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**Influence of the Climate Policy of the European Union on the Competitiveness of Pollution-generating Sectors of the Polish Economy in the Context of Sustainable Development**

**Abstract**

*The text analyses the influence of the EU climate policy on the competitiveness pollution-generating of sectors of the Polish economy. Study of literature and the results of the questionnaire survey, carried out in 2008 in enterprises located in Poland and representing the steel, glass, aluminium and cement industries became a basis for formulating conclusions concerning the consequences of the climate policy already implemented and planned after 2012.*

*The EU climate policy, particularly the common system of emission allowances trade, makes the enterprises face new developmental barriers. The expected increase in production costs will not only slow down the production dynamics, but may also entail lowering the competitiveness of Polish companies compared to companies from outside the EU, to which the greenhouse gasses emission limits do not apply. Adverse consequences for employment and for regional development should also be considered indisputable. If that was accompanied by an emission leakage outside the EU, achieving the global purposes of the climate policy would also become questionable.*

*The businesses surveyed represent industries which are pollution generators by their nature and even ecologically-oriented technological progress is incapable of ensuring considerable emission reductions without general switching of the economy to renewable energy sources.*

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## **1. Introduction**

Systematically conducted research proves that there is a considerable multidimensional influence of man upon the natural environment, including the Earth's atmosphere and the climate. In most cases the changes occurring are assessed as negative, which encourages undertaking operations aiming at stopping the escalation of unfavourable tendencies and at restoring the disturbed balance in the ecosystem. At present, most attention on the international forum is devoted to counteracting climate changes triggered by the economic activity of man. These issues are very complex, and, as the current experience indicates, it is extremely hard to reach agreement regarding the schedule, as well as the form and the addressees of the operations proposed. The shaping of international climate policy and its influence on the development is a vast research area, and the present paper only analyses a small fragment of it. On the basis of available literature and of questionnaire surveys carried out in 2008 in companies, located in Poland, and representing steel industry, aluminium metallurgy, glass works and cement industry, it has been possible to formulate essential conclusions concerning the influence of the EU climate policy upon the possibility of realization of sustainable development.

## **2. The issues of climate change**

Climate is one of the most crucial factors determining the functioning of societies and economies, as well as the entire ecosystem on the Earth. It is a complex phenomenon, commonly defined as the entirety of the weather conditions typical of a given area, including the average course of the annual rhythm of their changes over a longer period. A new paradigm of "changeable climate" starts to be used in climatology. It is accepted as a result of observation of various phenomena and objects. Interesting evidence is provided by paleoclimatology which tries to discover the changes in the Earth's climate from the data buried in the traces of biological, chemical, geological processes occurring in the recent and more distant past. Climate is influenced by numerous phenomena occurring in the earth's atmosphere, related to the solar radiation, energy balance, water circulation and air circulation, as well as by geographical factors such as: the latitude, elevation above sea level, land relief, or the character of base soil. The influence of man is also significant, mainly by means of the intensity and the character of his economic activity. Currently, scientific research related to climate is carried out by numerous research centres worldwide, which has been reflected in rich literature (Schönwiese 1997,

Wiąckowski 2000, pp. 37-54). From our point of view it is essential to become aware of the relationship between the climate and the functioning of social and economic systems. Until the Industrial Revolution this relation had a one-way character - it was the climate that influenced the man and his activity. At present we are also dealing with an opposite influence; in particular, burning fossil fuels and the changes in the way soil is used cause the warming up of the climate.

According to the definitions adopted in the Climate Convention, a climate change denotes a change in the climate caused indirectly or directly by the activity of man which changes the composition of the earth's atmosphere and which is distinguished from the natural changeability of the climate observed in comparable periods, whereas negative effects of climate change are considered to be the changes in the physical environment or the biocoenosis, caused by a climate change, which have significant harmful influence upon the composition, immunity or productivity of naturally controlled ecosystems, or upon the operation of socioeconomic systems, or upon the health and the prosperity of man.

For further considerations we assume that we regard the warming up of the climate as scientifically proven. Considerable acceleration of climate warming up is triggered by anthropogenic causes – about 80% of it a consequence of using fossil fuels, and the remainder is a result of deforestation (Climate Change 2001).

