



## GLOBAL WARMING - BASIC INFORMATION ON CLIMATE CHANGE

In Poland, carbon dioxide is the second, after steam, greenhouse gas, i.e. one that hinders the escape of thermal energy into space. It accounts for around 80% of greenhouse gas emissions. However, in opposition to the above, it is poison. Maybe not very strong, because in low concentrations it is not poisonous, but in higher doses it is harmful to health, and in extreme cases deadly, because its action causes hypercapnia (including breathing difficulties, shortness of breath).

The so-called negative emissions, i.e. the removal of CO<sub>2</sub> from the atmosphere, offset about 10% of Polish emissions. Could such compensation be increased? Yes, e.g. through afforestation policy. Regarding the percentage of afforestation, Poland is not good compared to other European countries (our forest cover was 31% for 2016, while in the same year Germany was 33%, Spain and Portugal were 37% and 35% respectively, e.g. Belarus as much as 42%).

Despite all the benefits of afforestation, it is unfortunately only a treatment for symptoms, not a counteraction to the "disease" that is the continuous introduction of new carbon into the carbon cycle. I am thinking of burning fossil fuels, especially hard coal. Coal deposits are still being exploited in Poland and the mining ethos is considered to be particularly important. It blocks changes in the energy sector. During talks on climate change, even in the scientific community, one may come across opinions that emission fees, renewable energy guidelines are mechanisms to limit the sovereignty of nation states. Even the phenomenon of global warming is being questioned. Nothing could be more wrong, the free market will always provide us with fuel, often cheaper and better quality than sulphated Polish coal, often extracted from uneconomic depths and in life-threatening conditions. Economic analyzes show that the contribution of mines to Polish GDP is negative. Billions of zlotys a year are allocated to maintaining coal mining.

According to the data of the Polish Geological Institute, Poland is not coal at all, as it is used to say. Mathematically, coal resources would be enough for over 800 years, but realizing the lack of sense in extracting small amounts of coal from depths in kilometers, the sufficiency of operative resources, i.e. those at which mining losses were taken into account, was also counted. Such sufficiency is 40-50 years, and if all unused resources were used, it would be a maximum of 100 years. Naturally, everything is calculated assuming that demand remains at the current level. Colloquially speaking, it's not that rosy. And yet one should mention the huge import of coal from abroad, including from Russia, according to Business Insider Polska - 13.47 million tonnes. In 2018, Polish mines mined approximately 63 million tons.

Why are we buying more and more coal from abroad? Because it is economical. To create an open-pit mine in Russia, Australia or the USA, all you need to do is remove a relatively thin layer of soil, introduce excavators, and complete mining. And we dig a kilometer down, introduce complicated equipment, and what do we get from it? The average productivity of 700 tons per employee, while in the worst mines in the US it is 2500 tons. There is a difference, right? Earlier I mentioned the



sulfurization of Polish coal. Simply put, it's about contamination with numerous sulfur compounds. The sulfur content of Polish coal in domestic sales is almost twice as much as Russian coal. Ash color looks similar, with nearly twice as much ash left after Polish coal.

Unfortunately, also the geological environment does not facilitate exploitation. Once in Poland it was fed at depths of 200-500 m, now about 800 to 1300 m, and the depths will continue to increase. Of course, along with the depth, the danger associated with methane explosions increases, the temperature rises, at a depth of 1 km it is about 40 degrees C, and seismic hazards, e.g. bumps. Coal deposits in Poland are deep, steep, cut by numerous faults, which does not facilitate mining, and naturally raises costs, and hinders or prevents mechanization. In opencast mining countries, the seams are usually gently sloping, just over 200 m underground. This arrangement of decks affects their greater availability - no need to build shafts, because you can simply use the rail.

The European Union has a climate protection policy. We must reckon with the fact that the prices of greenhouse gas emission allowances are unlikely to decrease, on the contrary, they will continue to rise. Many people will ask what to do? We have always heated houses with coal, what now? Now we need to introduce as many renewable energy sources as possible, in every possible form: photothermal and photovoltaic panels, vertical axis wind power plants, biogas plants at sewage treatment plants, municipal waste dumps or large food plants. It is often enough to better insulate your home, replace windows, properly make a roof, with insulation ... .. And of course power plants or nuclear power plants. We really have a lot to choose from. We do not believe in superstition, only in science.

**Author of the text:**

Michał Paweł Bijata is a student of the University of Warsaw at Interfaculty Studies in Environmental Protection at the University Center for Research on the Environment and Sustainable Development.

**Sources:**

<https://businessinsider.com.pl/>

<http://naukaoklimacie.pl/>

<https://ziemianarozdrozu.pl/>

<https://naukadlaprzyrody.pl/>

<http://orka2.sejm.gov.pl/>

**Literature:**

"Climate Science" Popkiewicz, Kardaś, Malinowski  
Lectures by MSOŚ UCBS UW.