

# Hearing 14 September 2015

„Contribution of coal and lignite to the EU's energy security”

**Will coal and lignite reinforce energy security of Europe ?**

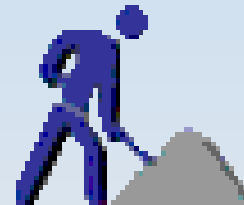
*Michal Wilczynski, Ph.D*  
*Freelance expert, Warsaw*

# Let's define "energy security"

- **security of supply** - that is, to ensure the continuity and quality of supply on the level resulting from social and economic needs. At the national level, it also means reducing dependence on energy imports;
- **economic security** – ie. ensuring that energy prices will not create a barrier to economic development and will not lead to energy poverty;
- **environmental safety** – ie. ensuring that energy production will not cause excessive environmental pollution and irreversible changes (including depletion of resources).



# **GEOLOGY & ECONOMY**



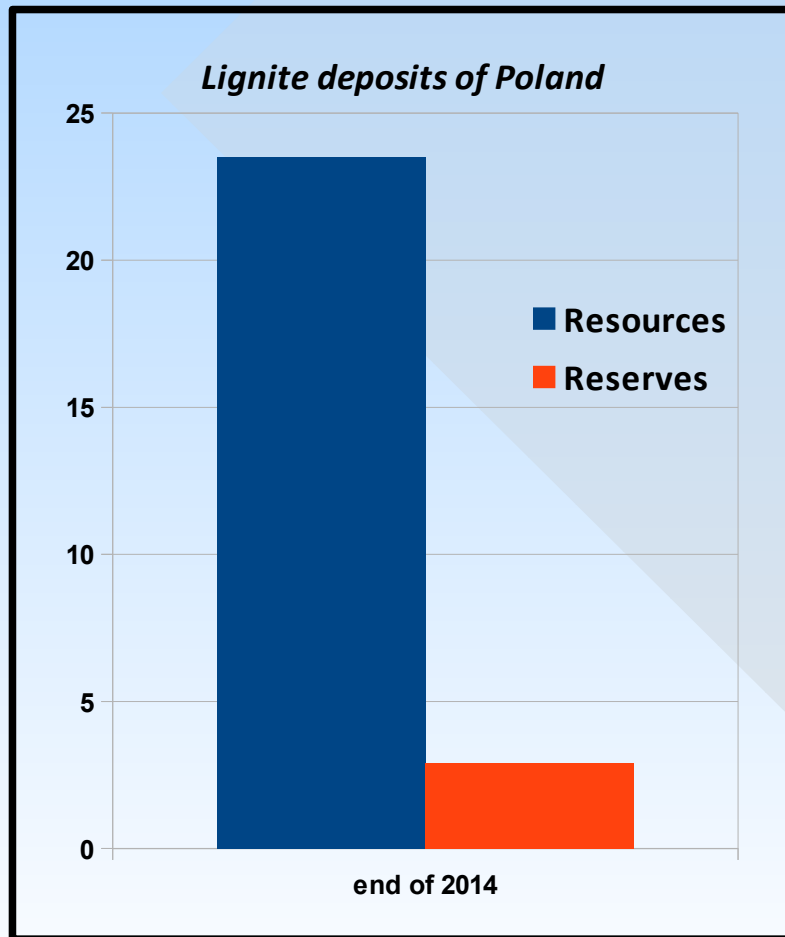
# Real base of security; resources or reserves - definitions

## International classification CRIRSCO-JORC

**RESERVES** – proven, possible to **economically reasonable** exploitation at current prices and applying known technologies.

**RESOURCES** - documented quantities but not possible to exploit cause economic and/or geological, and technological impossibilities.

