



Pristina, August 2020

REPORT
MONITORING OF DH TERMOKOS- REALIZATIONS IN THE 2019/2020 SEASON

Introduction

This document presents the summarized information and monitoring data of DH Termokos for the realizations in the season 2019/2020. The data and information are structured according to the detailed monitoring program of thermal energy enterprises – Annex 1.

Within this monitoring process, the following data, information and documents were submitted within by DH Termokos:

- 1) Regulatory Statements with data and information realized for the heating season 2019-2020:
 - a) Statement A of operating assets - factual data on the value of fixed assets;
 - b) Statement B of income and expenses - realized data on income and costs (expenses);
 - c) Statement C of billing and collection - data and information on heating area, billing and collection of customers;
 - d) Statement D of investments - data and information on realized capital investments;
 - e) Statement E technical- realized data for the thermal energy balance, as well as technical and customer data (production and supply of heat, network losses and heating area).

- 2) Disclosure of Statement B - details for all positions; and Investment Details.
- 3) Audit Report - Statutory financial statements for the calendar year 2019:
 - a) Profit / loss statement (Income statement);
 - b) Balance sheet;
 - c) Cash flow statement; and
 - d) Statement of changes in equity.

- 4) Data and other information and supporting documents:
 - a) List of metering of thermal energy consumption in substations;
 - b) List of assets ('fixed assets') - detailed data on fixed assets where initial value (of purchase), accumulated depreciation and present value of assets are given;
 - c) Detailed data and information on investments realized in the reporting period;
 - d) Report on the progress of the project (completed works), dated on 22 June 2020, and the annex to the contract with the contractor, which specifies the details of the works within the project;
 - e) New connections for the 2019/2020 season and contracts entered with customers for supply;
 - f) Disconnections and reconnections in the 2019/2020 season;
 - g) Losses of thermal energy in the network and quantitative losses of water;
 - h) Customer complaints;



- i) Billing of customers based on metered supply / consumption and by heating area (submitted on monthly basis in the framework of regular monitoring);
- j) Registered measurements of thermal energy produced by cogeneration (submitted on daily and monthly basis in the framework of regular monitoring);
- k) Analysis of 2019/2020 season.

Following the comments of ERO in the regulatory reporting within the monitoring of realizations, DH Termokos has sent additional data and information as well as the required explanations and clarifications, as follows:

- Regulatory Statements with some additions and corrections as required in ERO's comments;
- Response to ERO comments - additional explanations and clarifications for each of the comments;
- Improved details and explanations for realization of self-financing investments during the reporting period - the annual period that includes the heating season 2019-2020.

I Thermal Energy Balance

I.1 Production of Thermal Energy from cogeneration- TPP Kosova B

DH Termokos has based the production of thermal energy from cogeneration plants in TPP Kosova B, which has been the main component in the energy balance for this season. Actually, during the 2019/2020 season, all thermal energy production was from cogeneration plants in TPP Kosova B, so it was not necessary to activate the heavy fuel oil boilers in the Termokos Heating.

Electricity and thermal energy capacities

In order to ensure the production of thermal energy from cogeneration plants in TPP Kosova B, the respective electrical and thermal capacities are reserved, as approved in the Annual Balances of electricity and thermal energy. The planned capacity according to the approved electricity balances for 2019 and 2020, for the months October 2019 - April 2020 in total was 38,300 [MW_{EL}/h], while the allowed electricity capacity in the review of thermal energy tariffs was the same 38.300 [MW_{EL}/h]. Electricity capacity realized in the 2019/2020 season was 38,108 [MW_{EL}/h], i.e slightly lower than the reserved electricity capacity according to the balance, respectively allowed in the tariff review 2019/2020. According to the Thermal Energy Purchase Agreement KEK - DH Termokos, the billing for capacity is taken as reserved with the balance sheet except in cases when that capacity is exceeded. Given that in some months of this season there have been excesses (see tab. 1), then the billed capacity was 40,811 [MWh_{el}/h]. The following figure graphically shows the respective capacities described above.

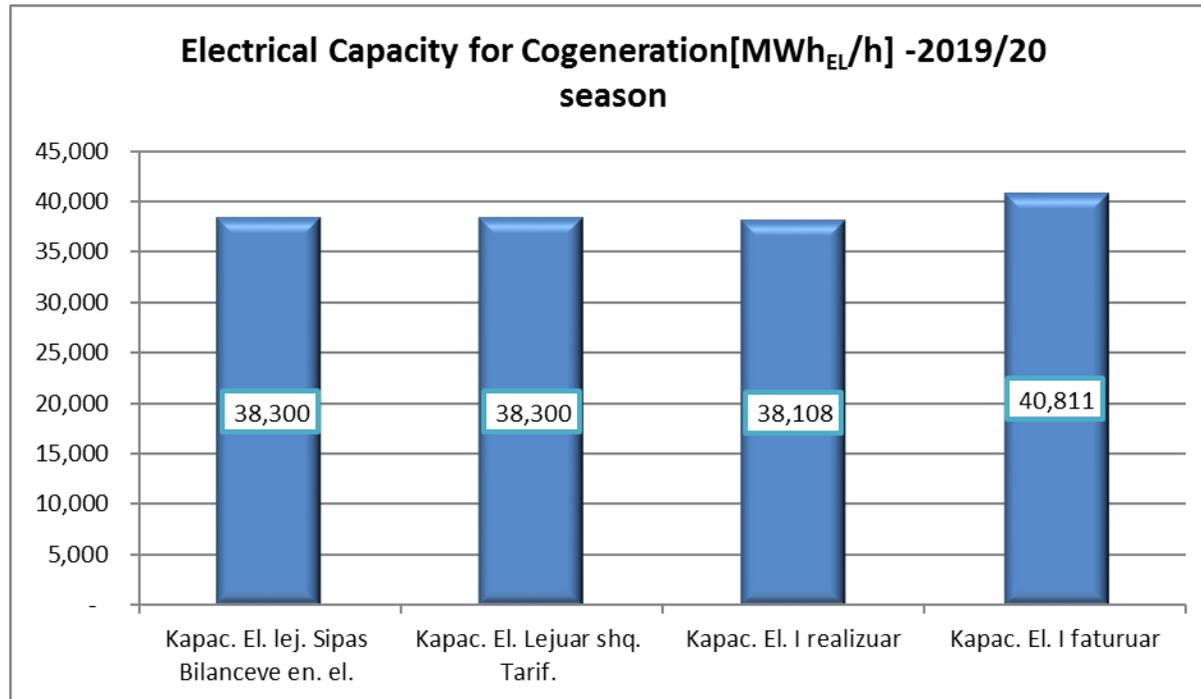


Fig.1. Electrical Cogeneration Capacity Comparisons in the 2019/2020 season

Regarding the average seasonal capacities in [MW], as follows:

- Average thermal capacity: 50.90 [MW_{TH}];
- Average electrical capacity: 8.64 [MW_{EL}].

It should be emphasized that in January, when temperatures were lower, the maximum thermal capacity of 71.94 MW_{th} (or 10.97 MW_{el}) was reached, and is considered to have been affordable for the thermal energy system.

The following table presents the monthly and general data for the respective capacities.

Tab.1 Capacities realized in 2019/2020 season

Electricity and thermal energy capacities - realization, 2019/20 season								
Description	Oct. 2019	Nov. 2019	Dec. 2019	Jan. 2020	Feb-20	Mar-20	Apr-20	total/Average
Average Thermal Capacity [MW _{TH}]	20.30	43.93	60.22	71.94	62.79	54.27	42.84	50.90
Average Electrical Capacity [MW _{EL}]	6.39	8.06	10.08	10.97	9.91	8.27	6.80	8.64
Overall electrical capacity [MWh _{EL} /h]	1,261	4,821	6,815	8,162	6,661	6,156	4,232	38,108
[MWh _{EL} /h] Overall All. Elec. Cap. Balance	2,300	5,800	7,500	8,000	6,500	6,000	2,200	38,300
Overall Billed Elec. Cap. [MWh _{EL} /h]	2,300	5,800	7,500	8,162	6,661	6,156	4,232	40,811

Conclusion:

Generally, the realized capacities for the production of thermal energy from cogeneration are approximately as planned on the Balances of electricity and thermal energy, respectively as allowed in the tariff review 2019/2020. Specifically, the realized electricity capacity is for only 192 MWh_{EL} / h lower than the reserved capacity according to the annual electricity balances. Given that in some



months of the season there was excess of the realized capacity compared to reserved one, the billed capacity was higher than the realized one for **2,703 MWh_{EL} /h**.

Recommendation:

Given the fact that the planning of electrical and thermal cogeneration capacities is quite close to the realizations, it is recommended that during the compilation of Balance Sheets to continue with this approach of realistic and accurate planning.

Produced amount of thermal energy

In the season 2019-2020, i.e in the period from 15 October 2019 to 28 April 2020, the amount of thermal energy extracted from cogeneration in TPP Kosova B (units B1 and B2) which we refer to as gross purchases from cogeneration was **246,733 MWh_{TH}**; In fact, this amount is in fact the amount that DH Termokos was supplied by TPP Kosova B during the heating season. Because the exchangers at the Thermal Energy Extraction Station (HES) at TPP Kosova B are under steam pressure throughout the entire summer, the meters at the HES have recorded this additional amount of 1,677 MWh_{TH}, which is calculated for billing in October 2019. However, for the respective comparisons of the energy balance, as valid for comparison we take the amount of thermal energy extracted during the heating season in the amount of **246,733 MWh_{TH}**; this amount is only 1.8% lower than the amount of thermal energy of **251,248 MWh_{TH}** allowed during the last tariff review.

The maximum monthly amount extracted in this season is in January 2019 with an amount of 52,762 MWh_{TH}. While the lowest amount of thermal energy extraction from cogeneration was in October 8,449 MWh_{TH}. It should be mentioned that due to the cold weather the heating season was extended for the period from mid-April to 28 April, which has resulted in a greater amount of thermal energy extracted from cogeneration.

The amount of thermal energy registered at the Thermal Power Receiving Station at DH Termokos, which we refer to as net cogeneration purchases, was **242,029 MWh_{TH}**. This realized amount is for 4,194 MWh_{TH} or 1.7% less than the amount foreseen/allowed in the last tariff review (246,223 MWh_{TH}). The summarized data of thermal energy production, according to the measurements performed in the heat exchange stations in TPP Kosova B and in DH Termokos, are presented in the following table.



Table 2: Production of Thermal Energy from Cogeneration by months

Thermal Energy from Cogeneration - 2019/2020 season				
Month	Energy [MWh_{TER}]	Energy [MWh_{TER}]	Losses	Losses in (%)
	Metering in TPP Kosova B	Metering in Termokos	[MWh_{TER}]	
October	8,449	8,317	132	1.56%
November	31,057	30,530	527	1.70%
December	44,182	43,398	784	1.77%
January	52,762	51,707	1,055	2.00%
February	43,209	42,345	864	2.00%
March	39,735	38,940	795	2.00%
April	27,339	26,792	547	2.00%
Total	246,733	242,029	4,704	1.91%

I.2 Production of thermal energy in heating plants (from heavy fuel oil boilers)

Regarding the thermal energy production in the heating plant of DH Termokos it should be noted that, regardless of the functioning of the cogeneration project, two fuel oil boilers with a capacity of 2x58 MW_{Th} have not been decommissioned, but they remain to serve as spare capacity, which will be used in cases when the units of TPP Kosova B will be out of operation due to planned outages (regular repairs and servicing) or due to unplanned outages (eventual failures). During the 2019/2020 season, heavy fuel oil boilers were not used, so there was no production of thermal energy from heavy fuel oil boilers.

Heavy fuel oil consumption

Based on what was stated above, fuel consumption – heavy fuel oil in the 2019/2020 season has been zero; so the reserve amount of fuel oil remains the same as at the end of the 2018/2019 season:

- gross reserves in the amount of 870 tons;
- net reserve (usable amount of fuel oil) 710 tons.

I.3 Total thermal energy production

As noted in the above chapters, the production of thermal energy from cogeneration plants in TPP Kosova B has been the main component in the energy balance for this season, while there has been no production of thermal energy from the heating plant of DH Termokos. The total gross thermal energy production realized was equal to the thermal energy production from cogeneration (gross purchases) 246,733 MWh_{Th}, which is only 11,335 MWh_{Th} or 4.39% less than the gross production planned / allowed in the last tariff review (258,068 MWh_{Th}). While the total net production, i.e the amount of thermal energy introduced in the distribution network was 241,343 MWh_{Th} - calculated as the difference between the amount of thermal energy received at HRC DH Termokos (242,029 MW_{hTh}) and own consumption (686 MWh_{Th}).



