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## **THE GEO-ECONOMICS OF CLIMATE CHANGE REGIME – POLISH PERSPECTIVE**

### **Abstract**

Climate change is one of the most important and controversial issues in contemporary international politics. There are different perspectives on the climate change regulation and its impact on states. This article aims at analyzing policy of Poland towards climate change regime from geo-economic perspective. It also presents the links between competitiveness of Polish economy (one of the key elements of economic security) and the climate change regime. This approach enables understanding that climate change regime is rather the matter of economic security than environmental problem or environmental security. European Union plays crucial role in implementation and development of climate change regime in Poland due to multiple financial instruments.

**Keywords:** climate change, economic security, energy security, geo-economy, European Union Emission Trading Scheme, The United Nations Framework Convention on Climate Change.

### **Introduction**

The idea of geo-economy was created by Edward Luttwak and Pascal Lorot. Luttwak initially introduced the term “geo-economics” in 1990 in his article “From Geopolitics to Geo-economics, Logic of Conflict, Grammar of Commerce.”<sup>1</sup> Lut-

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<sup>1</sup> E. Luttwak, *From Geopolitical to Geo-economics, Logic of Conflict, Grammar of Commerce*, “The National Interest” 1990, No. 20.

wak suggests that interstate conflicts should be viewed from the perspective of competition for market shares within international trade. He argues that we have entered the era of geo-economics.<sup>2</sup> Luttwak does succeed in identifying a significant new development – the fact that international conflicts generate economic confrontations over the distribution and the use of national and international goods. The emergence of this new battlefield calls for the deployment of geo-economic weapons, consisting of increasingly systematic support by the state in the form of research and development financing, combined with operating grants for production sectors as well as low interest loans, also known as predatory finance.<sup>3</sup>

Edward Luttwak argues that geopolitics represents an increasingly relict logic of global interchange. In the era of globalization it has been superseded by a global economic logic that transcends geopolitical calculations, even if the system of national states remains intact and powerful. For Luttwak, globalization represents the natural evolution of markets into larger and more powerful entities. States have to renovate their modus operandi accordingly, from a territorial to an economic register. Because of this new reality, states develop industrial and commercial policies in order to create a decisive comparative advantage in sectors deemed to be strategic. These policies are in turn defended with much determination at the international level, not only by means of diplomacy but also by means of what Edward Luttwak calls “geo-economic weapons.”<sup>4</sup>

Luttwak observed: “Everyone, it appears, now agrees that the methods of commerce are displacing military methods – with disposable capital in lieu of firepower, civilian innovation in lieu of military-technical advancement, and market penetration in lieu of garrisons and bases. States, as spatial entities structured to jealously delimit their own territories, will not disappear but reorient themselves toward geo-economics in order to compensate for their decaying geopolitical roles. ... ‘geo-economics’ is the best term I can think of to describe the admixture of the logic of conflict with the methods of commerce.”<sup>5</sup> The nature of a geo-economic power is determined by the relationship between the state and business. As Luttwak acknowledges, „while

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<sup>2</sup> E. Luttwak, *Turbo-Capitalism: Winners and Losers in the Global Economy*, New York 1999, pp. 17–24, p. 127.

<sup>3</sup> E. Luttwak, *The Endangered American Dream*, New York 1993, pp. 399–403.

<sup>4</sup> *Ibidem*, pp. 307–326.

<sup>5</sup> E. Luttwak, *From Geopolitical...*, p. 17–24.

states occupy virtually all of the world's political space, they occupy only a fraction of the total economic space."<sup>6</sup> He suggests that forms of coexistence between geo-economically active states and private economic actors will vary: it is intense in some cases and distant in others. Sometimes states „guide” large companies for their own geo-economic purposes and other times companies seek to manipulate politicians or bureaucracies. The relationship between the German state and business would seem to be an example of what Luttwak calls „reciprocal manipulation.”<sup>7</sup>

