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How to Encourage the Development of Renewable Energy in the Republic of Moldova?

Author:
Alexandru Fala

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■ Executive Summary

In the conditions of uncertain regional situation, diversification of energy sources is a top-of-the-list task for the economic security of the Republic of Moldova. Development of renewable energy sources (RES) is a solution for energy diversification. It could decrease the country's external energy dependence to a certain extent.

Despite positive evolution, the renewable energy sector grows rather slow. Thus, over 98% of renewable energy is represented by biofuel – a cheap and accessible source, consumed mainly by households. Private sector uses wind and solar energy, as well as biogas, to generate electricity. However, the share of these types of energy in the renewable energy production is very small (about 0.5% in 2015). Excessive investment costs and bureaucratic procedures cause limited presence of business community representatives in the renewable energy sector.

Thus, the renewable energy sector remains in its infancy. Although over the past 10 years several RES-related regulatory acts were adopted, certain drawbacks still exist, while some segments remain uncovered by the regulations.

An aspect causing certain ambiguity lies in the fact that energy efficiency and renewable energy sectors are unified in the policy papers. Although their merger is justified, there are no clear criteria for their delimiting, and thus financial efforts that have to be allocated to these two sectors are not separated. Another aspect refers to the support schemes. While the international practice has various support schemes aimed at RES promotion, the support mechanisms in the Republic of Moldova are limited and confined to indirect financing from public funds (budget allocations to the Energy Efficiency Fund – EEF), or on financial support from external donors. Although the legislation provides other forms of RES financial stimulation, such as: tax concessions and lending facilities or direct budget financing, these are not currently applied. In the absence of a unified approach for RES support, separate financing of actions decreases efficiency of the financial instruments being used.

After coming into force, the Law on Promoting the Use of Energy from Renewable Sources will lead to creation of the additional RES support schemes, which would allow identifying fixed prices for electricity generated from RES. This will have a minor financial impact on the consumers. At the same time, this legislative act has certain shortcomings:

- ✓ the law does not cover the entire sector of renewable energy;
- ✓ tenders for fixed prices could favour market entry for a limited number of large investors, which would create preconditions for certain anti-competition schemes;
- ✓ support scheme for liquid biofuel production could be unattractive.

We have the following recommendations for stimulation of RES development:

- ✓ Eliminate ambiguities related to financial support of RES. To this end it is necessary to: (i) develop criteria, that will help to establish, which RES development programs could be financed directly from the budget and which projects could be supported indirectly, by allocating public funds to the

EEF and to (ii) distribute to a certain extent budget sources allocated to EEF, so that a certain share of funds received by the Fund is directed strictly to RES development;

- ✓ In case of EEF it is necessary to align the activity of Fund's administrator with the set of performance criteria related to RES development, while the reporting should include separate information regarding implementation of projects related to energy efficiency and of those concerning RES use;
- ✓ Reduce the risks of excessive concentration of the sector in case of support scheme for electricity production based on RES;
- ✓ Extend the support scheme for liquid biofuel production by introducing premiums in case of unfavourable evolution of import prices.

■ Introduction

The Law on Promoting the Use of Energy from Renewable Sources, which transposes 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, will enter into force at the end of March 2017. The effective application of the respective law is crucial for the Republic of Moldova, considering the limited conventional energy sources, as well as confined energy independence. Thus, Moldova greatly depends on energy import, which over the past years has become uncertain due to tense relations with the Russian Federation and armed conflict in Ukraine. Therefore, the development of renewable energy sources will allow to balance the payments and to strengthen (at least, to a certain extent) the country's energy security.

The purpose of this document is to scan the renewable energy sector and policies in this field, and to come up with recommendations for effective application of the Law on Promoting the Use of Energy from Renewable Sources.