The main data of thermal energy production and relevant comparisons are presented in tabular form and graphically as follows:

Tab.3: Data on thermal energy production and relevant comparisons

Production of thermal energy [MWh _{TH}] - season 2019/20				
Description	Forecast/Allowed	Realized	Difference	Difference [%]
Extraction of thermal energy from cogeneration	251,248	246,733	4,515	1.80%
Production of thermal energy at district heating	6,820	0	6,820	100%
Total gross production of thermal energy	258,068	246,733	11,335	4.39%
Total net production of thermal energy	252,223	241,343	10,880	4.31%

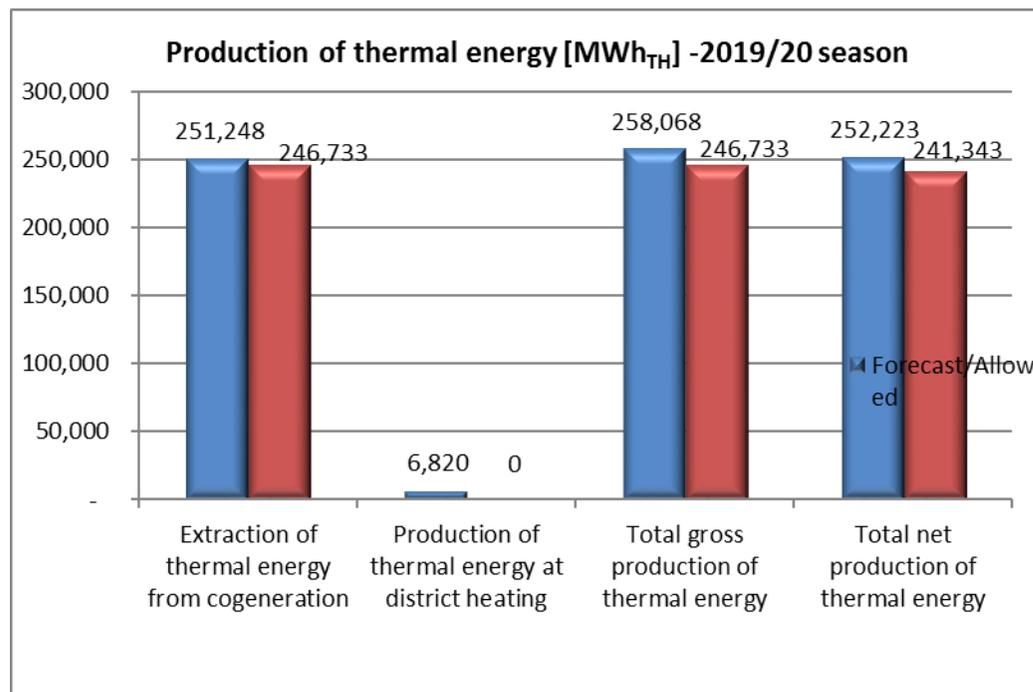


Fig.2: Graphical presentation of data on thermal energy production and relevant comparisons

Conclusion:

Same as for the capacities, as well as for the production of thermal energy in total, it can be generally concluded that the realizations are quite approximate in relation to the forecasts of the Tariff Review, respectively the Balance of thermal energy, specifically:

- The realized production of thermal energy from cogeneration is only 1.8% lower than planned.
- The big avoidance is in the production of thermal energy in the heating plant where during the season there is no need to produce thermal energy from heavy fuel oil, whereas the production of 6,820 MWh_{TH} is planned.
- Total realized thermal energy production also did not have major changes from the forecasts – the total gross realized production is 4.39% lower than the forecast, whereas the total net realized production is 4.31% lower than the forecast.



Recommendation:

Given that in general, the planning of thermal energy production was quite accurate in terms of comparison with the respective realizations, it should be continued with proper and accurate planning, which will take into account the demand of customers for thermal energy and will also reflect plans for increasing the number of new customers, i.e the heating area connected to the network.

1.4 Supply of customers with thermal energy

As a result of the continuous improvement of thermal energy production, more precisely the extraction from cogeneration, during this season, the sufficient and quality supply of thermal energy has continued in general.

Regarding the supply, it should first be noted that the metering of supply/consumption of thermal energy in customer substations is not complete (it is estimated that approximately 13-15% of consumption is not measured) because not all customer substations are equipped with meters of thermal energy. Out of 443¹ active thermal substations, 358 are equipped with thermal energy meters while 85 do not have functional meters; there are also meters that do not accurately record the amount of supplied/consumed thermal energy. Therefore, due to the incomplete and not fully reliable measurement of the amount of thermal energy supplied, some approximations have been made for the calculation of supply, using in the first place parameters such as: specific consumption (kWh / m²) respectively the specific requirement for heating capacity (W / m²) and full load hours.

The calculation method based on consumption measurement records can also be used for the approximate calculation of thermal energy consumption/supply. The supply/consumption measured in an amount of 192,250 MWh_{TH} is calculated from the monthly metering registers in substations - this difference is because a number of substations (approximately 19% of them) do not have metering equipment or the meters are not in order (seen in the consumption registration table in substations) and consequently an amount of supplied thermal energy has not been measured and recorded. Based on the heating area belonging to these substations it is estimated that it is about 13 - 15% of the heating surface for which consumption is not measured - so if the value of 14% is used and this percentage is added to the measured consumption, the calculated value of consumption is obtained from about 219,165 MWh_{TH}. Based on this analysis, it can be concluded that the estimation for energy supply/consumption is quite accurate with very little change.

Based on the above, the supply of thermal energy to customers in the 2019/2020 season is estimated to be **219,917MWh_{TH}**, which is 15,255 MWh_{TH} or 6.5% less than the supply provided in the tariff review

¹ This number of active substations includes 11 substations from the new connections of DH Termokos as well as 24 new substations that were constructed at the end of 2019, ie the beginning of 2020, in the Calabria neighborhood within the project of the European Commission - although they are equipped with meters in these substations no supply metering is recorded.



2019/2020 (235,172 MWhTH). The following is a graphic comparison between the forecast/allowed supply and the realization in the 2019/2020 season.

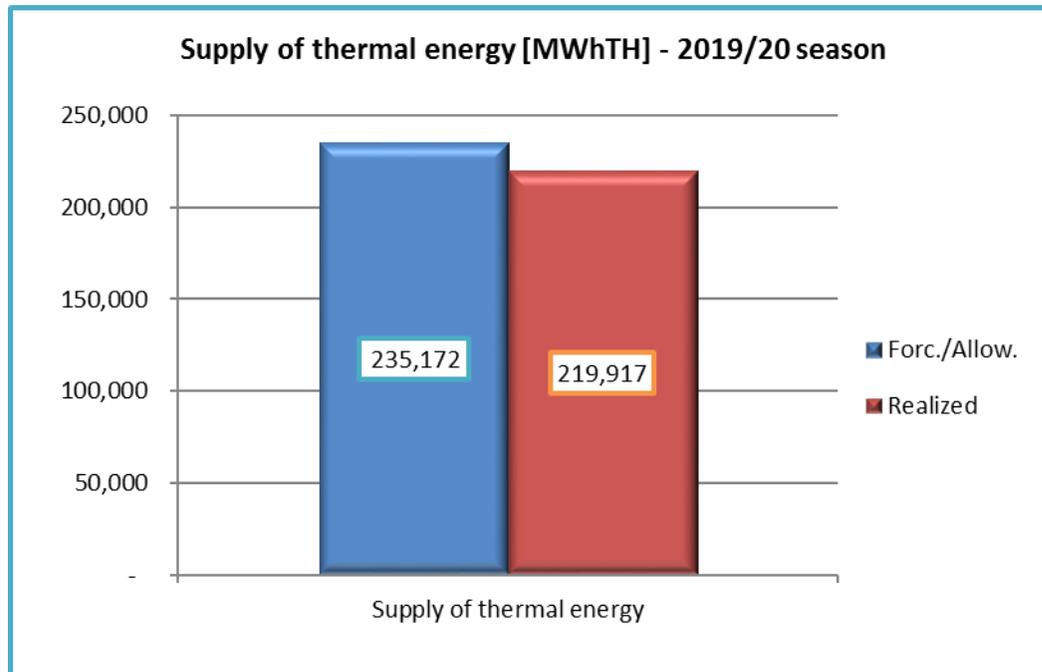


Fig.3: Forecast/allowed and realized supply in the 2019/2020 season

Heating area

Given that the heating area is one of the key parameters for estimating the heating demand, i.e thermal energy supply, in this section we will present the main data for heating area, realized in the 2019/2020 season and relevant comparisons.

From the Regulatory Statements 'C' and 'E' submitted by DH Termokos, the total active heating area realized is 1,384,594 m². In this regard, it should be noted that, from the monthly monitoring of ERO, it is noticed that the heating area has changed continuously during the season as a result of new connections, activation of passive customers and disconnections. So from the monthly data is calculated the average heating area for the heating season of 1,333,648 m². Although this is a small difference of 50,946 m², in the comparisons between the allowed and realized values we will refer to the calculated value of the average heating area. The respective data and comparisons for the heating area are presented as follows in tabular form and graphically:

Realized data for heating area in the 2019/2020 season:

Tab.4: Realized data for heating area in the 2019/2020 season



Customer heating area by billing [m2]- DH Termokos-season 2019-2020									
Billing	Cust. Gr.	19-Oct	19-Nov	19-Dec	20-Jan	20-Feb	Mars-20	Prill-20	Average
Metered*	Household	-	-	-	-	-	-	-	-
	Com&Inst	403,264	413,828	414,378	414,378	414,378	414,378	414,378	412,712
	Total	403,264	413,828	414,378	414,378	414,378	414,378	414,378	412,712
Unmetered**	Household	644,143	731,532	744,040	814,794	807,162	811,734	807,404	765,830
	Com&Inst	150,887	149,173	152,155	159,368	157,998	158,208	157,958	155,107
	Total	795,030	880,705	896,195	974,162	965,160	969,942	965,362	920,937
Total (metered and unmetered)		1,198,294	1,294,533	1,310,573	1,388,540	1,379,538	1,384,320	1,379,740	1,333,648

* 'Metered' billing means billing based on metered thermal energy consumption;

** 'Unmetered' billing means billing based on the customer's heating area.

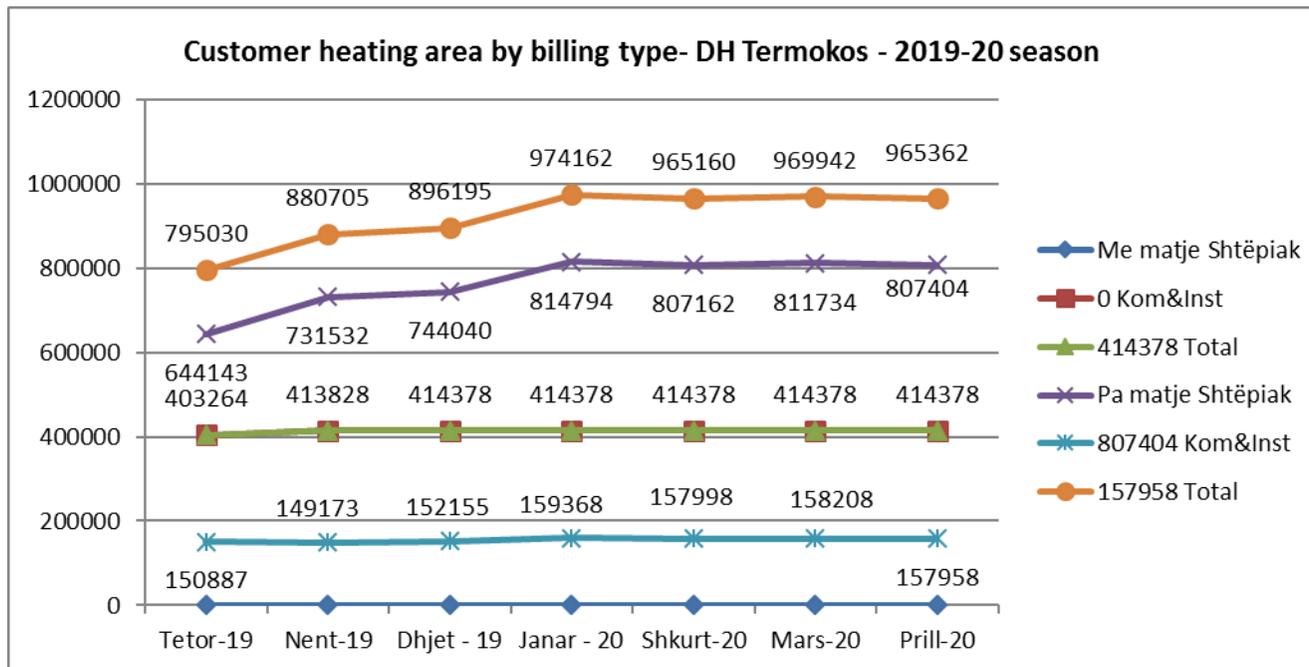


Fig.4: Heating area realized by months in the 2019/2020 season

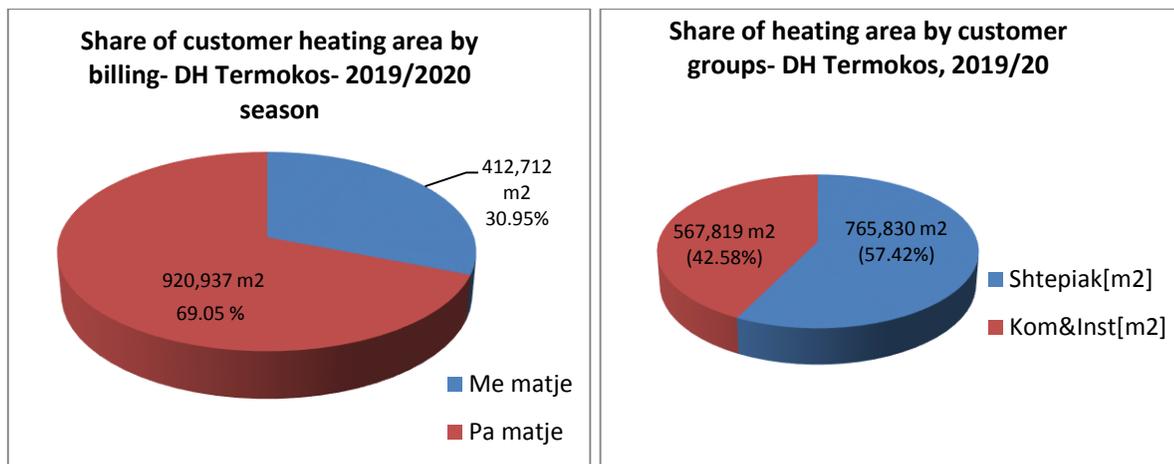


Fig.5: Share of heating areas according to billing and customer groups



Comparisons of predicted/allowed and realized heating surfaces:

Tab.5: Respective comparisons of heating area in the 2019/2020 season

Comparisons of heating area - 2019/20 season					
Description	recast/Allow	Realized	Difference	Dif. in %	
Heating area/Billing	Metered	402,931	412,712	(9,781)	-2.43%
	Unmetered	976,317	920,937	55,380	5.67%
	Total	1,379,248	1,333,648	45,600	3.31%
Heating area by customer groups	Household	808,413	765,830	42,583	5.27%
	Com&Inst	570,835	567,818	3,017	0.53%
	Total	1,379,248	1,333,648	45,600	3.31%

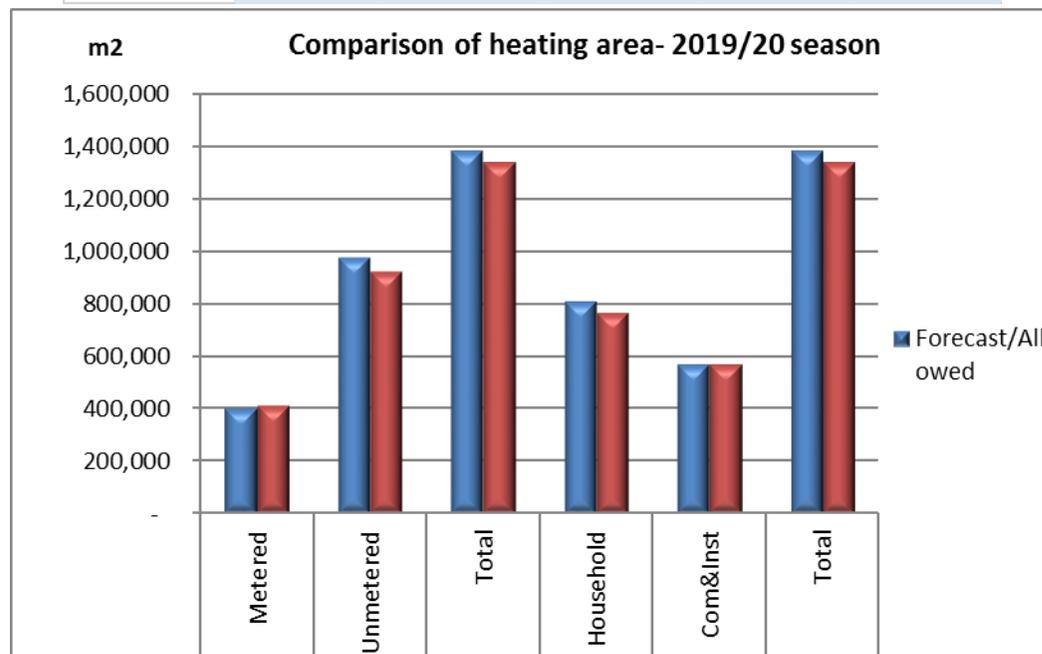


Fig.6: Graphic presentation of the respective comparisons of heating area in the 2019/2020 season

Conclusion:

- The supply of customers with thermal energy was quite close to the forecasts in the tariff review - the realized supply was only 6.5% lower than the relevant forecast. So it can be concluded that the supply has been quite good, while the difference is not considered to have a major effect on the quality of supply.
- Regarding heating area, it should be noted that in total there was a very small change - 3.31% lower than expected. Also, small deviations between realizations and forecasts (0.53% and 5.27%, respectively) were recorded in customer groups. The heating area which is billed based on the measurement of consumption has marked a difference of 2.43% between forecasting and realization, which is a signal that efforts should be increased so that more customers are billed based on the measured supply/consumption.



Recommendation:

- **As noted above, thermal energy supply, respectively the consumption is not fully metered because not all substations have functional thermal energy meters, and consequently the total supply is estimated based on approximate calculations. In this regard, DH Termokos is instructed to pay special attention to equipping all substations with functional meters, so that the supply or consumption of thermal energy is accurately metered.**
- **Regarding the planned heating area, it should be emphasized that, despite the fact that there are small differences between forecasts and realizations, it is necessary that the planning of heating area reflects as accurately as possible the new connections of buildings that are planned to be connected to the system in relevant periods.**

I.5 Losses in the thermal energy system

In typical (common) thermal energy systems (district heating) losses can be classified into:

- Losses in heat generation facilities often referred to as heating plant efficiency - these losses are characterized as losses of conversion of fuel energy into thermal energy (boiler efficiency), thermal losses in the piping system and related equipment (pumps, exchangers etc.), and own consumption. Heat losses are calculated as the difference between the amount of energy entered from the fuel and the amount of thermal energy gained at the exit of the heating/entry into the distribution network.
- • Losses in the primary distribution network (in special cases also the transmission network) - are characterized by several components such as: i) losses from heat transmission in pipes (depending on the level of insulation) and losses from water leaks; ii) losses due to dimensioning of pipes, ie quantitative flow of water in pipes; iii) losses affected by the temperature level of the supply and return water; iv) losses due to the geographical extent of the network (density of customers connected to the network and terrain configuration). Losses in the primary distribution network are usually calculated as the difference between the amount of thermal energy entering the network and the amount of thermal energy supplied to customer substations.
- • Losses in customer thermal substations and secondary distribution network (installations in customer buildings) - components are generally the same as losses in the primary network. In this regard, it should be noted that in accordance with the delimitation of the liability of the enterprise and the customer, losses in the secondary network are not subject to review by the enterprise's side and also by the aspect of regulation.

With the integration of thermal energy from cogeneration, the central heating system of DH Termokos has its own specifics in terms of system losses.



So, network losses include two components, losses in the transport network from TPP Kosova B - DH Termokos and losses in the primary distribution network.

Regarding the efficiency of thermal energy (heating) production plants, i.e losses in the heating plant, it should be noted that this loss component has very little impact on the overall losses in the system. This is due to the fact that upon the functionalization of cogeneration from TPP Kosova B, the production facilities of the heating plant are reserve capacity that is put into operation for short periods of time - only when there is an interruption in TPP Kosova B.

Based on what was stated above, the focus in handling the system losses breaks down into losses in the thermal energy transport network TPP Kosova B - DH Termokos and in the primary distribution network.

Losses in thermal energy transmission network TPP Kosova B - DH Termokos

Losses in the transport network in the length of 10.5 km were determined by measurements carried out at the Thermal Energy Extraction Station (HES) at TPP Kosova B and at the Thermal Energy Receipt Station (HRS) at DH Termokos. From the measurements carried out in the period October 2019 - April 2020, it results that the quantitative losses realized in this period are **4,704 MWhTh** respectively 1.91%, while the losses allowed in the last tariff review were **5,025 MWhTh** or 2.00%. There is a difference of 321 MWhTh or 0.09% between planning (allowed) and realization of losses in the transmission network.

Losses in the primary thermal energy distribution network

Losses in the primary distribution network are normally determined by measurements of thermal energy entering the distribution network and by the supply of thermal energy to customer substations. In this regard, it should be noted first that not all customer substations are equipped with thermal energy meters - out of 443 thermal substations 358 are equipped with thermal energy meters while 85 do not have meters; while according to the register of metering in substations it is noticed that 3 meters are defective (i.e not functional) but there are also meters that do not accurately record the amount of supplied/consumed thermal energy. Therefore, in the absence of a complete and not entirely reliable measurement of the amount of supplied thermal energy, some approximations have been made for the calculation of supply using in the first place parameters such as: specific requirement for heating capacity (W / m^2) and full load hours, respectively specific consumption KWh / m^2 .

The estimated value of consumption is **219,917 MWh_{Th}**. Subtracting this value of consumption from the amount of thermal energy introduced to the distribution network (**241,343 MWh_{Th}**) it results that the quantitative losses in the distribution network for the 2019/2020 season are **21,426 MWh_{Th}**, which in percentage represents **8.88%**. In the tariff review for the 2019/2020 season, the predicted/allowed value of losses in the distribution network was 6.76% respectively 17,051 MWh_{Th}. It can be concluded that the realized losses are greater than those allowed for only 4,375 MWh_{Th}, while if we refer to the level of losses in percentage there is a difference of 2.12%.

Overall network losses



Based on the above estimations for losses in the transmission and distribution network it is concluded that the total network losses realized in the season 2019/2020 are **26,130 MWh_{TH}** or at the level of **10.78%**. Given that the total allowed network losses were 22,076 MWh_{TH} respectively 8.76%, it is noted that the realized losses are by 4,054 MWh_{TH} or 2.02% higher than those allowed in the tariff review 2019/2020.

The following table and diagram summarize the details of network losses and related comparisons:

Tab. 6: Details of losses in thermal energy transmission and distribution network - season 2019/20

Network losses and respective comparisons - season 2019/20					
	Description	Forecast/Allowe	Realized	Difference	Dif. in %
Transmission network	Thermal Energy Extraction -HES TPP Kos.B [MWh _{TH}]	251,248	246,733	4,515	1.80%
	Receipt of Thermal Energy -HRS Termokos [MWh _{TH}]	246,223	242,029	4,194	1.70%
	Quantitative Losses [MWh _{TH}]	5,025	4,704	321	6.39%
	Share of losses [%]	2.00%	1.91%		0.09%
Distribution Network	Production/Net purchases of thermal energy [MWh _{TH}]	252,223	241,343	10,880	4.31%
	Supply / Consumption of customers [MWh _{TH}]	235,172	219,917	15,255	6.49%
	Quantitative Losses[MWh _{TH}]	17,051	21,426	(4,375)	-25.66%
	Share of losses [%]	6.76%	8.88%		-2.12%
Total- Network	Quantitative Losses [MWh _{TH}]	22,076	26,130	(4,054)	-18.36%
	Share of losses [%]	8.76%	10.78%		-2.02%

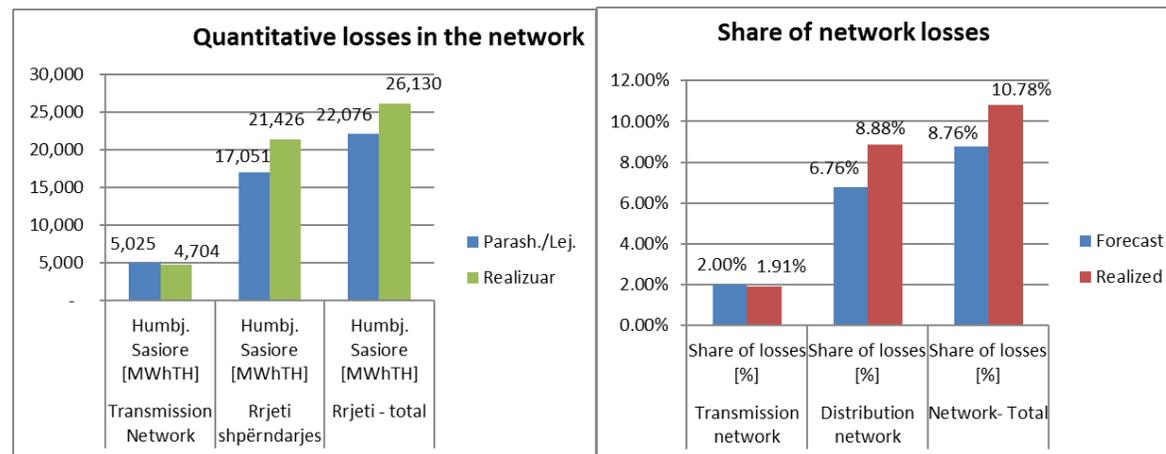


Fig. 7: Graphic presentation of transmission and distribution network losses –2019/20 season

Conclusion:

Regarding the network losses, it can be concluded as follows:

- The level of losses in the transmission network TPP Kosova B - DH Termokos is **1.91%**, where there is a decrease in the level of losses by **0.09%** compared to the level allowed in the tariff review for the season 2019/20;
- Losses in the distribution network have marked a level of **8.88%**, a higher level compared to forecasts; more precisely, there is a higher level of losses by **2.12%** compared to the level allowed in the tariff review for the 2019/20 season. However, due to incomplete measurement of supply/consumption at the level



of customer substations the results for losses in the distribution network should be considered with a degree of inaccuracy.

