REPORT
ON ENERGY MARKET IN POLAND
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INTRODUCTION
– HOW TO READ THE REPORT
Energy Market in Poland

Power, like other goods, is first generated, then purchased by agents and finally sold to customers. Energy trade companies purchase power from power generators and sell it to end customers. The prices and terms of transactions are individually agreed between the power vendor and purchaser or result from the terms of its purchase (purchase at a power exchange or using Internet power trade platforms). The main power exchange market is the Polish Power Exchange – Towarowa Giełda Energii (TGE). Trade at all TGE markets dedicated to power reached 132 TWh in 2012. This is more than 106% of power sold to end customers throughout the year. Compared to the previous year, trade grew by 4.20%.

The market itself is relatively young: it was established when the Energy Law Act entered into force in April 1997. Since then, energy ceased to be treated as a public good and has become a commodity. The process of demonopolization of the energy sector that had begun then led to its division into the following subsectors of energy: generation, transmission and distribution, and trade. The changes were aimed at launching market mechanisms in the energy sector to create a competitive energy market. Power generation and trade lost their monopolistic character and introduction of competition between energy companies was to ensure rational energy price levels. Energy trade companies (such as RWE Polska), power plants, non-tariff energy buyers (large customers that directly participate in the market) or brokerage houses, all take part in the wholesale electricity market. In the wholesale market, power can be purchased through bilateral contracts, on power exchanges and on on-line trade platforms.

In 2010, Poland saw the introduction of so-called exchange obligation. It is a statutory obligation to sell 15% of electricity through a power exchange or the regulated market, which was imposed on all domestic electricity producers. Those who receive compensation for termination of long-term contracts (so-called KDT) are additionally obliged to sell their entire electricity produced on competitive terms. Currently, wholesale trade in Poland is conducted at Towarowa Giełda Energii S.A. (Polish Power Exchange). Companies or households participate in the retail electricity market. The price for the customer in a retail market differs from wholesale market prices in terms of the excise duty, costs of renewable and cogenerated energy share, costs of participation in the Balancing Market and transactional costs of the vendor, which is illustrated in the following graph. Exchanges enable entering into contracts for immediate energy delivery on the following day (so-called Day-Ahead Market – DAM) and forward contracts for delivery at a later date, e.g. in the following quarter, throughout the following year or in a selected week of a given year (Commodity Derivatives Market – CDM).

Gas Market in Poland

On 20 December 2012, TGE admitted on the Commodity Forward Instruments Market forward instruments settled by way of a physical delivery of Group E high-methane natural gas, referred to as “gas forward contracts”. The launch of the Commodity Forward Instruments Market with gas instruments is only the beginning of gas exchange operation in Poland.

Read more in the following sections.
DAY-AHEAD MARKET (DAM) AT THE POLISH POWER EXCHANGE AND GAS
DAY-AHEAD MARKET

The Day-Ahead Market (DAM) enables trade in electricity for delivery at specific times of the following day. One of the main aims of the DAM is to enable initial balancing of contract positions, which consists in adjusting the electricity volume to evolving demand from wholesale market entities. This is where energy volumes resulting from the difference between the dynamically changing demand (which depends on weather conditions, for instance) and previously concluded contracts are sold and purchased. The DAM also plays an important role in creating reference energy prices for other contracts entered into on the wholesale energy market in Poland.

In the DAM, in addition to contracts for energy delivery at a specific time of the following day, players may enter into block contracts:

- **BASE** – a contract for delivery of the same volume of energy at any hour during the day;
- **PEAK** – a contract for delivery of the same volume of energy at any peak hour (10.00 a.m. – 7.00 a.m.);
- **MORNING** – a contract for delivery of the same volume of energy at any morning hour (0.00 a.m. – 6.00 a.m.).

In addition to prices for specific hours, TGE also announces daily indices for a specific day, which are average prices for the entire day or its part (block contracts) and facilitate tracking mid-term trends on the electricity market. Electricity prices are different for specific days (e.g. working days, Saturdays, Sundays, public holidays), which is one of the factors influencing the price curve fluctuation.

The level of electricity prices on the spot market depends on a number of correlated factors. They include:

- combination of days, e.g. working days, weekends, holidays, holidays combined with weekends, holiday seasons,
- weather conditions, e.g. temperature, cloudiness, precipitation,
- power availability in the National Power System (NPS) – grid constraints, generation capacity,
- demand levels in the NPS,
- Cross-Border Electricity Exchange – import, export of electricity,
- non-standard events (e.g. EURO 2012),
- energy carrier prices: oil, coal, gas,
- electricity forward market prices,
- contract position of market players, e.g. whether most players buy or sell electricity.

The Report also presents the demand levels of the NPS. It is worth to remember that the factors that impact demand levels are primarily weather conditions and economic growth rate.

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### NUMBER OF WORKING DAYS AND HOLIDAYS IN 2011–2012

<table>
<thead>
<tr>
<th>Calendar Data</th>
<th>Temperature (Warsaw)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>2012</td>
</tr>
<tr>
<td>working days</td>
<td>non-working days</td>
</tr>
<tr>
<td>January</td>
<td>20</td>
</tr>
<tr>
<td>February</td>
<td>20</td>
</tr>
<tr>
<td>March</td>
<td>23</td>
</tr>
<tr>
<td>April</td>
<td>20</td>
</tr>
<tr>
<td>May</td>
<td>21</td>
</tr>
<tr>
<td>June</td>
<td>21</td>
</tr>
<tr>
<td>July</td>
<td>21</td>
</tr>
<tr>
<td>August</td>
<td>22</td>
</tr>
<tr>
<td>September</td>
<td>22</td>
</tr>
<tr>
<td>October</td>
<td>20</td>
</tr>
<tr>
<td>November</td>
<td>20</td>
</tr>
<tr>
<td>December</td>
<td>21</td>
</tr>
</tbody>
</table>

Source: own compilation

Explanation: Calendar days and temperature levels have a significant impact on power demand: the number of holidays in a given month (the fewer, the higher demand), temperature (in winter months: the lower, the higher the consumption; in warmer months: the higher the temperature, the higher the consumption).
Gas Day-Ahead Market

On 31 December 2012, a Day-Ahead Market for gas was launched. The good traded on the market is Group E high-methane natural gas, further referred to as “gas”, for delivery on the following day. The launch of a gas exchange marks the first of a number of events on the way to full liberalisation of the market. At present, it is hard to expect any active interest of companies in trading the blue fuel on the gas exchange. In order to change that situation, it is necessary to introduce a statutory exchange obligation on the sale of at least some of the resource. It is also planned to enable entities to operate directly on the gas exchange, and thus to act as a market animator.

