map; C Demand and Supply (C 1 Country specifics; C 2 Demand; C 3 Power generation assumptions; C 4 Demand methodology; C 5 Supply); D Capacities; E Modelling Results (E 1 Flows; E 2 Disrupted demand; E 3 Disrupted rate; E 4 Remaining flexibility; E 5 N – 1; E 6 Import Route Diversification (IRD); E 7 Modelling indicators; E 8 Monetisation; E9 Monetisation per country; E 10 Import price spread; E 11 Marginal price); F Methodology; and G Gas Quality Outlook.

Draft ENTSOG's TYNDP 2017 includes a lot of information regarding infrastructure projects, including: project details pdf file dated 21 October 2016, infrastructure projects datasheet (with 10 worksheets) dated 21 October 2016, TYNDP Annex A1 projects tables (with 11 worksheets) published on 20 December 2016 and TYNDP Annex A2 project details pdf file published on 20 December 2016 However, this - partly redundant - information may not favour an easy access to project-specific information.

²¹ Article 8(10)(a), as amended by Article 22 of Regulation (EU) No 347/2013 : “ [...] ; it shall be the subject to a cost-benefit analysis using the methodology established as set out in Article 11 of that Regulation ”.

Moreover, the Agency persists in its view that cost data are essential for assessing the projects at any implementation stage and that reasonably credible indicative cost information for assets using mature technologies, such as the ones deployed in the majority of gas infrastructure projects, is readily available from a number of open sources, even if for some reason, however unlikely, a project promoter is unable to come up with an indication of a project's cost. The Agency recalls that Annex V (5) of Regulation (EU) No 347/2013 requires to at least take into account in the CBA the following costs: capital expenditure, operational and maintenance expenditure over the technical lifecycle of the project and decommissioning and waste management costs, where relevant. For the above reasons, the Agency invites ENTSOG to assure that project promoters provide reasonably accurate cost indications for all projects regardless of the degree of a project's maturity²², at individual investment items level, and discourage from inclusion in the TYNDP projects for which no cost data is available.

ENTSOG should use cost data to come up with specific benefit-cost²³ ratios at least for mature projects, and provide the information in the TYNDP along with the cost information for all projects.

The Agency appreciates that cost data was collected by ENTSOG for more than 90% of the FID and advanced non-FID projects, and that the collected data was supplemented by ENTSOG's own estimates derived from the technical information of projects and the Agency's Report on Unit Investment Costs published in July 2015. The Agency notes ENTSOG's view that investment costs are for project promoters in many cases commercially sensitive information, and that for this reason cost data is only displayed in the TYNDP in an aggregated way for groups of projects (for FID, advanced non-FID and less advanced non-FID projects), as well as on an annual breakdown for all projects. The Agency reiterates its view that for future TYNDPs:

- i) cost should be handled and presented per investment item, with commercial sensitivities resolved in a manner similar to the approach used for the electricity TYNDP developed by ENTSO-E²⁴;
- ii) benefit-cost ratios should be published per investment item and per project, at least for mature projects;
- iii) ENTSOG's own estimates and the unit investment cost indicators and the corresponding reference values^{25,26} developed by NRAs cooperating in the framework of the Agency in compliance with Article 11(7) of Regulation (EU) No 347/2013, may complement the primary cost information provided by project promoters, on an exceptional basis.

²² Cost indication ranges could vary depending on the maturity level of the projects, with less advanced projects using a wider range for the indicated cost.

²³ Cf. below for benefits dimensions of projects.

²⁴ For each project, ENTSO-E publishes the results of project CBA, including a cost estimate and an assessment of the range of variation of the cost estimate. Cf, for example, the TYNDP 2016 combined project fiches available for download from <http://tyndp.entsoe.eu/reference/#downloads>.

²⁵ http://www.acer.europa.eu/Official_documents/Acts_of_the_Agency/Publication/UIC%20Report%20-%20Gas%20infrastructure.pdf

²⁶ I.e., at least average and median, without excluding ranges and other indicators, where available.

The Agency invites ENTSOG to align its practice for handling commercially sensitive information to the approach used by ENTSO-E and to consider ways and means of properly conducting CBA for the purpose of the TYNDP, by collecting, using, analysing and making public both the costs and the benefits of the projects at individual investment item and at project level.

The Agency recommends ENTSOG and all promoters to make sure that cost information for each project is submitted to ENTSOG and included in future TYNDPs on a project-per-project basis, similar to what is already done in the electricity TYNDP. The Agency also reiterates that for each TYNDP project, relevant reference cost value(s) may be published by ENTSOG alongside the project promoter's actual cost estimate. The Agency draws the attention of ENTSOG that the unit investment cost indicators published by the Agency are also readily available for assessing project cost. The Agency invites ENTSOG to discourage from inclusion in the TYNDP projects for which no cost data is available.

Benefit dimension

The Agency notes that ENTSOG's assessment methodology uses monetised indicators²⁷ for the benefits associated with the expected scenarios for developments, but that not all benefits are always duly considered or monetised. For example, regarding the monetisation of the benefit of increased competition, ENTSOG notes that *"the EU [gas supply] bill mainly refers to the EU supply bill. Except in very specific cases, the infrastructure projects do not impact on the EU supply mix, whatever the supply configuration considered. As a result, the EU Bill is generally on the same level as in the low infrastructure level"*²⁸.

The Agency is of the view that the apparent equating of the "EU bill" with the "EU supply bill", which is essentially constant in ENTSOG's analyses as it coincides in all instances with the result for the so-called "low infrastructure scenario"²⁹, means that only a few TYNDP projects of the "low infrastructure scenario" are expected to bring benefits.

Monetised benefits of market integration and security of supply (avoided cost of gas disruption) appear to be missing from the TYNDP's CBA, even though ENTSOG indicates that it proposes *"further monetisation of benefits in terms of competition and security of supply risk mitigation"*³⁰. The benefits of improved security of supply are measured in terms of the value of quantitative non-monetised indicators, namely the indicators of disrupted demand and remaining flexibility and the TYNDP N-1 indicator under various assumptions³¹. The Agency notes that the N-1 indicator used by ENTSOG for the preparation of the draft TYNDP is not

²⁷ For example, the EU gas supply bill, the Gas Price Index (GPI) calculated as a proxy for the gas bill per unit of gas demand, and a discounted indigenous gas production price reflecting the producers' benefit materialised within Europe.

²⁸ TYNDP 2017, p. 204.

