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The System of Feed-in Tariffs in Ukraine: the Experience and Current Situation

Summary

This research aims to describe the situation of the feed-in tariffs system in Ukraine. It attempts to examine the main distinguishing features and drawbacks in comparison with the law of European countries. To do this the Ukrainian Law and the data taken from such sites as Eurostat and Ernst & Young Global Limited Company are analysed and compared. The main drawbacks of Ukrainian feed – in tariffs system are analysed more deeply. The main of them were the next: 1) provision about local component in Ukrainian's system of feed-in tariffs; 2) too high feed-in tariffs rates on solar energy in Ukraine in comparison with European countries; 3) insufficient attention to the issue of renewable energy produced from biomass. In the last year some improvements in these spheres have been made. But they will be valid mainly only until 2017. Now in Ukraine there are many obstacles in renewable energy sphere but the main reasons are political obstacles in the area of renewable energy. And the best opportunities for the development of renewable energy can be provided only by the competitive environment. Only in such a way Ukraine can become an energy-efficient modern state.

Key words: renewable energy, feed-in tariffs, legislation, Ukraine.

JEL codes: F18, F64, K32

Introduction

This paper aims to describe the situation of the feed-in tariffs system in Ukraine. In spite of many publications of Ukrainian scientists which have positive effect onto the system of feed-in tariff in Ukraine this issue is still not properly researched. Despite the many benefits which feed-in tariff system can provides it is important to understand whether this is really the system which will lead Ukraine to real energy efficiency and energy freedom or this is just way of lobby for a change in law for the benefit of certain persons and companies. In this article the system of feed-in tariffs in Ukraine and the problems which exist in this area is analyzed.

Impulse for the development of renewable energy

Scientists are commonly agreed that dependence on energy supplies could be an instrument of economical and political pressure of one country onto the other. A good example of this

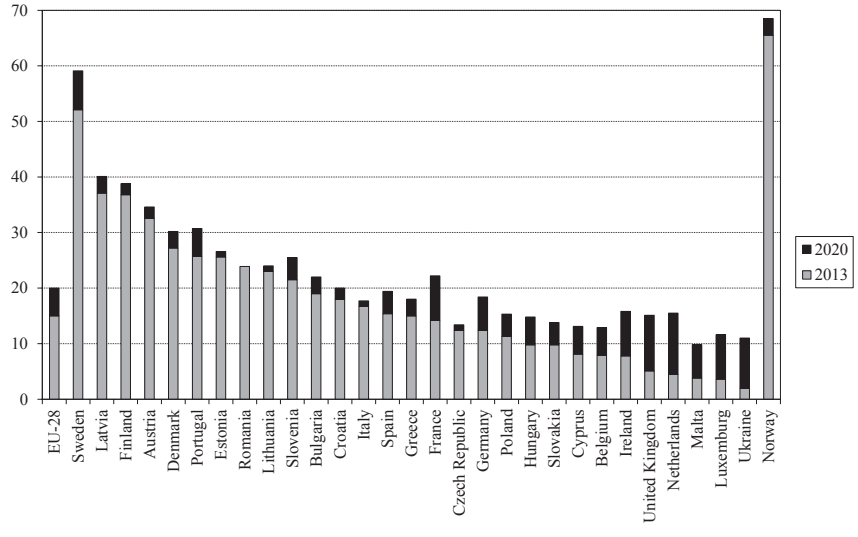
could be an oil crisis of 1973-1978 which had a negative effect on the USA economy. Oil prices increased dramatically, seemingly overnight. Markets were disrupted and shortages developed. Crash programs to develop alternatives to petroleum-based fuels began in earnest in many parts of the world. Many of these programs continue today (Klass 2004, p. 11). Another good demonstration of this could be tendency of the Russian Federation and its government to use energy as an instrument for economic and geopolitical results set new challenges for Ukraine and force to revise the key growth directions of energy independence (Kurbatova 2014, p. 59).

To avoid such dependence of one country on another one, many countries worldwide were stimulated to develop their renewable energy potential intensively. Increasing part of renewable energy sources such as solar, wind, biomass and others is a worldwide trend in the area of energy policy. For instance, Denmark is planning to receive all its energy from renewable sources till 2035.