It is important for modelling of the demand for the exchange gas to abandon the “take-or-pay” principle and enable companies to further resell the gas purchased from the previous supplier. It is equally important as well to provide market players with free access to transmission infrastructure and to extend it.

Achievement of a satisfactory trade efficiency at the Polish Power Exchange enabling for a reference price to be established, depends on whether the above assumptions are met.
The Commodity Derivatives Market (CDM) enables entering into contracts for delivery of electricity at a specified future date. The prices of the derivatives market reflect price projections. The CDM market serves for trading in forward contracts for electricity delivery, which assume that the seller (contract issuer) shall deliver energy at a specific future date and at a specific price while the buyer (contract buyer) shall purchase the energy at the specific future date and at the specific price.

Forward contracts enable to set energy prices in a longer time horizon (up to three years forward at TGE), which creates significant price drivers for investors who are planning to build new generation capacity. Customers, on the other hand, can forecast prices, streamline their electricity purchase costs and hedge against price increase risk. Currently, the following three types of contracts are traded on the CDM:

- **BASE and BASES forward contracts** (base) with a 24-hour delivery time, for BASE irrespective of the weekday or season, for BASES only on working days;
- **PEAK and PEAKT forward contracts** (peak) with delivery at 7.00 a.m. – 10.00 p.m. (15 hours during a day), for PEAKT irrespective of the weekday or season, for PEAKS only on working days;
- **OFFPEAK forward contracts** (off-peak hours) with delivery at 00.00 a.m. – 07.00 a.m. and 10.00 p.m. – 12.00 p.m. on working days and 00.00 a.m. – 12.00 p.m. on non-working days.

There are four types of contracts in relation to their date of delivery:

- weekly (BASE_W), (PEAKS_W) and (OFFPEAK_W);
- monthly (BASE_M), (PEAKS_M) and (OFFPEAK_M);
- quarterly (BASE_Q), (PEAKS_Q) and (OFFPEAK_Q);
- annual (BASE_Y), (PEAKS_Y) and (OFFPEAK_Y).

The abbreviated name of each contract indicates its type and delivery date. For instance, PEAKS_Q-4-12 means a forward contract for electricity delivery on working days in the fourth quarter of 2012 between 7.00 a.m. and 10.00 p.m.

Trading of the contracts is carried out in the continuous trading mode only, from Monday to Friday 8.00 a.m. to 2.00 p.m. The detailed rules of fixing daily settlement prices are available at TGE S.A. website.

Gas Commodity Derivatives Market

On 20 December 2012, Towarowa Giełda Energii launched trade in forward contracts with physical delivery of natural gas within its existing Commodity Derivatives Market. The market provides an opportunity to trade in standard forward products for physical delivery of natural gas at a fixed volume for monthly, quarterly and annual periods. The traded good is delivery of gas at a fixed volume in all hours of the delivery period. Trading in the continuous trading mode is held from Monday to Friday 8.00 a.m. to 2.00 p.m. Listing of every series of contracts is conducted in line with the contract listing and delivery calendar. Given the current regulatory situation, conclusion and settlement of gas exchange contracts is possible exclusively through brokerage houses and commodity brokerage houses that are members of TGE and members of the Exchange Clearing House managed by the Warsaw Commodity Clearing House (WCCH). The first brokerage houses that signed agreements enabling them to trade on the gas market include Dom Maklerski BOŚ SA, Noble Securities SA and Trigon Dom Maklerski SA. Clearing and settlement of gas market transactions are held by the Warsaw Commodity Clearing House. The risk management system used by WCCH ensures clearing security to every House member in the case of insolvency of any of the market players. Transaction settlement through WCCH ensures payment for the gas sold. Pursuant to an agreement concluded between TGE and Gaz-System, transactions concluded on the gas exchange are valid and effective between parties and are performed by Gaz-System.
PROPERTY RIGHTS MARKET, SO-CALLED “COLOURS MARKET”

The property rights market, commonly referred to as the “colours market”, is regulated by the provisions of the Energy Law Act and related regulations.

An exception to the rule are white certificates that are governed by the Energy Efficiency Act. White certificates confirm the saving of a specific energy volume as a result of implementation of energy efficiency increasing investments. White certificates have property rights attached to them and are traded at the power exchange.

The statutory system of supporting renewable energy sources and co-generation (combined heat and power generation) allows electrical power generators from the renewable sources and co-generation segments to sell their property rights, and obliges the power companies selling energy to the end user to acquire those rights. The property rights to electricity from renewable sources and co-generation, i.e. gas, coal and methane combined with heat are redeemable. An alternative solution for power companies is to pay a substitution fee.

The table below indicates percentage shares of obligations in 2010–2021. Some of them are defined for shorter periods.

