ELECTRICITY AND GAS MARKET IN POLAND
Status on 31 March, 2016
TOE Report

Warsaw, 20 April, 2016
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Electricity and Gas Market in Poland; Status on 31 March, 2016, hereinafter referred to as the ‘TOE 2016 Report’ or ‘the Report’, summarises key developments in Poland’s electricity and gas market between January 1, 2015 and March 31, 2016 with data and statistics for full calendar year 2015.

As in the previous reports since 2009, ([23]-[28]) this TOE 2016 Report invariably focuses on issues which are relevant for the Association of Energy Trading or TOE and its supporting members (electricity traders) and ordinary members (private individuals).

Section II offers TOE comments on what it believes were the most important measures and developments in the electricity market in the period at hand. In 2015 and in early 2016, several important documents were approved or are still in consultation which TOE believes have or may have a major impact on Poland’s electricity market, in particular on electricity trade. Section II makes an assessment of each of the documents and their relevance for the trade sector.

Section III traditionally summarises the price evolution of electricity and certificates of origin in 2015 in the Day Ahead Market, Derivatives Market and Property Rights Market and the global energy price environment.

Section IV outlines developments in the gas market and is divided into four sub-sections: Retail Gas Market, Gas Trading at TGE and Barriers to Gas Market Growth in Poland and Market Environment.

Short- and long-term recommendations are outlined in Section V. These are measures believed by TOE to be worth implementing to further strengthen the electricity and gas market in Poland.

Terms and acronyms are explained in Section VI and Section VII quotes references.

Section VIII lists the current membership of the TOE Management Board.

Finally, the authors of this Report are listed in Section IX.

The TOE 2016 Report relies on data and knowledge available to the authors on 31 March 2016. Ever since 2009, the Report has been published regularly in the first half of each calendar year.
The key developments and planned measures in the electricity market in Poland between 1 January, 2015 and 31 March, 2016 are summarised in the table below.

As in our previous reports, the summary mainly presents the developments in the wholesale market, sale of electricity to end customers, power interchange and the gas market.

Whenever any of the three areas were interlinked with other nodes of the entire electricity buying and selling cycle such linkage was highlighted and implications for the other segments of electricity value chain (generation, distribution and end-customers) were examined.

The following part of this Section provides a short background and evaluation of each of the measures presented.
**Table 1. Key Developments (Planned or Completed) on the Polish Electricity Market between 1 January, 2015 and 31 March, 2016**

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<td>3. Amendment of Energy Efficiency Law in December</td>
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<td>4. ebIX-based Polish Electricity Business Information Exchange</td>
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<td>5. Prosumers: new players in the electricity market</td>
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<td>6. CO2 Allowance Market vs. Electricity Market</td>
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<td>7. Financial Instruments at TGE</td>
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<td>8. System Interchange: selected aspects</td>
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<td>9. Operational Capacity Reserve and Intervention Cold Reserve</td>
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<td>10. EU Framework: ENTSO-E Network Codes</td>
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<td>11. EU documents and measures in financial markets (EMIR, MiFID 2)</td>
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<td>12. Impact of REMIT on market players (transaction data reporting under REMIT)</td>
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<td>P2 Modification criteria for electricity market architecture in Poland</td>
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<td>P3 Audiovisual fee — linkage to electricity model</td>
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Legend:
N neutral
- negative impact
+ positive impact
+/- mixed impact depending on criterion
* uncertain implementation

Follow-up measures covered by the TOE 2015 Report are marked in red.
Proposed/planned measures submitted before March 31, 2016 are marked in blue.
ERO continues to regulate household tariffs (Group 'G') used by certain energy companies on the same terms and conditions as in the previous reporting period. According to the regulator, this policy is designed to help protect households from unreasonable price hikes.

Meanwhile, there have been some positive new developments regarding Group G tariffs. Sales offers other than electricity tariffs may now be used by energy companies with customers for whom such energy companies are ex officio retailers. In general, ERO President has found it acceptable should companies were to conclude sales contracts with customers on terms and conditions other than tariffs provided such customers have been informed about the available tariffs. The electricity market players have welcomed this policy. Retailers, including those that had what is known as the 'tariff obligation' can now effectively offer their products to customers who have not switched suppliers. Hence, companies can offer better and more personalised deals to wide customer groups. This was not an option in the past because offering products other than tariffs to customers in the DSO's 'home territory' was not allowed. This new approach has clearly contributed to more market competition for the benefit of consumers and has shifted the market closer to full liberalisation.

However, customers are likely to migrate from tariffs to other products and we believe it is essential that tariffs should be reviewed. They have not been reviewed for a number of years even though the retail market has developed rapidly. Some of the practices and procedures are viewed as obsolete and are hardly acceptable in the new commercial environment.

TOE is committed to engage in a dialogue with ERO to develop an approach which balances interests of all parties, protects consumers and secures profits to businesses.

It must be reiterated that tariff regulation is a serious constraint to the electricity retail business.

Conclusions

The industry welcomes the option to offer electricity products other than tariffs that is now available to companies that do have such approved tariffs. We feel this is a positive trade-off and future policies of both ERO and retailers should reduce the tariff to a product offered to a limited number of customers who do not intend to switch their supplier or other customers who are otherwise not eligible to buy any non-tariff products.

TOE strongly believes all policies should ultimately lead to the full deregulation of tariffs and the liberalisation of electricity tariffs for households.

TOE expresses its continued commitment to engage in all other measures that protect vulnerable customers and prevent fuel poverty.
The Law of 20 February 2015 on renewable sources of energy (Renewable Energy Law) [7] was presented in detail in our report in 2015. While some provisions of the law entered into force on 4 May 2015 the most critical clauses in Chapter 4 (e.g. auction system) have not yet become binding. Originally, there were to become law on 1 January 2016. In the light of the developments in the troubled coal industry and a weak business case for coal-fired electricity generation government policies will directly determine the extent to which renewable energy sources will be promoted. Such sources have increasingly won the market competition with conventional technologies. Chapter P4 outlines the proposed modifications in the Renewable Energy Law.

In its original draft, the Renewable Energy Law contained a number of unclear definitions and provisions. It was obvious material corrections must be made in the law. Initially, the Ministry of Economy (MoE) did announce that work would soon begin to amend the law. TOE submitted critical comments that had been developed with our Members.

This chapter will highlight some of these comments.

The new auction system was tested in the sector in May 2015. There were serious problems with the viability of bids. There is no mechanism to validate prices against minimum investment costs. On occasion, bids came close to 240 PLN/MWh for wind units of more than 1 MW. With prices so low, the viability of the project could be at stake. This would compromise the implementation by Poland of its commitment to the EU 2020 target of 20 percent of renewables in the energy mix. On the other hand, pressure on prices would push most investors off the market as the risk of not making a business case in the market would be to high.

The process of monitoring the growth of installed capacity in renewable energy micro-installations up to the statutory thresholds, inspection procedures and new ERO responsibilities have been simplified. Feed-in tariffs have been introduced for certain renewable energy technologies, in particular solar energy. The tariff ranges from 0.64 to 0.75 PLN/kWh for installations up to 3 kW and 0.49 - 0.65 PLN/kWh for installations of 3-10 kW. New provisions have been designed to facilitate registration of micro-installations. ERO is required to report the number of such installations to help determine the time for reaching the installed capacity thresholds: 300 MW for installations of up to 3 kW and 500 MW for installations of up to 10 kW. Maximum annual amounts of electricity to be purchased from micro-installations by retailers has also been defined.

The amended legislation has increased the net rate of the renewable energy source fee from 2.51 PLN/MWh to 4.01 PLN/MWh. Environmentalists and producers of energy from renewable sources were critical of this change in the consultation process stating the change went much beyond the original proposals that were expected to clarify the interpretation of the bill.

The consultation process has revealed crucial problems with the quality and complementarity of the new provisions. Some analysts have claimed that the amendments proposed by MoE will make it impossible for Poland to use the feed-in tariff system to reach the statutory micro-
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installation capacity target of 800 MW. Ultimately, the amendment did not get through to the parliament. A new amendment was proposed in July. The amendment (known as 'small') of the law was finally passed in December 2015.

'Small' Amendment of the Renewable Energy Law in December 2016

The auction system that was supposed to replace 'green certificates' has not be launched under the Renewable Energy Law. Chapter 4 provisions will enter into force six months later to allow existing projects to be completed under old or new terms and conditions. The enormous oversupply of property rights linked to renewable energy sources of over 20 TWh is likely to grow even further, which will bring down the PMOZE_A prices, thus significantly reducing the profitability of 'green' projects. On the other hand, the postponement of the auction system is necessary to remove a major defect from the legislation, i.e. the exemption of the said chapter from the EC notification obligation. In fact, the provisions that have been exempted secure state aid to renewable energy sources.

Conclusions

The adoption of the Renewable Energy Law is an important step towards replacing the existing support system that is incapable of generating adequate market stimuli to guarantee the sector's sustainability. It must be observed, however, that the law has not been enforced because of its inconsistencies and interpretation issues concerning its key provisions. The delayed launch of the auction system until 1 July 2016 decided by parliament in the the December amendment appears to have had a detrimental effect on the existing system. The supply side has increased but no provisions in the system support the elimination of the surplus of certificates of origin. It is hoped that the decision of the Ministry of Energy, if any, will provide a reasonable tool to 'adjust' the demand so that the additional financial support for renewable energy sources ensures enough profitability to stimulate a sustainable development of the renewable sector.

3. Amendment of Energy Efficiency Law in December

Electricity and Gas Market in Poland. Status on March 31, 2016. TOE Report by 31 March 2016 will expire on 1 April 2016. The former Polish government and parliament did not pass the new law nor did they amend the existing one [12] to extend its validity and comply with the new directive [1] that was published on 14 November 2012 and entered into force on 4 December 2012, with Member States having to transpose it to national legislations by 5 June 2014.

The new parliament enacted a law amending the Energy Efficiency Law on 29 December 2015 [8]. The major goal of this legislation is to ensure a system of support for energy efficient projects in 2016. Meanwhile, it will be essential to adopt a new system to support efficiency in compliance with the EU Directive [1]. The amending legislation [8], which entered into force on 31 December 2015, has extended the energy efficiency certificate system by another year. The amended Article 27 Paragraph 7 provides that white certificates that have not been redeemed by ERO by 31 March 2017 will expire under law on 1 April 2017. For the purpose of calculating the amount of primary energy corresponding to the value of the energy efficiency certificate to be obtained and redeemed by entities referred to in Article 12 Paragraph 2 of the amended law in Article1, the Law [8] has specified a rate of 1.5 per cent for 2016.

**Conclusion**

Even though work continued in 2015 on a new energy efficiency law (see Chapter P1), the draft had not been discussed in Parliament by the end of 2015. Therefore, parliament adopted a law amending the Energy Efficiency Law on 29 December 2015 [8] in order to ensure a system of support for energy efficient projects in 2016. The amending legislation entered into force on 31 December 2015 and has extended the energy efficiency certificate system by another year. This will allow the adoption of a new Energy Efficiency Law. TOE is involved in drafting the new legislation.

