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Uncertainties of public opinion on energy consumption across enlarged European Union: An explanatory analysis

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Abstract

The paper is concerned with new challenges of EU energy policies and with attitudes of citizens towards energy consumption. Current globalisation era is characterised by uncertainties of energy supply and production. The EU energy policy-making recognises the importance of sustainable energy consumption habits of citizens and is also concerned with their opinion on energy politics. Public opinion and mass interest articulations of national electorates are central to studies on EU policies, because they indicate an important feedback that is often implying barriers effects on governing political elites of the democratic states concerned. Statistical analyses of the public opinion on energy consumptions across the enlarged EU show that there are two crucial polarisations in opinion and attitudes. First, there is a polarisation between the political option orientated on the EU level of policy-making and the option orientated on the level of individual member state. Second, there appears a polarisation between the negative attitudes to new energy issues and the positive attitudes that anticipate certain adaptations in energy consumption and habits. The two public opinion polarisations across the enlarged EU are examined in an explanatory model of nine variables. Statistical analysis (LISREL procedure) of the public opinion differentiations across the set of 25 electorates of the EU shows: (i) the importance of post-materialist orientations of the electorates that are tending to support both the national level of energy politics and the positive attitudes to reduction of energy consumption and adaptations of habits, (ii) a tendency of the electorates with a more negative view of globalisation to prefer the national level of energy policies, and (iii) a tendency in the public opinion in the more rich member states to shift towards the post-materialist values and to prefer the national level of policy-making on issues of energy consumption and production. In consequence, the explanatory model used in this paper indicates that the current differentiations in the public opinion across the EU do not tend to support in a sufficient way the development of strong energy policies at the EU level. There are considerable uncertainties in the world system today about the geopolitical and geo-economic circumstances of energy supply and production. However, the analysis in this paper indicates that in view of the current public opinion the development of energy policies at the EU level is seemingly also beset by considerable uncertainties and risks of insufficient electoral support.

Key words: European Union, new energy policy, globalisation, public opinion analysis

"We face risk situations that no one in previous history has had to confront – of global warming is only one. Many of the new risks and uncertainties affect us no matter where we live, and regardless of how privileged or deprived we are." (Anthony Giddens, 2002, *Runaway World. How Globalisation is Reshaping Our Lives*, page 3.)

Introduction

Following the oil crises of 1973 and 1979, energy policy of the member sates of the European Communities or European Union (EU) could count on more or less stable oil supply and relatively stable oil prices. As one of the world's largest importer of crude oil, natural gas and hard coal, the EU is a key player on the world energy markets. In a few last years, however, the energy markets have become much tighter and oil prices and associated prices of other energy sources have been volatile and rising. It is therefore little surprising that the EU politics concerning energy and associated environmental issues have become crucial topics on the EU agenda (see Green Paper "A European Strategy for Sustainable, Competitive and Secure Energy", EU Commission, March 2006). Rising energy demand has given emphasis to the importance of energy consumption. However, the acute policy issues of energy consumption and production have to be considered in a wide and complex context of the globalisation era with its current geopolitical and geo-economic circumstances. Reserves of oil, gas and coal are unevenly distributed across the world system of states. The largest reserves are located in politically and economically less-secure macro-regions of the world system such as Middle-East, West-Africa or Russia. About half of total energy consumption is produced in the enlarged EU of 25 economies while the other half is imported (EC, 2006b). Consequently, the current EU energy import dependency is considerable. The most important energy supplier of the EU is currently Russia. A recent communication from the European Commission to the European Council recognised that there is obviously great need in the enlarged EU to improve energy efficiency and to take decisions on more effective policies (EC, 2006c). There are presented to the EU policy-making three major energy and environmental challenges: (i) rising crude oils and natural gas prises, (ii) geopolitical insecurities of supply, and (iii) adaptation to green house effects. It is understood that tackling of the rising energy demand must also be orientated in a framework of economic and sustainable development policies on increasing the share of renewable energy in the EU energy mix, limiting the increasing import dependence, and making the use of fossil fuels cleaner and more efficient. Significantly, the EU energy policy also gives considerable emphasis to the importance of sustainable energy consumption habits of citizens and is concerned with their opinion on energy politics in general. This emphasis put upon energy consumption habits of citizens across the enlarged EU has placed the issue in the specific context of cross-national differences in public opinion on character of uncertainties of globalisation processes and on shifts from materialistic mass value orientations towards more post-materialistic values orientations with their stress on environmental concerns and ecological sustainability (see Inglehart and Welzel, 2005).

In July 2005 the European Commission launched a campaign to increase public awareness concerning sustainable energy and between 11th October and 15th November 2005 the Commission organised in the framework of Eurobarometer no. 64 a Special Eurobarometer survey (no. 248) in order to monitor public opinion on en-

ergy consumption of citizens across the enlarged EU of 25 electorates. The survey was considering public opinion concerning (i) appropriate decision-making levels (i.e. local, national or EU levels) to respond to new energy challenges, (ii) priorities to reduce energy consumption and dependency on imported energy sources, and (iii) energy consumption habits and willingness to change them. Therefore, this specific survey and also regular Standard Eurobarometer surveys provide good opportunities to specify current differentiations in public opinion and attitudes of citizens concerning energy across the 25 member states of the enlarged EU. Public opinion and mass interest articulations of national polities are central to studies on EU policies because they indicate an important feedback implying often barriers effects from electorates on governing political elites of the democratic countries concerned (Taylor, 1991; Wessels, 1995). It is therefore interesting to ask in this paper questions which are dealing with differences across the EU25 in societal context and in opinion and attitudes concerning energy consumption. Accordingly, the paper is structured as follows. Second section focuses on basic challenges of the EU energy policies under the above-mentioned pressures of globalisation and geopolitical considerations. Third section is concerned with general differences across the enlarged EU in attitudes to energy consumption and indicates some key polarisations tendencies in public opinion. Fourth section is providing a statistical explanation of differences in some crucial attitudes to energy across the twenty-five electorates of the EU. Finally, in the last section there are drawn major conclusions on the current cleavages and emerging uncertainties concerning energy consumption and public opinion across current European space.

EU energy policy under pressures of globalisation and geopolitical considerations

Although the 1992 Treaty on European Union indicated the energy sector as an activity of the EU, important responsibilities in the sector still are at the member state level (Dinan, 2005). Until the late 1970s there was agreement on the energy policy of the Community and nuclear energy was seen as a future source of energy and making it less dependent on energy imports. Currently, there are differences of opinion among national governments and EU institutions and the public not only concerning nuclear energy, but also regarding other energy issues. Nuclear safety and greenhouse effect are also recognised as crucial issues. The differences in opinion are there in spite of clear geographical dimensions of energy issues that are having the character of trans-border problems that could be solved by policy-making efforts at the European level. Obviously, it is necessary to reconcile protection of environment and security of supplies with issues of competitiveness and also pay attention to the EU's concerns with job opportunities and greater business efficiency. There also are uncertainties and estimated risks of energy supply and markets of global economy (EC, 2006a; 2006b). Total EU production of crude oil covers 20 percent of the 2004 consumption. Most of the EU crude oil imports come

from Russia (27 percent) and the Middle East (19 percent). Possible disruptions of oil supplies will have parallel adverse impacts in other major consuming regions of the world economic system (the US, Japan, China or India). It seems that transport is the sector where reduction of oil consumption is difficult to achieve. There are similar circumstances concerning natural gas although there is still 46 percent of consumption covered by EU domestic production. There are increasing imports of gas from Russia (25 percent) and from North Africa, Nigeria and the Middle East (together 14 percent). These circumstances make necessary a policy-making that is orientated on diversification of supply and integration of national and regional markets in the EU in order to partly reduce insecurity of supplies. Substitutions of solid fuels and oil as transport fuel by natural gas are climate-friendly. However, substitution of nuclear power with natural gas would lead to overall green house effects by increasing emissions and increasing natural gas consumption without reductions on other energy sources has obviously been climate unfriendly. It is therefore clear that the enlarged EU has to respond to the new and complex energy challenges under pressures of uncertain globalisation processes and geopolitical circumstances.