To conduct such large scale changes in the EU the so called strategy 20-20-20 was adopted. This strategy implies achieving such main points 1) 20% cut in greenhouse gas emissions (from 1990 levels) 2) 20% of EU energy from renewables 3) 20% improvement in energy efficiency (Statistics explained, Europe 2020 indicators − climate change and energy, 2014). Ukraine is targeted at increasing of the share of renewable energy as well. That is why Ukraine has joined the 20-20-20 strategy. It should be said that demands for Ukraine is lower – our aim is to reach figure 11 % to 2020. For instance part of renewable energy in Ukraine in 2013 was only 2%.

Figure 1

Share of the renewable energy in European countries (2013, 2020)



Sources: own calculations based on: Eurostat data (2015).

It should be said that European countries have already achieved some results in this sphere. The leaders of the renewable energy among European countries are Norway with the share of 67%, Sweden − 52 %, Latvia and Finland with approximately equal share of 38%.

Energy policies in all Europen countries depends strongly on the promotion and maintaining of renewable energy technologies by governments. There are a lot of regulations and economic mechanisms which are implemented in order to increase the share of renewable energy in the energy producing.

To achieve such significant results European countries have adopted special support systems for renewable energy producers. The most successful measure of them is feed-in tariffs system which have been implemented in most of the EU countries. And now exists nearly in 63 countries worldwide. This system offers producers of energy from renewable sources to sell their electricity at a fixed price, which is subsidized from the state budget.

Among others, Spain and Germany have been applying feed-in tariff systems during the last years very successfully, which led to a large increase of Renewable Energy Sources plants in both countries. In the year 2004 the governments of Spain and Germany initiated the International Feed-In Cooperation in order to promote the exchange of experiences and to improve the feed-in system design in EU and other countries (Ragwitz 2010, p. 3).

The system of feed-in tariffs in Ukraine

A feed-in tariff is a policy mechanism designed to accelerate investment in renewable energy technologies. It achieves this by offering long-term contracts to renewable energy producers, typically based on the cost of generation of each technology (Cory 2010, p. 15).

Ukrainian law gives such definition of feed-in tariff: this is − a special tariff for purchasing electricity generated at the power plants including the commissioning phase of construction power plants (starting complex), with alternative energy (except for blast furnace and coking gases, and for hydropower – only the micro, mini and small hydropower) (*Pro vnesennya zmin do Zakonu Ukrayiny "Pro elektroenergetyku" shhodo stymulyuvannya vyrobnyctva elektroenergiyi z alternatyvnych dzherel energiyi* 2013).

As we can see definition can be slightly different in meaning. But the most important for us have to be content of the renewable energy support system. In practice successful feed-in tariff policy has to include three key provisions:

1) Guaranteed access to the grid;
2) Purchase agreements (usually they have to be at least 10 years long); Purchase agreements are typically offered within contracts ranging from 10-25 years and are extended for every kilowatt-hour of electricity produced.
3) Payment levels based on the costs of renewable energy generation (Cory 2010, p. 6).

Ukraine has also joined this system. In 2009 the law in this area was adopted. It is the Regulation of National Electricity Regulatory Commission of Ukraine On Determination, Revision and Cancellation of the Green Tariff (the Feed-in Tariff Regulation). This regulation set up "rules of the game" on the Ukrainian energy market and set up rates of feed-in tariffs on dependency of renewable energy sources.

The main points of this regulation are the next:

1) All tariffs have reference to euro and are set till 2030.
2) The feed-in tariff is set for each type of renewable energy and for each producer of such energy. For instance feed-in tariff for solar energy is 0.459 EUR per kWh. For wind energy this is 0.112 EUR per kWh, and for small hydro energy plants it is 0.764 EUR per kWh.
3) In regulation there is provision about local component. It means that at least 30 % of materials for energy plants have to be produced in Ukraine, and from 2014 – 50%. (Postanova *pro zatverdzhennya poryadku vstanovlennya, pereglyadu ta prypynennya diyi "zelenogo" taryfu dlya subyektiv gospodarskoyi diyalnosti* 2012).