Recommendation:

- Following the ascertainment of the reduction of the level of losses in thermal energy transmission network, it should be taken into account the monitoring of the accuracy of measurements and measurement records, in order to avoid possible inaccuracies and changes in presenting the level of losses from season to season.
- Regarding the losses in the distribution network, as mentioned above, same as for the supply, it is essential to have complete and accurate measurement of supply/consumption at the level of thermal substations. Therefore, the same recommendation applies that all necessary measures should be undertaken to equip all thermal substations with functional meters.

I.7 Summary of Thermal Energy Balance for the season 2019/'20

The following table presents the summarized data of Thermal Energy Balance and the respective comparisons between forecasts and realizations.

Table 7: Summary of production, supply and total losses in the system - season 2019 / '20

Network losses and respective comparisons - season 2019/20					
	Description	Forecast/Allowed	Realized	Difference	Dif. in %
Transmission network	Thermal Energy Extraction -HES TPP Kos.B [MWh _{TH}]	251,248	246,733	4,515	1.80%
	Receipt of Thermal Energy -HRS Termokos [MWh _{TH}]	246,223	242,029	4,194	1.70%
	Quantitative Losses [MWh _{TH}]	5,025	4,704	321	6.39%
	Share of losses [%]	2.00%	1.91%		0.09%
Distribution Network	Production/Net purchases of thermal energy [MWh _{TH}]	252,223	241,343	10,880	4.31%
	Supply / Consumption of customers [MWh _{TH}]	235,172	219,917	15,255	6.49%
	Quantitative Losses[MWh _{TH}]	17,051	21,426	(4,375)	-25.66%
	Share of losses [%]	6.76%	8.88%		-2.12%
	Quantitative Losses [MWh _{TH}]	22,076	26,130	(4,054)	-18.36%
Total- Network	Share of losses [%]	8.76%	10.78%		-2.02%

II Costs and revenues for the season 2019-2020

This chapter presents the summarized data on revenues, operating costs, assets and investments which have been realized in the 2019/2020 season as well as the relevant comparisons with the data provided/allowed in the last tariff review.

II.1 Revenues

Total Revenues of DH Termokos - sale of heating and other services - during the 2019/2020 season were **€ 6,443,227**. Revenues from the sale of heat are in the amount of **€ 6,387,299** which include: revenues from regular billing of customers in the amount of **€ 6,381,802** and revenues from billing for unauthorized use of heat in the amount of **€ 5,492**. While other Revenues, mainly from connections and reconnections were **€ 55,928**. The following table provides details on the revenues generated during the 2019/2020 season.



DH Termokos- Revenues in the season 2019/2020	
Revenues from the regular billing for thermal energy supply	6,381,802
Revenues from the authorized use of thermal energy	5,497
Subtotal - revenues from the sale of heat	6,387,299
Other revenues (connections, services in the secondary network et	55,928
Total revenues	6,443,227

Table 8: Revenues of DH Termokos in the 2019/2020 season

* Regarding the value of Revenues from regular billing of customers for thermal energy supply € **6,381,802**, it should be noted that due to the importance in the following sub-chapter for billing and collection, we will use this value for the respective estimates and comparisons.

With the functioning of cogeneration, the quantity of thermal energy produced has marked a quantitative increase but also an improvement in quality, which has affected the continuous improvement of supply and has resulted in an increase in revenues from the sale of heat from season to season. However after a significant increase in previous seasons this increase in the last 4 seasons has stabilized. In the 2019/20 season, revenues from the sale of heat were € 6,387,299, which represents an increase of € 79,931 (about 1.3%) compared to the 2018/2019 season (€ 6,307,368). The following table presents the relevant comparisons with previous seasons for the realization of incomes (revenues) from the sale of heat.

Table 9: Revenues from the sale of heat by seasons

Revenues from the sale of heat by seasons (in €)					
sez. 2014/15	sez. 2015/16	sez. 2016/17	sez. 2017/18	sez.2018/19	sez. 2019/20
3,865,013	5,468,944	5,970,336	6,036,808	6,307,368	-

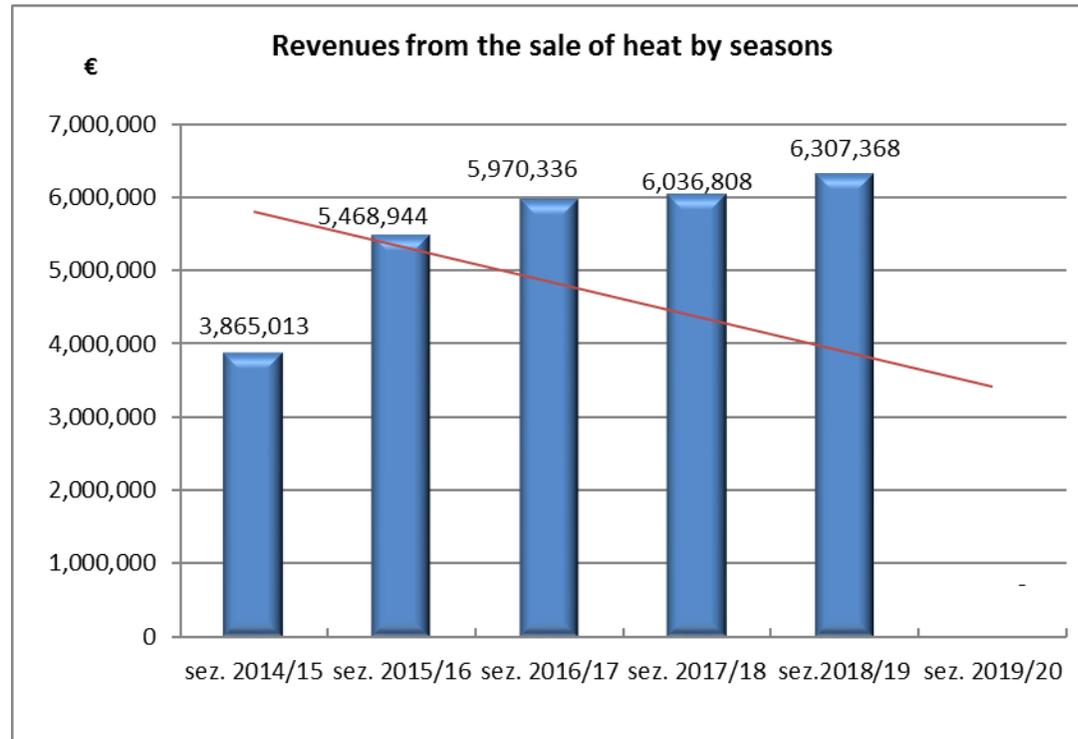


Fig.8: Graphical presentation of revenues realized from the sale of heat by seasons

Regular billing for thermal energy supply

First of all, it should be noted that customer billing for thermal energy supply, in accordance with the tariff structure, is based on consumption metering (metered billing) and based on customer heating area (unmetered billing). The total billing realized in the season 2019/2020 was **€ 6,381,802**, whereas the billing with measurement was **€ 2,352,997** and without measurement **€ 4,028,805**; the metered and unmetered billing ratio as well as the respective values are presented in the diagram below.

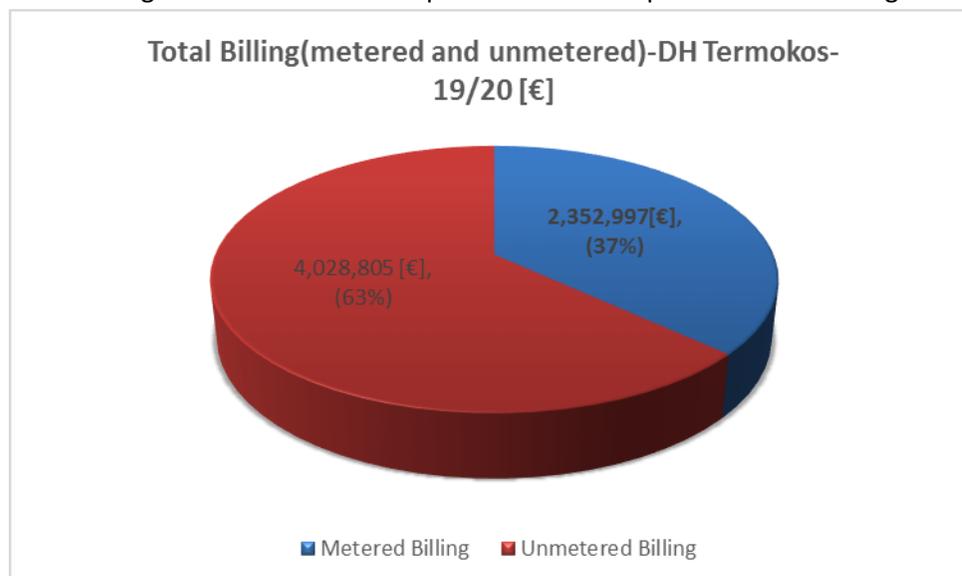


Fig. 9: Share of metered and unmetered billing values in total billing



Billing details are provided below:

- Metered billing

The following table and diagram provide details on metered billing:

Tab. 10: Metered billing details by months of the 2019/20 season

Metered Billing - DH Termokos-19/20 [€]								
Billing components	Tetor-19	Nent-19	Dhjet - 19	Janar -20	Shkurt-20	Mars-20	Prill-20	Total
Thermal capacity	63,058	54,438	54,457	54,457	50,866	50,755	50,866	378,897
Therm. Energy Con	50,913	235,120	389,136	446,981	346,294	317,086	188,570	1,974,100
Total	113,971	289,558	443,593	501,438	397,160	367,841	239,436	2,352,997

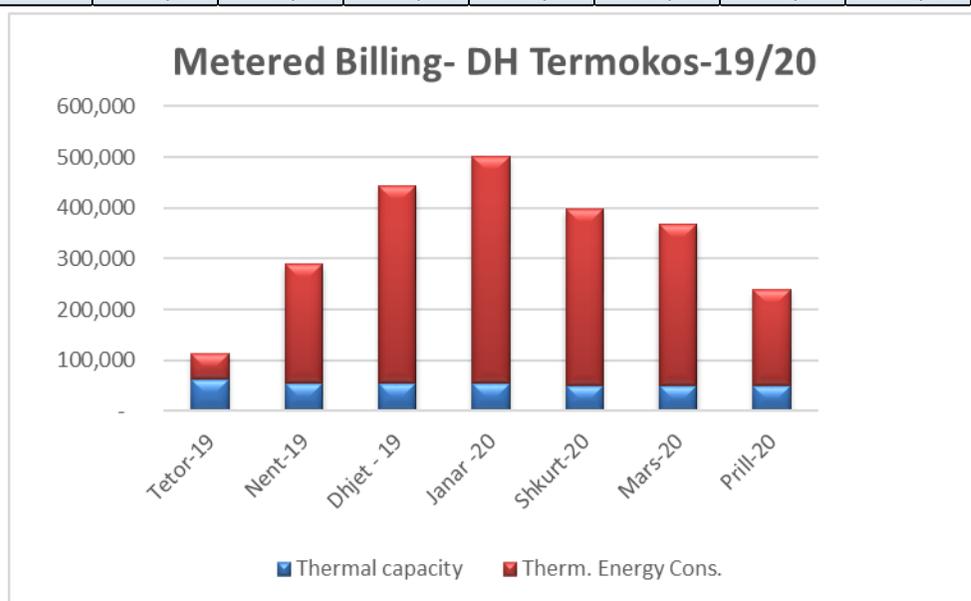


Fig. 10: Graphic presentation of metered billing by months of the 2019/20 season

- Unmetered billing

The table and diagram below show the details for the unmetered billing (according to the heating area).