**4. ebIX-based Polish Electricity Business Information Exchange**

In 2014, Poland launched a project to develop an ebIX-compliant business information exchange model for domestic electricity market players. PTPIREE has lead the process and it has involved consultations with electricity traders, including TOE. TOE welcomes the concept of a single cohesive model of data exchange between energy market players. There are still outstanding details that require further discussions.

The following are the major outcomes of the project in:

- Final version of the Polish Electricity Business Information Exchange Model compatible with the ebIX standard was published on 26 May and later revised on 23 June 2015;
- Central Business Exchange Standards were published (CBES) on 23 June;
- The launch of the technical dialogue regarding the design, deployment and maintenance of CBES the retail electricity market in Poland was announce on 13 July;
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- Draft amendments of IRiESD implementing CBES in the retail electricity market developed and DSOs completed consultations of IRiESD update cards in mid-2015, ERO approved updates in early 2016.

CBES is to cover the exchange of information between DSOs, electricity retailers and entities responsible for commercial balancing (CBs). The types of information will include supplier switching, metering and billing information and power outages. It is supposed to be built by five DSOs (ENEA Operator Sp. z o.o., ENERGA OPERATOR S.A., PGE Dystrybucja S.A., RWE Stoen Operator Sp. z o.o., TAURON Dystrybucja S.A.) as 'a tool supporting the retail segment of the electricity market". The system is expected to be a communication hub between retailer market participants. Data storage and processing are the responsibilities of DSOs/sellers; CBES will provide a single uniform data exchange standard, which will make communication more effective and fasters. According to the Model, CBES will use ebIX, an international standard developed by ebIX Forum, and will support an automatic data exchange using standard format messages.

Furthermore, PDPs (power delivery points) will be renumbered according to new rules outlined in IRiESD, as requested by the trade sector for a long time. According to IRiESD, DSOs will inform retailers about the effective date of new PDP format with 180-day notice.

**Conclusions**

The Polish Electricity Business Information Exchange Model compatible with the ebIX standard and the published Central Business Exchange Standards (CBES) are expected to support an automated exchange of information and data using standard electronic messages between participants of the retail electricity market in Poland. The types of information will include supplier switching, metering and billing information and power outages. TOE members have been involved in this DSO-led initiative from the very beginning by reviewing proposals and actively participating in consultations. The quality of the model and detailed mechanisms will have a critical impact of the quality of data exchange in the electricity market.


Following over three years of debate, the Polish Parliament enacted the Renewable Energy Law on 20 February, 2015. The new law was expected to make a significant change in the way renewable energy sources were to be promoted in Poland from 2016 onwards. This was to apply to consumers who generate electricity or prosumers.

The new renewable energy sources legislation provides detailed rules for micro-installations of up to 10 kWe commonly referred to as prosumers. There are two categories of prosumers under the legislation: (1) units up to 3 kWe and (2) units of over 3 kWe up to 10 kWe of
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installed capacity. The obligated seller must purchase electricity from a renewable source micro-installation for 15 years, counting from the date of commissioning of such a micro-installation. Obligated sellers will be compensated for losses on such transactions. Depending on the capacity and type of source, feed-in tariffs are determined in the legislation for the obligated seller:

- Up to 3 kWe: hydro, onshore wind and solar energy – PLN 0.75 per kWh;
- Over 3 through to 10 kWe: hydro, onshore wind and solar energy – PLN 0.65 per kWh, agricultural biogas – PLN 0.70 per kWh, landfill biogas – PLN 0.55 per kWh, treatment plant biogas – PLN 0.45 per kWh.

These feed-in tariffs will apply until the total capacity of commissioned < 3 kWe units exceeds 300 MWe and the total capacity of commissioned 3 – 10 kWe units exceeds 500 MWe. The tariffs may be changed upon exceeding these thresholds or as a result of an ordinance issued by the Minister of Economy. This creates a high degree of investor uncertainty which may slow down growth in the number of such power units. Notably, the amendment of the Renewable Energy Law passed in December 2015 [7] has ‘deferred’ feed-in tariffs until July 2016.

Another form of support is the absence of licensing of micro-installations. Instead, the DSO must be notified of any micro-installation and its installed electrical capacity. The Renewable Energy Law [9] stipulates that no business of electricity, heat or cooling generation from renewable energy sources that in a small installation will require any licensing but instead must be registered with ERO.

In addition, the legislation has introduced net metering (this is one of the few provisions of Chapter 4 that did enter into force on 1 January 2016). The principle has raised concerns in the energy sector, including TOE, ever since it was proposed. According to the principle, the difference between the amount of electricity extracted from the grid and the amount of electricity supplied to the grid will be accounted for every six months. These transactions do not cover the payments for electricity distribution.

Refer to Chapter P4 for further information about the proposed amendment of the Renewable Energy Law.

Conclusions

On 20 February 2015, following several years of discussions and arrangements at different levels, including the Sejm and Senate, the Sejm adopted the final draft of a brand new law on renewable energy sources. The law was expected to significantly reform the existing model of support for new renewable energy sources in Poland which retaining the existing system for ‘old’ installations producing electricity from renewable energy sources. One important modification that caused a controversy during the parliamentary process (on the grounds that there was no consistency with the remaining part of the law and the provision itself was not clear) was the introduction of feed-in tariffs for micro-installations with an electric capacity of up to 10 kWe and six-monthly payments that are supposed to increase the level of support for such...
Electricity and Gas Market in Poland. Status on March 31, 2016. TOE Report installations, which was supposed to generate a growth stimulus for the prosumer sub-sector in Poland.

6. The CO₂ Allowance Market versus the Electricity Market

2015 was the third year of the 3rd Clearing Phase of the EU ETS in 2013-2020. An upward trend with respect to the price of allowances started in 2014 and persisted ever since. Its power was nearly identical as two years before. Again, the key factors that affected the growth in the price of EUAs included political developments and the intense efforts by the European Commission to reform the EU ETS. The EUA prices fell dramatically at the beginning of 2016 (as presented in the chart below), which was correlated with the falling prices of European electricity, oil, gas and utility coal futures.


Several major modifications were made in 2015 with respect to decisions made by the European Commission in 2014:

- In May 2015, following long tripartite negotiations, the Council of the European Union, the European Commission (EC) and the European Parliament agreed to implement the Market Stability Reserve (MSR). According to the final arrangement, MSR is to become operational in 1 January 2019. This announcement caused the price of allowances to go up to 7.50 €/MgCO₂.

- The launch of MSR in 2019 was finally approved on 8 July 2015. The price of CO₂ emission allowances reached its 2.5 year record high at 8.15 €/MgCO₂ in mid-July.
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- In July 2015, the European Commission also published the proposed amendments of the Directive on the EU ETS in 2021-2030. In order to meet the 2030 emission reduction target of 43 per cent in ETS the linear reduction coefficient would be increased from 1.74% to 2.20% per year.

- EC announced the complete schedule of allowance auctions for 2016 at the end of November 2016. Auctions will again take place at EEX and ICE. Poland will sell over 40 million allowances in 2016, which is more than twice as many as in 2015.

- Following two weeks of hard talks, a historic international climate agreement was announced at the end of the 21st Climate Conference in Paris on 14 December 2015. The proposed reduction of global temperature growth at much below 2.0°C the commitment of the parties to achieving the greenhouse gas emission summit 'as soon as possible' have been interpreted in a number of ways. The EU has been working since the beginning of 2016 to develop a set of proposals on how to include the Conference recommendations in EU climate objectives in 2020-2050.

The EU ETS has seen another decrease in issued allowances by an estimated 0.6 per cent in 2015 against 2014, which is below the consensus which was marked by a slight increase. Apparently, CO₂ emission has not been reduced as visibly as in 2013 (decline by 4.5 per cent).

While the share of renewable energy sources in Poland’s energy mix has grown steadily the purchase price of EUAs, being one of the variable costs of generation, continues to strongly affect the price of electricity sold in the wholesale market.
Conclusions

Prices of CO2 emission allowances had a weaker impact on electricity prices in Poland in 2015 than in previous years. Given the structure of the Polish generation subsector the impact is likely to be greater in the coming years as the number of free allowances is diminished. By intervening in the EU ETS, the European Commission has been trying to trim the surplus of allowances, which has caused the surplus to shrink from about 2.07 billion tonnes in 2014 to 1.6 billion tonnes in 2015. In addition, according to official statements made by European Commission officials no further interventions in the current phase of EU ETS is planned until the Stability Reserve mechanism is enabled in 2019. 2020 price projections of CO2 developed by leading EU ETS analysts and published in February 2016 envisage a stable continuation of the upward trend until prices reach values between 10 €/MgCO2 up to 22 €/MgCO2 in 2020.

7. Financial Instruments at TGE

The Energy Commodity Exchange or Towarowa Giełda Energii S.A. (TGE) launched the Financial Instruments Market (FIM) on 4 November 2015. FIM will support the trade in TGe24 electricity price futures known as the Day Ahead Market.

On Day One, 2 transactions were completed at FIM for the January future contract (F_TGe24_M-01-16) with a volume of 1,488 MWh and a value of PLN 231,012. The daily settling price was 155.25 PLN/MWh.

By the end of Q1 2016, these were the only transactions concluded since the FIM launch. There are possibly several reasons for this:

- The system of fees and charges makes hedging transactions unattractive at FIM versus forwards at the commodity futures market;
- 'Internal competition of markets' within TGE: a liquid futures market with 3 market animators and fewer formal requirements versus a 'startup' (FIM);
- No FIM market moderator;
- No liquidity, which puts off potential FIM market entrants;
- Changing attitudes to risk in financial institutions (potential FIM market players) and limited proneness to speculative behaviours (MiFID II).
- Formal barriers: transactions completed via stock brokers (commodity exchange broker is no longer an available profession in the commodity market).
Conclusions

TGE might take extra steps to make FIM a more attractive market proposition and ensure adequate liquidity levels. This is essential in the context of the growing share of OTC transactions in energy trade. Furthermore, if is to develop as a hedging tool for market players the fee system and possibly the product offering (e.g. gas) should be revised.

8. System Interchange: Selected Aspects

TSO continued its re-despatching activity throughout 2016. This mostly entailed purchasing energy in the Polish balancing market to limit the unscheduled flows on synchronous links. This often radically pushed up prices in the balancing market and thus in the Polish spot market. In response to measures taken by TOE and other stakeholders, TSO provided a thorough explanation and started publishing structured power interchange data. TSO’s measures could be seen as radical because re-despatching often increased otherwise high spot prices on the Polish market. TSO argued that interchange measures were an ‘absolute priority’ of all the tools available to operators.

