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**Summary of the
CEER Report on Regulatory
Frameworks for European Energy
Networks**

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Regulatory Frameworks for European Energy Networks

1 Introduction

This CEER report analysed different regulatory systems of electricity and gas networks in most individual EU Member States, Iceland and Norway. It provides a general overview of the regulatory practices in place, the calculation of a classic and adequate rate of return, the determination of the regulatory asset base (RAB) and the depreciation of assets in the different regulatory systems. Other important individual parameters and new incentive mechanisms presented in this study have to be interpreted in the context of a whole country-specific regulatory regime. Some contents only reflect an ex ante approach for 2018, while ex post calculations still are to be executed. As tariff regulation schemes are highly complex, a direct comparison of certain parameters, such as capital costs, is difficult and should only be done in the context of the whole regulatory system.

CEER addressed this challenge by undertaking a survey among CEER members, which focused on the main elements for determining allowed revenues. This data was then subject to a basic comparison and a number of conclusions were drawn. The data collection, covering the current regulatory regimes in 2018, took place in the first half of 2018.

In comparison to the previous reports from 2014 to 2017, no major changes were found in respect of the most important parameters. But a new chapter (chapter 2 of the current report) has been added, which gives a brief overview of the regulatory regimes in individual EU Member States, Iceland and Norway. Chapters 6 and 7 of the previous reports have been removed due to the relevance of the content. For further details regarding differences or developments one can consult last year's report. This annual report focusing on the regulatory frameworks for European energy networks will be published every year in future.

2 New Chapter 2

As seen in the new added chapter 2, the report shows that different countries have different characteristics in their respective regulatory systems, which have to be considered. Despite differences in the regulatory system and the specific situation in each country, no regulatory regime can be seen as a stand-alone system with exclusive regulatory instruments. Otherwise many parallels between the regulatory regimes can be identified.

3 Economic Theory and the Regulatory System

In the past, cost-based regulation approaches (rate-of-return or cost-plus regulation) were widely used for tariff regulation purposes. As a response to the major drawbacks of these cost-based regulation (no incentive for cost minimisation or waste of resources), incentive-based approaches were developed and are currently applied in many countries.

Incentive-based regulation can be characterised by the use of financial awards and penalties to achieve the desired goals (efficient cost base) whereby the regulated company is allowed some discretion in how to achieve them. Most European countries use incentive-based regulation in the form of a mixture of a cap regulation (revenue or price) and a guaranteed rate of return. Furthermore, the survey revealed that a majority of the regulators require the cost saving mainly on the OPEX side, independent of the energy (gas/electricity) or the market layer (TSO/DSO).

4 Calculation of the Rate of Return

Even in a regulated, monopolistic market, companies – in this case network operators – must be allowed to make a return on investment, just as in a competitive market. There are different possible methods to calculate the rate of return.

Mostly a WACC factor (Weighted Average Cost of Capital) is used. In this case NRAs can distinguish between *nominal* or *real* and *before* and *after* taxation as well as a “Vanilla” WACC. For electricity network regulation, the most popular approach is to use nominal WACC before taxation. In the gas sector, the nominal WACC before taxation approach is popular as well, however the real weighted average cost of capital before taxation is also frequently. In general, WACC can be expressed by the following components:

- Risk-free rate: There are only marginal differences in the individual regulatory systems concerning evaluating the risk-free rate. Most NRAs evaluate risk-free rate on the basis of government bonds interest rates and in most cases they use the same methodology for all network operators. The most frequently used bonds have maturities of 10 years, but also 5-year bonds appear and there is a high usage of historical averages even if there is no conformity concerning the years of these averages.

- Debt premiums: The evaluation of the values differs from NRA to NRA. They are usually estimated on the basis of market analysis provided by external experts and internal comparative analysis conducted by the NRAs, but some of them also use country ratings. Most NRAs add them to the real risk-free rate and the survey shows that for the majority of the analyzed countries, the real cost of debt was evaluated between 2015 and 2018.
- Market risk premium: It is also based on market analysis or reports prepared by expert groups and is evaluated between 2015 and 2017.
- Capital gearing: Based on market analysis or reports prepared by expert groups. Concerning the year of evaluation of the gearing ratio most NRAs apply years between 2015 and 2017.
- Taxes: Mostly defined by law and evaluated between 2015 and 2017.
- Beta values: The majority of NRAs evaluate beta values by using external and internal market analysis. The most frequently applied approach in the calculation is to use the formula which includes tax. In order to make the values comparable the asset beta were calculated.

NRAs also use different length of regulatory periods and different tariff years in the individual regulatory systems. In general, the majority of NRAs evaluate the rate of return parameters in the year before the regulatory period starts and the typical regulatory period is between 3 and 5 years independent of TSO or DSO and electricity or gas sector.

5 Regulatory Asset Base

The Regulatory Asset Base (RAB) serves as a fundamental parameter in utility regulation in order to determine the allowed revenue; most Member States use 100% of RAB for that. The structure of individual components included into the RAB and their valuation differ significantly among EU Member States and even among the regulated sectors.

The RAB can be comprised of several components such as fixed assets, working capital or construction in progress. The RAB may be valued according to different methods (e.g. historical costs, indexed historical costs or actual re-purchasing costs), which will have an influence on the determination of the CAPEX.

- Fixed assets: All NRAs count fixed assets into the RAB.

- Working capital: The greater part of countries does not take working capital into the RAB. If working capital is calculated into the RAB, the application differs.
- Assets under construction: About the half of the NRAs include assets under construction into the RAB. Some countries have certain conditions for them to be included.
- Contribution from third parties: The vast majority of the NRAs are deducting such contributions from the RAB.
- Leased assets: Around 40% of the Member States include leased assets into the RAB. The most countries which not include leased assets considered them as OPEX.

The value of the assets included into the RAB could be expressed either in historical costs or re-evaluated values. The survey results that the historical cost method is the most common way for calculating the RAB components, followed by the re-evaluated assets method, while the mixture of these two methods applied only rarely.

Over half of the NRAs adjust the RAB during the regulatory period and the annual recalculation of the net book value (new investment depreciation) is the most common approach. Concerning the question whether the adjustment affects net book values by accounting for new investments and/or depreciation, most Member States confirm this.

6 Depreciation

Once a depreciation method (straight line or accelerated depreciation) has been chosen at national level, it is then applied for both gas and electricity network operators. Straight line depreciation is applied by most NRAs in gas and electricity regulation. For the most part the linear method is applied for the depreciation of the regulated assets.

The lifetime of a typical network asset ranges from 30 to 50 years and the majority of the NRAs use the individual depreciation rate for each type of asset. For both electricity and gas regulation, most NRAs apply the same depreciation rate value for typical TSO and DSO network assets alike.

Just as in the case of RAB valuation, the depreciation of assets might be based on historical values, re-evaluated values or on a mixture of these two methods. The vast majority of regulators allowed depreciation of tangible and intangible assets valued on the same basis as the RAB in their regulation, hence clear correlation between these values can be observed.

7 Further considerations

For a deeper analysis of investment conditions, it would be useful to take a closer look at other fundamental parameters such as costs per unit, share of CAPEX, total expenditures (TOTEX) or the consideration of total costs [€].

Furthermore, the current developments of the energy networks in Europe should be analysed in the future. The switch from conventional to renewable energy sources, a growing cooperation between (and inside) European energy networks and the integration of smart elements into the networks can be seen as the next huge challenges for the network operators on the one hand, but on the other as well for the regulating national authorities.