■ Renewable Energy Sector in the Republic of Moldova

Unsteady Energy Security of the Republic of Moldova

The economy of the Republic of Moldova depends on the energy import a lot, while unstable situation in the region presents a constant threat to the country's energy supply. Energy import from Ukraine is especially uncertain, since the conflict in eastern Ukraine resulted in less electricity produced and exported¹. Though in the spring of 2016 the Ukrainian authorities have announced the possibility of resuming energy supply to the Republic of Moldova², Ukraine once again faces problems in the energy sector. Since the transportation lines in Donbass area are blocked, the supply of anthracite (one of the main raw materials for electricity generation at Ukrainian power plants) decreased drastically³. Acquisition of energy from the Transnistrian region indirectly leads to the increase of debts to Gazprom and thus undermines the country's energy security. Currently, electricity is supplied from the Cuciurgan Power Plant, through *Energokapital* intermediary⁴. This business entity buys gas from TiraspoltransgazTransnistrian company at a lower price and then supplies it to the Cuciurgan Power Plant⁵. *Energokapital* pays the power plant only for transforming gas into electricity and then sells energy to *Energocom*⁶ – a state-owned company on the right bank of the Nistru river. The fact that *Energokapital* buys gas imported from the Russian Federation at a lower price leads to the increase of debt to *Gazprom*. Some uncertainties related to import of gas from the Russian Federation also exist, since Moscow often uses economic instruments for geopolitical purposes.

Renewable Energy – a Chance to Strengthen Energy Security?

¹ Lupusor A., Fala A., Cenușă D., Garstea N., Prohnițchi V., State of the Country Report. Republic of Moldova 2016, Expert-Grup Independent Think-Tank, Chisinau, 2016, p. 29.

² <https://www.rbc.ua/rus/news/minenergo-soobshchaet-gotovnosti-eksportu-1453816220.html>

³ <https://economics.unian.net/other/1783356-balans-nedeli-chrezvyichaynyie-meryi-v-elektroenergetike-rost-vvp-i-prokurorskaya-proverka-tarifov.html>

⁴ Nuțu O., Cenușă D., The Bridge over the Prut, version 2.0: the electricity interconnection between Romania and Moldova, Expert Forum (Bucharest), Expert-Grup Independent Think-Tank (Chisinau), 2017, p. 6

⁵ <https://crimemoldova.com/news/social/energocapital-vs-energocom-o-nou-edin-am-nat/>

⁶ *Ibidem*.

In the context of constant risks related to energy supply to the Republic of Moldova, it is important to diversify energy supply, especially by expanding the use of renewable energy sources (RES). Another argument in favour of renewable energy is the fact that RES's negative impact on the environment is much lower than that of conventional energy.

RES development in the Republic of Moldova is defined by several trends. Renewable energy production is growing, and during 2013-2015 it increased from 11424.4 to 13405.1 terajoules. The share of renewable energy in the gross domestic consumption also increased from 11.8% to 13.6%. A similar evolution is noted in the ratio between production of renewable energy and final energy consumption, which increased from 13.2% to 15.1% between 2013 and 2015.

Table 1. Evolution of renewable energy production

INDICATORS	2013	2014	2015
Energy produced from RES, terajoules	11,424.4	12,673.2	13,405.1
Share of energy from RES in the gross domestic consumption of energy, %	11.8	13	13.6
Ratio of energy from RES in the final energy consumption, %	13.2	14.7	15.1

Source: EG, NBS, NERA calculations

Another characteristic of the renewable energy sector – is a significant disproportion between generation from different sources. Thus, over 98% of renewable energy is represented by biofuel. This type of fuel is mainly used in the residential sector (in 2015 the primary production of biofuel constituted 13,164 terajoules, while population's final consumption was of 11,737 terajoules). In case of households, biofuel is a traditional energy source and is more accessible and cheap if compared to other types of fuel. Hydraulic energy has a small share in the renewable energy structure. It varied around the level of 1.5% between 2013 and 2015. In the region on the right bank of the Nistru River of the Republic of Moldova, electricity is generated from hydraulic energy at the Costesti-Stanca Power Plant, which is situated on the Prut river. Electricity on the basis of wind and solar energy and biogas is produced by private companies. In 2016, 22 producers of electricity based on renewables were operating⁷. Electricity production based on RES had grown between 2013 and 2015, increasing from 6.9 to 61.8 terajoules. However, the share of energy generated from wind, sun and biogas in the renewable energy production is insignificant: only 0.46% in 2015.

