

Environmental area

Environment policies and management

Increasing the competitiveness of assets and limiting the environmental impact of the production process are among the objectives set out in the Company's Strategy. The Group has identified and documented significant areas in which its operations have an impact on the natural environment. Certified environmental management systems (PN-EN ISO 14001: 2015) have been implemented. The systems are monitored and audited by independent certification bodies. The certificate of the Parent Company is valid until 30 May 2022, while of EC Zielona Góra until 6 July 2021.

The Independent Integrated Management System (IMS) in KOGENERACJA S.A. and HPP Zielona Góra S.A. operate under the Environmental Protection Policy in the PGE Capital Group. In 2019, the companies of the KOGENERACJA S.A. Group adopted Management Board Declarations on the Environmental Policy obliging the authorities of these companies to continuously improve their activities for the protection and improvement of the environment and pollution prevention.

Being fully aware of the existing risks and of the gravity of threats to the natural environment and the work environment, the Company undertakes to:

- planning the development of the Company based on modern and environmentally friendly technologies, meeting the criterion of best available techniques,
- identification of all environmental aspects, their periodic review and continuous monitoring of significant aspects,
- minimizing the negative impact on the environment through appropriate management in all areas of the Company's operations,
- rational and economical use of fuels and electricity,
- taking preventive measures to counteract the occurrence of accidents,
- raising employees' qualifications, awareness and commitment to environmental protection,
- support and participation in promoting the idea of environmental protection in local social initiatives.

The Group produces energy in an environmentally-friendly way by using effective technologies, such as high-efficiency cogeneration which involves combined production of electricity and heat. Heat in the form of hot water is delivered to consumers via district heating networks.

The process of cogeneration (production of heat and power in cogeneration) is characterized by much higher efficiency than separate production of electricity in a power plant and heat in a heating plant. The primary energy contained in fuel in combined heat and power plants is converted into heat and power with an efficiency of approx. 80%, while for comparison, the average efficiency of Polish power plants is 36%.

Thanks to lower fuel and water consumption and lower emissions, cogeneration is much more environmentally friendly.

The adopted environmental management policy is subject to verification both during internal audits and by external independent institutions (e.g. IMS audit, CO₂ emission audit).

Table. Fines for non-compliance with laws and regulations on environmental protection

in PLN thousand	KOGENERACJA S.A.		EC Zielona Góra S.A.	
	from 1 January to 31 December 2019	from 1 January to 31 December 2018	from 1 January to 31 December 2019	from 1 January to 31 December 2018
Value of fines for non-compliance with environmental laws and regulations imposed in a given year	0	0	0	0

Fuels, energy and other raw materials

Our main goal is to produce heat and electricity in line with the expectations and with due respect for the natural environment. The Group strives to meet the growing energy needs while caring about air quality in the face of climate change and depletion of raw materials. The Group regularly monitors the consumption of raw materials and endeavors to ensure their optimal utilization.

Table. Raw materials consumption

	KOGENERACJA S.A.		EC Zielona Góra S.A.	
	from 1 January to 31 December 2019	from 1 January to 31 December 2018	from 1 January to 31 December 2019	from 1 January to 31 December 2018
coal (TJ)	16 600	17 053	-	-
biomass (TJ)	415	349	-	-
gas (TJ)	219	222	10 129	10 235
water (thous. m3)	1 944	1 918	1 063	1 050
electricity (GWh)	225	230	34	35

■ Electricity

In order to ensure efficient utilization of energy:

- electricity and heat production processes are analyzed to identify where they occur and how big there are and to eliminate or minimize them,
- the parameters and indicators determining the economics of the CHP plant operations are kept constantly under control and assessed for conformance with the optimal operating parameters of power plants.

■ Water

For its main processes, the Company uses a water intake located on the right bank of the Oder River at EC Wrocław and on the left bank of the Oława River at EC Czechnica. The water is used for technological and cooling purposes (for the main and auxiliary cooling cycle). The Company manages its water resources in a rational way and takes care to maintain their quality.

