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PUBLIC PERCEPTION OF ENERGY SECURITY IN LITHUANIA

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Abstract. The relevance of this article is based on the aim to fulfill the lack of understanding of public perception on energy security. Despite the fact that energy security problems in Lithuania are analyzed on a regular basis, however, there is no comprehensive research on the very issue of the public perception of energy security. The results of the empirical survey (public poll carried out in 2013) are used to explain the public perception of energy security and its main aspects, and to show the existing difference of society opinion between different social groups in regard to gender, age, education, occupation, income and living area. The research showed that variety of different aspects are taken into account in public perception on energy security. The dominance of "The prices of energy resources" (mean – 4.35) and "Reliability of energy supply services" (mean – 4.25) was fixated throughout different social groups. The three most ambivalently ranked aspects were "Development of oil extraction" (mean – 3.50), "Development of nuclear energy" (mean – 3.30) and "Development of shale gas extraction" (mean – 3.08).

Keywords: energy security, public perception, social groups, price and reliability of supply

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JEL Classifications: L1, L90

1. Introduction

Lately, an effort to link energy and society is noticeable in conceptualization of energy security in academic discourse. Growing attention to sustainable development concept fosters discussions on how energy security affects society and what responsibilities fall upon society in the development of smooth energy security politics (Winzer 2012; Cherp, Jewel 2011; Sovacool, Mukherjee 2011; Sovacool *et al.* 2012; Augutis *et al.* 2012; Vosylius *et al.* 2013; Streimikienė *et al.* 2007; Baublys *et al.* 2015). In most cases the discussions consider the political and economic consequences, which are or may affect the society, meanwhile the sustainable development is concern that all of the above mentioned consequences would have a positive impact on society. Noble intentions in relation to public interest can also be grasped in official discourse (The national energy independence strategy 2012). It seems that the interest of society is becoming the stimulus targeted by the politics of energy security.

The problem of energy security is indeed one of the most important (amongst others) in Lithuania (Balžekienė *et al.* 2009: 239). Needless to say its importance varies due to external and internal affairs, but people al-

ways understood the importance of energy security. However, until recent years there were no further elaborations on what it means "energy security" for society? We could find some qualitative data on experts (Genys, Aleksandravičius 2012) or politicians (Česnakas 2013) opinion, some attempts to explain social preconditions of public risk perception (Rimaitė, Rinkevičius 2008) and some explanations on public view towards nuclear energy (Balžekienė 2006; Gaidys, Rinkevičius 2008). But there are no systematic attempts to explain public perception of energy security. Therefore, a detailed public poll was carried out in 2013 in order to understand how Lithuanian society interprets energy security, what aspects does it name as most important. The goal of the article is – to reveal public opinion towards the most important aspects of energy security and to identify existing differences of the attitude between different social groups (in regard to gender, age, education, occupation, income and living area).

2. Energy security, strategic interest and public perception

The evolution of energy security concept can be easily grasped when analyzing literature on energy security during the last few decades. As Cherp and Jewel have recently (2011) showed the concept has evolved from a narrow based interest in oil supply to the notions of integrated energy security theory on the global scale. The variety of actual definitions which cover different angles of energy security is scrutiny summarized by Winzer (2012), Kruyt *et al.* (2009), Ang *et al.* (2015). Even though the definition of energy security is variable and means something different for each country, it is possible to notice the growing emphasis on society's interest in current literature. The official European Commission paper also provides comprehensive definition putting a strong emphasis on society's interest (European Commission, Green Paper 2000).

The extent to which energy security is concerned may fundamentally differ in various countries. Rightly so, one thing is try to improve existing energy infrastructure and its efficiency, thinking about diversification of supply or trying to implement some new technologies. The different thing is to pursue it in totally different conditions than it was created in as if in Lithuanian case. Lithuania inherited infrastructure from Soviet times and now it has to restructure it according to the changed conditions and actual interests of the nation. Therefore one can also find the evolution of energy security concept (Augutis *et al.* 2013) which has been changing throughout the history aiming to answer to different aspects of the problem due to the interest of the small but evolving country. For example, the first breach in energy security Lithuania faced right after declaration of Independence (when Russia started raising prices on energy resources for Lithuania and impending them to the world prices and in 1990 introduced the oil embargo, until finally in 2006 closed down "Druzhba" oil pipeline that supplied raw materials to "Mažeikiai" oil refinery) accordingly the main priorities of energy security were emphasized due to the main threats. Only in recent years in the academic literature (Molis 2011; Leonavičius, Genys 2011; Tvaronavičienė 2012; Vosylius *et al.* 2013; Balitskiy *et al.* 2015) it is possible to grasp a more consistent approach to energy security which puts focus not only on energy system's ability to provide energy for the consumers in acceptable prices but also its ability to withstand the threats of technical, environmental, economical, political and social kind.