²⁹ Under this scenario, only existing infrastructure and FID projects are considered. Cf. TYNDP 2017 Executive Summary, p. 9.

³⁰ Ibid., p. 10.

³¹ TYNDP 2017, pp. 196-199.

identical³² to the N-1 indicator prescribed by Regulation (EU) No 994/2010³³. The N-1 indicator to be used must be consistent with the definition provided in Regulation (EU) No 994/2010, or at least, in order to avoid confusion and misinterpretations between the two indicators, the Agency suggests that ENTSOG change the name of the indicator used for the TYNDP.

The benefits related to market integration are evaluated under the so-called “import price spread configuration”³⁴.

The Agency notes that ENTSOG evaluates the monetised benefits of projects in terms of social-economic welfare, such as the reduction of the total EU gas supply bill. The Agency recommends that ENTSOG develop this approach by also reflecting on the distinction between the notions of producer surplus and consumer surplus, which are of particular relevance given that most of the EU gas supplies are from outside the EU.

ENTSOG’s proposals presented during the TYNDP development process³⁵ for the ways to better monetise security of supply in the end were not applied in the draft TYNDP 2017. The proposed monetisation methodology is seen as overly simplistic.

The Agency urges ENTSOG to continue working on monetising security of supply benefits in the context of improving the gas CBA methodology, by refining its approach in such a way as to be able to determine, firstly, which categories of consumers would be interrupted in case of a gas disruption, then use demand-side effects and a behaviour change approach. Finally ENTSOG could estimate the value of interrupted gas supply via the willingness of consumers to pay or to accept disruptions (WTP/WTA), as in electricity, based on customer surveys, or via assessing the loss of value to end users of gas due to the absence of gas (e.g. the economic value of output *not* produced due to the absence of gas). The Agency recommends ENTSOG further to investigate security of supply benefits monetisation along these lines, and to open a consultation on the topic, in order to arrive at a reasonably useful and accurate benefits monetisation methodology.

The Agency strongly recommends ENTSOG to introduce the necessary amendments to its work procedures and analytical methods as applied to the draft TYNDP and CBA at all levels, in order to improve the measurement and the monetisation of benefits and to enable the proper comparison of costs and benefits ascribed to a system development pathway (scenario) or to a particular project. The update and the improvement of the gas CBA methodology along such lines, as a basis for the TYNDP 2018, should be a key priority for ENTSOG.

³² TYNDP uses N-1 indicator stemming from the ENTSOG’s ESW-CBA methodology, which is derived from Regulation (EU) No 994/2014, plus: a) capacities used are the one reported to TYNDP 2017, taking into account “lesser-of-rule”; b) peak demand is the one under TYNDP 2017 scenarios.

³³ OJ L 295, 12.11.2010, p. 1.

³⁴ TYNDP 2017, pp. 206-207.

³⁵ 4th Stakeholder Joint Working Session for TYNDP 2017, 23 February 2016

The Agency is of the view that the benefit analysis part of the draft TYNDP 2017 (limited to the effects of advanced projects only) contains important insights and findings, in particular as regards the country-specific and regional conclusions, which are presented with a breakdown in terms of each of the main criteria of Regulation (EU) No 347/2013, i.e. the contribution to security of supply, market integration, competition and sustainability.

The Agency appreciates ENTSOG's indication that the overall investment costs for all advanced non-FID projects is €16 billion and that the actual investment costs necessary for achieving the benefits of advanced non-FID projects would be lower, as some of these projects potentially compete with each other in terms of delivering security of supply, competition and market integration benefits to the areas in need³⁶. The Agency invites ENTSOG to continue carrying out such analyses and report its findings in future TYNDPs, without, however, delaying the implementation of an adequate CBA on the basis of an improved CBA methodology which offers a costs-benefit analysis for each TYNDP project.

3.5. Utility of the TYNDP in support of other processes

Use of CBA

The Agency welcomes ENTSOG's commitment stated in its Annual Work Programme 2017 to improve the CBA methodology and to apply it better to the next TYNDP by 2018. The Agency stresses the need to improve the entire TYNDP as outlined in this Opinion, as well as the CBA methodology as described in the Agency's Opinion No 04/2014 and other recommendations³⁷.

The Agency notes that the current CBA methodology, as applied in the TYNDP, results in insufficient monetisation of the expected benefits and lacks from cost data at project level. Thus, it is impossible to assess whether the benefits of a system development scenario or a certain project exceed its cost, and accordingly the analysis is insufficient to assess the net value as the main *raison d'être* of any particular project or a given system development scenario.

The Agency encourages ENTSOG to integrate the ESW-CBA and the PS-CBA steps into one single CBA methodology, with CBA output (the results of the application of the CBA methodology to each project in the TYNDP) published as part of the gas TYNDP. This integration would align the gas and electricity TYNDPs and is also of utmost importance for enabling the use of the gas CBAs in the TYNDP as a direct input for the Regional Groups, eliminating the need of additional steps during the PCI selection process.

The Agency notes that the TYNDP has to meet in a balanced way the expectations of the TSOs, other project promoters and stakeholders at large participating in or affected by various aspects of gas network planning and development, such as policy makers, NRAs, market participants

³⁶ TYNDP 2017, p. 207.

³⁷ For example, in the Agency's letter to the ENTSOs dated 7 June 7 2016, which contains recommendations regarding the development of a consistent and interlinked electricity and gas market and network model, which would in due course be included in the CBA methodology. Downloadable from http://www.acer.europa.eu/Official_documents/Other%20documents/ACER%20views%20on%20a%20consistent%20and%20interlinked%20electricity%20and%20gas%20market%20and%20network%20model.pdf.

and others. In this respect, the Agency recalls the increasing importance of the TYNDP in the PCI selection process since 2013, as the inclusion of projects in the most recent TYNDP is a prerequisite for being considered later for inclusion in the PCI list.

3.6. Identification of infrastructure needs

The Agency appreciates ENTSOG's assessment of the infrastructure needs and gaps provided in Section 6.3 of the draft TYNDP 2017. In particular, the Agency sees as reasonable ENTSOG's approach to identifying infrastructure gaps on the assumption that all FID and only FID projects will be implemented. However, the Agency notes that not all projects of FID status will necessarily be implemented. The Agency takes note of ENTSOG's consistent use of this "low infrastructure" scenario for assessing the gas infrastructure's ability to serve the goals of achieving reasonable levels of sustainability, security of supply, competition and market integration. The Agency appreciates the visually simple and clear manner in which the results of the analyses are provided.

