

POLSKA ENERGIA

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This was a breakthrough year for Tauron

INTERVIEW WITH **DARIUSZ LUBERA**, CHAIRMAN OF THE MANAGEMENT BOARD OF TAURON POLSKA ENERGIA

INTERVIEW BY: **JACEK MICHALSKI**

■ ■ ■ Asked about what the year 2010 was like for his company, Chairman Dariusz Lubera answered that the year was absolutely exceptional in the history of the Group. It abounded with important events, the most significant of which was the debut on the Warsaw Stock Exchange. The exceptional character of the offer is best reflected by the figures: the value of the public offering amounted to Zł4.2bn and made it the second largest debut of an energy company in Europe. The number of individual investors who subscribed for the shares amounted to 230,000. The number of institutional investors was also large. The company's capitalization increased from Zł8.2bn, noted on the day of the debut, to Zł11.5bn on the last WSE session in 2010. The crowning of the WSE debut was the admission of Tauron to WIG20 index in December 2010.

Accounting for the results in 2010, Dariusz Lubera said that the company managed to break new records, both with respect to revenue increase (by 13 percent) and the EBITDA (Earnings Before Interest, Tax, Depreciation and Amortization), which increased by 5 percent. In his opinion, among the main reasons why Tauron achieved so good results was the growing demand for energy, both conventional and renewable. The Manufacturing Segment produced by 14.4 percent more electricity than the year before, and the Distribution Segment supplied by 37.5 TWh of electric power, which was by 3 percent more than in 2009. Companies in the group increased sales by 14.2 percent of electricity than in 2009. The particularly good EBITDA result is mostly to be attributed to the very good results of the Distribution Segment.

Dariusz Lubera emphasized that Tauron is working to increase efficiency even more. The company is implementing



a program for the reduction of operating costs, aimed to bring Zł1bn of savings in the years 2010-2012. Asked about the perspectives for the new year, the Chairman announced that the current strategy of the company is being revised in order to accommodate it to the changing legal and market conditions. The company is also implementing a program for the improvement of cost efficiency and trying to obtain funding for the key investment projects as well as the key investments connected with the consolidation of the

energy market in Poland. Finally, Tauron Holding is undergoing restructuring through the sale of companies not connected with the main profile of its activity and merging of companies involved in the same type of activity.

Dariusz Lubera expressed his hope that year 2011 will bring stabilization both with respect to prices and regulatory processes.

“This was a breakthrough year for Tauron”, p. 4-5

A gas steam block will be built in Stalowa Wola

■■■ Tauron Polska Energia and Polskie Górnictwo Naftowe i Gazownictwo (PGNiG) companies will build the largest gas power and heating plant in Poland, to be localized in Stalowa Wola. The capacity is to amount to 400 MWe and 240 MWt. Contracts concerning the realization of the project was signed on 11 March. The expected value of the investment amounts to Zł1.9bn. The new gas and steam block in Stalowa Wola will be launched at the end of 2014 and managed by Elektrociepłownia Stalowa Wola special purpose company, set up by Tauron and PGNiG, each holding 50 percent of the shares. The preparatory works have already began. The technology used is expected to meet all environmental requirements at the same time ensuring high efficiency of the block. The two companies will provide for 30 percent of the costs. The remaining part will be financed from loans. Negotiations are already being conducted with the European Investment Bank (EBI) and the European Bank of Reconstruction and Development. The company has already started preparations for the construction itself and selected the contract engineer. The main contractor will

be selected in the second half of 2011. Earlier in the year, the permission for the setting up of the special purpose company Elektrociepłownia Stalowa Wola by Tauron and PGNiG was issued by the Office for Competition and Consumer Rights Protection (UOKiK).