Tab. 11: Details of unmetered billing (based on heating area) according to months of the 2019/20 season

Unmetered Billing (with heating area - m2) - DH Termokos-19/20 [€]									
Description		19-Oct	19-Nov	19-Dec	20-Jan	20-Feb	20-Mar	20-Apr	Total
Billing	Household	154,965	497,774	515,546	530,891	550,561	547,770	375,915	3,173,422
	Com&Inst	57,449	126,283	142,713	143,015	143,352	143,574	98,997	855,383
	Total	212,414	624,057	658,259	673,906	693,913	691,344	474,912	4,028,805

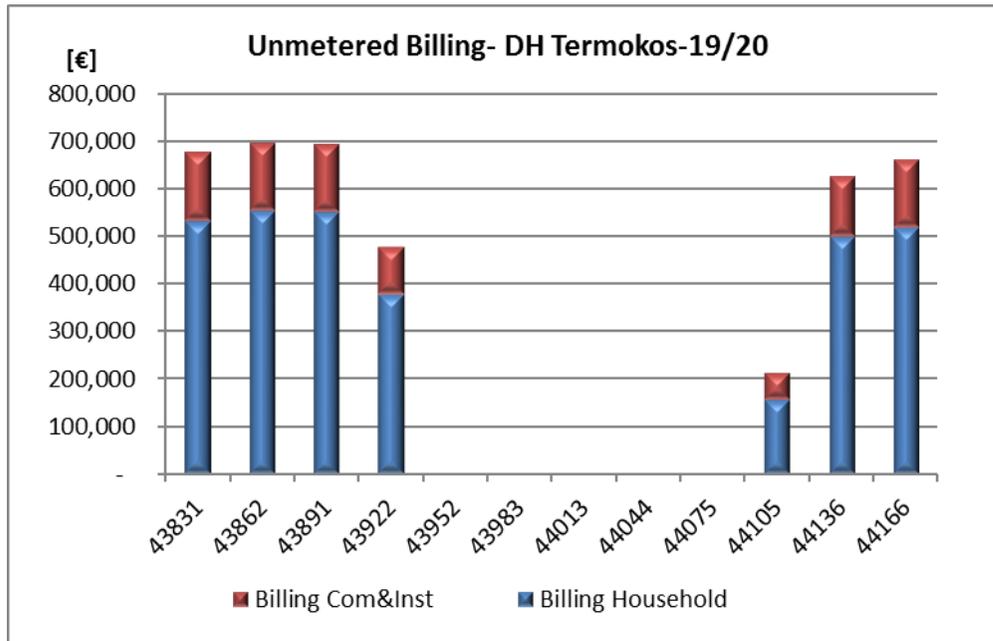


Fig. 11: Graphic presentation of unmetered billing (based on the heating area) according to the months of 2019/20 season

- Total billing

The table and diagram below show the details of total billing:

Tab. 12: Details of total billing by months of the 2019/20 season

Total Billing (metered and unmetered)-DH Termokos-19/20 [€]								
	19-Oct	19-Nov	19-Dec	20-Jan	20-Feb	20-Mar	20-Apr	Total
Metered Billing	113,971	289,558	443,593	501,438	397,160	367,841	239,436	-
Unmetered Billing	212,414	624,057	658,259	673,906	693,913	691,344	474,912	-
Total	326,385	913,615	1,101,852	1,175,344	1,091,073	1,059,185	714,348	-

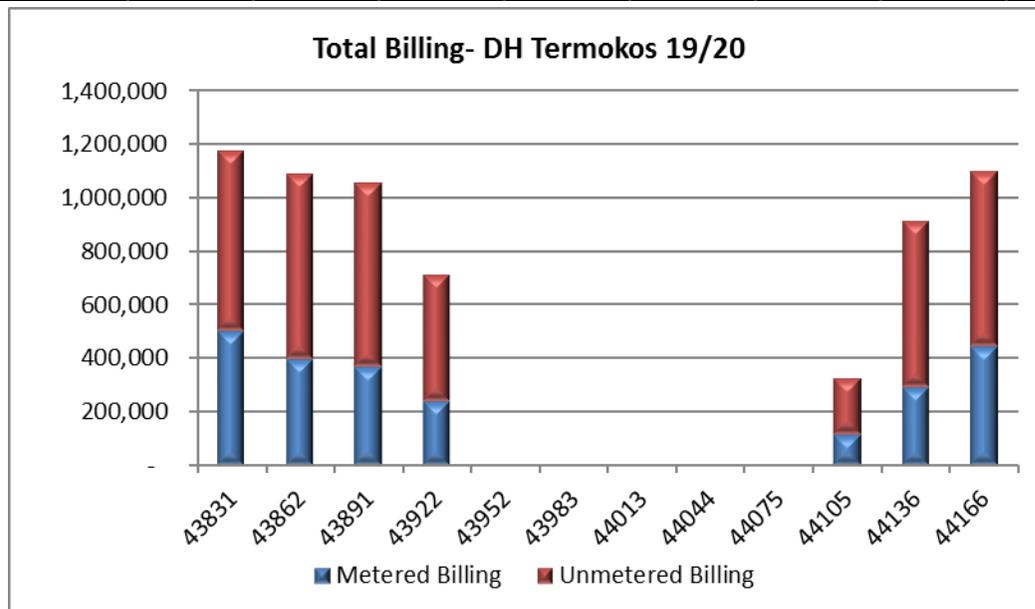


Fig.12: Graphic presentation of total billing by months of the 2019/20 season



- Respective comparisons of forecasted and realized billing

Total billing is realized at the level of 99%; i.e from € 6,472,902 of the Revenues foreseen in the last tariff review for the season 2019/20 from the sale of thermal energy to customers (regular billing for thermal energy supply), € 6,381,802 were realized. It is encouraging that metered billing has been realized at the level of 127%; while unmetered billing (according to the heating area) was realized 87% where the main factors for this sub-realization are the discounts on billing.

Tab. 13: Summary of comparisons of billing values in the 2019/20 season

Summary of comparisons of billing values - DH Termokos 19/20				
Billing type	Allowed [€]	Realized[€]	Difference [€]	Realized in %
Metered billing	1,846,827	2,352,997	-506,170	127%
Unmetered billing	4,626,075	4,028,805	597,270	87%
Total faturimi	6,472,902	6,381,802	91,100	99%

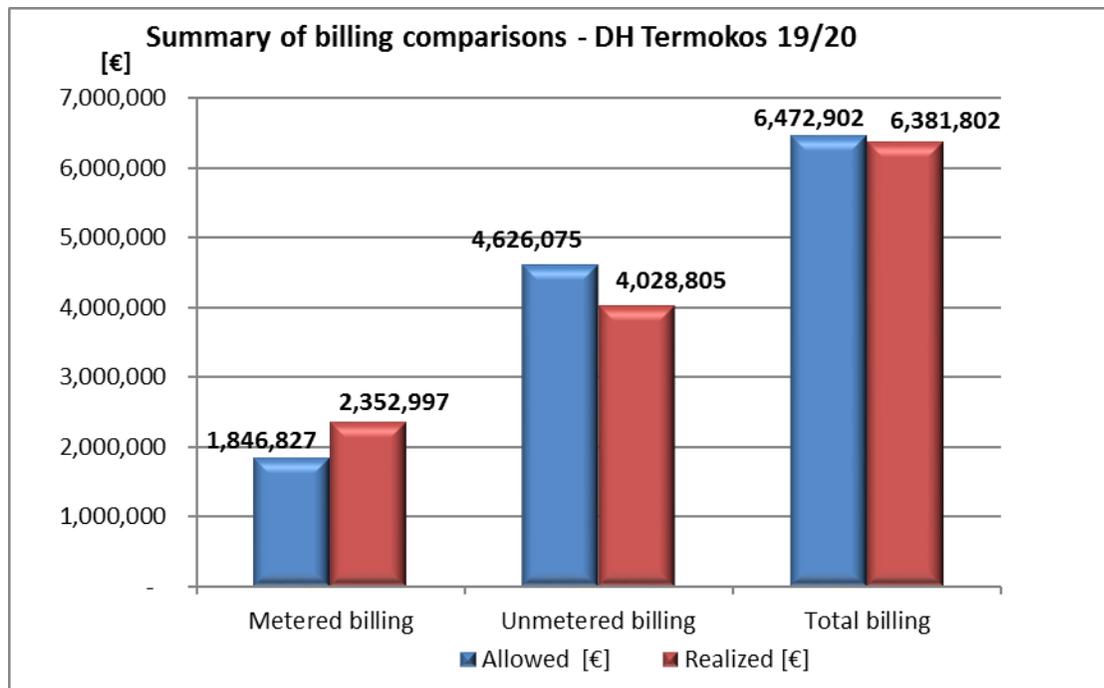


Fig. 13: Summary of comparisons of billing values in the 2019/20 season

Conclusion:

- Revenues from the sale of thermal energy to customers, which in addition to regular billing for supply has also included revenues from compensation for identified and treated cases of unauthorized use, have marked a small increase of 1.3% compared to last season. In general, there is a trend of increasing revenues from the sale of thermal energy in the last 5 seasons and especially noticeable is the increase in revenues after the commencement of cogeneration (2015/16 season).



- Referring to the billing values, there is a stable trend of metered billing towards non-metered billing - the value of metered billing is about 37% in relation to total billing, while non-metered billing is about 63%.
- The value of metered billing was € 2,352,997 and marked an over-realization of 27%, compared to the forecast in the tariff review 2019/20, which represents a positive development.
- The value of billing without metering (based on the heating area) was € 4,028,805 and a realization of 87% was recorded compared to the forecasts. Regarding the incomplete realization of unmetered billing, it should be mentioned that a significant amount is a reduction in billing due to various breakdowns and due to the poorer quality of heating in some parts of the system of DH Termokos. This fact indicates the disadvantage of unmetered billing (according to the heating area), therefore this type of billing should be avoided as much as possible.
- Total Regular billing for thermal energy supply is realized at the rate of 99% - i.e a change of only 1% from the forecast/allowance in the tariff review. Considering that the main reason is the reduction in unmetered billing, it can be concluded that this forecast - the allowed value was quite accurate.

Recommendation:

Despite the fact that the realization of metered billing has marked a significant increase compared to the planning, it is recommended that DH Termokos further increase this type of billing towards unmetered billing. If we refer to the ratio of metered billing of 37% compared to unmetered billing (63%), it is noticed that there is room for consumption based metering to increase and at the same time reduce the billing based on the heating area; this is especially the case in the so-called 'one customer one substation' - buildings of institutions, commercial facilities, etc., where the transition from billing based on the heating area to the consumption based metering is easily feasible. In this sense, we must recall the many benefits to both customers and the enterprise from metered billing that enables in the first place fair billing based on real thermal energy consumption and that enables the application of energy efficiency measures (savg of consumed energy etc).

Collection

In the season 2019/2020 the amount collected was € **3,974,752** which represents the total collection rate of **62.28%**. The level of collection has marked a decrease of 8.58% compared to last season 2018/19 where the percentage of collection was 70.86%. Overall as can be seen from the table and diagrams below, collection has had an upward trend in the last seasons.

Tab. 14: Collection values by seasons

Season	season 2014/15		season 2015/16		season 2016/17		season 2017/18		season 2018/19		season 2019/20	
	(in €)	(in %)										
Customer Group												
Household	835,338	39.01	1,332,616	45.64	1,379,704	46.56	1,406,665	50.30	2,266,135	76.05	1,489,032	46.92
Com&Ins	1,749,081	72.47	2,439,047	81.66	2,570,678	75.97	2,405,706	75.22	2,190,119	66.18	2,485,720	77.48
Total	2,584,419	56.74	3,771,663	63.86	3,950,382	62.24	3,812,371	63.59	4,456,254	70.86	3,974,752	62.28

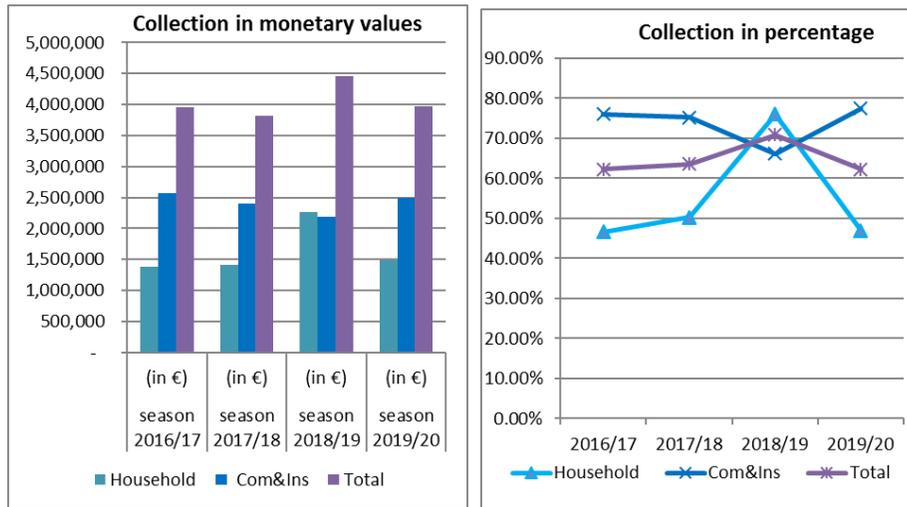


Fig. 14: Presentation of collection values and levels by seasons

The details on billing and collection for the 2019/2020 season are presented below:

Tab. 15: Billing and collection in the season 2019/2020

Collection compared to billing - DH Termokos 19/20			
Customer group	Billing [€]	Collection [€]	% of billing
Household	3,173,422	1,489,032	46.92%
Com& Ins	3,208,380	2,485,720	77.48%
Total	6,381,802	3,974,752	62.28%

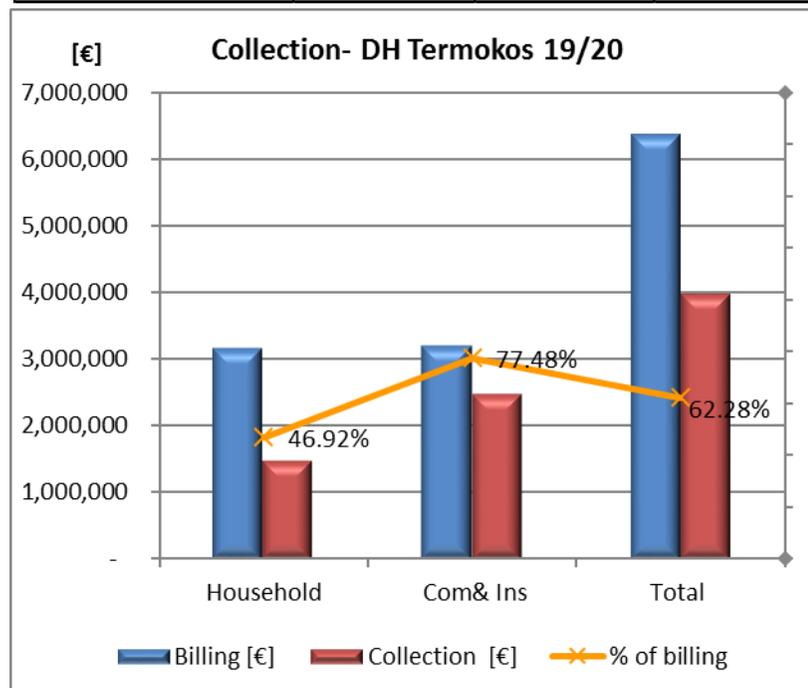


Fig. 15: Graphical presentation of the billing and collection in 2019/20 season

Conclusion:



- The overall level (rate) of collection has decreased compared to last season. The overall collection rate in the 2019/20 season was 62.28%, which represents a significant decrease of 8.58% compared to the previous season 2018/19 where the collection percentage was 70.86%.
- It should be mentioned that in this season the collection of payments from the group of household customers is significantly lower (46.92%); while the collection of payments from commercial and institutional customers was 76.05%, with a slight upward trend. Regarding the reduction of collection, one of the main factors is the pandemic, which has affected the payments for the months of February - April 2020, especially for household consumers.

