

REPORT FROM THE  
SEMINAR

Chances for Execution of the  
Energy and Climate  
Package



and consequences of failure to do so



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The seminar entitled **Chances for Execution of the Climate and Energy Package (and consequences of failure to do so)**, held in Warsaw on 13 July 2010, was a continuation of two-stage open consultations of the desired provisions of the Polish National Programme for Reduction of Emissions. The consultation process was opened with the fourth International Conference *NEUF: New Energy User Friendly 2010*, entitled *Public consultations of road maps of the National Programme for Reduction of Emissions*. Among the participants were: Ms Connie Hedegaard, European Commissioner for Climate Action; Mr Waldemar Pawlak, Polish Deputy Prime Minister and Minister of Economy; Professor Andrzej Kraszewski, Polish Minister of Environment, and Ms. Hanna Gronkiewicz-Waltz, Mayor of Warsaw. In total, the event was attended by 400 participants.

The organisers of the event were: Procesy Inwestycyjne Sp. z o.o., ETA Association for Energy Efficiency and the Eugeniusz Kwiatkowski Institute.

The seminar was co-financed by the National Fund for Environmental Protection and Water Management.

The objective of the seminar was to identify the desired solutions from among those laid down in legislative systems of other countries and to indicate areas which, being specific to Poland, require special attention and unique decisions.

The main problem of the Polish energy sector is its decapitalisation which results directly from the old age of the infrastructure. In the last five years, the Pątnów II and Łągisza II power plants were commissioned. The construction of Bełchatów II and Częstochowa power plants is coming to an end. At the Opole power plant, units 5 and 6 are planned to be built in the near future. However, all this is only a drop in the sea of needs. To stop the technical decapitalisation process, investments are needed at least on the level of 625 MW per year. The sources are decapitalised in 79%. Hardly any transmission lines are built. Transmission networks are decapitalised, in some cases, even in 71% (63% in the case of heat). To stop the process of the technical infrastructure decapitalisation, investments are required on the level of 16 billion €/year (out of this amount, 5 billion euro per year should be spent on the power sector). This is a very challenging task which may be described as the country's "re-electrification". Such investments may not be funded with loans as the creditworthiness of the Polish power sector is insufficient (9 - 12 billion €), and by the year 2015 we are going to need 25 billion €. It should be added that the repayment of interest would cause an enormous price increase. Thus, other solutions must be sought.

One of the main objectives of the EU climate policy is to counteract global warming. This is reflected in the assumptions of the Climate and Energy Package and in legislative acts counteracting climate change, developed by the governments of the Member States. Poland implements its commitments undertaken under the Package: since the signing of the Kyoto Protocol we have reduced our emissions by 30% (at the same time, however, we have managed to achieve significant progress in economic development: our GDP has increased by about 70%). Yet, relevant legislative work has only just begun. Therefore, a public debate on the shape of the National Programme for Reduction of Emissions is necessary.

The aforementioned issues became the focus of the seminar entitled **Chances for Execution of the Climate and Energy Package (and consequences of failure to do so)**.

**Among the participants of the discussion were:**

- Prof. Krzysztof Źmijewski, Secretary General of the Public Board of the National Programme for Reduction of Emissions;
- Prof. Tomasz Źylicz, PhD, Vice-Chairman of the Working Group on the Climate and Energy Package, the Public Board of the National Programme for Reduction of Emissions; Dean of the Faculty of Economics, University of Warsaw;
- Maciej M. Sokołowski, Executive Director of the Secretariat of the Public Board of the National Programme for Reduction of Emissions;
- Wojciech Stępniewski, Manager of the Climate and Energy Project, WWF Polska;
- Arkadiusz Węglarz, PhD, Secretary of the Working Group on Energy Efficiency, the Public Board of the National Programme for Reduction of Emissions; Director for Sustainable Development, Polish National Energy Conservation Agency;
- Daniel Borsucki, Chief Engineer for Utilities Management, Katowicki Holding Węglowy SA [Katowice Coal Holding, a joint stock company];
- Zbigniew Michniowski, Vice-President of the European Association "Energy Cities", Deputy Mayor of the City of Bielsko-Biała;
- Henryk Kaliś, Chairman, the Electricity and Gas Consumers Forum;
- Prof. Ryszard Ciach, President of the Foundation for Solar Energy Development, University College of Environmental Sciences in Radom.