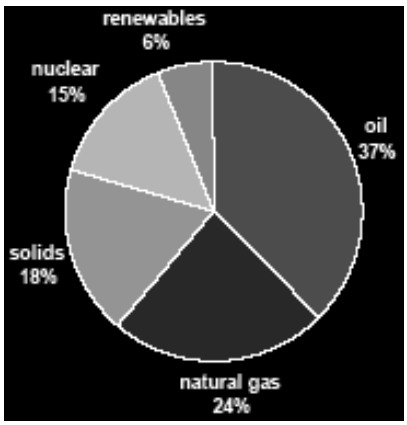

Fig. 1 Total energy consumption in the EU25 by fuel type in 2004 (source: EC, 2006b)

Figure 1 shows the structure of total energy consumption in the EU25 in 2004 by fuel type. It indicates the dependence on crude oil and natural gas and low level of the share of renewable sources. It is clear that there is a need for diversification of the energy mix. In particular any reduction of dependency on crude oil imports and products constitutes a very difficult task for developing energy politics at national and EU levels. There are risks of an insufficient public support for regulations attempting to reduce the EU oil dependence in the transport sectors, for tax incentives to promote efficient use of energy, higher standards for energy consuming equipment or for paying more for energy from renewable energy sources. In brief, there are political risks of low support for needed effective energy policies if the electorates of the enlarged EU are not inclined to change energy consumption habits and adapt current life styles and are not prepared to pay more for energy. Taking seriously the possibilities of an emerging negative feedback between, on the

one hand, energy policy intentions of the national and EU political elites and, on other hand, the public opinion on energy consumption and habits, this paper is therefore considering differences across the EU25 in societal context and in opinion and attitudes concerning energy consumption.

Public opinion and attitudes towards energy consumption, globalisation and post-materialist values

Various outcomes of the Special Eurobarometer survey "Attitudes towards energy" indicate considerable differences across the 25 polities of the enlarged EU in opinion and attitudes concerning energy politics and energy consumption and habits. The survey was part of Eurobarometer wave 64.2 and was conducted between the 11th October and the 15th November 2005. The survey covers citizens of the 25 countries aged 15 years and older. In each country, the basic sample design applied a multi-stage random procedure and numbers of sampling points were drawn with probability proportional to population size for a total coverage of the country and to population density. All interviews were conducted face-to-face in respondent's home. Sample size was one thousand respondents per country; only in the micro-states Cyprus, Luxembourg and Malta the sample size was five hundred (EC, 2000d).

Two polarisations

According to the survey, almost half of all EU respondents (47 percent) believed that the European level is the best level to respond to the new energy challenges (question QA67). Therefore, one can draw a preliminary conclusion that support of the total EU electorate for policy-making concerned with new energy issues at the European level is not convincing enough. The national decision-making level was considered the most appropriate scale of policy by 37 percent of respondents and only 8 percent prioritised the role of local authorities in promoting energy efficiency and renewable energies. Figure 2 shows the differentiations in opinion on suitability of the European and national levels of energy policy-making. The clear negative correlation (r square of 0.679) indicates existing tension between the two political and organisational options. Further, it appears that there are considerable differences in the public opinion across the enlarged EU. There is a convincing support for the European level of energy policy-making in Cyprus (CY), Greece (GR), Italy (IT), the Netherlands (NL) and Belgium (BE). Traditional euro-sceptic electorates in Finland (FI), the United Kingdom (UK), Estonia (ES) and Sweden (SE) seemingly do not consider the EU level to be an appropriate scale of decision-making on energy issues and tend to give priority to the level of own national government. It must also be noted that the large and influential electorates in Germany (GE) and France (FR) show only an average support for the European policy-making level and the public opinion in the ten 2004 enlargement countries appears to be quite differentiated.

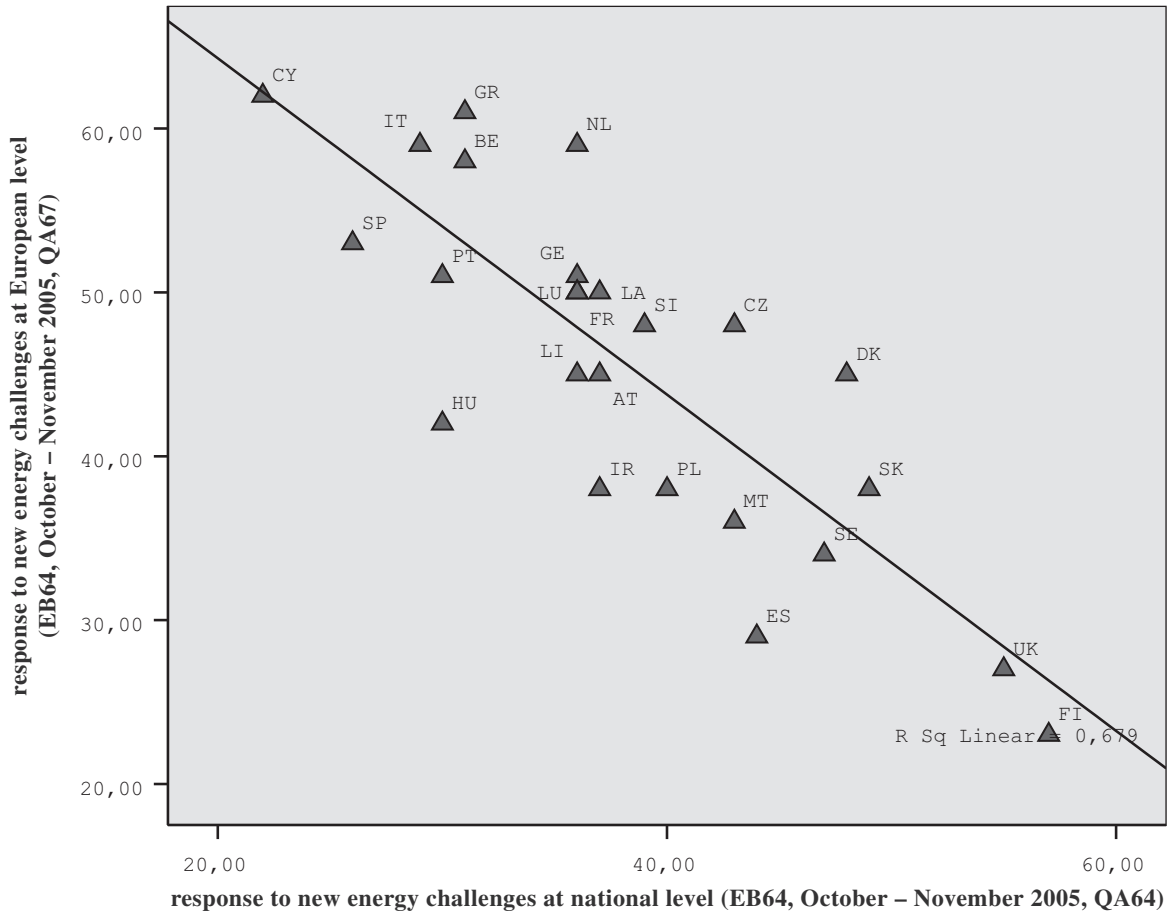

Fig. 2 Public opinion on the European and national levels of policy response to new energy challenges

