REKK

HUNGARIAN ENERGY MARKET REPORT

3rd quarter 2009

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Dear Reader,

In this report analysing developments for this year's second quarter, you can find four analyses in addition to the regular review of developments in the electricity sector.

In the last quarter, carbon-dioxide emission rights of 2008/2009 were finally allocated also to domestic actors of the market of allowances. This required us to analyse the most important developments in the European and the Hungarian markets of allowances in 2008. Following the early years, the shortages of emission allowances seem to force domestic firms to make crucial decisions on whether to buy allowances or reduce emissions.

The Directive 2009/28/EC of the European Parliament and of the Council on the promotion of the use of energy from renewable was published on 23 April. The Directive sets mandatory national targets for the overall share of energy from renewable sources for 2020. This was the reason that motivated us to make a general survey on Hungary with regard to the production of and the support to the electricity falling under feed-in obligation including electricity produced from renewable sources. Findings are terrifying.

Hungary went through a gas market model change on 1 July, at the beginning of the new gas year. Not long before this event, the government and the domestic gas wholesalers concluded an agreement on the settlement of losses accumulated in the previous period. Here, we examined what prices can be expected after the model change by the given market segments' customers due to the joint effect of international market developments and the domestic regulatory bargain.

Finally, our fourth analysis examines the relationship between domestic economic performance and electricity consumption. The analysis also helps to forecast the dynamics of electricity consumption if once the long awaited economic upturn starts.

We hope we could provide useful reading also for the period of summer holidays, and we welcome any feedbacks.

Péter Kaderják, *Director*

DEVELOPMENTS OF ELECTRICITY MARKET

Alike in the previous quarter, energy markets were steady also in the second quarter. The only exception was crude oil market, where prices were continuously soaring in the previous three months and approximated 70USD/barrel by the end of June. The demand on the domestic electricity market continued falling back also in this quarter. The current level of consumption is nearly the same as in 2005. Contrary to decline in demand, the Hungarian electricity market is still expensive in regional comparison. Both the prices of the Hungarian section of the Prague Power Exchange and the next year's futures prices of the MVM's auction show that next year's baseload prices on the domestic market exceeds those of our Northern neighbours (Austria and Slovakia) as well as Germany by approximately 10%.

International price trends

In the second quarter of 2009, each energy market including all the markets of raw materials, electricity and carbon-dioxide allowances stagnated without any significant changes in prices. The only exception was crude oil, the prices of which showed an increasing tendency that started at the end of this February, and appears to have stopped at the end of May and the beginning of June. The spot price of crude oil stabilised at near 70USD/barrel. There was a significantly less shift in the price of coal. A tonne of coal cost 80USD at the end of the 1st quarter of 2009, which varied between 80 and 85USD in the 2nd quarter excluding the period of the end of May and the beginning of June, which witnessed a 10% shift in the price of coal within a few days and then a similar quick return to the 80 to 85 USD range.

The peak and baseload EEX prices remained unchanged. The prices of both products varied in a very narrow range. Baseload electricity varied between 50 and 55 Euro with peak electricity varying from 72 to 78 Euro.

In addition to EEX prices, it is essential to examine the relationship of these prices with the prices on the power exchanges in the region. In the following, we compare the day-ahead power prices on the exchanges operated by the Romanian OPCOM, the EEX and the Czech TSO, the OTE; here we analyse short-term tendencies. In the 2nd quarter of 2009, the decreasing

Figure 1 Prices of ARA coal futures, 2010 and spot prices of WTI crude oil traded on the EEX in the last three quarters of 2008 and in the 1st half of 2009

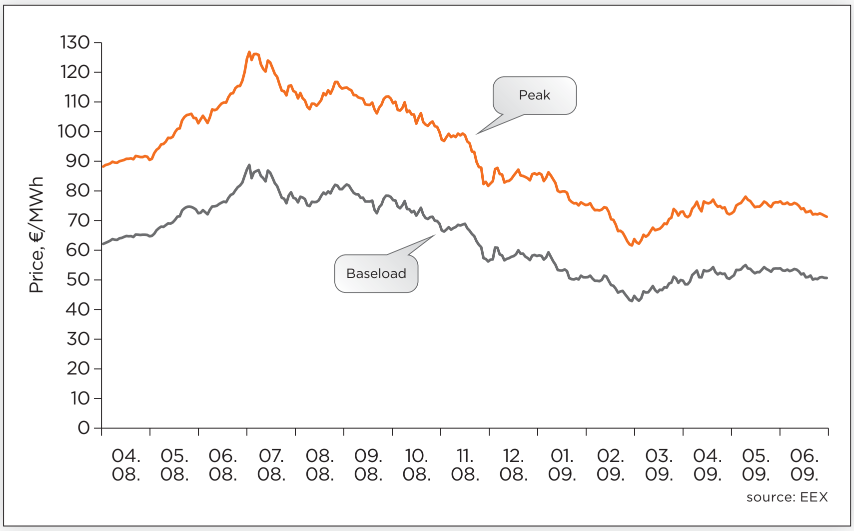


Figure 2 Futures prices of 2010 baseload and peak products on EEX

tendency of day-ahead prices stopped. The average price of day-ahead baseload product was 30 to 33 Euros in all the three months. The only exception was the Romanian market with nearly 10 Euro lower prices than the prices on the other two markets. However, this price premium, which accounted for 25 Euro in January 2009 disappeared by May.

The price of the European Union Emission Allowance (EUA) was ranging from 12 to 16 Euro in the second quarter of 2009. A slightly increasing tendency until the middle of May was followed by a decline in the price of EUA. The allowance was traded at 13 Euro at the end of June. Traded quantities did not change significantly compared to the previous quarter. On the biggest carbon-dioxide exchange, the ECX, the daily traded quantity was around 17 million tonnes.

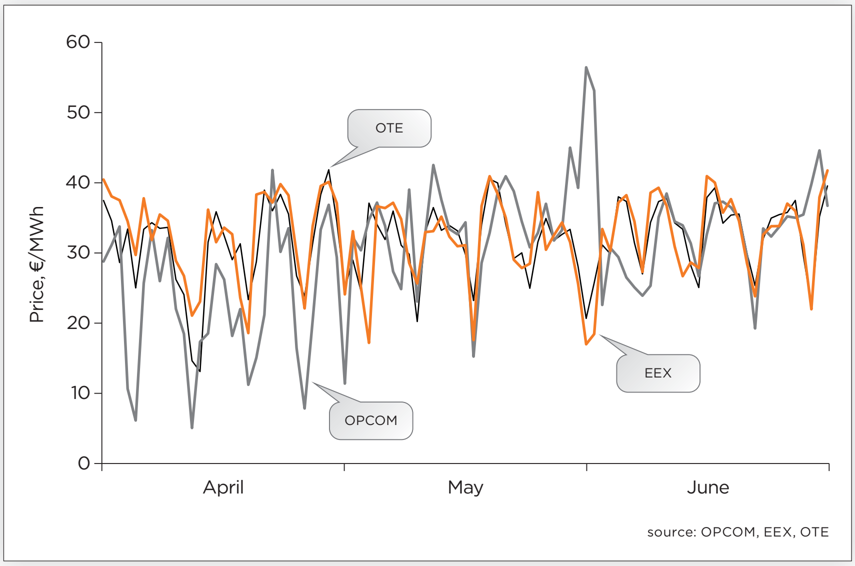


Figure 3 Comparison of day-ahead prices for baseload products on EEX, OPCOM and OTE exchanges, 2[nd] quarter 2009

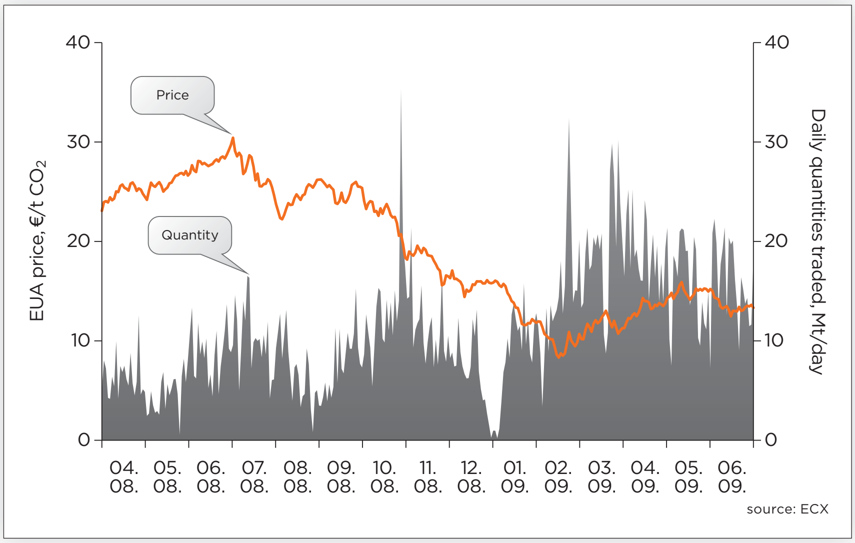


Figure 4 Prices of CO_2 allowance, December 2009 and the daily quantities traded on the ECX in the last three quarters of 2008 and in the 1[st] half of 2009

General survey on Hungary

In the second quarter of 2009, the monthly temperature adjusted power consumption excluding seasonal impacts was 10% lower on the average than in the same period of the previous year. Although there was a small fallback as low as 4% between March 2008 and March 2009, electricity consumption dropped significantly in April 2009 compared to March 2008. We can claim on the basis of these facts that the decline in demand caused by economic crisis continued in the second quarter of 2009.