According to the Secretary of the State in the Treasury Ministry Jan Bury, the construction of the block in Stalowa Wola is an instance of the use of one of the most innovative of energy technologies implemented in the world by Polish companies. Thanks to the low carbon dioxide emissions it is especially advantageous from the point of view of environment protection. It is also more profitable in financial terms than traditional technologies. The Secretary has congratulated Tauron and PGNiG on their decision to realize this investment project, which is expected to have crucial importance for Poland's economy. Meanwhile, the Undersecretary of the State in the Treasury Ministry Mikołaj Budzanowski, suggested that the investment is also expected to have crucial significance in relation to the construction of the LNG terminal which is currently being realized in Świnoujście.

Opinion about the undertaking was also expressed by the Chairman of the Management Board of PGNiG Michał Szubski, who said that the project is not only a chance to obtain a new large contract for gas supplies, but also a milestone in the process of transformation of GK PGNiG into a multi-energy concern. He also expressed the hope that collaboration with Tauron and the experience to be gained by the two companies will bear fruit in the form of other joint venture projects. Meanwhile, the Chairman of Tauron Polska Energia, Dariusz Lubera, emphasized that the gas steam block in Stalowa Wola will be the largest and the most modern object of this type in Poland. The project is well integrated into the corporate strategy of Tauron, which assumes the building of new production capacities based on coal, gas and renewable energy sources. Relying on the modern and highly efficient technology will make it possible to reduce the emissions of carbon dioxide and nitrogen oxides as well as eliminate the emissions of sulphur dioxide and dust.

"A gas steam block will be built in Stalowa Wola", p. 10-11, edited by EM

World Bank: Low emissions economy in Poland is possible

■■■ According to the report "Towards a Low Carbon Economy in Poland" prepared by the World Bank, Poland may transform its economy into a low carbon economy, however, the process will certainly be a major effort. The World Bank has acknowledged that Poland is far from the level of carbon dioxide emissions encountered in countries responsible for the largest part of its production in the world. Nonetheless, due to the relatively low per capita income, the amount of emissions in relation to GDP in Poland belongs to the highest in the EU. Therefore, the World Bank is assuming that in the next few decades, Poland will have to effect an increase per capita income to the EU level, at the same time making its economy less dependent on coal based energy production. The report states it clearly that the next major challenge for Poland will be the fu-

ture international agreements on climate policy and the EU policies towards energy sector and climate change. According to the new EU energy and climate package 3x20, the most energy intensive sectors of the Polish economy included in the ETS emissions trade system should contribute to the reduction of carbon dioxide emissions by 21 percent in relation to the emissions in the EU in 2005. As far as the other sectors are concerned, the permissible increase of emissions until year 2020 will be on the level of 14 percent.

Economic Adviser of the World Bank in Europe and Central Asia Erika Jorgensen, who was among the authors of the report, believes that the reduction of emissions should be less difficult than the economic transformation Poland underwent at the beginning of the 1990s. As the name indicates, the transformation

was a multidimensional, long and complex process, affecting all sectors of the economy. According to Erika Jorgensen, it is essential to remember about the point of departure in which we shall begin the process; coal is the dominating resource in the electricity production in Poland. It accounts for more than 90 percent of the national electricity output, which is an exceptional and unprecedented phenomenon. The situation is clearly not desirable, yet, the range of possible measures to be taken in order to reduce emissions is very broad. About 120 potential solutions have been identified on the level of the energy sector in Poland. The report states that in case Poland had not taken any measures to reduce the emissions (the so called baseline scenario), the total greenhouse gas emissions in Poland would have increased by 20 percent, in relation to emissions



FOTO: EAST NEWS

from 2005, by year 2020 and by between 30-40 percent by year 2030.

Relying on the currently available technologies, Poland may reduce emissions by 30 percent by year 2030. The estimated costs of the process would amount to EUR10-15 per every ton of emissions.

In 2020, the costs of the reduction would be the highest, however, in 2030, the country would be expected to experience higher economic growth thanks to the switch to low emissions economy. On balance, the process of reduction of

emissions is expected to result in a decrease of the GDP in relation to the level which would have been achieved if the process had not been implemented, by about 1 percent per year until 2030.