**The seminar was chaired by Ms. Marina Coey**, President of the Management Board of Procesy Inwestycyjne Sp. z o.o.

**Ms. Anna Ogniewska, Information, Promotion & PR Manager at Procesy Inwestycyjne Sp. z o.o.** welcomed the participants, presented the event subject and speakers and thanked the strategic sponsors, event partners, media patrons and all the participants for their interest in the event.

**Ms. Marina Coey, President of the Management Board of Procesy Inwestycyjne Sp. z o.o.** and the chairperson of the seminar gave an opening speech and emphasised the strategic importance of the issues to be tackled during the event. Then she gave the floor to the first speaker.

The seminar's part devoted to the speakers' presentations began with a presentation by **Prof. Krzysztof Źmijewski, Secretary General of the Public Board of the National Programme for Reduction of Emissions.** The presentation was entitled "Infrastructure: an inventory for the last two decades". Professor Źmijewski opened his presentation by emphasising the mission of the the Public Board of the National Programme for Reduction of Emissions established by Deputy Prime Minister and Minister of Economy Waldemar Pawlak. The Board's role is "to provide competent, independent and comprehensive strategic expertise enabling the implementation of the constitutional principle of sustainable development." The main objective of the Board is to optimise the emissions reduction process and to increase energy efficiency as the key tool for climate protection. Then the speaker presented the structure of the Board, its tasks and their advancement. The National Programme for Reduction of Emissions is of great significance for Poland. The derogation of the obligation to purchase 100% of CO2 emission allowances in the auctioning system, granted to the country, depends on the Programme's correct development and subsequent implementation. The scope of the programme is very wide and its implementation is going to be highly expensive; the level of investment may be close to the one assumed in the Marshall Plan.

The condition of the Polish power system is not encouraging. In technological categories, Poland's system is outdated which directly influences issues such as the country's energy security, production capacities, possibility to reduce GHG emissions, power demand control as well as construction and connection of new sources. Other problems of the sector are high emission levels, discrepancy between supply and demand in specific regions, low energy efficiency, energy mix strongly dominated by coal, and low flexibility. In this situation we have to construct new capacities and about 2.5 thousand km of transmission lines (yet, in the last years we built about 40 km annually). In 2030 we will have to switch off 60% of the currently operating production capacities. This condition

results from non-investment over the past 20 years. The technical decapitalisation process is strongly advanced: 73% for power plants; 71% for transmission networks; 75% for power distribution networks, and 63% for the heat sector. The decapitalisation level increases together with the State Treasury's share in a given sector. Poland has to accelerate the infrastructure modernisation process already today as, for instance, the construction of new power generation units is an extremely laborious and long-term process. For investments in the infrastructure, also required under the Climate and Energy Package, about 320 billion € is needed. However, this is not a result of the EC requirements but mainly of our own negligence.

To the end of his presentation Prof. Żmijewski emphasised the objectives and the need for implementing the European Climate and Energy Package which will help us to rebuild the infrastructure and thus to become a more effective economy.

**The next presentation was given by Prof. Tomasz Żylicz, Vice-Chairman of the Working Group on the Climate and Energy Package, the Public Board of the National Programme for Reduction of Emissions, and Head of the Warsaw University's Centre for Environmental Economics.** He stated that the Climate and Energy Package does not directly relate to climate but rather to the energy sector. According to Prof. Żylicz, the single-sided (European) CO<sub>2</sub> emission reduction programme may bring benefits on the continental scale but at the same time is going to negatively impact the world climate. The reason is that even if the EU does not emit CO<sub>2</sub> in Europe it will do this indirectly in other regions of the world. To protect the world climate, tools are required which limit the emissions on the global scale not on the local one. To reduce the emissions by 20%, the European Commission requires, inter alia, changes in fossil fuels consumption and the development of CCS and RES. To reduce the CO<sub>2</sub> content in fuels, the Emissions Trading Scheme (EU ETS) has been introduced; national carbon taxes for small sources are planned; low-carbon and RES technologies are promoted. The CCS technology is also promoted; however, it does not seem to be an effective solution for the future.

