29.07.2022

Third multi-year tariff (2023-2027)
Proposal for input values

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1.0 ENTRY

Energy Regulatory Energy on May 16, 2022, has opened the process of the third Periodic Review for multi-year tariffs (MYT3) to set the Maximum Allowed Revenues (MAR) of TSO/MO and DSO licensees, for the period of April 1 2023 to March 31, 2027.

This document presents KOSTT's proposals for Input Values, addressed to the Office of the Energy Regulator (ERO) as required by the "Rule for Setting the Maximum Allowed Revenues of the Transmission System Operator and Market (Rule for OST/OT Revenues) -'s)" dated March 16, 2017.

This periodic review is being done at a time of a major crisis in Kosovo's energy sector. KOSTT has suffered significant losses due to a number of factors, including:

• The inability to cover (recover) the cost of the energy provided for free to consumers in the north of Kosovo.

• The inability of KEDS and KESCO to pay KOSTT the required obligations for the Utilization of the Transmission System (TSO) and the Market Operator (OT), due to their extreme financial situation. This is mainly due to their inability to cover (in time) the rising costs of providing energy to consumers, especially considering the poor performance of KEK's generating units and the high cost of energy purchased in the markets regional energy in competition with enterprises in Western and Central Europe, which are experiencing severe energy crises.

• The inability to cover (in time) rapidly increasing energy costs related to system losses, which are required to be procured in regional energy markets during this severe energy crisis.

• Worldwide inflation levels, material shortages and supply chain problems.

• Great increase in national consumption.

All these events affect the level of risk in which KOSTT operates, affecting some components of its cost of capital, as well as other elements of the overall Maximum Allowed Income.

KOSTT appreciates the difficult situation in which ERO finds itself, given the political and social barriers that prevent the transition of market-based prices to timely tariffs for households and small businesses in Kosovo. The value of "Harmonized Inflation of Europe (HICP) 2022" for the most recent 12-month period ended 30 June 2022 is 8.6% and is increasing every month. This is far greater than any retail price increase ever given by ERO.

In the following, KOSTT's proposals for the Input Values for the Third Periodic Review 2023-2027 are presented.

2.0 EFFICIENCY FACTOR

KOSTT is allowed to include the cost of Operation and Maintenance expense in its allowed revenues starting with a base cost determined during the periodic (5 year) tariff review and adjusted each year by (1) inflation, and (2) an efficiency factor. This is referred to as “CPI – x” regulation. ERO defines the "Efficiency Factor" as “the target of cost reduction set during Periodic Reviews and applied at Regular Adjustments to determine allowed operating and maintenance costs of the TSO/MO.” The Rule states that the “Regulator shall set the Efficiency Factor at Periodic Reviews based on the annual efficiency improvement in the operating and maintenance costs of the TSO/MO that can be expected.”

In general, if KOSTT does not incur the costs allowed for an annual period, it is required to share the unspent funds with customers based on a Sharing Factor. In the event of an excess of expenses over the allowed limit, KOSTT must suffer a loss, unless it can be proven that the excess was due to factors beyond its control.

ERO noted during the prior multiyear reviews that it is difficult to determine efficiency factors for the licensees in Kosovo for several reasons (including the lack of similar entities in the country), therefore, ERO refers to efficiency factors used by regional regulators to set the level in Kosovo. The factor was set at 1.5% in 2017 for PR2 and has not been changed since.

KOSTT recommends that the value for the "Efficiency Factor" be set at zero for the next PR3.

The rationale for this recommendation is documented below.

Justification for the Recommendation

A. The level of the Efficiency Factor was arbitrarily set at 1.5% to utilize a methodology primarily intended for highly developed countries.

CPI-x regulation has been used by regulators for many years in developed countries. Those utilities have been operating on a commercial basis with highly established management practices. In addition, the sophistication of their systems (developed over many decades), allows for efficient operation from a technical, operational, and management perspective. KOSTT, as a government owned utility which is rapidly evolving as a regional operator in the new ENTSO-E role, has significantly greater cost pressures than highly established utilities. An example is the political problems that have been imposed on KOSTT with respect to supplying free energy to consumers in North Kosovo and the related problems with EMS concerning the border since 2020.

B. Practices of members of Energy Regulators Regional Association (ERRA).

In April 2020, Economic Consulting Associates provided a report to ERRA titled "Regulatory Approaches to Revenue Setting for Electricity Transmission and Distribution System Operators". That report indicated: "among ERRA Member Organizations, there is currently limited use made of efficiency factors either at the level of the tariff or revenue control or in setting cost allowances." Of the 20 regulators included in the study, 50% (10) do **not** utilize efficiency factors. Of the remaining 10 regulators:

- 2 did not disclose the value
- 3 use a 1% factor
- 4 use 1.5% (including Kosovo)
- 1 uses 4% (Nigeria, an outlier)

Based on the above, the use of a 1.5% factor is not typical among ERRA countries.