Recommendation:

Despite the continuous increase in the level of collection over the past few seasons, this season has seen a decrease in the level of billing, which negatively affects the financial performance of the enterprise. It is recommended that DH Termokos enhance its efforts to increase collection, by implementing all procedures and instructions from the Regulator as well as applying all permitted legal measures.

II.2 Operational costs

It should first be mentioned that costs are reported for the one-year period that includes the 2019/20 heating season. It should also be noted that, due to the nature of the operation, a considerable number of operating costs, especially variable ones, are costs incurred only during the heating season (cost of thermal energy from cogeneration, fuel, etc.); while other components of operating costs, e.g. staff costs, administrative costs, etc., are costs incurred throughout the year. This section presents the main components of operating costs.

Variable costs

In the 2019/20 season, variable costs were realized in the amount of **€ 3,117,710**, which is part of about 71% of the total value of operational costs. The main components of variable costs are the cost of thermal energy supply from cogeneration in the amount of **€ 1,238,589**, followed by the cost of electricity and the cost of personnel directly engaged in the production and distribution of thermal energy. It is worth mentioning that the cost of fuel (heavy fuel oil) was zero because there was no production of thermal energy in the DH Termokos Heating.

Cost of thermal energy from cogeneration

The following are details on the cost of thermal energy from cogeneration. In accordance with the agreement for thermal energy supply KEK - DH Termokos, the calculation of payments for thermal energy from cogeneration has included the load for lost electrical capacity and the load for the amount



of thermal energy. These charges are based on the price according to the Power Purchase Agreement between KEK Generation and the Universal Electricity Service Supplier:

- The price of electricity: **30.4 €/MWh_{EL}**.
- From the allocation factors: Fixed (for capacity): 70% and Variable (for amount): 30%, calculated
 - Price for electrical capacity = 30.4 * 0.7 = **21.28 €/MWh_{EL}/h**; and
 - Price for electricity amount = 30.4 * 0.3 = **9.12 €/MWh_{EL}**
 -

Consequently, the payment for thermal energy from cogeneration is calculated as follows:

- Payment for lost electrical capacity:

$$\frac{\text{Reserved thermal capacity}}{\text{Efficiency factor } (f=6.56)} * \text{Price for electrical capacity}$$
- Payment for supplied thermal energy amount:

$$\text{Thermal energy amount} * \frac{\text{Price for electricity amount } (9.12 \frac{\text{€}}{\text{MWh}})}{\text{Efficiency factor } (f=6.56)} = \mathbf{1.39 \text{ €/MWh}_{TH}}$$

In this manner, applying the calculation method described above, KEK billing to DH Termokos was completed. According to the submitted bills, the following is the structure of payments for thermal energy from cogeneration for the 2019/2020 season:

Table 16: Details on the structure of payments – Billing of thermal energy from cogeneration

Thermal Energy Purchases from Cogeneration - 2019/2020 season								
Billing for Capacities and Energy								
Season 2019/2020	Electric Cap MWh _{EL} /h	Tariff [€/MWh _{EL} /h]	Billing for capacity [€]	Thermal Energy Amount [MWh _{TH}]	Tariff [€/MWh _{TH}]	Billing for thermal Energy [€]	License Tax [€]	Total Billing [€]
Tetor 2019	2,300	21.28	48,944.00	10,126	1.39	14,075.14	1,012.60	64,031.74
Nëntor 2019	5,800	21.28	123,424.00	31,057	1.39	43,169.23	3,105.70	169,698.93
Dhjetor 2019	7,500	21.28	159,600.00	44,182	1.39	61,412.98	4,418.20	225,431.18
Janar 2020	8,162	21.28	173,686.93	52,762	1.39	73,339.18	5,276.20	252,302.31
Shkurt 2020	6,661	21.28	141,744	43,209	1.39	60,060.51	4,320.90	206,125.57
Mars 2020	6,156	21.28	131,002.45	39,735	1.39	55,231.65	3,973.50	190,207.60
Prill 2020	4,232	21.28	90,056.32	27,339	1.39	38,001.21	2,733.90	130,791.43
Totali 2019/2020	40,811		868,457.87	248,410		345,289.90	24,841.00	1,238,588.77

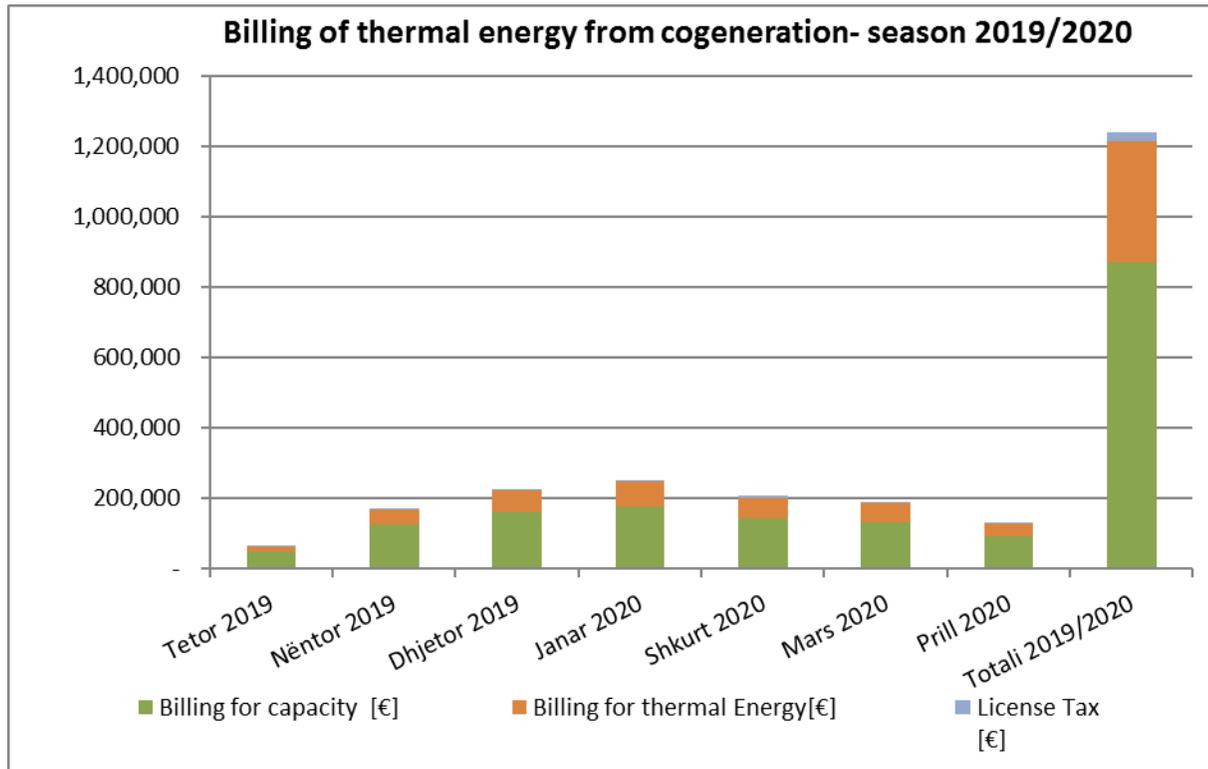


Fig.16: Graphical presentation of billing of thermal energy from cogeneration in TPP Kosova B- 2019/20 season

Respective comparisons for thermal energy cost from cogeneration are presented in the following chart:

Table 17: Respective comparisons between allowances in the tariff review and realizations

Comparisons between allowances and realizations in the tariff review- 19/20 season				
	Allow. Tariff. Rev. 19/20	Real. 19/20 season	Difference	Share of realizations
Electrical capacity [Mwhel/h]	38,300	40,811	-2,511	107%
Billing for capacity [€]	815,024	868,458	-53,434	107%
Thermal energy amount [MWhth]	251,248	248,410	2,838	99%
Billing for energy [€]	349,235	345,290	3,945	99%
Total billing [€]	1,189,384	1,238,589	-49,205	104%

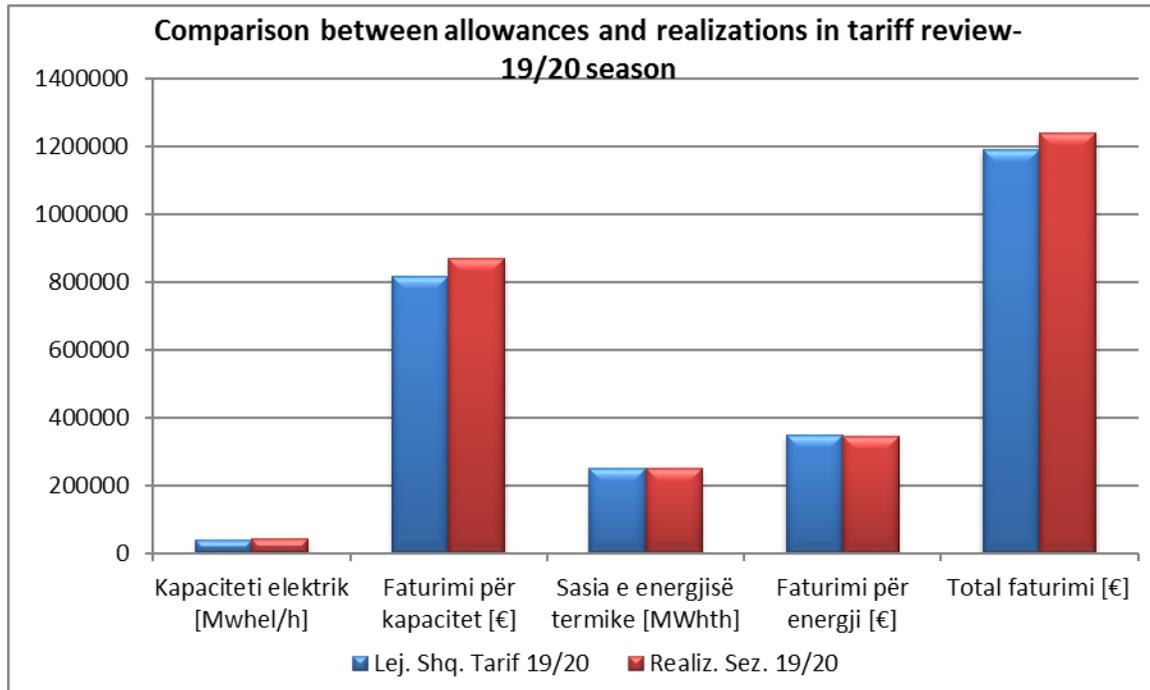


Fig. 17: Respective comparisons between allowances in tariff review and realizations

Fixed costs

In general, fixed costs have not undergone any significant changes in both structure and respective values. DH Termokos presented fixed costs in the amount of **€ 2,940,733**; where the largest component is other administrative and sales expenses in the amount of **€ 1,871,330** (in this component most of it belongs to the cost of accounts of receivable provisions in the amount of **1,210,379**). Termokos clarified that this large amount of receivables provision occurred as a result of debt repayment until 2008, in accordance with the Law on Public Debt Forgiveness. ERO considers this to be a necessary accounting operation to reflect the settlement of debts under the law in question; however, this cost has not been subject to forecasting and determination in the tariff review so it does not take it into account in comparisons between forecasts and realizations because it does not represent a real cost to the company for the period subject to tariff review. Also, taking into account the fact that in accordance with the provisions of Thermal Energy Pricing Rule, ERO determines/allows a reasonable percentage of the level of bad debts, which is categorized for comparison under other variable costs, including cost of bad debts as far as has been allowed in the tariff review. Also, from the Disclosure of statement 'B' under item Other administrative and sales expenses are also noticed some sub-items such as 'profit tax expenses' and 'loan interest expenses' which in the tariff review are handled under other components. (to the allowed return respectively the allowed profit); consequently, the amounts presented for these sub-components are not taken into account in estimating the realization of operating costs.