Revised IRIESP that became effective on 1 January 2016 outlines new terms and conditions offered by the TSO to ensure that re-dispatching has no effect on prices on the balancing market (BM). In particular, no interchange activity should have a major impact on the demand in the Polish system that is used while calculating the BM price. This is a reasonable arrangement because it will eliminate price volatility caused by operators rather than the fundamental interplay of energy supply and demand. Meanwhile, this approach does not solve the problem of the extra load on the Polish system as a result of re-dispatching.

The Energy Trade Association (TOE) welcomes PSE’s efforts aimed at increasing electricity imports from the western and southern regions. However, the level of available transmission capacity is still deemed insufficient. Following the launch of the virtual phase shifter TSO declared readiness to provide import capacity on the Polish German border it was offered only sporadically. The situation is likely to change after a physical phase shifter is enabled in Q2 2016.

ENTSO-E and ACER are still assessing the effectiveness of bidding zones in Europe. While the project is still under discussion it must be emphasised again that splitting Poland into two or more bidding zones could be risky.

The connector between Poland and Lithuania was activated in December 2015. The cross-border capacity of this connector will be available on the same terms and conditions as the Swedish line (implicit auction in the market coupling model). The system is efficient, market coupling is not controversial on the Day Ahead Market but consideration should be given to releasing capacity also monthly, quarterly and annually on the limited PTR basis (physical transmission rights) as is the case on the Estonian-Latvian border or on the basis of financial transmission rights (FTR).
Conclusions

Special attention must still be paid to any measures that could lead to the emergence of more than one bidding zone in Poland. There are major concerns regarding this matter among the participants of Poland’s electricity market. It is vital that TSO and ERO should work closely together on this front. Poland should seek to co-ordinate its position vis-à-vis foreign institutions as much as possible.

When enabled, phase shifters are likely to have a considerable impact on the Polish electricity system. Improved import capabilities and a greater degree of control over loop flows will contribute to improved system security. By neutralising the price impact of re-dispatching it will be possible to reduce the risk of turbulent short term price volatilities.

The Operator’s proneness to offer long limited import capacities must be carefully observed.

9. Operational Capacity Reserve and Intervention Cold Reserve

In the context of falling market prices and the TSO's concerns about the loss of its ability to effectively balance the system in certain seasons in the future, Poland launched the Operational Capacity Reserve (OCR) mechanism at the beginning of 2014. Originally, this was meant be an interim measure before the launch of the capacity market. Under OCR, payments are made for a generation capacity reserve to be maintained by operators. In principle, these payments should cover at least some of operators' fixed costs. No modification of the existing Energy Law was required which was a major advantage of this interim measure. Apparently, the mechanism is not perfect, however, and it has been modified a number of times.

Update Card No. CB/14/2015 (System Balancing and Constraints Management) to the Transmission Grid Operation and Maintenance Instruction was published in December 2015. Modifications introduced by the Card include: (i) revised OCR payments and (ii) terms and conditions of Intervention Cold Reserve.

Two additional methods of OCR payments have been added. One is a supplementary monthly payment and the other is a supplementary annual payment. Both relate to the distribution of the unused 'saved' OCR resources within a year. Monthly payments relate to the unused resources in the Operational Capacity Reserve budget (BGOR) within daily clearing each month; annual payments generators receive unused monthly balances that are a eligible costs of acquiring the reserve within the TSO tariff. The efficiency coefficient applicable by the end of 2015 (0.93) that was applied to determining the CRRM price has been set at 1.00. This will bring the price to 41.20 PLN/MWh in 2016.

The Intervention Cold Reserve (ICR, RIZ) introduced at the beginning of 2016 uses selected active TSO Schedule Units (JGOSP). The total generation capacity of units that provide this

1 Update Card No. CB/14/2015 IRIESP – System balancing and constraints management, 2 December 2015, p.2
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service is 830 MW. These units will be scheduled as last to be enabled for the purpose of balancing the National Electricity System. Payments for the electricity delivered to BM by JGOSP are based on variable generation costs in these units, including the cost of CO2 emissions, start up costs and the price of forced generation. For the purpose of determining the deviation price or the CRO price the disposable generation capacity of service ICR service providers are represented with a maximum rate at BM, i.e. 1,500 PLN/MWh. Units that deliver the intervention operation service operate under the same rules. The CRO prices is affected by the corrected balance of interchange and electricity used for pumping in pumped storage facilities.

TSO has argued that ICR will allow capacity to be reserved whose nature and generation costs can meet the needs of balancing the system. This is why this capacity is priced at the maximum allowable CRO price level at BM

The Intervention Cold Reserve is made up of units that are scheduled for closure in 2016 in accordance with relevant agreements, derogations from the Industrial Emission Directive (IED). These derogations define the working hours that remain until the unit is decommissioned which will be used for the purpose of delivering the ICR service. This service is delivered in accordance with contracts concluded by PSE with generators in 2013 and 2014 and they will be effective in 2016-2019, as appropriate. Units that are contracted to deliver ICR will be enabled upon instruction of the Operator exclusively at times of capacity deficit. In return, PSE will pay the unit owner for keeping them in operation and for achieving the required active power load and the supply of a certain amount of electricity within a specified amount of time.

In 2016, the budget earmarked for OCR payments amounts to nearly 500 million, which is more than in 2015 by approximately 20%. The mandatory capacity reserve in 2016 constitutes approximately 15% of the maximum gross demand (approximately 3.5 GW); it was 18% in 2015 (approximately 4.1 GW).

**Conclusions**

Energy security interpreted as the reliability of electricity supplies and the ability to balance the National Electricity System needs effective mechanisms to compensate for lacking market stimuli. The prospects of implementing a capacity market are long term so the Transmission System Operator (PSE) has launched, subject to ERO consent, the Operational Capacity Reserve (OCR) and Intervention Cold Reserve (ICR) as interim measures. OCR was implemented on 1 January 2014 and is revised annually to follow market developments. The last update introduced two supplementary payments, a monthly and an annual payment, to optimise spending the budget defined by means of the PSE tariff.

The Intervention Cold Reserve uses assets that have been scheduled for closure, mainly due to environmental legislation, Industrial Emissions Directive. These units are subject to derogations that allow them to operate for some time and deliver generation capacity upon the

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Operator's request to fill predictable deficits in consideration for a certain amount of payment. The amount of capacity ordered by PSE is 830 MW. This capacity will be used for balancing the system in 2016-2019.

10. EU Framework: ENTSO-E Network Codes

Our report offers a new chapter this year. It is about network codes that will soon become major drivers of the wholesale electricity market in the EU. The codes are introduced by virtue of UE implementing regulations that are directly applicable in all Member States. The codes were developed under Regulation of the European Parliament and of the Council No. 714/2009 [3] that calls on ENTSO-E to develop these documents according to guidelines developed by ACER. The codes cover the following regulatory areas:

1. Market codes:
   - The Network Code on Capacity Allocation & Congestion Management (CACM);
   - Network Code on Forward Capacity Allocation (FCA);
   - Network Code on Electricity Balancing (EB);

2. Connection codes:
   - Network Code on Requirements for Generators (RfG);
   - Network Code on Demand Connection (DCC);
   - Network Code on HVDC Connections and DC Connected Power Park Modules (HVDC);

3. Operation codes:
   - Network Code on Operational Security (OS);
   - Network Code on Operational Planning & Scheduling (OPS);
   - Network Code on Load Frequency Control & Reserves (LFCR);

This Report will naturally focus exclusively on market codes (point 1 above).

The Network Code on Capacity Allocation & Congestion Management (CACM)

CACM Code entered into force in the form of Regulation of the Commission (EU) 2015/1222 of 24 July 2015 that established guidelines for the allocation of transmission capacity and transmission constrain management. The document outlines the general rules of uniform linkage between Intraday and Day Ahead markets and provides an implementation schedule for specific arrangements in the transmission network supervised by ENTSO-E operators. The integration of European markets will be achieved via market coupling and implicit transmission capacity allocation using the flow-based method and a shared network model. The code lifts
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the regional division of Europe and sets up market areas delineated based on the topology of
the transmission system and actual network constraints.

According to the CACM Code, a joint request was filed by ENTSO-E operators on 13 November 2015 regarding the set up of transmission capacity specification regions. Under the proposed setup, Poland is assigned to the following regions:

1. Hansa – as part of the Northern Europe it covers three boundaries of market areas
   between Scandinavia (Denmark, Sweden) and continental Europe (Germany/Luxembourbg, Poland): DK1-DE/LU, DK2-DE/LU and SE4-PL;

2. Central and Eastern Europe (CEE) – it covers boundaries of market areas identified for
   fast implementation of the flow-based method (Germany/Luxembourg, Poland, Czechia, Slovakia, Hungary, Austria, Slovenia) and the boundaries of the other countries attached to this region (Croatia, Romania): DE/LU-PL, DE/LU-CZ, AT-CZ, AT-HU, AT-SI, CZ-SK, CZ-PL, HU-SK, PL-SK, HR-SI, HR-HU, RO-HU, DE/LU-AT, HU-SI;

3. Baltic – it cover the boundaries of market areas between Baltic States (Estonia, Latvia,
   Lithuania) and Scandinavia (Finland, Sweden) and continental Europe (Poland): EE-LV,
   LV-LT, EE-FI, LT-SE4, LT-PL.

Moreover, sixteen operators from Central-West Europe (CWE) and CEE signed a memorandum of understanding on 3 March 2016 to develop a common methodology of allocating transmission capacity in the Day Ahead market with a view to ultimately merging the two market areas. The work is to be completed on Q1 2017.

According to CACM Code, ERO President granted the NEMO status (Nominated Electricity Market Operator) to TGE for four years on 2 December 2015 so that it oversees the process of uniform merger of spot markets in the Polish market area. This nomination mandates TGE to organise an exchange for spot markets (Day-Ahead Market and Intraday Market) and to engage in international collaboration to create a fully integrated internal electricity market. Other responsibilities faced by NEMO include being a market merge operator and a body determining maximum and minimum settlement prices.

Network Code on Forward Capacity Allocation (FCA)

The FCA Code specifies the general rules of transmission capacity allocation in the futures markets. For final products such as long-term transmission rights there is an option to use such instruments as Physical Transmission Rights or Financial Transmission Rights. Physical rights are subject to the ‘use or sell’ principle and the financial rights can be options or obligations. The code specifies the methodology of selecting and calculating long-term transmission rights the rules for paying damages for network constraints that prevent enforcement of such rights.

EU Member States adopted a Regulation that provides guidelines for the long-term allocation of transmission capacity for the fifth time running on 30 October 2015. The document has
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been sent for review to the European Parliament and European Council to assess its con-
sistency with the Third Energy Package and the general EU principles. The FCA Code is ex-
pected to enter into force in the first half of 2016.