C. As a government owned utility, KOSTT does not have sufficient flexibility to manage costs to an externally determined level.

Privately owned utilities subject to Performance Based Regulation (PBR), price caps, cost caps, etc. generally attempt to "manage to the level of allowed costs." As a Government Entity, KOSTT does not have significant management flexibility to:

- Reduce staff levels
- Set wage levels
- Negotiate material and commodity prices directly with suppliers
- Negotiate prices for contracted services

KOSTT is subject to Government influence and policies that limit its options compared to privately owned businesses.

D. Comparison of actual OPEX costs for the most recent 5-year period to the level allowed for cost recovery show minimal correlation.

Table 1 displays the allowed O&M costs for the most recent 5 years compared to the actual expenditures of KOSTT.

ERO Tariff Allowances for KOSTT OPEX compared to Actual Results (thousands of Euros)						
	2017	2018	2019	2020	2021	5 Years
ERO Allowance						
Labor Cost	3,226	5,021	5,214	5,172	5,211	23,844
Maintenance	1,370	1,077	1,077	1,060	1,033	5,617
Other Opex	1,856	1,476	1,393	1,108	1,120	6,954
TOTAL	**6,453**	**7,574**	**7,685**	**7,340**	**7,364**	**36,415**
Actual Cost						
Labor Cost	5,016	4,952	5,431	5,529	5,287	26,215
Maintenance	686	494	684	753	826	3,443
Other Opex	1,240	1,224	1,061	1,184	1,850	6,559
TOTAL	**6,942**	**6,670**	**7,176**	**7,466**	**7,963**	**36,217**
Percent of costs recovered						
Labor Cost	64%	101%	96%	94%	99%	91%
Maintenance	200%	218%	157%	141%	125%	163%
Other Opex	150%	121%	131%	94%	61%	106%
TOTAL	**93%**	**114%**	**107%**	**98%**	**92%**	**101%**

Table 1 - ERO Tariff Allowances for KOSTT OPEX compared to Actual Results

You may notice in the following:

- Although total cost recovery over the 5-year period is close to actual costs, there is significant variability within the components.
- Maintenance costs for each year are significantly lower than the allowed level. Section I provides a discussion of this issue, including the fact that there is significant deferred maintenance.
- Actual labor costs are higher than the allowed levels in most years. This is especially important since KOSTT needs higher staffing levels due to ETNSO requirements and the growth of KOSTT's assets. ERO allowances for labor covers the cost of 381 employees, however, more are needed to accomplish KOSTT’s mission.
- In prior tariff reviews, ERO has encouraged KOSTT to reduce the number of employees. KOSTT has made efforts to optimize its work force and recently reduced the number of operators per substation from 5 to 4 operators.

- The significant increase in assets in recent years has not been followed by an increase in the staff for conducting the operation and maintenance of the new assets.

NOTE: The purpose of this document is not to recommend a certain level of operation and maintenance expenditures – that will be done elsewhere in the tariff review process. The intention of this discussion is to highlight the point that a simplistic reduction of O&M costs by an arbitrary efficiency factor does not properly reflect the operational and financial realities faced by KOSTT in a changing environment.

E. The asset base has been increasing over the years to meet the changing needs of Kosovo

Although KOSTT can be expected to use good management practices to achieve some efficiencies and cost savings, the increasing needs to add and improve facilities will result in personnel and other O&M cost increases not covered by a CPI – x approach. Table 2 shows the change in physical assets over time.

Physical assets	2021	2012/ 2013	%
Total number of facilities	40	37	8%
Number of other facilities/buildings	3	2	50%
Number of Sub-Stations	37	35	6%
Number of Energy Transformers	75	65	15%
Number of 400/220/110 kV fields	284	260	9%
Number of systems for own expenditures	38	35	9%
Length of 400/220/110 kV [km] transmission lines	1,410	1,223	15%

Table 2 – Increase in Physical Assets of KOSTT over Time

Increases in the number of new substations, length of high voltage lines and facilities and other transmission equipment, as well as the integration of the 110/x kV/kV Vallaq substation requires 20-25 additional people, primarily in the planning, maintenance, and operation sectors. See Table 3 for a forecast of the number of personnel needed by KOSTT over the upcoming 5-year period.

Organization	2022 Actual	2023	2024	2025	2026	2027
Transmission Operation	221	230	235	235	235	243
System Operation	30	35	35	35	35	35
Market Operation	18	18	18	18	18	18
Support Departments	112	116	117	117	118	120
KOSTT Total	**381**	**399**	**405**	**405**	**406**	**416**

Table 3 - Staff Planning for the Tariff Period 2023-2027

F. Several capital projects are planned over the next 5 years that will increase O&M costs

Inflation and efficiency adjustments will not accommodate new capital projects, especially to the extent they do not result in increased volumes and billed revenue. Capital projects planned over the next 5 years that will increase O&M costs include:

- Load support projects (New Substations: SS Fushe Kosova, SS Kastrioti, SS Malisheva, SS Dragashi)
- Transformer reinforcement projects (new added (second) power transformers in: SS Klina, SS Gjilani 5, SS Malisheva, SS Kastrioti and SS Fushe Kosova)
- New 110 kV lines: (110 kV lines SS Prizreni 2- SS Dragashi- SS Kuksi (till border), SS Prishtina 4- SS Prishtina 2, SS Prizreni 2,
- Variable shunt reactor 100MVAr in SS Ferizaj 2
- Re-vitalization and reinforcement project for 110 kV line segment SS Kosova A- SS Bardhi- SS Ilirida

G. Government regulations, environmental standards, and new health and safety requirements increase costs

Government Regulations, environmental standards, health, and safety requirements, etc. add additional layers of costs that do not lend themselves to simple indexing. According to the Law on Labour and the Law on Safety and Health at Work, with the aim at providing safe environment for work, KOSTT has legal obligations, such as**:**

- Health and accident insurance for employees
- Systematic Health Checks for employees
- Supply of Personal and Collective Protection Equipment
- Fire protection and creation of a safety zone around Substation facilities
- Public Safety Projects

H. The recent ENTSO-E designation requires KOSTT to add staff and increase operating costs

Due to ETNSO and the growth of KOSTT's assets (new substations), there is a need to increase the number of staff above the current number of 381 allowed. Although ERO

allowed some increases for O&M related to ENTSO-E, there was no allowance for the increased staff needed. New requirements include:

- Specific requirements related to the online maintenance of ICT services, especially the Internet, E-mail, Telephony and the Web and their security, the requirements provided for by ISO 27001 Standard (since we are already certified) regarding the security of information, additional staff of 3-4 people needed not only for maintenance but also that staff needs to be qualified in the area of safety.
- After signing the connection agreement with ENTSO-E and independent operation as a Regulatory Zone within the Kosovo-Albania Regulatory Block, the Market Operation Planning Sector is made operational, which is currently without the needed staff of 4 to 5 additional people. Regarding the submitted request to increase the number of employees in the SCADA/EMS&SCS sector, our request still stands, and it deals with the real completion of activities that this sector must cover.
- Through the "Migration towards advanced telecommunication systems" project, KOSTT plans to fulfil the conditions required by ENTSO-E and the Electronic Highway Technical Reference Manual (TRM) for the telecommunication system in Transmission System Operators.
- To increase the availability of the telecommunications system, it is necessary to increase the maintenance staff in the telecommunications sector.
- Reports or feasibility study on transmission development options to see the potential to economically increase the interconnector transfer capability, options for upgrading the high-voltage transmission lines to facilitate increased opportunities for renewable energy development and provide improved network security.

I. Cash constraints have impacted KOSTT in the past, resulting in deferring or canceling maintenance projects. The ongoing crisis in the sector will make the situation worse.

As shown in Table 1, maintenance costs for each year are significantly lower than the allowed level. This is due to the fact that when there are cash shortages, maintenance is the primary component of OPEX that is reduced. Most other operating costs cannot be reduced since the system must be up and running. Since the impact of maintenance cost reductions are primarily felt in the future, the hard decision is to defer projects. Of course, deferring maintenance is not a prudent management practice and it will eventually impact service levels and result in higher cost in the future if equipment prematurely fails.

3.0 ASSESSMENT OF LOSSES IN THE TRANSMISSION NETWORK

Losses in the transmission network are the result of electromagnetic processes that develop during the process of transmission and transformation of electricity in the network. Electricity losses depend on load losses, iron losses and Corona losses.

- The first factor is dominant and depends on the development of the network and the demand for electricity. The dependence of load losses is in quadratic function with the current flowing in the network elements. This means that systems with a low load factor for the same energy consumption cause greater losses.
- The second factor depends on iron losses caused by magnetic fluxes and eddy currents in the magnetic core of electric machines, as such, they dominate in power transformers. They are considered constant but actually depend on the voltage level. What this means is that the increase in the level of tension in the horizontal network of the region will affect the increase in iron losses for the transmission system of Kosovo.
- The third factor - corona losses have a relatively low impact on participation in total losses. These losses mainly dominate lines and voltage systems >220 kV.

The historical development of power losses since 2007 does not follow the demand and peak curve in a quadratic form, as substantial investments have been made in the transmission network in the last two decades.
After the main investments with high effect, SS Peja 3 and SS Ferizaj 2, the losses in the transmission network have entered the stable zone, even though the demand has continued with continuous growth, this can be seen in the diagrams of losses and consumption as follows. The ratio of the change in losses to the increase in consumption reflects the effect of projects on the transmission network.
The effect of the enormous increase in consumption in 2021 can be observed in the increase of losses in the transmission network.
KOSTT, within the framework of increasing efficiency in the network in the operational programs, has integrated the seasonal disconnection of auto-transformers with the aim of avoiding iron losses, always taking into consideration the fulfilment of the N-1 criterion in the transmission network.