From what was said above, the fixed costs realized in the 2019/2020 season are estimated at **€ 1,267,734**, where among the main components is the personnel cost in the amount of **€ 871,930**.

The following table summarizes the operating costs incurred in the 2019/2020 season and the relevant comparisons with the allowances in the tariff review.



Table 18: Operational costs for 2019/2020 season

DH Termokos Operational costs for season 2019/20	Lejuar [€]	Realizuar [€]	Diferenca [€]	Realizuar [%]
Variable Costs				
Cost of thermal energy from cogeneration	1,189,384	1,238,589	(49,205)	104%
Self generation cost	319,500	-	319,500	0%
Treated Water and Water Treatment Chemicals	130,000	104,656	25,344	81%
Electricity(prod. &Subs. Dist.)	549,199	537,378	11,821	98%
Personnel Cost (direct labour)	841,454	922,647	(81,193)	110%
Others variable	315,804	314,440	1,364	100%
Total variable costs	3,345,341	3,117,710	227,631	93%
Fixed costs				
Materials, Services	86,500	80,572	5,928	93%
Repair and Maintenance	85,000	45,644	39,356	54%
Administration Expenditures	82,000	71,257	10,743	87%
Personnel costs (different from direct labour)	749,608	871,930	(122,322)	116%
Sale costs and other administration costs	182,415	198,331	(15,916)	109%
Total fixed costs	1,185,523	1,267,734	(82,211)	107%
Total operational expenditures	4,530,864	4,385,444	145,420	97%

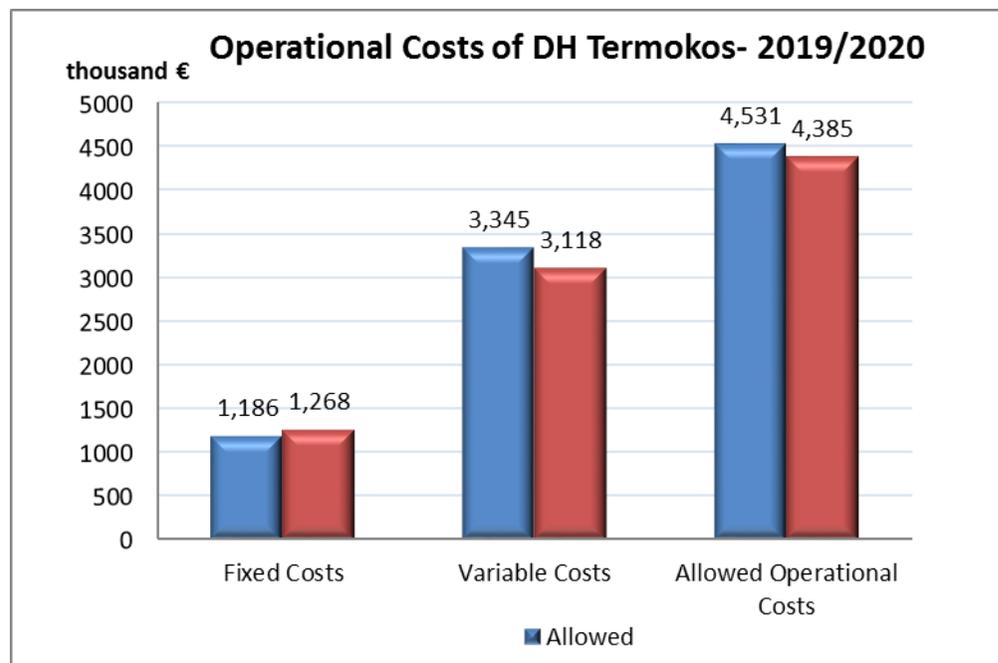


Fig. 18: Graphical presentation of operational costs and respective comparisons- 2019/20 season

Conclusion:

- Operational costs in total were realized in the amount of € 4,385,444 or in the amount of 97% of the value foreseen / allowed in the tariff review 2019/20 (€ 4,540,008); so there is a difference of € 154,564.



- Variable costs are realized at the level of 93%, which is due to the fact that there were no own generation costs (with heavy fuel oil); the main cost is the purchase of thermal energy from cogeneration which is realized at 104%.
- At Fixed Costs there is an over-realization of 7%; more precisely, the realization of fixed costs was 107% compared to the value allowed/predicted in the 2019/20 tariff review. So fixed costs were realized in the amount of € 1,267,734 with a difference of € 77,903 from the allowed value (€ 1,189,831).

Recommendation:

As the differences between planning and realization are small, the main recommendation is to proceed with a planning that is as realistic as possible, taking care that the projected / allowed costs are realized according to the components – i.e without changes in any cost component, in order for the enterprise to have a successful operation with the impact on continuous improvement of the quality of supply and service.

II.3 Operational assets

Regarding operational assets, it should first be noted that there are changes in both the structure and the value of assets, as a result of the implementation of investment projects: rehabilitation of the distribution network and thermal substations. For operating assets, DH Termokos has submitted the detailed list of updated assets and the Statement of assets.

The following table summarizes the categorization of assets by organizational units, as they are categorized and registered in the List of Assets of DH Termokos.

Tab.19: Categorization of assets by organizational units of DH Termokos and respective values

Operational Assets - Categorization by departments			
Departments	Initial value [€]	Depreciation[€]	Current value [€]
Production	4,329,222	4,220,041	109,181
Distribution	45,578,696	11,211,794	34,366,902
Supply	32,201	15,576	16,625
Administration and Finance	336,231	265,035	71,196
Total	50,276,350	15,712,446	34,563,904

Conclusion:

It should be noted that, according to the list of assets of DH Termokos, the assets are presented allocated to the organizational units of the enterprise, which is one of the license requirements regarding the unbundling of accounts. The initial asset value, depreciation and present value are also presented. However, the allocation of assets by organizational units is a bit too detailed, because in addition to the allocation in production, distribution, supply and headquarters (in the list presented as "DH Termokos"), assets are allocated in other departments such as: Finance, Administration, Procurement etc.

II.4 New investments

Regarding new investments for the reporting period, it should first be mentioned that investment projects have not been implemented as planned, mainly because there have been some delays in the



implementation dynamics, which has affected the complete non-realization of monetary values as planned/allowed in the tariff review for the 2019/20 season. The following are details for the realization of investments: both own investments (with self-financing) and investments from donations.

New investments with self-financing

In Statement 'D' of Investments, DH Termokos has presented the value of self-financing investments of € 434,589. Attached to the regulatory overview "D" has also submitted the details of these investments divided by departments (production, distribution and joint investments), and have also presented all the investment components. From the details it can be seen that the main investments are in network and equipment, and also a considerable amount are for joint investments, where the main components are investment costs related to projects for construction of the directorate and administration building, as well as information technology equipment and for the office.

From the analysis and verification of these components, it has been confirmed that some components presented as new investments, such as: Health insurance of workers, supply of chemicals for water treatment, insurance of vehicles, etc., do not belong to capital investments. and as such have not been accepted by ERO. Consequently, it was concluded that the **realized value of new investments with self-financing is € 326,206.**

In the 2019/20 tariff review, ERO has allowed self-financing investments in the total amount of € 1,380,000, where the main components have been the construction of the directorate and administration building (€ 530,000) and investment costs for rehabilitation of the network and related equipment (€ 494,000); from above it is clearly noticed a rather large under-realization of over 1 mil €. Regarding the building, it should be noted that only studies/designs have been carried out: Study on the Assessment of the location and facilities of DH Termokos (€ 18,980) and Detailed Project and assessment of the location and facilities (€ 49,000).

Details for the realization of investments are presented in the following table:

New investments with self financing - 2019/20				
	Lejuar	Realizuar	Diferenca	% Realiz.
Net. Rehab. And Equipmer	494,000	159,237	334,763	32.23%
Equip. and Prod. Plant	284,000	65,969	218,031	23.23%
Equip. and Comp. Prog.	72,000	33,020	38,980	45.86%
Total	1,380,000	326,206	1,053,794	23.64%

Investments from donations

First of all, it is important to mention that in the tariff review for the season 2019/20 ERO has allowed the value of investments from donations in the total amount of **€ 9,772,000**, which includes projects:

- European Commission Project IPA 2015: Rehabilitation of the network of substations, as well as expansion of the network and new substations in the total amount of € 8,300,000; based on the dynamic project development plan, the value of **€ 5,672,000** is **allowed**.



- KfW project: Rehabilitation of the network and substations, as well as expansion of the network and thermal substations in the total amount of € 14,000,000; according to the project development plans, the value of € **2,500,000** is allowed.
- MCC Project: Installation of thermal energy meters in the total amount of \$ 10,900,000; according to the project development plans the value of € **1,500,000** is allowed.

During the reporting period, the implementation of the European Commission Investment Project (IPA 2015) has started, which is currently underway, and until the reporting date, the following components have been implemented:

- Rehabilitation and expansion of the network 3.75 km route;
- Rehabilitation of 48 thermal substations and 28 new substations;
- Installation of 19 regulating valves in thermal substations.

The value of the realized works is € 2,482,528; according to the dynamics of the execution of works until the end of the reporting period, the realization of most of the works is expected, which is estimated at € 2,200,000. Consequently, the amount of investments realized at the end of the **reporting period** is € **4,682,528**.

While the other 2 investment projects (KfW Project and MCC), due to delays in the preparatory phase of project development, have not yet begun with the execution of works, and it can be considered that the value of the implementation of these 2 projects is zero.

From what was said above, it is concluded that **new investments from donations** have been realized in the amount of € **4,682,528**.

It is important to mention that in the tariff review for the 2018/19 season, ERO has allowed the value of investments from donations in the total amount of € **8,505,000**, where in addition to the above project, the following projects are included:

- European Commission IPA 2015 project: Rehabilitation of the substation network and network expansion; the estimated value of this investment for the tariff review period is € **3,250,000**.
- KfW Network Rehabilitation and Expansion Project; the estimated value of this investment for the tariff review period is € **2,625,000**.

The following table presents the details for the realization of investments from donations:

New investments from donations - 2019/20				
	Allowed	Realized	Difference	% Realized
Eur. Com. Project IPA2015	5,672,000	4,682,528	989,472	82.56%
KfW Project	2,500,000	0	2,500,000	0.00%
MCC Project	1,500,000	0	1,500,000	0.00%
Total	9,672,000	4,682,528	4,989,472	48.41%



Summary of realizations of new investments

From what was explained above, ERO estimates that during the reporting period new investments were made in the amount of **€ 5,008,734**; while in the tariff review 2019/20 new investments in the amount of **€ 11,152,000** were **allowed**.

The following table summarizes the details for the new investments:

Tab.20: Realized and planned new investments in the reporting period

New investments - 2019/20				
	Allowed	Realized	Difference	%Realized
Self-financing	1,380,000	326,206	1,053,794	23.64%
Donations	9,672,000	4,682,528	4,989,472	48.41%
Total	11,052,000	5,008,734	6,043,266	45.32%

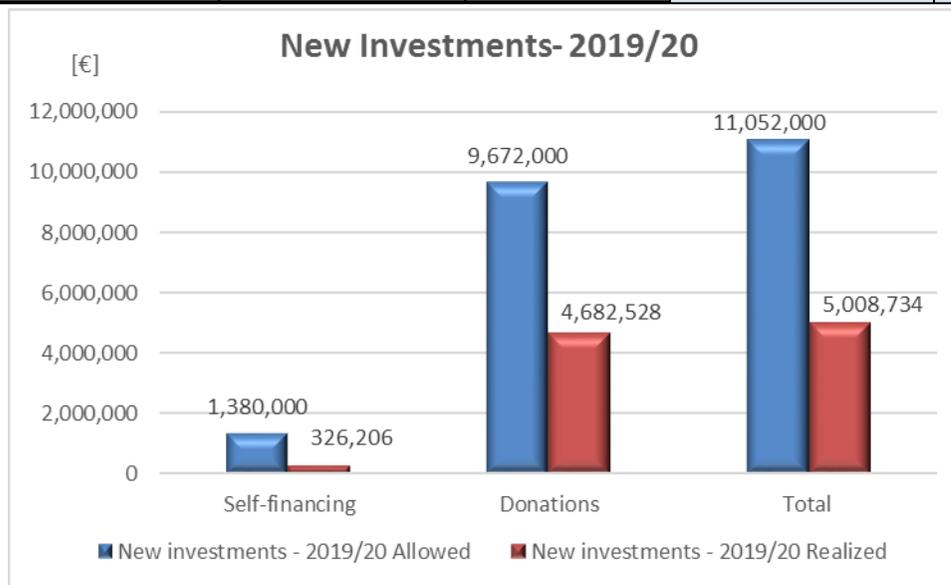


Fig. 19: Realized and planned new investments for the reporting period

Conclusion:

- New investments with self-financing were realized in the amount of € 326,206, which represents a very large difference of € 1,053,794 compared to the allowed / planned value, respectively realization of only 23.64%. The main factor for this under-realization is the non-implementation of the construction of Head Office building, foreseen in the amount of € 530,000.
- New investments realized from donations are € 4,682,528, where there is also a large difference of € 4,989,472 from the planned/allowed value in the 2018/19 tariff review, respectively a realization of 48.41%.
- In total, the new investments were realized in the amount of € 5,008,734 or 45.32% of the allowed/planned value in the 2018/19 tariff review.
- The main reason for non-realization of new investments from donations is the delay of the preparatory phase of the development of investment projects of KfW and MCC. While the non-realization of self-financing investments is mainly due to the non-start of



implementation of the project for construction of the directorate and administration building which was planned in the amount of € 530,000.