In particular, the Agency takes note that the sustainability needs are apparently completely addressed already in the low infrastructure scenario, *i.e.* by the implementation of just 17 capacity-impacting FID projects.

Regarding ENTSOG's assessment of infrastructure needs driven by security of supply considerations, the Agency notes that EU gas infrastructure is resilient to variations of gas demand caused by extreme temperatures and to disruption of gas supply from Algerian, Libyan and Norwegian sources. However, a disruption of Russian gas supply *via* Belarus could lead to security of supply issues in the long run (year 2030) in North-West Europe, while a disruption of gas supply *via* the Ukrainian route could potentially lead to security of supply issues in South-East Europe. At the same time, the Agency is of the view that ENTSOG's assumption that the already operational Klaipėda LNG FSRU will not be available after 2025³⁸ is questionable and may not lead to justified conclusions about the high exposure of Estonia, Latvia and Lithuania to the risk of gas supply disruptions in the long run.

According to the draft TYNDP 2017, a number of countries are likely to fail meeting ENTSOG's N-1 indicator³⁹ in the "Blue Transition" and "Green Revolution" scenarios for the years 2020 and 2030⁴⁰.

The Agency finds ENTSOG's identification of potential security of supply needs and investment gaps in the draft TYNDP 2017 improved compared to previous TYNDPs, in particular in being specific regarding the time horizon, location, severity of the potential impact

³⁸ The assumption of TYNDP is that Klaipėda LNG FSRU time charter will expire and the operator will not take a decision about possibly purchasing the FSRU by that time – and will not even consider renegotiating the charter or chartering another FSRU.

³⁹ ENTSOG's N-1 indicator is not identical to the N-1 indicator as provided in Regulation (EU) 994/2010 and the two should not be confused. The Agency strongly recommends not to use in the TYNDP indicators which are denoted in the same way, but differently defined and calculated in comparison to indicators in European directives, regulations and other EU-level binding legal documents.

⁴⁰ Bosnia and Herzegovina, Croatia, Estonia, Finland, FYROM, Greece, Ireland, Luxemburg, Portugal (the Portuguese NRA disagrees as indicated in Annex II of the Opinion), Romania, Slovenia and Sweden. Bulgaria in 2017 and Denmark and Poland in the "Blue Transition" scenario in the later years also show some N-1 driven needs, and Lithuania has such needs in any scenario by 2030.

and impacted country or countries. Except for the caveats indicated above, the Agency concurs with ENTSOG's findings regarding gas infrastructure needs driven by security of supply considerations.

The Agency invites the NRAs, the TSOs and the Competent Authorities of the concerned countries to take due note of ENTSOG's findings and consider possible actions addressing the identified needs and leading to the mitigation of the risks to security of gas supply within the shortest reasonable timeframe.

The Agency is of the view that a number of ENTSOG's findings regarding competition-related needs are of particular value, *inter alia* the finding that in some regions of Europe a degradation of the diversification potential can be expected over time due to the decrease of European indigenous gas production, a decrease which may affect the level of competition in gas supply. However, some of ENTSOG's findings regarding competition needs seem to boil down to not much more than a re-statement of the obvious: for example that Cyprus and Malta are currently completely disconnected from Europe's mainland, or that the Baltic, Central and South-Eastern countries experience high dependence on Russian supplies⁴¹. The Agency concurs with ENTSOG's view that the reported competition-related needs seem to be "*often resulting from the same limitations as identified in terms of security of supply*"⁴².

Regarding ENTSOG's assessment of market integration needs, the Agency reiterates its views that the use of unrealistic modelling assumptions, such as the existence of a perfect gas market or a single gas import price per gas source regardless of the gas destination, coupled with ignoring infrastructure tariffs for use of gas transmission, storage and LNG terminal services, puts a cloud of doubt over ENTSOG's conclusions about "needs" for infrastructure driven by gas market integration.

The Agency recalls that the TYNDP should not be just a "bottom-up" collection of projects which may or may not deal with particular investment needs, but rather a "top-down" network plan which would first identify needs and infrastructure gaps and subsequently link the gaps to the relevant projects. In fact, a combination of both approaches is needed. For this reason, the Agency invites ENTSOG to determine to what extent the specific TYNDP projects (investment items) address the identified needs (gaps) and contribute to alleviating and removing those infrastructure gaps, and at what cost, compared to the expected benefits.

The Agency recommends that the existing infrastructure and its use, including the level of physical congestion, be also analysed in the TYNDP. This level of use should be one baseline against which proposed projects should be analysed, in order to avoid the risk of stranded investments.

⁴¹ TYNDP 2017, p. 188.

⁴² Ibid.

The Agency urges ENTSOG to complete the task of identifying infrastructure gaps in the next TYNDP, especially with respect to target cross-border capacity needs, and to use the identified infrastructure gaps for evaluating the degree to which TYNDP projects match infrastructure gaps at EU level. This evaluation should be based on an improved CBA methodology with a clear indication of the benefits-to-cost ratio for each project intended to serve a particular need and to close a specific infrastructure gap.

3.7. On maturity of projects

In its Opinion on the TYNDP 2015, the Agency recommended “... including in future TYNDPs a grouping of projects by maturity level in the sense of Regulation (EU) 347/2013, i.e. depending on the extent and the accuracy of the information available regarding the project, as well as on the stage of the project”.

The Agency welcomes the fruitful cooperation with ENTSOG in developing criteria for “advanced non-FID projects” used to define an additional infrastructure level to be assessed in the TYNDP 2017. This additional criterion includes projects for which promoters have demonstrated *vis-à-vis* third parties the intention to implement the projects, but which have not reached FID⁴³. The Agency welcomes ENTSOG’s use of this criterion for advanced non-FIDs, which resulted in 52 projects being included in this category, and hopes that this criterion will be maintained in future TYNDPs.

The Agency notes that 148 out of 234 (63%) TYNDP projects are in the less advanced non-FID status. The Agency is of the view that less mature projects may be included in the TYNDP. The Agency is also of the view that it would be beneficial to develop and implement eligibility criteria guidelines for the promoters of such candidate projects and for the projects’ inclusion in the TYNDP, as the current lack of such eligibility criteria guidelines potentially allows non-realistic projects to be included in the TYNDP.

The Agency recommends ENTSOG to develop, in cooperation with the European Commission and the Agency, draft eligibility guidelines for the inclusion of projects in the future TYNDPs, with the aim of filtering out unrealistic projects from future TYNDPs.

