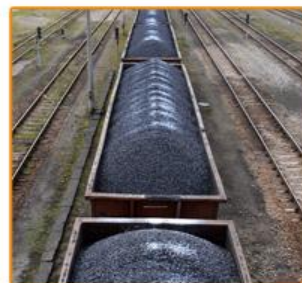
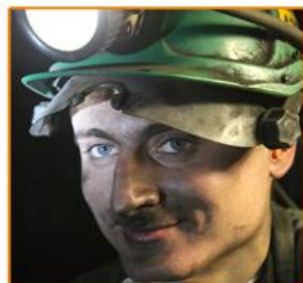


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European Coal Days 2012 **CO₂ Emission – Their Influence and Impact on the Polish Economy**

ETS Directive

- A key document related to CO₂ emission is Directive 2009/29/CE of 23 April 2009 concerning the European greenhouse gas emission allowances trading system (the so-called ETS Directive – The European Union Emission Trading System).
- The ETS Directive provides the modification of the EU ETS trading system, which is based among others on the resignation of the national allocation plans and the introduction of the obligation to purchase emission allowances at auction from 2013.
- An entrepreneur carrying out activities covered by the EU ETS (listed in the Annex to Directive 2009/29/EC) is obliged to surrender allowances in respect of emitted carbon dioxide – any surplus can be sold on the open market.
- Market of CO₂ allowances is considered by analysts to be very unstable, which is caused by the presence of very different and often irrelevant price forecasts. This applies both to earlier forecasts for the second period, as well as projections for the period 2013–2020.

- The increase in production costs due to the need to purchase CO₂ allowances by high-emitting companies.
- Increased production costs will cause higher prices of high-carbon products (especially electricity), which will cause inflationary impulse.
- The increase in prices of all companies (in particular energy-intensive industries and manufacturing industries), which use high emitting product as semi-finished products.
- Inter-sectoral reallocation of demand – final demand shift towards the products of companies emitting less CO₂ and to sectors not based on high-carbon semi-finished products.
- The increase of import of high-carbon products, particularly from non-EU countries (carbon leakage).

- **Changes in production technology in sectors with high CO₂ emissions, including energy sub-sector:**
 - diversification of fuels – reducing the importance of coal;
 - increasing of the fuel use efficiency (modern technologies);
 - development of renewable energy sources and nuclear power;
 - CCS installations construction.
- **Changes in technology will require additional investment – which will result in a temporary increase of demand for investment goods and the increase of demand in the construction and transport sectors.**
- **Implementation of additional investment will increase the demand for external capital (loans, other sources of finance).**
- **A significant increase of energy prices could cause the profitability of electricity import.**
- **Loss of competitiveness of high-carbon sectors, including export-oriented, will increase the relative profitability of investment in the service industries and high-tech. It will speed up the convergence of the structure of the Polish economy into the structure of the EU-15.**

According to the ETS Directive from 2013 the quantity of free allocations shall gradually decrease each year for the following reasons:

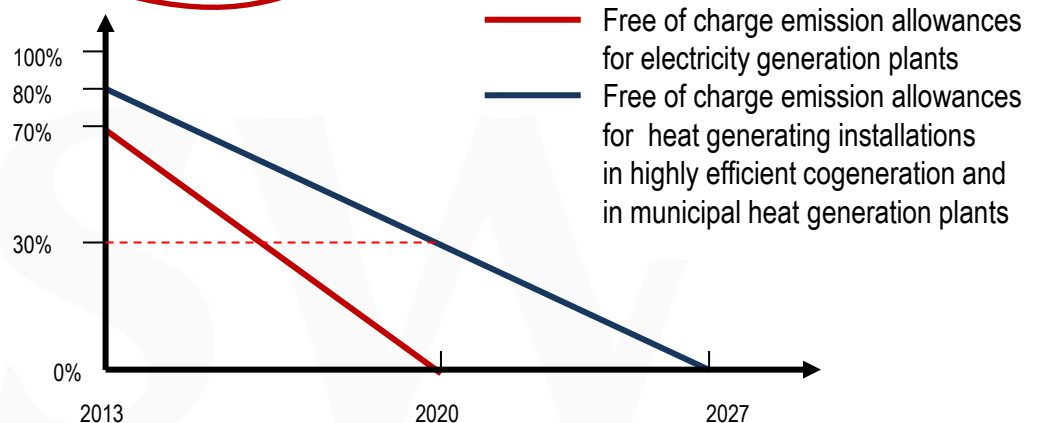
Polish power sector met the terms necessary to obtain the consent of the European Commission for a derogation from the obligation to purchase the allowances for existing and under construction installations (implementing projects that reduce CO₂ emissions which cost are comparable to the value of emission allowances).

In 2013 Polish installations will receive 70% emission allowances of the current limit CO₂ free of charge, in 2014 – 60%, etc. In 2020 all CO₂ emission allowances will be purchased by power generating entities at auctions.

