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Report on the methodologies and parameters used to determine the allowed or target revenue of gas transmission system operators

*Fulfilling the requirement in Article 34
of the Network Code on
Harmonised Transmission Tariff Structures for Gas*

30 October 2018

AGENCY CONCLUSION

- (1) Commission Regulation (EU) 2017/460 of 16 March 2017 establishes a Network Code on Harmonised Transmission Tariff Structures for Gas ('NC TAR'). Article 34 of the NC TAR requires the Agency for the Cooperation of Energy Regulators ('the Agency') to publish, before 6 April 2019, a report on the methodologies and parameters used to determine the allowed or target revenue of transmission system operators ('the Report').
- (2) The Agency hired Economic Consulting Associates ('the Consultant') to assist with this work by undertaking a Study to assess the methodologies and parameters used in EU Member States to determine the allowed or target revenue of gas transmission system operators ('the Study'). The Study was delivered to the Agency in September 2018.
- (3) The Agency fully supports the findings of the Study and its **Final observations**. The underlying document shall, together with the Study, be considered as the Agency fulfilling its reporting obligation under Article 34 of the NC TAR.

Focus of the Report

- (4) Article 34 of the NC TAR requires the Agency to report on both 'methodologies' and 'parameters'. It further requires that this Report be based on, at least, the parameters referred to in Article 30(1)(b)(iii). These are:
 - (1) types of assets included in the regulated asset base and their aggregated value;
 - (2) cost of capital and its calculation methodology;
 - (3) capital expenditures, including:
 - (a) methodologies to determine the initial value of the assets;
 - (b) methodologies to re-evaluate the assets;
 - (c) explanations of the evolution of the value of the assets;
 - (d) depreciation periods and amounts per asset type.
 - (4) operational expenditures;
 - (5) incentive mechanisms and efficiency targets;
 - (6) inflation indices.
- (5) Article 30 of the NC TAR uses the terms 'methodology', 'parameter' and 'value', a distinction that is relevant for the scope of this Report^{1 2}.
- (6) The Agency requested the Consultant to take a broad scope and focus on the overall methodology as well as on the key parameters and the methodology for setting these parameters, more than on the values of the parameters. There are two main reasons for this approach.

¹ An example: the *parameter* 'WACC' can have a *value* of 4.5% real, pre-tax. The *methodology* underpinning this parameter can be described at different levels of details. A high-level description of the methodology could be that the value is set using the actual cost of the company or, instead, that it is set using market data of comparable companies. At a more detailed level, it could be explained that the risk free rate, an element of the WACC, is set using (for example) monthly data of 10-year German government bonds over the period 1 January 2012 – 31 December 2017.

² The terminology can be confusing. We use 'depreciation period' for the parameter (expressed in number of years) that is set by the NRA, which is used to calculate depreciation (a cost item, expressed in euro or another currency). Also, we use the 'weighted average cost of capital' (expressed as a percentage) for the parameter that is often used to calculate the 'cost of capital' (a cost item, expressed in euro or another currency).

- (7) First of all, the Agency did not want to duplicate information. Article 30 of the NC TAR already requires that the values of the parameters be published by the NRA or TSO (as decided by the NRA). If that task is appropriately undertaken at national level, then the two sets of information together (the description of the parameters and their methodologies by the Agency and the values of the parameters provided by the NRA or TSO) will provide the relevant pieces of information to the market.
- (8) Secondly, not all information is easy to compare across countries. The parameters listed in Article 30 are of two different kinds:
- Data on expenditures (expressed in euro amounts or another currency), listed in Article 30 as operational expenses and capital expenses. This data is generally provided by the TSO to the NRA.
 - Parameters (not expressed in euro amounts or another currency) which are applied to the data on expenditures. These parameters are, for example, the WACC, the depreciation period, inflation indices and efficiency targets. They are used by the NRA to calculate the allowed or target revenues.
- (9) The data on expenditures would be difficult to compare across countries without assessing them against a measure of output (such as kilometres of network or the amount of gas transported through the network). One TSO may have more operational or capital expenditures than another TSO, but that information would not be very informative without knowing what quality of service the TSO provides to the network user. Assessing the cost against output data would come close to an exercise to determine the efficiency, which is a complex task clearly beyond the reporting obligation under Article 34 of the NC TAR³.