There was a considerable drop in the total domestic electricity consumption between the first and the second quarter of 2009, while the role of import sources grew in meeting domestic demand. The seasonality of import – the higher share of import in summer – is explained by the features of production falling under feed-in obligation. Since the power production of power plants co-generating heat and electricity significantly decreases out of the heating season, suppliers cover a larger part of their demand in the summer season from import.

Spot prices cannot be tracked on the Hungarian electricity market due to the lack of an exchange. Nevertheless, the results of the Austrian-Hungarian hourly cross-border capacity auctions may give a reference on the Hungarian prices. Auction prices reflect the difference between the prices of the two markets, therefore if capacity charges for import oriented transmissions are positive, the prices on the Hungarian market is higher by the difference, and on the contrary, if charges for export oriented transmissions are positive, the prices on the Hungarian market are lower by the difference relative to the Austrian market. Comparing the prices that evolved in the auctions of the first two quarters of 2009, it can be seen that there was a shift in the domestic hourly spot price of electricity in the second quarter. Contrary to the first quarter, when domestic spot prices were lower than EEX spot prices with the exception of evening hours, prices in May and June exceeded German prices excluding dawn hours. In these months, price premium in the Hungarian market was 2 to 4 Euro/MWh in the late morning and afternoon hours, while 5 to 10 Euro/MWh in the early morning and evening hours.

MAVIR Zrt. held its regular monthly cross-border capacity auctions also in the second quarter of 2009. An important development is that since April 2009 the system operator MAVIR has sold the total cross-border capacity available at the Ukrainian interconnector at auction. Contrary to other interconnector capacities, where system operators sell the access right jointly or share the sales of the available capacities 50%-50%, MAVIR Zrt. allocates the access right of the international line on the Ukrainian interconnector only to the Hungarian side. Those who want to transport electricity from the Ukrainian side, have to acquire the rights for network use also on the Ukrainian side. As a result, we cannot give an estimate on the transport costs of Ukrainian imports on the basis of the auction fees from the rights of network usage on the Hungarian side.

The other interconnectors saw a trend similar to the previous quarter that is capacity charges were near 0 HUF/kWh. Consequently, we might assume that national electricity markets, in the short run, constitute one regional pricing zone.

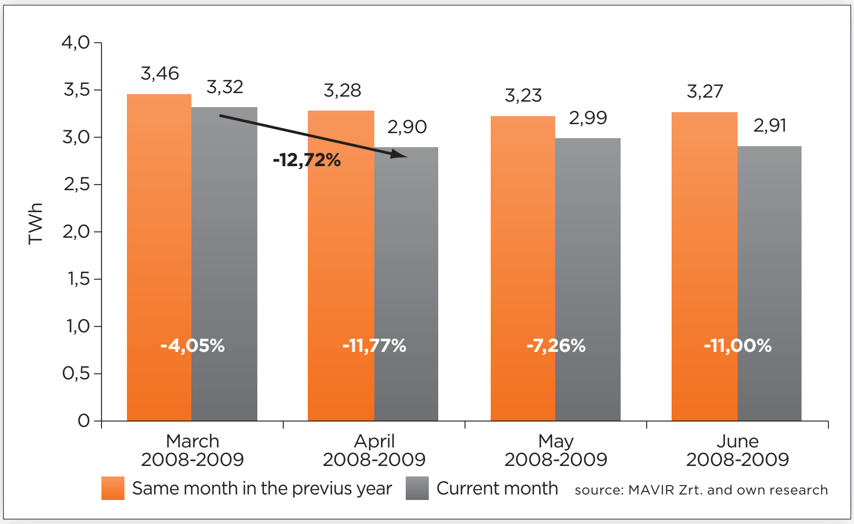


Figure 5 Adjusted power consumption relative to the similar period of the previous year between March 2008 and June 2009

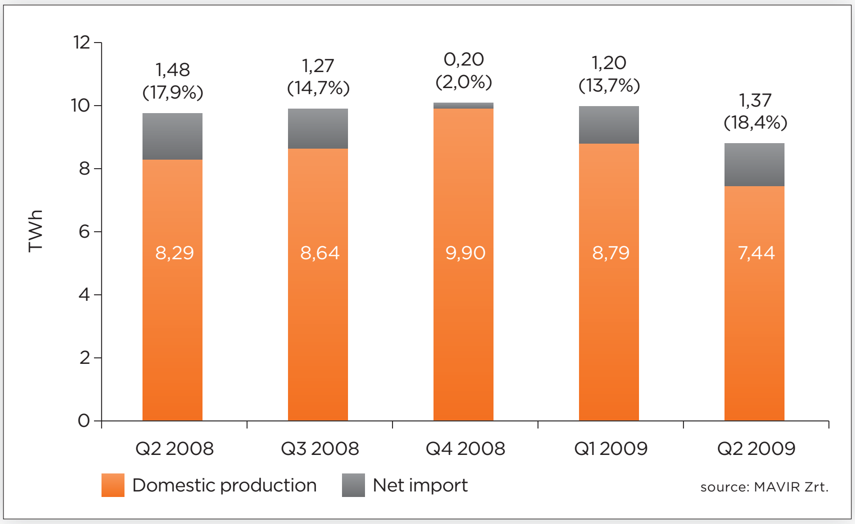


Figure 6 Quarterly domestic production and net imports between 2nd quarter 2008 and 2nd quarter 2009

