

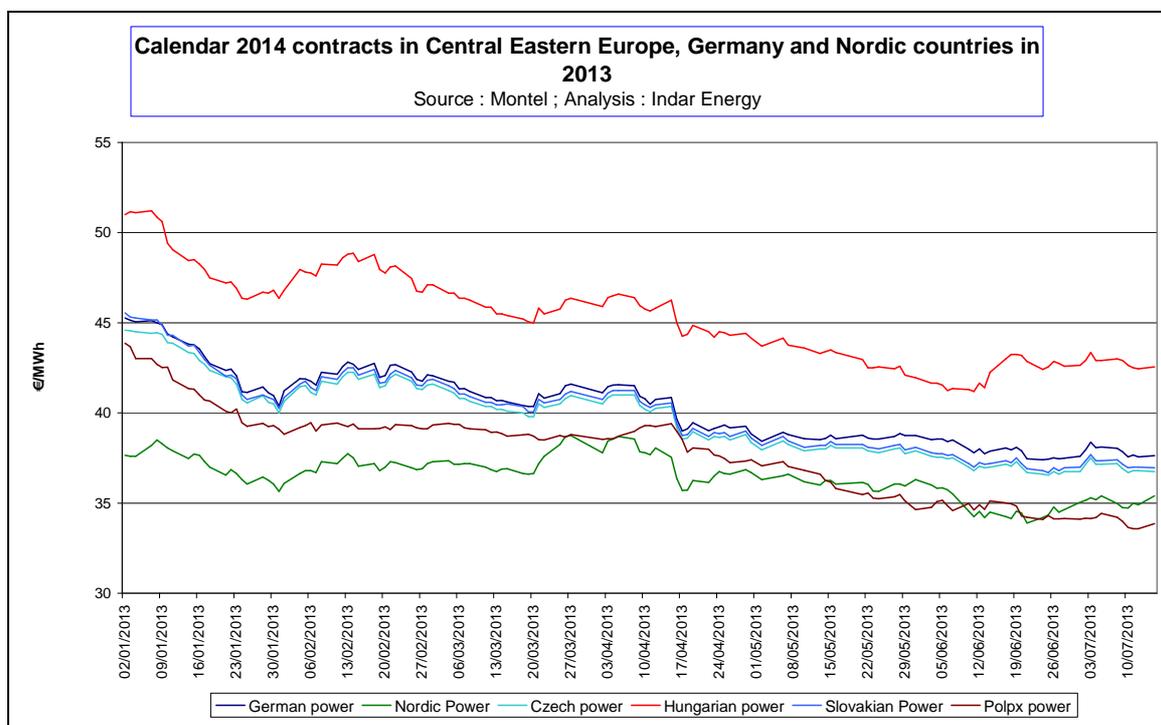
## Electricity markets in Central Eastern Europe - CEE (Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia)

### Overview

The targeted full integration of national energy markets by 2014 into a global EU internal energy market for electricity is a great challenge for the European power markets. Nowadays, East-Central Europe countries have very recent power markets and are not well known by occidental market players. However, among other consequences, the creation of this single European energy market gives them a much more important role in the understanding of the power prices' evolution in Europe.

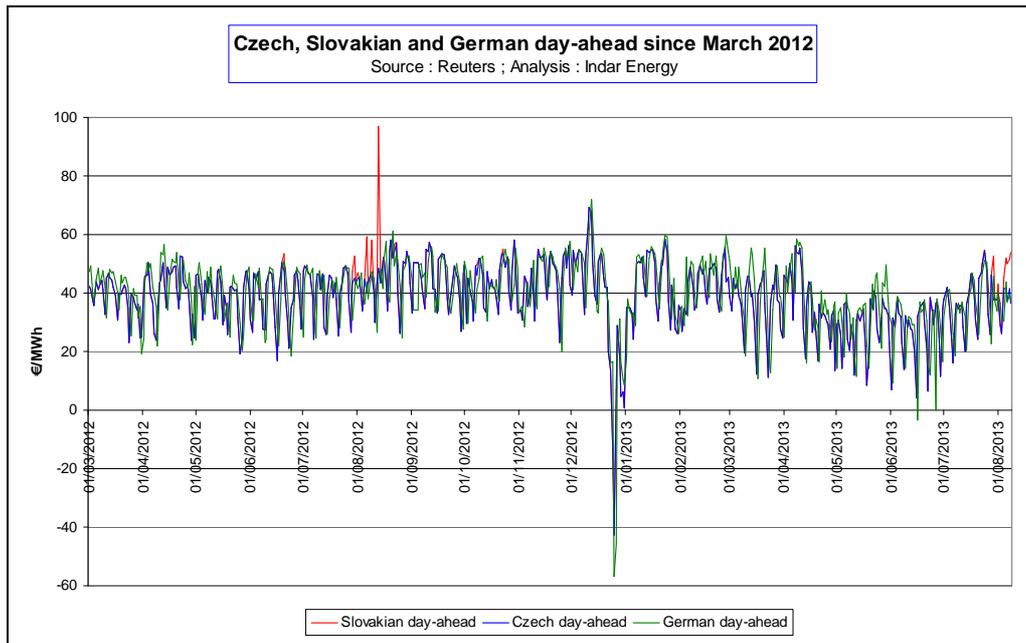
As for any other market, many factors impact the price formation and they are different for each country depending on resources, neighbouring countries and so on... Let's begin this analysis with an overview of Calendar 2014 contract evolution since the beginning of 2013.