Its main cause is considered to be an increase in the concentration of greenhouse gases in the atmosphere, mainly of carbon dioxide, methane, nitrogen suboxide, and several other so-called industrial gases. Those gases have different effects on the global warming according to their concentration in the atmosphere and their physical properties. They are opaque to different lengths of heat radiation and they mutually complement their effects. Their life period in the atmosphere is also different, and, depending on the gas, it ranges from 6–7.5 years for methane to over 100 years for carbon dioxide and chlorofluorocarbides (CFCs), and as many as 150 years for nitrogen suboxide (Flannery, 2007, pp. 153 – 213).

### **3. Climate protection and sustainable development**

Sustainable development is a type of socio-economic development, carried out by man in the technosphere, according to the anthropocentric perception of the world. It has an inter-generation dimension, and therefore it can only be achieved while maintaining balance between satisfying the needs of

the future generations and the needs of the people living at present. Sustainable development integrates all the activities of man and is aimed at liquidating inequalities in satisfying the needs on a global scale. It is currently the most advanced concept of organising the global economy and so far the only one that takes up the issues of preventing an ecological catastrophe on a global scale (Borys (ed.) 1999, Borys (ed.) 2005).

Sustainable development requires thinking in human, economic and ecological categories at the same time. Omitting any of these elements means straying off the path of sustainable development. Protection of the Earth's climate should be one of the mainstays of sustainable development. This will only happen if social and economic issues are considered in the development of climate policy parallel to purely ecological problems. Nowadays in European Union the Sixth Environment Action Programme of the European Community entitled "Environment 2010: Our Future, Our Choice" is realized. It covers the period from 22 July 2002 to 21 July 2012. The programme is based on the Fifth Environment Action Programme, entitled "Towards Sustainability".

The Sixth Environment Action Programme focuses on four priority areas:

1. climate change;
2. biodiversity;
3. environment and health;
4. sustainable management of resources and wastes.

It requires use of a whole range of instruments and measures to influence decisions made by business, consumers, policy planners and citizens. To reach the goals, five main avenues for strategic action was proposed: improving the implementation of existing legislation, integrating environmental concerns into other policies, working in partnership with business, empowering citizens and changing their behaviour, and taking account of the environment in land-use planning and management. Considering the priority character of the sustainable development concept in forming the EU policy, the planned changes to the climate policy should be scrutinised from the point of view of their consistency with this leading concept.

#### **4. Climate policy of the European Union**

The European Union has included its actions for climate protection in its priorities and it is taking an active part in the development of international cooperation in this area. The necessity to reduce greenhouse gases emission follows from many directives and decisions of the EU concerning different

economy sectors and it is one of the elements of actions for long-lasting and sustainable development. Some of the regulations were formulated as early as in the 1970s and 1980s, when climate protection issues were not an object of broad discussions. At present, often amended appropriately, they are also used to implement climate policy. Today, the EU is on the road to realising the most advanced international cooperation related to the Kyoto Protocol. Not only has the EU undertaken obligations exceeding the average level of emission reduction (8% instead of 5.2%), but it has decided to start trading transferable CO<sub>2</sub> emission permits. Under the Directive 2003/87/EC of the European Parliament and the Council, member states have been obliged to establish national schemes for distribution of CO<sub>2</sub> emission allowances. According to the Directive the membership country must include five principal economy sectors into the system, according to specific thresholds. The trade only involved CO<sub>2</sub> initially, but for the period after the year 2012, the European Commission has proposed including other sectors and gasses in the system. It should be stressed that the obligation to reduce greenhouse gasses emissions by 8% within the EU – 15 framework has been distributed among member states unevenly. It has been adopted under the Council's decision 2002/358/EC that the states which have the greatest economic distance to make up for will be allowed to increase their emissions in 2008 – 2012 relative to 1990: Portugal by about 27%, Greece by about 25%, Spain by about 15% and Ireland by about 13%. In return, other states have committed themselves to increase reductions in emission: Luxembourg by about 28%, Germany and Denmark by about 21%, Austria by about 13% and Great Britain by about 12.5%. Due to this arrangement and due to establishing an emission allowances trading market, it may be stated that the climate protection policy in the EU has a communal character and it has started a new stage of cooperation between countries in the process of integration.

The situation of new member states was not included in the Directive, but those countries have had to join the system and develop their own national CO<sub>2</sub> emission allowances distribution schemes for 2005 – 2007, and then 2008 - 2012, that is for the first accounting period of the Kyoto Protocol<sup>1</sup>.