The government's desire to take care of the strategic projects is totaly justifiable because its primary duty is to strive for a long-term strategic objectives of the country. However it might be very hard (or hardly possible) to implement some strategic projects if they do not correspond with public interest and fail to properly respond not only to the strategic long-term, but also short-term interests of society as well as different social groups (as has happened in the case of shale gas extraction[1]). Given Lithuania's geopolitical situation and Russian ambitions in relation to it, wealth inequality in society and the unequal burden of energy, the segmentation of interests in society and limited government capacity to respond it equally, the importance of public perception of energy security is increasing.

It is not easy to balance the state's strategic objectives and interest of the society, especially if the public interest is little known. The opinion of the society arises as a key factor for the smooth energy politics. And on

[1] Some rallies ("Save Samogitia, pure water and land") were held in Lithuania on May 9, 2013, which opened floor for the intense public discussion on the intentions of the LT Government to allow Chevron company exploring and extracting shale gas.

the contrary, if society lacks information on actual aspects of energy politics or the dominant understanding of energy security is reduced to some concrete aspects in public perception this might become an obstacle for the consistent energy politics. Even more it might open floor for propaganda and manipulations and the interest of society might remain unfulfilled.

3. Public perception of energy security and its aspects

Trying to identify the most important aspects of energy security for Lithuanian society, it was decided to provide the vast variety of different aspects of energy security (which were elaborated with experts assistance) and offer respondents to evaluate every each of them according to personal opinion. The aspects of energy security were formed in line with Lithuanian strategic interests and covered different angles of energy security: diversification (of energy suppliers as well as resources), reliability (of supply and infrastructure), independence (from foreign states (mainly Russia) as well as monopolistic practices), ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests, lastly – evaluation of strategic projects to be implemented in upcoming future (renewable energy, shale gas, nuclear energy).

Representative survey was conducted by public opinion research company "Vilmorus" in May and June 2013. Number of respondents: N = 2002; interviewed 18 years old and older residents of Lithuania. Method of survey: questioning respondents at home using pre-made questionnaires. Method of selection: multi-stage, probabilistic sampling. Selection of respondents was prepared so that each resident of Lithuania should have an equal chance of being questioned. The results reflect the opinion of the entire population of Lithuania and distribution by age, sex, place of residence, education, purchasing power. Error of survey results – 3% (probability – no less than 97%).

The survey revealed that energy security is perceived by the public rather broadly. Among the fourteen aspects presented to respondents for the assessment of its importance to Lithuanian energy security, certain trends were identified after evaluation.