Pascal Lorot defines geo-economics as the analysis of national strategies, the ultimate goal of which is not to control territory but to gain technological and commercial supremacy. This definition is based on the hypothesis that national policies affect market structures and states will attempt to remodel prevailing tendencies in order to suit their own interests.<sup>8</sup> Moreover, since his definition is based on economic geography, it introduces the notion of flows, i.e., that is to say the analysis of the movements of people, goods, services, knowledge and capital between territories over a given period of time.<sup>9</sup> The state is no longer a well-defined territorial space but an area of passage with invisible frontiers.<sup>10</sup> Finally, states harness their resources in order to deal with fiercer international economic competition.<sup>11</sup> Since the competition is a threat to national security, states will have a tendency to model their economic systems in such a way as to create or strengthen their national firms, while at the same time limiting opportunities for foreign enterprises. They will therefore seek to minimize relations generating disproportionate gains for other

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<sup>6</sup> *Ibidem*.

<sup>7</sup> *Ibidem*, p. 18.

<sup>8</sup> P. Lorot, *La géoéconomie, nouvelle grammaire des rivalités internationales*, in: *Annuaire français de relations internationales 2000*, eds. S. Sur, A. Dulphy, Bruylant, Brussels 2000, p. 116.

<sup>9</sup> D.M. Hanink, *The International Economy: A Geographical Perspective*, New York 1994, p. 1.

<sup>10</sup> J.G. Ruggie, *Territoriality and Beyond: Problematizing Modernity in International Relations*, “International Organization” 1993, No. 1, Vol. 47, p. 173; F. Rachline, *De la géopolitique à la géoéconomie: un entre-deux de la souveraineté*, “Temps modernes” 2000, No. 610, p. 338; J. Golden, *Economics and National Strategy: Convergence Global Networks, and Cooperative Competition*, “The Washington Quarterly” 1993 (summer), No. 3, Vol. 16, pp. 91–113; Goff P.M., *Invisible Borders: Economic Liberalization and National Identity*, “International Studies Quarterly” 1999, No. 4, Vol. 44, pp. 53–562.

<sup>11</sup> On the topic of the role of the State in the competitiveness of national enterprises, see Ch. Deblock, *Du mercantilisme au compétitivisme: le retour du refoulé*, Cahier de recherche 02-0, Research group on continental integration, September 2002, pp. 9–15.

states and increase relations from which they themselves derive disproportionate gains. He underlines that “states have engaged themselves alongside their national enterprises in policies that seek to conquer external markets and control sectors of activity considered of strategic value.”<sup>12</sup> Therefore, states that in large measure are dependent on market forces in international trade, investment and finance will attempt to use external forces to their advantage. However, states possessing greater control over their domestic market than over external markets, especially if they are economically weak, will instead have a tendency to rely on their own production capacities.<sup>13</sup> States will attempt to influence economic structures in their favor.<sup>14</sup> To do this, they rely on national strategies that can be divided into two broad categories: export-oriented industrialization and import substitution industrialization<sup>15</sup>. Export-oriented industrialization is generally used in order to improve the strategic position of a national enterprise competing for international market shares with a foreign firm when the market is dominated by either a monopoly or an oligopoly and is therefore imperfect.<sup>16</sup> Developing ideas of Pascal Lorot Jean-François Gagné suggests that the challenge for geo-economics approach is to identify winning sectors where national firms already possess competitive comparative advantages. The objective is to transfer the profits of the foreign firm to the national firm in a sector considered potentially lucrative and capable of generating substantial revenue for the state.<sup>17</sup>

According to Pascal Lorot, economic health of a state is the standard for measuring its power. Economic interests of the states are taking a lead over political inter-

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<sup>12</sup> P. Lorot, *La géoéconomie...*, pp. 110–122.

<sup>13</sup> On this topic, see J.A. Brander, *Rationales for Strategic Trade and Industrial Policy*, in: *Strategic Trade Policy and the New International Economics*, ed. P.R. Krugman, MIT Press, Cambridge 1986, pp. 26–36.

<sup>14</sup> On the topic of the asymmetrical dimension of interdependence, see S. Corbridge, *The Asymmetry of Interdependence: The United States and the Geopolitics of International Financial Relations*, “Studies in Comparative International Development” 1988, Vol. 23, pp. 3–29.

<sup>15</sup> On this topic, see J.A. Brander, *op.cit.*, pp. 26–36.