Since the moment the market for CO<sub>2</sub> emission allowances trading was created in January 2005, the interest in emission allowances has been rising dramatically and it has reached a turnover of 2 million tonnes daily. The price of allowances also rose from the initial level of 9 EUR per tonne to 35 EUR per

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<sup>1</sup> In Poland the first National CO<sub>2</sub> Emissions Allowances Distribution Scheme was prepared by the Ministry of the Environment in 2004. At present, activities are carried out on the basis of the National CO<sub>2</sub> Allowances Distribution Scheme for 2008 – 2012 for the community emission allowance trading scheme which was adopted by the Council of Ministers on 1 July 2008.

tonne in June, followed by a fall to 23 EUR in November ([www.pointcarbon.org](http://www.pointcarbon.org)). As experts have calculated, in the case of some coal-powered electric power stations the allowance to produce a kilowatt-hour of electric power is more expensive than the very coal used for that purpose. High prices encourage allowance purchasers to use compensating credit (offset), which represent reductions in pollution achieved due to clean development programs implemented in developing countries. Industrial enterprises responsible for CO<sub>2</sub> emissions can use a certain number of such credits as a cheaper substitute for emission permits (Wayt Gibbes 2005, pp.112-115).

Parallel to gaining experience from the functioning of already accepted arrangements, a debate on the shape of the climatic policy after 2012 is carried on. Many emotions are aroused in the EU by the so-called climate–energy package, the most important elements of which are the instruments proposed on 23 January 2008: the Directive of the European Parliament and Council changing the directive 2003/87/EC in order to establish and expand the Community greenhouse gasses emission allowance trading scheme (COM (2008) 16 final, Brussels 23.01.2008), the Directive of the European Parliament and Council on geological storing of carbon dioxide and changing the Council's directives of 85/337/EEC, 96/61/EC, the directives 2000/60/EC, 2001/80/EC, 2004/35/EC, 2006/12/EC and the decree (EC) No. 1013/2006, (COM (2008) 18 final, Brussels 23.01.2008) and the Directive of the European Parliament and Council on promoting using energy from renewable resources (COM 2008, 18, final, Brussels 23.01.2008).

Common goals of the energy and climate policies were adopted during the spring summit in March 2007. They are commonly known as “3 x 20” because they include:

- increasing energy efficiency by about 20% until year 2020,
- increasing the share of energy from renewable resources to 20% of the total final power consumption in the EU till 2020 and increasing to 10% the percentage of biofuels in fuel consumption in transport,
- a reduction of greenhouse gasses emission by at least 20% compared to 1999.

The Community also considers it possible to introduce a reduction aim as high as 30% on condition that other developed countries commit themselves to a comparable emission reduction, and selected developing countries contribute to it proportionally to their own potential.

The main focus of the energy and climate package is on the future form of the EU emissions trading system. In the run-up to the agreement there was a lot of debate in Europe about how emission permits could be awarded to industries

which are very energy-intensive or which are particularly reliant on exports. Companies threatened to relocate their operations to non-EU countries if they had to buy all their emission permits at auction. The EU was determined to avoid this, as it would inevitably lead to increases in emissions, due to “carbon leakage”. As a result, compromise was found whereby certain industries were made exempt from the auction system. All other sectors of industry were told that, as of 2027 at the latest, emission permits will only be auctioned and no longer given out free-of-charge. The aim is to reduce industry emissions by 20 per cent by 2020 compared to 2005. A new phase of emissions trading will commence in 2013, in which the number of permits will be gradually reduced. Rising prices should then offer companies an incentive to stop auctioning permits but instead to invest in greener and lower-emission technologies (Hood, 2010).

EU demonstrates strong determination in playing the role of leader in climate protection policy on international level. It was observed during consecutive meetings of Parties of Kyoto Protocol (Bali 2007, Poznan 2008, Copenhagen 2009, Cancun 2010, Durban 2011).

