

	COMMENTS	FO-ÇRT-011
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30.09.2022

Comments related to: ERO Consultation Paper on Loss Reduction Target

Issue for comment:

Answers to the issues raised by ERO in the Consultation Paper regarding the Loss Reduction Target

The comment:

1.0 INTRODUCTION

This document presents the response of KOSTT to the issues raised by ERO in its Consultation Paper concerning the Loss Reduction Target dated 13 September 2022.

KOSTT would like to thank ERO for acknowledging and responding to the issues raised by KOSTT in its 29 July 2022 Loss Reduction Recommendation Report.

To ensure consistency and transparency in the loss calculation methodology and loss reporting process, ERO instructed KOSTT to provide the rationale for the appropriate method for calculating losses in the transmission system. KOSTT is providing that in this report.

2.0 RESPONSES TO ISSUES RAISED BY ERO IN THE CONSULTATION PAPER

ERO correctly pointed out in the CP that KOSTT has maintained consistency in its projection of losses with respect to the 10-year Development Plan, the 2023-2027 Investment Plan, and this tariff process.

ERO also noted that “ERO considers that the losses realized by KOSTT during the past regulatory period are at an efficient level and in line with the losses realized by European and regional operators.” KOSTT plans to continue to effectively manage the level of losses going forward.

A. Methodology for the Calculation of Losses in the Transmission System

As ERO correctly pointed out in the Consultation Paper, it is mandatory that the methodology and loss calculation reporting to be consistent and transparent. To fulfil this objective, KOSTT in the following presents the clarification and proposal for the methodology which should be used. Determining the optimal method for determining losses in relative terms is based on risk that determining sizes can affect the assessment of losses in the next 5 years period.

So far, two evaluation methods have been implemented:

Method 1: If as a denominator in the calculation of losses in OST is also considered export;

Method 2: If the approach is considered as the denominator in the calculation of losses in OST

The first method is based on the mathematical expression:

$$\text{Losses \%} = \frac{\text{Losses GWh}}{\text{National consumption} + \text{Export}}$$

The second method is based on the mathematical expression:

$$\text{Losses \%} = \frac{\text{Losses GWh}}{\text{Energy Entering in KOSTT}}$$

According to the first method, the losses in % depended on the losses caused in relation to the amount of national consumption and export. This means that the losses in % depended on the variations of the annual exports, which due to the high uncertainty of generation and the development of new generation capacities may imply high uncertainty in the assessment of losses in relative terms.

On the other hand, knowing that the current generation injects 90% of the power produced into the horizontal 400 kV and 220 kV network, then the surplus mainly flows into the horizontal network, which compared to the vertical network where the currents are much greater in the conductor and transformer, cause significantly less network loss. To illustrate this, simulations were made in PSS/E as follows:

- Increasing consumption and maintaining constant generation (unchanged network configuration)
- Increasing generation and keeping consumption constant (unchanged network configuration)

These two cases are shown in figure 1 and 2.

The impact of the increase in consumption or demand if the generation remains constant with the same configuration of the network, determines an almost quadratic increase in losses in the network due to Joule's law highlighted in the 110kV network which accommodates increased power flows up to the distribution network. While if the impact of exports on the network is analysed by keeping consumption constant and increasing generation, it is observed that the dependence of losses with the increase in export is almost linear.

KOSTT considers that the second method of assessing losses in relative terms is more optimal since in this case the certainty of predicting losses depends only on two factors: **Network development and demand development.**