Table 2. Structure of renewable energy production, %

TYPE OF ENERGY	2013	2014	2015
Biofuels and waste	98.53	98.25	98.2
Hydraulic energy	1.41	1.66	1.34
Biogas	0.03	0.04	0.39
Wind energy	0.03	0.04	0.04
Solar energy	0.003	0.01	0.03

Source: EG, NBS, NERA calculations

⁷ <http://www.anre.md/ro/content/tarife-la-energie-electric%C4%83-produs%C4%83-din-surse-regenerabile-de-energie>

Renewable Energy Targeted by Authorities

Investors have low interest in RES, though the National Energy Regulatory Agency National Energy Regulatory Agency (NERA) approved a methodology for calculation of tariffs for renewable energy in electricity and for biofuels by Decision No 321 of 2009⁸. Modest presence of the private sector in RES use can be explained by the need for significant investments⁹, as well as by cumbersome bureaucratic procedures, such as: the need to change the land use or obtain construction permits¹⁰.

The renewable energy production is in its infancy, and the documents that regulate and establish sector's development priorities, drawn up over the past 10 years, are as follows:

- ✓ **The Law on Renewable Energy** was adopted in 2007, establishing the legal framework for the renewable energy sector functioning, social and economic relations that emerge during RES use, ways to organise renewable energy production and marketing;
- ✓ **The Law on Energy Efficiency** was adopted in 2010. The Law regulates activities aimed at reducing the energy intensity in national economy and mitigating negative impact of the energy sector on the environment. The Law contains provisions referring to RES regulation;
- ✓ **The National Energy Efficiency Program for 2011-2020** was approved in 2011. This document provides, among others, actions aimed at RES development;
- ✓ **The Energy Strategy of the Republic of Moldova until 2030** was adopted in 2013. This Strategy refers to objectives and strategies oriented to a more efficient, competitive and reliable energy complex, that would at the same time ensure the country's energy security, modernisation of the existing energy infrastructure, improvement of energy efficiency, use of renewable energy sources and integration into the European energy market¹¹;
- ✓ **The National Action Plan in the Field of Renewable Energy for 2013-2020** was approved at the end of 2013. The plan defines sectoral objectives for attaining the national objective by 2020. The Plan also establishes legislative, regulatory and administrative actions necessary for attaining the objectives;
- ✓ **The Law on Promoting the Use of Energy from Renewable Sources** was adopted in 2016. The Law will enter into force at the end of March 2017. This Law transposes the 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. The law includes reviewed objectives related to use of renewable energy and defines support schemes for renewable energy producers and their access to the networks.

As we can see, the fact that the field of energy efficiency is merged with that of renewable resources (an approach that leads to certain ambiguity), is characteristic of the policy papers in the energy sector.

⁸ Agenția Națională de Reglementare în Energetică, Hotărâre cu privire la aprobarea metodologiei determinării, aprobării și aplicării tarifelor la regenerabile de energia electrică produsă din surse regenerabile și biocombustibil nr. 321 din 22.01.2009

⁹ <http://bani.md/vadim-ceban-statul-trebuie-sa-monitorizeze-investitiile-in-producerea-energiei-regenerabile-doc/>

¹⁰ <http://eco.md/index.php/home/rss/item/4617-de-ce-nu-%E2%80%99Eia-foc%E2%80%99D-energia-verde-%C3%AE-n-r-moldova>

¹¹ Court of Accounts, The report of environmental audit - fulfillment of State Policy on Renewable Energy objectives approved by Decision No 4 of 29.01.2013