### Calendar 2014 and day-ahead contracts



As you can see on the graph above, “Calendar 2014” contract in the six CEE countries (Czech Republic, Hungary, Poland, Romania, Slovakia, and Slovenia) evolves in a similar way. All markets are on backwardation, which is obvious on the graph. This trend comes from a lower consumption and a higher renewable production in Europe which is not specific to East-Central Europe but to Europe in general.

If the contracts are all linked, this correlation is particularly blatant for the Slovakian and Czech contracts. The “Calendar 2014” contracts for these two neighbour countries have strictly the same evolution and they follow the German contract. The three contracts have settled in a 0.5€ range since the beginning of the year. The Czech and Slovakian day-ahead are even equal most of the time (graph below).



The Hungarian contract has the same evolution than the Czech and Slovakian (the correlation between the Hungarian and Czech Calendar is 0.971) but at a higher level, due to partly too high taxes. Poland, on the contrary, benefits from the lowest electricity prices in Northern Europe, which allows this country to have the cheapest Calendar 2014 of all CEE countries.

The particularities of each CEE countries can be explained by several factors.

## History

Each CEE market has specific aspects linked to historical and national evolutions.

The Polish Power Exchange (POLPX) was created in 2000 which makes it the eldest power market in CEE. The Power Exchange Central Europe (PXE), which initially offered power trading for Czech power, was established in July 2007. In 2008, PXE introduced trading in the Slovakian market and the Hungarian products were only launched on March 1, 2009.

The Czech Republic, Hungary and Slovakia launched the coupling of their electricity markets in 2012 which brought a harmonised approach of market organisation, as well as more stable and convergent electricity wholesale prices. Indeed, the correlation factor between Slovakia and the Czech Republic since the beginning of 2013 is 0.999, which confirms that they evolve similarly. More recently, on 11 July 2013, the accession of Poland and Romania to this trilateral project of market coupling has been signed. This new cooperation should drive to a convergence of prices in the years to come.

However liquidity of all these exchanges is very low and the deregulation of power markets in most CEE countries starts slowly. For the second quarter of 2013, the liquidity ratio was of 17% in CEE according to the European Commission. The fact that energy players have difficulties to quit the only supplier and regulated prices model is already known in West Europe, but is even more real in CEE, due to the exchanges recent starting. The cases of Poland and Romania give a good idea of these issues. In Poland, supply is divided between several players in different regions. They totally control the offer, and let no room for competition. This situation is absurd and the polish Energy Regulation Agency fears disruption in power supply in the years to come, if nothing is done to liberalize the energy