<sup>16</sup> There are four principal market imperfections: (1) the externalities, or overflowing effects, that take place when the economic activities of one State cause involuntary damage to the other (e.g. environmental pollution); (2) growing profits and a reduction of marginal costs leading to situations of monopoly; (3) the frequent lack of information to help consumers make choices; and (4) inequalities in the redistribution of wealth and profits; see R. Gilpin, *Global Political Economy*, Princeton University Press, Princeton 2001, p. 68.

<sup>17</sup> Geopolitics in a Post-Cold War Context, p. 16.

ests. Thus a new era emerges, an era of geo-economics.<sup>18</sup> Baumard and Lorot think, “Geo-economics is not still a science but emerging scientific discipline (discipline naissante).<sup>19</sup>

Summing up, geo-economics may be defined in two different ways – as the relationship between an economic policy and a change of national power and geopolitics – in other words, the geopolitical consequences of economic phenomenon, or as the economic consequences of geopolitical trends and national power. Both the notion of ‘trade follows the flag,’ meaning that there are economic consequences of the projection of national power, and the idea that ‘the flag follows trade,’ meaning that there are geopolitical consequences of essentially economic phenomena, would constitute the subject matter of geo-economics.<sup>20</sup> Luttwak and Lorot both regard geo-economy as important and helpful way of describing international policy. This paper discusses the Polish perspective of creating and functioning of the international regime on climate change in terms of geo-economy, which gives a unique opportunity to combine the economic, political and security approaches. Today the concept of geo-economics is multifaceted.

## 1. Climate change issues

There are two definitions of climate change, the new and the old one. We find the old one in the United Nations Framework Convention on Climate Change (UNFCCC), according to which the climate change is: “a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.” The UNFCCC thus makes a distinction between the climate change attributable to human activities altering the atmospheric composition, and the climate variability attributable to natural causes. The new definition is the one by the IPCC (Intergovernmental Panel on Climate Change). For the

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<sup>18</sup> P. Lorot, *La nouvelle grammaire des rivalités internationales*, in: *Introduction à la Géoéconomie*, ed. P. Lorot, “Economica” 1999, p. 11–12, p. 15.

<sup>19</sup> P. Baumard, P. Lorot, *Le champ géoéconomique: une approche épistémologique*, in: *Introduction à la Géoéconomie*, ed. P. Lorot, “Economica” 1999, p. 214.

<sup>20</sup> *A New Era of Geo-economics: Assessing the Interplay of Economic and Political Risk* IISS Seminar 23–25 March, 2001.

IPCC climate change is a change in the state of the climate that can be identified by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change can be due to natural internal processes or external forcings, or due to persistent anthropogenic changes in the composition of the atmosphere or in the land use.<sup>21</sup> Generally climate change has an impact on our everyday lives today and in the close future. The impact of climate change on our planet is wildly described by Nicolas Stern in *The Stern Review*. According to Stern “climate change is a serious and urgent issue. The Earth’s climate is rapidly changing, mainly as a result of increases in greenhouse gases caused by human activities. Most climate models show that doubling of pre-industrial levels of greenhouse gases is very likely to commit the Earth to a rise of between 2–5°C in global mean temperatures. This level of greenhouse gases will probably be reached between 2030 and 2060. A warming of 5°C on a global scale would be far outside the experience of human civilisation and comparable to the difference between temperatures during the last ice age and today.”<sup>22</sup>

Avoiding the worst consequences of climate change will require large cuts in global greenhouse gas emissions. Humans produce greenhouse gases by burning coal, oil, and natural gas to generate energy for power, heat, industry, and transportation. Deforestation and agricultural activity also yield climate-changing emissions. One way to reduce emissions would be to switch from fossil-fuel-based power to alternative sources of energy, such as nuclear, solar, and wind. A second, parallel option would be to achieve greater energy efficiency by developing new technologies and modifying daily behavior so that each person produces a smaller carbon footprint. Additionally, retrofitting buildings and developing energy-efficient technology would greatly help to curb greenhouse gas emissions.