A similar tension and complex differentiation patterns are shown in Figure 3 that also specifies a negative correlation (r square of 0.483) between two attitudes to energy consumption and habits. The two questions were introduced with the comment "As you may know, we are now facing new energy challenges (like high energy prices, international obligations to reduce CO_2 emissions) that could imply efforts for citizens. With which of the following proposition do you agree the most?" The horizontal axis indicates differentiation in agreement with the proposition "I do not intend to change my energy consumption habits and I would not be prepared to pay more". The EU respondents' average is 15 percent, but in Greece (GR), Hungary (HU), Latvia (LA) and Austria (AT) the share of this negative attitude to energy issues is over 20 percent. On the other hand, Figure 3 depicts the lowest scores on this negative attitude in Denmark (DK), the Netherlands (NL), Malta (MT), Finland (FI), France (FR), Luxembourg (LU), Sweden (SE), and Poland (PL). In contrast, the differentiation on the vertical axis indicates that the electorates in this group of EU countries declare their willingness to reduce energy consumption, but they are not prepared to pay more (i.e. agreement with the proposition "As I intend to reduce my energy consumption, I would not be prepared to pay more"). The levels of this specific public opinion in these countries are above or close to 60 percent and the EU average is 50 percent.

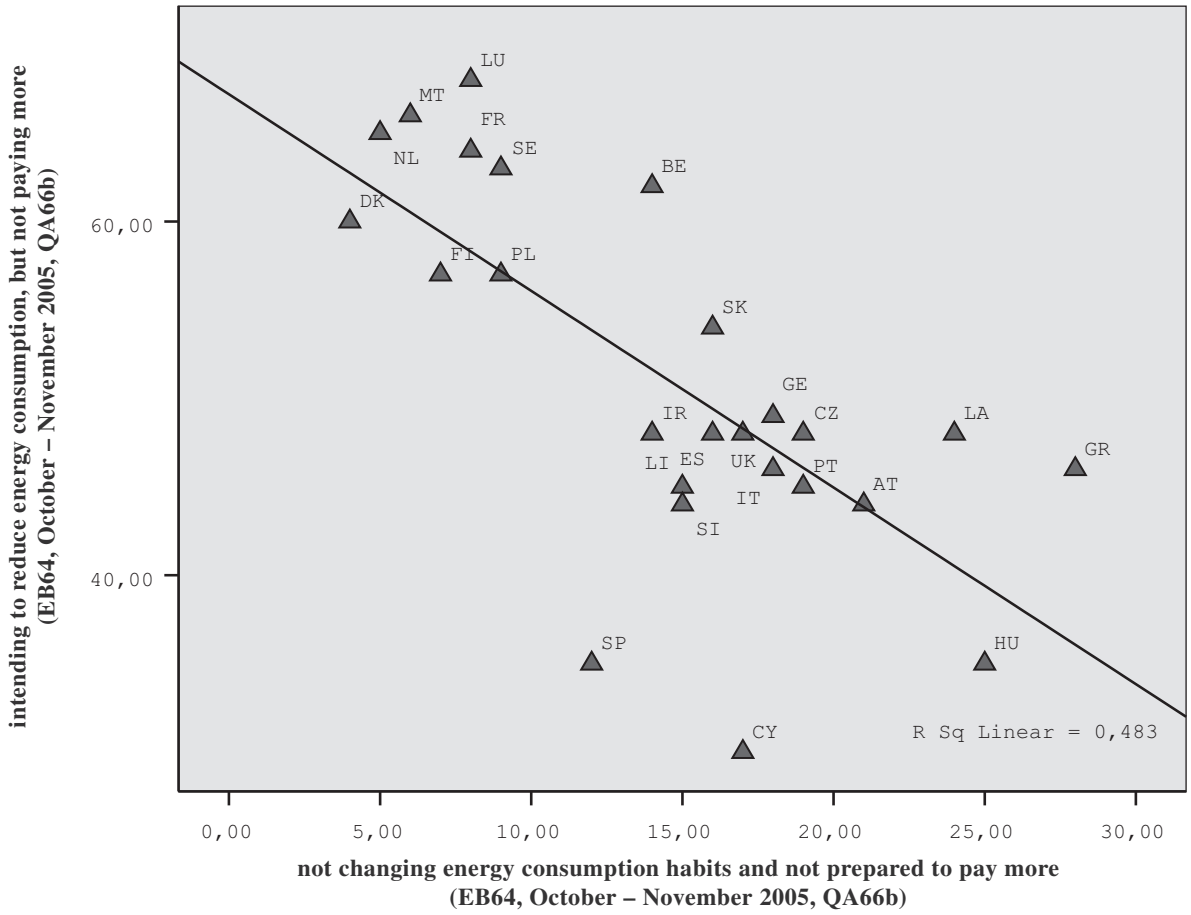

Fig. 3 Two attitudes to energy consumption habits and willingness to pay more for renewable sources of energy

The negative correlations in Figures 2 and 3 suggest important polarisations in the public opinion. First, there is clear polarisation between the political and organisational option orientated on the EU level of policy making and the option orientated on the level of individual nation-state. Second, there appears a polarisation between negative attitudes to new energy issues and positive attitudes that anticipate certain adaptations in energy consumptions and habits. Both polarisations suggest that it is worthwhile to control their statistical consistency in a wider context of other questions. Such a control can be made with the help of principal component analyses (Rummel, 1970) of correlations between other relevant indicators and those suggesting the specified polarisations.

Table 1 demonstrates a bipolar dimension extracted from correlations between six indicators that is representing 50.7 percent of their total variation. Principal component analysis has been employed in order to construct this statistical dimension that shows the tension between the public opinion locating the policy-making on new energy challenges at the national level (component loading (0.848)) and the public opinion supporting the policy-making at the European level (–0.775). This basic tension has already been specified in Figure 2, but the dimension in Table 1 controls the public opinion polarisation in the context of other interesting indicators. It appears that the importance given to the national level tends to be associated with the empha-

sis put upon the local level (0.554). In short, this opinion stresses the importance of domestic policy-making on energy issues. It is also important to note that this public opinion orientated on the national policy-making level tends to be associated with positive views on promotion of new energy technologies (0.679) and development of tax incentives on reduction of energy consumption (0.532). However, opinion on regulation in order to reduce dependency on oil tends to loads on the negative side of the dimension (–0.640). It is clear that this dimension is consistent in terms of contents and structure of the six component loadings. The dimension can be called NATIONAL RESPONSE TO ENERGY CHALLENGES and standardised component scores of the 25 countries on this statistical scale can indicate across the EU existing differentiation in the tension represented by its loadings.