Support to the Development of Renewable Energy Sources in Other Countries

Support financial instruments have a crucial role for RES promotion. The private sector is a bit reluctant when it comes to investing in RES, since renewable energy is currently more expensive than the conventional one¹². Thus, to increase the competitiveness of renewable resources, countries use various support schemes. The international experience in this field is vast (see Annex). A reference document for EU Member States in RES promotion is Directive 2009/28/EC, which defines the support scheme as “any instrument, scheme or mechanism that promotes the use of energy from renewable sources by reducing the cost of that energy, increasing the price at which it can be sold, or increasing, by means of a renewable energy obligation or otherwise, the volume of such energy purchased.” This document also mentions that the support schemes include, but are not restricted to:

- ✓ investment aid;
- ✓ tax concessions (tax exemptions, refunds or reductions);
- ✓ renewable energy obligation, including support schemes using green certificates. The obligation means that producers, suppliers or consumers have to include a given proportion of energy from renewable sources in their production, supply, or consumption;
- ✓ feed-in tariffs;
- ✓ premiums.

The majority of the EU Member States apply one of the following three support schemes: feed-in tariffs, premiums payments or green certificates¹³. Other forms of support, such as: subsidies, tenders or tax concessions, are also used. However, these instruments are implemented in addition to those three support measures.

Support to the Development of Renewable Energy Sources in the Republic of Moldova

In case of the Republic of Moldova, RES are supported by direct financing of the sector (budget allocations to the Energy Efficiency Fund or external financial support).

The first step towards creating a RES support framework was made by adopting the Law on Renewable Energy in 2007. This legislative act provided for the establishment of the Energy Efficiency Fund (EEF). The main object of Fund's activity is financing activities in the field of energy efficiency and use of renewable energy sources in accordance with strategies and programs developed by the Government. Although the Law also provides other measures to support RES, such as granting tax concessions and lending facilities, currently, the support mechanisms are mainly represented either by financing from EEF or by financial support from international organisations. The Law on Energy Efficiency also provides that important energy efficiency programs and projects can be financed from the state budget. In general, RES financing falls

¹² Canton J., Lindén Å. J., Support schemes for renewable electricity in the EU. Economic papers 408, European Commission, General Directorate for Economic and Financial Affairs, Brussels, 2010, p. 7

¹³ *Ibidem*, p. 9

within these legal provisions. However, there are no essential criteria to determine the importance of energy projects¹⁴.

Though the establishment of EEF was stipulated by the law adopted in 2007, the institution started operating only 5 years later. The Government Decision No 401 approved the Regulation on the organization and operation of the Energy Efficiency Fund in 2012. According to the Regulation, there are 4 sources for forming the Fund's financial resources:

- ✓ financial allocations from the state budget, at least 10% of the Fund budget;
- ✓ donations from individuals and businesses from the Republic of Moldova or from abroad, including from international financial institutions and funds;
- ✓ financial income consisting of interest on current accounts or bank deposits of the Fund, and of the interest and fees for financing contracts concluded with the Fund's customers;
- ✓ loans and other financial instruments of banks or investors, used exclusively for furtherance of the Fund's objectives.

The Fund uses the following instruments to finance energy efficiency and RES use projects: grant, guarantee, lending and leasing. As for the use of Fund sources, no clear criteria for delimitation of financing of energy efficiency promotion measures from those aimed at support of RES development, are established. One of the causes of this situation is the fact that the fields related to energy efficiency and renewable energy are merged in the policy papers. While EEF activity reports contain information about total volume of payments made, they have no distinct data about the amount of funding of RES promotion actions and measures aimed at streamlining energy use.

The adoption of the Law on Promotion of Energy from Renewable Sources in 2016 is a great step towards creating an enabling framework for renewable energy projects¹⁵. At the end of March 2017, when Law comes into force will start application of more complex support schemes. Thus, 2 support schemes will be implemented: one for the liquid biofuels and another – for electricity produced based on RES. Producers of liquid biofuels will obtain a RES-related obligation. Importers of oil products will be obliged to purchase liquid biofuels from the producers, observing quotas established by NERA, provided that the prices proposed by the producers do not exceed the average import price for the corresponding oil products. A more complicated mechanism will be used in case of electricity. Producers of electricity from RES will be divided into 2 categories:

- ✓ **Eligible producers who own or are going to own power plants with the cumulative power exceeding the capacity limit established by the Government.** This type of producers will benefit from the support scheme which consists in establishing a fixed price during a tender. Those producers who offered the lowest prices for selling electricity as compared to the ceiling prices during the tender will be granted the status of an eligible producer. Thus, the fixed price will be the lowest one offered

¹⁴Court of Accounts, The report of environmental audit - fulfillment of State Policy on Renewable Energy objectives approved by Decision No 4 of 29.01.2013

¹⁵ https://www.energy-community.org/portal/page/portal/ENC_HOME/AREAS_OF_WORK/Implementation/Moldova/Renewable_Energy

during the tender. It is expected that the total volume of tendered capacity will be of about 400 MW – this level the network will be able to absorb at a reasonable price¹⁶;

- ✓ **Eligible producer who owns or is going to own power plants with the cumulative power that doesn't exceed the capacity limit established by the Government, but not less than 10 kilowatts.** These producers will supply electricity at feed-in tariffs established by NERA, while their Status of an eligible producer will be confirmed by the Energy Efficiency Agency in accordance with the regulation on confirmation of the status of eligible producer, that is to be approved by the Government.

Setting of the prices that would have minimum financial effect on the consumers can be named as one of the advantages of tender. Identification of the ceilings, which on the one side will be attractive to investors, while on the other side will guarantee acceptable prices for the consumers, will be an important element of the support scheme. Biogas and thermal energy from renewable sources imply only non-discriminatory delivery to the networks, with no support scheme stipulated. At the same time, the network operators will have the obligation to give priority to electricity from renewable sources at dispatching the electricity production capacities, as long as it does not affect the safe operation of the electric system.

Support to the Development of Renewable Energy Sources Targeted by Donors

The audit of the achievement of state policy objectives related to renewable energy has established that the main funding source of the projects related to RES development is the support of foreign donors¹⁷. The "Biomass and Energy Project" financed by the European Union should be mentioned here. The purpose of the project is to create a safe system for producing energy from renewable sources, especially, from biomass. The first phase of the project was implemented between 2011 and 2014, while the financial support was provided by the European Union (EUR 14 million) and United Nations Development Programme (EUR 560 thousand)¹⁸. The second stage, planned for 2015-2017, is currently in progress. A budget of EUR 9.41 million is provided for the second phase of the project, while the financial sources will be allocated by the European Union¹⁹. Local public authorities that received funds during the first phase of the project, generally have evaluated the results of implementation positively²⁰. Moldovan Sustainable Energy Financing Facility (MoSEFF) is another program aimed at financial support of Energy efficiency and RES promotion. MoSEFF was launched in September 2009, by the European Bank for Reconstruction and Development (EBRD)²¹. With the help of MoSEFF, EBRD offered EUR 42 million for lending through local partner banks²². Though instruments are in place to finance RES development, there is no unified approach to financial support of the sector²³. Certain risks related to external financial support also exist. Possible

¹⁶ National action plan in the field of renewable energy for 2013-2020, approved by Government Decision No 1073 of 27.12.2013

¹⁷ Court of Accounts, The report of environmental audit - fulfillment of State Policy on Renewable Energy objectives approved by Decision No 4 of 29.01.2013

¹⁸ *Ibidem*

¹⁹ *Ibidem*

²⁰ http://eeas.europa.eu/archives/delegations/moldova/documents/press_corner/20150303_energy_and_biomass_project_ii_ro.pdf

²¹ <http://www.moseff.org/index.php?id=88>

²² <http://www.moseff.org/index.php?id=13&L=2%252Fwp-login.php>

²³ Court of Accounts, The report of environmental audit - fulfillment of State Policy on Renewable Energy objectives approved by the Decision No 4 of 29.01.2013

reduction or cessation of external financing could cause decrease of new investment projects and determine stagnation of the renewable energy sector.