In 2010 the EU continued their efforts in the sphere of European energy and climate policy. As the Lisbon Strategy expired in 2010, the European Council adopted a successor strategy, “Europe 2020”: a new European strategy for employment and growth. Its aim is to encourage a greener economy which uses fewer resources and is more competitive. Up to now the EU has played a leading role in the area of green technologies, and would like to maintain and extend this role. In this way Europe can use resources even more effectively and by that can become more competitive. Part of the Strategy is to take over the EU’s “20-20-20” climate and energy package which came into force in 2009. The idea behind this is that an economy using fewer resources has financial advantages. So the European Commission has calculated savings of 60 billion Euro by 2020 on oil and gas imports. Achieving the goal of using 20 per cent renewable energy by 2020 could produce 600,000 new jobs. And if on top of this the EU’s 20 per cent increased energy efficiency target is met, this could mean more than a million new jobs (<http://ec.europa.eu>)

The Europe 2020 goals will be driven forward by seven European Commission flagship initiatives. The “Resource-Efficient Europe” initiative in particular contains important points such as the Commission’s plans to create a single European electricity grid and smart grids. It also plans to draw up an action plan on energy efficiency and specifically encourage electric mobility. Every member state has to present its domestic targets and planned actions in support of these plans.

## 5. Evaluation of EU climate policy in the light of the questionnaire survey

The purpose of the questionnaire survey was to obtain information on how companies assess the current EU climate policy, and to determine the influence of the changes in legal regulations in this respect which are planned after 2012 (Burchard-Dziubińska, Lipińska 2008). Questionnaire forms were sent out to all the enterprises in the cement, metallurgy, steel, aluminium and glass industries which either are currently required to participate in the EU ETS system, or will be after 2012. The research carried out met with moderate interest, but it can be assumed that the replies obtained are representative because of the notable similarities between the replies given, particularly within individual sectors. A total of 18 questionnaire forms were analysed, and they included 5 companies in the cement industry, one company in the aluminium industry, and 6 companies in the steel and glass industries each. Half of the companies surveyed employ up to 500 people, and one-third employ between 500 and 1000 people. Fourteen of the enterprises surveyed are private companies, the majority of which are private companies with a share of foreign capital. The most important findings obtained in the questionnaire survey are as follows:

Fourteen of the companies surveyed regarded the proposed changes in the EU climate policy as an evident threat to their development, and 10 of them also indicated that it was a threat to the competitiveness of the Polish economy. It is worth noting that only 4 enterprises (representing the cement industry) indicated that operations related to the assessment of the effects of adjusting to the new climate policy had been undertaken. Thirteen enterprises (72%) gave an affirmative answer to the question whether the company limited the greenhouse gases emission between 2000 and 2007. In 11 cases (61%) the reduction was achieved as a result of modernisation in the company, in 6 cases (33%) it was a result of decommissioning some installations, in 4 cases it was a result of a periodic shutdown of the installation, and in 1 case it occurred due to a change in the production profile. Enterprises representing the cement and glass industries demonstrated the most modernisation investments. The situation looks the grimmest in the steel industry, especially as it is in this industry that the oldest installations still in operation come from the 1920s! Compared to 1999, the biggest CO<sub>2</sub> emission reduction was demonstrated by enterprises representing the steel industry – 34.2% on average (in one company it was as much as 50%), while the figure was 14.4% in the cement industry and 16.3% in the glass industry.

Modernisation, to be carried out between 2008 and 2012, leading to greenhouse gases emission reduction, is planned in 5 companies only, and on average it will bring a 10% emission reduction compared to 2005.



The question whether new installations are planned to be commissioned between 2008 and 2012 was answered in the affirmative by 8 companies (44.4 %). The fuels used will be: gas, black coal and solid waste. The resulting expected average greenhouse gasses emission increase converted to CO<sub>2</sub> will be 30% for the entire group researched, with the most substantial rise by 48.3% occurring in the glass industry. It will also be the most diversified in this sector - from 10 to 80%.

Only one company is planning to carry out modernisation in 2013 – 2020, leading to a reduction in greenhouse gasses emission, and achieving a 20% emission reduction in this way; 15 companies (83%) have no such plans, and in two companies a decision has not been made yet.

Commissioning new installations between 2013 and 2020 is planned in 3 companies, and in one of them the expected increase in greenhouse gasses emission converted to CO<sub>2</sub>, compared to 2005, will be as high as 140%. 12 companies (66%) reported no plans to commission new installations, and in 3 enterprises a decision has not been made yet.