Many scientists are agreed that system of feed-in tariffs is a good way for the development of Ukrainian energy sector. Such system is successfully implemented in the EU countries and in the other countries worldwide. They believe that pursuing of the EU example will bring significant benefits for Ukrainian state as well.

We can observe such opinions in works of scientists who address the issue of feed-in tariffs in Ukraine. For instance, Mrs. Tatiana Kurbatova in her article *Ukrainian renewable energy: Economic Determinants of growth, barriers and opportunities* writes that successful implementation of the aforementioned legal framework (regulation on feed-in tariffs) has become a powerful impetus for activation renewable energy capacity installation. Although at present stage the contribution of green generation is not sufficient in order to affect the overall energy balance of the country (about 3 % without large hydropower plants), at the end of 2013 placed in operation renewable energy capacity exceeded placed in operation fossil fuels plants (Kurbatova 2014, p. 59).

Another scientist who agree with positive effect of feed-in tariffs into Ukrainian energetic sector is Mr. Igor Gajdayenko, in his article *Alternative energy in Ukraine: state and development prospects* writes that among the key provisions of the law – the obligation for investors who apply for "feed-in tariff" is that "the proportion of raw materials, capital assets, works and services of Ukrainian descent in the cost of construction of the object" have to be at least 30% and from 2014 – 50%. It takes into account the EU experience, where local manufacturers have started to protest against the influx of imported equipment. Thus, the regulatory and legislative activities for the beginning of "green" energy in Ukraine is already laid, and European and international experience should help Ukraine to stay right course towards complete energy independence and environmental performance (Gajdayenko 2014, p. 149).

In theory this is very progressive regulation of National Electricity Regulatory Commission which creates conditions for the development of renewable energy in Ukraine. It was said that this regulation can bring Ukrainian's economy such main benefits:

1) Creation of good conditions for foreign investors in renewable energy sphere;
2) Increasing part of safety of energy supplies in Ukraine;
3) Significant step towards achieving goals of 20-20-20 strategy.

However, in practice we can observe different situation. To research the issue of feed-in tariffs more deeply and to compare Ukrainian law with the European Union one it could be said that Ukrainian law in this sphere has significant shortcomings.

Provision about local component in Ukrainian's system of feed-in tariffs

First of all regulation provision about local component is strongly criticized by many scientists and politicians not only in Ukraine, but also worldwide. I want to remember that according to the regulation the share of raw materials of Ukrainian's origin should be at least 30 percent and in 2014 – at least 50 percent in the total cost of construction of power facilities. It should be said that such mechanism create obstacles not only for foreign investors, but for domestic as well. Such mechanism creates many opportunities for corruption inside this sphere. Moreover, in Ukraine there are only a few companies which can satisfy needs of this law provision.

One of the members of National Electricity Regulatory Commission of Ukraine Andriy Gerus said that the local component mechanism is artificially created, because feed-in tariff rates are high and the authors of the law thought that there will come many investors and because of this artificially limited the access to the renewable energy market.

Rate of feed-in tariffs in Ukraine and Europe

Secondly, rate of feed-in tariffs on solar energy is too high and are above average European level. To show the average level of feed-in tariff in the European Union I have made two table where we can see feed-in tariff rates in the EU and in Ukraine.

Feed-in tariff on solar energy in European countries

We can see that one of the highest rates of the feed-in tariff on solar energy is set in Ukraine (up to 47 eurocent per kWh). Moreover, renewable electricity producers have received a lot of benefits – they are exempted from income tax for 2020. Also, the rent for the land to them was reduced by 70 percent. It should be said that, some of these benefits last year was canceled, but the most significant still remains: state is obliged to buy all the electricity produced by the producers of alternative energy at the established feed-in tariff rate.

We can compare feed-in tariffs on solar energy with feed-in tariffs on wind energy in Ukraine and worldwide.