■ Final Conclusions and Recommendations

The dynamics of the renewable energy sector in the Republic of Moldova is slow, but positive. In 2015, the ratio between the produced renewable energy and final consumption of energy was above 15%. At the same time, the RES development is uneven. Thus, over 98% of renewable energy is represented by biofuel. Private sector is involved in electricity production using wind and solar energy, as well as biogas. Though the use of these types of energy is expanding, their share in the renewable energy is very small (about 0.5% in 2015). Causes of low presence of business community representatives in the renewable energy sector include excessive investment costs and bureaucratic procedures.

While the international practice has various support schemes aimed at RES promotion, the support mechanisms for promotion of renewable energy in the Republic of Moldova are based either on indirect financing from public funds (budget allocations to EEFF), or on financial support from external donors. Although other forms of RES financial stimulation, such as: tax concessions and lending facilities or direct budget financing, are provided, these are not currently applied.

An aspect of policy papers related to energy sector, causing certain ambiguity, lies in the fact that energy efficiency and renewable energy sectors are joined. A causal link exists between these 2 sectors, thus their merger is justified. However, there are no clear criteria for delimiting these two sectors, and thus it is impossible to separate financial efforts that have to be allocated to them. Another aspect that reduces the efficiency of financial instruments is related to separate funding of actions, with no unified approach to support RES development.

It is advisable to adopt the Law on Promoting the Use of Energy from Renewable Sources, since besides the existing instruments that include only direct financing, additional RES support schemes will be created. An advantage of this scheme will be the possibility to identify fixed prices for electricity generated from RES. This will have minor financial impact on consumers. At the same time, this legislative act has certain shortcomings:

- ✓ The law does not cover the entire sector of renewable energy and creates support mechanisms only for electricity and liquid biofuels production;
- ✓ Tenders for fixed prices could favour market entry for a limited number of large investors. As a result, a market segment with a high level of concentration of producers and increased risk of anti-competitive practices can appear;
- ✓ The liquid biofuels support scheme can be unattractive for liquid biofuel producers, if the oil import prices are low.

Recommendations for Development of Renewable Energy Sources

The following suggestions can be made based on the analysis:

- ✓ It is necessary to eliminate ambiguities related to financial support of RES. To this end it is necessary to act as follows:

1. develop criteria, that will help to establish, which RES development programs could be financed directly from the budget sources and which projects could be supported indirectly, by allocating public funds to the EEF;
 2. distribute to a certain extent budget resources allocated to EEF, so that a share of public funds received by the Fund is directed strictly to RES development;
- ✓ It would be good to establish performance criteria related to RES development in the management contract with the EEF administrator. It would also be appropriate to include separate information regarding implementation of projects related to energy efficiency and of those concerning RES use, in the EEF activity reports;
 - ✓ To avoid the risk of concentration of RES electricity producers, whenever possible, it would be appropriate to divide the production capacities offered for the tender into smaller batches. This will facilitate tender access for investors, including small firms. At the same time, it would be good to develop from start clear limits regarding the acceptable level of renewable energy concentration on the market. It would also be appropriate to carry out investigation regarding existence of anti-competition schemes before starting the tender;
 - ✓ To increase the attractiveness of liquid biofuel production, it will be necessary to extend the support scheme. Thus, apart from importers' obligation to buy liquid biofuels, it would be good to introduce premiums for the situations when oil import prices are lower. The funds for paying the premiums can be allocated directly from the public budget;