Only 2 companies plan to decommission installations between 2013 and 2020; in one case the emission reduction is going to be as much as 99% (sic!), and 35% in the other. The planned decommissioning of installations is generally not related to the necessity to reduce greenhouse gasses emission.

The participation in the emission allowances trade system in 2005 - 2007 was considered advantageous by 3 companies, and unfavourable also by 3 companies, 8 (44 %) considered it neutral, and 4 companies were not required to participate in the system. The largest number of answers indicating a neutral character of the requirement to participate in the system was given by cement mills and glassworks. It certainly results from allotting greenhouse gasses emission allowances on the basis of historical data.

In the case of the present accounting period as many as 15 enterprises recognised the requirement to participate in the system as unfavourable. Within the group of enterprises examined it constitutes 100% of the companies required to participate in the system!

If it is necessary to purchase 20% of CO<sub>2</sub> emission allowances and if their prices increase by €10 compared to the present level, the expected increase in the unit price of the main product is very much diversified amongst the industries, and it averages:

- cement industry 17.3%
- steel industry 0.3%
- aluminium industry 3.0%
- glass industry 2.8%.

The greatest discrepancies in the estimated price increase were demonstrated by enterprises in the cement industry. It ranges from 2 to 40.6 %. Companies in the other industries demonstrate a similar sensitivity to the increase of the price of emission allowances.

If it is necessary to purchase 20% of CO<sub>2</sub> emission allowances at a price of €20 per tonne of CO<sub>2</sub>, the estimated production cost increase per annum is also very different amongst the industries and its averages:

- cement business 17.2%
- steel industry 3.5%
- aluminium industry 6.0%
- glass industry 4.5%.

Notable divergences can also be seen between the companies themselves:

- cement industry between 7 and 45.1%
- steel industry between 0.3 and 17%
- glass industry between 1 and 10%.

It indicates a highly varied sensitivity of the companies to the need to purchase CO<sub>2</sub> emission allowances, even if this duty covers only 20% of the planned emission. In view of the danger that high-emission production may be transferred to third countries, as well as the technical, economic and social problems related to further emission reduction in the sectors researched, applying preventive mechanisms is considered. Among the enterprises surveyed the most support was given to the proposal to allot, free of charge, up to 100% of CO<sub>2</sub> emission allowance allotments after an enterprise has demonstrated (and it has been approved by the European Commission) that a limit of economically acceptable changes to the production technology, related to CO<sub>2</sub> emission reduction, has been reached. A proposal to subsidise, from EU funds, investments aimed at implementing technologies characterised by lowest greenhouse gases emission and the lowest power consumption as well as detecting and storing CO<sub>2</sub> came second, whereas the third place went to the proposal to grant legal entities income tax relieves to outweigh the drop in the profit resulting from the need to purchase CO<sub>2</sub> emission units at an auction. Six companies were in favour of treating an importer as an enterprise from the sector threatened with an emission leak and of subjecting it to the requirement to purchase CO<sub>2</sub> emission allowances at an auction, in the amount required to produce the merchandise put on the market, on conditions corresponding to average emission from this sector for the entire EU e.g. in 2013. The companies generally did not support the proposal to label products according to the amount of greenhouse gases converted to CO<sub>2</sub>, related to the manufacturing and transporting a unit of a product in order to apply compensation fees. According

to all the respondents the factors which most hinder the leaking of production outside the EU are: high transport costs (19 % of total of indications), high investment costs and restrictions on import from outside the EU (17.9 % each), followed by exchange rate risk (11.9 %) and long investment period (10.7 %).

A diversity in replies between different industries can be seen. All respondents representing the cement industry chose high transport costs; high investment costs and restrictions on import from outside the EU were each indicated by 80% of respondents, and long investment period and exchange rate risk were each selected by 60% of respondents. In the case of the steel industry 100% of respondents considered the restrictions on import from outside the EU to be the major factor hindering the leakage of production; the next factor is high investment cost, indicated by 83% of respondents, followed by high transport costs and a good matching of the structure of the supply to the current demand on the domestic market, which were chosen by 66% of the companies examined. High transport costs, and a long investment period, instability of the world market, the exchange rate risk and restrictions of import from outside the EU are the factors hindering the transfer of production in the aluminium industry. Within the glass industry, 100% respondents indicated high transport costs, and high investment costs were indicated by 66% of respondents, followed by exchange rate risk chosen by 50% of the businesses examined.

