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Article

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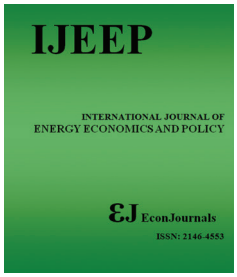

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Tax Incentives for use of Alternative Energy Sources in the Russian Federation

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ABSTRACT

Increasingly widespread use of alternative energy sources solves a number of urgent state problems, such as reduction of environmental pollution, diversification of energy resources, and weakening the dependence of the budget on oil revenues. The present article considers the role of taxes in the economic motivation of production and the use of alternative energy sources, as well as analyzes world practices of tax regulation in consumption of energy from renewable natural resources. In the course of the study, methods of collecting and processing secondary information were used, namely, grouping, generalization, classification, systematization, and modeling. In order to optimize the use of the proposed tax instruments, the latter are grouped according to the category of taxpayers.

Keywords: Power Industry, Alternative Energy Sources, Government Control, Taxes
JEL Classifications: H23, Q29, Q57

1. INTRODUCTION

Increasing the proportion of electricity generated by alternative sources is an urgent state task for the Russian Federation. This will reduce the dependence of the budget revenues on world energy prices, improve the environmental situation in the country, and give impetus to innovative development. In addition, there are many hard-to-reach regions in Russia, to which supplying electricity from renewable energy sources is more expedient. In the Russian Federation, it is necessary to create favorable conditions to implement investment projects for the development and sale of technologies and equipment by a business that allows generating energy from alternative sources. This will not only contribute to the development of scientific and industrial potential but also give additional tax revenues to the budget in the future. Tax incentives as a form of state support are one of the most effective instruments to solve this state challenge, as evidenced by world practice.

2. LITERATURE REVIEW

The issues of tax incentives when using alternative energy sources have been studied by many authors in different countries. The authors agree that the use of tax instruments yields good results in terms of expansion of the development, production, and use of equipment producing energy from renewable sources (Oueslati et al., 2017; Zhao et al., 2019).

Studies carried out by some authors (Comello et al., 2017) have confirmed the effectiveness of investment tax credits, which have allowed increasing the amount of energy produced by solar panels in the United States. Other authors (Godby et al., 2018) note about the new opportunities for rural communities in the USA to use wind energy provided by the state tax policy. There is a direct relationship between the increase in the tax on carbon emissions and the extension of the use of solar panels by households (Ghaith and Epplin, 2017). A similar relationship has been revealed between environmental taxes and investments of enterprises in

new energy production technologies (Chi Kuo et al., 2016). The same conclusions were drawn also by other researchers (Wen-Hsien and Shi-Yin, 2019). Several studies were conducted on the taxation practice in certain territories, including the taxation of mineral extraction (Hoy and Wrenn, 2018). While investigating the effectiveness of environmental taxes, some authors (Taylor et al., 2017; Kaufmann et al., 2019) came to the conclusion that it was expedient to enable enterprises to reinvest profits in alternative energy sources, as an alternative to imposition of environmental taxes.

3. MATERIALS AND METHODS

In the course of study, general scientific research methods were used, such as observation, analysis, and synthesis, induction and deduction, comparison and description, as well as qualitative and quantitative analysis. Methods, such as grouping, generalization, classification, systematization, and modeling were also used to collect and process information. During the processing of information related to the interest of consumers in the development of state support measures when deciding on the possibility of using alternative energy sources in practice, criteria were defined which determined the feasibility of using tax instruments that stimulated the use of alternative energy sources.

The authors of the present research advance a hypothesis that the decision-making process when choosing tax instruments to promote the use of alternative energy sources at the levels of households, businesses, and investors is based on different criteria. The principle of economic expediency and interest in obtaining various kinds of preferences are in demand regardless of the categories of the taxpayers. The provision of benefits by the state will be aimed at creating interest and increasing the activity of various groups of taxpayers in the use of alternative energy sources.

4. RESULTS

Alternative energy involves the use of solar, water, and wind energy. It should be noted that the production of energy through solar panels pays off not in all regions of Russia due to the harsh climate. Hydropower has great potential in the Russian Federation due to the possibility of using not only natural water bodies but also water treatment facilities. Geothermal heat is used as a renewable energy source in the Far East, Stavropol, and Krasnodar regions. The advantage of wind power consists of the relatively low cost of equipment.

In Russia, in 2016, the proportion of alternative energy sources accounted for not much more than 17% of the total generated energy (Table 1). This figure was mainly achieved owing to industrial hydroelectric power plants.

Russian indicator of the energy proportion received from alternative sources (Table 1) is comparable with the similar indicator of the European Union (Table 2). However, unlike the Russian Federation, in the European Union, not only hydropower but also wind and solar energy are important sources. In European Union, in 2016, out of 17% of the electricity produced by the alternative sources, water energy gave 7.4%, solar energy – 3.2%, and wind energy – 6.4%, whereas in Russia in the same period, from 17% of the electric power generated from renewable sources, 16,9% accounted just for hydropower energy.

Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC (Directive 2009/28/EC) obliges the European Union member states taking active measures to achieve by 2020 the 20% proportion of alternative energy in the country's total energy consumption. At that, each country should strive to reach the 10% threshold in the use of renewable energy sources in transport. In the energy strategy of Russia until 2020, it is planned to increase this indicator, showing the proportion of alternative electricity without hydropower in total energy production to 4.5% that indicates that this energy policy is supported at the highest state level.

It follows from the above that the urgent task of the state is increasing the proportion of electricity generated from alternative sources by means of economic incentive to use wind and solar energy. The most important economic instrument in this area, which is effectively used in the European Union, is tax policy. First of all, it is advisable to refer to the practices of countries which have achieved much higher than average use of alternative electrical energy (Table 3).

In the European Union, the leaders in the use of renewable energy are Iceland, Norway, Sweden, Montenegro, Latvia, Austria, Denmark, and Portugal.

Table 1: Power generation in the Russian Federation

Types of alternative energy	2010	2011	2012	2013	2014	2015	2016
Electricity, mln kWh including energy produced by power plants (PP)	1,038,032.7	1,054,857.5	1,069,289.3	1,059,085.5	1,064,196.5	1,067,543.3	1,090,970.2
Thermal PP	698,71.4	716,569.5	726,40.3	703,474.8	707,462.3	701,218.9	706,660.6
Nuclear PP	170,41.7	172,94.3	177,53.9	172,508.1	180,757.4	195,470.2	196,614.4
Hydroelectric PP	168,39.5	164,81.6	164,87.7	182,654.6	175,268.5	169,914.2	186,639.5
Of-nominal PP	50.8	52.4	462.9	449.0	719.1	939.9	1,055.7
Percentage of electricity generated by alternative energy sources, %	1.3	1.7	15.5	17.3	16.5	16	17

Source: Federal State Statistics Service of the Russian Federation (2019)

Table 2: Electricity consumption in the European Union

Types of alternative energy	2010	2011	2012	2013	2014	2015	2016
Electricity, produced from all sources, Terrajoule	8,421,970	8,335,370	9,264,650	9,895,420	10,164,380	10,639,030	10,424,540
Electricity, produced from renewable sources, Terrajoule	7,335,535.7	7,235,098.9	7,930,534.7	8,391,315.4	8,527,912.3	8,862,309.3	9,069,349.8
Percentage of electricity, generated from alternative sources, %	12.9	13.2	14.4	15.2	16.1	16.7	17

Source: Electricity consumption in the European Union. Eurostat (2019)

Table 3: The proportion of electricity produced from alternative sources in the European Union, %

EU Countries	2010	2011	2012	2013	2014	2015	2016
European Union	12.9	13.2	14.4	15.2	16.1	16.7	17
Belgium	5.7	6.3	7.2	7.5	8.0	7.9	8.7
Bulgaria	14.1	14.3	16.0	19.0	18.0	18.2	18.8
Czechia	10.5	10.9	12.8	13.8	15.0	15.0	14.9
Denmark	22.1	23.5	25.7	27.4	29.6	31.0	32.2
Germany	10.5	11.4	12.1	12.4	13.8	14.6	14.8
Estonia	24.6	25.5	25.8	25.6	26.3	28.6	28.8
Ireland	5.7	6.5	7.1	7.7	8.7	9.2	9.5
Greece	9.8	10.9	13.5	15.0	15.3	15.3	15.2
Spain	13.8	13.2	14.3	15.3	16.1	16.2	17.3
France	12.7	11.1	13.4	14.1	14.7	15.1	16.0
Croatia	25.1	25.4	26.8	28.0	27.8	29.0	28.3
Italy	13.0	12.9	15.4	16.7	17.1	17.5	17.4
Cyprus	6.0	6.0	6.8	8.1	8.9	9.4	9.3
Latvia	30.4	33.5	35.7	37.1	38.7	37.6	37.2
Lithuania	19.6	19.9	21.4	22.7	23.6	25.8	25.6
Luxembourg	2.9	2.9	3.1	3.5	4.5	5.0	5.4
Hungary	12.7	14.0	15.5	16.2	14.6	14.4	14.2
Malta	1.0	1.9	2.8	3.7	4.7	5.0	6.0
Netherlands	3.9	4.5	4.7	4.8	5.5	5.8	6.0
Austria	30.2	30.6	31.5	32.4	33.0	32.8	33.5
Poland	9.3	10.3	10.9	11.4	11.5	11.7	11.3
Portugal	24.2	24.6	24.6	25.7	27.0	28.0	28.5
Romania	23.4	21.4	22.8	23.9	24.8	24.8	25.0
Slovenia	20.4	20.3	20.8	22.4	21.5	21.9	21.3
Slovakia	9.1	10.3	10.4	10.1	11.7	12.9	12.0
Finland	32.4	32.8	34.4	36.7	38.7	39.2	38.7
Sweden	47.2	48.8	51.1	52.0	52.5	53.8	53.8
Britain	3.7	4.2	4.6	5.7	7.0	8.5	9.3
Iceland	70.3	71.5	72.4	71.6	70.4	70.2	72.6
Norway	61.1	63.7	64.0	65.9	68.6	68.4	69.4
Montenegro	40.6	40.6	41.5	43.7	44.1	43.1	41.5
Macedonia	16.5	16.4	18.1	18.5	19.6	19.5	18.2
Albania	31.9	31.2	35.2	33.2	31.5	34.4	37.1
Serbia	19.9	19.2	20.9	21.4	22.7	21.8	20.9