Despite the fact that there is no binding regulation in place, ENTSO-E operators have decided
to implement early pilot projects leading up to the launch of an internal electricity market.
Among such projects is the Harmonisation of long term Allocation Rules (HAR). The core parts
of the document were approved by all operators on 30 June 2015 and they will be applicable
on borders approved by local regulators from 1 January 2016. The cross-border links between
Poland, Germany, Czechia and Slovakia will use physical transmission rights.

Network Code on Electricity Balancing (EB)

The EB Code defines the model and operating rules of the pan-European Balancing Market
(BM). Specifically, it defines the cost of balancing sharing system and the activation procedure
for FCR or Frequency Containment Reserve, FRR or Frequency Restoration Reserve and RR or
Replacement Reserve. The main goal of the document is to transform local, usually national
balancing markets, so that a shared balancing mechanisms allows synergistic use of generation
resources located across the entire EU. The ultimate outcome of the BM model is the reduced
balancing cost and an improved security of supplies. The document specifies a range of
measures that are expected to establish regional BM areas and a single balancing mechanism
across the whole of the European Union. A level playing field is to be created for all potential
suppliers of regulatory services, including operators of renewable energy sources and DSR
aggregators.

On 22 July, 2015 ACER made a recommendation to implement the EB Code. New ENTSO-E's
comments in September 2015 made ACER offer a new recommendation of the Code. The
modifications regard dates of common market implementation. The complexity of energy bal-
ancing makes the EB Code a critical driver of cost efficient security of energy supplies and low
level market harmonisation. This is the most ambitious and forward-looking code to date.

ENTSO-E, ACER and European Commission experts are currently working on the code to pre-
pare for the comitology process to turn it into an applicable piece of regulation to be adopted
by EU Member States. Meanwhile, national TSOs have agreed to launch 9 pilot cross-border
BM projects to ensure faster and more efficient implementation. The pilot projects will help
accumulate early experience to identify the feasibility of the EB Code implementation schedule
and assess market impacts.

Conclusions

The efforts to build a pan-European electricity market gained momentum in 2015. Initial reg-
ulations regarding spot market have been implemented in the form of the CACM Code; the
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Adoption of the FCA Code that defines long term allocation of transmission capacity is expected in the second half of 2016. Characterised by a high level of complexity, the least advanced of ENTSO-E projects is the one regarding the balancing market area. However, the EB Code is expected to enter the comitology process this year. Meanwhile, pilot projects have been launched to implement detailed arrangement in all segments of the wholesale market. Bearing in mind the scope of regulation and the power of network codes in the European market electricity, TOE believes immediate measures must be taken to prepare the trade sector for a major change in the mechanics of the national electricity market.

11. EU Documents and Measures in Financial Markets (EMIR, MiFID 2)

Financial markets saw a major reform in the European Union in 2015. While it is firmly believed financial markets should be strictly regulated under Regulation of the European Parliament and of the Council (EU) No. 600/2014 of 15 May 2014 on financial market instruments and amending Regulation (EU) No. 648/2012 and Directive of the European Parliament and of the Council No. 2014/65/EU of 15 May 2014 on financial market instruments and amending Directive 2002/92/EC and Directive 2011/61/EU, commonly known as MiFIR II and MiFID II, the timing of implementation has been widely debated in Europe. The weight of the said regulation and the high number of obligations imposed on market players have caused a serious debate on the need for extending the grace period. The European Parliament and European Commission have pointed out that MiFID II and MiFIR II may be delayed until 2018\(^3\). If confirmed, this will be good news for the energy sector because the said provisions as well as EMIR will have a major impact on the trading policies of energy groups and corporations, especially in wholesale. One extra year to adapt the business structures to the new regime would certainly be most welcome by the market.

Conclusions

It is essential that the energy sector continues its active participation in efforts to delay the implementation of MiFID II/ MiFIR II to ensure a better transition to full compliance. As in 2015, the sector should contribute to secondary legislation to MiFID II/MiFIR II so that drives stability of commodity trade and does not undermine liquidity by increasing the cost of the trade business.

\(^3\) The European Commission officially informed on 12 February 2016 that the entire package of MiFIR II/MiFID II will enter into force one year later.
12. Impact of REMIT on Market Players (transaction data reporting under REMIT)

In 2016, energy companies for the first time reported their energy market transaction data in compliance with Regulation of the European Parliament and of the Council (EU) No. 1227/2011 of 25 October 2011 on wholesale energy market integrity and transparency (REMIT). The legal framework includes: Implementing Regulation of the Commission (EU) No. 1348/2014 of 17 December 2014 on data reporting implementing Article 8(2) and Article 8(6) of Regulation (EU) No 1227/2011 of the European Parliament and of the Council on wholesale energy market integrity and transparency (entered into force on 7 January 2016) and the ACER Technical Instruction of 9 December 2014 (entered into force on 29 December 2014). The most critical was the entrance into force on 7 October 2015 of the obligation to report contracts on energy products sold on the wholesale trade platforms. The following period was the first major test for new reporting mechanisms. In operational terms, this reporting requirement is the simplest of all because most of the reporting activities are completed by organisers of regulated trade platforms. Further reporting requirements will become effective in 2016. For example, on OTC contracts will have to be reported from 7 April, which will be another test of energy companies’ operational capacity to comply with new reporting requirements. It must be stressed that energy companies had to implement new internal processes to comply with strict reporting deadlines and to avoid collision in complying with information requirements under REMIT, EMIR and statutory reporting of public companies. As far as REMIT is concerned it is essential that companies adequately qualify their contracts (standard versus non-standard where the dividing line is determined based on the availability of the product on the domestic regulated market in which the trade is made).

Conclusions

It is critical that energy companies continue implementing measures to allow them to comply with reporting requirements. Companies will have to collaborate with trading partners in the light of the imminent requirement to report OTC transactions.

P1. New Draft Energy Efficiency Law


The draft law has simplified the system, which has been long advocated by customers and sellers of energy, including TOE members. There is negative experience with tenders in 2013 - 2015 so there is no more a requirement to hold a tender based on which ERO President
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selected energy efficiency projects that could receive energy efficiency certificate. This simplification should speed up the energy efficiency certification process. Another positive modification relates to white certificates that will now be issued based on energy savings documented in ex-ante and ex-post audits without any tendering. Energy efficiency certificates will not be issued to projects that have already been completed, which is possible under the present law.

In fact, the draft legislation incorporates the energy efficiency certificates system that has applied in Poland since 2013. This system encourages high energy efficiency solutions. Certificates will only be issued to projects that achieve the highest energy efficiency, i.e. result in energy savings by equipment and end customers, and reduce losses in the transmission and distribution of electricity, heat and gas.

At present, energy efficiency measures are encouraged in large companies, mainly energy generators and sellers, leaving out small and distributed operations and end customers.

The substitution fee is supposed to 'protect' the certificate market against excessive price growth and speculative activities that may potentially occur if there is not enough certificates in the marketplace to satisfy the demand. Today, the substitution fee is 1,000 PLN/toe. According the draft legislation [3], the fee will be raised to 1,500 PLN/toe. Furthermore, the substitution fee option will be phased out. In 2016, the fee will represent 30 per cent of the market, 20 per cent in 2017 and only 10 per cent in 2018. This means companies will have to actually implement energy efficiency projects on end customers' assets to reduce their energy consumption.

Under the new law, the requirement may be met by (i) obtaining an energy efficiency certificate and having it redeemed by ERO or (ii) paying a substitution fee or (iii) by implementing projects that improve the end customer's energy efficiency (documented by auditors). Unless met by substitution fee payment the obligation must be met and accounted for until 30 June of the third year following the year in which the obligation arose. There will be an option to apply to ERO for a cumulative settlement after 2 or 3 years until 30 June after the final second or third year, as appropriate. Substitution fees will be paid until 30 June for the preceding year.

Furthermore, the draft law proposes a simplified method of calculating the amount: revenues in PLN converted to toe are replaced by the amount of electricity, heat or natural gas sold in a given year to end customers in the network converted into toe.

The draft legislation requires energy audits to be performed by entrepreneurs every four years. This will apply to entrepreneurs as defined in the Free Economic Activity Law (Journal of Laws 2015 Section 584, as amended), except small or medium size entrepreneurs or ones that have an energy management system. Audits will be reported to ERO and the first audit must be performed within 12 months of the effective date of the law.

**Conclusions**

Ministry of Energy sent a new draft Energy Efficiency Law to the Council of Ministers (CoM) in
Electricity and Gas Market in Poland. Status on March 31, 2016. TOE Report early February 2016 following long discussions and a number of working drafts. The draft was accepted by CoM with minor modifications on 23 February 2016. It is supposed to fully implement Directive 2012/27/EU that requires that Member States of European Union make specific energy savings by 2020. The new law is supposed to replace the existing legislation. A new legislative framework is essential. While Poland has achieved a significant progress towards meeting the national energy efficiency target it must still catch up with the most energy efficient economies in Europe. There is much to be done to improve energy savings by end customers, lower the energy consumption by customers’ equipment and installations and minimise losses in the transmission and distribution of electricity, heat and gas.

P2. Modification Criteria for Electricity Market Architecture in Poland

A number of structural problems of the Polish economy are present in the energy sector. The sector is facing choices that are representative of the choices of Poland after 25 years of market transition. Having ‘picked the lowest hanging fruit’, Poland must now answer several key questions: How are we going to compete on the global market? On price, quality or (environmentally sound) technology? In the energy sector, these three parameters are expressed as security of supply, low price and low emissions. Is it possible to have all three at the same time?

Analysts have often raised the problem of energy market inefficiencies. The central argument is that electricity price is not reflective of the cost borne by generators. Power plants run on major losses as they often operate below break-even point. They must not be stopped, however, because uninterrupted and continuous supply of electricity is an absolute priority for the economy of the country.

Challenges

The blackout and brownout risks must be eliminated at all cost. This is a challenging task as the market is not in equilibrium as a result of EU dogmatic climate policy which drives emission reduction (climate protection) at all cost but sidelines supply security and low prices for end customers. On a micro level, supply security is at risk because of the ‘merit order’ whereby priority is given to energy from renewable sources. This effectively shortens the operation time for conventional power plants and the gradual deterioration of their financial performance. The growing demand for electricity is making the situation any easier.

The demand for electricity has been growing steadily in Poland since 2009. Meanwhile, there has been a reverse trend on the supply side. After Unit 4 was commissioned at Belchatów, there has been a steady decline in generation capacity available to Transmission System Operator as illustrated on the chart below.
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There is an increased risk of system unbalance at peaks especially if some generation units should fail, which was the case in August 2015 in Poland. Temperatures soared and critical units failed at Belchatów (B14) and Kozienice) and the TSO was forced to ration power supplies.

Poland is facing a cumulation of problems that are mutually aggravated in a vicious circle. With less and less operating time, power plants generate marginal profit or run on loss (missing money). Weaker financial performance means less capacity to invest in new generation capacity. This results in missing capacity so the security of the entire system is at stake.