The outcome of the Report for the Article 30(1)(b)(iii) parameters of the NC TAR

- (10) Looking at the list of parameters in Article 30(1)(b)(iii) of the NC TAR, the Agency found:

Item 1: types of assets included in the regulated asset base

- (11) The types of assets included in the regulatory asset base are similar across countries. The Consultant identified the following main categories of assets: pipelines, compressors, controllers/metering stations, and SCADA and telecoms.

Item 2: cost of capital

- (12) The weighted average cost of capital ('WACC') can be set in pre-tax, post-tax or vanilla terms. Most regulators use a pre-tax WACC. The WACC can also be set in real or nominal terms. This choice relates to the way the Regulated Asset Base ('RAB') is set, the aim being to ensure that the TSO

³ This work is already undertaken by CEER for a number of gas TSOs. The e2gas benchmark study published in 2016 had 22 participating TSOs: Fluxys (BE), bayernets (DE), Fluxys Tenp (DE), GASCADE Gastransport (DE), Gastransport Nord (DE), Gasunie Deutschland Transport Services (DE), GRTgaz Deutschland (DE), JordgasTransport (DE), terranets bw (DE), Thyssengas (DE), Nowega (DE), Ontras - VNG Gastransport (DE), Open Grid Europe (DE), DONG Energy Pipelines (DE), Energinet.dk (DK), ENAGAS (ES), REGANOSA (ES), Gasum (FI), Plinacro (HR), GTS (NL), REN – Gasodutos (PT) and National Grid Gas Transmission (UK). The benchmark study is accessible here: <https://www.acm.nl/nl/publicaties/publicatie/15833/Rapport-Benchmarking-European-Gas-Transmission-System-Operators>

is compensated for inflation (only) once⁴. A nominal WACC is much more prevalent than a real WACC. There is considerable variability in the level of the cost of capital across Member States. Finally, in a limited number of Member States, WACC premia are used for various reasons (e.g. volume risk, security of supply, expansion of transmission capacity).

Item 3: capital expenditures

- (13) Regarding item (a) 'methodologies to determine the initial value of the assets', it is not obvious what is meant with 'initial value'. The Agency understands this to be the opening value of the regulatory asset base, normally set when the NRA started regulating the TSO, but it could also refer to the value at which a new asset enters the regulatory asset base. The methodologies that were used to determine this opening value differ across countries.
- (14) Regarding item (b) 'methodologies to re-evaluate the assets', the data show that only the Hungarian and Latvian NRAs stated that the regulatory asset base is re-evaluated (using a replacement cost methodology). The Agency's initial impression was that asset re-evaluations occurred often, which in the end the data did not confirm. The Agency concludes that it may either be a misunderstanding, or it may not be clear what is meant with 'to re-evaluate assets'.
- (15) Regarding item (c) 'explanations of the evolution of the value of the assets', the value of the regulatory asset base today can (in simple terms) be understood by taking the initial 'opening' value and subtracting depreciation and adding investments. Explaining this methodology may not be very useful to the network user. It therefore makes more sense, in the context of the publication requirements under Article 30 of the NC TAR, to explain changes in the values (e.g. which investments have taken place, how much was invested, and how much was depreciated).
- (16) Regarding item (d) 'depreciation periods and amounts per asset type', the Study shows that the depreciation periods differ significantly across countries. The NRAs explained that they consider the useful life of the asset to set the depreciation periods. It could be that the useful life of a pipeline or a compressor station varies across countries, but that is not evident. Therefore, it would be useful to explain these methodologies and the reasons for the differences.

Item 4: operational expenditures

- (17) There are different approaches to set the operational expenditures. Most NRAs use bottom-up and/or top-down assessments. Bottom-up assessments look at the efficiency and reasonableness of individual cost items whereas top-down assessments abstract from individual cost items and instead focus on broad cost categories. A limited number of NRAs use the historical operational expenditures as an estimate for efficient costs with a correction for extraordinary costs. Only a few NRAs use statistical benchmarking to determine the efficiency of the operational expenditures.