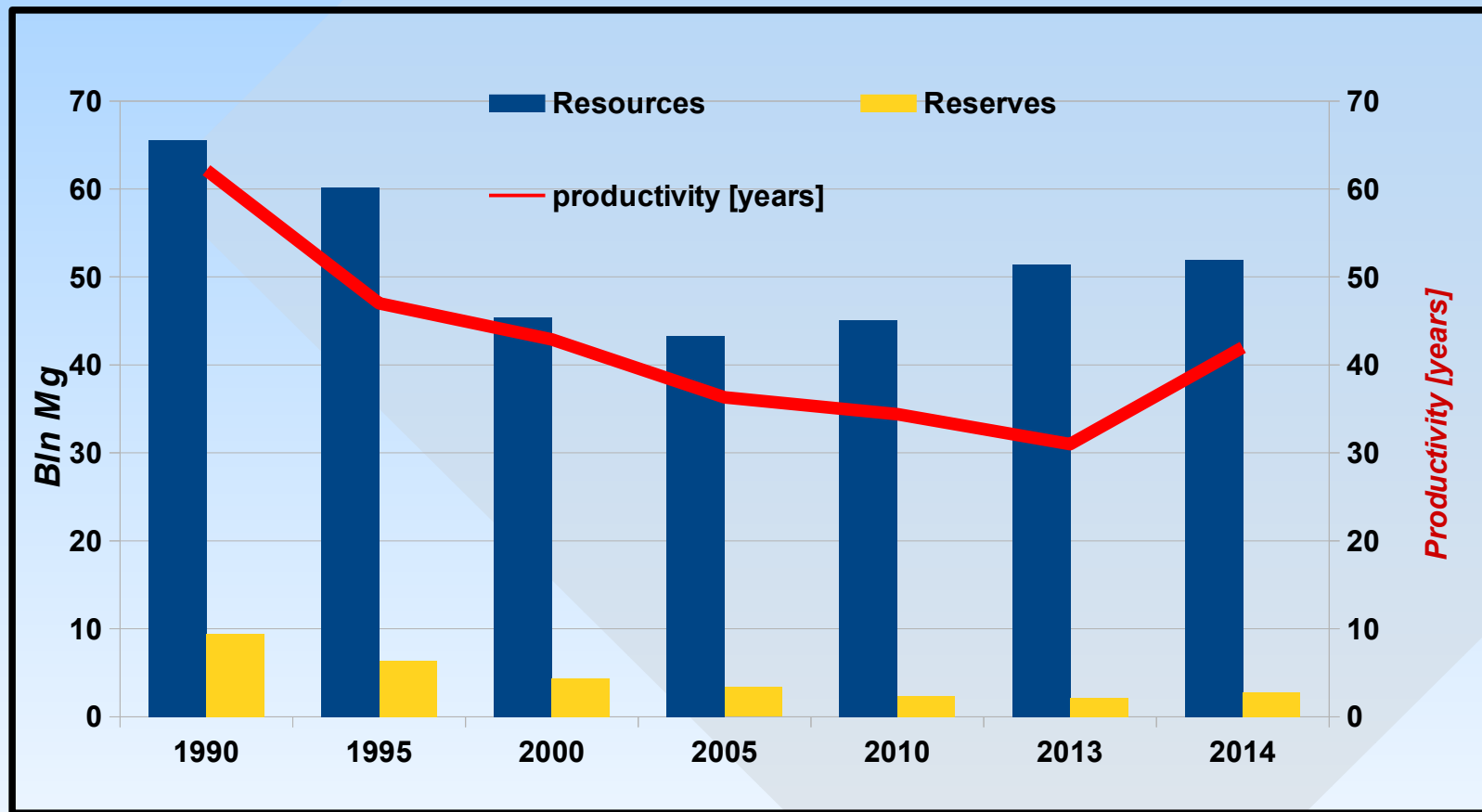
# Valorization and ranking-list of lignite deposits, (J.R.Kasiński, S.Mazurek, M.Piwocki, 2006)