Whereas conventional energy generation is accounted for solely based on variable cost in Poland market players want to maximise product to zero plus variable cost. This makes new projects less that profitable putting the system balance in jeopardy. Since energy is a top national priority pure market forces cannot operate freely - lower supply would bring prices up to the level which would support new investments.

Solution

Future blackouts can be prevented. Poland should implement a capacity market where not only producing and delivering energy would be rewarded but also being ready to deliver it. The capacity market should be seen as an insurance policy that guarantees the continuity of electricity supply. In other words, it is the most economically effective (for customers) cost of having a supply security. The cost and benefit analysis of a capacity market in Poland has not been performed or at least no such findings are publicly available. Nonetheless, the benefit of reduced risk of power rationing appears priceless.
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The Polish TSO is responsible for energy security and it can use some 'capacity' intervention mechanisms such as:

- Operational Capacity Reserve (OCR);
- Intervention Cold Reserve (ICR);
- Individual negotiations with owners of generation units scheduled for closure on environmental grounds;
- Demand Side Response (DSR), including the purchase of 'negawatts';

However, a number of analysts in the sector feel these are interim measures and will apply until the national capacity market is launched. The market model has to be negotiated and approved by the European Commission, which may delay the process.

Conclusions

The available intervention mechanisms outlined in Chapter 9 herein do not provide the security of energy supplies in Poland. There has been a firm response to the problem of blackouts in countries that have launched a bi-commodity market, e.g. USA, UK or France. In the US, federal legislation was passed following a wave of energy crises when politicians and citizens learned about the importance of energy supplies to the economy the hard way. One hopes that Poland will implement a capacity market not as a result but instead of blackouts. In this context, whether Poland adopts the centralised or decentralised capacity market model is of secondary importance.

P3. Audiovisual Fee — Linkage to Electricity Model

The Ministry of Culture and National Heritage has worked to develop a new draft Audiovisual Fee Law since the beginning of 2016. According to communication from the Ministry [17], 'the new media law is going in the direction of the audiovisual fee being added to the electricity bill'. Under the Subscription Fees Law of 2005, the fee is now (mostly unsuccessfully) collected by Polish Post. The Ministry wants the new system to be introduced on 1 January 2017 and have the following characteristics [19]:

- Users should generally contribute to national media whether or not they own radio or television sets;
- The system must be simple; no extra record of contributors or individualised fee calculation;
- Cheaper than the existing system;
- Collection must be effective and evasion must be eliminated.
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A flat monthly fee will be collected from anyone who has an electricity meter. No fee differentiation is planned. The fee will be collected by the company which bills the customer for electricity consumption: electricity retailer for integrated contracts or DSO for split contracts.

Energy companies will not interpret the fees as their own accounts receivable and will not engage in any active collection leaving this to tax offices.

**Conclusions**

The competitive nature of the electricity market makes it hard to effectively collect the audio-visual fee as part of the electricity bill. Clearly, the trade sector would welcome a new audio-visual fee collection system that would not involve the energy sector at all. However, this is apparently the policy of the new government. TOE has been part of the policy design process since March 2016. The launch of the new system where the audiovisual fee is included in the electricity bill from 1 January 2017 will require up front investments from energy companies. The system will also generated operational annual expenses that will have to be covered.


There has been much guesswork around the future of renewable energy sources in Poland fueled by the absence of any government papers in public domain that would shed light on the planned amendment of the Renewable Energy Law adopted on 20 February 2015. Based on the present provisions of the Renewable Energy Law and the applicable system of support for renewable energy sources that uses property rights it can be presumed that the planned amendment will compile new and old policies and include sources that co-fire coal and biomass.

In the light of the planned entry into force of Chapter 4 on 1 July 2016, it is assumed that Ministry of Energy puts in the amended legislation provisions that will postpone the enforcement Chapter 4 of the law (auctions instead of green certificates).

With regard to micro-installations, they are likely to be divided into prosumer and commercial installations. It is possible that FiT will be applied to small installations operated by businesses. The level of such support is still debated — this must not be qualified as state aid. With feed-in tariffs in place, the overall support will also depend on individual project subsidies.

There has been a special focus on farm-based biogas installations. The impact of current legislation on these vulnerable installation is being assessed and future policy is being designed to achieve sustainability. This may include the increase of reference prices for such installations.

There has been an interesting proposal to support new renewable energy installations that make a major contribution to Polish economy in terms of new jobs and value generation. This is correlated with the announced cutback on support for wind farms seen as operations that
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generate additional costs for the system, e.g. cost of conventional capacity reservation. Fur-
thermore, the amended legislation will promote local initiatives in rural communities such as
municipal energy clusters that will secure energy self-sufficiency for local communities.

There has also been some indication that support will geothermal and co-firing projects will
also be supported. If this turns out to be true co-firing projects may again be assigned a
coefficient of 1 in the green certificates system. Conventional sources that are marginalised by
renewable energy sources in the wholesale electricity market may use this option to improve
their business performance in the coming years. Finally, attention may be given hydro projects
that have been left out completely under existing legislation.

All the policy proposals to support renewable energy sources are likely to leave wind farms
without any government support. In fact, a separate Windmill/Proximity Law is to be proposed
that will impose additional operating cost on generators that will be linked to the frequency,
scope and cost of technical inspections performed by the Office of Technical Inspection (UDT).
Finally, new site location constraints are likely to inhibit the growth of new wind generation
capacity.

Conclusions

The draft of the amended Renewable Energy Law has not been published and there is a risk
that public consultations will be skipped under a tight legislative agenda. The auction system
is likely to be modified by introducing auction baskets with constraints on the operating time
of sources. Further, separate auctions are likely to be held for micro- and macro-clusters and
hybrid power stations. This step is welcome as it contributes to a balanced structure of the
sector that is dominated by wind farms at present. Wind farms may be assigned to an auction
basket with the operating time at over 4,000 h/year, which would be unpleasant surprise to
this industry. On the other hand, shifting the support stream from the well developed wind
farm industry to the other renewable energy sources is by many considered a step in the right
directly. The goal of this sector is not only to meet EU targets but also to improve stability of
the national energy system and cost minimisation.
III. ENERGY AND PROPERTY RIGHTS PRICING ON THE WHOLESALE MARKET

1. Day-Ahead Market

In 2015, prices decreased by 13% yoy compared to an increase of 17% in 2014. The average hourly price of electricity on the TGE Day-Ahead Market came to 156.95 PLN/MWh in this period (179.93 PLN/MWh in 2014).

For peak hours (on weekdays, from 8:00 a.m. to and including 10 p.m.), the price dynamic was nearly double. The 2015 average equalled 186.63 PLN/MWh, i.e. it declined by 20% compared to the preceding year (in 2014, peak hour prices increased by 31% on an annual basis). The volatility of the electricity price across 12 months was much higher than in 2014. The highest decrease (19%) came in Q4 2015 versus the same quarter in 2014. In Q3, the lowest decrease (9%) was observed. In contrast, prices fell by 10% and 12% in Q1 and Q2, respectively, compared to the same quarters in 2014. Electricity prices reached quarterly levels of 145.81 PLN/MWh, 154.71 PLN/MWh, 172.10 PLN/MWh and 155.16 PLN/MWh, respectively. Peak prices in consecutive quarters of 2015 came to: 174.11 PLN/MWh (decline by 11% yoy), 178.12 PLN/MWh (decline by 20.4% yoy), 207.98 PLN/MWh (decline by 15.8% yoy), and 186.34 PLN/MWh (decline by 29.4% yoy).

In 2015, Poland exported 0.3 TWh whereas it imported 2.1 TWh. The main reason why there were no significant exports was that exports to Germany, Czechia and Slovakia continued to be unprofitable as prices continued to fall the German EPEX SPOT market. In 2015, the decline was 2% and the average price came to 32.35 EUR/MWh. As prices remained low in the neighbouring countries, Poland imported 3.5 TWh on the DC cable between Poland and Sweden (3 TWh in 2014), 0.06 TWh from Ukraine (decline by 0.6 TWh yoy), and exported 4 TWh on the parallel link (Germany, Czechia Republic, Slovakia), in contrast to 1.5 TWh in 2014.

Exports have been boosted by re-dispatching. PSE exported 1.5 TWh in 2015 versus 0.5 TWh in 2014. Along with the change in flow direction, the demand has increased by 1.7% to 161.4 TWh. In 2015, domestic generators increased production by nearly 3.3%; wind power stations recorded the highest growth of nearly 40% to the level of 10 TWh; coal-fired generators grew by 2% and lignite-fired operations declined by 1%.

The price decline in 2015 contradicted fundamental developments, i.e. growing demand and shifted balance in cross-border exchange. The price of energy on 11 August 2015 made a historic record. The average price came to PLN 509.87 at 10:30, and PLN 726.94 per MWh for peak hours. High prices were supported by a long period of extremely high temperatures in Poland that boosted consumption, the failure of the largest 858 MW unit at Belchatów and the reduced capacity in other power stations that resulted from low water levels in rivers and shortages of cooling water. PSE made a decision on 10 August 2015 to ration power supplies so demand was cut nearly 2 GW, which left prices at much lower levels on the following days. The average price on 12 August 2015 was as low as 164.76 PLN/MWh.
Figure 4. Daily Prices on the TGE Day-Ahead Market

Source: TOE based on TGE data

Figure 5. Total domestic monthly demand for electricity

Source: TOE based on PSE data
2. Derivatives Market

The derivatives market stabilised in 2015. Volumes on the TGE futures market were slightly lower than in the preceding year (162 TWh, in contrast to 163 TWh in 2014 and 154 TWh in 2013).

BASE_Y_16 remained in a downward trend for three quarters. It reached a value of 181 PLN/MWh early in 2016. It reached a historic low at 153.99 PLN/MWh on 5 October, 2015. Subsequently, the trend was reversed and the price for electricity in 2016 continued to climb. Finally, the value came to 167.52 PLN/MWh on the last business day, i.e. approximately 3 PLN/MWh over the annual average. The higher prices at the end of 2015 resulted from a higher OCR charge and the transfer of 830 MW of capacity to ICR from 1 January 2016. 2015 saw a major change vis-a-vis 2014 in the correlation between the Polish market and the neighbouring markets: the Polish market was positively correlated with the Czechia and the German market. The correlation was strong at 0.63 with the Czechia market (-0.12 in 2014) and 0.59 with the German market (-0.28 in 2014). The Polish market had the strongest correlation with the Slovak market at 0.78.