It has been estimated that the cost of emissions reduction in Poland until year 2020 will be higher than the average cost to be noted in the other EU member states at the same time and may be increased even more due to the expected restrictions in the exchange of emissions licenses across sectors.

Authors of the report remark that the energy sector accounts for nearly 50 percent of emissions in Poland, however, the main challenges for the country's economy are more likely to originate in the transport sector. The high costs of investments in the energy sector will necessitate intensive mobilization of funding, while the long time needed for their realization implies that the structure of production will be changing slowly.

It is expected that the choice of the technology and decisions about new investments will depend not only on the capital expenditure, operational savings and the potential emissions reduction, but also on energy security and national supplies. The prospective improvement of energy efficiency may provide an opportunity to separate the economic growth and the level of emissions, which is characteristic for low emissions economy.

**“World Bank: Low emissions economy is possible in Poland”, p. 16-17,
ed. Emil Róžański**

Priorities of the Presidency: Will electricity in Poland become the most expensive in the EU?

■■■ In recent time, the EU has been making considerable efforts to outline a long term energy and climate policy. Further reductions of emissions will most probably remain the priority in this area. Will this necessarily imply that electricity prices in Poland will rise to be among the highest in Europe? What solutions may Poland propose in the course of its Presidency of the EU?

On 4 February 2011, the European Council held a session dedicated to energy and innovativeness. Among the most important conclusions of the session was the resolution to implement a fully integrated, functional and internally connected energy market by the year 2014. The Council emphasized the importance of promoting investments in renewable energy sources and low emissions technologies.

On 8 March, the EC was to announce the road map for the development of low emissions economy by year 2050. From the information which was revealed unofficially before the official announcement of the strategy, it transpires that the intermediate reduction targets for

greenhouse gas emissions in the entire EU will amount to 40 percent (in relation to emissions from 1990) until the year 2030 and 80 percent until the year 2050. Recommendations for the energy sector are much more radical and amount to 54-68 percent until year 2030 and 93-99 percent until year 2050. The EC has also noted the necessity to effect a significant increase in the use of renewable energy sources and related investments.

Steps taken to reduce greenhouse gas emissions and increase the use of renewable energy sources will result in a changes in the manner of operation of the energy market and necessitate the construction of energy production units of a different type, which will in turn imply the need for construction of network infrastructure and securing of a sufficient amount of flexible reserve capacity. All these actions entail costs which will affect electricity prices for individual customers. The extent of the influence will differ across different parts of the EU. In the next twenty years, Poland is expected to undergo a shift from

a country where electricity prices were among the lowest, to one where they will be highest in the EU. The change will not only reduce the competitiveness of Poland's economy but also enforce higher expenses for individual households.

In the second half of 2011, Poland will assume the Presidency of the EU. It is a commonly accepted practice that the country holding the Presidency refrains from policies aimed at the realization of goals which serve its own interest in the first place. Therefore, we certainly cannot expect that any attempts might be made to alter the assumptions of the energy and climate package. What can be done, however, is to propose a number of measures aiming to alter the manner of implementation of the package (both with respect to the measures which are already agreed on and those which are to be agreed on in the future) in a way, which would entail equal costs and benefits for all members of the EU.

**“Priorities of Poland's Presidency: Will electricity in Poland become the most expensive in the EU?”, p. 18-19,
Stanisław Tokarski, Jerzy Janikowski**

THE TECHNOLOGY OF GREAT DOUBTS



WOJCIECH KWINTA
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CARBON DIOXIDE SEQUESTRATION WAS MEANT TO BE A WAY TO INTRODUCE THE TRADITIONAL ENERGY SECTOR INTO THE ERA OF LOW EMISSIONS ECONOMY. AT THE MOMENT, HOWEVER, THE DEVELOPMENT OF THE TECHNOLOGY HAS REACHED A STAGE AT WHICH THE POTENTIAL BENEFITS ARE BEGINNING TO EVOKE SERIOUS DOUBTS.