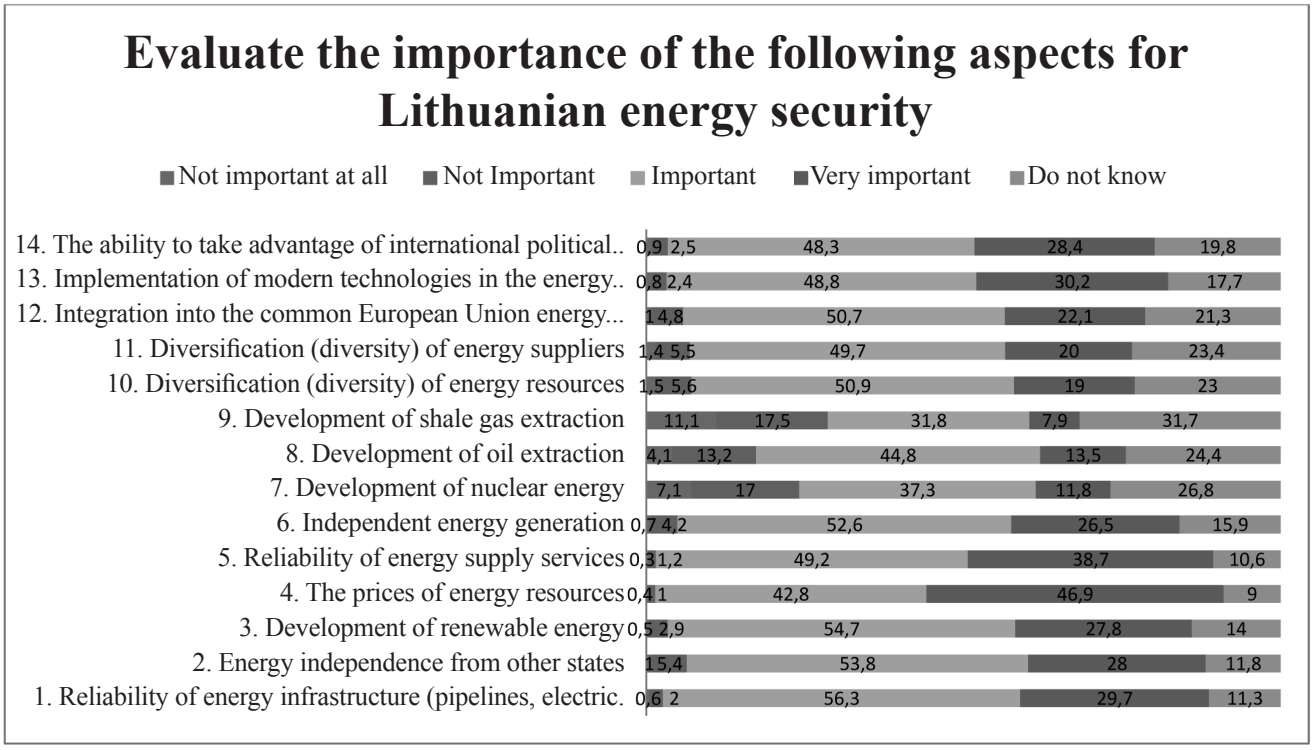

Fig.1. The importance of energy security aspects for Lithuania, the overall assessment of respondents

Source: authors

First, all the listed energy security aspects are important or very important to the respondents. As might have been expected, the most prominent are *prices of energy resources* (89.7% *important* or *very important*) and *reliability of energy supply services* (87.9% *important* or *very important*). *Second*, the study shows the continuing ambiguous evaluation of nuclear energy, when almost half say that this type of energy is *important*, almost a quarter (24.1%) of respondents answered that the "development of nuclear energy" was *absolutely unimportant* or *unimportant* for Lithuanian energy security, and a little more than a quarter (26.8%) have not decided on this issue. *Third*, evaluation of *development of shale gas extraction* is extremely ambiguous: a little less than one-third (28.6%) of respondents believe that it is an *unimportant* or *absolutely unimportant* aspect of Lithuanian energy security, and yet almost one-third (31.7%) have not decided on this issue; however, 39.7% believe that it is an *important* or a *very important* aspect. *Fourth*, despite certain evaluation trends indicated during the analysis, it is equally obvious that the public lacks information about certain aspects of Lithuanian energy security, which are less discussed in mass media or are more specific. For example, about a fifth of respondents have not decided about: *development of oil extraction*; *diversification (diversity) of energy resources*; *diversification (diversity) of energy suppliers*; *integration into the common European Union energy market*; *the ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests*. Thus during formation of the Lithuanian energy policy, it is necessary to take into account these provisions, because it is likely that a certain part of the society will take a negative position, which can disrupt certain projects[2] (see Figure 1).

4. The most important aspects of energy security in public view

The five point Likert scale was used for the data analysis and interpretation. Respondent disapproval of a particular issue was marked 1, indecisiveness / not knowing – 3 and approval - 5. Increased average of the responses (e.g., when responses average is approaching 5) means a higher importance of the particular aspect from the point of respondents opinion and conversely, lower average – lower importance (e.g., when responses average is approaching 1).

Table 1. The importance of energy security aspects. Summary of ratings (N 2002). 1 = Not important at all, 5 = Very important

Evaluate the importance of the following aspects for Lithuanian energy security	Mean	Min	Max	SD
The prices of energy resources	4.35	1	5	0.717
Reliability of energy supply services	4.25	1	5	0.715
Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)	4.12	1	5	0.730
Development of renewable energy	4.06	1	5	0.763
Implementation of modern technologies in the energy system	4.05	1	5	0.807
Energy independence from other states	4.02	1	5	0.838
The ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests	4.01	1	5	0.817
Independent energy generation	4.00	1	5	0.811
Integration into the common European Union energy market	3.88	1	5	0.842
Diversification (diversity) of energy suppliers	3.81	1	5	0.866
Diversification (diversity) of energy resources	3.80	1	5	0.860
Development of oil extraction	3.50	1	5	1.016
Development of nuclear energy	3.30	1	5	1.101
Development of shale gas extraction	3.08	1	5	1.117

Source: authors

[2] A referendum of a consultative character on the construction of a new nuclear power plant in the Republic of Lithuania took place on October 14, 2012. Contrary to what the ruling majority aimed at, only 34.09% of the participants supported the construction of the nuclear power plant, while 62.68% opposed it. The referendum can be regarded as an example of unsuccessful governmentality.