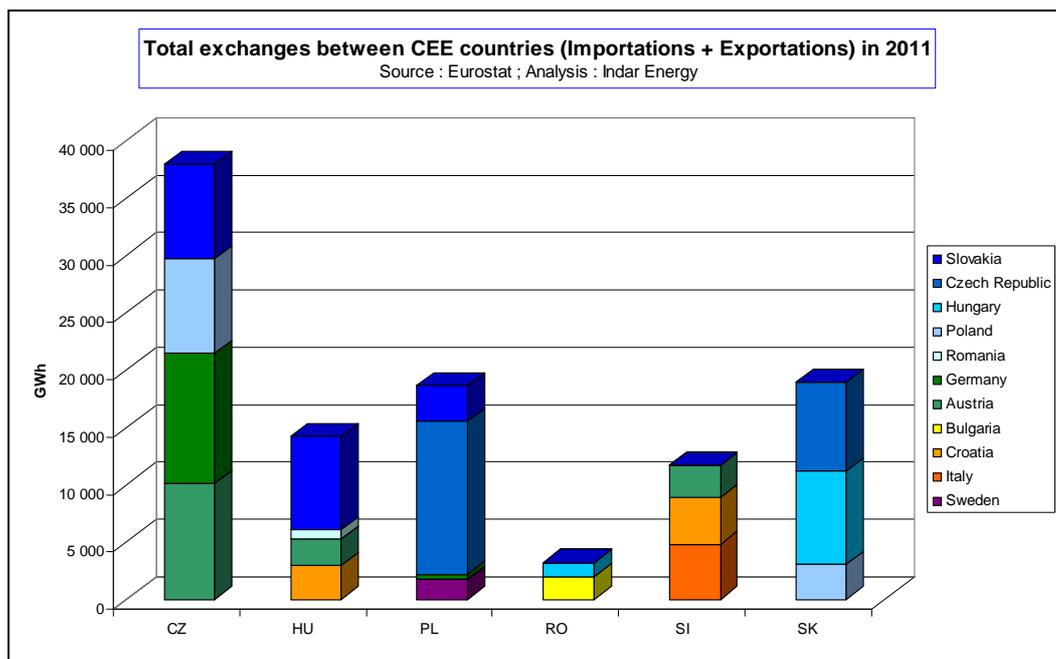
sector. In Romania, a national agency regulates energy prices. The European Commission has currently engaged an infringement proceeding against Romania to force this country to deregulate its energy market before 2015.

Nevertheless, the CEE was the most dynamic power trading region in Europe during the second quarter of 2013, as traded volume of day-ahead power grew by more than 15% on a yearly basis. It is a good sign and indicates that the liquidity should increase in the years to come.

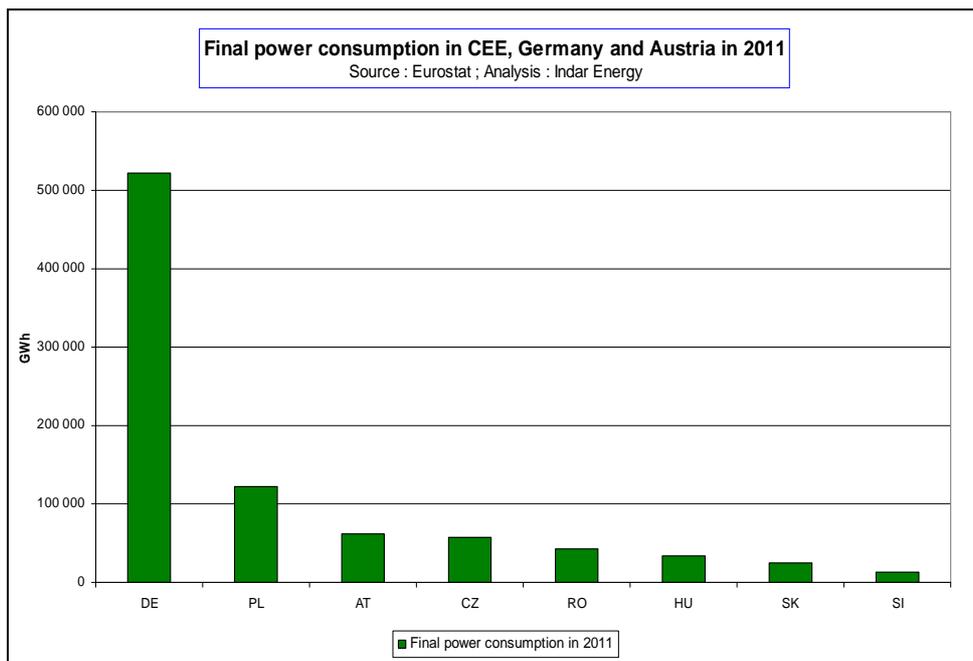
## Cross border flows

The decoupling between the Slovakian and Czech day-ahead prices happens when the cross border flows are saturated in the region. In August 2012, the spread between the day-ahead of these two countries resulted from a disruption in the cross border flow. The same happened in August this year, but this time it is the cross border capacities between Poland and Slovakia which were cut, limiting supplies in Slovakia.

The market coupling depends heavily on the cross border capacities.