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**Substitution fee**

<table>
<thead>
<tr>
<th></th>
<th>Unit.</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>RES</td>
<td>PLN/MWh</td>
<td>267.95</td>
<td>274.92</td>
<td>286.74</td>
</tr>
<tr>
<td>Co-generated (coal)</td>
<td>PLN/MWh</td>
<td>23.32</td>
<td>29.58</td>
<td>29.30</td>
</tr>
<tr>
<td>Co-generated (gas)</td>
<td>PLN/MWh</td>
<td>128.80</td>
<td>127.15</td>
<td>128.80</td>
</tr>
<tr>
<td>Co-generated</td>
<td>PLN/MWh</td>
<td>59.16</td>
<td>59.16</td>
<td>60.00</td>
</tr>
</tbody>
</table>

**Cost of “colours” for the end user (example based on the substitution payment)**

<table>
<thead>
<tr>
<th></th>
<th>Unit.</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>RES</td>
<td>PLN/MWh</td>
<td>27.87</td>
<td>28.59</td>
<td>29.82</td>
</tr>
<tr>
<td>Co-generated (coal)</td>
<td>PLN/MWh</td>
<td>4.97</td>
<td>6.57</td>
<td>6.80</td>
</tr>
<tr>
<td>Co-generated (gas)</td>
<td>PLN/MWh</td>
<td>3.99</td>
<td>4.20</td>
<td>4.51</td>
</tr>
<tr>
<td>Co-generated (mining methane)</td>
<td>PLN/MWh</td>
<td>0.00</td>
<td>0.24</td>
<td>0.36</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>PLN/MWh</td>
<td>36.83</td>
<td>39.59</td>
<td>41.49</td>
</tr>
</tbody>
</table>

Source: www.ure.gov.pl, own compilation

The Property Rights Market for all “colours” is managed at Towarowa Giełda Energii S.A. The labels below mean property rights for specific “colours”. For the sake of clarity, we may call them green, red, yellow and violet certificates.

- **PMOZE_A**, i.e. Property Rights to Certificates of Origin for electricity generated with renewable energy sources, the generation period of which (as indicated in the Certificate of Origin) began on 1 March 2009 (inclusive) – so-called “green certificates”.
- **PMEC**, i.e. Property Rights to the Certificates of Origin for electricity generated in high-efficiency combined heat and power (CHP) units referred to in Article 9(1) item 2 of the Energy Law (coal) – so-called “red certificates”.
- **PMGM**, i.e. Property Rights to the Certificates of Origin for electricity generated in high-efficiency combined heat and power (CHP) units referred to in Article 9(1) item 1 of the Energy Law (gas) – so-called “yellow certificates”.

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* Draft Act of 10 December 2012 amending the Act amending the Energy Law Act, the Environmental Protection Law Act, the Act on the system of assessment of compliance and the Act amending the Energy Law Act and amending certain other acts, Regulation of the Minister of Economy of 14 August 2008 (Journal of Laws No. 156, item 968), Regulation of the Minister of Economy of 26 July 2011 (Journal of Laws No. 176, item 1052), Regulation of the Minister of Economy of 18 October 2012 (Journal of Laws No. 211, item 1229), Act of 15 April 2011 on energy efficiency (Journal of Laws No. 94, item 551), as amended.*
The Report presents indexes for specific energy sources.

- **PMMET**, i.e. Property Rights to the Certificates of Origin for electricity generated in high-efficiency combined heat and power (CHP) units referred to in Article 9(l) item 1(a) of the Energy Law (mining methane) – so-called “violet certificates”.

- **Energy efficiency certificates, so-called white certificates** – certificates confirming the saving of a specific energy volume as a result of implementation of energy efficiency increasing investments. White certificates have property rights attached to them, are traded at the power exchange and governed by the Energy Efficiency Act. White certificates enable to estimate energy savings and period in which such savings were achieved. The system is in force in years 2013–2015.

TGE announces indexes for each type of Property Rights, constituting an average price weighted with the volume of all transactions in a given contract, e.g. PMOZE_A, in a trading session.

The table below presents a list of property rights labels and their respective indexes for specific sources of energy generation.

<table>
<thead>
<tr>
<th>Energy source</th>
<th>Short name of property rights</th>
<th>Certificate colour</th>
<th>Index name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Renewable energy sources</td>
<td>PMOZE_A</td>
<td>Green</td>
<td>DZEK_A</td>
</tr>
<tr>
<td>Coal</td>
<td>PMEC</td>
<td>Red</td>
<td>KECX</td>
</tr>
<tr>
<td>Gas</td>
<td>PMGM</td>
<td>Yellow</td>
<td>KGMX</td>
</tr>
<tr>
<td>Mining Methane</td>
<td>PMMET</td>
<td>Violet</td>
<td>KMETX</td>
</tr>
<tr>
<td>Other</td>
<td>Not yet listed at TGE</td>
<td>White</td>
<td>Not yet listed at TGE</td>
</tr>
</tbody>
</table>

The graphs featured in the Report have been made based on the following selected price indexes:

- **ICE Brent Crude Futures** – weighted average price of one-year futures contracts for oil (Brent, Forties, Oseberg or Ekofisk, so-called BFOE) to be delivered in the following year;
- **ICE Rotterdam Coal Futures** – weighted average price of one-year futures contracts for coal to be delivered in the following year;
- **EEX Cal** – futures contracts for electricity at the German EEX, for a base to be delivered throughout the entire following year;
- **ECX EUA Futures Contract Emissions Index** – a daily index of average weighted price of futures contracts for CO2 emission allowances in the European Union Emission Trading Scheme.

In order to better illustrate the correlation between electricity price and the prices of its carriers, the graphs on page 33 show listings of energy coal, oil and electricity. Given high volatility of prices, the data included in the graph have been presented since 2007.
ENERGY MARKET IN POLAND – DAY-AHEAD MARKET

2012 SPOT PRICES VS. TRADE VOLUME

STABLE LOW PRICES IN THE WHOLESALE MARKET

In 2012, electrical energy prices on the spot market were lower than in the preceding year. The average weighted price amounted to PLN 179.5/MWh, marking a decrease by ca. 12% compared to 2011. Prices were peaking in February: the average weighted price on the spot market was PLN 221.1/MWh. The lowest average weighted price of electrical energy was reported in December, namely PLN 163.4/MWh. Price levels in 2012 were dependent on weather conditions, lower energy demand as well as imports/exports of energy from Germany and Sweden. They were also affected by an economic downturn.