Recommendation

Given the fact that there is a significant under-realization of investments compared to planning/permits and since new investments are important for the expansion and good functioning of the thermal energy system, care should be taken in forecasting investments by assessing as best as possible all the key factors that affect the full realization of investments. In this regard, taking into account the 1-year planning period for the purpose of tariff review, it is recommended to estimate as accurately as possible the respective amounts for the review period, especially for long-term projects.

III. New connections

According to the information of DH Termokos, during the reporting period there was a considerable number of new connections. The total number of customers from new connections in the 2019/2020 season is 1,225 - of which 1,091 are household customers (residential) while 134 are commercial and institutional customers. The total area from the new connections is 91,630 m², where about 78% of the heating area belongs to household customers while commercial and institutional customers participate with about 22% in the total heating area of the new connections. The following is a tabular and graphical summary of data on new connections.

Table 21: New connections in the 2019/2020 season

New Connections- 2019/20 season				
Cust. Gr.	No. of cust.	Share[%]	Heating area [m ²]	Share [%]
Shtëpiak	1091	89%	71,274	78%
Komerc&Inst.	134	11%	20,356	22%
Total	1225	100%	91,630	100%

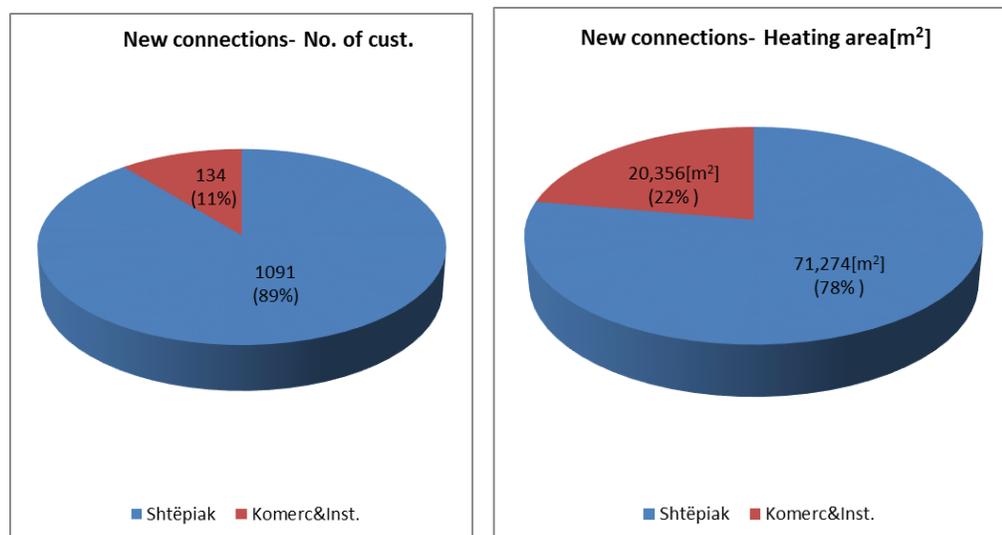


Fig. 19: Share of new connections according to customer groups



Regarding supply contracts concluded with customers, it should be noted that in the 2019/20 season, a total of 669 contracts were concluded for supply of thermal energy (district heating).

Conclusion

In the 2019/2020 season, a considerable number of new connections were realized (in total 1,225), where the heating area was increased by 91,630 m². Regarding new connections, it should be noted that this increase in new connections is a result of the network expansion project that has begun to be implemented in 2019.

For the realization of connections, DH Termokos implements its internal procedures that are to some extent in accordance with the Rule on General Conditions of Energy Supply and the Guideline for New Connections.

The total number of supply contracts concluded with customers is 669. From the above data it is noticed that the concluded contracts do not correspond to the new connections, because it has to do with the fact of connection of new residential buildings where in the case of realization of these connections, each housing unit is considered and registered as a potential customer.

Recommendation

- Taking into account the increasing demands for connection to the thermal energy system of DH Termokos, new connections should be enabled as much as possible in the regions where the primary network exists, in which case the highest possible use of district heating service will be optimized. Also, the implementation of planned investment projects for network expansion should be one of the main priorities in order to enable the connection of a large number of new customers to the district heating system.
- In the realization of new connections , the provisions of the Rule on General Conditions of Energy Supply and the Guideline and internal procedures on new connections shall be fully implemented.
- The bonding of supply contracts with customers should track the number of new connections, in line with legal obligations.

IV. Unauthorized use of heat and disconnections for the 2019/2020 season

According to the information of DH Termokos, during the reporting period only 2 cases of illegal connections were identified, which were registered in the billing system of DH Termokos by applying the procedures for unauthorized use. While no cases of expansion of facilities have been identified, i.e increase of the heating area . The details are presented in the following table:

Tab. 23: Identified cases of the unauthorized use of heat



Unauthorized use of heat - season 2019/20						
Description	No. of Cons. (household)	No. of Con (Com&Inst.)	Total Cons.	Heating area (household) [m ²]	Heating Area (Com&Inst.) [m ²]	Gjithsejt Sip. ngr. [m ²]
Expansion of heating area	0	0	0	0	0	0
Illegal connections	0	2	2	0	304.5	304.5

Disconnections implemented during the season are at the request of customers, while there were no disconnections for non-payment.

The following tables present data on customer disconnections and reconnections during the 2019/2020 heating season.

Tab.24: Connections and reconnections in 2019/20 season

Disconnections - 2019/20 season						
Description	No. of Cons. (household)	No. of cons. (com&Inst.)	Total cons.	Heating area (household) [m ²]	Heating area (Com&Inst.) [m ²]	Total heating area [m ²]
Disconnections for non-payment	0	0	0	-	-	-
Disconnections by request	58	23	81	4,159.96	4,427.00	8,586.96
Total disconnections	58	23	81	4,159.96	4,427.00	8,586.96
Reconnections	97	17	114	7,031.57	4,494.05	11,525.62

Conclusion:

- In this season, only 2 cases of unauthorized use have been identified, which are illegal connections of commercial customers.
- These cases have been handled by applying the Procedure for identification of unauthorized use of heat (document drafted by DH Termokos and approved by ERO).
- Disconnection cases are only at the request of customers. Regarding the reconnection, a considerable number of cases belong to the activation of the so-called 'passive' customers, which have been reconnected upon request. For disconnections and reconnections of customers DH Termokos applies internal procedures that are mainly in accordance with the ERO's Rule on Disconnection and Reconnection of Customers.

Recommendation:

- Identification of unauthorized use of heat should be a continuous activity of technical teams in the field, in which case the procedure for identification of unauthorized use should be fully implemented and the losses caused by this unauthorized use should be restored.
- It is also recommended to undertake the re-verification of unauthorized use, respectively the expansion of heating area - for the previously identified cases as such.
- Based on the fact that the disconnection cases are at the request of customers, it is necessary to analyze in detail the reasons for which customers request disconnection, focusing on the



causes of poor quality of supply. These should be minimized as much as possible to prevent the shrinking of the customer base.

V. Customer complaints and requests – 2019/2020 season

Based on the data of DH Termokos for the 2019/2020 season (period: October 2019 - April 2020) a total of 1,421 complaints and requests were received, where for the vast majority of them responses were returned. The following are tabular details of customer complaints and requests.

Tab.25: Customer complaints and requests for the reporting period

Complaints/requests for the heating season 2019/2020					
Receipt of complaints and requests					
Ver. of quality	Verification of area	No. of requests	Change of owner	Interventions	Total
574	67	480	256	44	1421
Responses to complaints and requests					
Ver. of quality	Verification of area	No. of requests	Change of owner	Interventions	Total
494	52	315	256	44	1161

Conclusion:

In the reporting period, DH Termokos has received a significant number of complaints and requests which have been addressed according to the Procedure of DH Termokos for Review of Customer Complaints and Requests approved by ERO, which is mainly in accordance with ERO's Rule on Resolution of Complaints and Disputes in the Energy Sector.

The number of addressed complaints and requests is about 82% compared to the received ones.

Recommendation:

- Referring to the fact that a considerable number of complaints and various requests have been recorded, DH Termokos should undertake a detailed analysis which will identify the reasons for the complaints, especially those related to the quality of heating. Based on these analysis, prioritize and take the necessary measures to improve the quality of heat supply.
- In addressing complaints and requests, DH Termokos shall implement the Internal Procedure for Review of Customer Complaints and Requests approved by ERO, adhering to, among other things, the deadlines set out there. It is important to resolve/address all complaints/requests received.



Prepared by:

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Annex 1: DETAILED PROGRAM OF MONITORING THERMAL ENERGY ENTERPRISES

ERO's monitoring program determines the monitoring of thermal energy enterprises through the following grouped components, which require information and data realized for the season 2019-2020, as follows:

Group I: Energy balance and technical data for the 2019-2020 season:

- 1) Monitoring of these components:
 - 2) 1) Production of thermal energy in heating plants;
 - 3) 2) Production of thermal energy from cogeneration (**currently valid only for DH Termokos**);
 - 4) 3) Supply of customers with thermal energy;
 - 5) 4) Technical losses - losses in the thermal energy transmission network (**currently valid only for DH Termokos**) and losses in the distribution network; and
 - 6) 5) Fuel consumption.
- For the above components the following data/information/documents are required:
 - 1) To complete the Regulatory Statement E: Technical Statement (season 2019/2020);
 - 2) Daily / monthly reports of thermal energy production in the heating plant (for the season 2019-2020);
 - 3) Daily / monthly reports of thermal energy from cogeneration - measured at the thermal station in KEK / **these do not need to be sent because they are sent to us throughout the season**)
 - 4) Reports for thermal energy measurements from cogeneration at the thermal station in Termokos (**this is important for determining losses in the transmission network KEK-Termokos**)
 - 5) Data with the recording of thermal energy measurements supplied to customer substations (season 2019/2020)
 - 6) To present in tabular form the technical losses in distribution, divided by months (for the 2019/2020 season).
 - 7) Technical losses in the thermal energy transmission network KEK- DH Termokos, divided by months (for the 2019/2020 season).
 - 8) Statement of heavy fuel oil expenditure; the amount of fuel oil supply, fuel oil consumption, reserves at the beginning and end of the 2019/2020 season.



Group II: Revenues and costs for the 2019-2020 season

- 1) Monitoring of these components
 - 2) 1) Operating costs;
 - 3) 2) Capital costs;
 - 4) 3) Heating area, billing, and collection;
- The following data / information / documents are required for the above elements:
- 1) To be completed: Statement A: Operating assets; Statement B: income and expenses; Statement C: Billing and collection; and Statement D: related investments and disclosures;
 - 2) Customer database;
 - 3) List of Assets for 2019
 - 4) Financial statements for the calendar year 2019 and the Audit Report;
 - 5) Data on investments made in the 2019/2020 season, broken down by investment and financing projects (donations or self-financing);
 - 6) List of customers billed according to metered energy (by metering).

Group III: New connections and contracts for the 2019/2020 season

Monitoring of these components:

- 1) New connections - for this component are required: Data in tabular form with the number of new connections; locked surfaces and thermal capacity.
- 2) Contracts for customer supply: the number of contracts concluded with customers during the 2019/2020 season is needed, as well as the respective heating area.

Group IV: Unauthorized use of heat and disconnections for the 2019-2020 season

Regarding this component, the following data / information are needed:

- 1) For unauthorized use of heat: to present in tabular form the number of identified cases of unauthorized use of heat, such as the number of illegal connections, increase of heating radiators without notifying the thermal energy enterprise and similar cases. The measures taken by the enterprise for the identified cases should also be explained.
- 2) For customer disconnections from the network: to present in tabular form the data with the number of disconnections, the area in m², listing them according to the reasons for which the disconnection occurred, the duration and the number of reconnections.

Group V: Customer complaints and requests - 2019-2020 season

Regarding this component, the following data / information are required:



The table showing the number of complaints, customer requests, divisions according to the type of complaints/requests; divisions according to the number of complaints/requests; divisions according to the number of complaints/requests resolved, unresolved, in process and division of complaints resolved into groups: positively resolved or rejected.