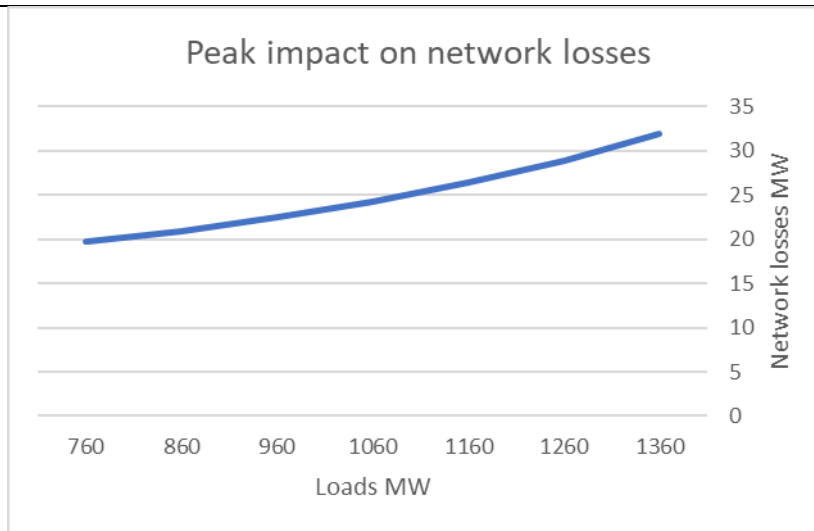


Figure 1. Impact of consumption on losses in the constant generation network

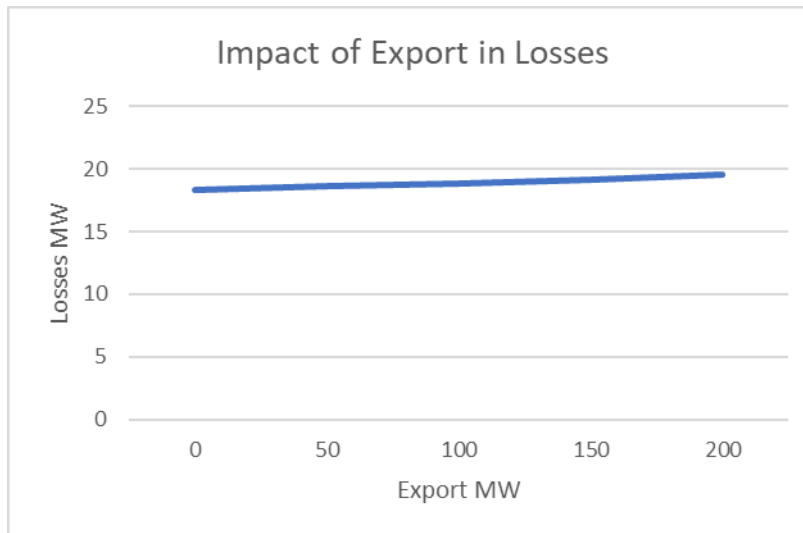


Figure 2. The impact of exports (excesses) on network losses with constant consumption

B. KOSTT Forecast of Losses for MYT3

Based on the calculation of losses according to the method described in the document "Technical Performance Indicators" approved by ZRE, the losses in relative terms predicted for the third period vary in the range of 1.74%-1.83%

Due to the high uncertainty in terms of planning the incoming energy in the transmission, but also in the demand for electricity at the time of the global crisis, KOSTT proposes that in the third tariff period the allowed level of losses be set at 1.78%.



The table below contains the projections of losses for the following 5 years of MYT3, computed in accordance with the methodology documented in section A.

Table 1. Prediction of transmission losses for PR3

Year	2023	2024	2025	2026	2027	
<i>National Net Consumption</i>	6878	6892	6912	6939	6950	
<i>Entry in Transmission [GWh]</i>	7066	7251	7493	7571	7584	
<i>Measured Losses / forecast [GWh]</i>	129	129	131	132	134	<i>Average</i>
<i>Losses % (on Entry in Transmission)</i>	1.83%	1.78%	1.75%	1.74%	1.77%	1.77%

C. Transmission Loss Sharing Factor

In its 29 July 2022 report to ERO concerning losses, KOSTT recommended that a 50% loss sharing factor be applied for MYT3. In its Consultation Paper, ERO indicated in Table 8 that a 50% sharing factor was appropriate for 2023. For the years 2024 through 2027, however, the factor is shown as zero. Since ERO did not discuss the issue of a zero factor, we assume this was a typographical error and it will be corrected in the next report.

If not, then KOSTT strongly requires that the loss sharing factor be 50% for the entire PR3, otherwise KOSTT would be exposed to great financial risks as a result of the energy crisis which is expected to last and the great fluctuation of prices.

3.0 SUMMARY

Based on the analysis and discussion in section II, the Allowable Loss Level should be 1.78% and the Allocation Factor should be 50% for the hole MYT3 period.