Deteriorating macroeconomic data in Poland and neighbouring countries quickly translated into power demand, which was maintained at a level similar to the preceding year. Falling demand for power and significant volume of green energy that appeared on the market contributed to a decrease of prices. Throughout the year, the average energy price on the spot market was lower by almost 12% than the preceding year’s average price. The price curve followed the long-term price curve where Q1 and Q4 prices are usually lower than in the other quarters. This may seem odd as energy consumption in colder months is significantly higher. However, in such periods power plants generate additional volumes of energy and can deliver over 20% more energy to the system. Higher volume of cheaper energy generated contributes to a drop in prices, which explains the curve presented. February was an exception, though. At the beginning of the month, extremely low temperatures led to a sudden leap in power consumption. Polish power plants worked at their historical peak capacities. On Tuesday, February 7, at 5.00 p.m., a record-breaking demand for electricity was reported, amounting to 25,845 MW. The demand in the evening peak was a historical high in the National Power System. The price grew by 23% vs. January. This resulted mainly from high prices in peak hours, which exceeded even PLN 400/MWh. The last previous leap of this kind was observed in October 2011.

DEMAND IN THE NATIONAL POWER SYSTEM IN 2011–2012

Source: compilation based on the data available at www.pse-operator.pl

Source: own compilation

The demand is dependent on the temperature. In winter, the lower the temperature, the higher the consumption; in warmer months, higher consumption correlates with higher temperatures.
in November 2011. It was related to a failure of a new block in Belchatów and a number of blocks in Polaniec. The trend on the energy market was reversed by increasing temperature and falling demand for energy. Electricity prices in March were at the annual low. In Q2 and Q3, gradual decrease of power supply by power plants and growing demand for energy due to record-breaking high temperatures contributed to a temporary growth in energy prices. August saw a record in energy prices on the balancing market. Such a sudden price increase on the balancing market up to the level of PLN 1,455/MWh provided an impulse to higher prices on the Day-Ahead Market at the Polish Power Exchange. The remaining time of the year did not bring any significant fluctuations in energy prices on the daily-hourly market.

Throughout 2012, energy prices remained at a stable low level. This must have come as a surprise to all market players as 2012 forecasts had not projected such a strong slump.

The forward market in 2012 was undoubtedly marked by the cheapest prices since 2008. The average energy price for annual BASE contracts for 2013 reached PLN 189.5/MWh and was lower by more than 7% than contracts concluded for 2012. The beginning of 2012 brought a relatively low market liquidity in futures contracts for 2013. The BASE_Y-2013 product was then sold at a price of PLN 213–215/MWh. A dramatic price slump occurred in the second half of the year and was
maintained virtually until the end of December, which market players had never expected. Deteriorating macroeconomic indices, worsening investor sentiments measured by the PMIO index, lower than expected energy consumption, mainly in the industry, introduced much uncertainty on the markets. In 2011, higher market liquidity in futures contracts was observed already in March. In 2012, March was still marked by anticipation. Market players who followed price developments in neighbouring markets (e.g. price falls on the German EEX market) probably delayed their contracts for 2013 hoping for further price drops on the forward market. When in May and June the price started to fall by another PLN 5/MWh, the market decided it was high time to start contracting. The trade volume was similar to that of 2011. July and August brought further declines by PLN 2–3/MWh. The prices in August dropped to the level of PLN 195/MWh. But the biggest surprise was yet to come. The price started to fall month by month by further PLN 5 or 10/MWh. In December, the settlement rate for the BASE_Y–2013 contract amounted to PLN 168.90/MWh. 2012 was also a year of increasing liquidity and transparency of the power exchange market. The most liquid contract in 2012 was an annual contract for block delivery in 2013. The trade volume on BASE_Y–2013 contract in all markets (TGE and trading platforms) reached 108 TWh and was lower by 10% than trade in the BASE_Y–2012 contract. Between January and July, the trade volume was lower by 25% than in the comparable period of the preceding year, however, between August and December, the volume grew by 50% compared to the corresponding period of 2011. Given such low prices, market players could assume that the price was as low as possible and that it would be better to contract at a two-year old level than miss a chance. This drove the transaction volume. Prices lower than PLN 180/MWh on the futures market were not seen even in 2009. In October, when statistical data for 2011 were published, and where the average cost of energy generation for professional power plants was at a level of PLN 174/MWh, the selling price below such cost was a bargain that couldn’t be missed. Such prices could force generators of the most expensive energy, whose generation costs were much above PLN 175/MWh, to buy cheap energy on the market instead of generating their own energy. The situation, however, may not last long. Such low wholesale market prices may make it impossible for power plants to offer energy at or below the production cost (in particular in the case of the least efficient production plants). Therefore, pressure may be exerted by less efficient energy producers on increasing such low price levels.
GREEN CERTIFICATE VOLUMES AND PRICE INDEX