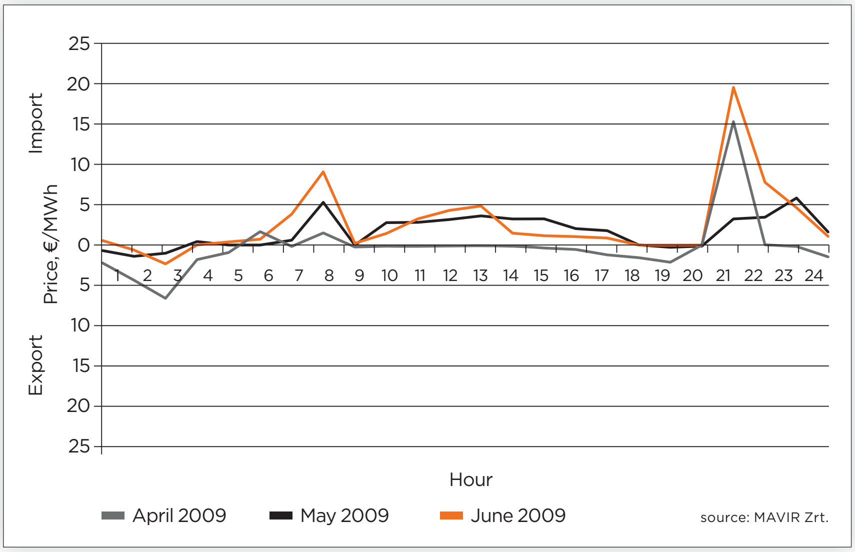
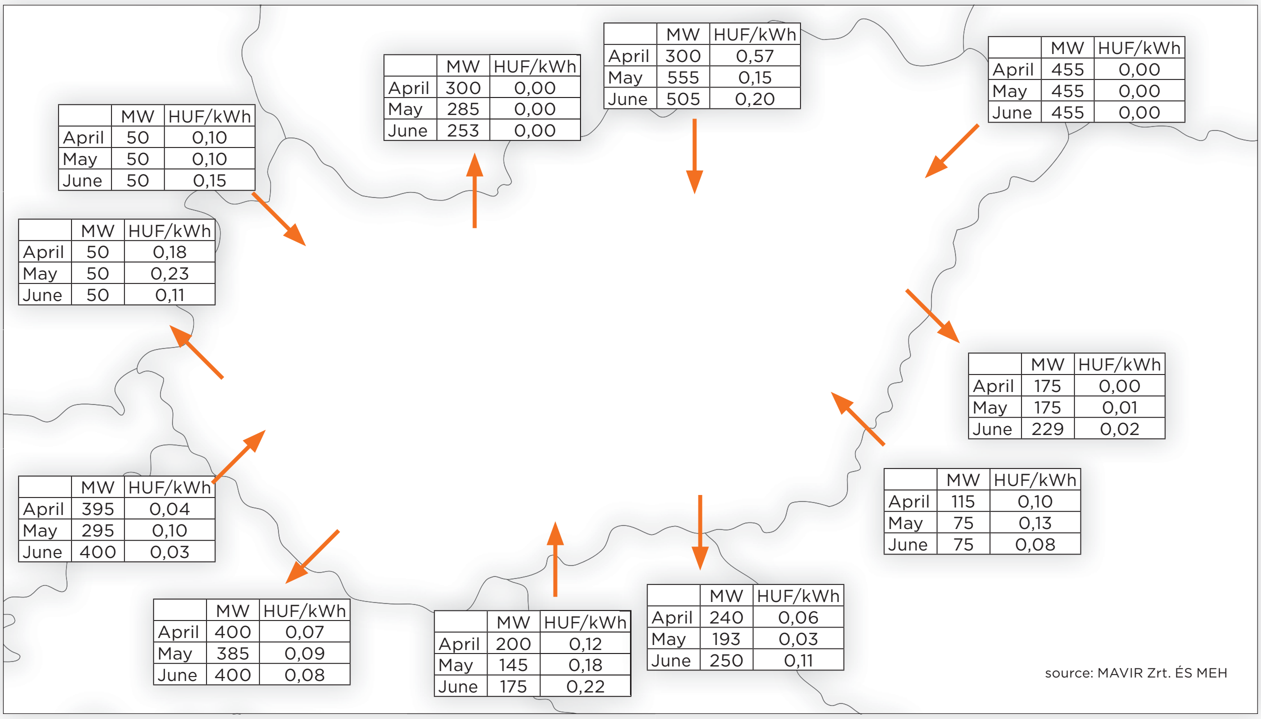


Figure 7 Daily Austrian-Hungarian cross-border capacity prices (monthly averages), 2nd quarter 2009

MAVIR Zrt. conducts auctions at the Austrian-Hungarian interconnectors each day. The Figure shows the simple averages of the prices evolving in the given hours of the given months. A reason for the near zero values of peak hours may be that the amount of the announced capacity is higher in these hours.



	MW	HUF/kWh
April	50	0,10
May	50	0,10
June	50	0,15

	MW	HUF/kWh
April	300	0,00
May	285	0,00
June	253	0,00

	MW	HUF/kWh
April	300	0,57
May	555	0,15
June	505	0,20

	MW	HUF/kWh
April	455	0,00
May	455	0,00
June	455	0,00

	MW	HUF/kWh
April	50	0,18
May	50	0,23
June	50	0,11

	MW	HUF/kWh
April	175	0,00
May	175	0,01
June	229	0,02

	MW	HUF/kWh
April	115	0,10
May	75	0,13
June	75	0,08

	MW	HUF/kWh
April	395	0,04
May	295	0,10
June	400	0,03

	MW	HUF/kWh
April	240	0,06
May	193	0,03
June	250	0,11

	MW	HUF/kWh
April	400	0,07
May	385	0,09
June	400	0,08

	MW	HUF/kWh
April	200	0,12
May	145	0,18
June	175	0,22

source: MAVIR Zrt. ÉS MEH

Figure 8 **Results of monthly cross-border capacity auctions, 2nd quarter 2009**

In the figure, capacities mean the announced capacities. Capacities were not sold fully in the period under review only if oversubscription evolved at a given price since the system operator regarded then the sequent highest price as auction price.

Next year's electricity prices in Hungary and in the Central-Eastern European region

The Prague Power Exchange (PXE) opened its Hungarian section in March 2009, where monthly, quarterly and yearly futures products can be traded. The product with the highest turnover is the 2010 baseload futures with bids equalling a total of 438 GWh in the period from March to the end of June.

In the following, we analyse the development of Hungarian electricity prices based on the 2010 PXE prices for Czech, Slovakian and Hungarian baseload futures and the similar EEX prices.

In the second quarter of 2009, 2010 baseload futures were traded at the lowest price of the region in the Czech Republic. The average price varied around 50 to 52 Euro, which was at least one Euro lower than the German price in each month. Slovakian prices unambiguously adjusted to the Czech prices, and the price difference between the two markets was very small. Hungary is the most expensive country in the region. The difference between Hungarian and Slovakian 2010 baseload futures prices exceeded 5 Euro in May and in June 2009. Hungarian futures cost 4 Euro more even than the similar Austrian and German futures.

PXE prices are worth comparing with the results of the virtual capacity auction held by MVM on 8 July 2009. On this auction it was possible to make bids on 2010 baseload products of a total annual volume of 2.04 TWh. The most important of the auctioned products was the baseload product of 1.752 TWh. The selling price for this

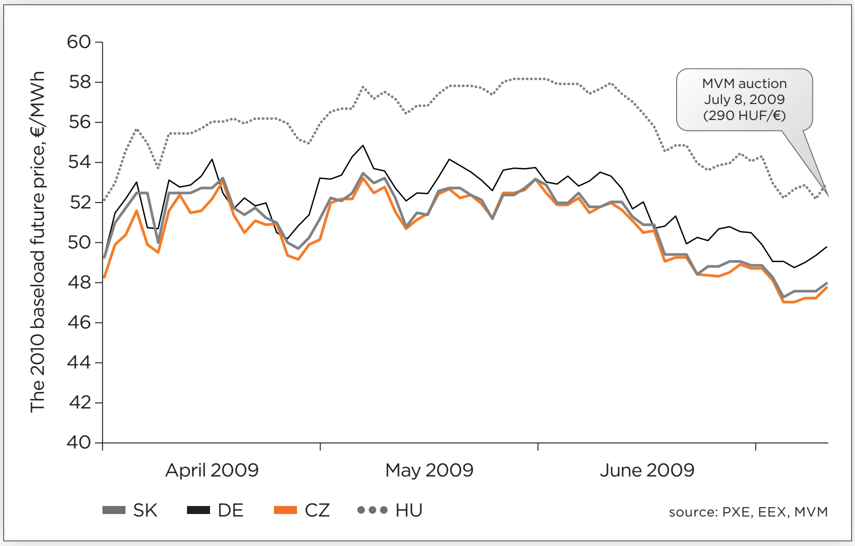


Figure 9 **2010 baseload futures prices in the countries of the region in 2nd quarter 2009**

product was 15.2 HUF/kWh. Based on the next year's currently expected HUF/Euro rate, roughly 290 HUF/Euro, this equals 52.4 Euro/MWh, which is roughly the same as the July PXE prices of the adequate product. These underline our former statement on the high Hungarian price level.

Abbreviations in the report

ARA	Amsterdam-Rotterdam-Antwerp
CITL	Community Independent Transaction Log
ECX	European Carbon Exchange
EEX	European Energy Exchange
EIA	Energy Information Administration
EU ETS	European Union Greenhouse Gas Emission Trading System
EUA	EU Allowance
GHG	Greenhouse gases
KÁT	Mandatory Power Purchase System (Kötelező Átvételi Rendszer)
MEH	Magyar Energia Hivatal (Hungarian Energy Office)
OFGEM	Office of the Gas and Electricity Markets (UK)
PXE	Power Exchange Central Europe
SMP	Significant Market Power
WTI	West Texas Intermediate

ENERGY MARKET ANALYSES

Analysis of carbon-dioxide emission figures of 2008

Signatory states of the Kyoto Protocol undertook to reduce their GHG emissions on the average by 5.2 % below the 1990 levels in the period from 2008 to 2012. The Protocol defined various ways how to reduce GHGs and specified GHG emission levels for each country for the period from 2008 to 2012 as compared to the base year. The European Union established an instrument to reduce emissions, the carbon trading in order to fulfil the Kyoto undertakings. The Union passed the Directive 2003/87/EC on 13 October 2003, which laid down the key principles of GHG emission reduction and emissions trading. This Directive allows given installations to emit carbon-dioxide since 1 January 2005 only in the possession of a permit, and requires these installations to monitor and report their emissions. The permit includes an obligation on installations to surrender carbon-dioxide emission unit (EUA) equal to the total carbon-dioxide emissions of the installation in the given year. If their annual emissions exceed the allowed level, they must buy emission allowances from other market players. Another option to cover this shortage is to use up the next year's allowance so rolling the shortage. If, however, the effective emission of an installation is lower than the level of its allowances, it has a choice between selling and banking its allowances.