■■■ The energy and climate package consists in a number of EU regulations aimed to reduce greenhouse gas emissions (above all, carbon dioxide) and introduce a low emissions economy. Member states have obliged themselves to achieve the expected targets by means of energy efficiency increase and development of emissions free technologies based on renewable energy sources. Also tolerated is the CO₂ free nuclear energy. The greatest problems are therefore caused by coal based electricity production, responsible for high emissions of CO₂. In the near future, both the energy sector and industries will be expected to pay for all emissions, which will have impact on prices of electricity and costs of industrial production. The restrictive approach adopted by the EC is meant to enforce the implementation of solutions restricting greenhouse gas emissions. There are practically no effective methods to reduce emissions in coal based electricity production. There is also only one generally approved possibility consisting in the carbon capture and storage (CCS) technology. The solution is seemingly advantageous for coal fueled power plants, however, it may unexpectedly turn into a cost intensive trap.

CCS installations are generally costly and energy intensive. It is estimated that they may raise the costs of construction of new power blocks by about 50 percent. They draw energy from the power plants and thus overturn the achievements of new technologies reducing their efficiency to 45 percent of the full capacity. CCS technologies may reduce the capacity by another 8-12 percent, which implies that a power plant may work at 33 percent of its capacity, which is comparable with the efficiency of old

fashioned plants. At the same time, the production of each unit of electric power requires by 30 percent greater input of coal. The CO₂ capture may take place at different stages of the process, depending on the technology used. In traditional power plants, the gas is extracted from fumes, while in IGCC installations – from the fuel just after gasification. These methods make it possible to extract between 70 and 90 percent of the CO₂. In oxy-combustion, the efficiency may reach 100 percent. After extraction, the gas must be pumped under the ground. This manner of storage has numerous opponents who are concerned about the possible negative consequences it may have, for example, for the quality of water. Reports of international organizations leave no doubt as to the fact that the CCS technology is first of all very cost intensive. According to the Global CCS Institute, costs of electricity from plants equipped with CCS installations may be by 39-78 percent higher than electricity from plants that do not use the technology. The Intergovernmental Panel on Climate Change (IPCC) predicts that the costs may rise by up to 90 percent, whereas Peter Viebahn from Potsdam Institute for Climate Impact Research has estimated that the costs increase by 50 percent. According to experts from the MIT, the increase ranges from 27 percent (IGCC) to 60 percent (supercritical coal units). Researchers from the Belfer Center for Science and International Affairs (Harvard University) have estimated the cost increase generated by the technology at USD50/1MWh. All the above mentioned calculations prove that at the current stage of its development, the application of CCS technology has no economic justification.

The German Society for Chemical Engineering and Biotechnology DECHEMA has emphasised that the storage of carbon dioxide does not generate any value added and recommended that the gas be used in biological processes, inorganic mineralisation, artificial photosynthesis and production of fuels (methanol) and plastics. CO₂ may also be used in the production of ammonium and aspirin. Finally, it may find application in processes supporting electricity production from renewable sources. Research should be directed at the investigation of algae, which photosynthesise the most efficiently with the level of CO₂ reaching 23 percent. In the process, they absorb the gas and turn into biomass. Difficulties connected with the technology concern the need for large amounts of sunlight and space, as the installations cover large areas. Nonetheless, experts from DECHEMA admit that even with the application of the latest technologies, only 1 percent of the global CO₂ emissions may be utilised by conversion into chemical products and only 10 by conversion into fuels. These solutions are also said to require many years of further research and do not offer any solutions to the problem of high costs of carbon dioxide capture (although they potentially may reduce them to some extent). At the moment, the only thing we know for certain is the direction of the future research. The main objective will certainly be the reduction of costs of CCS technologies and finding the way to utilise at least part of the extracted CO₂.

