KNOWLEDGE-BASED COMPETITIVENESS INDICES AND ITS CONNECTION WITH ENERGY INDICES

by

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Knowledge-based economy has become a major trend in the international society in the 21st century. However, today's strategies place a greater emphasis on sustainability than in the past, while continuing to emphasize the importance of education and its connection with labour market. There has been a re-orientation, where resource, eco-efficiency and innovation have become major elements for achieving national objectives and a relevant level of competitiveness. This article deals with 30 indices, which define the competitiveness of a specific economy, and involve knowledge parameters. The indices are classified into four main categories and one special category. They are then analysed regarding the participation of Serbia and their availability. The main focus of this paper is to give a detailed analyses of energy indices, as a special category of knowledge indexes. It has been shown that Serbia, in many cases, was not included in the study analysis or that there was insufficient information about Serbia's position. This article shows that only a part of the presented indices includes Serbia. It is concluded that a new, revised model is needed that will include more exact indicators.

Key words: *competitiveness, knowledge-based economy, energy sector, competitiveness indices, Serbia*

Introduction

The composite indicator is an aggregated index of individual indicators and their weights, which represent the relative importance of each indicator. The use of composite indicators proved to be a very practical tool for the decision makers, comparative analysis of a country (its regions and sub-regions), as well as for companies and their products. It is because of their ability to describe and easily measure complex concepts (*e. g.*, sustainability, competitiveness, knowledge-based economy, *etc.*) that they can be used to benchmark performance and help with comparisons. However, composite indicators may send false information if they are badly constructed or misinterpreted. Nevertheless, in recent years, there has been an expansion in their use in different domains [1].

Today there are hundreds of indicators and composite indexes, which have been developed around the world for the assessment of economic, socio-economic or environmental conditions at the supranational, national, or local level [2]. Real GDP per capita of an economy is the most widely used measure of economic performance. Thus, the rate of change in

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real GDP, commonly known as economic growth, is used as a measure of economic change and, as such, a measure of economic dynamism. Although this approach has some advantages, resulting from the fact that GDP is measured frequently, widely (global coverage) and continuously, many scientists criticized its use as an indicator of societal development. Since it only takes into account cash transactions, it disregards other knowledge-building activities, which take place outside the market system (such as tacit knowledge) [1].

Indicators, particularly those related to the knowledge economy, were quite limited in the recent past. Nijkamp and Siedschlag [1] describe the existence of seven composite indices related to knowledge economy, developed from different authors from 1995-2005. Today, the number of indexes that describe knowledge competitiveness is much higher. In this review of the present state, 22 composite indexes which define the competitiveness of an economy, and include the parameters of knowledge have been examined. It has been observed that they can be classified into the following four categories [3]:

(1) Competitiveness Indices,
(2) Knowledge Competitiveness Indices,
(3) Innovation Competitiveness Indices, and
(4) Information Technology Competitiveness Indices.

Although the connection between the index with the knowledge parameters and the indices related to the energy sector is not obvious at first glance, in recent years there has been an increase in the number of energy indicators in the previously analysed indices. For this reason, the paper undertakes a detailed analysis of the indices of the energy sector, as a special fifth category, to determine whether they adequately illustrate Serbia's position, and if they offer enough information about the state of the energy sector in Serbia. Most of the research is dedicated towards the macro level of relation between energy, knowledge and economic impact but fundamentals of the phenomena given above can be found in basic research about capacity portfolio planning as an input in energy supply systems [4].

Analysis of Serbia's position by the represented index with knowledge parameters

It is observed from the analysis of 22 composite indices that define national and regional competitiveness and also contain the parameters of knowledge that Serbia is ranked by only 10 of them. As mentioned earlier, the indices with elements of knowledge can be classified into 4 main categories. This paper will also analyse the additional fifth category that will be described later.

The 1st category is the Competitiveness Indices**,** in which Serbia is ranked by three out of the five displayed. This category includes: IMD World Competitiveness Index (Yearbook), Global Competitiveness Index, Index of Economic Freedom, European Competitiveness Index, and Europe 2020 Competitiveness Index. Competitiveness indices represent the general category and its sub-elements include, among others, the knowledge elements. According to this group of indexes, the ranking of Serbia's economy can be rated as very poor. In two indexes, Serbia is ranked in the third quarter of the list of countries, while by the Europe 2020 Competitiveness Index, it is ranked in the last place. This low ranking of Serbia can be ascribed to a majority of qualitative (soft) data in all four of the aforementioned indexes.