3.8. Grouping and clustering of projects

The TYNDP 2017 development process was carried out *via* candidate project submissions by project promoters. Subsequent analysis of projects included in the TYNDP which would become PCI candidates involves project grouping as initiated by the TSOs. In the PCI selection round of 2015, this grouping took place outside the Regional Group meetings and without other stakeholder involvement.

The Agency is of the view that the notions of “project”, “investment item”, “groups” or “clusters” of projects could be better defined in the TYNDP process. The Agency sees merits

⁴³ The criterion for considering a project in the “advanced non-FID” group includes (a) FEED having been started or permitting started in all hosting countries and (b) project commissioning date falling within 7 years from the year of application to the TYNDP.

in ENTSOG's introduction of "soft guidelines" to promoters on clustering in the context of Regional Groups during the 3rd PCI selection process⁴⁴, while at the same time recommends further improvements in the way in which the grouping of projects is done.

The Agency stands ready to collaborate with the Commission and ENTSOG for defining - well in advance of the next TYNDP 2018 - grouping and clustering guidelines for both the TYNDP and the subsequent selection of PCIs, in terms of substance and procedure.

3.9. TYNDP modelling: treatment of LNG

The Agency takes note of ENTSOG's claims of refinements having been introduced in the current model and modelling approach for LNG terminals and storages⁴⁵, but at the same time the Agency reiterates some structural criticisms⁴⁶. LNG is considered as "one" source in the draft TYNDP 2017 despite the diversification which LNG provides. Also, LNG is considered as having one price, despite the fact that the pricing of LNG from different sources may diverge. No distinction is made in the LNG supply data by entry point from a given source: all gas imported from a source is considered as available to all European consumers regardless of the actual route of supply. However, the Agency notes that the LNG diversification potential is acknowledged qualitatively in the TYNDP report, in line with input received from Gas Infrastructure Europe for LNG (GLE).

The Agency considers that the treatment of LNG as one supply source in all EU countries does not reflect the reality of the LNG market, which is by nature multi-source and of almost global character. For this reason, the Agency suggests to ENTSOG to depart from the practice of treating LNG supply as one source for the purpose of calculating ENTSOG's N-1 indicator and use instead a more realistic approach, such as assessing the actual number of competitively available sources of LNG imports for the LNG terminals located in various countries and regions of the EU.

The Agency invites ENTSOG to investigate treating LNG as a multi-source supply in the modelling and to provide a more detailed breakdown of the expected future LNG sources by origin and entry point (i.e., by existing and proposed route) in the future TYNDPs, together with historical information from recent years and information about actual LNG price differentials per source and route.

3.10. Consistency of NDP / TYNDP

The Agency in its Opinion on the TYNDP 2015 recommended *"that future TYNDPs include a cross-reference map of the investment codes in the TYNDP and in the relevant national development plans (NDPs). In case a TSO or project promoter submits projects to ENTSOG which are not part of the relevant NDPs, that TSO or project promoter shall provide a well-founded reasoning, keeping in mind the provisions of Article 8 of Regulation (EC) No 715/2009, pursuant to which "the Community-wide network development plan shall [...] build*

⁴⁴ Guidelines recommend that grouping under the 2nd PCI List should be the basis for grouping of the 3rd PCI list, the treatment of competing projects, and the use of functionality criteria for new projects.

⁴⁵ TYNDP 2017, p. 15

⁴⁶ Agency's Opinion 14/2016 on gas network developments, pp. 5, 29 and 30. Agency's Opinion No 11/2015 on the TYNDP 2015.

on national investment plans". The cross-referenced codes would enable the Agency to examine without doubt to which extent the TYNDP is built on NDPs as required by Article 8(10)(a) of Regulation (EC) 715/2009, without prejudice to other Community aspects of the network planning at the European level".

The Agency commends ENTSOG for the increased transparency in the draft TYNDP 2017 regarding the inclusion (or not) of TYNDP projects in NDPs, and notes that about 75% of the TYNDP projects are also listed in NDPs. The Agency recommends ENTSOG to present in a dedicated section of the TYNDP 2017 the list of TYNDP projects which are not included in NDPs, together with the justification provided by promoters regarding the way in which these projects close an infrastructure gap present at EU level which is not already addressed in a NDP.

The Agency also advises caution for considering the draft TYNDP 2017 as a European-level reference for assessing the consistency of NDPs with European-level network development plans, until such time when the TYNDP content is improved along the recommendations provided in this Opinion.

3.11. On comparison with TYNDP 2015 projects

The Agency notes that 234 projects⁴⁷ have been submitted for the TYNDP 2017, a reduction in comparison to the 279 projects submitted for the TYNDP 2015. The Agency notes that 63% of the projects included in the TYNDP 2015 have been re-submitted for the TYNDP 2017, while the remaining projects were cancelled (21%), not re-submitted (9%) or have been completed (7%).

4. Conclusions

The Agency appreciates the improvements already achieved in the process, methodology and outcome of the development of the draft TYNDP 2017 in comparison to the TYNDP 2015 and **acknowledges that ENTSOG has assured:**

- the inclusion of a cross-reference check of the investment codes and status assigned to each project in the TYNDP and in the relevant gas infrastructure NDPs;
- an improved consideration of a project's maturity, by the development and definition of a criterion for "advanced non-FID projects" as an additional infrastructure level;
- the submission, for the first time and in compliance with Regulation (EC) No 715/2009, of the draft TYNDP for the Agency's Opinion, and ENTSOG's willingness to consider stakeholder feedback and the Agency's Opinion and adapt the draft TYNDP before its final publication, expected by April 2017;
- the use of an "import price spread" configuration based on actually observed gas prices data and complementing the uniform "standardised" supply configurations, an approach which represents a reasonable proxy for a "real life" analysis of the potential benefits of the TYNDP projects;
- the introduction of a TYNDP 2017 project map;

⁴⁷ TYNDP 2017, p. 123.

- the improved identification of infrastructure needs according to the criteria provided in Article 4 of Regulation (EU) No 347/2013;
- the good communication and collaboration with stakeholders and with the Agency during the TYNDP process, while acknowledging that divergent views may persist;
- the publication of (aggregated) cost information, although not with the granularity requested by the Agency (not per project or investment item);
- the incorporation, for the first time, of a long-term gas quality outlook as required by Commission Regulation (EU) 2015/703⁴⁸.