Tab. 1 Dimension NATIONAL RESPONSE TO ENERGY CHALLENGES (N = EU25). Represented variance = 50.7%.

Indicators	**component loadings**
(1) response to new energy challenges at national level (QA67)	0.848
(2) response to new energy challenges at local level (QA67)	0.554
(3) promote new energy technologies (QA65)	0.679
(4) develop tax incentives on energy use (QA55)	0.532
(5) regulate to reduce dependency on oil (QA55)	–0.640
(6) response to new energy challenges at European level (QA67)	–0.775

Source: Special Eurobarometer no. 248, October–November 2005.

Table 2 attempts in a similar way to substantiate the tension that is shown in Figure 3. There appears across the 25 polities a polarisation between negative attitudes to new energy challenges and positive attitudes that anticipate express certain adaptation in energy consumption and habits. This tension in attitudes is statistically controlled using correlations with other three indicators showing other interesting attitudes. The component analysis extracted from a correlation matrix of the five indicators a dimension that represents 46.3 of their total variation. In accordance with the negative correlation specified in Figure 3, also this statistical scale is obviously bipolar. It is clear that the positive intention to reduce energy, but not paying more (component loading 0.824) is associated with the opinion to use more bike to reduce car use (0.733) and also with the intention to use more public transport and bike to reduce car use (0.573). These results demonstrate a tendency towards the willingness of the citizens to change their behaviour in order to contribute to solve issues of dependency on oil sources of energy. The negative side of the dimension represents negative attitudes: attitudes indicating that citizens are not changing energy consumption habits and not prepared to pay more (–0.852) and also not prepared to pay more for renewable energy resources (–0.579). Given the positive orientation of this dimension in terms of the content of the five indicators it can be called POSITIVE ATTITUDES TO ENERGY CONSUMPTION. It gives

standardised scores for each of the 25 countries and indicates existing differentiation across the EU in positive or negative attitudes to energy issue. Accordingly, the task of the explanatory analysis in the fourth part of this paper will to determine variables (explanatory factors) that tend to influence the differentiation.

Tab. 2 Dimension POSITIVE ATTITUDES TO ENERGY CONSUMPTION (N = EU25). Represented variance = 46.3%.

Indicators	**component loadings**
(1) intending to reduce energy consumption, but not paying more (QA66b)	0.824
(2) to use more bike to reduce car use (QA70)	0.733
(3) to use more public transport and bike to reduce car use (QA70)	0.573
(4) not prepared to pay more for renewable energy sources (QA66a)	–0.579
(5) not changing energy consumption habits and not prepared to pay more (QA66b)	–0.852

Source: Special Eurobarometer no. 248, October–November 2005.

Negative view of globalisation and post-materialist values orientation

It is clear that the current energy challenges must be seen in the context of a variety of globalisation pressures that stretch across the countries as results of economic and social transformations of the current world system (Held et al., 2005). This has also been recognised in official documents of the European Commission (EC, 2006a; 2006b). Obviously, significant differences in the perception and assessments of relevant aspects of globalisation stretch from the EU and national political elites further to individual electorates of the enlarged EU. Given the geopolitical and geo-economic contexts of new energy challenges it is therefore logical to assume that differences in view of globalisation across the 25 electorates can importantly contribute to explanation of differences in the attitudes to energy consumption and habits. Table 3 gives results of an attempt to specify a dimension based on opinions on six aspects of globalisation. Positive loadings on the dimension represent opinions on the globalisation that emphasise anxiety about economic effects of globalisation. The highest loading represents the opinion that globalisation leads to relocation of companies to countries where labour is cheaper (0.941). The next opinion explicitly says that citizens are afraid of job transfer to other member states which have lower production costs (0.861). It is necessary to note that this attitude tends to emphasise tensions in public opinion between the electorates in richer member states with higher production costs and those in the new member states with lower cost levels. A similar opinion tendency indicates the view that relocating companies do so to increase their profit (0.716). On the other side of the dimension, there is loading the opinion recognising some EU's capacities to protect citizens of negative effects of globalisation (–0.786). This opinion clearly expresses a positive view of the EU in this respect and the lack of anxiety. A similar optimistic view brings the belief that global economic relations enable inflows

of foreign direct investment in the country concerned (–0.660). These two optimistic attitudes are also associated with the idea that globalisation tends to increase competition for national companies (–0.481). This view seems to express certain confidence in the country's competitiveness. This pattern of views and their loadings on the dimension makes it possible to call the scale NEGATIVE VIEW OF GLOBALISATION. High scores of the EU countries on this dimension will represent anxiety and uncertainties concerning the globalisation pressures. Low scores will indicate opinion having more confidence in regard to current challenges of globalisation processes and their differentiating impacts in the enlarged EU.

Tab. 3 Dimension NEGATIVE VIEW OF GLOBALISATION (N = EU25). Represented variance = 57.1%.

Indicators	**component loadings**
(1) globalisation leads to relocation of companies to countries where labour is cheaper (QA55)	0.941
(2) currently afraid of the job transfer to other member states which have lower production costs (QA18.8)	0.861
(3) companies that relocate do so to increase profit (QA57)	0.716
(4) globalisation increases competition for our companies (QA55)	–0.481
(5) globalisation brings FDI in our country (QA55)	–0.660
(6) net agreement that the EU protects us of the negative effects of globalisation (QA56)	–0.786

Source: Standard Eurobarometer no. 64. October–November 2005.

The negative view of globalisation must be taken into account if the geo-economic and geopolitical context of attitudes to energy consumption and habits has to be considered. The same applies to differences across the enlarged EU in the shift towards post-materialist value orientations, because it can be assumed that differences in post-materialist values can be considered as important public opinion factors having substantial effects on differentiations in attitudes towards energy consumption and energy-related behaviour. The shift to post-materialism is pointing out to changing mass values and attitudes leading to decreasing importance of economic survival (materialism). It is associated with the structural shift from the era of industrialisation to the stage of post-industrial economy and society (Inglehart, 1997; Inglehart and Welzel, 2005). This change implies increasing existential security in circumstance of rich economies with advanced welfare state provisions. It is important to emphasise in the context of this paper that the shift towards post-materialist values and associated attitudes is resulting in life priorities of self-expression, and quality of life and, importantly, also in environmental concerns. Post-materialist value orientations also imply critical attitudes to authority, more critical and less easy led political opinion and critical approach to the European integration processes (Dostál, 2002; 2006). It is therefore worthwhile to explore the importance of differences in intensity of the post-materialist orientations and consider their linkages with differences in energy attitudes and habits. In Table 4, there are

five indicators representing typical post-materialist and materialist opinions. The structure of principal component loadings clearly shows the assumed distinction between post-materialist and materialist orientations. There are high positive loadings on the dimension of the stress on protection of speech (0.930), information on environmental and nuclear safety policy (0.833) and the emphasis given to the priority of the EU to protecting environment (0.725). On the materialist side of the dimension there are substantial negative loadings of public concerns with rising prices (–0.852) and priority of the EU to fighting unemployment (–0.610). Hence, the component score on this dimension can be used to indicate differences in the post-materialist orientations across the twenty-five countries.