The 2nd category of the represented indexes, Knowledge Competitiveness Indices**,** refers to those that directly describe the competitiveness of an economy according to the parameters of knowledge society. The most important are: Knowledge-based Economy Index,

The Metropolitan New Economy Index, Knowledge Economy Index (KEI) and Knowledge Index (KI) and World Knowledge Competitiveness Index (WKCI). From this group of four indices, only the Knowledge Economy Index and Knowledge Index rank Serbia. Serbia is ranked at 49th of 146 places – or in the second quarter of the countries – by the latest report. However, it is important to note that this index only contains 12 quantitative indicators (no quality), and it can be concluded that it is inadequate for showing the position of an economy in a knowledge-based society.

The 3rd category represents Innovation Competitiveness Indices, which describe one segment of the knowledge society. This group includes: Global Innovation Index, Innovation Union Scoreboard, The Atlantic Century Benchmarking EU and U.S. Innovation and Competitiveness, The BCG Report: The Innovation Imperative in Manufacturing, Report: Innovation: Transforming the Way Business Creates, The Global Cleantech Innovation Index and The Global Innovation Policy Index. Serbia is ranked by three of the seven indices. In the Innovation Union Scoreboard, Serbia is ranked in the 3rd quarter of the countries and in Report: *Innovation: Transforming the Way Business Creates*, Serbia is ranked in the 4th quarter of the countries. According to the Global Innovation Index, Serbia is ranked in the 2nd quarter of the countries, in the 67th place out of 143 countries in 2014. The relevance of this index can be rated as good, as it contains 81 indicators, of which 56 are quantitative, 22 represent composite indices and five are qualitative (soft) data. However, it is interesting to observe the changes in the ranking of Serbia and other Western Balkan countries from 2008-2012. The changes in the methodology of this index, after two years of measurements, caused considerable variation in the ranking of some countries (tab. 1). The main reason for the wide variation in the rank, during these years, was the elimination of a large number of qualitative (soft) variables, which presented nearly half of the indicators. The greatest change occurred in the ranking of Serbia, which was placed 101st in the 2009/10 report. Within one year, Serbia climbed to 55th place, according to the 2010/11 report, and then to 46th place in the 2012 report. These changes indicate the amount of contribution of expert assessment of Serbia, whose opinion was taken into account to a great extent. The situation is similar with the other countries, but the experts were oriented differently to different countries. It can be concluded that the use of qualitative (soft) parameters may affect the level of objectivity and final results.

Table 1. Position of the western Balkan countries in the Global Innovation Index from 2008 until 2014

Country	2008/09	2009/10	2010/11	2012	2014
Total No. of data	60	60	80	84	81
Ratio of and hard data (mixed) and quality data	24/36	24/36	59/(15)/6	62/(16)/6	56/(22)/5
Slovenia	36	26	30	26	28
Hungary	47	36	25	31	35
Croatia	62	45	44	42	42
Romania	69	52	50	52	55
Montenegro	71	59	-	45	59
Bulgaria	74	49	42	43	44
Macedonia	89	77	67	62	60
Serbia	92	101	55	46	67
B&H	107	116	76	72	81
Albania	121	81	80	90	94

The 4th category is the Information Technology Competitiveness Indices. This group classified the following indexes: Networked Readiness Index, Information Society Index, The ICT Development Index, Digital Economy Rankings, United Nations E-Government Survey Indices and IT Industry Competitiveness Index. Serbia is ranked by three of the six indices. According to the Network Readiness Index, Serbia is ranked in the 77th place out of 143 ranked countries, or in the third quarter of the observed countries. The reason for this poor ranking can be found in the large number (more than half) of qualitative variables that are contained within this index. According to the ICT Development Index, Serbia is ranked 50th out of 166 countries in 2014. However, this index contains only 11 quantitative variables that cannot be evaluated satisfactorily. According to the United Nations E-Government Survey Indices, Serbia is ranked 69th out of 193 countries in 2014. The problem with this index is also the small number of included variables, only seven quantitative and five qualitative.

Analysis of the Serbia position by energy indices

Energy indices are an example of knowledge indices that can be categorized as an additional fifth category. Recently, there has been a tendency for the indicators which describe the state of the energy sector of a country to be involved in the formation of the index related to the field of knowledge. This view is confirmed by the numerous examples which will be discussed in the paper.