As concerns the 20% energy efficiency increase, extensive research is carried out to develop the most effective programme in this field. However, the promotion of technologies which increase energy efficiency may, in turn, generate a rise in demand for more effective goods and services (the so-called "feedback effect"). Professor Żylicz noted that the lack of macroeconomic approach to, and reliable research on, these technologies may lead to a situation in which they will be implemented regardless of their practical functionality and applicability.

As regards the development of RES, the speaker noted that the annual operating time of individual RES sources in Poland is, in most cases, seven times shorter than in the case of conventional sources. However, the development of renewable energy sources has a good perspective because of their multiplicity (wind, water, solar energy, biomass, geothermal energy and others) as well as the existing support schemes: green certificates, feed-in tariffs and fossil fuel taxes. Although the use of RES entails the risks connected with co-incineration (controversial from the environmental point of view), destruction of biodiversity and the necessity to maintain the so-called hot capacity reserve, it also brings additional benefits such as the local-scale promotion of environmental protection and health care, and increase in energy security.

To the end of his presentation Prof. Żylicz stressed once again that the Climate and Energy Package does not directly refer to climate protection on the global scale, and that some solutions to be implemented within the Package entail numerous technological pitfalls that must be avoided.

The next speaker was Mr. **Maciej M. Sokołowski, Executive Director of the Secretariat of the Public Board of the National Programme for Reduction of Emissions**. His presentation focused on the risks for Poland, arising from the provisions of the EU-ETS Directive. First the speaker discussed the basic assumptions of the Climate and Energy Package, including, in particular, the regulations of Directive 2003/87/EC aimed at improving and extending the EU's GHG emission allowance trading scheme (EU ETS). Special attention was paid to the regulations relating to the rules of allowances allocation and purchase. Then, Poland's situation in the above context was presented.

Mr. Sokołowski explained that the so-called derogation, negotiated in December 2008, allows for temporary, free-of-charge allocation of emission allowances. This possibility is reserved for those member states which meet either the so-called *network condition*<sup>1</sup> or the so-called *coal condition*<sup>2</sup>; Poland has been granted the derogation under the coal condition. The speaker stressed that the system of free allocation of CO<sub>2</sub> emission allowances is restricted by a number of detailed but not clearly laid down conditions relating to the settlement of the saved amounts (their use for investment in low-emission projects). Mr. Sokołowski indicated that another problematic issue is the vague provisions of the EU legislation relating to the system's impact criteria. He pointed out

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<sup>1</sup> the national electricity network was not, in 2007, directly or indirectly connected to the network interconnected system operated by UCTE

<sup>2</sup> or where, in 2006, more than 30 % of electricity was produced from a single fossil fuel, and, where in 2006 the gross domestic product per capita at market prices did not exceed 50 % of the average gross domestic product per capita of the EU

that in this context the issue most important for Poland is the resolution and legal regulation of the problem of investment projects started before 31 December 2008 and not completed before 30 June 2011. Are the physically started investment projects going to be treated as "new entrants"? (this would mean no derogation for new investment projects).

The speaker added that the condition for obtaining the derogation is sending to the EC, no later than by 30 September 2011, a detailed application containing the proposed allocation methodology and a list of installations covered by the system. The most important part of the application is the so-called. national investment plan that provides for investments in retrofitting and upgrading of the infrastructure and clean technologies. Based on the plan, the country will carry out its settlements with the European Commission. In conclusion Mr. Sokołowski stated that the development of the National Programme for Reduction of Emissions will help build the national investment plan, whose implementation will lead to the improvement of infrastructure and reduction of emissions.

