Chapter 7

Electricity, Thermal Energy, and Water Supply Sector

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Chapter 7
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1. Effective Samples

Twenty sample surveys were conducted for the electricity, thermal energy and water supply (ETEWS) sector Eleven of them were studied separately from the industry sector because the production volume was not fully included, the differences in fuel and energy consumption were high, and the relevant sources were unclear.

2. Electricity, Thermal Energy, and Water Supply Sector

The following sub-sector survey reports were prepared for the ETEWS sector:

- Electricity and thermal energy (ETE)
- Other

The energy consumption and resource/generation data from five different combined heat and power (CHP) plants was analysed for the ETE sub-sector study. The power plants were in the central and southern regions of Mongolia. The plants provided detailed data on fuel consumption including that of coal, diesel, wood, liquefied petroleum gas (LPG), lubricants, and motor gasoline. Note that some power plants collected the heating consumption data from the coal consumption amount and the billing payment.

The other sub-sector includes heating boilers, power plants, heating distribution companies.

3. Energy Consumption in the Electricity, Thermal Energy, and Water Supply Sector

The estimation of the energy consumption of the ETEWS sector includes power and heat plants. In terms of consumption structures, the following three types of energy were considered: coal, electricity, and other (lubricants, heavy fuel oils/mazut/and diesel).

The energy efficiency (conservation) in the sector is calculated by the fuel usage by each sub-sector, and the fuel unit is in tonne of oil equivalent (toe). Table 7-1 shows the results of the energy consumption in the ETEWS sector.

Table 7-1. Energy Consumption in the ETEWS Sector (toe)

Energy Type	Unit	Electricity and Thermal Energy	Other	Total
Coal	toe	1,916,234.97	226,208.43	2,142,443.39
Electricity	toe	62,108.25	5,517.14	67,625.39
Other	toe	3,144.88	1,195.70	4,340.58
Total		1,981,488.09	232,921.27	2,214,409.36

ETEWS = electricity, thermal energy, and water supply.
Source: Elaboration and calculation of MEEI authors.

As shown above, the role of coal is dominant in the energy consumption of the ETE sub-sector. The share of coal in the total consumption of the ETE sub-sector was 96.7% whilst it was 97.1% for the other sub-sector. Overall, coal accounted for 96.8% of the total ETEWS consumption whilst electricity accounted for 3.1% and the other fuel, 0.2% (Table 7-2).

Table 7-2. Share of Fuel Consumption in the ETEWS Sector (%)

Energy Type	Electricity and Thermal Energy	Other	Total
Coal	96.7	97.1	96.8
Electricity	3.1	2.4	3.1
Other fuel	0.2	0.5	0.2
Total	100	100	100

Source: Elaboration and calculation of MEEI authors.

By sub-sector, 89.5% of the total energy consumption of ETEWS is the consumption of the ETE sub-sector (Table 7-3).

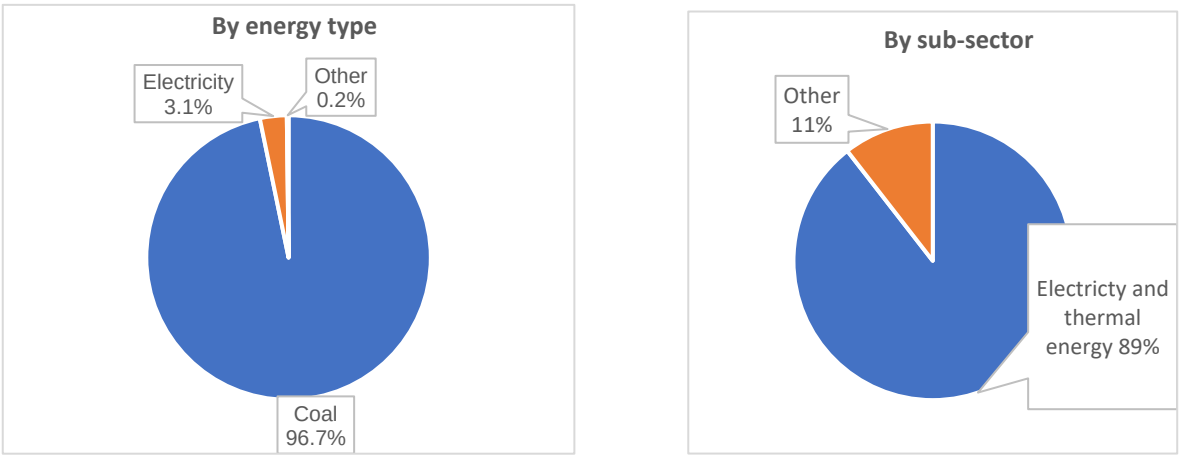
Table 7-3. Share of Sub-sector of Energy Consumption in the ETEWS Sector (%)