Table 2. Derivative Electricity Markets Correlation Matrix

<table>
<thead>
<tr>
<th></th>
<th>PL</th>
<th>CZ</th>
<th>SK</th>
<th>CE</th>
<th>HU</th>
<th>NP</th>
</tr>
</thead>
<tbody>
<tr>
<td>PL</td>
<td>1</td>
<td>0.63</td>
<td>0.78</td>
<td>0.59</td>
<td>0.54</td>
<td>0.49</td>
</tr>
<tr>
<td>CZ</td>
<td>0.63</td>
<td>1</td>
<td>0.77</td>
<td>0.99</td>
<td>0.37</td>
<td>0.63</td>
</tr>
<tr>
<td>SK</td>
<td>0.78</td>
<td>0.77</td>
<td>1</td>
<td>0.69</td>
<td>0.75</td>
<td>0.53</td>
</tr>
<tr>
<td>CE</td>
<td>0.59</td>
<td>0.99</td>
<td>0.69</td>
<td>1</td>
<td>0.28</td>
<td>0.88</td>
</tr>
<tr>
<td>HU</td>
<td>0.54</td>
<td>0.37</td>
<td>0.75</td>
<td>0.28</td>
<td>1</td>
<td>0.07</td>
</tr>
<tr>
<td>NP</td>
<td>0.49</td>
<td>0.83</td>
<td>0.63</td>
<td>0.88</td>
<td>0.07</td>
<td>1</td>
</tr>
</tbody>
</table>

Source: Polenergia Obrót
The strengthening of the EUR/PLN exchange rate, which was at 4.28 at year-end (4.28 at year-beginning), affected the interdependence between markets and the valuation of futures. In 2015, next-year electricity reached higher values in Poland than in any of the neighbouring countries (Slovakia, Chechia, Germany, Nordic Countries). On average, the price of an annual contract was higher by about 9 EUR/MWh.
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The BASE_Y-16 contract traded at TGE in a wider range compared to the preceding year. The annual minimum was 153.99 PLN/MWh (October) and the maximum occurred early in the year with the annual contract trading at 181.00 PLN/MWh. The average annual price of BASE_Y-16 came to 164.22 PLN/MWh compared with 168.60 PLN/MWh for BASE_Y-15. For the last 40 quotations, the average was 164.85 PLN/MWh and it was higher than SPOT performance in 2015.

3. Property Rights Market

The Property Rights Market for electricity generated in renewable sources, in co-generation units and energy efficiency certificates operates under legislation that imposes an obligation to obtain and redeem property rights attached to certificates of origin or to pay a substitution fee in proportion to the volume of energy consumed by end customers. In principle, this obligation is met by an energy company, industrial customer or, under certain conditions, the end customer, commodity broker or broker. Industrial customers have a special status with a privilege of lower property rights obligations for energy from renewable energy sources. A list of industrial customers is published on ERO website.

The level and volatility of property rights prices in the market are affected the supply and demand and the substitution fee rate as published by ERO (this rate effectively determines the maximum price level)

The levels of obligation and substitution fee rates in 2015 were as follows:

- for energy generated in renewable sources – PMOZE_A known as 'green' property rights: 14%; substitution fee: 300.03 PLN/MWh;
- for energy generated in gas co-generation units or units with a total installed capacity up to 1 MW – PMGM-2015, known as 'yellow' property rights: 4.9%; substitution fee 121.63 PLN/MWh;
- for energy generated in methane co-generation – PMMET-2015, known as 'purple' property rights: 1.3%; substitution fee: 63.26 PLN/MWh;
- for energy generated in other co-generation sources – PMEC-2015, known as 'red' property rights: 23.2%; substitution fee: 11.00 PLN/MWh;
- for energy efficiency certificates – PMEF, known as 'white' property rights: 1.3%; substitution fee: 1,000.00 PLN/toe.

The charts below present the pricing of the various instruments at TGE and OTC (OTC transactions recorded by TGE).
For 'green' property rights, prices remained considerably below the substitution fee much line in 2014 and they lost 28 per cent in value at TGE sessions between January and March 2016. This was the result of a strong oversupply of rights available in the market. Nonetheless, the main market accounted for a small fraction of the total volume of trades. By far, most rights have been traded over the counter (nearly 76% of total volume). By and large, prices have been higher by about 35 per cent in the OTC market. The price difference reflected historic arrangements and the nature of bilateral agreements. A high proportion of property rights in the OTC market come from multi-annual investment agreements that were a condition precedent for receiving loans to build renewable energy sources. These agreements were concluded at the time of a permanent undersupply of property rights in the market. The price formula applied at the time used a discounted substitution fee or inflation-adjusted base price. In practical terms, this means a high proportion of entities incur a much higher cost of meeting the obligation that would be suggested by price levels at the core TGE market.

The price of 'green' property rights is extremely sensitive to actual and proposed changes in legislation. Provisions that regulate the supply and demand of rights are of particular importance. They seek to:

- Reduce support for simple co-firing technology (correction coefficient for the number of certificates of origin per unit of energy at 0.5 applicable since 1 January 2016);
- Phase out of support for hydro power stations with an installed capacity of over 5 MW (applicable since 1 January 2016);
- Introduce a new support mechanism, i.e. auctions, that will replace the existing mechanism i.e. certificates of origin. There will be no new installations eligible for certificates of origin from renewable energy sources (originally since 1 January 2016, postponed until na 1 July 2016);
- Postpone the obligation deadline by three months until 30 June (deadline extension for 2015);
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- Define the obligation after 2016 at 20% with an option to reduce it by way of a relevant regulation (applicable since 1 July 2016).

![Figure 10. PMGM-2015 Price and Volume (yellow certificates)](image)

Unlike 'green' certificates, 'co-generation' property rights were undersupplied. Consequently, prices were rising and were based on the discounted substitution fee. The law of 14 March 2014 amending the Energy Law has limited the duration of these rights. For example, the 2015 obligations can only be settled with property rights for energy produced in 2015 (hence the instruments presented in the analysis are marked '2015').

Much like with 'green' rights, OTC market prevailed considerably for 'yellow' certificates (over 79% volume). Price levels were similar in both segments. The average price in the core market came to 118.14 PLN/MWh, and 116.10 PLN/MWh on the OTC market, a difference of 2%.
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Figure 11. PMEC-2015 Price and Volume (red certificates)

'Red' certificates traded at similar volumes as 'yellow' certificates (76% in the OTC market, 24% in the core market in the period at hand). Price levels were similar (average in the core market: 10.73 PLN/MWh, average in the OTC market: 10.52 PLN/MWh), the difference between average prices was 2%.

Figure 12. PMMET-2015 Price and Volume (purple certificates)

The total volume of 'purple' certificates was higher in the core market than in the OTC market, which resulted from a very low supply of these rights. Price levels were quite similar: the
Electricity and Gas Market in Poland. Status on March 31, 2016. TOE Report average price in the core market came to 62.02 PLN/MWh, and 61.81 PLN/MWh in the OTC market.

The only property right with a deadline at the end of March are 'white' rights (other types of rights have a deadline in June). Liquidity is much lower on this market and the low OTC volumes result from a high minimum number of property rights per one order and a very low supply.

![Graph](image)

Source: TOE based on TGE data

Figure 13. PMEF Price and Volume (white certificates)

### 4. Price of Energy Fuels: Global Hard Coal Market

Hard coal accounts for approximately 40% of electricity production globally. It is an essential raw material in other industrial processes, e.g. steel industry. Despite its pivotal role the global coal industry is facing a number of challenges in the coming years.

Coal consumption and coal prices are affected by global climate policy that encourages coal phase out in energy production. This translates into global change in energy mix and industrial production.

China is the key global player in the coal market. The projected shift to a service-based economy has caused a visible decline in coal consumptions since 2014. According to statistics, the decade of growth ended in 2014, when coal consumption fell for the first time (by approximately 2.9%), and plummeted by 3.9% in 2015. Notably, the growth in electricity consumption in China since 2013 has been covered by renewable energy sources, which again challenges the demand for energy coal in this country.

Coal consumption for energy production has also declined in the US, world's largest coal-consuming economy (by approximately 12.5%).
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Interestingly enough, Europe's coal consumption in 2015 remained unchanged versus 2014, and India was the only country out of 10 largest coal consumers to record an increase (by approximately 4.1%).

Consequently, total global coal consumption declined by approximately 3.5% in 2015 versus 2014. Projections generated by international organisations such as MAE, BP (see below) suggest that global demand for coal is bound to slow down and it will grow annually by approximately 0.5-0.8% (versus average growth rate of approximately 3.9% in 2000-2013).

![Figure 14. Historic and projected global demand for hard coal [Mtce].](image)


![Figure 15. Share of coal in global demand for primary energy.](image)

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In Poland, the estimated consumption of hard coal for energy production increased by approximately 0.58% relative to 2014. In contrast, the consumption of lignite fell by approximately 1.3% yoy.

Hard coal prices continued to fall in Poland, Europe (ARA) and globally in 2015, as illustrated on the chart below.

![Global hard coal price indexes and the PSCMI_1 [PLN/Mg*] index.](image)

*Prices of foreign coal converted according to USD exchanged rate published by the National Bank of Poland (NBP)

Source: World Bank, ThomsonReuters, NBP, PolskiRynekWęgla.pl

Figure 16. Global hard coal price indexes and the PSCMI_1 [PLN/Mg*] index.

There has been a global oversupply of coal so there is a slim chance prices will pick up any time soon.

The International Energy Agency projects that ARA will remain below 50 USD/Mg until 2020 (ARA was 42.5 USD/Mg as of 31 March 2016).

The oversupply of hard coal has also been observed in Poland since mid-2012. The annualised stock of hard coal in Poland was approximately 7.5 million Mg in 2015, which means a decline by approximately 11.3% versus 2014. As of December 2015, the hard coal stock was approximately 5.8 million Mg versus approximately 8.2 million Mg in December 2014. As of February 2016, the hard coal stock was 6.1 million Mg. The coal stock before oversupply (2011) averaged approximately 2.4 million Mg.

Coal prices in Poland are affected by the option to buy relatively cheaper coal in Russia. The average coal price in 'Russia Baltic' was approximately 51.4 USD/Mg in Q3 2015 (approximately 193.8 PLN/Mg) while the average value of PSCMI_1 came to 217.5 PLN/Mg in the same period.

The average coal price in 'Russia Baltic' was approximately 72.4 USD/Mg in Q3 2014 (approximately 228.1 PLN/Mg) while the average value of PSCMI_1 came to 231.3 PLN/Mg.
There was a breakthrough in the retail gas market in Poland in 2015. This perception is justified especially in the context of the last several years.

PGNiG Obrót Detaliczny Sp. z o.o. (POGC Retail), a retail company created as a spin-off of the PGNiG S.A. Group (POGC) in 2014, took over the customer service function and now serves about 6.5 end customers with a total annual consumption of less than 25 million m³ of gas. POGC still retails gas to major end customers which are approximately 30 companies with approximately 30 per cent of the domestic gas consumption.

The restructuring of POGC caused an increase in gas volumes traded on the commodity exchange because the mandatory public trade in gas specified in Article 49b Para. 1. and introduced on 1 January 2015 covers 55% of gas. POGC buys nearly all of its gas through TGE. With improved liquidity other traders have been encouraged to sell gas on this platform (further details below).