The next presentation was given by **Mr. Wojciech Stępniewski, Manager of the Climate and Energy Project, WWF Polska**. He tried to answer the question whether it is possible to reduce primary energy consumption by 20% without implementing investment projects.

CO<sub>2</sub> emissions may be reduced for instance by reducing energy consumption, developing energy efficient technologies, low emission transport, flexible CDM, JI and cogeneration mechanisms, CO<sub>2</sub> conversion to natural gas, and use of renewable energy sources. In the future there will probably be new opportunities such as the use of hydrogen in fuel cells, CCS, coal gasification, artificial photosynthesis, and coal-nuclear synergy. However, in this perspective, the most cost effective solution is the increase of energy efficiency.

Mr. Stępniewski presented the potential for energy consumption reduction and the possibilities of energy efficiency increase for:

- industry (high potential; large diversity in terms of possibilities to increase efficiency indicators; need to move to more efficient technologies);
- households (high potential: cooling, cooking and dishwashing appliances; thermal modernisation of buildings; automation and control systems; heat recovery from ventilation systems; modernisation in the field of boilers and water flow-through heaters; installation of solar panels; more efficient light sources; the necessity to change behaviours and attitudes);

- electrical drives (replacement of engines, pumps, etc; the total saving potential: 12 432 GWh/year);
- buildings (construction of low-emission and passive buildings; preparation of a plan towards increase in the number of "almost zero-energy" buildings; improvement of thermal modernisation systems; energy certificates);
- transport (incentives to buy hybrid and electric cars; flex-fuel; fiscal barriers to purchase of SUVs; development of electricity infrastructure; promotion of bus lanes; improvement of railway infrastructure and urban rail transport; improvement of public transportation systems).

The development of energy efficiency reduces greenhouse gas emissions at negative cost of investment because the implementation of pro-efficiency measures generates a return of investment costs. This is possible thanks to the savings obtained. In order to develop energy efficiency, special support mechanisms for companies, such as the Energy Efficiency Act, certificates or thermal modernisation funds, should be improved or introduced.

Development perspectives for thermal modernisation of buildings and construction of low-energy buildings were presented by **Dr. Arkadiusz Węglarz, Secretary of the Working Group on Energy Efficiency, the Public Board of the National Programme for Reduction of Emissions; Director for Sustainable Development,** Polish National Energy Conservation Agency. The condition of buildings in Poland significantly differs from the average condition in the EU. Buildings consume about 40% of all primary energy consumed in the country. 80% out of their consumption is used for heating. The largest amount of energy is consumed by residential buildings. While presenting the condition of buildings and the possibilities of energy-efficient buildings' construction in Poland, the speaker presented detailed technical data for energy-efficient buildings: 7, 5 and 3 litre buildings, passive buildings and zero-energy buildings. The data included:

- percentage of heat losses in residential buildings;
- energy consumption by different types of buildings;
- sizes of heat savings in various types of energy-efficient buildings, and energy efficiency potential of newly constructed buildings;
- additional investment layouts necessary for achieving specific energy characteristics of low-energy buildings, and the possibility of the investment layouts' return in the Polish conditions;



- calculations of simple rates of return on investment in energy-efficient buildings for needed different energy carriers (natural gas, fuel oil, electricity).

Then, the speaker presented buildings' energy saving potential that can be achieved as a result of their thermal modernisation which significantly reduces buildings' heat demand. According to the Polish National Energy Conservation Agency (KAPE), the cost of implementing the thermal modernisation potential is 68 billion PLN.

The development of energy-efficient buildings and thermal modernisation technologies may contribute to meeting the assumptions of the Climate and Energy Package in the construction sector. In Poland, the sector still has a large energy-saving potential and has to use it so that the same living standards as in the "old" EU member states can be achieved in Poland. To this end, new support mechanisms and legislative solutions relating to energy efficient building are required.