Table 1 reveals the ratings of the most important aspects of energy security in Lithuania amongst respondents. The highest rank of 4.35 scored "The prices of energy resources", while the lowest of 3.08 – "Development of shale gas extraction". The aggregated average of responds is 3.874, which means that all provided aspects according to respondents are very close to be important (where 1 = Not important at all, and 5 = Very important). We can see that only three aspects were evaluated distinctly bellow the average: "Development of shale gas extraction" (3.08), "Development of nuclear energy" (3.30) and "Development of oil extraction" (3.50). While other three close to the average: "Integration into the common European Union energy market" (3.88), "Diversification (diversity) of energy suppliers" (3.81) and "Diversification (diversity) of energy resources" (3.80). All eight other were evaluated above the average (see Table 1).

5. Difference of public attitude amongst various social groups

Contemporary society is composed of different social groups which are usually fragmented to each other and often have different goals. Only part of them has sufficient social welfare to pursuit their interest independently while many others have fewer opportunities and therefore are more dependent on the social welfare of the state and state politics in general. Trying to build solid and optimal policy of energy security is important to indentify existing difference of attitudes towards energy security between various social groups. Therefore the differences in regard to the following aspects: gender, age, education, occupation, income and living area were analyzed and is presented in the following parts. The assumptions for every analyzed group were based on theoretical insights (Knox-Hayes *et al.* 2013; Perlavičiūtė, Steg 2015) and other countries empirical discoveries (Demski *et al.* 2014; Strambo *et al.* 2015) and is presented separately in each paragraph as follows.

5.1. Gender.

The assumption made in the research expected women to prioritize environmental issues and renewable energy more than men. Meanwhile it was expected man to prioritize reliability and independent energy generation.

Despite the anticipatory assumption, the research showed that in Lithuania there are almost no differences of attitudes towards most important aspects of energy security between men and women. The only noticeable differences were grasped on the attitudes on the first and the twelfth aspects (i.e. "Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)"; and "Integration into the common European Union energy market") when the average of men responses at first reach 4.16 for men and for women 4.10, and at twelfth - reach 3.92 for men and for women – 3.85. As we can see even here the difference is only 0.07 meanwhile in the evaluation of other aspects differences haven't reached more than 0.03.

5.2. Age.

The assumption made in the research expected elderly groups to be concern with energy prices and reliability of supply. While younger groups – with long term interest and strategic projects (e.g., renewable energy, implementation of modern technologies in the energy system, ability to take advantage of international political relations).

Table 2 shows how groups of different age ranks each of the aspect of energy security according to their importance and the mean of the responses.

Table 2. The importance of energy security aspects by different age groups

Question/ age	18 - 25		26 - 35		36 - 45		46 - 55		56 - 65		66 and more	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Q 4	1	4.42	1	4.42	1	4.35	1	4.33	1	4.33	1	4.30
Q 5	2	4.26	2	4.31	2	4.20	2	4.26	2	4.24	2	4.23
Q 1	3	4.17	3	4.18	3	4.15	4	4.08	3	4.10	3	4.11
Q 14	4	4.16	5	4.16	8	3.94	8	3.96	7	3.99	8	3.93
Q 13	5	4.13	4	4.16	6	3.99	6	4.03	4	4.03	4	4.02
Q 3	6	4.08	6	4.14	4	4.08	3	4.10	5	4.02	6	3.99
Q 2	7	4.01	7	4.11	5	4.06	5	4.03	8	3.97	7	3.99
Q 6	8	3.96	8	4.07	7	3.98	7	3.97	6	4.00	5	4.01
Q 12	9	3.90	9	3.92	9	3.83	9	3.85	9	3.90	9	3.89
Q 11	10	3.88	10	3.91	10	3.79	10	3.77	10	3.82	11	3.76
Q 10	11	3.83	11	3.91	11	3.75	11	3.75	11	3.81	10	3.79
Q 8	12	3.57	12	3.60	12	3.57	12	3.41	12	3.47	12	3.46
Q 7	13	3.37	13	3.40	13	3.38	13	3.25	13	3.24	13	3.21
Q 9	14	3.22	14	3.19	14	3.11	14	3.01	14	2.98	14	3.05

Source: authors

The analysis showed that there are no differences in opinion on the most important aspects of energy security between groups of different age in Lithuania. The three most important aspects were named the same: "The prices of energy resources", "Reliability of energy supply services" and "Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)". It corresponds with assumption made for elderly groups, however it seems that in relatively poor society the same aspects are actual to all age groups of society.