Source: The proportion of electricity from alternative sources in the European Union. Eurostat (2019)

For example, in Denmark, where 32.2% of electricity is produced from alternative sources (Table 3), the increase in taxes on the use of fuel and electricity served the impetus for the use of energy-efficient equipment, and subsequently, the export of energy production technology. At the same time, energy-efficient products and technologies are becoming increasingly popular in the world market as energy prices increase.

State support for the development and implementation of energy production technology from alternative sources contributes to the innovative development of the country. Due to the significant cost of creating, implementing, and using innovations in the field of renewable energy sources, state support is necessary both through direct financial investments and the use of economic regulatory instruments, which include taxes.

The export of alternative energy production equipment and technology, as well as energy-efficient equipment, is promising for both making business profits and increasing tax revenues to budget. Therefore, the provision of tax incentives to encourage this process, over time, will cease to be the only shortfall in budget income and will turn into additional tax revenues.

5. DISCUSSION

Principal disadvantages of alternative energy sources inhibiting their widespread implementation are the high cost of generating

equipment and a long payback period. The accrual of depreciation on such fixed assets with an increasing coefficient, as well as tax holidays on the property tax of organizations with respect to equipment used for the production of electricity from alternative energy sources may become an incentive to solve this problem. However, pursuing the state interests, it is expedient to extend such privileges first of all on the domestically produced equipment.

Studies of some scientists, who deal with the efficiency of imposition of tax on the carbon content of energy consumption, indicate the existence of the following correlation: An increase in taxes on energy reduces the carbon emissions from fossil fuel consumption in the long term (Sen and Vollebergh, 2018) that is interesting though not exhaustive. A gradual transition to the use of alternative energy sources without serious consequences through tax incentives for enterprises producing energy in the traditional way is quite justified. For these purposes, it is proposed to exempt them from the carbon tax for greenhouse gas emissions, provided that part of the profits is invested in equipment that allows producing energy in an alternative way. Such a system will allow not only raising funds for purchasing expensive assets, but also preparing networks and systems to store energy from renewable sources. In addition, such an approach should contribute to the preservation of jobs. The Russian analog of the carbon tax is a fee for adverse impact on the environment, which formally does not apply to taxes, though has a tax nature.

The absence of a tax on private use of wind turbines and solar panels in Russia certainly encourages the development of alternative energy. However, the constraining factor is the lack of financial capacity of individuals to purchase and install such equipment. Here, the possibility of applying a tax deduction on personal income tax, when purchasing wind turbines, solar panels and other devices that generate electricity from renewable sources by citizens, could serve a tax incentive. Such tax benefit is an exemption from income taxation of an individual in the amount spent on the purchase of equipment for the production of alternative energy. It is proposed to provide it in the amount not exceeding one million rubles and not oftener than once every 10 years to prevent abuse by taxpayers.

The practice of Asian countries also seems to be quite applicable. For example, in Uzbekistan, where there are about 300 sunny days a year, households are encouraged to consume energy from alternative sources by exemption from personal property tax and land tax for a period of 3 years by virtue of a certificate from the energy provider.

6. CONCLUSION

The proposed tax instruments to promote the use of alternative energy sources can be classified according to the taxpayer categories in order to improve the efficiency of application:

1. Tax benefits for investors, who invest in the development of both energy-efficient devices and equipment to generate energy from alternative sources;
2. Tax preferences for companies building and owning infrastructure, which allows producing and transferring electricity from alternative sources;
3. Tax incentives for householders, who purchase and run power units operating on renewable energy sources.

The benefits of the first category include reduced rates of the profit tax and the personal income tax in respect of the income derived from the investment of funds in the development of both energy efficient appliances and equipment designed to produce energy from alternative sources.

A variety of the second category benefits is the exemption from carbon taxes of energy producers, who invest part of the profits in the amount defined legally to purchase equipment that is needed to generate energy from alternative sources. In addition, the second group of benefits includes tax vacation on the property of organizations in respect of domestically produced property used for the production of electricity from alternative sources, as well as the application of increasing coefficients to depreciation rates applied to energy generating equipment.

The third category of benefits includes exemption from tax on property of physical persons in relation to the alternative energy generating equipment for its payback period; the application of the tax deduction for the personal income tax with respect to acquisition wind turbines, solar panels, and other devices that generate electricity from renewable sources.

In addition, increasing taxes on nonrenewable energy sources is an economic incentive to use alternative energy sources. However, such a measure should be combined with the reduction of other taxes, for example, the payroll tax.

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