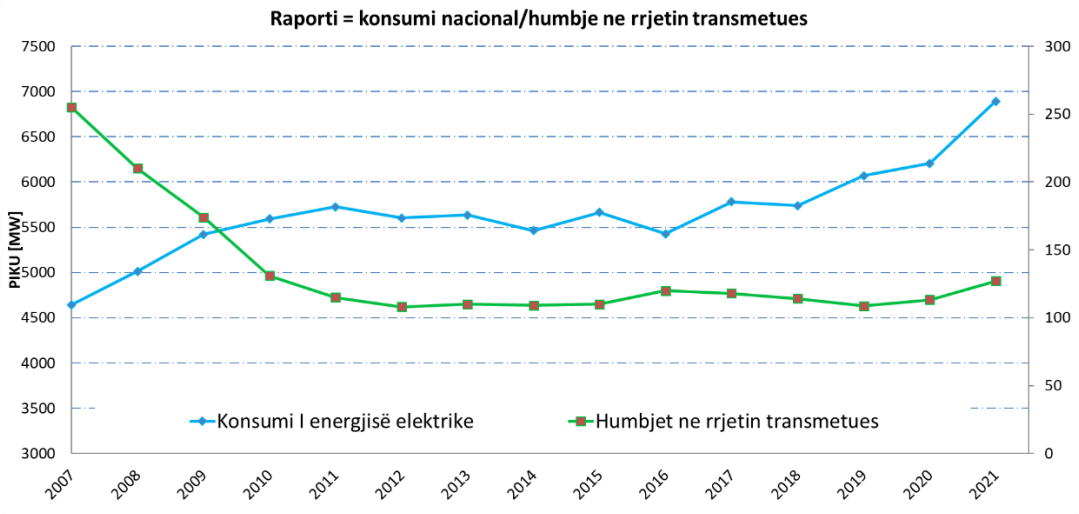

Figure 1. Ratio of change in losses to increase in consumption

The projection of losses in the transmission network for the third tariff period is based on the projects from the 10-year development plan, respectively from the 2022-2027 Investment Plan sent to ERO.
The main factor that determines the estimation of losses is the estimation of the load and demand for electricity in the following 5 years. Within this framework, projects with an impact on reducing losses are mainly attributed to network reinforcement projects, as well as load support and revitalization projects.

The first category creates new power flow paths affecting the reduction of power flows in other elements, mainly related to the new 110 kV transmission lines such as the lines in the projects: SS Dragashi, Lines in Prizren, Line Prishtina 4- Prishtina 2 , Reinforcement of the line segment Kosova A- Palaj_Ilirida-Vallaq, revitalization of lines with a section of 150 mm2, etc. The substation projects: Fushë Kosova, Kastrioti, Malisheva and Dragashi also have the effect of reallocating power flows. With these projects, the transformers and connecting lines in SS Prizreni 1, SS Rahoveci, SS Prishtina 1 and SS Bibaj are unloaded.
On the other hand, there are projects that affect the increase of losses and are mainly related to losses in iron. This category includes additional transformers such as SS Klina, SS Gjilani 5, SS Kastriot, etc.

It is worth noting that the above-mentioned projects in the distribution network affect the reduction of losses since they will enable the conversion of the network from 10 kV to 20 kV and the passivation of some 35/10 kV substations.
The following table presents the development of losses in the transmission network for the two tariff periods I and II.

	PERIOD I					PERIOD II				
Year	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**
Net national consumption	5524	5356	5553	5306	5663	5625	5960	6092	6764	6773
In transmission -input [GWh]	**8418**	**8126**	**8419**	**8087**	8481	8439	8769	8920	9541	9609
Measured losses / estimates [GWh]	**110**	**109**	**110**	**120**	**118**	**114**	**109**	**113**	**127**	**137**
Exports	966	559	662	1170	880	677	905	1283	835	1026
Total energy Net Consumption + export	6490	5914	6215	6476	6543	6302	6865	7375	7599	7799
Losses % (to Net Consumption+Export)	1.70%	1.84%	1.77%	1.86%	1.80%	1.81%	1.58%	1.53%	1.67%	1.75%

Table 4 – Losses in the transmission network for the two tariff periods

In relative terms, transmission losses depend on the level of net consumption and export. Due to the high uncertainty in the export estimates, 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 **1.85%.**

In the table below, the possible projections of the development of losses in the following 5 years are presented.

	PERIOD III (Planning)					
Year	**2023**	**2024**	**2025**	**2026**	**2027**	
Net national consumption	6878	6892	6912	6939	6950	
In transmission -input [GWh]	9707	9721	9743	9771	9784	
Measured losses / estimates [GWh]	**129**	129	131	132	134	
Exports	59	230	605	605	605	
Total energy Net Consumption + export	6937	7122	7517	7544	7555	**Average**
Losses % (to Net Consumption+Export)	1.86%	1.81%	1.74%	1.75%	1.77%	1.79%

Table 5. Possible projections of the development of losses in the next 5 years

4.0 TRANSMISSION LOSSES SHARE FACTOR

For the Third Regulatory Period 2023-2027, KOSTT requires that the transmission losses share factor be 50/50.