Annex 1. Support Schemes for Renewable Energy. International Practices

Feed-in tariffs. Introduction of feed-in tariffs implies: (i) guaranteed access to the network of renewable energy producers, (ii) existence of a long-term contract for buying renewable energy, (iii) establishment and adjustment of price depending on the unit cost of produced non-conventional energy. Several European countries apply this mechanism. At the same time, the mode of implementation of feed-in tariffs differs from country to country. Thus, several European countries use differentiated feed-in tariffs depending on the technologies used. For example, the price of electricity produced by photovoltaic facilities is often 5 to 10 times higher than for the energy generated by a small hydropower plant²⁴. Countries like Estonia and Cyprus, apply, however, a common feed-in tariff, regardless of the source of renewable energy origin²⁵. This approach allows to identify the most competitive technologies. There are also various tariff adjustment practices. Bulgaria and Hungary, for example, revise their tariffs with references to inflation and electricity price developments, while Latvia adjusts them based on gas price development²⁶. In most cases tariffs are time-limited, which should facilitate the phasing-out of the support scheme. The advantage of feed-in tariffs lies in the capacity of this mechanism to intensify RES development. However, it is unlikely that the RES sector will easily transit from a regulated market to a liberalised one through this support scheme.

Premiums. The support mechanism through premiums consists in an additional charge to the market price of electricity. United Kingdom, Denmark and Netherlands are among EU Member States that apply premiums²⁷. This support scheme increases the sector's compatibility with the mechanisms of a liberalised market, while exposing the investors to a greater risk. Several European countries, such as: Czech Republic, Estonia or Slovenia, use mixed support schemes, which include both feed-in tariffs and premiums, while energy producers can choose between these two instruments²⁸. These hybrid systems allow producers to take on greater risks, since feed-in tariffs represent a guaranteed price ceiling in relation to energy price cuttings. The combined support schemes ensure a better transition to a liberalised market, if compared to the feed-in tariffs mechanism.

Green certificates. The green certificates mechanism is a more complicated support scheme. The following states use this mechanism: Belgium, Romania and Poland. Green certificates imply that a part of energy is produced from renewable sources (for each unit of energy producers obtain a certain number of green certificates). The number of issued certificates correlates with the share of renewable energy in the total energy produced. Renewable energy producers that obtain green certificates are established every year. Subsequently, green certificates are traded on a different market than the energy one. Concurrently, the price of green certificates is regulated. Romania, for instance, defines a fluctuation interval for the value of

²⁴ Canton J., Lindén Å. J., Support schemes for renewable electricity in the EU. Economic papers 408, European Commission, General Directorate for Economic and Financial Affairs, Brussels, 2010, p. 32

²⁵ *Ibidem*, p. 32

²⁶ *Ibidem*, p. 33

²⁷ The European Wind Energy Association, Design options for wind energy tenders, p. 9, 11, 18

²⁸ Canton J., Lindén Å. J., Support schemes for renewable electricity in the EU. Economic papers 408, European Commission, General Directorate for Economic and Financial Affairs, Brussels, 2010, p. 33

certificates, while Belgium established minimum prices depending on the country's region²⁹. Price regulation is necessary to ensure a minimum profit level for investors.

Tax incentives. Application of fiscal incentives can favour RES development. Hassett and Metcalf (1995) made some estimations on the basis of data of the US state tax policy oriented to energy conservation stimulation and concluded that increase in the rate of tax exemption determines the growth of probability to invest³⁰. However, there are certain risks related to the use of tax incentives:

- ✓ ceasing provision of tax exemptions could lead to decrease of investments in RES: Kahn and Goldman (1987) analysed the US experience and came to the conclusion that after expiration of energy tax credits, capital intensive projects, such as wind turbines or small hydropower plants, were not financially viable³¹;
- ✓ change of regulations can lead to system sophistication, and, as a result, the applicants will obtain tax concessions in more difficult conditions, while the efficiency of incentives will decrease. Pablo-Romero, Sánchez-Braza and Pérez (2013) argued that in Spain, because of regulatory changes, tax incentives had low impact on solar thermal energy conversion technologies deployment³².

²⁹ Canton J., Lindén Å. J., Support schemes for renewable electricity in the EU. Economic papers 408, European Commission, General Directorate for Economic and Financial Affairs, Brussels, 2010, p. 32

³⁰ S. Abolhosseini, A. Heshmati, The Main Support Mechanisms to Finance Renewable Energy Development. Discussion Paper No. 8182, The Institute for the Study of Labor, Bonn, 2014, p 8

³¹ *Ibidem*, p.8

³² *Ibidem*, p. 9.