At the same time, the Agency notes that the draft TYNDP 2017, intended for the adoption of the fifth TYNDP, is the second one elaborated with the application of the CBA methodology developed by ENTSOG, a methodology which, however, still suffers from significant shortcomings and does not adequately support in its application the TYNDP and the subsequent PCI selection. Furthermore, due to the lack of CBA assessments for each project individually, the deficiencies of physical network modelling and flaws in the market modelling used for the elaboration of the draft TYNDP 2017⁴⁹, the Agency considers that the contribution of ENTSOG's draft TYNDP 2017 to the efficient functioning of the market is in need of significant improvements. For these reasons, the Agency advises using the draft TYNDP 2017 with caution for the selection of PCIs.

As “**short-term**” recommendations, the Agency encourages ENTSOG to consider for the final version of the TYNDP 2017:

- the comments and remarks of NRAs on the TYNDP 2017 projects, as contained in Annex II to this Opinion;
- the publication of a summary document indicating how feedback from the public consultation and the Agency's Opinion is taken into account for the final TYNDP 2017;
- the publication of cost data per project, or in the absence of cost data from project promoters, the use of the unit investment cost indicators made available by the Agency;
- the introduction of a review section containing a comparison of past assumptions and projections of gas demand and supply and their actually observed levels, including the lessons learned from potential projection errors;
- the reconsideration of the gas demand estimate under the “Blue Transition scenario”, perceived as potentially overoptimistic regarding gas demand levels;
- for TYNDP projects which are not included in NDPs, the provision of statistics, along with the listing of any such projects, and a summary evaluation of the justification provided by promoters on how these projects close an infrastructure gap at EU-level which is not already addressed in a NDP;
- the use of a N-1 indicator fully consistent with the definition provided in Regulation (EU) 994/2010. As a minimum, the Agency suggests that ENTSOG change the name of the N-1 indicator used for the final TYNDP 2017 to avoid misinterpretations of the analysis; and to make more evident that the N-1 indicator in the TYNDP 2017 is not identical to the N-1 indicator in Regulation (EU) No 994/2010.

⁴⁸ OJ L 113, 1.5.2015, p. 13.

⁴⁹ See Section 3.1 of this Opinion.

As “**medium-term to long-term**” recommendations, the Agency finds necessary that, for the future TYNDPs, ENTSOG:

- consider improving the presentation of the TYNDPs along the line contained in Annex I to this Opinion;
- better incorporate the market (shippers’) perspective on infrastructure gaps, and the degree to which the projects included in the TYNDP could serve to close such gaps;
- significantly improve the CBA methodology, in particular regarding the collection, verification and use of project data (including cost data) and scenarios, measurement of benefits, and further monetisation of the benefits of the projects, in line with the Agency’ Opinion No 04/2014 on the CBA methodology and other recommendations⁵⁰;
- improve the model and modelling used for the TYNDPs, by:
 - involving more the market and not only the capacity perspective in the TYNDP indicators, monetised whenever possible, in particular those related to competition and market integration criteria;
 - refining the approach to gas price formation in the modelling, by improving the market modelling assumptions and algorithms, in line with a more realistic gas market model;
 - taking into account and using the consistent and interlinked electricity and gas networks and market model, in pursuit of greater consistency with electricity and in full compliance with Regulation (EU) No 347/2013;
 - improving the treatment of LNG, in particular by capturing the multi-source, multi-route nature of this gas source in the modelling;
 - including infrastructure tariff data in the analyses, along with other missing operational and contractual (market) constraints;
 - building on the expertise and the best practices, the models and the tools used by the TSOs for developing NDPs, as highlighted in the Agency’s Opinion No. 14/2016 on gas network developments; and
 - fully documenting the TYNDP models with a detailed description of input, output, assumptions, variables and constants, and the mathematical algorithms;
- develop, in consultation with stakeholders, clustering and grouping guidelines for promoters to be used in the TYNDP context and subsequent PCI selection process, in line with the existing electricity practice;
- plan better future TYNDP processes, in order to make sure that the official submission of the draft TYNDP for the Agency’s opinion contains also the information regarding the consultation process, as required by Articles 9(2) and 10 of Regulation (EC) 715/2009;
- continue the work on a common scenario process with ENTSO-E for the TYNDP 2018 and provide full transparency on the use of input data and assumptions;
- provide and use a more detailed breakdown of the expected future sources of gas by origin and entry point (*i.e.*, by existing and proposed routes), together with historical information about such gas flows from recent years;
- propose adequate eligibility guidelines to filter out unrealistic projects from future TYNDPs;

⁵⁰ Agency’s Opinion No 11/2015 on TYNDP 2015; Agency’s Opinion No 15/2015 on the draft regional lists of proposed gas PCIs 2015; Agency’s Recommendation No 5/2015 on good practices for the treatment of the investment requests, including CBCA requests.

- complete the task of identifying infrastructure gaps, especially with respect to cross-border capacities, and revisit some of the indicators to quantify the benefits and the cross-border impacts of projects.


The Agency finds that the draft TYNDP 2017 is in line with the objectives of Regulation (EC) No 713/2009 and Regulation (EC) No 715/2009 in terms of contributing to non-discrimination, effective competition, and secure market functioning, but it is not free from shortcomings, in particular regarding the quality of the CBA, a significant part of which are also noted in the Opinion of the Agency on the TYNDP 2015. Due to the lack of proper CBA, the draft TYNDP 2017 may not sufficiently contribute to the efficient functioning of the market.

The Agency encourages ENTSOG to implement the “short-term” recommendations when finalising the TYNDP 2017, and urges ENTSOG to start working on implementing the “long-term” recommendations, in particular by improving the CBA methodology for its full application in the next TYNDP 2018 and the 4th PCI selection process.

This Opinion is addressed to ENTSOG.

Done at Ljubljana on 15 March 2017.