The number of supplier switching cases was much higher in 2014 than in the preceding years. The rate of supplier switching is believed to the most credible measure of competition in the gas market. According to ERO statistics [32], there were just several supplier switching case in 2011, 210 in 2012, 429 in 2013 and 7,007 in 2014. Since monitoring was put in place until the end of 2015, 30,749 supplier switches occurred, which is illustrated in the figure below.

Table 3. Supplier switching structure in the gas market by tariff groups, number of customers and metering systems

<table>
<thead>
<tr>
<th>Supplier switching</th>
<th>W 1-4</th>
<th>W5</th>
<th>W6</th>
<th>W7</th>
<th>W8</th>
<th>W9</th>
<th>W10</th>
<th>TSO Tariffs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td># Customers</td>
<td>27563</td>
<td>2076</td>
<td>876</td>
<td>144</td>
<td>43</td>
<td>17</td>
<td>5</td>
<td>25</td>
<td>30749</td>
</tr>
<tr>
<td># Metering Systems</td>
<td>30669</td>
<td>3174</td>
<td>1049</td>
<td>153</td>
<td>43</td>
<td>19</td>
<td>5</td>
<td>33</td>
<td>35145</td>
</tr>
</tbody>
</table>

Source: ERO
There has been visibly more interest in the gas trade business and more market activity of energy companies whose core business used to be electricity. At year end 2015, 177 companies had a licence to trade in gaseous fuels and 63 were active players in the market. This is evidence of the growing market liberalisation and hopes for stronger growth in the years to come despite the barriers and imperfections of the market that still exist.

The number of framework agreements for gas distribution signed by DSO with retailers in 2015 suggests progress in liberalisation. There were 116 retailers who had active agreements with TSO at the end of 2015, of which 67 had concluded agreements with DSO.

The gas market liberalisation model in Poland relies on the policy of mandatory public trade in gas to ensure equal access to the wholesale market to all market players. This is expected to trigger genuine competition on the retail market. Furthermore, the use of the maximum price model for gas created opportunities to offer lower prices. They can be applied provided all customers in tariff groups are treated equally (Paragraph 29 Section 4 of the Tariff Regulation [16]). This has increased competitiveness and has positively affected the market. However, this is still not a fully market-based arrangement and TOE recommends deregulation of gas trade altogether.
2. Gas Trading at TGE

Over three years after the launch of the gas trade at TGE, the total volume of gas trade in 2015 was approximately 106.9 TWh, which was 4.3% more than in 2014 (less than 112 TWh). Significantly higher volumes were recorded in the gas spot market (13.9 TWh, i.e. 111.8% more than in 2014). The volume at the Intra-Day Market for gas (IDMg) came to 3.4 TWh (increase by 191.4% versus 2014); the volume at the Day Ahead Market for gas (DAMg) came to nearly 10.5 TWh (increase by 94.4%). The volume weighted average price of natural gas reached 87.46 PLN/MWh on the spot market in 2015; it was lower by as much as 17.54 PLN/MWh than in 2014 (105.00 PLN/MWh).

The volume of natural gas at the Futures Commodity Market (RTTg) came to nearly 93 TWh in 2015. The volume weighted average price of GAS_BASE_Y-16 came to 95.35 PLN/MWh in 205 and was lower by 15.11 PLN/MWh than the price of GAS_BASE_Y-15 in 2014 (110.46 PLN/MWh). There were 13 auctions in 2015. However, only two ended with completed transactions, both for a monthly product with delivery in April 2015. The chart below illustrates TGE (IDMg, DAMg, RTTg) volumes in 2015.

![Chart: Trading volumes at TGE in 2015](image)

As illustrated by the figure above, the highest total trading volume at IDMg, DAMg and RTTg came to nearly 16 TWh in August. November turned out the least liquid month with a volume of 5.53 TWh and May with 5.62 TWh of volume. The most liquid contract in 2015 was an annual contract with delivery in 2016 (GAS_BASE_Y-16) with a volume of 21.6 TWh. This figure represents about 23% of the total volume at RTTg in 2015. The volume weighted average price of this contract (all transactions, including pre 2015 ones) came to 103.68 PLN/MWh.
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Volume weighted average prices of futures contracts and DAMg are presented in the figure below.

![Graph showing average prices of futures and spot contracts at TGE with delivery in 2015 (excl. auctions)](image)

Source: TOE based on TGE data.

Figure 19. Average prices of futures and spot contracts at TGE with delivery in 2015 (excl. auctions)

There was a sharp drop of gas prices in 2015, particularly in the second half of the year. On average, prices in the Polish and European market were lower by about 5% than in 2014. Prices of gas offered at TGE Day Ahead Market were higher than in Western European platforms NCG (Germany), GASPOOL (Germany) and TTF (the Netherlands) by less than 6% on average. Note that the biggest difference between Poland and Western Europe was recorded in the first half of January 2015 and it amounted to 5.58 EUR/MWh. Within the Polish market, differences between wholesale TGE DAMg prices and average retail prices averaged approximately 25% in 2015, i.e. it was similar to 2014 (approximately 26%). The difference was the highest at 11.77 EUR/MWh in the second half of December 2015. Wholesale and retail prices approximated the most in the first half of January, i.e. wholesale and retail prices were wider apart as the year progressed.
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Figure 20. 2015 Spot prices at TGE and CRG (Poland), Gaspool and NCG (Germany), TTF (the Netherlands)

As illustrated on the chart above, a clear downtrend can be seen in all markets although prices fluctuated and pulled up early in 2015. The second half of the year was marked by market lows. A number of factors were at play including the decline in oil prices in international markets to 30USD/bbl, a mild winter in Europe, full underground storage and lack of problems (uninterrupted cross-border supplies). Furthermore, the 2015 trends appear to continue in early 2016 with more price degradation.

Conclusions

Developments in 2015 changed the gas market in Poland significantly. Gas prices fell sharply at TGE, both on the spot and the futures market. Still, price levels remained higher than in Western markets with nearly unchanged trading volumes. Certain trading companies were became more active at the commodity exchange albeit a single seller still dominates the wholesale market. The share of the POGC Group in the retail and wholesale market fell below the 2014 level to less than 90%.
3. Barriers to Gas Market Growth in Poland

Regulation of All End Customer Tariffs by ERO

While new instruments have been introduced to liberalise the wholesale trade in natural gas end customer and tariffs are fully regulated. The market is still controlled even though Poland has met all conditions stipulated in ERO President Communication No. 21/2013 of 22 July, 2013 regarding the timetable of exempting energy companies that have concessions to trade in gaseous fuels or trade in natural gas with foreign parties from the obligation to have their tariffs for gaseous fuels sold to customers other than households approved by ERO, this policy has not been implemented to date.

TOE is of the option that continued regulation of all end customer tariffs is in principle inconsistent with EU regulations. inhibits the market growth and is detrimental to the economy and customers. This is substantiated in the judgement of the European Court of Justice of 10 September 2015 (Case No. C-36/14) in which the Court upheld the present position of the European Commission that an obligation of unlimited duration imposed on energy companies to apply prices for the delivery of natural gas that have been approved by the President of ERO constitutes a disproportionate measure that is in violation of Article 3 Paragraph 2 of Directive 2009/73/EC because it goes beyond what is necessary to pursue a general economic interest (protection against excessive gas prices) because prices determined for end users other than households inhibit new market entries and prevent consumers from fully enjoying what the internal market can offer.

In the context of the current situation in Poland, it is believed that ERO should publish and implement a new timetable of gas price liberalisation in Poland as soon as possible or act according to the timetable presented in its communication of 22 July, 2013. While doing so, it should take into account a number of market changes that have occurred despite existing barriers. For example, the wholesale market has become much more liquid, the number of players in the gas market and their market share have grown and more and more customers have been switching gas suppliers.

Therefore, TOE again recommends that the first to be deregulated should be all tariffs offered companies outside the POGC Group.

The continued regulation of tariffs with tariffs containing maximum prices does not offer customers the full option to choose their supplier and prevents access to market prices.

Existing Legislation on Mandatory Natural Gas Reserves

The Law on Mandatory Stocks of Natural Gas [14] requires that trader that import gas maintain mandatory reserves of natural gas. Traders may be exempted by the Minister of Energy if the
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	number of customers is less than 100,000 and gas imports do not exceed 100 million m³ per

eyear (equivalent of about 1.1 TWh).

Current legislation is discriminatory to trading companies which could be a real alternative to
	the dominant market player. It effectively discourages companies from increasing volumes of
	imported gas over 100 million m³. This is a fact that emerges from desk research and market
	observations: there is very little or no interest among alternative trading companies in access

to storage capacity. Moreover, customers that import gas for internal use are in a privileged

to position to traders because they do not have make the reserves.

TOE members believe this law should be amended as soon as possible:

- To impose the obligation to store reserves only on traders who sell exclusively to pro-

tected customers (households, hospitals, pre-schools etc.). This proposal was in the
	historic draft Gas Law, part of the "Big Three Pack" or

- To introduce a ‘ticketing model’ based on the national gas reserve system where a

government agency, Resource Reserves Agency (or any other nominated agency),
	would physically maintain the whole or part of the natural gas reserve in consideration
	of a fee paid by trading companies which are required to maintain such reserves (a
	similar mechanism has been applied in the liquid fuel sector; this policy was proposed
	in the draft Gas Law designed as part of the energy legislation package known as the
	‘Big Three Pack’.

Existing Ordinance on Minimum Diversification of Oil and Gas Supplies

The Ordinance on minimum level of diversification of oil and gas supplies

(Journal of Laws 2000, Issue 95, Section 1042) imposes fixed shares of gas imports from the

neighbouring countries which prevents trading companies from identifying import opportuni-

ties based on a business case. The very definition of imports is unclear: depending on the

source it includes or excludes deliveries from EU Member States. TOE welcomes the proposal

to exempt LNG, to include clear definitions of import and source of origin and to reduce the

level of mandatory diversification. Meanwhile TOE feels it is sufficient to state that gas may be

imported from a variety of countries, using existing interconnectors without any requirement
to physically diversify gas supply on a company by company basis.

Excessive Reporting Requirements for Natural Gas Trading

Companies which have concessions to trade in natural gas, including import/export, are ex-
pected to submit numerous reports, regularly or on demand, to government offices, Energy

Market Agency (ARE), Main Statistical Office. Often, it is about the same data. The reporting

requirement applies to all companies irrespective of the actual business type and scale even if
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the scale of their operations is very limited. This consumes significant resources which is a
considerable entry barrier.

TOE recommends simplifying the reporting procedures to avoid duplication, reducing the num-
ber of recipients to limit the number of reports to the necessary minimum.