The European Union's Emission Trading Scheme (EU ETS) defined two periods. The first was a test period from 2005 to 2007 and the second one is the first Kyoto commitment period from 2008 to 2012. The Directive required each countries – including also accession countries – to prepare a National Allocation Plan, which determines the amount of allowances to allocate free of charge to given installations. These allocation plans were approved by the European Commission, as well. Separate allocation plans had to be elaborated for each period.

Installations falling under the scope of the EU ETS had to submit their verified emissions of the year 2008 by the end of April 2009. The number of the affected installations was nearly 12,000 in the 27 EU Member States, Norway and Liechtenstein joining the EU ETS. In the first period between 2005 and 2007, the allocated emission allowances significantly exceeded the total emissions of installations. The excess allowances amounted to 35 million tonnes per year in the average of three years, which accounts for 1.7% of the total allocated quantity. As a result, the price of allowances of the first period declined to close to zero in 2007. Emission figures of 2008, however, show a significant scarcity. Last year the total quantity of allowances allocated for free was 1.901 billion tonnes with an emission of 2.05 billion tonnes[1], so the shortage reached 143 million tonnes in 2008. This shortage, however, significantly differs by sectors and countries as Figure 10 and Figure 11 show.

The sectoral analysis shows that one of the very few sectors that had shortages was the electricity sector, while all the other ones produced

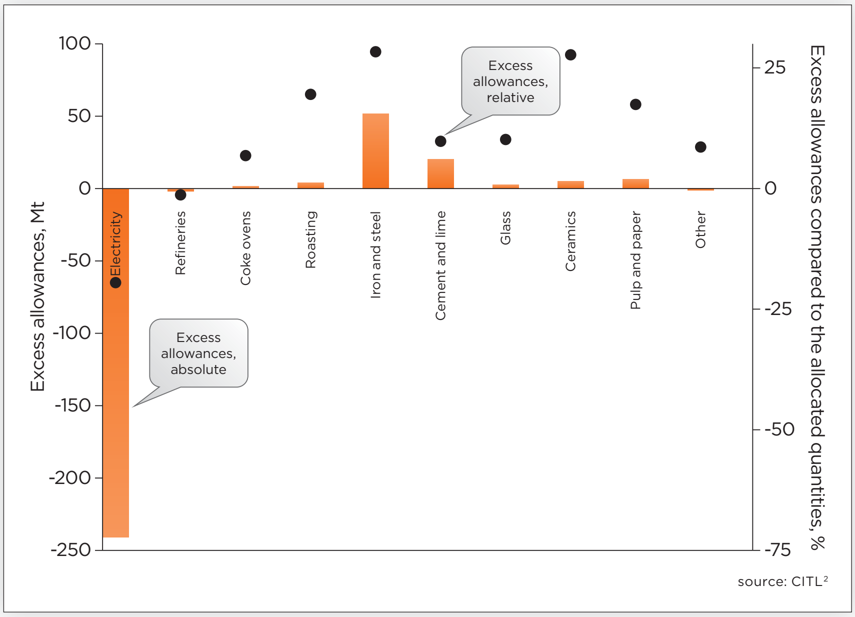


Figure 10 **Excess allowances in 2008 in the given sectors and excess allowances as compared to the allocated quantities[3]**

[1] The analysis excludes Bulgaria and Norway since the companies in these countries have not obtained the total amount of allowances in 2008.
[2] CITL - Community Independent Transaction Log: This scheme records emission allowances and their movements
[3] Electricity sector also includes residential and communal district heat as well as heating equipment for own purposes.

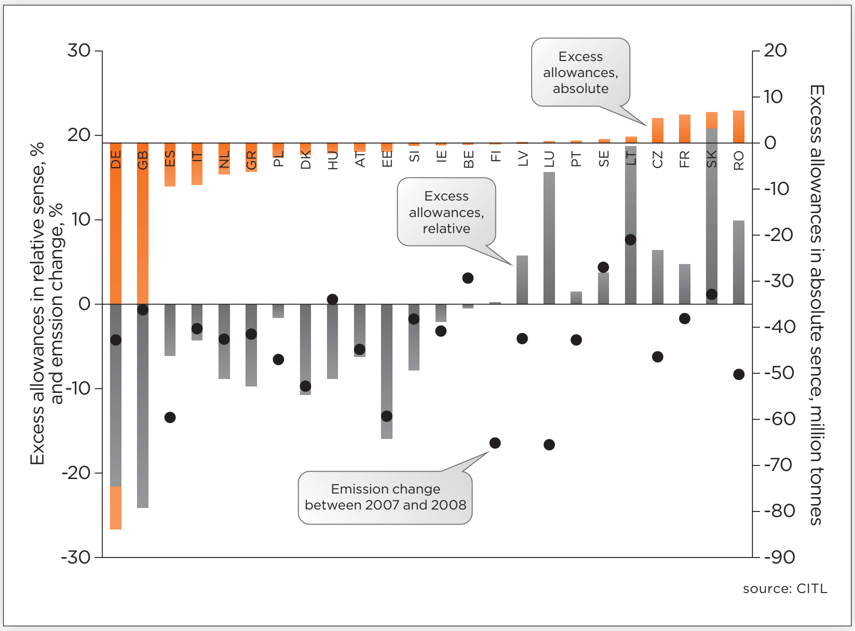


Figure 11 **Emission change between 2007 and 2008, excess allowances in 2008 by countries and excess allowances as compared to the allocated quantities**

aggregated surplus in allowances particularly iron and steel industry with its outstanding figure. It is important to note, however, that it is also the electricity sector, where it is the easiest to pass through costs to customers. The cost of carbon-dioxide increases the equilibrium price of electricity, which favours those producers who face lower specific carbon-dioxide costs compared to the rise in electricity prices. The difference of these two is called the windfall profit of regulation. Based on calculations of the UK's energy regulatory authority, OFGEM, this windfall profit reached 9 billion pounds between 2008 and 2012 purely in the UK.

In the country analysis, we can see that Germany and UK had the largest shortage both in absolute and relative sense, while Slovakia and Romania had the largest surplus of allowances. When comparing Hungary's emissions figures of 2008 with those of 2007, it can be seen that the total emission grew by 73 million tonnes accounting for 3.5% of the emission of the year 2008. As the Figure 11 shows, emission grew from 2007 to 2008 in only as few as five countries including Hungary, which suggest that contrary to other countries there were not any significant prevention in Hungary, which also induced significant shortage of allowances.

In January 2007, Hungary submitted its National Allocation Plan for the second phase of the ETS to the European Commission, which was refused by the Commission in its decision dated on 16 April 2007. The Commission said that the high number of allowances to distribute among Hungarian installations was unjustified. The Hungarian proposal comprised an annual quantity of 30.73 million, which included the allowances reserved for new entrants and the ones to be auctioned. In the Commission's viewpoint, this exceeds the justified amount by 3.8 million tonnes, and the Commission would approve the allocation plan only with this reduction. Accordingly, the Hungarian government drew up a new Allocation Plan, which was promulgated in the governmental decree 2008/13. With regard to the total allocated quantity, it was already in line with the Commission's requirement. Nearly 90 % of this quantity was allocated to Hungarian installations for free, 8 % was reserved for new entrants and 2 % will be auctioned. Although this governmental decree specified the annual allowances to be granted to installations for free, it was not the final allocation of free allowances. It cost almost one and a half year for the Hungarian government to accept the final allocation list, which was promulgated in the governmental decree (96/2009.) on 24 April 2009. This was approved by the Commission in its decision of 27 April 2009 that is 3 days before the installations would have to account their 2008 emissions and surrender the allowances equal to their previous year's emission to the national authorities. Thus, Hungary was the last but one EU Member State that could have the National Allocation Plan for the second phase approve. This uncertainty that installations did not know how much allowances they would receive for free, meant a significant risk for domestic companies. The final allocation list, which is included in the CITL, allocated 658 thousand more allowances among installations for the year of 2008 than specified by the governmental decree 13/2008 thus reducing the auctioned quantity and the new entrants' reserve. At the same time, however, 90 of 214 installations[4] received on the average 5900 tonnes less than the quantity determined by the Hungarian government in 2008, while a few large installations received by more hundred thousand tonnes more.