This is based on the fact that not all factors that affect the level of transmission losses are under the control of KOSTT.

Therefore, the division of losses or savings between KOSTT and the consumer with a distribution factor of 50/50 is the appropriate division which does not risk the financial damage of the company and provides incentives to reduce losses in the future.

5.0 WEIGHTED AVERAGE COST OF CAPITAL (WACC)

As a price regulated utility, KOSTT is allowed to recover its costs in accordance with the ERO "Rule on Maximum Allowed Revenues of Transmission System Operator and Market Operator (Rule on TSO/MO Revenues)" dated 16 March 2017. This Rule specifies that KOSTT is allowed to recover its prudently incurred costs by licensed activity. The costs to be recovered are in two major categories:

- **Operational Costs** for the licensed activity, which include operating and maintenance, ancillary services, cost of energy losses, license fees, etc.
- **Capital Costs** related to the licensed activity, which include (1) recovery of asset costs through depreciation and (2) the cost to finance those assets, determined by applying a rate of return (WACC) to a Regulatory Asset Base (RAB).

This submission puts forth KOSTT's position with respect to the WACC that should be used during PR3.

I. WACC Determination in Accordance with the Tariff Methodology

The tariff methodology utilizes a conventional approach to determining the Allowed Return on Capital by applying a Weighted Average Cost of Capital (WACC) to a Regulatory Asset Base (RAB). It differs from convention, however, in that it initially expresses the WACC in "Real" terms, as opposed to "Nominal". Nominal values are generally used since they are available directly from the regulated entity or in the securities markets. ERO then adds the inflation rate to the WACC to have a nominal rate to apply to the RAB to compute the Allowed Return on Capital, which must be in nominal terms. The point is that the reader must carefully apply the algorithms in the tariff methodology to achieve the desired result.

Using the methodology, WACC is determined using the following parameters:

WACC = (1 - g) * (rE) / {1 - t) + g * (rD)

Where: g = gearing (debt: debt+ equity ratio)

rE = real cost of equity (expressed as a%}

rD = real cost debt (expressed as a%)

t = Kosovo corporate income tax rate

Cost of Equity (rE) is specified based on the Capital Asset Pricing Model as follows:

rE = rf + 6i * ERPm

Where: rf = the risk-free rate

ERPm = equity risk premium applicable to the market as a whole

6i = covariance between the returns on the individual equity asset and those of the market as a whole (the equity beta)

Cost of Debt (rD) is supposed to represent the cost of debt of the TSO/MO

We address the cost of debt in Section IV, the cost of equity in Section V, and the resulting WACC in Section VI, addressing each of the variables and the recommended value for each in accordance with the prescribed methodology. First, however, we would like to provide comments on the methodology itself to provide a context as to our approach.

As discussed previously, the REAL costs of debt and equity cannot be determined directly, they are generally determined based on the respective market costs adjusted for inflation. In recent years, given low levels of inflation and low interest rates globally, the "Real" cost of debt to governments and private borrowers has been very low or negative. This has been changing rapidly with the intervention of governments to manage their economies and the recent surge in inflation. Europe is one of the few regions that has just recently made the transition from negative real short-term interest rates. On 21 July 2022, the European Central Bank (ECB) raised its key interest rate (Deposit Facility Rate) from negative 0.5% to 0%, the first increase in over 10 years. This reflects the concern of the EBC over the European inflation rate of 8.6%, the highest level since the EURO was introduced.

Secondly, the Capital Asset Pricing Model (CAPM) was developed to analyze security prices and determine the cost of equity to entities operating in the capital markets. Given the fact that there are no functioning capital markets in Kosovo, the use of this model is tenuous. Of course, over the years CAPM has been adapted to use in non-profit entities, government owned entities (such as KOSTT), and for other than capital market purposes (capital budgeting, for example). ERO has commented over time in consultation papers that CAPM is difficult to apply in Kosovo as well as the fact that the cost of debt is difficult to determine for an entity that does not issue debt commercially. It is within this context that KOSTT will propose input values to ERO that are appropriate to accomplish the objective of determining appropriate tariffs for KOSTT.

II. WACC Determination from PR2

In PR2, KOSTT provided its recommended WACC to ERO and ERO initially put forth its position. During the process, the Government became involved and indicated that, as the owner of KOSTT, it would accept a low return on equity, presumably to keep retail tariffs low. As PR2 progressed, however, ERO simply decided to set the WACC for KOSTT equal to the WACC it set for KEDS (8.5%). The rationale was that they are both network operators. Key differences, however, are that (1) KEDS is privately owned, (2) KOSTT has licensed activities other than the network, and (3) KOSTT faces a higher level of risk which impacts its cost of capital.