**Mr. Daniel Borsucki, Chief Engineer for Utilities Management, Katowicki Holding Węglowy SA**, gave a presentation prepared jointly with Mr. Henryk Paszcza, Director, Industrial Development Agency in Katowice. The presentation concerned investment needs of the Polish hard coal mining sector. Details were presented concerning the size of hard coal and lignite deposits in Poland. It was also noted that the goal of the state administration's policy towards the sector is to rationally and effectively manage the coal deposits located in Poland so that they can also be used by future generations.

According to the forecasts, until 2030 the situation in the sector is going to be fairly stable in terms of the number of mines and sufficiency of deposits. However, an increase is necessary in the number of new investment projects opening new deposits and layers and making it possible to open new coal mines and use more efficient extraction methods. Without such projects, the situation of the Polish mining industry may significantly deteriorate. The factors adversely affecting the condition of the sector include a growing surplus of coal imports over exports which results from the industry's operation on the competitive market.

At present, the main objectives of investment projects in the coal-mining industry are:

- making up for losses in the production capacity while maintaining the safety of miners and ensuring compliance with environmental standards;
- effective spending of financial resources in order to achieve the desired benefits in the future.

The investment projects should include in particular:

- large-scale investment projects (new excavations, coal enrichment plants, environmental protection units);

- purchases of finished goods (powered supports, cutting machinery, transport equipment).

The investment outlays necessary for the period 2010-2015 are estimated at around 15 billion PLN (and at 25 billion PLN for the period until 2020).

The implementation of the said investment projects would make it possible to:

- use new amounts of the resources;
- increase the resource base after 2015 by approximately 54%;
- extend the life cycle of coal mines in relation to the values specified in their functional strategies;
- increase energy security of the country by meeting the energy demand through sufficient hard coal extraction;
- increase the certainty of coal supply to commercial power plants;
- maintain Poland's role in the EU as a significant producer of coking coal.

The European initiative "Covenant of Mayors" as a chance for getting Polish cities involved in the implementation of the Energy and Climate Package was discussed by **Mr. Zbigniew Michniowski, Vice-President of the European Association of Energy Cities, Deputy Mayor of the City of Bielsko-Biała**. The conference of the cities-leaders in the implementation of environmental protection projects, which was the opening event of the "Covenant of Mayors", took place in 2008. It was attended by over 300 representatives of cities, mainly those grouped in Energie Cities Europa. 41 cities, including Bielsko-Biała, declared their accession to this initiative of the European Commission.

On 10 February 2009 the city of Bielsko-Biała, together with 365 other cities, signed a declaration in which, among others, it undertook to:

- go beyond the 2020 targets set out for the EU, by reducing carbon dioxide emissions by at least 20% through implementing an Action Plan for Sustainable Energy;
- preparation of emissions inventory as a basis for the action plan.

The Action Plan for Sustainable Energy, prepared for Bielsko-Biała, included an inventory of CO<sub>2</sub> emissions as compared to the base year 1990; an emission forecast for 2020 was also included. As a result of relevant calculations it was estimated that the emission reduction potential of the city's energy management system, until 2020, is approximately 245 000 tons. It should be emphasised that the largest emission-reduction potential lies in the rational consumption of energy, particularly heat. Without the involvement of cities as the consumers of more than 75% of energy consumed in the country, energy

efficiency policy implementation in Poland can not succeed. The required emission reduction to be achieved by the city of Bielsko-Biała in the period between 2010 and 2020 is 186 768 tons of CO<sub>2</sub> (on average, 18 677 tons of CO<sub>2</sub> per year).

The most important measures leading to the emission reduction include thermal modernisation of buildings, change of behaviour patterns (energy saving), use of energy efficient equipment and technologies, use of renewable energy sources, and change of transport habits.