Crisis on the “green” market

A large price decrease was observed throughout 2012. Between January and December, the price fell by PLN 100/MWh, i.e. by 35% compared to the baseline. The confusion on the market was caused by the legislators. The principles for awarding green certificates are yet unknown and the revenue of green power producers depends on the generation technology, while the Ministry of Economy is not responding to the ever increasing surplus of unredeemed certificates whose number growing month by month caused a significant drop in prices. Between May and July, a significant (49%) increase in the number of unredeemed Property Rights was observed and price decreases have been continuing since then. In the next two months, the price fell by more than PLN 30/MWh and the trend followed in subsequent months. Continued consultations and multiple changes of directions in works over so-called “Energy tri-pack” were a clear sign from the Ministry of Economy that there was no clear concept for resolving the problem of surplus Property Rights. In the fourth quarter, it was almost certain that the new law could not be passed before the end of the year, which only deepened market uncertainty and restlessness. The price slumped suddenly by another PLN 60/MWh and halted in December at an average level of PLN 186/MWh (lower by 35% than the substitution fee). If the provisions of the new draft RES Act were in force, investors would be assured that the legislator may exercise the right to increase the obligation level in order to manually reduce the surplus of rights and stop the price decrease. Unfortunately, before the end of 2012, no new law was passed, nor any information was provided on the expected date of its entry into force. Any possible quick legislation of one of the previously presented drafts must also wait for a notification of the European Commission, which means another six months of delay. Consequently, we may be sure that the following year will fail to appease investor concerns on the green energy market and if the current pace of price decreases is maintained, even adoption of the new law in 2014 may not suffice to save the green support system.
Collapse of the “reds”
The average annual price fell by more than 60%: from PLN 18.8/MWh in 2011 to PLN 7.5/MWh in 2012. The trade volume grew by more than 66% in the said period. For most part of the year, the price was maintained at a stable but low level of PLN 8–9/MWh. However, October brought a continued fall to the level of PLN 2/MWh, equal to 6% of the substitution fee (!), meaning that the rights have lost any value for investors. An increase in turnover between October and December was only a game of speculators who still expected that the support system would be prolonged, bringing exorbitant gains on their junk securities. What led to the collapse of the cogeneration support system? Certainly, one of the reasons was the cogeneration obligation expiring at the end of 2012, but it was also contributed by the lack of any information on the future of the support system. In the case of green certificates (whose obligation will expire at the end of 2017), we already saw a number of concepts prepared by the Ministry of Economy, some initiatives by Polish MPs or opposition parliamentary clubs that provoke much debate. As far as red and yellow certificates are concerned, however, we were not provided with any information whatsoever, not even whether the system will be upheld or not. The market was full of speculation while the price fell to the level of 30% of the substitution fee and remained at this level for most of the year. When it turned out at the beginning of the fourth quarter that the Ministry of Economy did not even have a single concept for the system, it became clear that the system will not be prolonged with undisrupted continuity (amendment of the law requires notification to the European Commission, and the entire procedure until the act enters into force lasts up to six months) as the system was to expire on 31 March 2013 and not much was being done about it in October last year. Some investors started to redeem their rights as the surplus of unredeemed rights fell since the beginning of the year by 15%, however, the level of unredeemed rights still remained high, i.e. at a level of 120% of annual production. The end of the year was marked by increased activity of the Ministry of Economy, which – realising it was unable to introduce any innovations in the cogeneration support system – tried to find a way to prolong the existing rules until 2015. This, however, required amendment of the Energy Law and introduction of a new regulation establishing a percentage share of the obligation. In order to accelerate the process, the Ministry of Economy combined amendment of the act with the regulation and intended – upon approval of the Prime Minister – to put the bill to vote in the Sejm to extend the validity of the existing principles. However, as it turned out, even such activity required notification to the European Commission, which delays the approval procedure by subsequent months. From 1 January 2013, market entities are no longer obliged to buy red and yellow certificates. Whether and on what terms the fees will be charges in 2013 (whether for part or for the entire period) will depend on the interpretation of the President of the Energy Regulatory Office (Urząd Regulacji Energii – URE). Therefore, any forecasts of the nearest future for these Property Rights must be considered more as guesswork and speculation than a reliable analysis.

“Yellow” Won’t Stir Emotions
Although yellow certificates are in the same situation as red certificates, for their future after 1 January 2013 is still unknown, they seem not to provoke much emotion. The average annual price in 2012 was higher by 0.5% than that of 2011 and reached PLN 124.6/MWh with the substitution fee for 2012 amounting to PLN 128.8/MWh. The price remained at a stable level as its volatility throughout the year did not exceed 3%. Starting from the second half of the year, we saw a gradual slight increase of the average price from PLN 122.5/MWh in May to PLN 125.8/MWh in December. However, 2012 brought a significant increase in the trade volume, which was almost three times higher than in 2011. As the yellow certificates market is small and has a marginal impact on the end user price of electrical energy, it does not stir emotions among investors as much as green and red certificates markets do. This is why it survived the legislative turmoil so smoothly.
COMMENTARY BY CHIEF STRATEGIC PORTFOLIO MANAGEMENT ANALYST, RWE POLSKA S.A. – SŁAWOMIR SKOCZEK

Can prices get even lower? Greece, Italy, Spain, euro, crisis: these words dominated the news in 2012. This was another year of Europe’s struggle with the problems of Greece, Spain, Italy and its efforts to maintain the Eurozone.

The initial attempts at resolving the situation by the governments of the strongest EU member states boiled down to injecting more funds into the Southern European countries in deep economic agony. However, the method could not be used endlessly and finally time came to start implementing some serious austerity measures. Consequences soon followed. Social turmoil, strikes, unemployment increase reaching even 25% in Spain and 26% in Greece were the outcome of the savings introduced. 2012 was another year of poor economic performance of EU member states and large global economies. The situation in the US is stabilising slowly while its GDP growth at a level of ca. 1.8% in 2012 seems a rather good result given the situation. China’s GDP at a level of 7.6%, only a dream for EU member states, seems quite poor for the Middle Kingdom (GDP for 2011 was 9.2%). We should remember that China consumes 50% of the global coal production, which means that the condition of the Chinese economy has a significant impact on commodity prices on global markets.

The Polish economy has been following global trends. There is one exception, however. As Poland is still a country that makes products of a relatively low level of technical advancement whose main asset is cheap workforce, we have been observing a reverse correlation between China’s GDP and Poland’s GDP. Therefore, poor condition of the Chinese economy at risk of a downturn (depleting stimulation potential, decrease of prices on the real estate market) may positively impact the growth of Polish GDP. Weaker China means cheaper commodities and poorer exports of Chinese products, which offers an opportunity for Polish exporters.