Table 1: ERO Determination of WACC for Network Operators – PR2

	Component		Value
a	Risk Free Rate Real rf		3.0%
b	Debt Premium		2.8%
c	Debt Cost, Real (rD)	= a + b	5.8%
d	Market Risk Premium (ERP_m)		4.5%
e	Equity Beta (B)		0.75
f	Equity Cost Post Tax Real	= a + (d*e)	6.4%
g	Tax Rate (t)		10%
h	Equity Cost Pre-Tax Real	= f / (1-g)	7.1%
i	Gearing (g)		40%
j	WACC - Pre-Tax, real	((1-i) *h)+(i*c)	6.6%
k	CPI	See Note 1	1.9%
l	WACC – Pre-Tax, nominal	= j + k	8.5%

Table 6. ERO determination of the WACC derivation from PR2

Note 1: the CPI is the actual value of inflation measured using the "Harmonised Indices of Consumer Prices (HICPs) - All Items, for the Eurozone" published by Eurostat

I. Cost of Debt Analysis

The ERO tariff methodology specifies the determination of the cost of debt as follows:

> *"The cost of debt (rD) shall be the average interest rate of existing long-term loans (exceeding 1 year) to the TSO/MO, expressed in real terms and weighted according to the value in Euros of each loan.*
>
> *4.3 Where the Regulator considers there are insufficient existing loans to provide a reasonable estimate of the actual cost of future debt financing to the TSO/MO, the Regulator may make an adjustment to the actual cost of debt calculated as above. This adjustment shall be made based on:*
>
> *(i) An assessment of the prevailing market interest rate for loans to businesses of similar size, risk and credit status as the TSO/MO.*
>
> *(ii) An assessment of the expected interest rate applied to any future concessional loans to the TSO/MO.*
>
> *(iii) An assessment of the expected mix of commercial (non-concessional) and concessional loans in the debt of the TSO/MO over the coming Regulatory Period."*

The weighted average cost of debt for KOSTT as of 30 June 2022 is 3% as shown in Table 2.

Source	Rate	Outstanding	Annual Interest	
Banka Gjermane KfW	4.82%	3,999,996	192,800	
Banka Gjermane KfW	3.50%	5,682,383	198,883	
Banka Gjermane KfW	0.75%	5,000,000	37,500	
Kredi nga qeveria nga fondi i KfW	0.75%	3,000,000	22,500	
BERZH (direkt) [Rate = 3.5% + eurobor (1.04%)	4.54%	17,923,537	813,729	
Qeveria e Kosovës	2.26%	26,500,000	598,900	
	TOTALS	**62,105,916**	**1,864,312**	
Weighted Average Cost of Debt Outstanding				**3.00%**

Table 7: KOSTT Weighted Average Cost of Debt as of 26 July 2022 (Euros)

The reader should note that the values in Table 2 are NOMINAL, and therefore given the current Eurozone HICP of 8.6%, the REAL value is negative 5.6%.

As ERO pointed out in prior tariff reviews, the loans are based on concessionary terms and do not represent commercial borrowings. Also, there are no businesses in Kosovo of similar size, risk, and credit status, therefore, we have no guidance there. With respect to a forecast of future borrowings, the only potential new loan KOSTT is hoping for is from KfW, however, it is contingent on resolving the issue of free electricity to North Kosovo, among other things. It would be a concessionary loan of 25.5 million Euros at an estimated rate of 1%. In the event the loan materializes sometime next year, it could reduce the nominal cost of debt from the current 3% to approximately 2.4%.

In PR2, ERO utilized the 10-year average yield of Hungarian Government debt securities (3.0%) as being representative of the highest risk of traded long-term debt among regional comparatives. Of course, Kosovo government securities are likely riskier than those of Hungary. Using a similar approach for this tariff review, the current yield on a 10-year Hungarian bond is 8.76%. The rate over the past 5 years has varied from a low of 2.02% to the current 8.76% with the 5-year average of 4%. Using the 4% value and adding a debt premium of 2.8%, the cost of debt would be 6.8% as opposed to the 5.8% used in PR2. Of course, that is a nominal rate, therefore the real rate would be negative 1.8%. ERO recognizes that such a negative rate is not appropriate for use in tariff setting.

Given that risk free rates have been rising rapidly and given the worsening global financial situation, it would be reasonable to utilize the current Hungarian Government bond yield of 8.76% reduced by the current inflation factor of 8.6% and round to zero to obtain a real risk-free rate. Adding the 2.8% Debt Premium used in PR2 would produce a **"Real Debt Cost" of 2.8%,** which is the value KOSTT proposes to be used in PR3, which equates to a **"Nominal Debt Cost" of 11.4%.**

Of course, if ERO is not comfortable with the use of real risk-free rate of 0%, it can utilize something greater, however, KOSTT objects strongly to the use of a negative rate in any rational economic environment.