[4]Slightly more installations fall under the scope of the Directive, but here we analysed only those installations that received allowances both according to the governmental decree 2008/13 and in the final allocation list.

	Number of installations, pcs	Allowances received in 2008, thousand t	Emission in 2008, thousand t	Surplus in 2008, thousand t	Relative shortage, %
Electricity	149	18 297,9	20 676,8	-2 378,9	-13,00%
Mineral oil refineries	1	1 282,4	1 423,1	-140,7	-10,97%
Coke ovens	1	220,5	222,8	-2,3	-1,04%
Metal ore roasting	2	293,5	305,6	-12,0	-4,10%
Iron and steel industry	5	1 149,7	1 160,6	-11,0	-0,95%
Cement and lime	7	2 554,9	2 513,6	41,4	1,62%
Glass industry	9	307,0	261,0	45,9	14,96%
Ceramics	40	741,4	561,6	179,8	24,25%
Pulp and paper industry	5	172,0	112,3	59,7	34,72%
Other	1	7,7	7,7	0,0	-0,04%
Total	**220**	**25 026,9**	**27 245,0**	**-2 218,1**	**-8,86%**

Table 1 Number, emissions and allocated allowances of Hungarian installations by sectors in 2008 and the relative and absolute surplus of allowances in these sectors

In 2008, 220 installations received allowances in Hungary, and the total emission of these was 27.245 million tonnes, which exceeded the quantity of allowances allocated for free by 2.218 million. This equals a shortage of 8.86% compared to the allocated quantity, which is considered high in international comparison. Emissions significantly differ according to sectors, as well. The Table 1 shows, how many installations were in operation in the given sectors, how many allowances they received in 2008, and how much was their total emission in 2008.

Electricity sector had the highest emission with an annual emission exceeding even 20.67 million tonnes, which is 2.378 million more than the quantity of the received allowances. Both the single Hungarian mineral oil refinery and the metal ore roasting have considerable shortage of allowances. Coke ovens, iron and steel industry and the cement and lime sectors are relatively balanced, while the sectors of glass, paper and ceramics have significant surplus of allowances.

The analysis of emission figures of the first year of the second phase of the EU ETS suggests that the strict action of the Commission on the reduction of allowances was successful. Consequently, it is unlikely to have a situation by the end of the period similar to the first phase when allowance prices dropped to zero due to overallocation. Hungarian installations, particularly installations of electricity sector, are in an unfavourable position compared to neighbouring countries since Hungarian installations have a considerable shortage of allowances. On the other hand, this position is also resulted from the fact that Hungary is one of the few countries, where the carbon-dioxide emission of installations grew compared to the previous year.

Analysis of supports for co-generated and renewable electricity producers

In Hungary, renewable and co-generated electricity production is supported by feed-in obligation and guaranteed administrative prices. The framework of the support is specified in the Decree of the Minister of Economy and Transport (GKM) 2002/56. The decree required suppliers to take over all the electricity on their supply territory, deriving from renewable energy producers and co-generation below 50 MW nominal electric capacity at guaranteed and administrative prices. The support scheme defined different prices both for various technologies and for various zone times. There was a significant change in 2007. This year two important decrees were promulgated on renewables and co-generators. The governmental decree 389/2007 repealed the former GKM decree, and set obligatory feed-in prices and other rules of the obligatory feeding-in in a higher level legislation. One of the most important modifications was that large co-generation power plants (between 50 and 130 MW) have been drawn under the scope of the support scheme in heating seasons.

Another important change was the establishment of a 'green balance group', which was specified in the GKM decree 109/2007. In virtue of this, supported power plants sell the generated electricity to the green balance group manager, which is MAVIR as specified in the decree, instead of the territorially competent supplier. Generators falling under the scope of feed-in obligation (hereinafter KÁT producers) and the suppliers supplying end users (hereinafter KÁT buyers) must submit their planned monthly schedule to the system operator each month in advance. Suppliers must take over the electricity falling under feed-in obligation from the green balance group manager in the proportion of the electricity sold to (their) customers, while the users importing electricity must take it over in the proportion of the electricity consumed by themselves. The system operator records how much electricity the given KÁT buyers have to take over in the given month, and discloses also the profiles, which means how much electricity they have to take over in the given hours.

The system operator, based on the feed-in prices set in the decree and the planned monthly production of KÁT producers, determines the average prices to be paid to these producers. This price will be corrected by the difference of fact and plan figures of the previous month and will be increased by the costs of balancing of the green balance group and the operation of the KÁT balance group. Based on these, the system operator finally determines a price (KÁT unit price), which must be paid in the given month by the KÁT buyer to the green balance group manager. MAVIR preliminarily discloses the price to be paid by KÁT buyers and the profile in each month.

The production falling under feed-in obligation was growing in the last years. The growth was induced by three factors, which are the increasing production of the already operating and primarily co-fired biomass blocks, the spread of co-generation power plants and the extension of the scope of support. This latter took place in two steps. The already mentioned new decree of 2007 involved also large co-generation (50-130 MW) power plants, while the decree of the Minister of Transport, Telecommunication and Energy (KHEM) 34/2008 amending the former one involved co-generators below 190 MW installed capacity. Changes are summarised in Figure 12.

Figure 12 also depicts the proportion of the total domestic electricity production which is withdrawn from the market by the production falling under feed-in obligation. It can be seen that this proportion was below 10 % in 2003, then stagnated around 12 % in the following three years, and rose to 17 % in 2008 due to the effect of large co-generation power plants. Another shift is expected in 2009. MAVIR forecasts the production falling under feed-in obligation to amount to around 7500 GWh, which accounts for more than 20 % of the total domestic production in 2008.

The considerable weight of co-generation implies a significant seasonal fluctuation in the quantity of obligatory feeding-in. Figure 13 depicts the structure of the production falling under feed-in obligation and the proportion of the various technologies compared to the monthly system load and to the total domestic production between January 2008 and April 2009. The figure shows that seasonal fluctuation cannot be really detected in the production from renewable sources. The monthly renewable production was relatively stabile in the last one and a half years. Contrary to this, co-generation shows a strong seasonality. This is the explanation of the fact that while the share of production falling under feed-in obligation in the total domestic production reached 20% in the first half of 2008, this share fell below 15% in the summer of 2008. In given months of the winter of 2008/2009, however, this share exceeded even 25% due to the extension of the support.

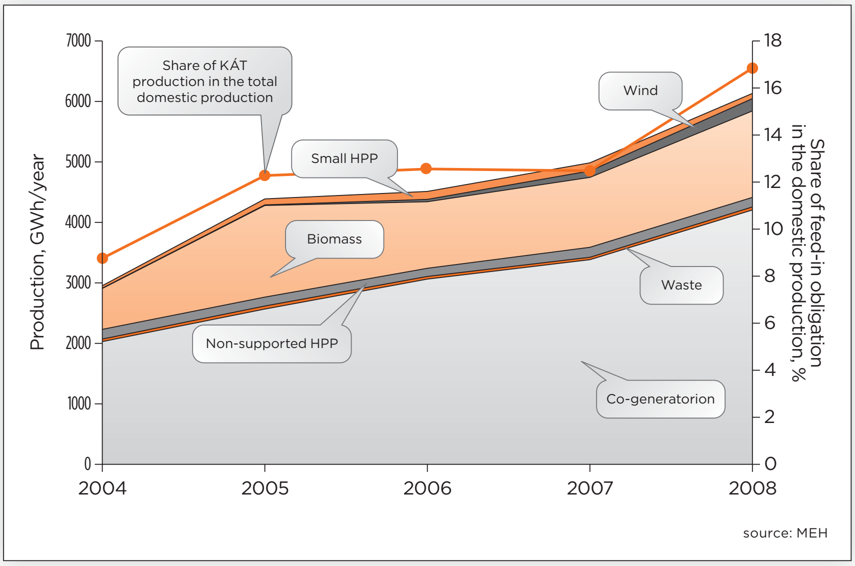


Figure 12 **Structure of production falling under feed-in obligation by sectors and its share compared to total domestic production, 2004-2008**

Withdrawing so much capacity and production respectively from market significantly reduces competition among market producers. The main threat in this is that producers remaining on the market may lift prices. Consequently, the price of electricity increases not only because of the huge price support for feed-in obligation but also because of the weakening competition.

In the following, we analyse the KÁT unit price and its relationship with market prices in the last one and a half years.