Tab. 4 Dimension of POST-MATERIALIST VALUE ORIENTATION (N = EU25). Represented variance = 63.6%.

Indicators	**component loadings**
(1) protecting freedom of speech (QA55)	0.930
(2) more informed on environmental and nuclear safety policy (QA18.8)	0.933
(3) priority of the EU to protecting environment (QA57)	0.725
(4) priority of the EU to fighting unemployment (QA55)	–0.610
(5) fighting rising prices (QA55)	–0.852

Source: Standard Eurobarometer no. 64. October-November 2005.

According to earlier public opinion research, the shift towards the post-materialist values orientation is central to the understanding of differentiations in various other public opinion tendencies (Inglehart and Welzel, 2005; Dostál, 2006). It can therefore be assumed that the differences in the post-materialist value orientation across the EU25 will have a systematic effect on the differences in attitudes to energy. In Figure 4, there is shown a clear positive correlation (r square of 0.612) between the scores of the 25 polities on the post-materialist dimension and the scores on the dimension representing positive attitudes to reduction of energy consumption (see Table 2). The highest scores on the post-materialist dimension belong to Denmark (DK), Sweden (SE) and the Netherlands (NL). The lowest scores show the polities in the old and new EU peripheries: Portugal (PT) and Greece (GR) and Lithuania (LI), Poland (PL), Slovakia (SK) and Latvia (LA). The positions of the electorates in Germany (GE) and the Czech Republic (CZ) are close the average scores on the two dimensions. Indeed, it appears that across the enlarged EU the increasing level of post-materialist values tends to stimulate positive attitudes to reduction of energy. In terms of the theory of cross-cultural variation (Inglehart, 1997) this outcome is significant. It suggests a closer link of the post-materialism with more responsible environmental and energy consumption attitudes. It is also significant to note that the tendency to more responsible attitudes takes place in the value setting of the post-materialist critical and emancipative ethos in respect to the national and the EU policy-making levels (Inglehart and Welzel,

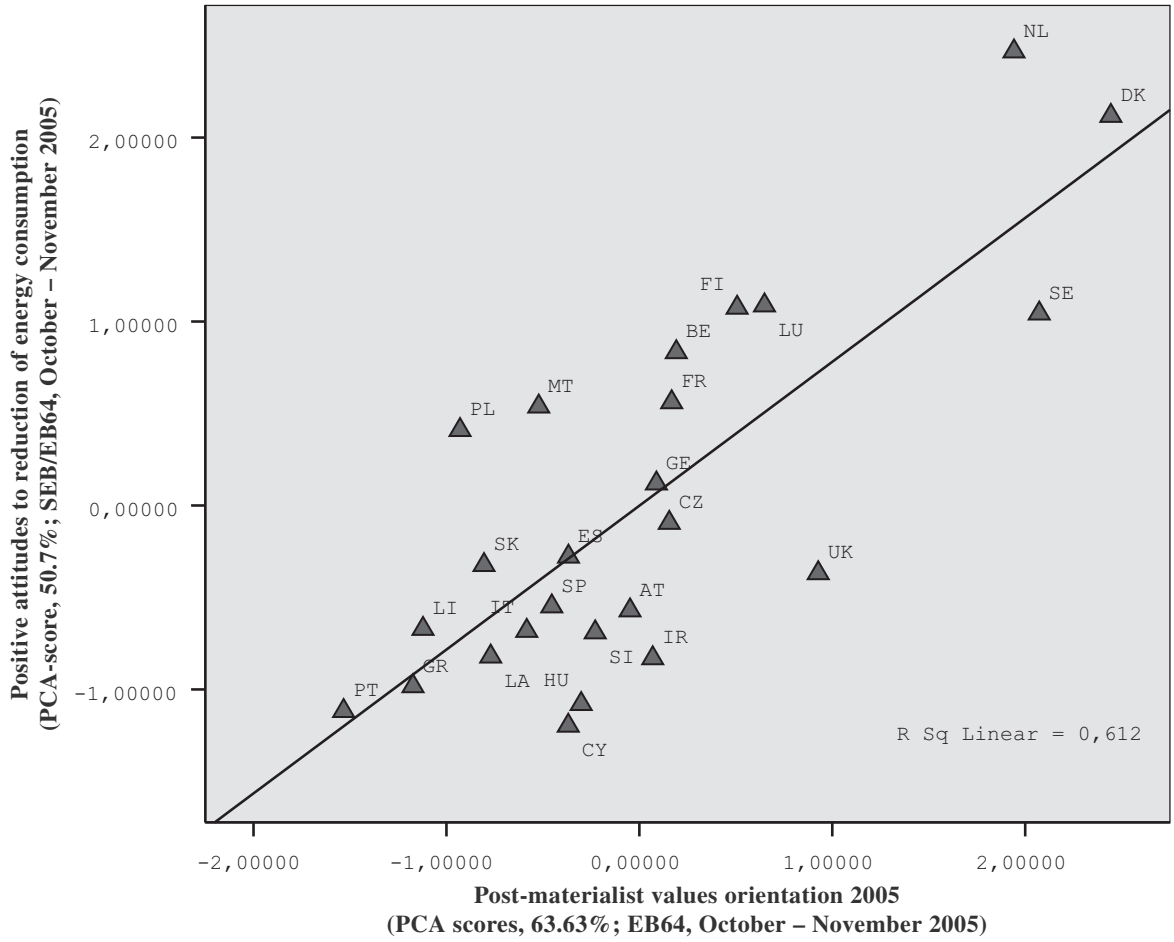

Fig. 4 Post-materialist values orientation and positive attitudes to energy consumption

2005, 149–172; Dostál, 2006). In short, the suggested hypothesis argues that in the rich countries socio-economic development brings increasingly favourable living conditions and this stimulates a rise of mass post-materialist values which place higher priorities to environment-related issues. In view of these empirical tendencies and theoretical considerations one can postulate two hypotheses to be examined in the explanatory model in the next section of this paper. First, it can be expected that the post-materialism score still will have in a wider setting of other explanatory variables a substantial effect on the positive attitudes to new challenges of energy consumption and adaptations of energy consumption habits. Second, in a similar way, it can be claimed that a higher position of the electorates on the post-materialist dimension will be tending to result in views opposing political and organisational options of decision-making at the European level.

An explanatory model of attitudes to energy consumption

The statistical examination in the preceding section suggested a number of theoretical claims and associated hypotheses that have to be incorporated in an explanatory model of differences in some crucial attitudes to energy across the twenty-five

electorates of the enlarged EU. Identifying causal directions in an explanatory model with nine variables is a complicated matter. The differentiations in public opinion across the twenty-five electorates considered in the preceding section indicate the needed explanatory approach must be sufficiently complex in order to reach an acceptable level of the model determination. It is necessary to use the wide lens of the multivariate LISREL (linear structural equations) analysis (see Saris and Stronkhorst, 1984; Asher, 1983). The LISREL approach in this paper is based upon the postulation of an explanatory (causal) order of structural conditions such as socio-economic development level of countries concerned or number of years of the EU membership and basic public opinion variables such as the negative view of globalisation and the post-materialist values orientation that seem to influence across the EU25 the public opinion concerned with new challenges to energy consumption and adaptations of behaviour. In consequence, the role of a large number of measures of structural conditions and intermediate variables on basic political opinions are examined as determinants of the energy consumption attitudes.