II. Cost of Equity Analysis

As discussed in Section II, although the Capital Asset Pricing Model (CAPM) is not directly applicable to entities in countries without capital markets, without local risk-free rates, without measurable equity risk premiums, and without measurable beta values, it is frequently used by regulators in those countries. A much more straightforward approach for government owned entities would be to add an Equity Risk Premium (reflecting the additional risk of equity vs debt) to the cost of debt of a firm to arrive at the cost of equity. Such an approach has been used to estimate the cost of equity for closely held firms or for firms with minimal public trading volumes. However, since the tariff methodology calls for the use of CAPM, we will work within that framework.

The CAPM estimates the cost of equity using the following formula:

rE = rf + 6 * ERPm

where: **rf** is the risk-free rate

6 is the covariance between the returns on the individual equity asset and those of the market as a whole (the equity beta)

ERPm is the equity risk premium applicable to the market as a whole

KOSTT will address each of the three variables of CAPM and utilize those to develop its recommended cost of equity.

In Section IV, we proposed the use of a risk-free rate of 0%, given the current inflation level of the "Harmonised Indices of Consumer Prices (HICPs) - All Items, for the Eurozone" published by Eurostat" as of 30 June 2022 of 8.6%. For consistency, that value will be used in this section.

The Beta value for KOSTT cannot be directly determined since the shares do not trade on a market. Of course, beta is also referred to as a measure of the relative risk of the equity in a firm. ERO had traditionally utilized a beta value of 1.0, signifying that the risk of KOSTT was average. In PR2, however, ERO reduced the beta value to 0.75, indicating that KOSTT is only 75% as risky as the average company. Beta values in the range of 0.7 to 1.0 have traditionally been used for utilities across the world. The situation with KOSTT, however, indicate that it is much riskier than the average firm due to:

- The inability to recover the cost of energy provided free to consumers in North Kosovo.
- Inability of KEDS and KESCO to pay the required Transmission Use of System (TUOS) and Market Operator (MO) obligations to KOSTT, due to their extreme financial situations.
- The inability to recover (on a timely basis) the rapidly increasing energy cost related to system losses, which are required to be procured on regional energy markets during this severe energy crisis.

Those risks are in addition to the risks faced by utilities in general including the transition from fossil fuels to renewables which impact the transmission system with respect to stability and the need to add capital and operating costs to accommodate the transition. This is in addition to risks being faced by industry in general including worldwide Inflation levels, material shortages, and supply chain issues.

The risk faced by KOSTT is also exemplified by the actual results for the prior 5 years as shown in Table 3.

YEAR	Net Income	Ending Equity	Average Equity	ROE
2016		89		
2017	2	91	90	2.2%
2018	-1	90	90.5	-1.1%
2019	23	112	101	20.5%
2020	16	126	119	12.7%
2021	-27	100	113	-27.0%
5 Year Total	13			
5 Year Average	2.6		101.3	**2.6%**

Table 8: KOSTT Return on Equity (millions of Euros, except percentages)

The average annual Return on Equity (ROE) for KOSTT for the past 5 years was 2.6%, far lower than the authorized 6.4% value authorized in PR2. In addition, risk is measured by uncertainty. The reader can also see the significant uncertainty that is evident from the wild fluctuations in the ROE values from year to year. This is indicative of a firm with a beta value much greater than 1.0. It is certainly not appropriate to continue using a low-risk beta value of 0.75. Although it could be argued that the value should be greater than 1.0, **KOSTT proposes that a value of 1.0 be used for beta for PR3**.

The third variable needed for CAPM is the Equity Risk Premium (ERPm). The value used for PR2 was 4.5%. The rationale ERO used was that the value of 6.7% used in PR1 was higher than EU regulators were using and, therefore the value was reduced to 4.5%.

KOSTT has reviewed several research reports addressing the issue of the Equity Risk Premium. Our review included the following sources:

- The “Equity Market Risk Premium Research Summary” published by KPMG on 31 March 2022 indicates a value of 5.5% as follows: “We recommend the use of an equity market risk premium (“MRP”) of 5.5% as per 31 March 2022. Between the fourth quarter of 2021 and first quarter of 2022 we have observed lower stock prices, albeit combined

with increased volatility due to increasing global uncertainties. As a result of these developments, we increase our MRP to 5.5%, an increase of 50 bps compared to the fourth quarter of 2021"

- Pablo Fernández. Professor of Finance. IESE Business School published the "Survey: Market Risk Premium and Risk-Free Rate used for 95 countries in 2022" on 24 May 2022. That survey did not indicate a composite market risk premium; however, it provided the values for each country. The value for the US was 5.6% while the values for most EU countries were on the order of 6.0%. Of interest was the value for Hungary of 6.7%.

- Seeking Alpha, a crowd-sourced content service for financial markets providing articles and research coverings a broad range of stocks, asset classes, exchange-traded funds, and investment strategies, provides monthly estimates of the long-run return above the risk-free rate. The value in March 2022 was 5.5%.

- New York University Stern School of Business published its study of equity risk premiums in January 2022. It contained country information as well as regional averages. That information correlated well with the other studies. It indicated average ERPs for Western Europe of 5.2% and those for Eastern Europe of 7.4%.