For markets important for the energy sector, i.e. coal, gas, CO2, 2012 was marked by dropping prices. Oil was the only commodity that sustained the falling trend. However, it was helped by the Iranian crisis and activity of the Saudi Arabia, which reduced its production (OPEC policy aimed at maintaining price levels).

Perspectives for energy sources are not comforting. Oil, now quite expensive, confronted with growing supply, high stocks and moderate demand, should get cheaper. An interesting phenomenon is regular growth of oil production in the US, which is estimated at a level of ca. 0.4 million of barrels per day. In the case of the US, we are witnessing a fuel revolution. After a spectacular success of shale gas, Americans
turned to shale oil. If forecasts are right, the US will become an exporter of black gold, which will change the global situation that has existed for decades. Coal prices should remain low. This will be supported by lower demand from China and low energy consumption (due to a sustained economic downturn). Despite Russia’s monopolistic domination, gas in Europe is getting cheaper, too. Low energy prices make it unviable to put expensive gas blocks into operation. This in turn leads to a significant decrease in the consumption of the blue fuel. In the case of gas, prices in forward contracts are calculated on the basis of oil prices. The expected oil price decrease and increased diversification of gas supply should eventually lead to a drop in gas prices. However, the CO2 market is unforeseeable as the price levels are determined on political grounds. The system foundations indicate a potential for further decrease, mainly because of significant surpluses on the CO2 allowances market. In March and April (planned date of EP’s work on the Directive amendment), we will see how effective the European Commission officials are and whether they can arbitrarily control CO2 prices. Taking account of all the factors that are important for electrical energy price levels, it may be assumed that the prices on the wholesale energy market will maintain their current level. Last year was marked by systematic slumps of energy prices (ca. 9% annually in Poland!). Prices fell to their lows (the base 2014 product is listed at a level of ca. PLN 166/MWh). Such levels no longer ensure profitability for more expensive producers and it seems that the potential for further decreases was exhausted. Low electrical energy prices mean fund- obtaining problems for investors. Implementation of some investment plans is being halted as they are no longer economically viable. Low prices axed investment projects at the Rybnik Power Plant and Ostrołęka Power Plant. The current situation, however, may not last in a longer perspective. Investment needs of the Polish energy sector are immense. Even if we assume that energy consumption remains at the same level and that the obsolete blocks that do not meet environmental standards will have to be closed after 2015, there still is a need for new power-generating capacity. Cheap coal, cheap emission allowances and relatively expensive gas put coal-fired blocks at an advantage (especially those fired with lignite). The gap will be partially bridged by RES. They are the energy sources that have recently been growing most dynamically. If investors in Poland follow similar behaviour patterns as German investors, we may expect capacity growth mainly in wind plants, and later on in photovoltaic sources. However, for such a scenario to occur, some favourable conditions for investors are necessary. One of such conditions is the expected implementation of the new RES Act, which has been anticipated for one and a half years.
CO₂ IS SUFFOCATING

CO₂ EMISSION ALLOWANCE PRICES ON THE EU MARKET
(FOREWARD CONTRACT DECEMBER 2012 AND 2013)

Material demand, mainly because of the dynamic growth of Asian economies. This translated into an increase of prices and then into record-breaking levels of investment in raw material exploration and production. In North America, high profitability of the fuel sector fostered important advancement in new technologies of extracting energy raw materials, a consequence of which was a significant drop in gas prices and growth of oil production in the last three years. The Persian Gulf countries could not remain idle in such a situation. The most recent OPEC report provides very interesting information with regard to the current situation. At the end of 2012, for the first time in several quarters, oil production fell in Saudi Arabia, which brought a decrease of production in the entire oil cartel. OPEC’s policy, which assumes controlling production levels, will impact further price fluctuations. If the prices start to fall because of increasing production of the US and Iraq that is slowly returning to global markets, the cartel will certainly respond in order to prevent price drops. It is much easier to justify coal or energy quotations where prices are shaped by more free-market factors. The level of prices is a result of the supply and demand game where there are no such strong players on the production side as OPEC is in the case of oil. The production policy of Persian Gulf countries and geopolitical situation in the world are not as important here. Decreasing coal prices demonstrate how much the global economic situation has deteriorated, mainly in China, as its appetite for raw materials was driving the economic situation in recent years. Coal quotations for 2013 traded in 2012 fell in comparison to those traded in 2011 by 2012 by more than 16% on average. The trend continues as the highest prices were reported in January last year and until December 2012, they dropped by almost 20%. Coal prices were generally followed by energy prices. However, decreasing raw material prices and deteriorating economic situation, followed by low energy consumption, are not the only reasons for falling energy prices on European markets. A significant growth in the share of green energy (that is produced in peak daily demand where the price is the highest) led to reduction in the output of the least efficient (an thus most expensive) conventional energy sources. In Germany, the average listing at the EEX exchange of the CAL13 product traded in 2012 fell compared to CAL12 traded in 2011 by as much as 12% (which was significantly contributed by solar energy panels that generated cheap energy at peak hours). A similar trend was observed in Poland where the average price of CAL13 in relation to CAL12 was lower by more than 9%. However, the scale of the crisis becomes clear when we look at the slump between January (average PLN 213.5/MWh) and December (average PLN 168.9/MWh), which reached almost 21%. Despite the fact that macroeconomic forecasts for Poland are not optimistic (much worse than 2012 performance) and the sentiments among investors are gloomy, with the PMI index at a level of 48 points, lower by more than 1 point vs. last year, it is hard to assume that such significant price decreases can be maintained in the months to come. Currently, the prices below PLN 170/MWh are at a level of medium costs of energy generation by power plants in Poland. More expensive producers could buy cheaper energy on the market. The situation thus may not last long. Given the investment requirements of the Polish energy sector, the price should be fixed at a low level for some time and then slowly start to grow to an average level of PLN 190–200/MWh.
When we compare the “December 2012” CO₂ emission contract price at the beginning of 2012 and the price on the last day of quotation for this type of contract, we can see that the price remained virtually unchanged at a level of EUR 6.5/t. However, 2012 on the emission allowances market was far from stable, which is visible in the price volatility between EUR 5.7–9.5/t.