Structural and public opinion variables

The postulated causal order of the explanatory model is shown in Figure 5. The first structural variable to be examined in terms of its effects in the model is the number of years of the EU membership. The major hypothesis to be tested in the explanatory model is whether the public opinion in the old member states is inclined to support more the option of the policy-making on energy issue at the European level and, in particular, whether it expresses positive attitudes to reduction of energy consumption and adaptations of habits. Because it can be assumed that long-lasting experiences with the European integration process and with reforms of EU institutions and procedures can stimulate more positive attitudes to new issues in the sector of energy. The second structural variable is a measure specifying difference in level of socio-economic development across the 25 countries. The measure is a principal component score on the following dimension: (1) share of taxes in GDP in 2004 (loading of 0.842), (2) GDP per capita in PPS in 2005 (0.679), (3) public dept share in GDP in 2005 (0.550), (4) unemployment rate in October 2004 (–0.570) and (5) real GDP growth in 2005 (–0.837). In brief, this measure represents 49.95 percent of the total variation of the five indicators and can be called RICH WELFARE STATE AND LOW GROWTH. The scores on this dimension show differences across the 25 countries in the level of welfare state provisions and the current economic productivity in GDP terms. The structure of the loadings also indicates that the rich member states tend to accumulate high levels of public debt (see Baldwin and Wypolsz, 2004, 360–362). It is further clear that there are in the rich countries lower levels of unemployment rate, but it is also indicated that the rich EU economies tend to be lagging behind the poorer member countries in terms of realised economic growth. Accordingly, one can assume that the scores on this dimension can reveal in the explanatory model effects that influence current

public opinion cleavages between the electorates in the rich and the poor countries in the enlarged EU.

Next, in the postulated causal order of the model there is a block of five intermediate variables. There are the measures of post-materialist value orientation and negative view of globalisation described in the preceding section. The third variable in this block is representing differentiation in the positive answer to the question whether "the EU is protecting against globalisation" (Eurobarometer no. 64, October – November 2005, question QA56). It can be assumed that this opinion will tend to support the EU level of energy policies and the positive attitudes to energy consumption. The fourth variable is concerned with nuclear energy. The use of nuclear energy is a crucial long-term issue in debates on safe energy production and green house effects. Therefore, it is important to incorporate the opinion differences on this issue into the explanatory model. It appears that 12 percent of all EU respondents choose the nuclear alternative as an acceptable solution of current energy production problems (Special Eurobarometer no. 248, question QA65). However, there are significant differences in opinion between the electorates in the North and the South of the EU25. The highest levels of support for nuclear energy are in Sweden (32 percent), Finland (27 percent) and Lithuania (21 percent). The lowest support levels are in Malta (2 percent), Cyprus (2 percent), Greece (2 percent) and Spain (4 percent). In these Mediterranean countries there is the public opinion tending to give a considerable preference to the development of solar energy (support levels in these countries are ranging from 76 to 50 percent). It is clear that these differences represent articulations of public interest that reflect basic environmental circumstance in the enlarged EU. Therefore, it is important to explore in the explanatory model if the opinion differences on nuclear energy tend to have some systematic influence on the attitudes to energy consumption and views of appropriate levels of policy-making. The fifth variable in this intermediary block of the model is differentiation across the EU25 in opinion concerning the question whether "the EU is ahead the USA in protection of environment" (Eurobarometer no. 64, October–November 2005, question QA53.3). Over the half of all EU respondents (59 percent) expressed agreement with this geopolitical claim. However, there are interesting differences in the opinion between the EU15 countries and the ten new member countries. In the former there is the share of positive answers of 62 percent and in the latter only of 41 percent. This difference is important, because it is pointing out to certain scepticism on the EU environmental achievements in the public of the new member states. It can be assumed that also the opinion stressing an EU leadership in environmental affairs will tend to support both the view of the EU level as an appropriate scale for development of energy policies and the positive attitudes to energy consumption. The third block of the explanatory model includes the two major dependent measures: NATIONAL RESPONSE TO ENERGY CHALLENGES and POSITIVE ATTITUDES TO ENERGY CONSUMPTION (see Tables 1 and 2).

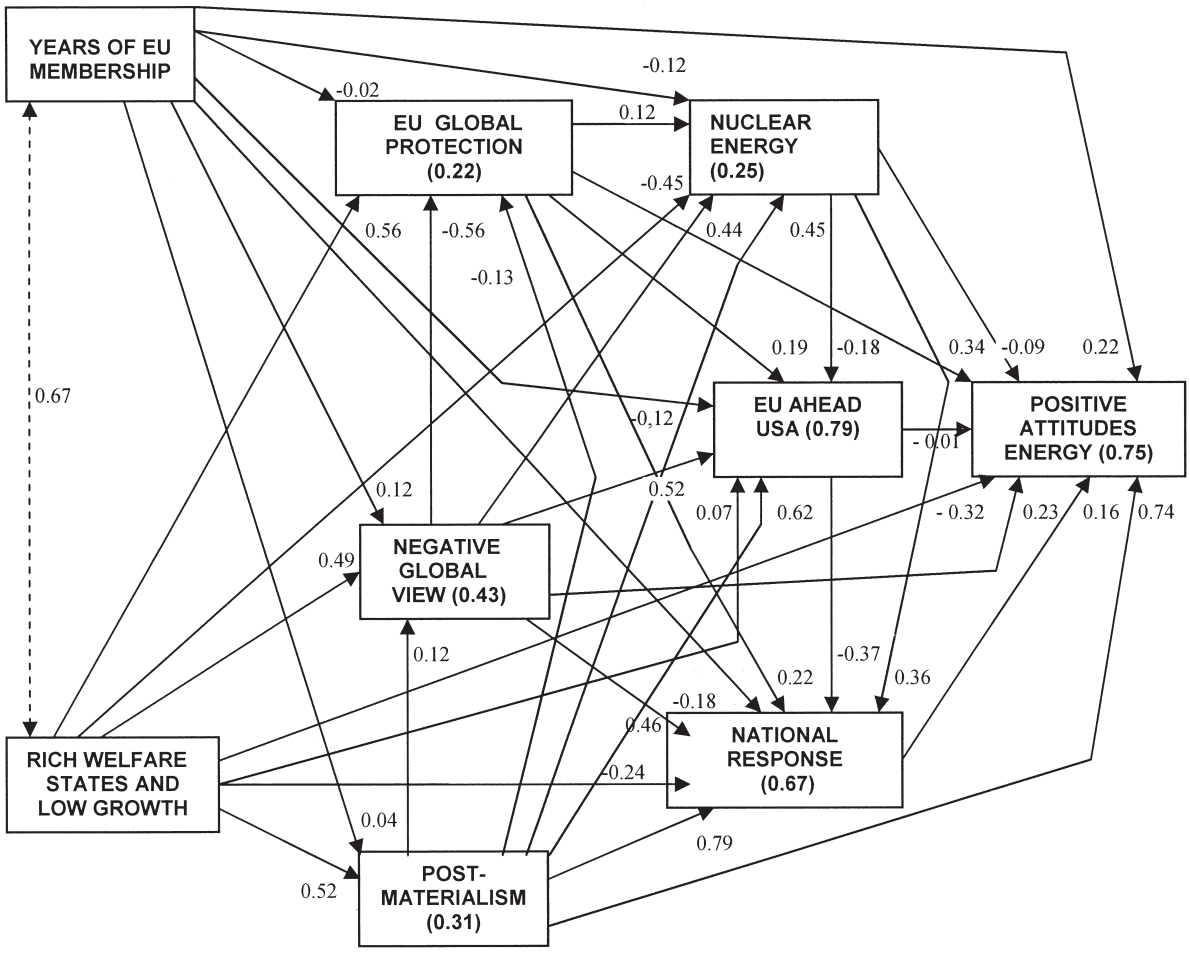

Fig. 5 An explanatory model on positive attitudes to reduction of energy consumption (N = EU25; determination = 75 percent)