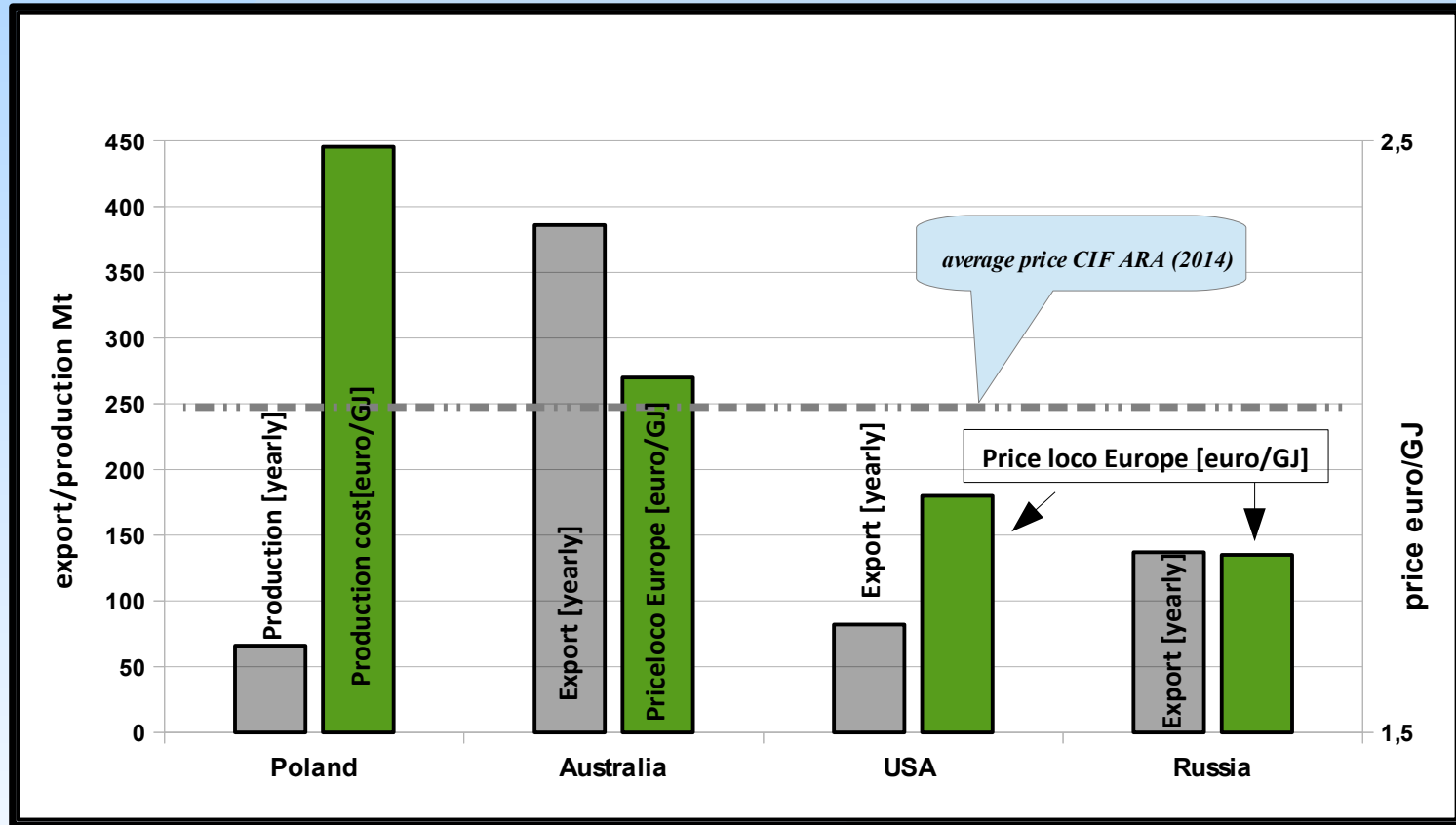
Detail valorization of lignite deposits in Poland has been prepared considering **3 aspects: economic, ecological, and social**, assessed on a base of level human acceptance of mining.

„**Economic valorization** is the most important procedure and it should be applied at the first step of analysis, because **only the profitable deposits would be taken into consideration for potential investors in the real economic conditions**”.

