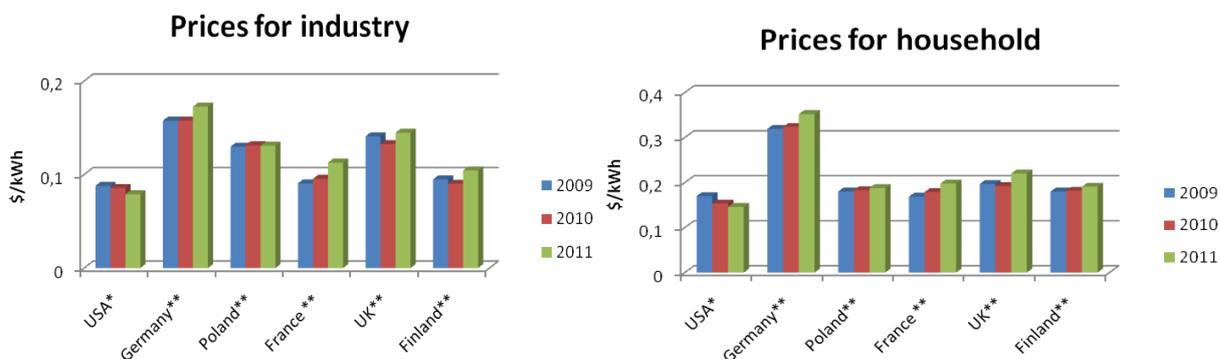


Fuel, Efficiency and Electricity Price

Aliaksandr Biahliak, e-mail: aliaksandr.biahliak@gmail.com
Belarusian National Technical University, Minsk, Belarus

It's common knowledge that electricity is very important for the economy of each country. This research presents the way how the electricity price and efficiency depend on the used fuel type. It's very interesting to see from figure 1 that:



* Source: www.eia.gov ; ** Source: <http://epp.eurostat.ec.europa.eu>

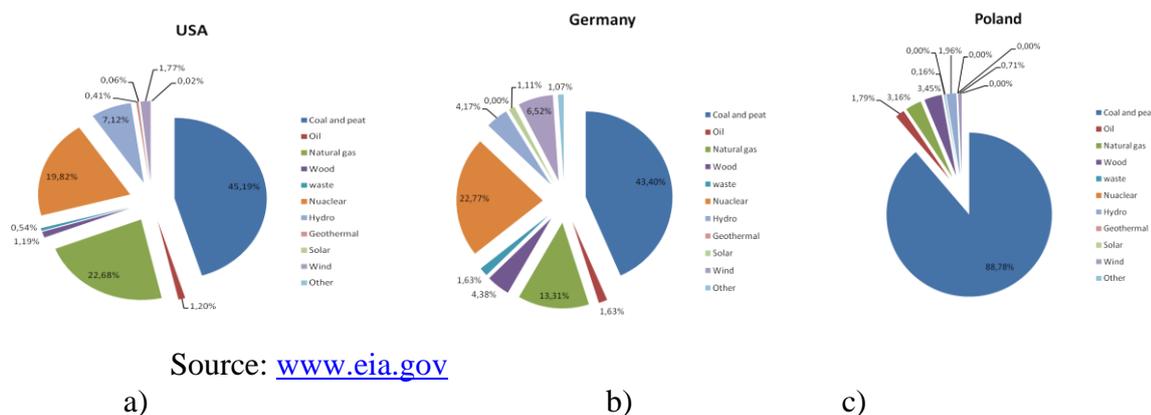
a)

b)

Figure 1. Electricity price for a) industrial and b) household consumers in 2012, 2d

1. Electricity price in the USA is 1.5-2 times lower than in Germany
2. Electricity price in the USA (for industry and household) became lower form year to year (2009-2011) and in Germany it became higher (2009-2011)
3. Electricity price in Poland was more or less similar during 2009-2011.

One of the main reasons of such difference is the fuel being used. We can see in figure 2 the diagram of the used fuel for electricity producing in 2011 for the USA; Germany and Poland.



Source: www.eia.gov

a)

b)

c)

Figure 2. Fuel consumption for electricity producing a) in the USA; b) in Germany; c) in Poland in 2011

Germany shows the tendency to “green energy”. It's very important for ecology. But it's too expensive for the end users. Poland and the USA are more conservative in the use of fossil local fuels. It helps them to have a very good and predictable electricity price.

Atheoretical research of fuel effectiveness has been carried out with the fuel of different quality(LHV and other parameters) in steam turbine as well as Brayton cycles. The conclusion is interesting – the cheapest fuel with a bad quality (for example brown coal) can have better fuel effectiveness than a good fuel (for example natural gas).