Item 5: incentive mechanism and efficiency targets

- (18) Revenue cap or price cap regulation is labelled as 'incentive regulation' because it provides strong efficiency incentives. This is due to the fact that if the TSO spends less (more) than implied by the "cap", it can retain the additional (reduced) profits until the next review (in the 'purest' form of this

⁴ If the asset base is indexed to inflation, then the WACC should be set in real terms and if the asset base is calculated using historical costs, then the WACC should be in nominal terms.

type of regulation). Rate-of-return and cost-plus regulation provide little, if any, incentives for efficiency. Most NRAs use a revenue cap or a hybrid methodology. (In most cases a revenue cap is only used on the operational expenditures, while the capital expenditures are under a cost-plus regime). The use of efficiency targets is common for operational expenditures, but not for capital expenditures.

Item 6: inflation indices

- (19) Of the Member States that use an inflation index in the most recent regulatory period for controlling revenues or prices, most use consumer price indices⁵.
- (20) Of the NRAs that use inflation indices where cost of capital is set in real terms, most use consumer price indices (7 NRAs), one uses harmonised index for consumer prices and two use retail price indices.

Future work

- (21) The Study provides an overview of the main characteristics of the methodologies in each Member State and assesses them against a number of criteria (economic efficiency, risk allocation, and other regulatory and consumer issues). This type of work has not been done before in the European Union, and the Agency considers that the Study provides valuable information to NRAs, TSOs and other market participants.
- (22) The Agency shares the Consultant's **Final observations** in Chapter 15.6 of the Study.
- (23) In addition, and having in mind that improving transparency is one of the main objectives of the NC TAR, the Agency identified the following areas, where further work is desirable:

1. Transparency

- (24) The values of the parameters in Article 30 are published for most TSOs (with the exception of the TSOs that have a multi-annual tariff period). The template that ENTSOG has developed on its own initiative is very helpful.
- (25) However, some of the terms used in Article 30 can be interpreted differently. Therefore, the information is not published in a comparable manner across the EU Member States. It would be desirable to have comparable values published.
- (26) In addition, it is difficult for network users to interpret the values. Network users would need to know what are these values used for when the allowed/target revenues are set. Furthermore, for some regimes, such as the tariff benchmark, this information may not always be relevant. Therefore, the Agency recommends that the list in Article 30 be amended (see Annex 1).
- (27) The Agency recommends that ENTSOG, in cooperation with the Agency, use the Study, including its glossary in Annex A5, to enhance the ENTSOG template and publish data according to the

⁵ Nine NRAs use CPI (consumer price index), two NRAs use HICP (harmonised Index of Consumer Prices). Of the alternative inflation indices, two NRAs use RPI (retail price index) and one uses deflated GDP. Finally, one NRA uses a mix of labour costs and CPI.

terminology proposed in the Study. The Agency also recommends to consider if this information can be made available in an even more user-friendly manner, by providing a single overview of the information of all the TSO and NRA publications on the ENTSOG and the Agency's website.

2. Tariff benchmark methodology

- (28) Recitals 7 and 8 and Article 13 of Regulation (EC) No 715/2009 mention the benchmarking of tariffs by the regulatory authorities. This methodology is used in Slovakia. As the Study focussed on comparing the more general methodologies (revenue cap, price cap, hybrid and cost-plus/rate-of-return regulation), this methodology has not been analysed extensively. Most aspects in the questionnaire were not relevant for the Slovakian system. However, it would be useful to better understand the methodology and its assessment against cost-based tariffs. The Agency invites the Slovakian NRA and TSO to include this in the publication under Article 30 of the NC TAR and to reflect how cost-based tariffs play a role in their tariff setting.

3. Profit

- (29) The term 'profit' is often mentioned when it comes to tariff regulation. On the one hand, because network users may be concerned about a high level of TSO profits and on the other hand, by TSOs who may have concerns about financeability. The Agency considers it useful if NRAs could provide market parties with a better understanding of this concept in a regulatory context:

- first of all, because there may be differences between the commercial profit values the TSO publishes and the values the regulator uses, for example because the NRA may choose to deviate from the accounting rules the commercial data are subject to;
- secondly, because profit may be easily understood in a cost-plus system, but not in other regulatory regimes. In a cost-plus system, the NRA sets the level of profit the TSO is entitled to earn. However, most NRAs use a revenue-cap or hybrid approach where the profit the TSO actually makes depends on the target (allowed or target revenues) set by the NRA, the capacity bookings (if the TSO functions under a price cap regime) and the TSO's ability to cut costs. Therefore, a high profit could be the result of:
 - the TSO being very efficient and beating the target (the objective), and/or
 - the NRA making a 'bad' forecast of the (efficient) cost, and/ or
 - more than expected bookings in the system (if the TSO functions under a price cap regime).