The enterprises surveyed demonstrate an extremely varied potential for performing the essential operations required to adapt to the EU climate policy after 2012. Only two enterprises acknowledged that they could do it on the basis of their own financial resources (one each from the cement industry and the steel industry), 3 enterprises stated that it was feasible with the use of a bank loan (one each from the cement industry, steel industry and glass-making industry). The variant consisting in obtaining subsidies from the public purse amounting to not less than 50% of the anticipated adaptation costs received the greatest recognition among the companies surveyed, but as many as one-third of the respondents, including as many as 60% of the cement industry companies, considered it impossible to meet the obligations resulting from the adaptation requirements.

Summarising data from the research, the climate policy of the EU, and the Community system of emissions allowances trade in particular, have a clearly restrictive character. It makes the enterprises face new development barriers which can hamper their economic activity. Clearly, however, the system lacks mechanisms which could be an incentive to undertake pro-ecology activities. All the enterprises surveyed, irrespective of the type of industry, indicate threats resulting from the climate policy implemented at present and planned after 2012.

They concern primarily:

- slowing down the dynamics of production,
- increasing the costs of running the businesses, in case it is necessary to purchase emission allowances,
- lowering the competitiveness of Polish enterprises vis-à-vis companies from outside the EU, to which the limits of greenhouse gasses emission do not apply.

If the expected increase in electric energy prices resulting from the implementation of the climate policy is taken into consideration, the anxieties expressed should be considered justified. Not only do they concern a decrease in profitability of production, but also problems with maintaining manufacture in general, which would obviously be followed by a reduction of employment, breaking cooperative links, and consequently, slowing down the development pace of regions. Many companies undertook a considerable modernisation effort in the past decade. Considering the long investment cycles in the industries examined, the substantial costs of the modernisation, and the transferring of the point of reference to 2005, these companies could be at a particular disadvantage. The readiness to move production abroad to countries with lower ecological standards, declared by some enterprises, must be recognised as threatening from the point of view of the effectiveness of the climatic policy on a global scale. It would involve the so-called emissions leakage outside the EU, which would mean a fiasco of the efforts undertaken by the EU to protect the world's climate.

The enterprises surveyed represent industries which are pollution-generating by their nature. Obviously, in their case we are also dealing with ecologically-oriented technological progress; however, the potential of emissions reduction related to it should not be overrated.

## **6. Conclusion**

Climate protection policy is not implemented in an economic, social and institutional vacuum. The development of methods and instruments for its implementation should be subject to certain principles and it should be evaluated according to clear criteria compatible with the idea of sustainable development. Therefore, apart from the possibility to implement it, special attention should be paid to ecological effectiveness and economic and social effects. In the case of the regulations already in effect and the ones planned with reference to pollution-generating sectors, such as the cement, steel, glass and aluminium

industries, one can recognise serious threats to their competitiveness, with the ecological effect being insignificant or even negative, if an emission leak occurs due to a transfer of production outside the EU. The problem of the influence of the environmental protection policy on the competitiveness of individual industries and entire economies was recognised a long time ago. The temperature of the discussion of this issue has risen considerably since the operations for the protection of the world climate were intensified, because it made people aware of the huge differences between countries, in terms of the range of energy consumption of production converted into a unit of GDP, and in the amount of greenhouse gases emission relative to the scale of production, and also relative to the different proportions of utilisation of fossil fuels and energy from renewable sources. A decrease in competitiveness of companies located in Poland compared to manufacturers from non-EU countries, particularly from China, Russia and Ukraine, may have an indirect adverse effect on the labour market and may slow down the development and economic growth. Products of the cement, steel, glass and aluminium industries are characterised by a larger price flexibility of the demand than in the case of energy. Therefore, a drop in demand for products made in Poland or in the EU may be expected, as well as an increase in purchase of cheaper equivalents imported from outside the EU. Moving the production abroad to countries which are not required to participate in the emission allowance trade system should be considered extremely detrimental. Since many enterprises from the industries covered by the expanded EU ETS system are reaching the limit of feasible emission reductions in this generation of installations, applying further CO<sub>2</sub> emission limits to them should be contemplated with much consideration. The path of emission reduction should be known in many years' advance (e.g. 20 years) so that it is possible to rationally plan investments, which are long-term and expensive in the industries analysed. Functioning of a free market of "green certificates" and facilitating realisation of JI and CDM-type projects also seem reasonable. Then the cost account would be decisive in the choice of the form of fulfilling protective operations. Subsidising should primarily apply to the development of new, energy-efficient technologies and using the energy from renewable resources. Support for already existing companies should be limited to the cases of protection of workplaces in installations reaching the end of their useful life due to technical reasons, according to EU regulations concerning the scope of public aid.