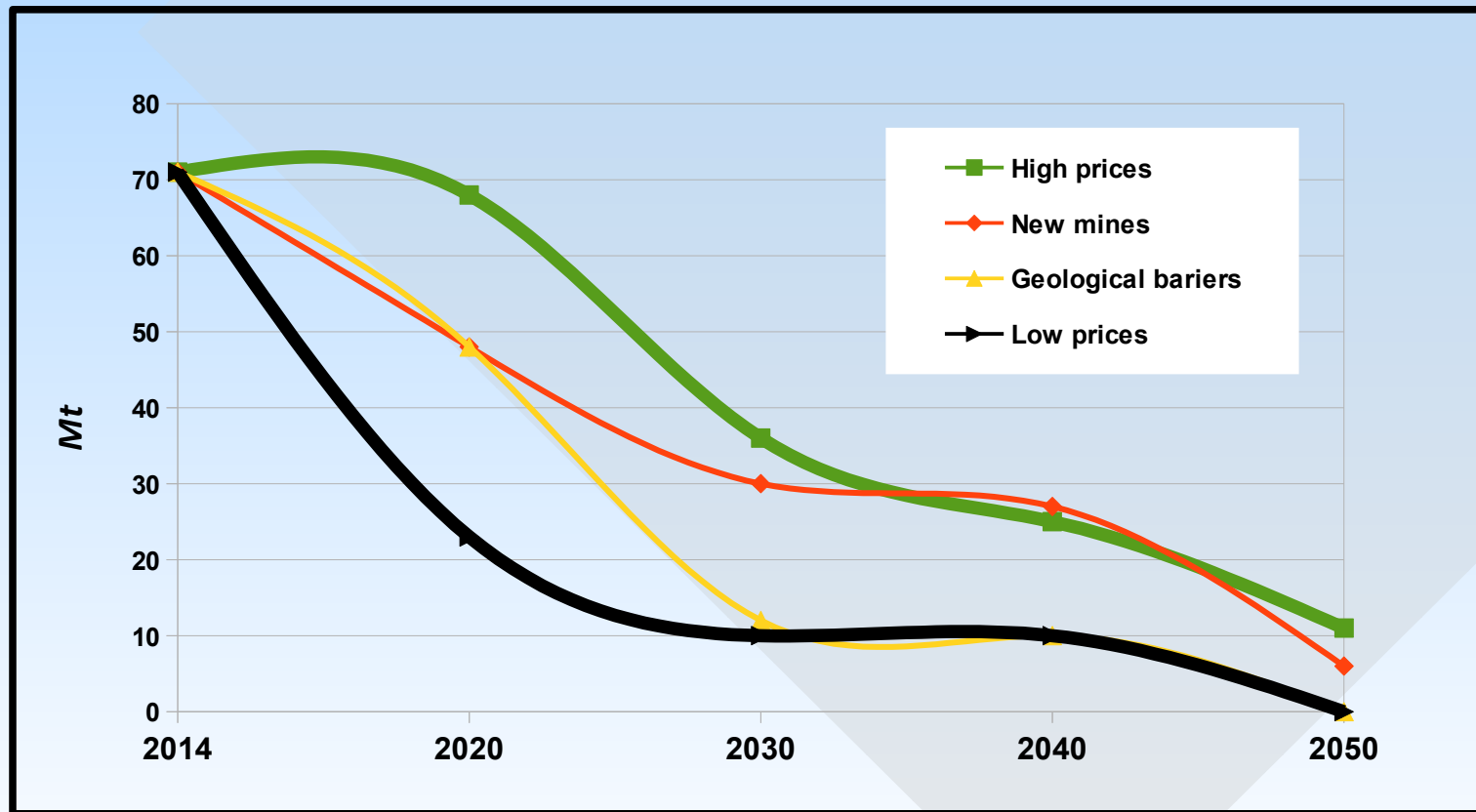
# Myth of huge reserves of the hard coal - Poland