Based on the above studies, **KOSTT recommends that the Equity Risk Premium for PR3 be set at a minimum value of 5.5%**. This is also supported by the fact that KOSTT faces significantly high risks, as discussed on pages 9 and 10.

Using the three variables discussed above, **KOSTT recommends the Cost of Equity on a Real Post Tax basis be 5.5%** computed as follows:

$$rE = rf + 6 * ERPm = 0\% + (1.0 * 5.5\%) = 5.5\%$$

The corresponding value on a pre-tax basis will be: 5.5% / (1-10%) = 6.1%. **This equates to a nominal return on equity of 14.7%, based on the current CPI of 8.6%.**

III. Weighted Average Cost of Capital

Now that we have recommended values for the costs of debt and equity, the only other variable is the gearing, which represents the percent of debt in the capital structure.

ERO has previously determined that the appropriate gearing level for regulated licensees lies between 0.40 and 0.70. Since both KEDS (DSO) and KOSTT (TSO and MO) have gearing at lower levels than this, ERO proposed that for each entity gearing be set at 0.40 representing the end of this range for PR2. KOSTT concurs with this assessment and notes that the current level of debt in the capital structure is still less than 40% and, therefore **KOSTT supports the gearing value of 40% for PR3**.

Utilizing the formula for WACC specified in the tariff methodology, the WACC proposed by KOSTT on a REAL basis is:

WACC = (1 - g) * (rE) / {1 - t) + g * (rD) = [(1-.4) * (5.5% / (1-10%)] + [.4 * 2.8%] = 4.80%

The WACC applied to the Regulatory Asset Base is expressed as a Nominal value which is computed as follows:

WACC = (1 - g) * (rE) / {1 - t) + g * (rD) = [(1-.4) * (14.1% / (1-10%)] + [.4 * 11.4%] = 13.40%

Table 4 provides a summary of the components of the proposed WACC on a real and nominal basis for clarity.

Components	REAL	NOMINAL
Return on Debt	2.8%	11.4%
Return on Equity	6.1%	14.7%
Weighted Average Cost of Capital	4.8%	13.4%

Table 9: Summary of KOSTT Recommendations for WACC for PR3

SUMMARY: KOSTT RECOMMENDS A WACC VALUE OF 13.40% BE USED TO APPLY TO THE RAB FOR PR3

Table 10 on the following page provides ERO with a comparison of the recommended component values of WACC for PR3 to those used during PR2.

COMPONENT	PR2	PR3
Risk Free Rate Real rf	3.0%	0.0%
Debt Premium	2.8%	2.8%
Debt Cost, Real (rD)	5.8%	2.8%
Market Risk Premium (ERPm)	4.5%	5.5%
Equity Beta (B)	0.75	1.00
Equity Cost Post Tax Real	6.4%	5.5%
Tax Rate (t)	10%	10%
Equity Cost Pre-Tax Real	7.1%	6.1%
Gearing (g)	40%	40%
WACC - Pre-Tax, real	6.6%	4.8%
CPI (HICP)	1.90%	8.60%
WACC – Pre-Tax, nominal	**8.5%**	**13.4%**

Table 10: Comparison of Recommended Components of WACC, PR3 vs PR2

6.0 SAVINGS/LOSS DISTRIBUTION FACTOR

Generally, if KOSTT does not incur allowable costs for an annual period, it is required to share unspent funds with customers based on an Allocation Factor.
This factor, which is applied to operating expenses, can have a positive or negative financial effect depending on the realized operating expenses over the years.

Both in the case of savings in the budget of operating expenses and in the case of budget overruns, not all factors are under the control of KOSTT, therefore, a more equal and non-discriminatory approach to both KOSTT and the end consumer is the Savings Distribution Factor / Losses to be 50/50 between them.

7.0 ECONOMIC LIFE OF ASSETS

KOSTT after a detailed analysis regarding the technical and economic lifespan of the assets concludes that the categories of assets and their lifespan defined in the Second Regulatory Period PR2 is adequate and proposes that the same should continue in the Third Regulatory Period PR3.
This is based on the nature of transmission network assets where the length of the technical life is quite large and there cannot be significant changes from one regulatory period to another.

Asset type	Asset's useful life (years)
Buildings, roads, sewer networks, water supply, wells, elevators	50
HV network, pillars	40
Low voltage network, substations, transformers, etc.	30
Trucks, bins and work machinery	10
Control and Telecommunication, various equipment, fire protection	8
Furniture, office equipment	7
IT equipment, software, patents, licenses, vehicles, etc.	5

Table 11: Transmission asset categories and their proposed lifetime for KOSTT

8.0 SUMMARY

Based on all that was said above, KOSTT's proposals for the Input Values for the Third Regulatory Period PR3 are:

Efficiency factor	**0%**
Transmission losses target	**1.85%**
Allocation factor for transmission losses	**50/50**
Weighted average cost of capital (WACC)	**13.40%**
Operational savings/losses sharing factor	**50/50**

- **End of Document-**