The international regime on climate change consists of the United Nations Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol and the political agreement, that is the Copenhagen Accord, and the COP-17 Durban Platform for Enhanced Action (“Durban Platform”). The Kyoto Protocol includes firm commitments to curb emissions only of developed countries, but it does not include

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<sup>21</sup> <http://thegwpc.org/science-news/4374-ipcc-introduces-new-climate-change-definition.html>.

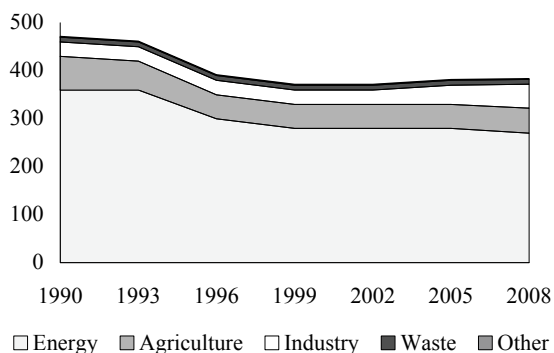
<sup>22</sup> N. Stern, *The Economics of Climate Change. The Stern Review*, Cambridge 2007, p. 2.

the United States<sup>23</sup> and Canada.<sup>24</sup> Probably Japan and Russia will soon follow Canada's example. Moreover, according to the regulations two major emitters – China, India are excluded from the reduction policy. The hopes for a legally binding climate accord – even if desirable – may be fading. From geoeconomic perspective big emitters like China and India (according Kyoto regulations), that are competitors on global markets without meaningful targets and incentives to curb their emissions, are more competitive than Poland is. From this perspective the regime should be common for all the countries delivering targeted emissions cuts without any exceptions. If not, some of them will be more competitive.

## 2. Geo-economy of Climate Change Regime

To examine geo-economy of climate change from the Polish perspective two major issues should be raised: the competitiveness of the Polish economy and the influence of targeted emission cuts on the market. Competitiveness of the Polish economy depends on energy prices. The major source of CO<sub>2</sub> emission in Poland is energy production (see Figure 1).

Figure 1. The GHG emission by source in Poland, 1990–2008 in million of tones CO<sub>2</sub>



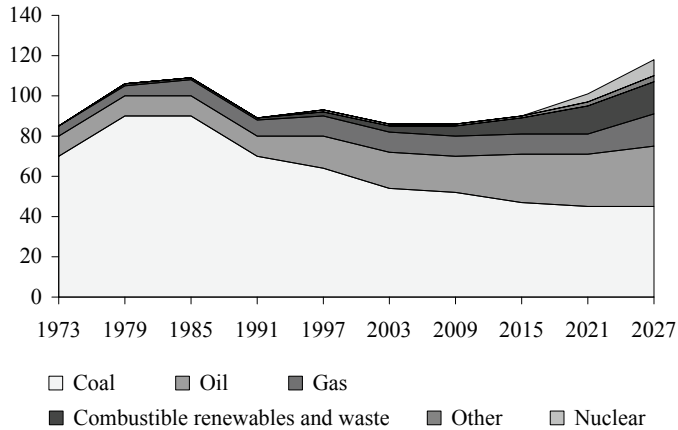
Source: International Energy Agency (a)..., p. 34.

<sup>23</sup> United States has not ratified the protocol.

<sup>24</sup> Canada officially withdrew from the accord on 13th of December 2011.

Increasing greenhouse gases emission is caused mainly by the energy sector based on coal, oil. After many years of underinvestment, the need to upgrade Poland's energy infrastructure is pressing.<sup>25</sup> To stop this tendency huge investments should be done.

Figure 2. Total primary energy supply by source in Poland, 1993 to 2030



Source: International Energy Agency (a)..., p. 18.

According to the WEO 2011 Poland requires cumulative additional investment in power plants alone of around 141 billion euro (PLN 610 billion) over the period 2010–2030.<sup>26</sup> Total power sector investments could represent 1.3% of GDP on an annual basis in this period.<sup>27</sup> Poland produces around 20 GW in power plants older than 30 years. From the geo-economics perspective coal plays three roles.

Firstly, it is very important source of energy for Poland (see Figure 2).