# Global trade of hard coal - competitiveness; 2014/2015



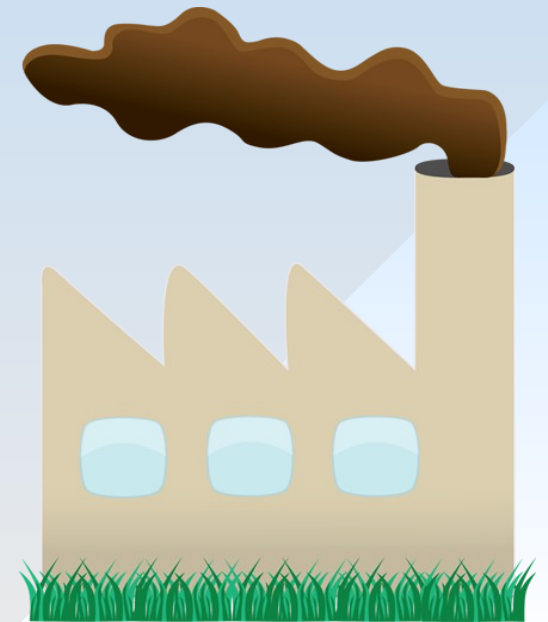
# Prognosis for hard coal production in Poland (Warsaw Institute for Economic Studies, 2015)