While it is possible to calculate the impact of the third element, it is *not possible* to distinguish between the first and the second. It is a consequence of the design choice that more (less) incentives to cut the costs go together with a higher (lower) chance of high profits or losses.

Conclusion

- (30) The Agency invites the NRAs and TSOs to follow up on the lessons emerging from the Study and, in particular, on the **Final observations** in Chapter 15.6 thereof. The Agency will facilitate future work in this area. Furthermore, the Agency recommends that the list in Article 30(1)(b)(iii) be amended to better reflect the practices across the Member States (see Annex 1 to this Report).

- (31) The Study is attached in Annex 2 to this Report.

Annex 1: Structure of Article 30(1)(b)(iii)

- (32) Early on in the process, it became clear that the terminology and the structure of the list of parameters in Article 30(1)(b)(iii) does not always match the way the allowed or target revenues are set in practice.
- (33) The Agency considers that it would be helpful to clearly distinguish between:
- the methodology to set the allowed or target revenues, including a description of the methodology for the separate parameters,
 - the values of the parameters (set by the NRA),
 - the values of the expenditures (provided by the TSO to the NRA or set by the NRA based on the parameters)
- (34) Figure 1 below is a very simple representation of how the allowed or target revenues may be set⁶. Although it does not correctly describe all steps in all systems, it aims at explaining the difference between expenditures (in green) provided by the TSO, expenditures and cost (in blue) set by the NRA and parameters (in orange) set also by the NRA.
- (35) Regarding the *values* of expenditures (in green in figure 1), it becomes a bit more complicated to determine what should be published.
- In a cost-plus regime, it makes sense to publish this data.
 - However, when incentive regulation is used, the cost and revenues are decoupled. Cost data are used as an input to set the allowed or target revenues, but within the regulatory period, the cost can deviate from the revenues. To understand the allowed or target revenues, it makes sense to publish the costs that were used as input in the model, and not, for instance, the most recent cost data.
 - Overall, care should be taken to explain if and how the published values are used⁷.
- (36) Furthermore, the Agency would not make separate item 1 ('types of assets') and item 3 ('capital expenditure'), as the Article 30(1)(b)(iii), currently suggests. Simply put, a capital expenditure represents an investment. This investment in an asset is added to the regulatory asset base. The assets are then expensed over the useful life of the asset using depreciation.
- (37) In addition, the terms 'incentive mechanisms' and 'efficiency targets' are put together in item 5 of the list. However, an incentive mechanism is a design choice, while incentive and efficiency targets are used as parameters in the various countries. Regarding the latter: there are different methodologies to set the allowed or target revenues, such as revenue-cap, price-cap or cost-plus methodologies. This choice impacts, *inter alia*, the incentives given to the gas TSO for reducing cost.