The report of the World Economic Forum's - Global Competitiveness Index (GCI) analyses the introduction of new sub-indices related to sustainable development. Currently, GCI takes into account 12 pillars or drivers: institutions, infrastructure, macroeconomic environment, health and primary education, higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness, market size, business sophistication, and innovation. However, the new framework indicates that competitiveness on its own may not lead to sustainable levels of prosperity. In other words, competitiveness is a necessary but insufficient condition for continued prosperity. Hence, there is the need for the additional social sustainability–adjusted and environmental sustainability– adjusted measures of competitiveness [5].

The 2nd example is the Europe 2020 Competitiveness Index, which contains a sub index called *Environmental sustainability*. According to this index, a high-quality physical environment well-managed through a variety of channels is important for competitiveness. The efficient use of energy and other resources lowers costs and directly boosts productivity by making better use of inputs. In the Europe 2020 Competitiveness Index, this dimension is assessed by taking into account the share of renewable energy consumption, the enforcement of environmental legislation, the ratification of international environmental treaties and the quality of the natural environment. The last element includes the measurement of air pollution levels through CO_2 intensity and PM2.5 emissions [6]. Furthermore, the Global Innovation Index contains a sub index called Ecological Sustainability which includes three indicators: GDP per unit of energy use (a measure of efficiency in the use of energy), the Environmental Performance Index of Yale and Columbia Universities, and the number of certificates of conformity with standard ISO 14001 on environmental management systems [7]. One more example is the Global Cleantech Innovation Index. Its sub index – Cleantech-Specific Innovation Drivers helps to promote market adoption of clean technologies and address barriers to entry for industry. Both public and private-driven support are important considerations, including Cleantech-friendly government policies, Cleantech public R&D spending, development of national infrastructures for renewable energy, availability of private funding and access to Cleantech clusters and other organizations. Also, its 2nd sub index – Evidence of Commercialized Cleantech Innovation - measures the ability of a country to scale-up Cleantech inno-

vations. This factor is derived from Cleantech manufacturing value-added, Cleantech company revenues, renewable energy consumption data, Cleantech late-stage private investment, M&A's and IPO, and the number of publicly-traded Cleantech companies in major indices [8].

Based on the above examples, it can be concluded that it is necessary to perform a detailed analysis of the index related to the energy sector in order to assess whether they offer adequate information on the state of development of Serbia in this field. To this end, the analysis will include eight relevant indices related to energy sector.

This 5th group classified the following indexes: Renewable Energy Country Attractiveness Index, the Global Green Economy Index, Energy Trilemma Index – the Energy Sustainability Index, Energy Development Index, Energy Productivity and Economic Prosperity Index, the Global Energy Architecture Performance Index, Global Energy Competitiveness Index, and the International Index of Energy Security Risks. Serbia is ranked by five of the eight indices**.** The main characteristics of the aforementioned indexes are given in tab. 3.

According to the Energy Trilemma Index, Serbia is ranked 116th out of 129 ranked countries, or in the fourth quarter of the observed countries. The explanation for that poor ranking can be found in the imbalance between the economic development and environmental sustainability. The index contains 23 mixed datasets, with the 13 indicators that make up the Energy Performance sub index having 75% weight ratio in the total formation of the index. Under this sub index, Serbia is placed 120th out of 129 countries. This especially poor position of Serbia is based on the indicators of energy security that consist of the ratio of total energy production to consumption, diversity of electricity generation, distribution losses as a percentage of generation, five-year CAGR of the ratio of TPEC to GDP, days of oil and oil product stocks, net fuel imports as a percentage of GDP for importers, and fuel exports as a percentage of GDP for exporters. The indicators of environmental sustainability also contribute to this low ranking and they consist of total primary energy intensity 1.3.2 CO_2 intensity, the effect of air and water pollution, and CO_2 grams/kWh from electricity generation. As Serbia has developed economically, its efforts to maximize energy equity and provide its people with affordable, good-quality energy have come at the cost of environmental sustainability. Serbia's large environmental footprint is a serious challenge. The improvements in energy and emissions intensity are offset by the higher levels of CO_2 from electricity generation [9].