These empirical measures representing the two structural conditions and the seven public opinion measures or variables and the associated hypotheses are translated into the postulated explanatory model shown in Figure 5. The LISREL procedure estimates independent direct and indirect, or mediated, effects in complex models with a large number of variables. The effects are estimated standardised multiple regression coefficients (partial regression coefficients) indicating the change in the value of dependent variable with a unit change in the value of independent (explanatory) variable, assuming no change in the values of the other independent variables. Thus, the other independent variables are statistically held constant (Saris and Stronkhorst, 1984). The multiple regression of the postulated explanatory model indicates that the two structural variable and the six public opinion variables determine across the EU25 together 75 percent of the total variation of the measure POSITIVE ATTITUDES TO ENERGY CONSUMPTION (r square of 0.75). This outcome shows a substantial determination level of the model.

It appears that the component score measure RICH WELFARE STATES AND LOW GROWTH (further RICH) is an important factor influencing increasing scores on the dimension POST-MATERIALIST VALUE ORIENTATION (further POST-MAT) in the set of 25 member states. In terms of the LISREL modelling based on the standardised multiple regression coefficients this means that a shift of one standards deviation on the explanatory dimension RICH implies a positive effect of 0.52 of standard deviation on the dependent measure POST-MAT. This effect is in accordance with the claim of Inglehard and Welzel (2005) saying that in rich democratic redistributive societies (i.e. advanced welfare states) the shift towards post-materialist values is considerable. There is no independent effect on the POST-MAT coming from the other structural variable indicating the number of year of the EU membership, further EUYEARS (effect of 0.04). Also the differentiation in the scores on the measure NEGATIVE VIEW OF GLOBALISATION (further GLOBAL) is only substantially affected through the measure RICH (effect of 0.49). This is also an important outcome of the explanatory interpretation of the postulated model. It means that the electorates of the richer member states of the EU tend to be more afraid of globalisation pressures (i.e. they tend to be concerned about international competition and its domestic socio-economic consequences; see Swank, 2002) than the electorates in the poorer states (i.e. mostly the electorates in the new member states). This result suggests emerging serious public opinion cleavages in the enlarged EU concerning socio-economic and some political affairs (Dostál, 2006). The model also demonstrates a very low effect of the POST-MAT measure on the GLOBAL measure (effect of 0.12) and allows the conclusion that the shift towards the post-materialist values does not result in a convincing tendency in the public opinion to view globalisation pressures only in negative terms (see also Giddens, 2002, 6–19 for a similar view). The model also indicates that the variable EUYEARS has similarly low independent effect (0.12) on the GLOBAL measure. The differences across the 25 polities in the view that the EU is somewhat protecting against globalisation (variable EU GLOBAL PROTECTION) are determined in the statistical model only to the level of 22 percent. There are interesting contradictory effects of the RICH measure on the variable. The direct effect of 0.56 is considerable. However, there is an indirect effect mediated by the GLOBAL measure: $-0.56 \times 0.49 = -0.27$. This statistical outcome means that if a high score of a country on the RICH measure is associated with a high score on the GLOBAL measure than the belief in the EU capacities to protect against negative globalisation impacts is tending to decrease.

The next public opinion variable is concerned with the view on the nuclear energy. The variable NUCLEAR ENERGY is also determined at a low level (25 percent). But, there are three substantial direct effects. First, there are again contradictory effects coming from the RICH measure. There is a negative direct effect (–0.45). However, there are positive indirect effects via the POST-MAT and GLOBAL measures $(0.52 \times 0.45) + (0.49 \times 0.44) = 0.45$. The other effects mediated by the variable EU GLOBAL PROTECTION are negligible. These statistical

results mean that the total effect of the RICH measure on the NUCLEAR ENERGY variable is close to zero. Second, there is the substantial positive direct effect of the POST-MAT measure (0.45) implying that the electorates scoring higher on this dimension tend to view nuclear energy in more positive terms. In other words, it seems that the more post-materialist electorates in the northern EU member states are more inclined to accept nuclear energy as one of options allowing to respond to new energy challenges. Third, there is a similar independent positive direct effect coming from the GLOBAL measure (0.44). This effect suggests that the polities with more negative view of globalisation and its uncertainties seemingly tend to see the use of nuclear energy as an acceptable affair. The determination level of the variable EU AHEAD USA is high (79 percent) and its differentiation across the 25 polities can be explained in the model by positive direct effects of the POST-MAT measure (0.62) and the GLOBAL measure (0.52). There are mediated via these two measures also substantial indirect effects of the RICH measure: $(0.52 \times 0.62) + (0.49 \times 0.52) = 0.56$. These statistical outcomes show that when the public opinion in the richer countries tends towards the post-materialist orientations or towards the negative view of globalisation than there is also a public opinion tendency to perceive the EU ahead the USA in protection of environment. However, it is necessary to note that this specific question is asked in a way which is not establishing whether the perception of the protection is concerning the EU level or the national level.

The last block of the postulated explanatory model is considering the measures NATIONAL RESPONSE (see Table 1) and POSITIVE ATTITUDES ENERGY (see Table 2). Statistical determinations of the two measures are considerable (67 respectively 75 percent). The measure NATIONAL RESPONSE is in the causal order of the postulated model especially important, because it represents the crucial polarisation in the public opinion between the view supporting the national energy policy-making and the view supporting the EU level of policy-making. It is obvious that this public opinion polarisation is of great significance for the development of current EU policies responding to new energy challenges in the globalisation context. The statistical outcomes indicate positive and negative effects that document a complex pattern of public opinion tendencies influencing this polarisation. First, there is a strong positive direct effect of the POST-MAT measure (0.79). This means that the electorates with intensive post-materialist value orientations clearly tend to support the national level of policy-making on energy issue. It is necessary to emphasise that this strong independent effect still is there in the wide pattern of the other six independent direct effects in the model. It has already been mentioned in the third section of this paper that the post-materialist value orientations have been leading to critical attitudes to authority, more critical and less easy led political opinion and critical approach to the European integration processes, in particular in respect to the deepening of the EU integration (Inglehart and Welzel, 2005; Dostál, 2006). There is a substantial positive effect of the GLOBAL measure (0.46) meaning that across the EU25 also the negative view of globalisation pressures

tends to stimulate the public opinion to prefer the policy-making on energy in the framework of the (own) nation-state. Next, there is positive direct effect (0.36) of the variable NUCLEAR ENERGY. This statistical result suggests a public opinion tendency indicating some concerns of the electorates giving a priority to nuclear energy option about possible barriers to necessary policy-making on this energy source that could originate at the European level of decision-making. The direct and indirect effects of the RICH measure are again of a more complex character. There is a low negative direct effect (–0.24). However, the indirect effects mediated by the POST-MAT measure and the GLOBAL measure are positive effects: $0.52 \times 0.79 = 0.41$, respectively $0.49 \times 0.46 = 0.23$. It seems that the public in the rich member states tends towards the post-materialist orientations and towards preferences of the national level of policy-making on energy. Finally, there is a negative direct effect of the differentiation in the view that the EU is ahead the USA in environmental protection (–0.37). It seems that this effect represents across the EU25 the public opinion tendency to associate this accomplishment with the EU level of policy-making.