The Hungarian support scheme of renewable and co-generation guarantees a fix price for producers in other words, the scheme did not separate the price of energy and the support itself. This had a relatively slight significance until 2008 since market price was relatively stabile. Since 2008, however, considerable movements have been experienced in market prices and in KÁT unit prices. Before addressing this issue in details, we briefly define what we call market price.

Since Hungary is lacking transparent electricity market with available domestic spot or futures prices, therefore we gave estimation on domestic electricity prices in the following way. We took German day-ahead hourly prices and the hourly prices evolving on the daily auction of the Austrian-Hungarian cross-border capacities as a basis. If the price in a given hour was higher at the Austrian-Hungarian interconnection than in Hungarian-Austrian relation, we added the cross-border price to the German day-ahead market price. In an opposite case, we deducted the cross-border price from the German day-ahead market price. We converted the calculated prices to domestic currency based on the given day's HUF/Euro exchange rate, thus we obtained the Hungarian electricity price of a given hour. In order to be able to compare estimated market price with KÁT unit price, we used the given month's profile of KÁT buyers determined by MAVIR, which provided a base for weighting the given hours and thus we could calculate monthly market prices. Figure 14 shows the estimated domestic market prices, the KÁT unit price and the estimated specific support deriving from the difference of these two factors.

The difference of KÁT unit price and estimated market price was relatively stabile until October 2008, which was followed by a significant rise. This rise was induced by two factors. On the one hand, German market prices dropped significantly to 10HUF/kWh by 2009 due to the economic crisis, on the other hand, the KÁT unit price set by MAVIR started increasing, as well. By the middle of 2009, the difference of the two factors approximated 25 HUF/kWh. Accordingly, the current average obligatory feed-in price, which was 33.9HUF/kWh in July 2009, was more than triple the market price. As a result, while decreasing electricity prices have a crucial effect on other producers, market processes have no impact on producers falling under feed-in obligation at all.

The facts above give explanation on the huge increase in support. While the total annual support paid to KÁT producers was 52 billion HUF in 2008, the support paid in the first half of 2009 already exceeded 70 billion HUF, which meant a cost of 3.73 HUF/kWh to be paid by customers.

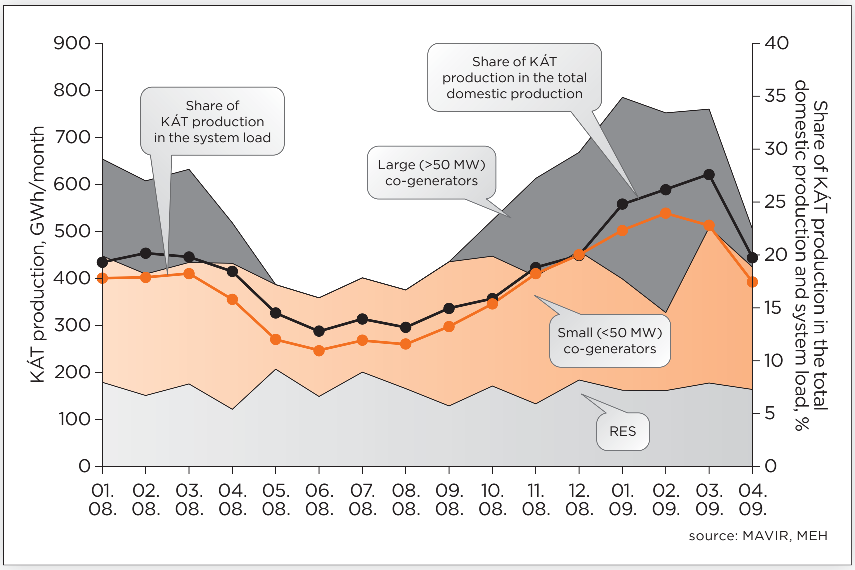


Figure 13 Monthly production of various technologies falling under feed-in obligation and the share of these in the total domestic production and system load, January 2008– April 2008

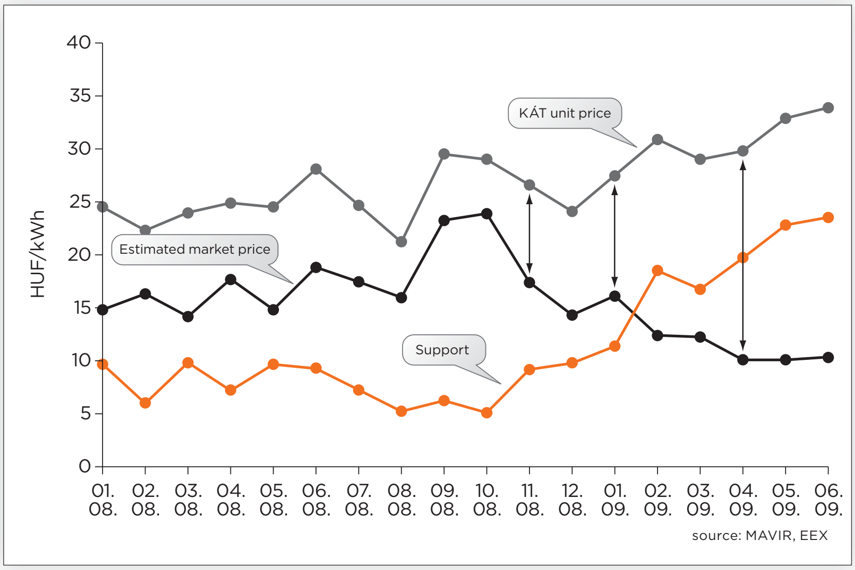


Figure 14 Unit price of KÁT, estimated market price and specific support, HUF/kWh

If the practice of the first year continues also in the second half, the estimated annual support will be nearly 150 billion HUF, which is triple the support paid in 2008. The greatest winners of this scheme are co-generators, who obtained 68% of the support in 2008, which amounted to more than 35 billion HUF. These figures reveal serious consequences of the involvement of large co-generation power plants into the support scheme.

The current support scheme needs to be reviewed thoroughly. As a minimum measure, the authority should regulate the support as a price premium, which would provide not only for transparency, but also protection for customers against unjustified price increases.

Impact of gas market model change on prices

At the beginning of the new gas year, 1 July 2009, there was a gas market model change in Hungary. A crucial element of the model change is that since this date onwards all the domestic gas customers excluding the ones below 100 m^3/hour contracted capacity including households can purchase gas purely on the basis of free market agreement at market prices. Small customers have had the possibility to buy gas at universal service prices under administrative price control. What prices will customers face following price liberalisation? Will the same happen on the gas market that took place on the electricity market in January 2008? In 2008, a similar type of model change and price liberalisation took place under unfavourable conditions. High international energy prices and the limited intensity of wholesale competition jointly induced a significant, 30-70% increase in prices compared to previous administrative prices. Politics gave a sensitive reaction on this phenomenon by extending significantly the circle of customers entitled for universal service and administrative price control.

We see two reasons to provide for a more successful model change in the gas sector from the viewpoint of customers. These are the favourable international price conditions and the potential deterring power of the implementation of the regulation of the Hungarian Energy Office on market players with significant market power (SMP).

Recession and decreasing oil prices considerably reduce the cost of gas imports, therefore traders may share this cost reduction with their customers in their agreements concluded for the following gas year, which may result in a significant price reduction also to customers. Apparently, the concentrated structure of the domestic wholesale gas market allows players with SMP to hinder this price reduction by their market power. However, the last year's precedent on the electricity market proved that Hungarian Energy Office did exercise its rights to regulate SMP players and tried to restrict the behaviour of the dominant wholesaler, MVM by administrative pricing and imposing auctioning obligations. This may be an object-lesson for the gas wholesaler E.ON likely to be qualified as an SMP market player.

Competition has intensified on the gas market in the recent years due to the beneficial effects of the ownership unbundling of MOL FGSZ, as a result of which not only E.ON but also EMFESZ, MOL, Tigáz and Shell acquired significant market share. This would give base for further optimism with regard to future prices, which is, however, shadowed by the severe uncertainty around the ownership and gas sources of EMFESZ.

The last part of this chapter gives an in-depth analysis on the expected domestic wholesale gas prices.

Domestic natural gas prices are mainly determined by the purchase price of Russian gas transports. Therefore, we should start our analysis with examining the prices of the dominant natural gas import contract (E.ON-Panrusgáz). The agreement sets the price of natural gas for three months at the beginning of each quarters and reviews prices in line with the European practice based on the difference of the last 9 months' average price of two oil derivatives (heavy oil and fuel oil) from the starting prices of the base period. Since the set price is valid for three months, and at the beginning of the new period it takes into account the average oil price increase of the previous 9 months, simply, we can claim that the contracted natural gas price approximates the world price of crude oil with a 6-month lag and a diminished intensity.
The Figure 15 depicts well that the summer record heights of oil prices were followed by a drastic increase in natural gas prices only in the winter of 2008/2009, with a half-year lag.