Table 1

Feed-in tariff on solar energy in the European countries

Country	Solar Energy (€ct per kWh)
Austria	over 5 kWp, up to 350 kWp: 10.0 – 12.5
Serbia	1) Residential systems: 12.5-17.37; 2) Groundmounted systems: 11.11 -13.98
Bulgaria	1) Roof-top and facade-integrated installations: 7.4-10.8; 2) Other installations and plants: 6.7-7.8
Croatia	20.2-29.8
Czech Republic	1) Installed capacity up to 5 kW: 9.0; 2) Installed capacity up to 30 kW: 11.1
Germany	1) specific building-mounted systems 13.15 – 11.49; 2) other systems: 9.23 minus €ct 0.4 per kWh
Estonia	Average level – 51.0
France	Information not available
Greece	55.2
Hungary	1) Plants of 20 MW or less: (approx. €ct 0.10); 2) Plants between 20-50 MW 0.03-0.09; 3) Plants of more than 50 MW0.05-0.07
Ireland	
Italy	36.1 – 44.3
Latvia	1) for building-integrated solar power installations -20.1; 2) for solar power installations not integrated in buildings 13.3-14.2
Lithuania	
Luxemburg	electricity from PV installations ≤ 30 kW fed into the grid during the year 2014 receive a tariff amounting to 26.4
Nederland	45.9-58.3
Poland	
Portugal	Indicative average rate of the Feed-in tariff is 0.257
Slovakia	27.4
Slovenia	26.7-41.4
Spain	3.2-3.4
Great Britain	7.8- 17.7
Ukraine	1) Ground-mounted systems: 33.9 – 35.8. From the beginning of 2017 - 42.1-47.8

Source: own elaboration based on legal source on renewable energy. Comparison tool.

Feed-in tariff on wind energy in European countries

From these two tables we can conclude that on dependency of source of renewable energy feed-in tariffs in Ukraine have different rates. We can see that tariffs on solar energy are above average European level and rates of feed-in tariffs on wind energy is similar to the European one.

Table 2

Feed-in tariff on wind energy in the European countries

Country	Wind energy (€ct per kWh)
Austria	If the application is submitted in 2013: 9.45 For 2014, the aforementioned tariff will be reduced by 1 %
Serbia	Up to 10 MW: 8.45
Bulgaria	1) up to 30 kW: 7.0; 2) up to 200 kW: 6.6; 3) up to 1 MW: 6.0; 4) more than 1 MW: 4.9
Czech Republic	From 1 January – 31 December 2014: 7.3
Germany	Onshore: 4.95 – 8.90; Offshore: 3.9 – 19.4
Estonia	
France	Onshore: 8.2 during the first 10 years and then €ct 2.8 – 8.2 for the next five years
Greece	7.2 – 9.3
Hungary	
Ireland	Large-scale wind-power plants 6.95 Small-scale wind-power plants 7.2
Italy	3.2
Latvia	11.7
Lithuania	1) Up to 10 kWh 8.1; 2) Installed capacity exceeding 10 kW up to and of 350 kW: EUR 7.5 per capacity exceeding 350 kW: 6.4 per
Luxemburg	9.2
Nederland	18.6
Poland	
Portugal	7.4
Slovakia	7.3
Slovenia	The uniform annual price is 8.3
Spain	7.3
Great Britain	16.1-3.2
Ukraine	1) < 600 kW: 6.4; 2) 600 - 2,000 kW: 7.5 ; 3) > 2,000 kW: 11.3

Source: like in Table 1.

These all tools in comparison with high rate of feed-in tariff create highly profitable business, but only for a few companies and not for all participants of the market.

We can also see that not all counties have feed-in tariff rates. This is explained by the fact that in many European countries there exist system of green certificates. These certificates confirm the specific amount of energy produced with the help of renewable energy sources.

The system of green certificates acts in the next way: alternative energy producers receive certificates, and consumers have to buy a certain amount of them in producers (which is a per-

centage of their total energy consumption, so-called mandatory quota). If suppliers or consumers do not perform these obligations, applies a system of fines (Denysiuk at al. 2011, p. 9).

Feed in tariffs and renewable energy from biomass

The third drawback is an insufficient attention to the issue of renewable energy produced from biomass. This is a significant obstacle for investors who would like to do business in this sphere.