The last measure in the causal order of the postulated model is the score on the dimension POSITIVE ATTITUDES TO ENERGY CONSUMPTION (see Table 2). The statistical outcomes clearly demonstrate a strong positive direct effect (0.74) of the differentiation in the post-materialist values orientation (the POST-MAT measure) on the differentiation in the dimension representing the polarisation between positive and negative attitudes to energy consumption and adaptations of habits. It must be noted that this positive independent affect is very close to the simple correlation between the two measures ($r = 0.78$) shown in Figure 4. This convincing outcome suggests that the differentiation across the enlarged EU in the post-materialist values can be seen as the crucial public opinion tendency that is also influencing across the 25 electorates the differentiation in the current attitudes towards energy. There is also a lower positive direct effect (0.34) of the variable EU GLOBAL PROTECTION indicating some impact of optimistic perceptions of the EU sheltering capabilities on the positive attitudes to energy. There a very low positive direct effect (0.23) of the GLOBAL measure suggesting a very weak tendency to stress the positive attitudes towards energy. A similar very low positive direct effect (0.22) comes from the variable EUYEAR. But, this result of the statistical modelling tends to suggest that the length of the EU membership and possible associated experiences of the electorates with the EU affairs are seemingly not stimulating in a decisive way the positive attitudes to energy consumption and adaptations of behaviour. Finally, there are contradictory effects of the RICH measure again. On the one hand, there is a negative direct effect (–0.32). On the other hand, there is a substantial positive indirect effect mediated by the POST-MAT measure ($0.52 \times 0.74 = 0.38$). Also these positive and negative effects show that the total effect of the difference between the rich and the poor member states is close to zero.

Conclusions

The enlarged EU has to respond to the new and complex energy challenges under pressures of uncertain globalisation processes and risky geopolitical circumstances. Any reduction of dependency on crude oil imports and oil products constitutes particularly a very difficult task for developing energy politics at national and EU levels. There are risks of an insufficient public support for regulations attempting to reduce the oil dependence in the transport sectors, for tax incentives to promote efficient use of energy, for higher standards for energy consuming equipment or for paying more for energy from renewable energy sources.

Public opinion and mass interest articulations of national electorates are central to studies on EU policies, because they indicate an important feedback that is often implying barriers effects on governing political elites of the democratic states concerned. The statistical analysis of the public opinion on energy consumption across the enlarged EU has shown that there are two crucial polarisations in opinion and attitudes. First, there is the polarisation between the political option orientated on the EU level of policy-making and the option orientated on the level of individual member state. It is significant to note that positive views on promotion of new energy technologies and development of tax incentives on reduction of energy consumption are associated with the opinion stressing the importance of the national policy-making level and not the EU level. Second, there has appeared the polarisation between the negative attitudes to new energy issues and the positive attitudes that anticipate certain adaptations in energy consumption and habits. The two public opinion polarisations across the enlarged EU have been examined in the postulated explanatory model of nine variables. The LISREL modelling of the public opinion differentiations across the set of 25 electorates of the EU has allowed a number of major conclusions. First, the strong direct effects in the explanatory model have documented the importance of post-materialist orientations of the electorates that are tending to support both the national level of energy politics and the positive attitudes to reduction of energy consumption and adaptations of habits. Second, the outcomes of the model have also indicated a tendency of the electorates with a more negative view of globalisation to prefer the national level of energy policies. Third, the analysis did not show some clear cleavages in public opinion on energy between the old member states of the EU15 and the new member states of the 2004 enlargement. However, the modelling approach has suggested a tendency in the public opinion in the richer member states to shift towards the post-materialist values and to prefer the national level of policy-making on issues of energy consumption and production. Fourth, the explanatory model used in this paper has indicated that the current differentiations in the public opinion across the EU do not tend to support in a sufficient way the development of strong energy policies at the EU level. Finally, the major conclusion to drawn is that there are considerable uncertainties in the world system today about the geopolitical and geo-economic circumstances of energy supply and production, but the uncertain-

ties are not reflected in the current public opinion across the enlarged EU. The analysis made in this paper has indicated that in view of the public opinion the development of energy policies at the EU level is seemingly also beset by considerable uncertainties and risks of insufficient electoral support.

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Résumé

Neurčitost veřejného mínění o spotřebě energie v zemích rozšířené Evropské unie: Explanační analýza

Příspěvek se zabývá novými výzvami energetické politiky Evropské unie a analyzuje diferenciace postojů občanů ke konzumpci energie. Současnou éru globalizace charakterizují nejistoty týkající se jak dodávek energie, tak její produkce. Energetická politika Evropské unie uznává význam udržitelnosti konzumpce energie a chování občanů a také provádí výzkumy veřejného mínění o politice, která se týká energie. Veřejné mínění a masové artikulace zájmů občanů národních států jsou důležité, protože ukazují významnou zpětnou vazbu na rozhodování poltických elit demokratických států. Statistické rozbory veřejného mínění týkající se konzumpce energie v souboru 25 zemí rozšířené Evropské unie ukazují dvě klíčové polarizace ve veřejném mínění a postojích. Za prvé se ukazuje důležitá polarizace mezi možností zaměřit rozhodování a politiku týkající se energie na úroveň Evropské unie a možností zaměření na úroveň jednotlivých národních států. Za druhé se ukazuje polarizace mezi negativními postoji k novým problémům energie a pozitivními postoji, které předpokládají jisté adaptace konzumpce energie a chování. Obě polarizace jsou statisticky prověřovány v explanačním modelu devíti proměnných. Statistický rozbor (procedura LISREL) diferenciací veřejného mínění v souboru 25 zemí Evropské unie ukazuje několik významných tendencí: (i) důležitost post-materialistických orientací občanů, které směřují jak k podpoře rozhodování o otázkách energie na úrovni národních států, tak k podpoře pozitivních postojů k redukci konzumpce energie a adaptaci návyků, (ii) tendenci občanů s více negativním hodnocením globalizace podporovat politiku týkající se energie na národní úrovni, a (iii) tendenci veřejného mínění v bohatších členských státech se přiklánět k post-materialistickým hodnotám a k preferenci národní úrovně rozhodování o politice týkající se konsumpce a produkce energie. Interpretace postulovaného explanačního modelu ukazuje, že současné diferenciace veřejného mínění v souboru 25 zemí nenaznačují dostatečnou podporu pro rozvoj silné politiky týkající se energie na úrovni Evropské unie. Tyto závěry ukazují, že vedle nejistého vývoje světového systému a riskantních geopolitických a geoekonomických okolností dodávek a produkce energie je Evropská unie konfrontována s nejistotou a riziky nedostatečné podpory pro rozvoj politiky týkající se energie na nadnárodní úrovni.