Actions are undertaken to reduce water consumption for the purpose of production processes by increasing the operating discipline of production equipment, optimizing heat recovery, eliminating leaks in technological installations and optimizing equipment for water sampling technology.

Emissions to the atmosphere

The current problem of large cities is the so-called low emission, harmful to health, of fossil fuels and waste generated during the incineration of fossil fuels and waste in low-efficiency household furnaces. KOGENERACJA S.A. has concluded a trilateral agreement on the Partnership for Sustainable Development with the city of Wrocław and the distributor Fortum Fortum within the framework of reducing low emissions.

KOGENERACJA S.A. joins the KAWKA+ program implemented by the city of Wrocław, under which, together with a heat distributor, it facilitates the process of connecting tenement houses to the municipal heating network. The program also provides for education of residents on the possibilities of using network heat.

In January 2016, flue gas desulphurisation and denitrification systems were launched at EC Wrocław. This project significantly improved air quality - sulphur oxide emissions were reduced five times and nitrogen oxides three times. EC Zielona Góra S.A. produces heat and electricity from gaseous fuel, which reduces emissions to the atmosphere.

The decrease of CO₂ emission in 2019 in the Parent Company was caused by a higher share of biomass in cogeneration production and a lower share of coal-based production in EC Czechnica and a lower production volume.

The KOGENERACJA Group does not have any biogenic gas emissions.

Table. Emissions to the atmosphere

KOGENERACJA S.A.							
(Mg)	as at 31 December 2019	as at 31 December 2018	as at 31 December 2017	Difference 2019/2018	Difference 2018/2017	Difference (%) 2019/2018	Difference (%) 2018/2017
SO ₂	1 803	2 092	1 937	-289	155	-14	8
NO _x	1 949	1 795	1 724	154	71	9	4
Pyły	108	117	95	-9	22	-8	23
CO ₂	1 549 477	1 591 231	1 535 622	-41 754	55 609	-3	4

EC Zielona Góra S.A.							
(Mg)	as at 31 December 2019	as at 31 December 2018	as at 31 December 2017	Difference 2019/2018	Difference 2018/2017	Difference (%) 2019/2018	Difference (%) 2018/2017
SO ₂	8,5	7,6	7,5	1	0	12	1
NO _x	324	394	405	-70	-11	-18	-3
Dusts	10,3	6,1	4,6	4	1	69	11
CO ₂	558 010	563 290	566 719	-5 280	-3 429	-1	-1

Side products of combustion and waste

Side products of combustion (UPS) produced in the technological process of the Parent Company are mainly slag mixes, fly ash, gypsum.

They are transferred in 100% to PGE Ekoserwis Sp. z o.o., a company dealing with the development and subsequent location of ashes and slag in road, hydrotechnical or construction industry investments. Thus, the reuse of furnace waste and substances captured in air protection installations is in line with the idea of closed-loop management. In addition, the flue gas desulphurisation process produces gypsum, which is a fully-fledged product.

The Parent Company operates an integrated waste management system through:

- rational management of materials and raw materials,

- economic use of furnace waste (slag and fly ashes as a raw material for road construction, cement industry, construction, etc.),
- selective waste collection,
- subjecting the waste generated to recovery processes first, followed by disposal,
- storage of waste until its collection, in a way that limits its negative impact on the environment, and specially prepared and designated sites for this purpose,
- Storage of hazardous waste in special adapted containers placed in bathtubs or in specially prepared places with hardened or sealed substrates to protect the soil and water environment from contamination,
- transfer waste only to recipients with appropriate waste management permits,
- keeping individual installations in good working order.

The administrative decision permitting the production of waste issued to EC Zielona Góra SA on 31 May 2012 by the Marshal of the Lubuskie Province sets out the terms of waste management, including a permit for the transport of waste generated in connection with the operation of the installations for transmission, distribution and production of heat in local (gas) boiler facilities in the Municipality of Zielona Góra.