The above import contract played an important role in the price regulation system of the period prior to the model change in July 2009, as well. Theoretically, the administrative resale gas charge was to cover the cost of import, the wholesale margin and the turnover charge of transmission. The regulation, however, was not entirely consistent in this respect. As the Figure shows, the acknowledged wholesale gas charge was less than the effective costs in 2006, exceeded those in 2007 and was less again in the winter of 2008/2009. The accumulating loss of 66 billion HUF of public utility wholesalers (E.ON and Tigáz) should be paid in the form of a separate charge element by those customers who satisfied their natural gas demand from the public utility segment in the period or in a part of the period from July 2005 to June 2009. The value of this charge element (excluding VAT) is 17.5 HUF/m³ between 1 July 2009 and 30 September, and 3.13 HUF/m³ between 1 October 2009 and 31 December 2009 (KHEM Decree 27/2009 (25.06)).

The significant role of the dominant import contract played in the shaping of domestic natural gas prices is likely to remain the same also in the period following full market opening. On the one hand, price regulation prevailing in universal service will take into account the costs of this import contract in the course of determining wholesale prices. On the other hand, since the transport volume booked by the contract significantly exceeds the demand of universal service customers, the remaining quantity will constitute a significant proportion of free market supply. Therefore, we give a forecast on the price of import natural gas for the next half year.

Since the HUF cost of import natural gas is primarily shaped by the crude oil price determining the price of crude oil derivatives and the HUF/Euro exchange rate, we prepared our prognosis in various scenarios assuming different crude oil prices and HUF/Euro exchange rates (assuming a fix USD/Euro exchange rate at 1.4). We considered three scenarios. The base scenario calculated with an oil price of 70 USD/barrel and 285 HUF/Euro exchange rate for the second half of 2009. The pessimistic scenario (from the viewpoint of customers) determined a higher crude oil price (80 USD/barrel) and a weaker HUF (300 HUF/Euro), while the optimistic scenario calculated with a lower crude oil price (60 USD/barrel) and stronger exchange rate (270 HUF/Euro). The Figure 16 shows that in the base scenario, the import price will continue declining from the current 67.7 HUF/m³ until the end of summer, which will be followed by a rise and the price will reach 60.5 HUF/m³ by the end of the year. In total, this scenario would result in an average import price of 55.5 HUF/m³ in the second half of 2009. In the pessimistic scenario, the price of natural gas would rise to 69.9 HUF/m³ by the end of the year, which is slightly higher than the current price, but the average natural gas price of the second half (61.4 HUF/m³) would still be less than the current level. Finally, in the optimistic scenario, the declining trend of gas prices would last until the middle of autumn, and the average level of import prices would be 49.6 HUF/m³ in the second half of 2009.

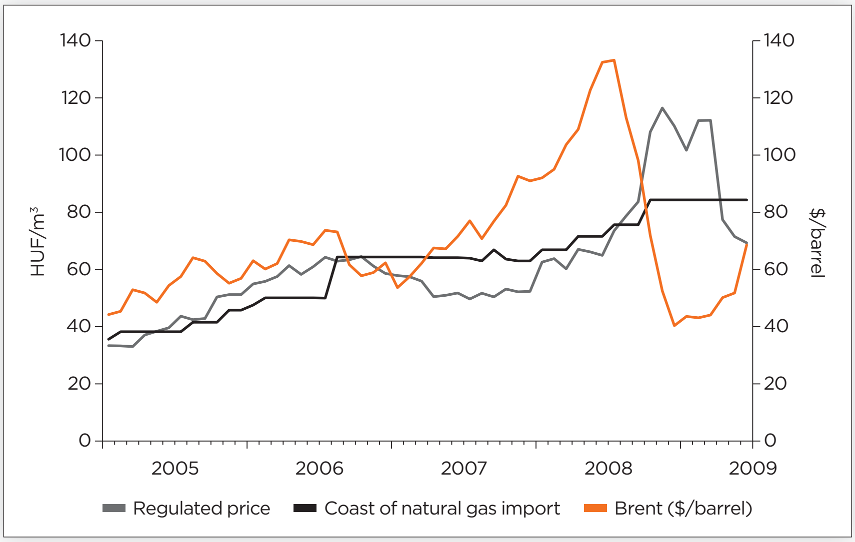


Figure 15 **Cost of import natural gas from January 2005 to June 2009**

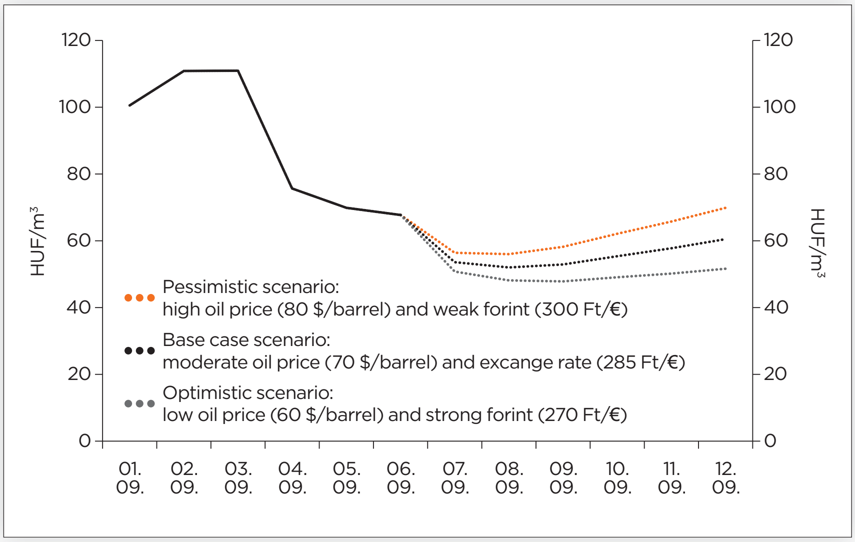


Figure 16 **Wholesale natural gas price forecast, second half of 2009**

The main beneficiaries of the favourable effect of the decreasing natural gas wholesale price will be the customers who have been purchasing natural gas from the free market since July 2005, because the fall in price will be moderated only by the rise in VAT from 20% to 25%. In the case of other free market customers, the charge compensating the former public utility wholesalers' losses in addition to the VAT increase may level out the effect of gas cost reduction certainly up to the end of September. Finally, end-users of universal service providers will perceive a price increase of 3-4% from July, which may be followed by an approximately 10% price decline in October. This price is planned to remain stable, which would make it unnecessary to increase prices to these customers in next year's January either. However, the diminished gas demand and the oversupply of import induced by the former did not exclude competition for universal service customers, which was already launched by EMFESZ last year.

WORKING PAPERS

Electricity consumption and the impact of crisis

In our analysis, we examine the impact of the economic crisis on electricity consumption with statistical methods. The analysis is based on monthly consumption figures between January 2005 and April 2009. These figures are taken from the monthly market reports of MAVIR. Temperature figures used in the analysis are daily mean temperatures of Budapest, and industrial production indices are figures from the Hungarian Central Statistical Office (KSH).

Electricity consumption depends on temperature with a negative relationship in winter and a positive relationship in summer. In the first step, we calculate the temperature adjusted consumption figure by calculating the regression between temperature and consumption (separately for winter and summer), then excluding the 'extreme' effect of the deviation from the mean temperature assuming a given mean temperature (of the last 20 years).

Temperature had a particularly significant effect in the first four months of 2009. January can be divided into two parts. The first 13 days were much colder, while the second part was warmer than the average of several years, thus the two periods levelled out each other. February and March were slightly warmer than the average, while April was outstandingly warm; it has been the warmest April since 1901.

Figure 17 shows the actual and the temperature adjusted monthly consumption.

Electricity consumption was relatively stable in the last years. After excluding the effect of temperature, on the annual average a relatively stable rise of 1.5% was obtained for the period from 2001 to 2007.

The question is how the crisis influenced this relatively stable growth. To answer this question it is expedient to clean our time series from the effect of seasonality. As a tool, we used TRAMO-SEATS method applied also by KSH and the Central Bank of Hungary (MNB) and the appropriate DEMETRA software developed by Eurostat. This method is a model based seasonal decomposition method based on signal extraction techniques, which is able to separate the effect of long-term trends, seasonality and irregular components. Seasonality in this case includes calendar effect, which is the potential distorting effect of the various numbers of working days and bank holidays shifting among various months (Eastern and Ash Monday).