For the Agency:


Alberto Pototschnig
Director

Enclosures (Annexes I-II)

- ANNEX I: Suggestions for future TYNDPs
- ANNEX II: NRA Comments/remarks on TYNDP 2017 projects

ANNEX I. Suggestion for future TYNDPs

The Agency recommends that future TYNDP reports cover:

- (1) An **Opening Chapter** with a Foreword & Executive Summary.
- (2) A **Main Report Volume** describing methodological aspects, assumptions, assessments and outputs, including:
 - a. Introductory chapter, covering, among others, *status quo* of infrastructure and describing the TYNDP process;
 - b. Input chapter, covering, among others, scenario determination⁵¹, demand and supply;
 - c. Output chapter covering, among others, an **assessment of infrastructure resilience**, monetisation, infrastructure scenarios, identification of problems and investment gaps (needs), barriers to investments from TSOs perspective, and conclusions. This chapter should include **General Statistics of infrastructure projects** with information per type of assets, per corridor, per advancement level, investment costs and benefits, investments in National Development Plans, investments not in National Development Plans, investments matching investment needs, etc.
- (3) An Appendix covering the **Infrastructure Plan**, i.e. the **TYNDP projects**, including **infrastructure “project fiches”** with info such as: project identification and visualisation, project description, general information and sponsors, investment needs, NDP information, PCI information, clustering, competing and/or complementary projects, technical (including capacity) data, implementation data, economic and regulatory data, gas sourcing data, target markets (impacted area) data, benefits-to-costs ratio for each project.
- (4) An Appendix covering a **documented formal description of the ENTSOG model and modelling methodology**.
- (5) Accompanying datasheets including, for example, scenarios (values assumed for the relevant parameters and their evolution over time), capacities, country data, demand, gas quality, power generation assumptions, production and supply potentials, stress and disruption cases, indicators of simulated cases, monetisation, etc.

⁵¹ If not part of a separate Scenario Development Report.

Annex II. NRA Comments/remarks on TYNDP 2017 projects

Input was received from 19 NRAs, of which:

- 7 had no comments: BE, BG, FI, LV, LX, NL and SI.
- 12 had comments, of which:
 - 3 NRAs referred only to general comments on TYNDP projects: CY, ES and PT.
 - 6 NRAs referred only to project-specific comments/remarks on data items of TYNDP projects: CZ, FR, LT, HU, HR and PL.
 - 3 NRAs referred to both general comments and project-specific comments/remarks on data items of TYNDP projects: AT, IT and DE.

Table 1: General NRA comments on TYNDP 2017 projects

Reporting NRA	Comment
AT	The Austrian projects of Gas Connect Austria listed in the TYNDP 2017 are not taken from the latest version of the NDP, 2017, but from the NDP 2016. This is due to the ENTSOG deadline for the project submission (May 2016).
CY	Comments concerning the TYNDP 2017 Main Report and TYNDP 2017 Map: 1. Cyprus is not visible in all maps in the TYNDP 2017 Main Report; 2. Although Cyprus project TRA-N-1146 is included in the list of the TYNDP 2017 Map, its location is not visible on the actual map.
DE	With regards to the “NDP Name”, the TSOs are required to refer and name the same reference, including year and version (draft or final) of the NDP. Concerning “Enablers”, the list is not complete. Without further in-depth analysis, it seems to be more projects which are dependent on each other. With regard to “Capacities”, BnA does not have the needed data to verify the numbers. Regarding “Third-Party Access Exemptions”, BnA cannot confirm the information given by the TSOs.
ES	A Project must be included in the NDP to be built and included in the TSO’s allowed revenue. Most of the proposed projects in the TYNDP 2017 are currently not included in the NDP. CNMC has serious doubts with regard to the necessity of some of these projects, in particular, those which increase capacity at regasification plants or duplicate some existing gas pipelines.
IT	The legal implementation of Directive 73/2009 has been revised (law 115/2015). AEEGSI defined rules on the consultation and on the minimum requirements of NDPs in June 2016 (Regulatory Order 351/2016). Now consultation is open. AEEGSI is expected to evaluate the draft NDPs 2016, indicatively in mid-2017. Then, AEEGSI is expected to be in a position to have a better evaluation of the differences in project features.
PT	In TYNDP 2017, the gas "Demand Peak" for Portugal’s N-1 calculation in 2017 is 267 GWh/d in the “Blue Transition Scenario” and 258 GWh/d in the remaining three scenarios. Besides the fact that in 2016, the verified Portuguese daily “Demand Peak” was 225 GWh/d, in the beginning of 2017 a value of 247 GWh/d was reached. ERSE recommends reviewing the TYNDP forecast, taking into account the most recent available data. Additionally, ENTSOG conclusions of N-1 analysis seem unrealistic as they ignore the fact that two of the Portuguese power generation plants have fuel-switch capability and alternative backup fuel. They represent a total maximum natural gas consumption of 80 GWh/day (1800 MW electrical power output) and according to Reg. (EU) 994/2010 they must be included in the demand-side measures. This is enough to cope with ENTSOG’s referred N-1 non-compliance of Portugal in any scenario for 2020. As regards 2025, further information on the national electrical sector is needed. No remarks on the TYNDP projects for Portugal.

Table 2: Project-specific comments/remarks on TYNDP 2017 projects⁵²

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
AT	TRA-N-954	Main information	NDP Number	TAG 2017-01	TAG 2016/03	wrong number
	TRA-N-136	Main information	Commissioning year	2019	2020*	According the latest data of NDP; *unofficial information indicates additional postponement to year 2022.
	TRA-N-919	Main information				According the latest information from TSO side, TSO will withdraw from this project due to loss of interest on capacities from shippers.
CZ	TRA-N-135	Transmission Projects	Compressor Power	2	0	According the latest data of NDP, additional compressor power is not indicated.
	TRA-N-752	Main information	Commissioning year	2019	2021	According the latest data of NDP, the commissioning of second stage of project is expected in 2021.
	TRA-N-133	Main information				Based on the survey results, there is no sufficient demand for transmission capacity between the Czech Republic and Austria. ERU has fundamental objections against the inclusion of this project in TYNDP and the NDP.

