Environmental benchmarking

ENVIRONMENTAL BENCHMARKING IS A METHOD FOR ASSESSING AND MANAGING THE ENVIRONMENTAL INDICATORS OF SAMRUK-ENERGY JSC BY COMPARING ITS ACTIVITIES WITH THOSE OF THE BEST COMPANIES IN THE MARKET AND INDUSTRY. THIS APPROACH ENABLES THE STUDY OF INTERNATIONAL EXPERIENCE IN MANAGING ENVIRONMENTAL ASPECTS AND THE IMPLEMENTATION OF BEST PRACTICES IN ITS OWN PRODUCTION.

Due to the absence of publicly available environmental indicators for companies for 2023, data from 2020 to 2022 were used for the analysis.

The benchmarking relies on two indicators:

- Use of freshwater for technological and domestic purposes;
- Direct (Scope 1) and indirect (Scope 2) greenhouse gas emissions.

To identify the environmental trend, the largest energy companies in Kazakhstan and globally were analysed:

- Enel;
- ERG;
- RusHydro PJSC.

Production indicators

Company	2020		2021		2022	
	Electricity generation, billion kWh	Installed capacity, GW	Electricity generation, billion kWh	Installed capacity, GW	Electricity generation, billion kWh	Installed capacity, GW
Samruk-Energy JSC	31.3	6.200	35.6	6.215	35.88	6.275
ERG	18.8	3.387	19.9	3.387	19.23	3.387
Enel	207.1	84	222.6	87.1	227.8	84.6
RusHydro PJSC	151.5	38.1	143.8	38.2	135.7	38.4

Greenhouse gas emissions (Scope 1, 2) [31, 32]

Company	2020		2021		2022	
	Direct GHG emissions, million tons CO_2eq (Scope 1)	Indirect GHG emissions, million tons CO_2eq (Scope 2)	Direct GHG emissions, million tons CO_2eq (Scope 1)	Indirect GHG emissions, million tons CO_2eq (Scope 2)	Direct GHG emissions, million tons CO_2eq (Scope 1)	Indirect GHG emissions, million tons CO_2eq (Scope 2)
Samruk-Energy JSC	40.679	-	40.308	0.015	32.993	0.013
ERG***	29.710	0.116	30.268	0.1256	29.931	0.0535
Enel**	45.7	11	51.6	9.9	53.1	10.1
RusHydro PJSC **	30.13	-*	30.58	-*	30.88	-*

*The companies did not disclose Scope 2.

** Enel and RusHydro PJSC are engaged in energy production based on the operation of hydroelectric power plants, which result in minimal greenhouse gas emissions.

*** ERG, in addition to energy production facilities, has mining and processing facilities, Scope 1 includes all types of production facilities.

Freshwater withdrawal, million m³

Company	2020	2021	2022
Samruk-Energy JSC	211.380	211.247	230.694
ERG	1,910	2,069	1,989
Enel	51.5	73.10	76.0
RusHydro PJSC	706.26	672.96	686.76

Specific indicators

Company	2020		2021		2022	
	m³/'thousand kWh	tons of CO_2eq/ thousand kWh	m³/'thousand kWh	tons of CO_2eq/ thousand kWh	m³/'thousand kWh	tons of CO_2eq/ thousand kWh
Samruk-Energy JSC	6.75	1.30	5.93	1.13	6.43	0.92
ERG	101.60	1.59	103.97	1.53	103.43	1.56
Enel	0.25	0.27	0.33	0.28	0.33	0.28
RusHydro PJSC	4.66	0.20	4.68	0.21	5.06	0.23

The companies differ in terms of capacity and volume of generated electricity, so the comparative analysis of specific indicators of greenhouse gas emissions and freshwater withdrawal will be conditional.

According to the results obtained, Samruk-Energy JSC has the following trend:

- annual decrease in specific GHG emissions: in 2021 by 13%, in 2022 by 19%; at the same time, the indicator remains approximately at the same level for ERG and Enel, and RusHydro PJSC shows an increase in specific GHG emissions: in 2021 by 5% and in 2022 by 9.5%;
- The average value of specific water withdrawal for 2020-2022 is 6.37 m³/ thousand kWh, which is higher than Enel by 21 times (0.3 m³/ thousand kWh) and RusHydro PJSC by 33% (4.8 m³/ thousand kWh), but significantly lower than ERG by 16.16 times (103 m³/ thousand kWh).

Based on the results obtained, Samruk-Energy JSC should continue to reduce its carbon footprint, focus on modern technologies and methods to reduce greenhouse gas emissions, and continue modernization of both main and auxiliary equipment to reduce water intake for technological needs subsidiaries and affiliates.

[31] Companies of Samruk-Energy JSC in 2020 and RusHydro PJSC did not disclose Scope 2.

[32] Enel and RusHydro are engaged in energy production based on the operation of hydroelectric power plants, which result in minimal greenhouse gas emissions.