Meanwhile more noticeable differences emerge in the following aspects. As it was pointed in the assumption: younger groups (age *18-25* and *26-35*) are indeed more concern with "Ability to take advantage of international political relations" (rank 4 and 5), "Implementation of modern technologies in the energy system" (rank 5 and 4) and "The development of renewable energy" (rank 6 for both groups). Interestingly enough for all the other groups "The development of renewable energy" also is important (ranked from 3 to 6 with very similar mean of responses). Unexpectedly the "Implementation of modern technologies in the energy system" was highly ranked (4) by the elderly groups (*56-65* and *66 and more*). The middle age groups (*36-45* and *46-55*) are those who concern with "Energy independence from other states" and "Independent energy generation" above all others (rank 5 and 7). Lastly the three most ambivalently ranked aspects were "Development of oil extraction", "Development of nuclear energy" and "Development of shale gas extraction" – accordingly 12, 13 and 14 ranks for all age groups. The "Development of shale gas extraction" also scored the lowest mean of responses average. As it was mentioned before this might be related with information shortage on these relevant issues in society which hinders clear understanding of its importance to energy security.

5.3. Education.
The assumption made in the research expected those with higher education to be more concern with diversification (of resources as well as suppliers), independent energy generation and the implementation of modern technologies in energy system. While those who haven't higher degree to be more concern with energy prices and reliability of supply.

Table 3 shows what are the most important aspects for groups of different education and what the differences amongst them are.

Table 3. The importance of energy security aspects by different education groups

Question / education	Primary education		Secondary education		Vocational training		Further education		Unfinished higher education		Higher education	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Q 4	1	4.06	1	4.32	1	4.34	1	4.36	1	4.39	1	4.48
Q 5	2	3.98	2	4.18	2	4.21	2	4.28	3	4.24	2	4.41
Q 1	3	3.90	3	4.08	4	4.05	3	4.16	6	4.17	3	4.25
Q 3	4	3.83	5	3.99	5	4.02	4	4.08	2	4.30	6	4.19
Q 2	5	3.79	6	3.98	8	3.92	7	4.01	5	4.19	5	4.19
Q 13	6	3.79	7	3.98	3	4.11	6	4.01	4	4.20	4	4.21
Q 6	7	3.79	8	3.96	9	3.92	5	4.02	8	4.07	8	4.13
Q 14	8	3.72	4	4.01	6	3.98	8	3.98	7	4.13	7	4.16
Q 12	9	3.70	9	3.80	7	3.95	9	3.87	10	4.00	10	3.99
Q 10	10	3.59	11	3.74	10	3.80	10	3.76	11	3.89	11	3.98
Q 11	11	3.57	10	3.74	11	3.80	11	3.76	9	4.04	9	4.00
Q 8	12	3.49	12	3.53	12	3.50	12	3.51	12	3.57	12	3.46
Q 7	13	3.32	13	3.30	13	3.31	13	3.23	13	3.57	13	3.29
Q 9	14	3.22	14	3.10	14	3.08	14	2.98	14	3.46	14	3.01

Source: authors

As it was in previous case the same most important aspects ("The prices of energy resources", "Reliability of energy supply services" and "Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)" emerged here and there are almost no differences (except that those with *Vocational training* and *Unfinished high education*, where the aspect of reliability of supply was ranked accordingly 4 and 6) between different education groups. Although it is worth mentioning that the means of the responses average between different groups are not as consistent as it was in previous case (see Table 3).

The high rank of aspects "Energy independence from other states" and "Development of renewable energy" between *Primary* and *Secondary education* groups comes with a little surprise. On the other hand this might be related with the popular demand for the cheap energy in society in general. The same aspect of "Development of renewable energy" was ranked in 2 place in case of *Unfinished higher education*.