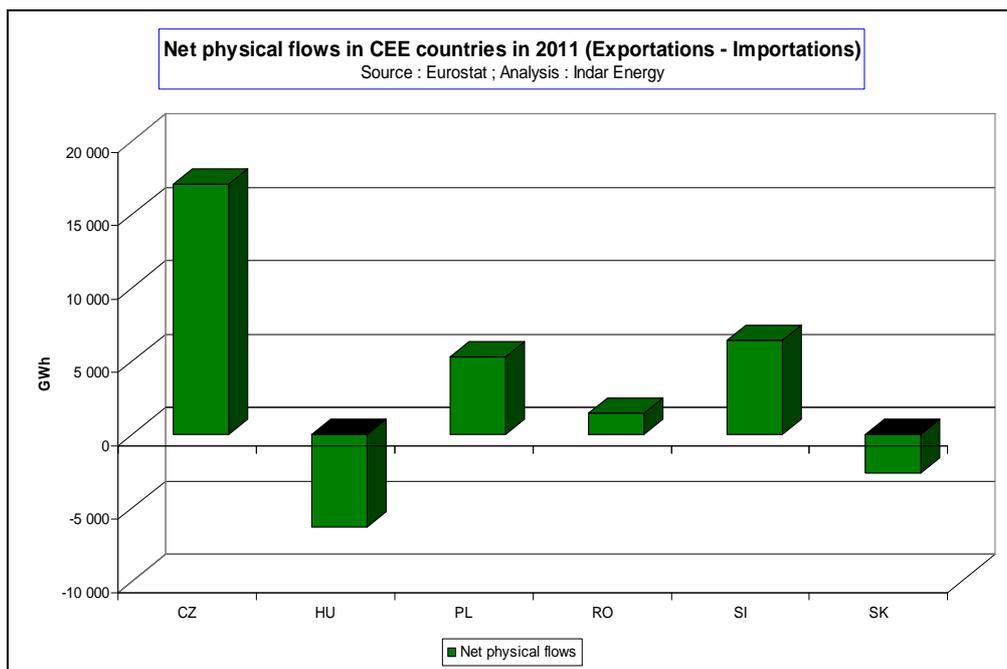


The geographic central position of the Czech Republic in CEE makes it the trade champion! Transactions are almost equally divided between Germany, Austria, Slovakia and Poland. This seems a bit awkward considering that Slovakia consumes six times less than Poland, three times less than Austria and ten times less than Germany (see Graph here above and below).



We can also notice that Romania and Slovenia depend heavily on the Balkans and that the Nordic power market can influence Polish power prices. Polish border flows are relatively low compared to global consumption as Poland disposes of a limited cross border capacity. However Poland is the bridge between Nordic countries and CEE. This lack of interconnexions obliges Poland to allocate capacities efficiently and increases the risk of disruptions. ENTSOE (European Network of Transmission System Operators for Electricity) plans the construction, in the ten years to come, of two new interconnexions one between Poland and Germany and one between Poland and Lithuania in order to improve the coupling between Poland and its neighbours.