The speaker also discussed selected scenarios for the implementation of the city's commitments and presented the adopted action plan. The activities which must be carried out require large amounts of money and thus financial and legal support mechanisms are needed. The cost reduction as a result of increased efficiency and the proportional avoidance of emission fees will not by themselves be able to compensate the costs incurred under the city's Action Plan. Bielsko-Biała undertook the commitment because it has experience in implementing projects aimed at reducing energy consumption and CO<sub>2</sub> emissions; among these projects are:

- use of heat pumps in municipal buildings;
- use of biogas from waste treatment;
- municipal heat distribution network's reconstruction consisting in the elimination of steam pipelines, replacement of old-type water pipes with pre-insulated pipes, reduction of transmission parameters and modernisation of heat distribution substations (reduction of heat losses);
- installation of solar panels on municipal buildings;
- cooperation with local companies and local community organisations.

Of importance for the participation in the initiative is also the city's long-term cooperation with other Polish and European cities within the associations dealing with energy efficiency and climate protection.

Mr. Michniowski summarised his presentation by stating that if all citizens of Bielsko-Biała reduce their energy consumption (electricity, gas and heat) by only 1%, the city's annual greenhouse gas emissions will be reduced by around 6 200 tons.

**Mr. Henryk Kaliś, Chairman of the Electricity and Gas Consumers Forum**, gave a presentation entitled *Domestic offset as a method of cost reduction in industry*. He stressed that the Climate and Energy Package has a major impact on the policies and competitiveness of Polish industrial plants. This was discussed on the basis of the comparison of energy costs and energy policy costs in Poland and in Germany. The requirements of the Package pose a threat to the competitiveness of the Polish industry

by increasing production costs. EC treats individual member states unequally, which leads to situations such as the one in Spain. Spain, despite its failure to meet the Kyoto Protocol targets, was given the possibility to continue to increase its emissions, while the new EU member states (including Poland), who have not only met the targets but have even gone beyond them, are forced to continue the reduction measures.

The next part of the presentation focused on the rules for allocating free-of-charge emission allowances in the energy sector and outside it. The derogations in the power sector which postpone the obligation to purchase 100% of the necessary CO<sub>2</sub> emission allowances until 2020 will not bring any reduction of energy costs to the Polish industry. In fact, all they guarantee to the Polish power sector is the funds for investment projects<sup>3</sup>; the market value of the projects is equal to the free allowances allocated to Polish power plants in the years 2013-2020. The costs incurred by the Polish industry as a result of increase in electricity prices will rise (indirect emissions). The derogations in the power sector may make it impossible for Polish -intensive industries to obtain compensations connected with "indirect emissions", e.g. in the form of free allowances (as a result of shifting the generated production cost from the area of allowance purchase to the area of financing investments in the power sector infrastructure).

The Electricity and Gas Consumers Forum compiled a list of objections to the system of free CO<sub>2</sub> allowances and presented the risks to the Polish industry. The main risks are:

- significant reduction of the number of free allowances and the impossibility to fully cover the costs generated by the ETS;
- lack of definition, in the Directive, of the mechanisms of granting free allowances for indirect emissions (the freedom left to member states in this field will lead to further differentiation of costs incurred by European manufacturers solely as a result of implementing different national energy policies; consequently, further decrease of Polish industry's competitiveness will take place.)
- the above mentioned concerns are well grounded; this is confirmed by the fact that Poland is not involved in the works on developing the principles of granting compensations/free allowances to installations prone to carbon leakage as a result of allowance cost inclusion in electricity prices.

The indirect costs of the derogations and the direct costs of the reduction are going to be immense. A chance for their slight mitigation is the domestic offset. Projects implemented in EU Member States and aimed at reducing greenhouse gas emissions outside EU ETS should generate allowances or credits that can be used both in and outside EU-ETS. A condition for the system's implementation is the issuing, by the European Commission, of executive regulations based on which such projects could be implemented. Their implementation should also extend to those types of activity whose

inclusion in the EU-ETS will not be possible. Domestic Offset is a chance but would also require changes in the thinking about business.