The assumption for those with *Higher education* corresponds only in part. The aspects of diversification (of resources as well as suppliers) didn't receive much approval and were ranked only in 11 and 9 places. Meanwhile the aspects of "Independent energy generation" and "Implementation of modern technologies in energy system" scored much higher means and were ranked in 5 and 4 places (this was also the case for those with *Unfinished higher education*). "Development of oil extraction", "Development of nuclear energy" and "Development of shale gas extraction" were also evaluated as most irrelevant as in previous case. Even though they scored much less than aggregated average (3,87) the difference between these groups are quite noticeable (see Table 3).

5.4. Occupation.
The assumption made in the research expected those from private sector to prioritize market principles (diversification and independent generation). Meanwhile state enterprises employees to prioritize involvement of diplomacy (ability to take advantage of international political relations and energy independence), while those who retired and unemployed will be similar to the elderly groups (the importance of energy prices and reliability of supply).

Table 4. The importance of energy security aspects by different occupation groups

Question / occupation	State enterprises employee		Private business owner		Private company employee		Student / Pupil		Unemployed		Retired		Other activities	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Q 4	1	4.40	1	4.35	1	4.44	1	4.48	1	4.13	1	4.30	1	4.10
Q 5	2	4.33	2	4.27	2	4.32	3	4.26	2	3.95	2	4.24	2	4.04
Q 1	3	4.18	3	4.23	3	4.19	4	4.22	5	3.83	3	4.11	4	3.88
Q 2	4	4.11	7	4.03	5	4.15	7	4.06	7	3.77	7	3.97	7	3.79
Q 3	5	4.08	4	4.16	4	4.17	6	4.12	3	3.88	5	4.01	3	3.91
Q 14	6	4.07	8	3.99	7	4.10	2	4.27	6	3.80	8	3.93	5	3.83
Q 6	7	4.06	5	4.15	8	4.05	8	4.00	8	3.76	6	4.00	8	3.75
Q 13	8	4.05	6	4.13	6	4.15	5	4.16	4	3.88	4	4.01	6	3.82
Q 10	9	3.85	11	3.80	11	3.92	10	3.86	11	3.56	10	3.76	9	3.69
Q 11	10	3.84	9	3.87	10	3.96	11	3.85	10	3.57	11	3.75	10	3.65
Q 12	11	3.83	10	3.85	9	4.01	9	3.93	9	3.70	9	3.88	11	3.61
Q 8	12	3.55	12	3.61	12	3.48	12	3.51	12	3.47	12	3.47	12	3.56
Q 7	13	3.27	13	3.38	13	3.35	13	3.28	13	3.35	13	3.24	14	3.35
Q 9	14	2.95	14	3.04	14	3.15	14	3.14	14	3.17	14	3.03	13	3.38

Source: authors

Table 4 once again stressed the importance of "The prices of energy resources", "Reliability of energy supply services" and "Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)" within Lithuanian society. They are also most popular aspects despite the differences between different occupation groups. The results confirmed the assumption in case of *State enterprises employee*: "Energy independence from other states" (4) was ranked as the most important aspects for energy security right after those three which importance are unquestioned in Lithuania. "The ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests" took 6 place and in between of these two the aspect of "Development of renewable energy" intervened in group of *State enterprises employee*. The assumption for those from private sector was proved only in part. Differently than it was expected the aspects of diversification (of supply neither resources) did not attract much approval and were ranked in 11 and 9/10 places in *Private business owners* and *Private company employee* groups. Meanwhile the other aspect (Energy independence from other states) was ranked in 5 place by *Private company employees* and in 7 place by *Private business owners*. "Independent energy generation" was also important for both groups (accordingly 5 and 8). It is worth mentioning that "Development of renewable energy" scored high 4 rank in both groups. Some other mentionable aspects are: "The ability to take advantage of international political relations" which was ranked at 2 place in group of *Students* and *Pupils*; "Development of renewable energy" was ranked at 3 place in *Unemployed* and *Other activity* groups; "Implementation of modern technologies in the energy system" was ranked in 5 places in *Students* and *Pupils* and in 4 place in *Unemployed* and *Retired* groups.

5.5. Income.

The assumption made in the research obviously expected groups with lower income to be concern with energy price and reliability of supply. Meanwhile groups with higher income to be concern with development of renewable energy, independent energy generation and implementation of modern technologies. Table 5 shows what are the most important aspects for groups of different income and what are the most noticeable differences amongst them.