Sub-sector	Coal	Electricity	Other Fuel	Share of Total
Electricity and thermal energy	89.44	91.84	72.45	89.48
Other	10.56	8.16	27.55	10.52
Total	100.0	100.0	100.0	100.0

Source: Elaboration and calculation of MEEI authors.

Figure 7-1 shows the energy consumption in the ETEWS sector by sub-sector and energy type.

Figure 7-1 Energy Consumption in the ETEWS Sector, by Energy Type and Sub-sector



Source: Elaboration and calculation of MEEI authors.

Energy intensity of the ETEWS sector is determined by comparing its consumption with the size of the sales revenue. Total intensity of the sector is shown in Table 7-4 in different units.

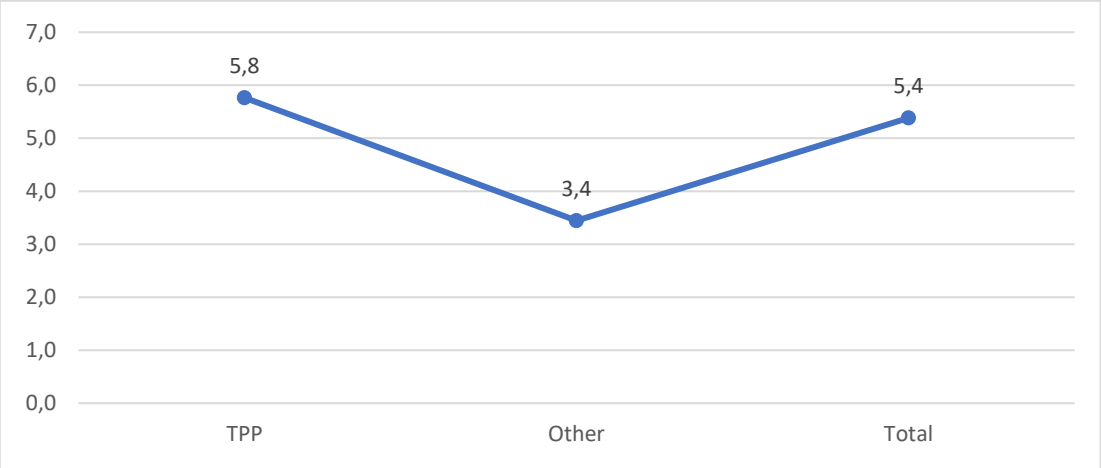
Table 7-4. Energy Intensity

Energy Type	Unit	Electricity and Thermal Energy	Other	Total
Energy intensity	toe/million tugrik (₮)	5.76	3.44	5.38
	toe/thousand US$	15.24	9.11	14.23
	kWh/million ₮	67,043.22	40,064.30	62,608.64
	kWh/thousand US$	177,241.48	105,917.58	165,517.82

Source: Elaboration and calculation of MEEI authors.

In terms of toe/million ₮, the energy intensity of the ETEWS sector was 5.38. The ETE sub-sector had an energy intensity of 5.76 toe/mil ₮ which is 0.07% more than in the sector total. The energy intensity of the other sub-sectors was 3.44 toe/mil ₮ or 0.56% less in the sector total. This indicates the significant impact of the ETE sub-sector on the energy consumption of the ETEWS sector. Figure 7-2 shows the energy intensity of the ETEWS sector in toe/million ₮.

Figure 7-2 Energy Intensity (toe/million ₮)



Source: Elaboration and calculation of MEEI authors.

Total sales of the ETEWS sector, including ETE and other sub-sectors, is shown in Table 7-5.

Table 7-5. Sales of ETEWS Sector (million ₮)

Indicator	Electricity and Thermal Energy	Other	Total
Sales revenue	343,729.13	67,613.18	**411,342.31**

Source: Elaboration and calculation of MEEI authors .