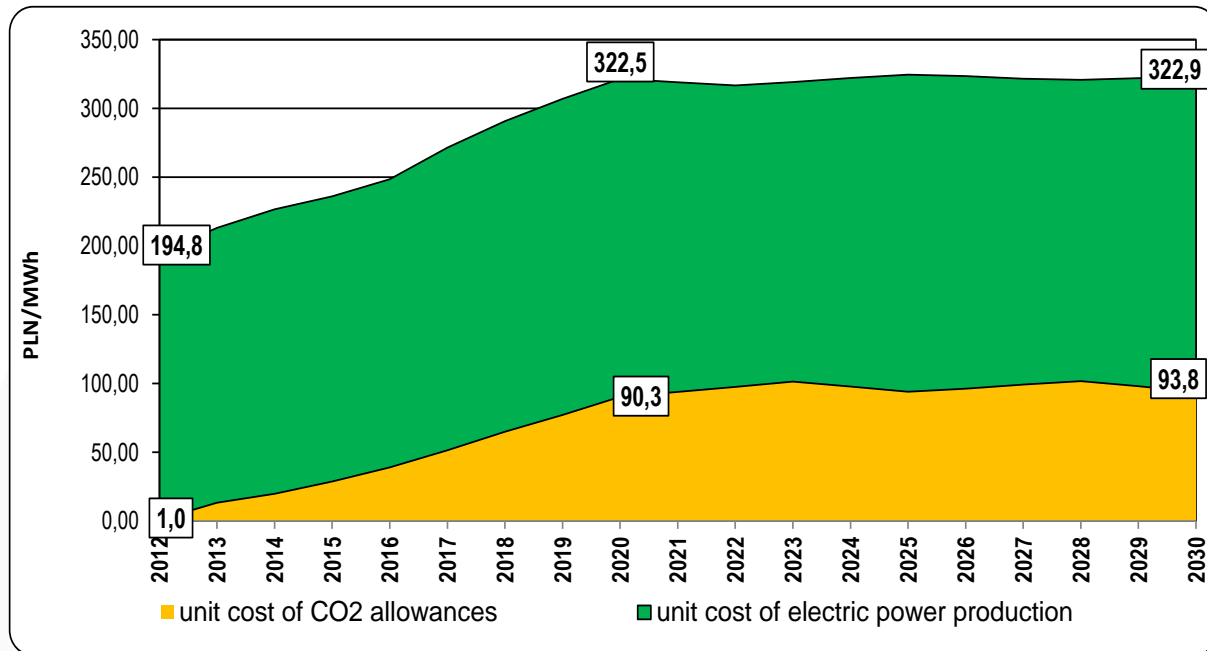
Heat generating installations in highly efficient cogeneration providing municipal heat will be able to obtain in 2013 a maximum of 80% of free of charge allowances, this quantity will be reduced year by year – 30% allowances in 2020 to 0% in 2027.

The number of emission allowances allowed into trade on the market will be reduced each year, so that in 2020 the volume of emissions covered by the trade system is reduced by 21% in relation to 2005.

Free of charge CO₂ emission allowances



Share of CO₂ allowances cost in electricity generation costs

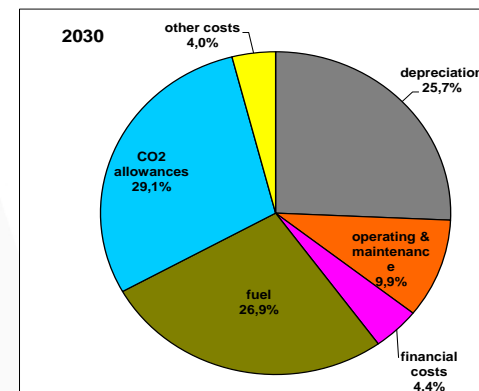
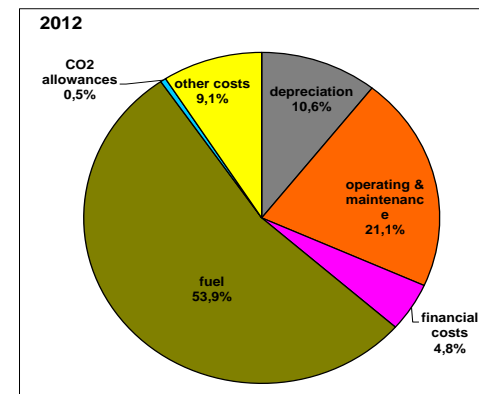


It is expected that in 2030 the average unit cost of electricity generation will reach the value of 323 zł / MWh, which means an increase of ca. 66% as compared to the year 2012.

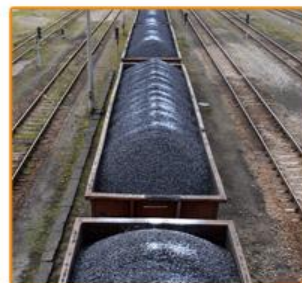
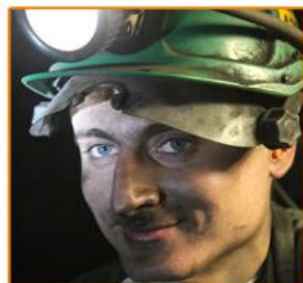
In the structure of the cost of electric power production an important role is played by costs of CO₂ purchases.

Their share in the total cost will increase from around 0.5% in 2012 to 29% in 2030. It is estimated that the unit cost of CO₂ allowances will amount to about 94 zł / MWh in 2030.

Forecast of unit of electric generation cost



Thank you for your attention



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