Table 5. The importance of energy security aspects by different income groups

Question / income for one person	Under 300 Lt[3] (86,89 Eur)		301-600 Lt (87.18 - 173.77 Eur)		601-900 Lt (174.06 - 260.66 Eur)		901-1200 Lt (260.95 - 347.54 Eur)		1201-1500 Lt (347.83 - 434.43 Eur)		1501-1800 Lt (434.72 - 521.32 Eur)		1801-2100 Lt (521.61 - 608.20 Eur)		2101 Lt and more (608.49 and more)	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Q 4	1	4.11	1	4.22	1	4.35	1	4.41	1	4.60	3	4.53	1	4.39	1	4.63
Q 5	2	4.00	2	4.09	2	4.26	2	4.34	2	4.45	2	4.53	3	4.29	2	4.59
Q 1	3	3.89	3	3.99	3	4.12	3	4.24	3	4.31	8	4.26	2	4.35	3	4.44
Q 13	4	3.87	6	3.94	7	3.97	4	4.17	5	4.28	1	4.58	6	4.16	5	4.39
Q 3	5	3.85	4	3.99	4	4.05	5	4.10	4	4.30	5	4.37	5	4.20	6	4.39
Q 14	6	3.85	7	3.92	8	3.93	8	4.08	6	4.27	4	4.47	8	4.12	4	4.44
Q 6	7	3.84	8	3.90	6	4.00	6	4.09	8	4.16	11	4.00	9	4.08	10	4.24
Q 2	8	3.75	5	3.96	5	4.04	7	4.08	7	4.20	7	4.32	4	4.29	8	4.29
Q 12	9	3.72	9	3.77	9	3.82	9	3.97	9	4.11	10	4.26	7	4.14	7	4.32
Q 10	10	3.68	11	3.67	11	3.76	10	3.94	11	4.01	9	4.26	11	3.88	11	4.20
Q 11	11	3.68	10	3.69	10	3.77	11	3.90	10	4.06	6	4.37	10	3.96	9	4.27
Q 8	12	3.52	12	3.55	12	3.43	12	3.52	12	3.55	12	3.58	13	3.35	12	3.80
Q 7	13	3.40	13	3.37	13	3.21	13	3.28	13	3.34	13	3.05	12	3.37	13	3.56
Q 9	14	2.95	14	3.15	14	2.99	14	3.06	14	3.06	14	2.95	14	3.25	14	3.34

Source: authors

This is the first time when at least one group broke the settled tendency of the most important aspects. The usual three aspects ("The prices of energy resources", "Reliability of energy supply services" and "Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)") were common for most of the groups except one (those with income of *1501-1800*) which "Implementation of modern technologies in the energy system" ranked as the most important aspect for energy security. The other not usual surprise was stated in the other settled tendency of the most irrelevant aspects where the group of those with *1801-2100* income aspect Q7 ranked over Q8.

The results in this case fully corresponded with assumptions. Groups with higher income (*901-1200*; *1201-1500*; *1501-1800*; *1801-2100*; *2101 and more*) gave priority (especially group *1501-1800*) to "Implementation of modern technologies" (rank 1), "Development of renewable energy" (rank 5). The additional aspects ("The ability to take advantage of international political relations") was also important (both ranked 4) for groups of *1501-1800* and *2101 and more*. Meanwhile "Independent energy generation" was important for all groups except those with the lowest and those with the highest income. Both groups ranked it for 8 place but the mean of the response was quite different (accordingly 3.75 and 4.29).

5.6. Living area.

The assumption made in the research expected to reveal the main difference between those living in cities and those living out of cities. This opposition derives from objective living condition differences – those living in big cities expected to be concern more with renewable energy and modern technologies and those living in small towns to be concern with diversification of resources.

[3] The public poll was carried out in 2013 when national currency Litas was still in use, therefore in further analysis in this article income in litas is used as a category. The analogue amount in Euros is provided in the brackets.

Table 6. The importance of energy security aspects by different living area groups

Question / living area	Main Cities		District Centers		Small Towns		Rural Settlements and single farms	
	Rank	Mean	Rank	Mean	Rank	Mean	Rank	Mean
Q 4	1	4.54	1	4.12	1	4.22	1	4.32
Q 5	2	4.41	2	4.08	5	4.02	2	4.21
Q 1	3	4.27	7	3.97	7	3.97	3	4.09
Q 13	4	4.18	5	3.97	3	4.12	6	3.94
Q 3	5	4.16	6	3.97	8	3.92	4	4.04
Q 14	6	4.13	8	3.91	2	4.13	7	3.92
Q 6	7	4.10	4	3.99	11	3.72	8	3.90
Q 2	8	4.09	3	4.00	13	3.58	5	4.00
Q 12	9	3.95	9	3.89	4	4.02	9	3.77
Q 10	10	3.93	11	3.82	6	4.00	11	3.59
Q 11	11	3.93	10	3.84	9	3.92	10	3.61
Q 8	12	3.49	12	3.50	10	3.77	12	3.50
Q 7	13	3.21	13	3.27	14	3.55	13	3.41
Q 9	14	3.01	14	3.18	12	3.67	14	3.00