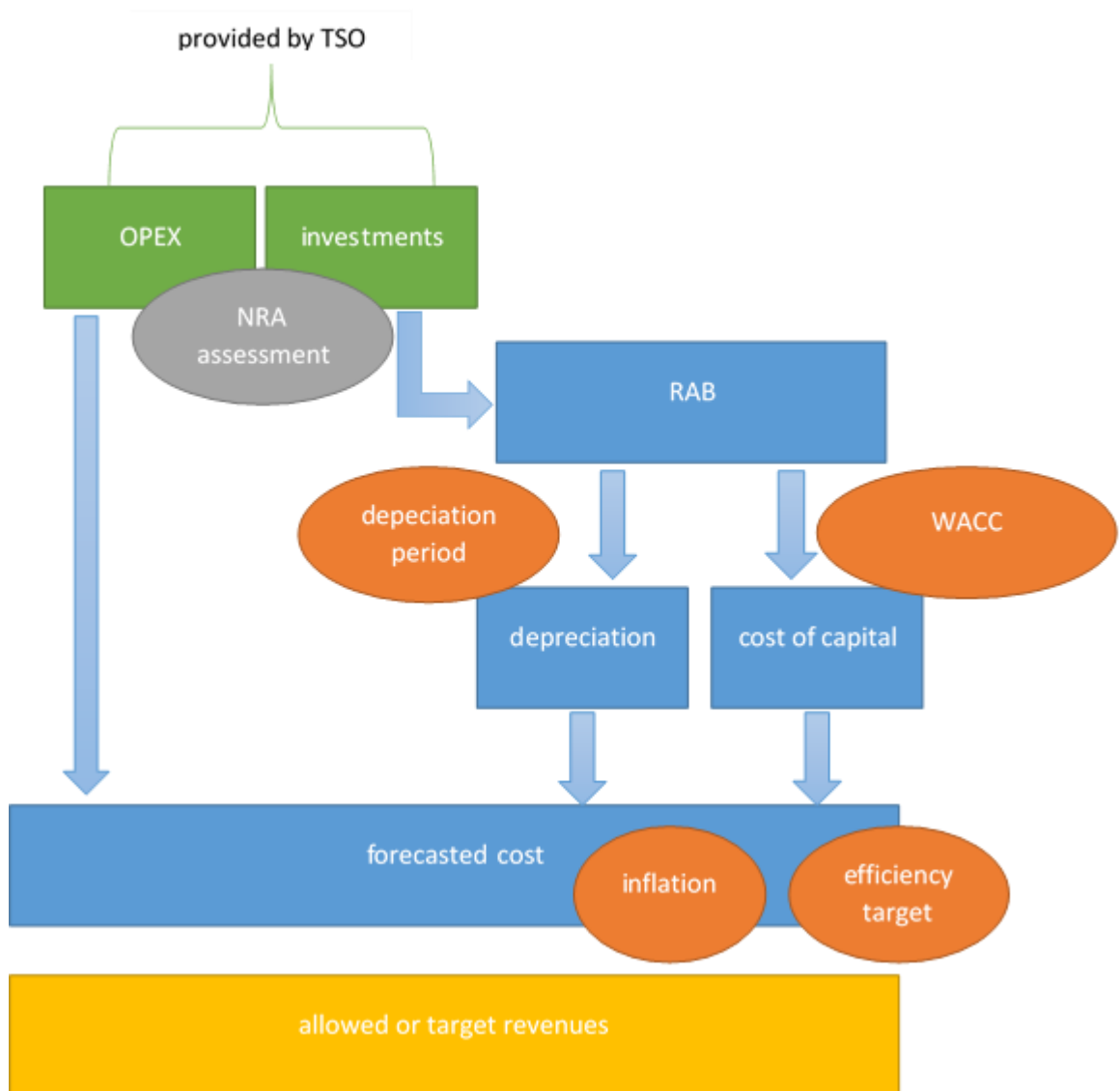
⁶ The figure is oversimplifying: there are many different choices that can be made. For example, in some systems, the cost of debt of the TSO may be used (which would then be provided by the TSO) and the NRA may only set the parameter 'cost of equity' to calculate the cost of capital.

⁷ Even more so for the 'hybrid' regimes. For example when costs and revenues are decoupled for the OPEX, but not for the CAPEX.

- (38) To conclude, the Agency recommends to change the list in Article 30(1)(b)(iii), so that the publication by the NRA or TSOs is structured along the following lines⁸:
- (1) A description of the methodology, including at least a description of:
 - (a) the overall methodology, such as revenue-cap, hybrid, cost-plus or tariff benchmarking;
 - (b) the methodology to set the regulated asset base;
 - i. methodologies to determine the initial (opening) value of the assets;
 - ii. methodologies to re-evaluate the assets;
 - iii. explanations of the evolution of the value of the assets;
 - (c) the methodology to set the cost of capital;
 - (d) the methodology to determine the TOTEX or, if applicable, OPEX and CAPEX;
 - (e) the methodology to determine the efficiency of the cost, if applicable;
 - (2) The values of the parameters:
 - (a) cost of equity and cost of debt or weighted average cost of capital in percentages;
 - (b) depreciation periods in years;
 - (c) efficiency targets in percentages;
 - (d) inflation indices;
 - (3) The values of costs and expenditures that are used for setting the allowed or target revenue in the local currency and in euro of:
 - (a) The regulated asset base per asset type;
 - (b) The depreciation per asset type;
 - (c) The cost of capital;
 - (d) Operational expenditures.

⁸ The Agency proposes that the new structure and form of publication is implemented voluntarily and as quickly as feasible, if after checking with European Commission, this approach does not contradict the current legal provisions in NC TAR.

Figure 1 Schematic overview of parameters and cost





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