⁵² NRAs were invited to indicate significant differences (not due to natural evolution of a project) in the characteristics (data fields) in comparison to the information available in their NRA (last NDP or other source). ENTSOG's TYNDP 2017 data is as of 25.5.2016, when data collection process was closed for this TYNDP.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
DE	TRA-N-135	Main information				Based on the survey results, there is no sufficient demand for transmission capacity between the Czech Republic and Austria. ERU has fundamental objections against the inclusion of this project in TYNDP and the NDP.
	TRA-F-337	Main information	NDP Number	026-06	026-06	The project CS Rothenstadt (TRA-F-337) is listed in the draft NDP 2016 under the number 026-06. The project West to East operation of the IP Waidhaus (TRA-F-753) is not listed in the draft NDP 2016 with a separate number.
	TRA-F-753	Main information	NDP Number	026-06		The project CS Rothenstadt (TRA-F-337) is listed in the draft NDP 2016 under the number 026-06. The project West to East operation of the IP Waidhaus (TRA-F-753) is not listed in the draft NDP 2016 with a separate number.
	TRA-F-937	Main information	Reason for non-NDP inclusion	Nord Stream 2 is to be included in the German Net Development Plan 2016 (currently under discussion).	Nord Stream 2 as in investment project will not be examined and approved within the framework of the NDP by the NRA.	The NDP only contains investment measures to be built on German territory. However, in one variant of the future scenario assumptions, the existence of Nord Stream 2 is presumed.
	TRA-F-344	Transmission Projects	Section/Length/Diameter/Compressor or	Podisor - Horia / 528 / 813 / 50		In the draft NDP 2016 the project Compressor Station Herbstein is not listed with these specifications.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
	TRA-N-814	Main information	Commissioning year	2016		The Commissioning Year seems to be inconsistent with the project status "Advanced Non-FID"
	TRA-N-047	Barriers to Investment	Barrier	Lack of market support	Lack of market support + the project is conditional to the success of a pilot on gas deodorization, to an ACB and to the approval of NRAs.	see new data.
FR	LNG-N-225	Barriers to Investment	Barrier	Discrimination aiming at preventing the project to be recognized as an efficient alternative to a third gas pipeline through the Pyreneans.	The expansion of Montoir LNG terminal is conditional to the signature of commercial contracts and to NRA approval.	see new data.
	LNG-N-227	Barriers to Investment	Barrier	Discrimination aiming at preventing the project to be recognized as an efficient alternative to a	The expansion of Fos Cavaou LNG is conditional to the signature of commercial contracts and to NRA approval.	see new data.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				third gas pipeline through the Pyreneans.		
	TRA-N-269	Barriers to Investment	Barrier	Lack of market support	The development of transmission infrastructure in Fos Cavaou terminal is conditional to FID on the expansion of the LNG terminal.	see new data.
	TRA-N-258	Barriers to Investment	Barrier	Lack of market support	The development of transmission infrastructure from Montoir terminal expansion is conditional to FID on the expansion of the LNG terminal.	see new data.
	TRA-N-252	Barriers to Investment	Barrier	Lack of market support	Lack of market support + uncertainty on the benefits associated to the project	see new data.
	TRA-N-256	Barriers to Investment	Barrier	Lack of market support	Lack of market support + uncertainty on the benefits associated to the project	see new data.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
HR	TRA-F-334	Main information	PCI code	6.24.3	6.26.3	
		Main information	Commissioning year	2017	2018	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
		Transmission Projects	Commissioning year	2017	2018	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
		Time Schedule	Commissioning ends	2017	2018	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-F-86	Main information	NDP number	1.24 and 1.25	1.5 and 1.6	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
		Main information	NDP number	1.13	1.14	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-N-066	Transmission Projects	Length (km)	6	5	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
		Main information	Commissioning year	2022	2023	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-N-068	Main information	NDP number	1.1, 1.2, 1.4, 1.5, 5.4	1.21, 1.22, 1.23, 5.5	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
		Transmission Projects	Length (km)	250	252	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-N-1057	Main information	PCI code	6.24.3	6.26.3	
		Main information	NDP number	5.2 and 5.3	5.3 and 5.4	Corrected according to new NDP 2017-2026 (not yet approved by HERA)

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
	TRA-N-070	Main information	NDP number	1.11, 1.12	1.26 and 1.27	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-N-1058	Main information	PCI code	2.5.2	6.5.2.	
		Main information	NDP number	1.21	1.29	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-N-302	Main information	NDP number	1.3	1.12	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
	TRA-N-075	Transmission Projects	Diameter (mm)	1000	800	Corrected according to new NDP 2017-2026 (not yet approved by HERA) For pipeline sections: Zlobin - Bosiljevo, Bosiljevo - Sisak, Sisak - Kozarac
		Main information	NDP number	6.5.1	N/A	Corrected according to new NDP 2017-2026 (not yet approved by HERA)
		LNG Terminals	Project Ship Size (m3 LNG)	265.000	1st stage up to 150.000 m3, 2nd stage up to 265,000 m3	According to Business Plan submitted in July 2016 as part of Investment request.
	LNG-N-082	LNG Terminals	Project Storage Capacity (m3 LNG)	300.000	1st stage depending on FSRU storage capacity availability, 2nd stage 1 x 150.000	According to Business Plan submitted in July 2016 as part of Investment request.
		LNG Terminals	Yearly Volume Comments	1st stage - 1-4 bcm/y (According to FSRU ship and pipeline availability), 2nd stage - 3,5 bcm/y, 3rd stage - 5	1st stage - 2 bcm/y (according to FSRU ship availability), 2nd stage - 3,5 bcm/y	According to Business Plan submitted in July 2016 as part of Investment request.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				bcm/y, 4th stage - 8.75 bcm/y		
		LNG Terminals	Ship Size Comments	75,000.00 – 265,000.00 (Jetty construction and sea depth will enable Q Max LNG carriers to berth at the site. The size of the carriers that are going to berth alongside to the FSRU will depend on the storage and regasification capabilities of the FSRU)	1st stage - up to 150.000 m3, 2nd stage - up to 265.000 m3 (Jetty construction and sea depth will enable Q Max LNG carriers to berth at the site. The size of the carriers that are going to berth alongside to the FSRU will depend on the storage and regasification capabilities of the FSRU)	According to Business Plan submitted in July 2016 as part of Investment request.
		LNG Terminals	Storage Capacity Comments	1st stage depending on FSRU storage capacity availability, 2nd stage 1 x 150,000.00, 3rd	1st stage depending on FSRU storage capacity availability, 2nd stage 1 x 150,000.00	According to Business Plan submitted in July 2016 as part of Investment request.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				<p>stage 2 x 150,000.00, 4th stage 2 x 150,000.00</p> <p>Market Background Analysis was carried out and it indicated that the market has commercial potential. Open Season procedure will serve as an official confirmation of that analysis. The binding phase of Open Season has been carried out. Signing of the contract is expected to be upon NRA's approval of missing regulatory framework for liquefied natural</p>		
Transmission Projects			Barrier	<p>Market Background Analysis was carried out and it indicated that the market has commercial potential. Open Season procedure will serve as an official confirmation of that analysis. The binding phase of Open Season has been carried out. Signing of the contract is expected to be upon NRA's approval of missing regulatory framework for liquefied natural</p>	<p>Market Background Analysis was carried out and it indicated that the market has commercial potential. Open Season procedure will serve as an official confirmation of that analysis. The binding phase of Open Season has been carried out for land type of LNG terminal, whereas it has to be done again for FSRU.</p>	