Secondly, taking into consideration significant coal reserves (see Figure 3), the consumption of energy in Poland, problems with cooperation in European Union on energy security matters, and rude Russian gas policy, coal is the major guarantor

<sup>25</sup> International Energy Agency (a), Energy Policies of IEA Countries 2011 Reviews Poland, France 2011, p. 10.

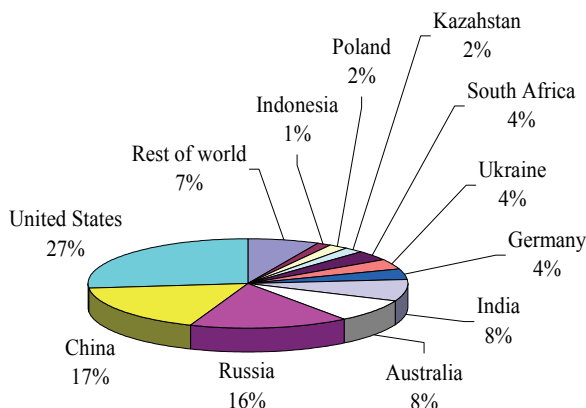
<sup>26</sup> *Ibidem*, p. 65.

<sup>27</sup> *Ibidem*.



of the Polish economic security.<sup>28</sup> Coal guarantees the competitiveness of the Polish economy, which is a key element of the geo-economy concept.

Figure 3. Coal reserves by country



Sources: International Energy Agency (b)..., p. 404.

Thirdly, in 2010 Poland was the key producer of coal in Europe<sup>29</sup> (see Figure 4). Mining operation in Poland is already cost-competitive with imported coal. Poland is the ninth coal exporter.

However, coal production in OECD Europe is projected to fall to around 190 Mtce<sup>30</sup> in 2020 and 120 Mtce in 2035 – almost one-half of output in 2009.<sup>31</sup> In the world economy the importance of coal is growing. It could be observed in a growing rate of coal export by port (see Figure 4).

From the Polish perspective coal is not only the energy security matter but also a tradable good which could, according to Luttwak and Lorot, strengthen the strategic position of national enterprise. The role of coal from the geo-economics per-

<sup>28</sup> See more on economic, energy security K.M. Książopolski, *Ekonomiczne zagrożenia bezpieczeństwa państwa: metody i środki przeciwdziałania*, Warszawa 2004 and K.M. Książopolski, *Bezpieczeństwo ekonomiczne*, Warszawa 2011.

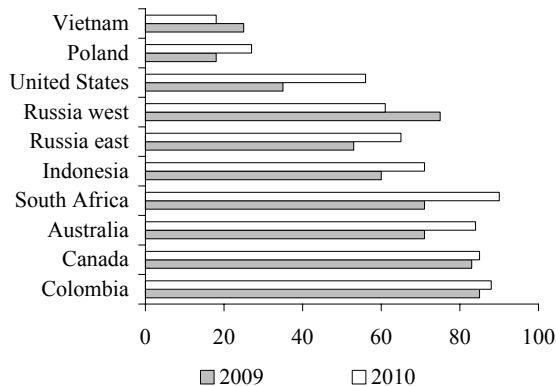
<sup>29</sup> International Energy Agency (b), *World Energy Outlook 2011*, International Monetary Fund, *World Economic Outlook Database*, April 2012, p. 441.

<sup>30</sup> MTCE – Mega Tonnes of Coal Equivalent.

<sup>31</sup> International Energy Agency (b)..., p. 442.

spective has the predominate influence on the Polish policy towards climate change regulations and regime.

Figure 4. Coal export port utilization rates for selected countries



Sources: International Energy Agency (b)...., p. 411.

Of course coal mining is not a winning sector in the future of Poland – the renewable energy sector probably will be a winning sector if the European Union would include in its reduction policy all major emitters such as China, India and the United States of America. Climate change mitigation technologies are wind, solar photovoltaic (PV), concentrated solar power (CSP), biomass-toelectricity, carbon capture and cleaner coal technologies.