**“The technology of great doubts”,
p. 26-27, Wojciech Kwinta**

On the oceanic swing

FLOODS IN AUSTRALIA AND DRAUGHTS IN CHINA AND EAST AFRICA; THESE ARE THE OUTCOMES OF THE EXTREME WEATHER WHICH STRUCK OUR PLANET IN THE LAST FEW MONTHS. THE CAUSES LAY IN THE ACTIVITY OF THE EQUATORIAL PARTS OF THE PACIFIC OCEAN, THE MOST DYNAMIC WATER RESERVOIR ON EARTH.

ANDRZEJ HOŁDYS



It started at the end of Spring 2010 near Peru and Ecuador. The temperature of the ocean water fell unexpectedly. At the beginning of Summer it was already well below the standard level. That was a clear indication that La Nina was coming. At the end of July 2010, disastrous rains fell on the area accounting for 20 percent of Pakistan. In some places, the rainfall reached the level of 40 cm. The clouds reached as far as the Arabian Peninsula, which has not seen so much rain in the summer period for many years. Heavy rains fell in China. The amount of water flowing into the gigantic artificial reservoir on Yangtze river, called the Three Gorges Dam, last July and August, reached up to 70,000 cubic meters per second. The amount was seventy times bigger than the volume of Vistula. The water level was rising at the rate of five meters per day.

The name La Nina ("girl") was proposed by scientists 25 years ago as the opposite of El Nino ("boy"), denoting a more frequent phenomenon, which also appears periodically in the Equatorial Pacific. This time, it could be predicted as soon as September, that La Nina will strike with exceptional force. Shortly afterwards, low pressure areas formed over Asia and Australia, causing a number of dangerous phenomena such as storms, thunderstorms and hurricanes. In December, La Nina struck the East Coast of Australia. In many states the rainfall was the highest in history. Queensland was devastated by the most violent storm it has seen for many decades. Heavy rains fell in Malaysia, Indonesia and the Philippines. The situation in the Pacific Ocean has also contributed to the emergence of exceptionally heavy rains in South Africa. Researchers admitted that they had not

been expecting the "girl" to be so violent. Admittedly, however, it is very difficult to predict the behaviour of the ocean for more than a few months ahead.

It was 80 years ago when a British meteorologist, George Walker, noticed that the movements of pressure over the tropical areas of the Pacific resemble the pendulum – whenever the pressure rises in the East, it decreases in the West and vice versa. The phenomenon is known as the ENSO (El Nino/Southern Oscillation). El Nino and La Nina appear every time the pendulum swings to the extreme position.

The latest excesses of the "girl" included draughts, which affected South America, East Africa and China. It is not certain whether it was the Pacific Ocean which contributed equally to all those

in the years 1983-1985 and 1998-2000.

The third scenario is that after 12 months of peace, El Nino will appear again, which would be a confirmation of the assumptions made by some researchers who believe that the Pacific will be more and more unpredictable due to the climate change, making the weather equally whimsical.

There are some more forecasts, saying that the conditions which have so far been appearing seasonally with the strike of La Nina may stay for good and deprive east Africa and South America of their rains, sending them to the monsoon regions in Asia, along with cyclones and typhoons.

The only way to tell how the situation will develop in the future is to look back to the trends from hundreds and thou-



FOTO: FORUM

phenomena. Could La Nina affect the weather in the inter-tropical zone? It is generally believed that the low temperature of the Pacific Ocean may affect temperature on the entire globe, yet, no explanation has as yet been offered as to how it is actually taking place.

La Nina started to recede in mid February. When will it disappear? There are three possible scenarios: the first possibility is that the swings will subside and the weather will be calm again. The second assumes that La Nina will return in Autumn, as it had happened before,

sands of years ago. As far as this year is concerned, the first predictions can be made at the beginning of May, when the movements of the meteorological buoys located on the Ocean by the Japanese and US researchers will indicate the trends to be expected in the second half of the year. If La Nina is to be followed by an equally forceful El Nino, we may expect the record of the average temperature on the globe to be beaten this year.

"On the oceanic swing", p. 28-29,

Andrzej Hołdys