The projected changes in the EU climate policy of the, unquestionably very valuable from the point of view of the protection of the world's climate, can nonetheless turn out to be a considerable threat to the further development, not to say the existence, of particularly pollution-generating sectors of economy, especially in the case of their unilateral introduction.

The consequences may also have a macroeconomic character, including generating a tendency to increase the inflation, a negative effect on the budget revenue from excise duty, and including a slowing down of the pace of GDP growth.

Nowadays, ambitious goals of European climate policy are more and more often criticised. Unfortunately, implementing of common climate policy, stimulating economic development of all members of the EU, is not possible. Moving the production of the cement, steel, glass and aluminium industries abroad to countries which are not required to participate in the emission allowance trade system should be considered extremely detrimental. Since many enterprises from the industries covered by the expanded EU ETS system are reaching the limit of feasible emission reductions in this generation of installations, applying further CO<sub>2</sub> emission limits to them should be contemplated with much consideration.

The consequences may also have a macroeconomic character, including generating a tendency to increase the inflation, a negative effect on the budget revenue from excise duty, and including a slowing down of the pace of GDP growth.

Taking into consideration behaviour of non-EU countries, one may say that the global goal of the climate policy is constantly escaping from us. Even the most ambitious greenhouse gases reduction plans of the EU is not going to manage to change the global situation because of diminishing part of EU in global emission (10 %). Carbon leakage is a real threat. It means that production, and therefore greenhouse gases emission, are going to be moved from one place to another, jeopardising reaching of the climate policy goals. Problems associated with accomplishing the mission of protecting the climate are of prime importance just days before negotiations in Durban. The projected changes in the EU climate policy of the, unquestionably very valuable from the point of view of the protection of the world's climate, can nonetheless turn out to be a considerable threat to the further development, not to say the existence, of particularly pollution-generating sectors of economy.

Not being able to achieve the ecological goal, the economic one comes to first place. An optimistic approach should be applied when it comes to improving competitiveness by eco-innovation leading to low carbon economy.

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## Streszczenie

### **WPŁYW POLITYKI KLIMATYCZNEJ UNII EUROPEJSKIEJ NA KONKURENCYJNOŚĆ POLUTOGENNYCH SEKTORÓW POLSKIEJ GOSPODARKI W KONTEKŚCIE ZRÓWNOWAŻONEGO ROZWOJU**

*W tekście przedmiotem analizy jest wpływ polityki klimatycznej UE na konkurencyjność polutogennych sektorów polskiej gospodarki. Analiza literatury i wyniki badań przeprowadzonych w 2008 r. w zlokalizowanych na terenie Polski przedsiębiorstwach reprezentujących hutnictwo żelaza, szkła, aluminium oraz przemysł cementowy stanowią podstawę do sformułowania wniosków dotyczących konsekwencji już prowadzonej i planowanej po 2012 r. polityki klimatycznej UE. Polityka klimatyczna UE, zwłaszcza wspólnotowy system handlu pozwoleniami do emisji, stwarzają dla przedsiębiorstw nowe bariery rozwoju. Oczekiwany wzrost kosztów produkcji, może nie tylko spowolnić dynamikę produkcji, ale także obniżyć konkurencyjność polskich przedsiębiorstw w stosunku do przedsiębiorstw spoza UE, które nie muszą dostosowywać się do redukcji emisji gazów cieplarnianych. Pod uwagę należy brać także konsekwencje dla zatrudnienia i rozwoju regionalnego. Jeśli wystąpiłby również wyciek emisji poza UE osiągnięcie globalnych celów polityki klimatycznej stałoby się bardzo wątpliwe. Branże uwzględnione w badaniu są ze swej natury polutogenne i nawet proekologiczne przemiany technologiczne nie są w stanie zapewnić redukcji emisji bez generalnego przestawienia się gospodarki na odnawialne źródła energii.*