At the end of January 2012, prices grew significantly as a result of a strong cold weather wave and increase in electrical energy prices. Increases were reported until the end of the first decade of February. News on another sale of allowances from the NER300 reserve caused a market adjustment that lasted until 13 February. From then on, the price of CO₂ emission allowances went up as the European Parliament Commission announced it would support withdrawal of some of the allowances from the market. It was rumoured that even 1.4 billion tons would be withdrawn. The prices went up to reach their high on 27 February at a level of EUR 9.51/t.

The beginning of March 2012 was a period of market recovery. Combined with decreasing oil prices, also emission allowance prices dropped. Polish objection to the EU plan on combating climatic change only deepened the market adjustment. At the beginning of April, prices reached their lows of ca. EUR 6.2/t. The market saw data from reports concerning emissions from specific EU instances, which confirmed a significant decrease of actual emissions as compared to forecasts. At the beginning of May, as a result of – among others – announced negotiation on the energy efficiency directive and possible EC intervention, the prices bounced back temporarily to a level of EUR 7.57/t.

June brought a change of trend: the price went up to reach the long unseen level of EUR 8.36/t at the beginning of July. The price was influenced by information on planned reduction of allowances in the following years. The second half of July brought a significant drop in CO₂ emission allowance prices. It was contributed by information from the EC on possible deadlines for introducing changes aimed at improving the situation (i.e. increasing prices) in the emission allowance trading system. Postponement of concrete actions translated into decreasing prices, which reached the level of EUR 6.59/t on 30 July.

Then we could see the impact of politics on the energy market as the EC proposed to amend the EU Directive on allowance trading in order to provide it with a possibility to control the supply in view of ensuring proper functioning of the market. EC’s statements caused an increase of prices, which was observable until the beginning of September.

On 7 September, the prices reached their local top at a level of EUR 8.38/t, and then started to fall until the last week of the month. The adjustment was also contributed by an announcement by the Dutch Ministry of the Environment of their objection to the EC’s intent to postpone some allowances to a later date and a statement by Russia in which it said that it would not be implementing reduction targets arising under the Kyoto Protocol following 2012. Between the beginning of October and the first days of November, the prices followed a side trend, oscillating at a level of EUR 7.7–8.3/t. Slight price fluctuations were a response to rumours on the future model of the ETS and the sale of reserve units from NER300.

After 25 October, i.e. following the meeting of EU Ministers of the Environment and announcement of the common EU position for the UN climate conference in Doha, the prices rose again until 12 November and attained the February level of above EUR 9/t. However, a sudden change came. Within just a few days, the prices slumped to EUR 6.7/t. The reason was announcement by the EC of its report on the CO₂ market, in which it said that the surplus of allowances on the market was significant and that it exceeded previous estimates. In the last week of November, the prices stabilised for a short time, and then started to fall to their annual low of EUR 5.72/t on 4 December. At that moment, the market was aided by the UN climate conference in Doha. Moderate optimism surrounding the agreement of members of the climate summit was reflected in a price increase. The market was strong enough to continue the trend until 10 December. Information on the planned volumes of EEX and ICE auctions in 2013 were published (almost 820 million of new allowances) and continuing allowances surplus on the market brought the prices down again until the end of the “December 2012” contract listing on 17 December. If we take a look at the CO₂ allowances market in 2012, we might say the market would be predictable and dull, but for political decisions. The EC was effective in scaring the market until mid-November. Then it turned out that the market has some serious faults which may not be remedied in a simple way. EC’s attempts at transferring some of the allowances to a later period proved ineffective because of significant surpluses and the need to introduce legislative changes beforehand. What should the emissions trading market expect for the future? If the EC pushes the legal changes through, it will certainly temporarily attain its goal, namely an increase in emission prices. However, this may not be the target solution as the mechanisms that are currently in force in Europe have a negative impact on each other. On one hand, the EU supports energy efficiency and RES technologies that lead to emission reduction but on the other – it is trying to manage the emissions by maintaining their high prices. An interesting solution seems to be a system of referencing the best technologies available (i.e. benchmarking). Also, solutions promoting “bio” materials (biomass, biofuel) should be reviewed again. It turns out that when we take account of the carbon footprint when they are processed into energy, the use of some of them is unreasonable.
POLITICS AND ECONOMY VS. ENERGY PRICES
Excise duty on coal and coke used for heating purposes entered into force. Its rate depends on the calorific value and equals on average ca. PLN 30 per ton. Coal for electrical energy production and coal for households are exempted from the excise duty.

Polskie Górnictwo Naftowe i Gazownictwo will finalise acquisition of the Warsaw-based heat producer Vattenfall Heat Poland (VHP). The transaction value is PLN 3,016.7 million.

The EC is extending the review of Poland’s application for free CO₂ emission allowances for power plants after 2013 until mid-July.

PGE Elektrownia Opole signed with a consortium of Rafako S.A., Polimex-Mostostal S.A. and Mostostal Warszawa S.A. an agreement for the construction of two power blocks of a total of 1,800 MW available capacity. The net value of the contract is PLN 9.4 billion. The blocks are to be commissioned for use in 2017-2018.

According to an estimate of the Polish Geological Institute, Polish shale gas resources are smaller than estimated by Americans and amount to 350-770 billion cubic metres.

The EC is seeking help for falling CO₂ prices. In view of rehabilitating the emissions market, the EC is planning to reduce the supply of allowances on the market after 2012.