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				gas i.e. methodology for determination of tariff for receiving LNG and gas send-out.		
	Transmission Projects			Potential barrier of enough pipeline capacity availability. The pipelines need to be build but FID has not yet been reached, which is a precondition for LNG terminal realization in foreseen deadlines.	-	Evacuation pipelines for LNG are simultaneously planned by TSO in 10-year NDP. Therefore, this complete text line should be deleted.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
		Transmission Projects		<p>Permit granting process for the project has started in 10/2013 by requesting the EIA which was approved in 04/2014. Location permit was approved in 09/2015. Accordingly to the specific phase of the projects permits will be modified / obtained.</p>	<p>Permit granting process for the project has started in 10/2013 by requesting the EIA which was approved in 04/2014. Location permit was approved in 09/2015. Accordingly to the specific phase of the projects, permits will be modified / obtained. Project promoter LNG Croatia LLC submitted an Investment request with CBCA proposal for LNG terminal in July 2016.</p>	
		Transmission Projects		<p>Project named LNG terminal on the Island of Krk was declared on Government of Republic of Croatia session</p>	<p>On 16th of July 2015, during a session of the Government of Republic of Croatia, the LNG terminal project on Krk island was declared a project of strategic</p>	

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				<p>from 16th of July 2015 a project of strategic importance for the Republic of Croatia. The Act on strategic investments enables this kind of projects to have the highest priority with faster and simplified procedure in obtaining necessary documents and permits for the project implementation.</p>	<p>importance for the Republic of Croatia. The Act on strategic investments enables this kind of projects to have the highest priority with faster and simplified procedure in obtaining necessary documents and permits for the project implementation. Croatian Government on its session on 8 June 2016 adopted a decision for speeding up the first (FSRU) phase of LNG terminal.</p>	
	Transmission Projects			<p>NRA needs to approve missing regulatory framework for liquefied natural gas i.e. methodology for determination of</p>		<p>HERA adopted Methodology of determining the amount of tariff items for handling liquefied natural gas ("Official Gazette", No 71/16) in July 2016. Coordinated CBCA Decision between HERA and MEKH was adopted in October 2016 and submitted to ACER.</p>

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				tariff for receiving LNG and gas send-out. In order for the project to be implemented on time, when the CBA/CBCA request is submitted to the Croatian NRA all of the relevant NRA's (six identified countries) need to come to a fast decision.		Therefore, this complete text line should be deleted.
HU	TRA-N-524	Main information	2017			HEA does not support the inclusion of projects that are not part of NDP.
	TRA-N-636	Main information	2017			HEA does not support the inclusion of projects that are not part of NDP.
	TRA-N-656	Main information	2021			HEA supports the Easting project and favours the route which is connected to the RO-HU-AT route.
IT	TRA-N-012	Time Schedule	2019			5/2016 (Construction start). We have no data regarding the construction start and consequently 2019 as commissioning year seems unrealistic

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
	TRA-F-051	Third-party Access Exemptions	100%		50%	The exemption is only for the 50% of the total capacity
	TRA-N-008	Main information				The draft Snam Rete Gas NDPs 2016-2025 mentions this project although its commissioning date is beyond 2025
	TRA-N-009	Main information				The draft Snam Rete Gas NDPs 2016-2025 mentions this project although its commissioning date is beyond 2025
	UGS-N-034	Barriers to Investment	Barrier	Low rate of return	0	ROI for storage companies is under the same principles as for TSOs, the determined WACC. CEER report shows that WACC is on average not small considering EU level.
LT	LNG-N-824	Main information	Status	Less advanced Non FID	Advanced non-FID	Please note that the main purpose of current LNG Terminal project (LNG-N-824) is to buy back the LNG Terminal. LNG Terminal in Klaipeda itself is in operation from the end of 2014, which means design and permitting stages are completed. However, buy back process will be completed in 2024. Current criteria for advanced-non FID methodology do not capture all project-specific situations, since under current methodology an already successfully functioning LNG Terminal is rated as Less-Advanced project.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
		Barriers to Investment	Barrier	Klaipeda LNG terminal project is supported by all political institutions in Lithuania (i.e. President office, the Government, Ministries, Parliament, other). Project is supported by COM and pilot action is regarded as a success story: https://ec.europa.eu/energy/sites/ener/files/documents/1_EN_ACT_part1_v10-1.pdf	Should be removed. No political barriers.	This is not a barrier but accelerator.
		Barriers to Investment	Barrier	According to LNG terminal Law, all fixed LNG terminal expenses are covered via gas transmission tariff, while variable costs are	Should be removed. No regulatory barriers.	This is not a barrier but accelerator since terminal's fixed costs are covered via security of supply component which is a part of the transmission tariff.

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
				included in regasification tariff. Due to low or none variable costs, capacity reservation is free of charge. Additional income from other regulated LNG terminal activities shall cover fixed terminal expenses and no additional profit shall be experienced.		
		Barriers to Investment	Barrier	Low or zero-priced short-term capacity	Should be removed. No regulatory barriers.	This is not a barrier but accelerator. Such pricing is more attractive option for users.
		Main information	Commissioning year	2019	2021	New information on new technical approach received.
	TRA-N-341	Main information	NDP Name Or Reason for non-NDP inclusion	Ten-year Network Development Plan 2014-2023	Ten-year Network Development Plan 2016-2025	More recent NDP

Reporting NRA	TYNDP 2017 Project code	Sheet in TYNDP 2017 project data	Enter Data field	TYNDP 2017 Data	TYNDP 2017 Data, corrected/commented by NRA	NRA comments / remarks on data corrected / or projects
PL	TRA-N-342	Main information	NDP Name Or Reason for non-NDP inclusion	Ten-year Network Development Plan 2014-2023 2019	Ten-year Network Development Plan 2016-2025 2021	More recent NDP
	TRA-N-212	Transmission Projects	Commissioning year	2019	2021	Due to changes in the route of the project and its material scope, the commissioning date is changed. 2019 is not a realistic year for commissioning.
	LNG-N-272	Main information				The project was not agreed upon in the 2016 - 2025 NDP by the NRA. The NDP is strictly limited to the transmission network.
	UGS-N-914	Main information				The project was not agreed upon in the 2016 - 2025 NDP by the NRA. The NDP is strictly limited to the transmission network.
	LNG-N-947	Main information				The project was not agreed upon in the 2016 - 2025 NDP by the NRA. The NDP is strictly limited to the transmission network.