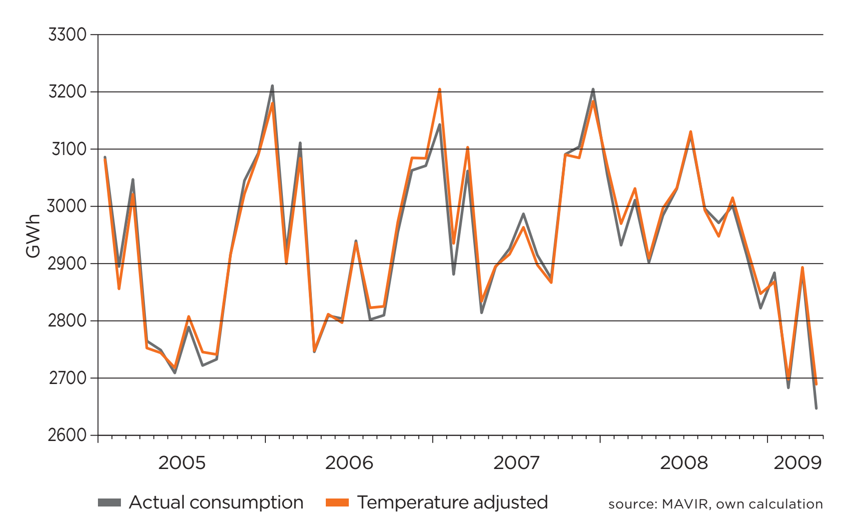


Figure 17 Actual and temperature adjusted consumption between January 2005 and April 2009, GWh/month

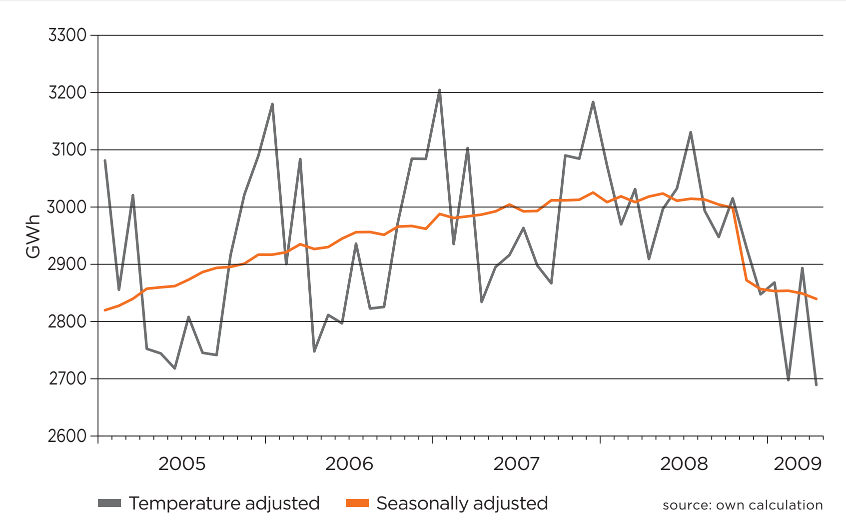


Figure 18 Temperature adjusted consumption and its seasonal adjustment, from January 2005 to April 2009, GWh

The program is able to identify and correct for several types of outliers and structural breaks.

The Figure 18 shows the seasonally adjusted time series of temperature adjusted consumption.

It can be seen that the fundamentally increasing trend excluding seasonal effects lasted till the summer of 2008. Consumption was stagnating in the summer and autumn of 2008, which was followed by a drastic drop of a structural break nature in November 2008 preceding a slight decline till as late as April 2009. Accordingly, the current level of electricity consumption approximately equals the level of 2005.

It is worth comparing electricity consumption with industrial production index, as well. Here, we used again the seasonally adjusted volume indices compared to the annual average of 2005.

As the Figure 19 shows, tendencies are very similar including also the huge drop in 2008.

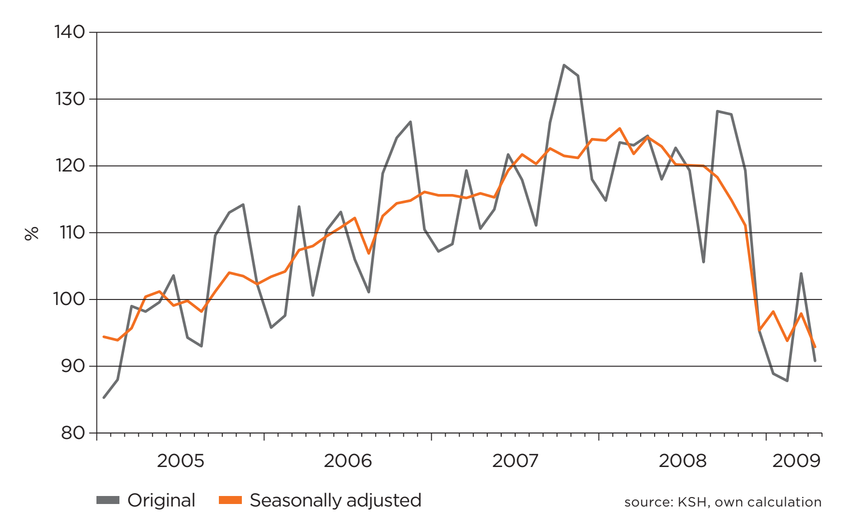


Figure 19 **Volume index of industrial production and its seasonal adjustment, annual average of 2005 =100%**

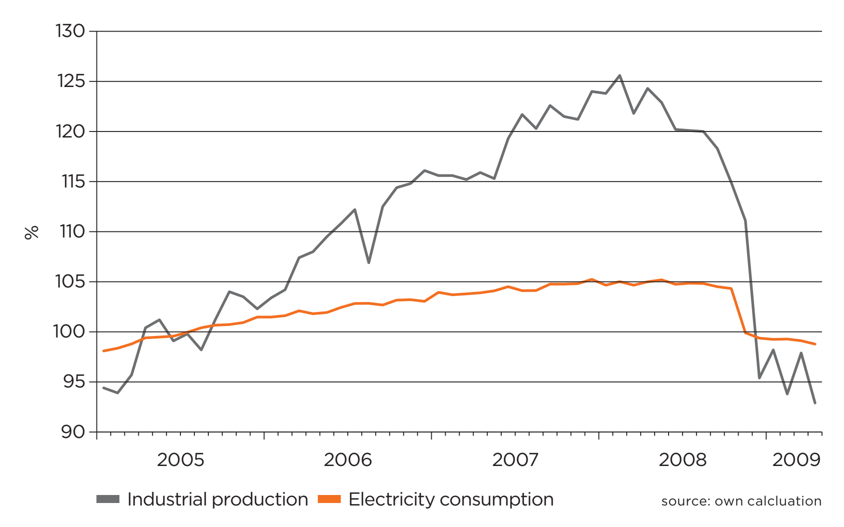


Figure 20 **Industrial production and electricity consumption, monthly average of 2005 =100%, seasonally adjusted figures**

The development of the two phenomena can be best compared if seasonality adjusted time series are used. For the sake of the best comparison, we used indices compared to the annual average of 2005 also in the case of electricity consumption.

Figure 20 suggests that electricity consumption fell because of the crisis at the end of 2008. However, both the size of increase and decrease in consumption are much lower since electricity consumption is also dependent from the consumption of residential and communal customers who are less sensitive to the crisis. A good example, that the 30% drop in industrial production at the end of 2008 was followed by a 5% decline in electricity consumption. Recent data show that the large drop in electricity consumption was purely a single effect and only a slight decline is expected in the first half of 2009, while the consumption may even rise in the second half.

We highlight two other factors with the help of further regression analyses.

- The rise and fallback in industrial production strongly correlate with electricity consumption (the explanatory factor is 91% in the error adjusted regression model). The coefficient of the correlation is 0.2, in other words, **a 1% change in industrial production implies an average 0.2% change in electricity consumption.**
- The similar development of the two factors is not entirely synchronic. The rise and fallback in electricity consumption forecast the changes in industrial production. An outstanding example is the end of 2008, when electricity consumption fell in November, while industrial production followed this in a really great measure only in December. The reason of this phenomenon is the protraction of the multiplying effects. Decreasing production directly results in a drop in electricity consumption, but it lasts a while until it vigorously appears in less energy intensive productions and services through suppliers.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