The seminar's part devoted to the speakers' presentations ended with a presentation by **Prof. Ryszard Ciach, President of the Foundation for Solar Energy Development, University College of Environmental Sciences in Radom**. Prof. Ciach paid attention to two problems connected with the implementation of the Climate and Energy Package:

- failure to achieve 15% share of RES by the end of 2020 will entail financial consequences in the form of limitation of the EU funds:
  - increase in CO2 emission fees proportionally to the RES share below 15%;
  - continuation of the costly modernisation of the relevant part of the coal-based power industry.
- consequences of RES reduction to 15% instead of 20% by the end of 2020: Poland may be located among the B group countries due to its own fault.

According to the speaker, the country's energy policy treats renewable energy sources as marginal ones. Biomass is often considered to be the most promising source. However, many experts criticise this approach. For example, they emphasise limited agrarian possibilities of Poland. Moreover, our rules of biomass co-incineration are not consistent with the EU guidelines. The wind energy sector is well developed in the world but the Polish law contains numerous obstacles to the development of wind sources; moreover, there are problems with connectivity to the network and with people's attitude to wind technologies. The development of hydropower is restricted by geographic conditions and its potential is low.

According to Prof. Ciach, our main possibilities are connected with the development of solar energy systems. If as little as 1.1% of the country's area is allocated to photovoltaics, the country's energy demand can be met. However, we still lack support systems for solar technologies in Poland.

The EU's energy security is threatened by growing imports of energy. Therefore, energy policy should be focused on the development of RES based on the country's national sources. The development of RES is going to lead to a situation in which prices of energy from these sources will be lower than the prices of electricity generated with the use of coal. In the European Union, such a phenomenon is called Grid Parity. In Spain, Italy and Germany such a situation is expected in 2014-2015. Poland's Energy Policy until 2030 assumes, however, a continuous increase in the prices of electricity generated from coal.

## **DISCUSSION PANEL**

Mr. Witold Michałowski representing the quarterly magazine "Rurociągi" ("Pipelines") stated that the alarming messages connected with the greenhouse effect are merely a result of financial engineering. He also stressed that CO<sub>2</sub> does not have to be treated only as a "pest" but can also be treated as a resource.

Mr. Walenty Kobus, the Association for Development of Small Hydroelectric Power Stations, said that during the presentation the speakers did not pay sufficient attention to the development possibilities of the hydropower sector and to the potential of dispersed energy sources. Another problem is the tax system in the country: instead of fighting for increasing energy efficiency of the sources, people are forced to fight with the tax system as such.

Mr. Ryszard Śnieżyk, independent expert, stressed that Poland implements projects that are inefficient (e.g. the extension of the Opole power plant and inadequate implementation of CHP projects and projects connected with dispersed energy sources.)

Prof. Wrzesiński of Warsaw University of Technology, also representing the quarterly magazine "Rurociągi" ("Pipelines"), stated that power generation in Poland is based on coal which is why the use of modern technologies is of greatest importance. After its purification CO<sub>2</sub> can be used for hydrogen and oxygen production; Poland should implement more research programs (e.g. within the Rafael project).

Mr. Marek Kowalski, representing the Polish Confederation of Private Employers called "Lewiatan", suggested that there exist solar technologies which are cheaper and more efficient than those presented during the seminar.

In response to Mr. Kowalski's statement Prof. Ryszard Ciach pointed out that the technologies that potentially seem more efficient are in fact either very expensive or simply ineffective.

Mr. Krzysztof Biernat, Fuels and Renewable Energy Institute, made the following statements:

- While talking about biomass we have to bear in mind the opportunities brought by the use of waste energy;
- The costs of solar energy systems are still very high;
- Dispersed energy sources should be promoted;
- CCS is not a solution to the problems connected with CO<sub>2</sub>.

Prof. Żmijewski strongly emphasised that even if there were no necessity to counteract global warming we would still have to upgrade our infrastructure because it is outdated. If we do this in an energy effective way we will just get additional benefits.