Table 1. Patenting activity of inventor countries in selected CCMT fields (1988–2007)

Country	Total patents
Japan	691,751
USA	423,187
Germany	334,119
Korea	107,001
France	126,924
Poland	1,149

Source: I. Haščič, N. Johnstone, F. Watson, C. Kaminker, *Climate Policy and Technological Innovation and Transfer*, OECD Environment Working Papers 2010, No. 30, p. 50.

Decarbonisation of Poland’s power sector will be a particularly significant challenge requiring an adequate policy and regulatory framework because if it failed, Poland would be only the market for CCMT technology.<sup>32</sup> According to geo-economic approaches Poland’s energy sector would be dominated by foreign firms. This kind of domination can be observed in the gas sector in Poland where Gazprom dictates one of the highest prices on gas in Europe. Prices could have tremendous impact on macroeconomic indicators and economic growth. Also, the impact on political scene and system should be taken into consideration.<sup>33</sup>

From the Polish perspective the target policy formulated in The Kyoto Protocol is not just. The targets cover the main industrialized countries (excluding USA, Canada, Australia). Poland’s GDP (PPP) per capita is 30% lower than in Greece, nearly twice lower than in Germany and should follow the target policy. These data show that Poland would spend more money as a percentage of its GDP for the adaptation policy. Consequently, the negative impact on economic growth would be visible.

Table 2. Gross domestic product based on purchasing-power-parity (PPP) per capita GDP

Country	France	Germany	Greece	Poland	United Kingdom
2000	25,971.844	26,089.845	18,799.850	10,365.832	25,254.588
2005	30,406.417	30,220.902	25,076.081	13,580.050	32,089.702
2006	32,005.526	32,449.403	27,024.648	14,899.892	33,794.466
2007	33,470.100	34,567.482	28,587.467	16,370.175	35,751.418
2008	33,959.302	35,681.769	29,115.851	17,579.335	35,907.121
2009	33,237.607	34,329.597	28,403.343	18,035.000	34,460.037
2010	33,996.502	36,013.344	27,668.285	18,950.718	35,343.700
2011	35,156.451	37,896.948	26,293.949	20,334.191	36,089.595

Source: International Monetary Fund, April 2012.

The UN FCCC methodology takes a geographical approach to emissions responsibility, which means that all emissions generated from a country are so called country’s emissions. This is the accounting methodology used in the Climate Change Regime. It has an adverse impact on the whole system. In the globalised world one can find a country with a low production of GHG and a high consumption level of

<sup>32</sup> International Energy Agency (a)...., p. 9.

<sup>33</sup> Russia – Ukraine relation is the best example of this Russian behavior.

GHG. Such country can import high carbon intensive goods (steel, cement, etc.). This methodology promotes rich countries rather than the poor ones like Poland which is unable to switch its economy to competitiveness low carbon products, can not conduct the strategy of importing high carbon intensive goods. In the case of import the balance of payment could be in danger.

Unfortunately one of the mechanisms in The Climate Change Regime in the European Union is the ETS. The EU Emissions Trading Scheme (EU ETS) is the common trading ‘currency’ of emission allowances. One allowance gives the right to emit one tone of CO<sub>2</sub>. Every country in the ETS has emission allowance transferred every year to enterprises. Emission allowances are very important to the fast reduction in emissions yet it will generate a huge cost and weaken competitiveness of the economy. A good exemplification of the problem is the allowance scheme for the period of 2008–2012 (see Table 3).

Table 3. European Union Emission Trading Scheme

Country	Kyoto target (% change against base year)	2005–2007		2008–2012	
		allocated CO <sub>2</sub> allowances (million tonnes per year)	share in ETS (%)	allocated CO <sub>2</sub> allowances (million tonnes per year)	share in ETS (%)
1	2	3	4	5	6
Austria	-13.00	33.00	1.40	32.30	1.50
Belgium	-7.50	62.10	2.70	58.00	2.80
Bulgaria	-8.00	42.30	1.80	42.30	2.00
Cyprus	–	5.70	0.20	5.20	0.30
Czech Republic	-8.00	97.60	4.20	86.70	4.20
Denmark	21.00	33.50	1.40	24.50	1.20
Estonia	-8.00	19.00	0.80	11.80	0.60
Finland	0.00	45.50	2.00	37.60	1.80
France	0.00	156.50	6.80	132.00	6.30
Germany	-21.00	499.00	21.70	451.50	21.60
Greece	25.00	74.40	3.20	68.30	3.30
Hungary	-6.00	31.30	1.40	19.50	0.90
Ireland	13.00	22.30	1.00	22.30	1.10
Italy	-6.50	223.10	9.70	201.60	9.70
Latvia	-8.00	4.60	0.20	3.40	0.20
Lithuania	-8.00	12.30	0.50	8.60	0.40
Luxembourg	-28.00	3.40	0.10	2.50	0.10