# **ENVIRONMENTAL IMPACT OF COAL & LIGNITE**



# Coal mining is a threat to all components of the environment

**The main threats** (*Report on Environment state in Silesia Region.*

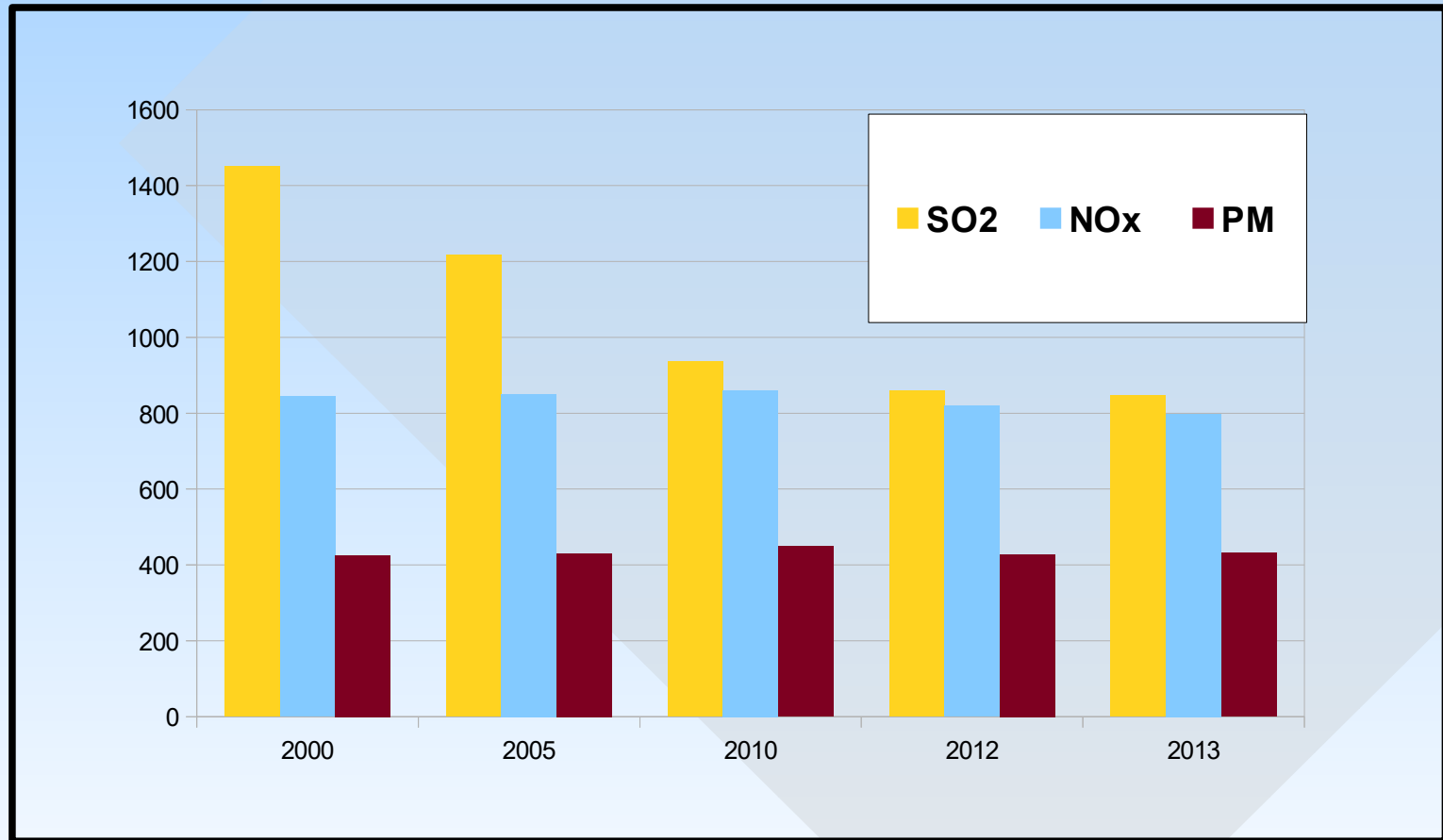
*Regional Insp.of Env.Prot.):*

- from the coal mines of Upper Silesia, annually is pumped out water containing **1.7 million tonnes chlorides and sulfates** - the concentration of **radioactive elements** reaches 400 kBq/m<sup>3</sup>
- from the mines of Upper Silesia during the year is transported to dump **20 million tonnes of waste**. The dumps of Upper Silesia contains 500 million tonnes of mining waste.
- Mining activities cause surface deformations, earthquakes, collapse of large areas.

# Lignite mining is a threat to all components of the environment

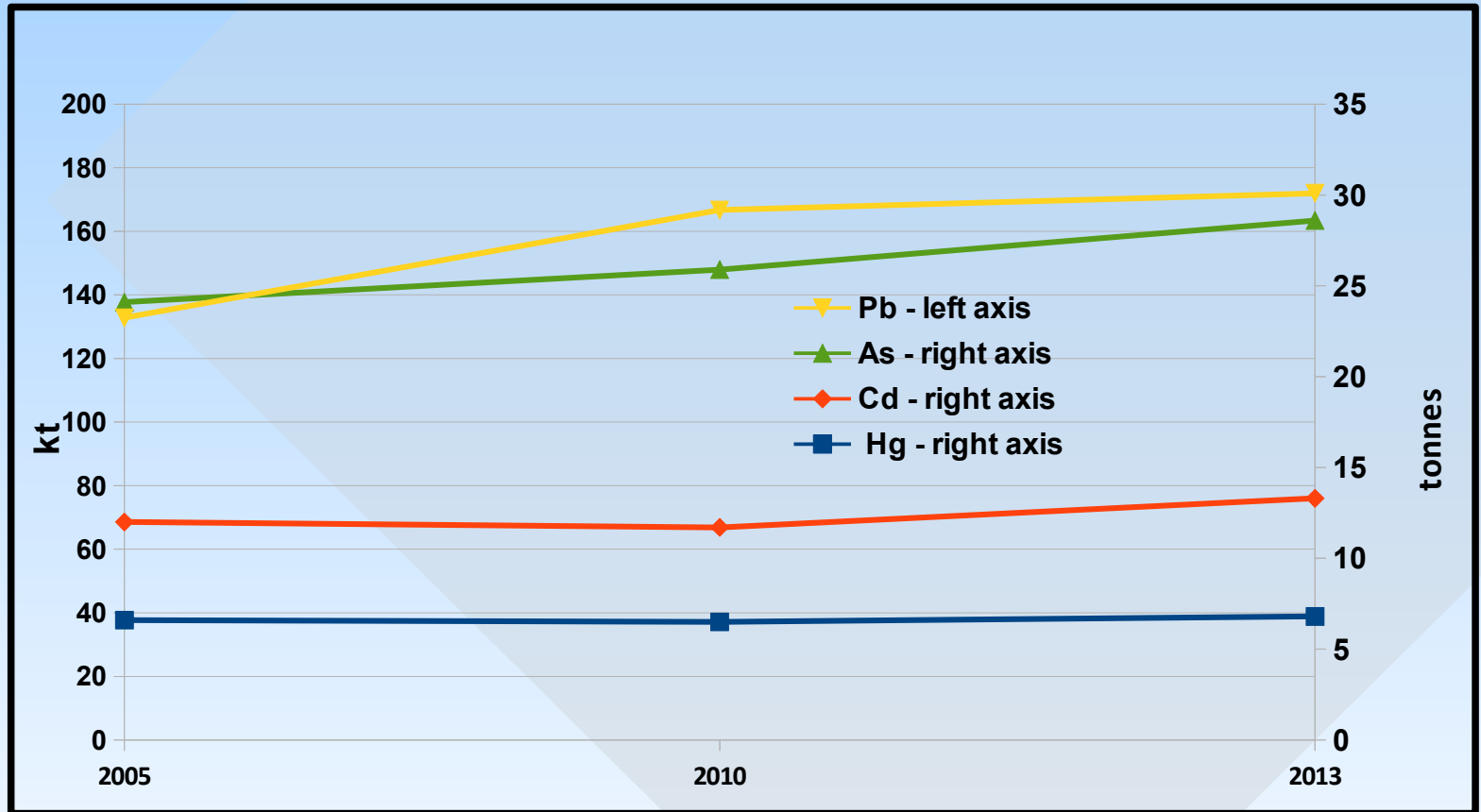
Polish lignite mines	Extracted lignite [mln Mg]	Removed rocks [mln m <sup>3</sup> ]	Water pumped [mln m <sup>3</sup> ]
Adamów	177,9	1.170,4	2.911
Bełchatów	816,1	3.477,5	7.106
Konin	534,9	2.811,1	4.368
Turów	840,2	1.841,4	886
<b>TOTAL</b>	<b>2.369,1</b>	<b>9.300,4</b>	<b>14.539</b>