Other Barriers on the Gas Market in Poland

- Complex and difficult supplier switching procedure (especially in cases of partial switch-
ing); no uniform standards for metering data exchange and online interaction; no simple
process to settle under gas distribution and sales contracts;
- Tariff terms and conditions for short term gas sale contracts (distribution and transmission
cost in short periods). Correction coefficients applied to transmission/distribution fees
should be lowered for short-term contracts;
- Integrated agreements are the only profitable vehicles for gas sales (selling under decou-
pled contracts means customers have to go directly to the balancing market);
- IRIESP and IRIESD are very extensive documents that use less than fully comprehensible
language to describe settlement rules for the balancing market and nominations. They
should be simplified as is the case in the electricity sector.
- Terms and conditions of the reverse flow service is not transparent enough on the Yamal
Pipeline; this pipeline has not been interconnected to the TSO system.
- No clear and transparent rules for contracting small DSOs.
- Barriers to access to market information mainly in retail.
- Excessively long tariff proceedings; actual cost carried by traders is disregarded with POGC
and POGC Retail used as benchmarks instead; Any major change in business conditions
(e.g. increase in prices in the wholesale market) can be shifted into the tariff with a sig-
nificant delay thus generating losses.

Conclusions

Much progress was made towards gas market liberalisation in Poland in 2014 as manifested
by the growing rate of supplier switching.

However, there are still concerns related to the absence of firm measures to remove barriers, in
particular to deregulate tariffs offered by certain trading companies and end customer tariffs or to
change existing regulations on the mandatory gas storage and diversification of gas
supplies.
4. Market Environment

LNG

The newly built Świnoujście LNG terminal has been one of the largest and most critical projects in recent years that raises the level energy security for Poland. The terminal can receive liquefied natural gas brought by sea from any geographic region in the world. It is the first facility of its kind in Central and Eastern Europe and the Baltics. It has a capacity to receive 5 billion m³ of gas annually. If the third tank is added the capacity will rise to 7.5 billion m³. As early as in 2009, a 20-year LNG contract was signed with Qatar for 1.5 billion m³ of gas annually. The remaining capacity was offered to other market players. Even though physically built, the terminal was not commissioned last year. Commercial operation can only commence after operational tests have been successfully completed. The first test gas delivery was made 11 December 2015. LNG Carrier Al Nauman left the port of Ras Laffan in Qatar to arrive in Świnoujście 21 days later with approximately 120 million m³ of gas. The gas was purchased from the same Qatari company, Qatargas, with which the long term LNG contract was signed. The second delivery was made on 8 February 2016. Again, this was a test delivery. This time, though, the amount was 130 million m³ of gas. The LNG terminal can be of key importance for Poland as it diversifies its gas sources. With the high level of market volatility, it is possible that competitive gas prices will be secured as well.

The global LNG market has grown exponentially. In 2015, LNG accounted for approximately 10% of global demand for natural gas and its role is likely to grow in the immediate future. Major LNG exporters include Qatar, Algeria, Nigeria, Malaysia, Indonesia, Trinidad & Tobago, Australia and Russia. The United States has recently joined the core group and with its deposits and the investment programme the country may take the lead in the sector. American gas may become the key price maker in Europe.

Storage

Poland owns 7 high-methane gas storage tanks of about 2.8 billion m³. All of them are owned by Poland’s largest gas company POGC. New storage capacity of 0,06 billion m³ was added in 2015. The terms and conditions of gas storage services changed on 1 July 2015. Individual tank-specific services were abandoned. Instead, three virtual storage units have been created including the Kawerna Storage Facility Group (made up of PMG Mogilno and PMG Kosakowo) and Sanok (PMG Swarzów, PMG Brzeźnica, PMG Strachocina and PMG Husów), PMG Wierzchoslawice.
Figure 21. Loading and consumption volumes and fill percentage of gas storage in Poland.

On 1 January 2015, storage facilities in Poland held approximately 1.9 billion m$^3$ of gas, which was 76% of the capacity. At the end of the winter season, i.e. on 31 March, they were 47% full (1.2 billion m$^3$). W 2015, regular filling operations started in early May and consumption began only in late October (mild winter). In early 2015, there was 1.7 billion m$^3$ of gas in storage (59% of total capacity). With another mild winter, there were 0.9 billion m$^3$ in storage (33% of total capacity) on 31 March 2016.

**Interconnectors**

The interconnection of the Polish gas system with systems of neighbouring countries plays a key role in energy security. Existing interconnectors support gas import from Germany, Czechia, Ukraine and Belarus. On 1 January 2015, new gas imports opportunities were provided for the western route on the Yamal pipeline with the extension of the pumping station in Włocławek. Continuous imports capabilities using virtual reverse flow on the Yamal pipeline increased from 2.3 to 5.5 billion m$^3$/year (reverse flow at Mallnow Station). Add 2.7 billion m$^3$ of interrupted capacity (import is possible only if gas flows to Germany). Other interconnectors that support gas imports include: Lasów (interconnector with Germany – 1.5 billion m$^3$/year), Drozdowicze (interconnector with Ukraine – 5.7 billion m$^3$/year), Visokoye (interconnector with Belarus – 5.5 billion m$^3$/year) and Cieszyn (interconnector with Czechia – 0.5 billion m$^3$/year). Gas exports to neighbouring countries is only possible via stations in Lasów and Cieszyn. Relatively high cost of cross-system transit made arbitrage impossible between commodity exchanges. In 2015, there were only several opportunities to purchase gas in foreign exchanges at lower prices than on the Polish exchange (including the transit cost).
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Conclusions

The gas market in Poland is no longer insular. The gas infrastructure has been extended with the new LNG terminal in Świnoujście and improved imports capabilities at Mallnow reverse flow station. Russian gas is no longer the only choice even though it still accounts for the largest import market volume. Prices both for wholesale and retail customers and at TGE have been increasingly affected by prices in Western gas hubs. Consequently, the gas market needs to be seen in a global framework.
V. RECOMMENDED SHORT- AND LONG-TERM MEASURES

Short-Term Measures (STM). Electricity
1. Speed up work on the amendment of the Renewable Energy Law to launch the auction market as soon as possible.
2. Involve electricity sector stakeholders in a process to develop, adopt and publish the new renewable energy law with deadlines that would allow the sector to comply.
3. Adopt measures to improve liquidity in the TGE electricity financial contract market and the PMOZE_A futures market.
4. Revise TGE fees to maintain a high level of liquidity in the commodity markets in the context of declining mandatory volumes.
5. Make FIM more attractive to improve liquidity in the segment.
6. Continue efforts and interactions between DSO and sellers to develop a business information exchange system in the electricity market in line with the ebIX standard; deploy CSWI

Short-Term Measures (STM). Gas
7. ERO President to deregulate all gas tariffs offered by non-POGC entities for all customers.
8. Amend legislation on mandatory storage of high-methane natural gas to reduce mandatory storage volumes for trading companies that sell gas to end customers, i.e. protected customers in line with EU regulations (households, hospitals, nursery schools, pre-school etc.) or introduce the ticketing system.
9. Amend Ordinance on diversification and ensure a clear interpretation of the Ordinance with respect to the Mallnow reverse capability.
10. Simplify and reduce reporting requirement to bare minimum.
11. Modify IRIESP of GAS-SYSTEM S.A. and IRIESD of Poland Spółka Gazownictwa Sp. z o.o. to simplify supplier switching procedure (particularly partial switching), implement uniform standards for metering data exchange, settlements under distribution agreements, and to simplify settlements on the balancing market.
12. Support measures to ensure liquidity in the core and OTC gas market.
13. Transfer the entire retail business to POGC Retail.
14. Calculate tariff gas prices based on actual cost (maximum cost).

Long-Term Measures (LTM). Electricity
1. Step up efforts to build up a power market; move from conceptual phase by engaging in arrangements with the European Commission and by finalising draft legislation and developing secondary legislation to enable the system.
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2. Actively participate in the EU level process to reform EU ETS and meet EU long-term climate policy objectives to ensure that Poland’s economic realities are properly considered and to protect the country’s economic competitiveness.

3. Step up efforts to develop Polish National Energy Policy 2050 compatible with EU energy policy and including policies for the coal and nuclear sectors in Poland.

**Long-Term Measures (LTM). Gas**

4. ERO President to deregulate household tariffs.

5. Create a gas hub in Poland and reasonably extend existing or build new cross-border capacities to improve links with the EU, ensure physical reverse flow on these links and increase capacities for cross-border gas trade and access to interchange capacities.

6. Develop a mode of interaction with LNG Terminal operator to ensure access to re-gasification services and develop capacities to trade in LNG and LNG-regasified gas.
## VI. **ACRONYMS AND TERMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Definition</th>
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<tbody>
<tr>
<td>ACER</td>
<td>Agency for the Cooperation of Energy Regulators</td>
</tr>
<tr>
<td>DSM</td>
<td>Demand-Side Management</td>
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<tr>
<td>DSR</td>
<td>Demand-Side Response</td>
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<tr>
<td>ESMA</td>
<td>European Securities and Markets Authority</td>
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<tr>
<td>EU ETS</td>
<td>European Union Emissions Trading Scheme</td>
</tr>
<tr>
<td>IRiESD</td>
<td>Distribution Grid Operation and Maintenance Instruction</td>
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<tr>
<td>IRiESP</td>
<td>Transmission Grid Operation and Maintenance Instruction</td>
</tr>
<tr>
<td>ICR</td>
<td>Invention Cold Reserve</td>
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<tr>
<td>EC</td>
<td>European Commission</td>
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<td>NES</td>
<td>National Electricity System</td>
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<tr>
<td>MoE</td>
<td>Ministry of Energy</td>
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<tr>
<td>OCR</td>
<td>Operational Capacity Reserve</td>
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<tr>
<td>OREO</td>
<td>Renewable Energy Clearing Agent</td>
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<tr>
<td>DSO</td>
<td>Distribution System Operator</td>
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<tr>
<td>TSO</td>
<td>Transmission System Operator – PSE Operator SA</td>
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<tr>
<td>PTPiREE</td>
<td>Polish Association of Electricity Transmission and Distribution</td>
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<tr>
<td>BM</td>
<td>Balancing market</td>
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<tr>
<td>IDM</td>
<td>Intra-Day Market</td>
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<tr>
<td>DAM</td>
<td>Day-Ahead Market</td>
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<tr>
<td>DAMg</td>
<td>Day-Ahead Market for Gas</td>
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<tr>
<td>GDM</td>
<td>Gas Derivatives Market</td>
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<tr>
<td>CoM</td>
<td>Council of Ministers</td>
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<tr>
<td>G tariff</td>
<td>a collection of electricity prices and tariffs for households</td>
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<tr>
<td>TGE</td>
<td>Towarowa Giełda Energii SA – Polish Power Exchange</td>
</tr>
<tr>
<td>TOE</td>
<td>Association of Energy Trading</td>
</tr>
<tr>
<td>TPA</td>
<td>Third Party Access</td>
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<td>ERO</td>
<td>Energy Regulatory Office</td>
</tr>
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</table>
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