According to the Energy Productivity and Economic Prosperity Index, Serbia is ranked 105th out of 131 countries. However, this index has not provided a detailed analysis of Serbia's position, so it is not useful for making certain conclusions and recommendations for the country's future development [10].

According to the Global Energy Architecture Performance Index, Serbia is ranked 71st out of 125 countries. Serbia was added to the full list of countries in the EAPI 2015 (it was not included in the EAPI 2014) as it now meets the requirements for inclusion. Also, this index does not provide any other information about Serbia's position [11].

According to the Global Energy Competitiveness Index, Serbia is ranked 75th out of 146 countries. This index describes Serbia as an average performer country. No other comments are available. However, this index contains only 13 quantitative variables that cannot be evaluated as a satisfactory measure [12].

Comparison with the existing research

In addition to the presented energy indexes which exist in practice, the examples from specific authors who describe how the energy index is supposed to look like can be found in the literature. The results from the research conducted by Vera and Langlois [13] and Patlitzianas *et al*. [14] are presented below.

In the research conducted by Vera and Langlois [13], summary indicators for sustainable energy were proposed based on the indicators proposed by several international agencies: the Department of Economic and Social Affairs, the International Atomic Energy Agency, Eurostat, the European Environment Agency, and the International Energy Agency.

The outcome of this research is 30 different proposed indicators, exhibited in tab. 2. They are categorized according to dimensions, themes and sub-themes. The indicators are grouped into three major dimensions: social, economic and environmental. They are further sorted by seven themes and 19 sub-themes. Some of these can be classified into more than one dimension, theme or subtheme, thus giving numerous correlations among these categories [13].

Table 2. Energy indicators for sustainable development [13]

Theme/Sub-theme	Energy indicator	Description
Equity		
Accessibility	SOC1	Share of households (or population) without electricity or commercial energy, or heavily dependent on non-commercial energy
Affordability	SOC2	Share of household income spent on fuel and electricity
Disparities	SOC3	Household energy use for each income group and corresponding fuel mix
Health/Safety	SOC4	Accident fatalities per energy produced by fuel chain
Use and production patterns		
Overall use	ECO1	Energy use per capita
Overall productivity	ECO2	Energy use per unit of GDP
Supply efficiency	ECO3	Efficiency of energy conversion and distribution
Production	ECO4	Reserves-to-production ratio
	ECO5	Resources-to-production ratio
End use	ECO6	Industrial energy intensities
	ECO7	Agricultural energy intensities
	ECO8	Service/ commercial energy intensities
	ECO9	Household energy intensities
	ECO10	Transport energy intensities
Diversification (fuel mix)	ECO11	Fuel shares in energy and electricity
	ECO12	Non-carbon energy share in energy and electricity
	ECO13	Renewable energy share in energy and electricity
Prices	ECO14	End-use energy prices by fuel and by sector
Security		
Imports	ECO15	Net energy import dependency
Strategic fuel stocks	ECO16	Stocks of critical fuels per corresponding fuel consumption
Atmosphere		
Climate change	ENV1	GHG emissions from energy production and use per capita and per unit of GDP
Air quality	ENV2	Ambient concentrations of air pollutants in urban areas
	ENV3	Air-pollutant emissions from energy systems
Water		
Water quality	ENV4	Contaminant discharges in liquid effluents from energy systems
Land		
Soil quality	ENV5	Soil area where acidification exceeds critical load
Forest	ENV6	Rate of deforestation attributed to energy use
Solid-waste generation and management	ENV7	Ratio of solid-waste generation to units of energy produced
	ENV8	Ratio of solid waste properly disposed of total generated solid waste
	ENV9	Ratio of solid radioactive waste to units of energy produced
	ENV10	Ratio of solid radioactive waste awaiting disposal to total generated solid radioactive waste

Patlitzianas *et al*. [14], carried out research to find the proper indicators for sustainable energy policy. By selection criteria, they identified the following indicators for each one of the selected energy policy objectives:

- security of supply – It aims to reduce the dangers affecting dependence on an external supply, and neither maximizes energy dependence nor decreases a country's dependence,
- competitiveness of energy market – It reflects the ability for energy product and service provision to compete with international standards, and
- environmental protection – It refers to the safeguarding from all external parameters, which are shaped by energy production.