# Coal burning is a threat to all components of the environment



Source: The National Center for Emissions Management, 2015

# Heavy metals emission from burning coal and lignite



Source: The National Center for Emissions Management, 2015

# CONCLUSIONS



# The implementation of economic programs for energy policy is necessary to use cost-benefit analyzes and internalise external costs

**The correct external costs is a key factor in the success of the energy transition.**

By adopting internalisation of external costs to the direct costs of energy production, the **highest fuel costs get for lignite** (100 euro per MWh). The bill previously used, taking into account only the direct costs of 1 MWh production cost of 35,7 euro and the remaining 64,3 euro are passed to other market participants. In large part on unsuspecting citizens. (prof..J.Popczyk)

*„scenario provides full internalisation of external costs, which - although it forces the development of the "most expensive" energy technology - makes the social cost (the sum of the company's costs and external costs) is lower by 29,6 bln euro from the costs of a "business as usual" (prof.M.Kudełko, „The internalisation of external costs caused by national energy sector”*

# Energy Road Map 2050 - Com(2011)885

*The European Commission justifies the challenges of the Energy Roadmap 2050 because:*

- *in the coming decades and that EU countries must incur huge expenditure on modernization of energy systems;*
- *Europe's economy after 2030 years will have a competitive handicap on the global market as a region with relatively low dependence on imported energy and fluctuations in their prices;*
- *program size significantly reduce air pollution, improve the health of inhabitants of the continent.*

*“The share of renewable energy (RES) rises substantially in all scenarios, achieving at least 55% in gross final energy consumption in 2050, up 45 percentage points from today's level at around 10%. The share of RES in electricity consumption reaches 64% in a High Energy Efficiency scenario and 97% in a High Renewables Scenario that includes significant electricity storage to accommodate varying RES supply even at times of low demand.”*



Thank you for your  
attention!