1	2	3	4	5	6
Malta	–	2.90	0.10	2.10	0.10
Netherlands	–6.00	95.30	4.10	86.30	4.10
Poland	–6.00	239.10	10.40	205.70	9.90
Portugal	27.00	38.90	1.70	34.80	1.70
Romania	8.00	74.80	3.20	73.20	3.50
Slovakia	8.00	30.50	1.30	32.50	1.60
Slovenia	8.00	8.80	0.40	8.30	0.40
Spain	15.00	174.40	7.60	152.20	7.30
Sweden	4.00	22.90	1.00	22.40	1.10
UK	12.00	245.30	10.70	245.60	11.80
Lichtenstein	8.00			0.20	0.00
Norway	1.00			15.00	0.70
Total		2298.50	100.00	2086.50	100.00

Source: The EU Emissions Trading Scheme, European Communities 2008, p. 16.

The reduction of the allowance was from 239.10 million ton per year in 2005–2007, to 2086.50 million ton per year in 2008–2012, that means by 9.90%, but the reduction of the Polish allowance was by 13.97%, nearly 40,00% more than average. The ETS created the opportunity to reduce Polish competitiveness by an unclear political decision.

The Climate Change Regime does not take into account such a natural reservoir of CO<sub>2</sub> as forests. Nearly 30% of the Polish territory is covered with forest which has important impact on the CO<sub>2</sub> level as well as on the CO<sub>2</sub> reduction. China is against this regulation because it is covered in forests in around 14 percent, almost evenly divided between coniferous and broadleaved forests.<sup>34</sup>

## Conclusions

The concept of geo-economics seems particularly helpful as a way of describing the Polish policy towards Climate Change Regime. One can see that economic aspects of the climate change regulation are the most important because they have strong influence on competitiveness of the country. Today coal has the predominate influence on the Polish policy towards climate change regulations and regime. The issue of the climate change regulation from the perspective of geo-economy is not

<sup>34</sup> [www.state.sc.us/forest/fprodchi.pdf](http://www.state.sc.us/forest/fprodchi.pdf).

a matter of will but a matter of economic security – competitiveness and development – which is objective and clear. Of course from the wider and longer time perspective Poland should gradually shift to the renewable energy technology, but today it is impossible without financial support mechanism from the European Union.

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## GEOEKONOMIA REŻIMU ZMIAN KLIMATU – POLSKA PERSPEKTYWA

### Streszczenie

Zmiany klimatu są jednym z najbardziej intrygujących zagadnień współczesnych stosunków międzynarodowych. Wyróżniamy wiele różnych perspektyw badania międzynarodowych reżimów ochrony środowiska oraz ich wpływu na państwa. Celem artykułu jest analiza polskiej polityki w zakresie zmian klimatu z perspektywy geoeconomii. Prezentuje on również związki między konkurencyjnością polskiej gospodarki, a reżimem ochrony klimatu. Takie podejście umożliwia zrozumienie, iż kwestie ustanawiania reżimu ochrony klimatu jest zagadnieniem bardziej bezpieczeństwa ekonomicznego, niż problemów ekologicznych lub bezpieczeństwa ekologicznego. Unia Europejska odgrywa kluczową rolę w rozwoju i implementacji reżimu ochrony klimatu w Polsce.

**Słowa kluczowe:** zmiany klimatu, bezpieczeństwo ekonomiczne i energetyczne, geoeconomia, Europejski System Handlu Emisjami, Ramowa konwencja Narodów Zjednoczonych w sprawie zmian klimatu.