Methodology

Theoretical research and analysis were backed by the data from scientific and professional literature from both local and international sources. Moreover, the results from the authors who had explored competitiveness, knowledge-based economy, competitiveness indices and the energy sector in their publications were utilized. Several methods were applied in this paper, including:

- inductive-deductive – these were used to explain the recognized relationships between the competitiveness indices and energy indices, and to detect new ones,
- historical – these were intended to ascertain the existence of key developments in the experimental phenomena within a certain time period. It included the compilation of historical facts, phase evaluation or source criticism, and phase revelation or result displays,
- empirical – these methods were utilized in the collection of original, precise numerical data or qualifying characters,
- statistical,
- proof and disproof, and
- analysis and synthesis – these assessed complex hypotheses, judgments and deductions in their simpler elements, whereby each was studied individually. The synthesis method aimed to connect these components into a single part. By so doing, conclusions were obtained.

As a result, relevant conclusions were achieved, as well as the evaluations on the current linkage between the competitiveness indices and the energy sector, and the proposals for better solutions based on other countries' experiences.

Discussion and conclusions

Economic development has always been knowledge-based. However, the scope and significance of knowledge to economic processes has fundamentally changed over the past years [1]. The transition to a sustainable economy implies an expected increase in the demand for green jobs and requires new work skills, cooperation between various sectors, new business models, new education strategies and new models for measuring and analysing the achieved level of competitiveness.

Today, numerous indices reflecting the competitiveness of economies are defined for the purpose of following the progress in this area. Composite indices are increasingly recognized as a useful tool in various analyses and public statements. The main feature of composite indexes, lies in their ability to quantify and simplify information for the understanding of a particular problem. However, if not properly installed they can display incorrect information, so the greatest challenges for the authors of these indices are their

proper formation and an adequate selection of indicators in relation to the area which is described by the index.

In their previous research, the authors have dealt with the analysis, classification and systematization of the indexes, which contain the parameters of knowledge. In recent years, it was noted that there has been an increasing interest in this issue, which led to an increase in the researchers and relevant institutions involved in this field. The authors have identified 22 studies that describe the indices with the parameters of knowledge and they are classified into four relevant categories. The main problem of these studies is that only 10 of them analyse the position of Serbia. Also, they do not offer enough information about the state of knowledge developed in Serbia. In addition, Serbia is mostly presented as a backward country when it comes to the competitiveness of knowledge. However, in a detailed analysis of the methodology of the aforementioned studies, it is observed that the existing models of knowledge contain a great number of qualitative indicators, which are subject to the manipulative influences of experts, while the models based on quantitative indicators include a small number of parameters. Therefore, it was concluded that the existing models of competitiveness that contain knowledge parameters are not appropriate for countries in transition such as Serbia.

In further research, the researchers propose introducing a new and improved model that more adequately describes the position of Serbia and other transitory countries when it comes to the competitiveness of knowledge. This new and revised model will better indicate specific problems, *i. e.* the so-called bottlenecks in the development towards achieving a knowledge society. The key parameters of this new model are knowledge, innovation, R&D, education, the use of IT technology and sustainable development [15].

To adequately describe the connection between the sustainable development and the knowledge economy, the authors of this paper have dealt with analysis and classification of indexes in the energy sector, which are in expansion today and whose results are important for the proper construction of the knowledge-based competitiveness index. It was noted that they could be classified as a fifth specific category which is important for indexes based on knowledge. This view is confirmed by the numerous examples of existing, previously analysed indexes which are composed to include the indicators related to the energy sector. The study included 8 of these indices, four of which analyse the position of Serbia in the competitiveness of the energy sector. However, of these four indexes, only one gives detailed information on the status of Serbia. This is the Energy Trilemma Index (formerly Energy Sustainability Index), which is issued by the World Energy Council. According to this index, Serbia is ranked 116th out of 129 countries analysed. Nevertheless, this index has only 23 mixed indicators, and 13 of these 23 indicators account for around 75% of the total score. The authors are of the opinion that more parameters should be used for obtaining the relevant ratings of some economies.

Also, the paper presents the research of other authors who deal with this issue and who carried out the selection and systematization of the indicators necessary for the formation of some energy indexes. However, it is necessary to check the availability of the proposed indicators for Serbia. Also noted is the omission of the indicators related to bio and fuel energy potential of specific countries.