### Imports, exports and energetic mix

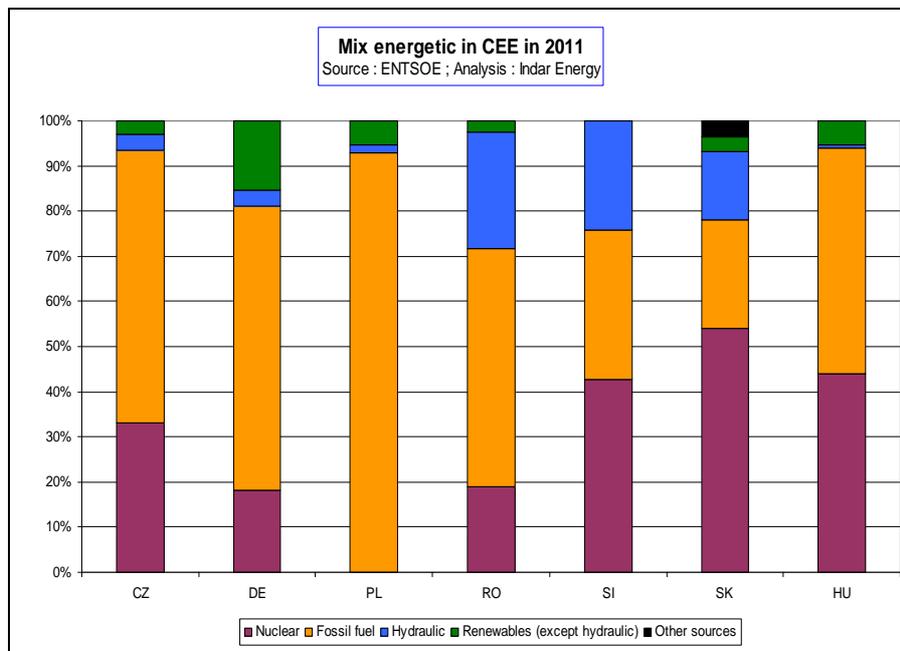


We already mentioned that electricity prices are substantially higher in Hungary than in the rest of CEE countries. Hungary being the lowest power producing amongst the CEE countries is consequently relying on heavy electricity imports (see graph above). Hungary lacking power production imports are necessary to cope with a growing consumption. To inverse this trend, the Hungarian government decided to double the actual nuclear capacity in the next twenty years.

The electricity flow balance is positive in Poland, thanks to its coal resources. This allows Poland to have the lowest electricity price of all CEE countries. Nevertheless, the commitment of curbing the CO2 emissions in accordance with EU rules is highly penalizing Poland which produces more than 90% of its power from fossil fuel (graph below). This pressure drove its authorities to start a nuclear energy program, with the construction of two nuclear power plants before 2030.

Slovakia, the Czech Republic and Slovenia are also to increase the share of nuclear in their power production. In the long run, these investments in nuclear power plants could help to maintain the decrease of power prices in Europe.

## Renewable energy



The renewable energy policy differs strongly from one country to another in CEE. Slovakia, Slovenia and Romania give the impression of being good students. They reached the EU goal of a 20% renewable share in their mix energetic. This success is mostly due to their high hydraulic productions.

On the contrary, Poland, the Czech Republic and Hungary are struggling to launch their energetic transition. Hungary made a lot of progress these last years thanks to governmental subventions. It developed his biomass and wind production but it starts from far and has a lot more efforts to make in order to reach EU goals. The Czech Republic, which targets only 13% of renewable energy in its mix energetic in 2020, is not favoured by nature to develop renewables production. It already reached its maximum hydraulic capacities and doesn't have many regions with the wind conditions necessary to develop wind farms. Finally, Poland is really reluctant to develop renewable energy. The share of renewable in power generation was only of 7% in 2011, and most of it comes from cogeneration.

Poland seems unwilling to change this trend, and prefers for now slowing the climate negotiations of the EU: in particular, it rejects all quantitative targets, like it did with the “Carbone 2050” plan of the EU in March 2012. This lack of motivation can perhaps be explained by Polish high hopes of developing shale gas. Indeed, the shale gas exploitation could allow it to reduce its dependency to Russian gas and to curb its CO<sub>2</sub> emissions in the same time. It would be a way to meet EU goals without investing a lot of money in expensive renewables energies.

## Challenges to come

The Fukushima disaster didn't change the will of CEE countries to develop their nuclear energy. But combining this development with the growing share of renewable energy poses a problem of flexibility in the production. Indeed, renewable production relies heavily on the weather conditions, and nuclear power plants are not flexible contrarily to gas or coal plants. Admittedly, the new nuclear power plant generation is more flexible than the previous one, but changing regularly the production level prematurely damages the plant and shortens its lifetime. So there is still a great progress margin in nuclear technologies. Other flexible way of producing power will be needed to match the power production and consumption. In the opposite case, the peak power prices will explode and in the long term, supply disruptions could even occur in the hours of high demand.

Moreover, renewable energy presents another issue, as grid must be resized and adapted to the increasing renewable share. This will need a lot of investments in a time when the access to financing is somewhat limited.

CEE countries have to speed up the deregulation of their power market in order to meet the EU goals, in spite of the pressure of a few energetic lobbies. In so doing, they might kill two birds with one stone securing a safer supply and a cheaper energy cost for their population.

## Glossary

**Central Eastern Europe (CEE):** European region which includes the Czech Republic, Hungary, Poland, Romania, Slovakia and Slovenia according to the European Commission.

**Calendar 2014:** Forward market for the delivery of power in 2014.

**Day-ahead:** Forward market for the delivery of power the following day.

**Correlation coefficient:** coefficient which reflects the simultaneous change in value of two numerically valued random variables.

**Market coupling** (Source: EPEX): Market coupling uses implicit auctions in which players do not actually receive allocations of cross-border capacity themselves but bid for energy on their exchange. The exchanges then use the available cross-border transmission capacity to minimize the price difference between two or more areas

**Backwardation:** A market condition in which a futures price is lower in the distant delivery months than in the near delivery months.

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