The CHP plant in Stalowa Wola signed a contract with the Spanish company Abener, the general contractor for the gas and steam block. The contract, whose net value is PLN 1.57 billion, concerns Poland’s largest gas CHP plant of 449.16 MW available capacity. The project is being implemented by Grupa Kapitałowa PGNiG and Grupa Tauron. The investment is due for completion at the turn of 2014 and 2015.

Polka Grupa Energetyczna loses dispute with the Office of Competition and Consumer Protection (UOKiK) concerning the acquisition of Energa, as upon concentration, PGE would achieve a dominating position on the domestic energy sales markets.

Polka Grupa Energetyczna decided not to appeal against the decision of the Court of Competition and Consumer Protection and abandoned the acquisition of Energa.

The EU Court of Justice confirmed EC’s loss in its dispute with Poland concerning CO₂, which resulted from the imposition on Poland of a reduced limit for CO₂ emissions for years 2008-2012.

The European Commission wants to make the excise duty dependent on the volume of CO₂ emissions. Pursuant to EC proposals, energy carriers would be subject to a duty combining two components. The first component would amount to EUR 20 per ton of CO₂ emitted, and the other would depend on the calorific value of fuel and would amount to EUR 9.6 per GJ for engine fuel and EUR 0.15 per GJ for heating fuel. Warsaw, Berlin and London oppose to the new energy tax.

Poland is the only EU member state to veto again on the plan for emission-free energy generation until 2050. Poland could not agree to the EU’s proposed solutions as they would be harmful to our industry.

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RWE opened a wind farm of 14 WM available capacity in Krzećin (Zachodnipomorskie Voivodeship). The farm made up of 7 wind turbines will generate ca. 30,000 MWh of electrical energy annually, and supply ca. 15,000 households.

The Ministry of Economy published its draft act on RES. The Ministry’s plans assume that green energy generation will be supported only for 15 years, except for co-combustion, which will be supported for 5 years. The new legislation will cancel support for old hydropower plants. In addition, the draft assumes that the rights to obtain green certificates will be taken away from producers who sell their energy above the official guaranteed price.

RWE Renewables Polska acquired the wind farm in Taciewo. The farm is made up of 15 wind turbines of the total installed capacity of 30 MW. The annual energy output exceeds 65,000 MWh.

The common energy market of the Czech Republic, Hungary and Slovakia based on the market coupling mechanism was launched.
**KEY DATES OF 2012**

**10 OCTOBER**
- The Ministry of Economy developed a draft implementing act containing proposals regarding the so-called Energy Tri-Pack.
- ZE PAK is first listed on the Warsaw Stock Exchange. The ZE PAK stock price for individual and institutional investors was set at PLN 26.2.
- There is a new version of the Gas Law. The Ministry of Economy’s proposal for the exchange obligation assumes selling 70% of the gas from PGNiG through the exchange.
- The Ministry of Economy completed work on the draft act on renewable energy sources.
- Another version of the draft Energy Law was published.
- On 19 October, a parliamentary bill amending the Energy Law, so-called “small tri-pack”, was put forward.

**11 NOVEMBER**
- PGNiG signed an agreement with Gazprom concerning a change in gas prices. The agreement assumes a decrease of the gas price by more than ten per cent.
- The European Union and Australia undertook efforts aimed at establishing world’s largest emission trading system. With an intercontinental platform for exchanging emission allowances, entrepreneurs will be able to use Australian and European units on equal terms in both systems.
- The European Commission proposed to delay the auction of 900 million CO₂ emission allowances. The EC is thus aiming to remedy the surplus and the resulting low price of allowances in the European Emissions Trading Scheme (ETS). The EC announced further action, including removal of some allowances from the market.
- The Ministry of Economy presented a new version of the regulation governing the minimum required share of energy from renewable sources. The obligation will be higher and amount to 12% in 2013. The Ministry of Economy decided to extend the support horizon until 2021.

**12 DECEMBER**
- An agreement was reached at the US Climate Conference in Doha concerning the extensions of the Kyoto Protocol until 2020, i.e. until a new agreement enters into force. The agreement must be concluded until the end of 2015.
- The Energy Regulatory Office approved reduced gas tariff for PGNiG. The new tariff entered into force on 1 January 2013. Gas prices will be reduced by 2–4% for the industry and ca. 10% for individual users.
- On 12 December, the Polish Energy Exchange (TGE) launched a gas trading platform – it is a historical event for the Polish energy industry.
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RWE POLSKA PRODUCT RANGE
BASED ON MARKET MECHANISMS
RWE POLSKA PRODUCT RANGE

Target price
The client enters into an agreement where they define satisfactory electrical energy price levels and indicate the volume they want to buy. RWE Polska undertakes to purchase energy at the price that is satisfactory for the client and that will be guaranteed throughout the agreement term. If the market situation does not allow to purchase energy within the set timeframe and at the agreed price, then the agreement between RWE Polska and the client will be terminated without consequences for any of the parties.

Purchasing in batches
In this model, energy purchases are spread out over several batches, so as to take opportunity of favourable market conditions. This allows clients to diversify energy purchasing costs and minimise the risk of price volatility on the wholesale market.
- for companies consuming more than 10 GWh annually

Full supply
Full supply protects clients against price fluctuations on the wholesale market, allowing long-term corporate budget planning. The product enables to control the expenses and ensures stability of next year’s energy supply, at the same time protecting the client against possible price increases.
- for companies consuming more than 1 GWh annually

Spot energy purchase
Purchase at the Day-Ahead Market prices. The sales agreement and base energy purchase are signed for a specific agreement term, e.g. a year. The client may decide to purchase energy on the spot market at any time, according to their need and at the most favourable moment. The price per MWh on the invoice received is the average from transactions performed.
- for companies consuming more than 50 GWh annually that forecast their daily-hourly energy consumption

RWE Polska provides every client with a dedicated account manager who will provide professional advice when using any of the above products.

CONTACT US:
RWE Polska S.A.
T (22) 821 39 39
E oferty@rwe.pl
www.rwe.pl

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