From the previous comments and the results of the research, it can be concluded that it is necessary to carefully consider the selection of indicators that adequately describe the competitiveness of Serbia in the field of knowledge. Taking into account the challenges of the present time in terms of sustainability, it is especially important to carefully analyse the necessary performance of the economy from the standpoint of energy indicators.

Table 3. Energy indexes [9-12] [16-19]

Index name	Renewable energy country attractiveness index	The Global Green Economy Index	Energy Trilemma Index -The Energy Sustainability Index	Energy Development Index
Name of the institution releasing the index and the start year of the release	Ernst & Young Global Limited	Dual Citizen LLC	The World Energy Council	International Energy Agency
Frequency of publication	More times in one year from 2003.	Annually from 2010.	Annually from 2012.	Periodically from 2004.
Best ranked countries in the latest report	1. China 2. USA 3. Germany 4. India 5. Japan Report: 2015	1. Germany 2. Denmark 3. Sweden 4. Norway 5. Netherlands Report: 2014	1. Switzerland 2.Sweden 3. Norway 4. UK 5. Denmark Report: 2014	1. Malaysia 2. Argentina 3. Venezuela 4. Libya 5. Jordan Report: 2010
Number of countries ranked	40	60	129	80
Number of variables (quantitative / qualitative data ratio)	53 (keep in secret)	17 mix	23 mix	5 quantitative
Ratio of weighted coefficients	n/a (keep in secret)	Equal weight	75/25	Equal weight
Sub-composite indices and number of fields/number of parameters	1. Macro drivers 2. Energy market drivers 3. Technology-Specific drivers	1. Leadership & Climate Change (4) 2. Efficiency Sectors (4) 3. Markets & Investment (4) 4. Environment & Natural Capital (5)	1. Energy performance (13) 2. Contextual performance (10)	1. Household indicator (3) 2. Community indicator (2)
Serbia's rank and % rank among other countries	Serbia is not ranked	Serbia is not ranked	116 (in the 4th quarter among states)	Serbia is not ranked

Table 3. (continuation)

Index name	Energy Productivity and Economic Prosperity Index	The Global Energy Architecture Performance Index	Global Energy Competitiveness Index	International Index of Energy Security Risks
Name of the institution releasing the index and the start year of the release	Ecofys Group, 2001	World Economic Forum, Accenture	Institute Choiseul, KPMG, 2012	U.S. Chamber of Commerce's Institute for 21st Century Energy
Frequency of publication	Single study	Annually from 2012	Single study	Annually from 2012. (analyses data from 1980)
Best ranked countries in the latest report	1. Hong Kong SAR, China 2 Cuba 3 Colombia 4 Singapore 5 Switzerland Report: 2015	1. Switzerland 2. Norway 3. France 4. New Zealand 5. Spain Report: 2015	1. Norway 2. Canada 3. Iceland 4. Denmark 5. Colombia Report: 2012	1. Norway 2. Mexico 3. Denmark 4. New Zealand 5. United Kingdom Report: 2015
Number of countries ranked	131	125	146	25
Number of variables (quantitative/ qualitative data ratio)	n/a	18 (15 quantitative , 2 mix and 1 qualitative)	13 quantitative	29 (quantitative and mix)
Ratio of weighted coefficients	n/a	Equal weight	n/a	14/17/20/15/14/7/7/6
Sub-composite indices and number of fields/number of parameters	1. Energy Productivity of Households 2. Improvement in Household Energy Productivity 3. Service-Sector Energy Productivity 4. Service-Sector Energy Productivity Growth 5. Energy Productivity in Industry 6. Improvement in Energy Productivity for Industry 7. Resource Productivity in Industry 8. Improvement in Resource Productivity for Industry	1. Economic growth and development 2. Environmental sustainability 3. Energy access and security	1. Energy mix quality (4), 2. Electricity quality, availability and Access (4) 3.Compatibility with environmental issues (3) 4. Other (2)	1. Global Fuel Metrics (6) 2. Fuel Import Metrics (5) 3. Energy Expenditure Metrics (4) 4. Price & Market Volatility Metrics (4) 5. Energy Use Intensity Metrics (3) 6. Electric Power Sector Metrics (2) 7. Transportation Sector Metrics(2) 8. Environmental Metrics (3)
Serbia's rank and % rank among other countries	105 (in the 4th quarter among states)	71 (in the 3rd quarter among states)	75 (in the 3rd quarter among states)	Serbia is not ranked

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