Mr. Józef Neterowicz, Radscan Intervex Polska, stated that:

- An additional effect of the development of biomass technologies is an increase in the number of jobs,
- Waste is the only fuel whose price is negative but in Poland there is still a lot to be done in the field of waste management. We should pay more attention to waste technologies because they bring more benefits than nuclear energy technologies.

Mr. Jacek Biskupski, The Foundation for Solar Technologies Development, said that the we should develop solar technologies because they bring many opportunities. Waste from the production of photovoltaic systems will not be a problem since technologies for silicon recovery from photovoltaic devices are already being developed.

Mr. Krzysztof Bańka asked Mr. Michniowski, Mayor of Bielsko-Biała, about the possibilities of building environmental awareness among local communities.

Mr Michniowski replied that what is most important is the continuous nature of the activities and the starting of environmental education at the earliest possible age. The city of Bielsko-Biała implements awareness building measures inter alia within the project "Zero emission school". Pupils prepared a programme based on which a school building was covered with photovoltaic cells and the rest of the emissions is going to be offset by planting a forest. What is most important is to change the mindset.

Mrs. Maria Dreger, Rockwool Polska Sp. z o.o., stressed that the policy should be carried out using the bottom up approach because energy solutions should serve the consumers. Therefore, consumers should be viewed as the main chain in the process.

Mr. Zbigniew Nowakowski, Social Environmental Institute, also stressed that the issue of energy efficiency is very important. It is necessary to undertake social education measures aimed at achieving energy savings at the largest possible scale.

Mr. Grzegorz Onichimowski, TGE SA, noted that the presentation given by Prof. Żmijewski lacked the European context. If Poland becomes a part of the pan-European energy market the Polish consumers will not have to pay more for energy than consumers from the neighbouring countries. To achieve this situation we need to focus on the development of interconnections between the national systems. Mr. Onichimowski also stated that the market should regulate itself; support schemes distort the market mechanisms thus leading to pathologies.

Prof. Żmijewski agreed with Mr. Onichimowski but at the same time pointed out that the construction of transboundary connections in our country is going to be a lengthy process because it is just one of the many interrelated problems.

Mr. Wojciech Konecki, CECED Polska, paid attention to the need to convince decision-makers of the importance of energy efficiency issues. The industry sector is already convinced; what is needed now is the regulatory measures.

Prof. Żmijewski stated that the Public Board of the National Programme for Reduction of Emissions works towards convincing the decision makers, however such processes usually take a lot of time.

Mr. Grzegorz Szymczyk, Gamesa Energia Polska Sp. z o.o., emphasised the problems connected with the complexity of the energy certification system, the different classifications of energy generated by one source as green energy and red energy (biomass from biogas plant/biomass from gasification) and the politicisation of the approach to waste energy.

Mr. Mirosław Jankowski, representing the magazine "Energia i Budynek" [Energy and Buildings], focused on the problems of technologies used in solar collectors and the need to classify subsidised collectors in order to eliminate unfair competition.

Ms. Waleria Skarżyńska, the National Fund for Environmental Protection and Water Management, emphasised the importance of local governments' activities aimed at emission reduction.



## **CONCLUSION**

One of the main objectives of the European Union is to counteract global warming. This objective is reflected in the assumptions of the Climate and Energy Package and in legislative acts developed by the Member State governments with the aim to combat climate change. Poland has only recently started its work in this area. Therefore, it is of utmost importance to precisely determine the directions of the future activity. The aim of the seminar was to discuss the shape of the National Programme for Reduction of Emissions as a means of implementing the Climate and Energy Package adopted by the EU. However, the requirements of the Package should not be the only motivation for us to act; it should be remembered that the Polish infrastructure requires thorough modernisation and restructuring.

The fulfilment of the requirements of the EU Climate and Energy Package is not just a formal requirement to meet the "3x20" target but is, first of all, in line with the long-term interest of Poland.

All presentations given at the seminar and a video recording of the event can be found at the website of Procesy Inwestycyjne Sp. z o.o., at: [www.proinwestycje.pl](http://www.proinwestycje.pl).