Source: authors

The analysis showed that "The prices of energy resources" remains as the most important aspect of energy security in Lithuanian throughout all different social groups. However, "Reliability of energy supply services" was ranked in 2 place for all groups except those living in *Small towns* (rank 5). The importance of the "Reliability of energy infrastructure" aspect divided into two groups depending on living area. It was equally important for those living in *Main cities* as well as in *Rural districts* (both ranked 3 place) and less important for those living *District centers* and *Small towns* (Table 6).

Another interesting difference between those living in *District centers* and *Small towns* was fixated towards "Independent energy generation" and "Energy independence from other states". For the first mentioned group it was important (accordingly 4 and 3 rank), but for the second group somehow almost not important at all (accordingly 11 and 13 rank). The results confirmed the assumption: the aspects "Development of renewable energy" and "Implementation of modern technologies" were ranked accordingly at 4 and 5 places (right after the three that are most important for society in general) for *Main cities* group. Meanwhile the importance of "Diversification of energy resources" for those living in *Small towns* was ranked in 4 place. Lastly, "Development of oil extraction", "Development of nuclear energy" and "Development of shale gas extraction" were also evaluated as most irrelevant aspects for most of the groups with an exception of *Small town* group (which as the most irrelevant ranked "Development of nuclear energy") and "Development of oil extraction" was ranked a bit higher – in 10 place.

Conclusions

The research showed that variety of different aspects are taken into account in public perception on energy security. However there are two aspects which dominated throughout different social groups: "The prices of energy resources" (mean – 4.35) and "Reliability of energy supply services" (mean – 4.25). Another aspect "Reliability of energy infrastructure (pipelines, electric transmission networks, power plants and so on)" (mean – 4.12) is also very important in public opinion (but is not as dominating as previous two). The three most ambivalently ranked aspects were "Development of oil extraction" (mean – 3.50), "Development of nuclear energy" (mean – 3.30) and "Development of shale gas extraction" (mean – 3.08). This indicates that the developers of energy politics do not manage to successfully link these specific projects to the public interest.

An effective energy politics is based on the rationality of society and its trust in public interest. But if society believes that the developers of energy politics do not represent their interests it becomes difficult to guarantee the implementation of smooth politics. Great amount of those who are undecided / do not know (on such aspects as "Development of nuclear energy" (26.8%), "Development of oil extraction" (24.4%), "Development of shale gas extraction" (31.7%), "Diversification (diversity) of energy resources" (23%), "Diversification (diversity) of energy suppliers" (23.4%), "Integration into the common European Union energy market" (21.3%), "The ability to take advantage of international political relations (e.g., EU, NATO) to defend Lithuanian interests" (19.8%)) points to the important issue - lack of public communication - in energy politics. This is important not only because of untapped potential for the energy security impact on sustainable development and social cohesion, but also due to the fact that undecided part of society might become an object for radical movements or even hostile foreign policy.

Despite the increasing academic debate on the sustainable development of energy security, the research showed that in Lithuania, the interests of different social groups' are not aligned with each other, and the politics of energy security simply aims to correspond to the average of public opinion. It is important to recognize the interests and needs of each society groups, it is inevitable to ground the politics with tangible evidence and argue its value and compatibility with interests of each group (and public interest in general) if aiming to build effective and sustainable energy security politics. As it was mentioned before the empirical data of 2013 year was used in the study which indicates situation of that time, meanwhile in recent years the energy sector has undergone a number of significant changes[4] that most likely will have an effect on public perception. On the one hand, this most probably will have a positive impact on public attitude, on the other hand, will have to wait until the benefit of realized projects will become visible and the actual effect of their impact on society will be possible to measure. However, if the public opinion will continue to be treated not as a subject but as an object, without further discussion of its demands, it may be that the amount of those who are undecided and do not know will remain high and it will serve as an obstacle for the implementation of energy politics.

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[4] More about main significant events in Lithuanian energy sector in 2014 year see: Augutis *et al.* 2015.

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