Not only Ukrainian scientists, but European one as well agree that the law on feed-in tariff has certain disadvantages. For example, the law gives strange definition of "biomass", because it is unclear whether biogas is considered as part of the law on feed-in tariff or no. According to the law, "biomass products consisting wholly or partly of vegetable matter, which can be used as fuel for the purpose of converting energy contained in them." Biogas can be produced from a variety of substrates, including manure, sewage sludge and other substances that are not herbal. Therefore, such biogas plants can not get under the feed-in tariff. A significant drawback is the fact that feed-in tariff does not apply to the power plants which used biomass co-combustion of traditional fossil fuels. Quite difficult is the procedure for obtaining feed-in tariff, you must first obtain a license for energy production, then – feed-in tariff and finally to become a member of the wholesale electricity market (Geletuha et al. 2014, p. 97).

Because of all these shortcomings the law was strongly criticized not only in Ukraine but also abroad, as foreign investors could not come to the Ukrainian market of renewable energy. Because of this, some changes to the law were adopted in 2015, unfortunately they will exist only until 2017.

Current situation of feed-in tariffs in Ukraine

The Verkhovna Rada of Ukraine has adopted the law "On amendments to some laws of Ukraine to ensure competitive conditions of electricity from alternative energy sources" №2010-d, which changes the rules of the feed-in tariff and can be the impetus for the development of projects for the production of electricity from renewable energy sources.

The law brought changes to such Ukrainian laws as "On alternative fuels," "On electricity" and "On the Principles of operation electricity market of Ukraine". This law has brought such main changes:

1) reduce rates of feed-in tariff for electricity generated from alternative energy sources to the average level (in order to solve the problem of over stimulation of production of electricity from solar energy);
2) remove provision on the local componet for the feed-in tariff entrepreneurships (*Zakon Ukrayiny pro vnesennya zmin do deyakych zakoniv Ukrayiny shhodo zabezpechennya konkurentnych umov vyrobnycztva elektroenergiyi z alternatyvnyx dzherel energiyi* 2015).

Although the provision of local component was canceled and rate of feed-in for solar energy is reduced (by 44% to 33.9), we have take into account two important factors:

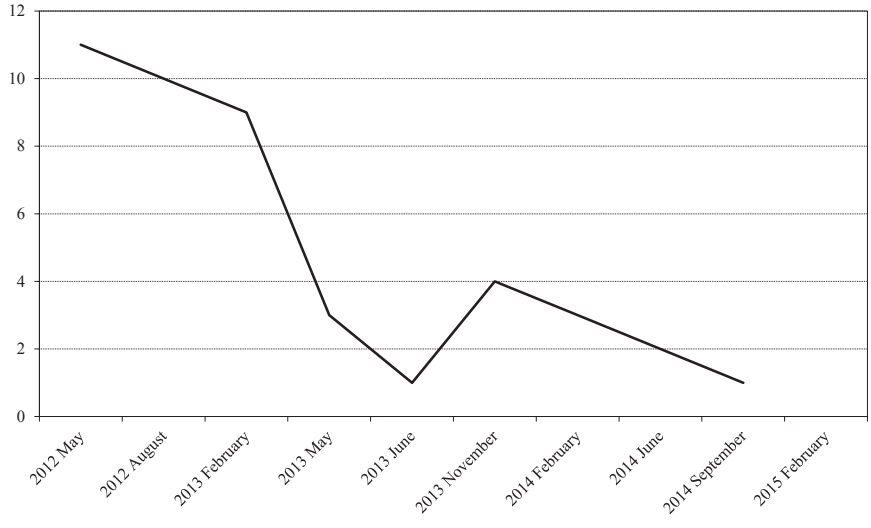
1) such concessions will be valid only until 2017;
2) rates remains with reference to the euro. It should be said that during the past year devaluation of the hryvnia has reached a very high level, this means that companies which operate in energy market is still highly profitable.

Foreign investors have always compared international environment and feed-in tariff in different countries. The developers of the law argue that investors welcomed such change. Until now, solar power offered significant privileges that are not available anywhere else in the world but only for a few companies, but now investors hope that access to the tariff will be much easier.

However in practice we can see different situation. In fact Ukraine reduces popularity among investors into renewable technologies. The best illustration of this could be Renewable energy country attractiveness index (RECAI), which is developed by Ernst and Young Global Limited Company. The top 5 in this list are 1) China, 2) USA, 3) Germany, 4) Japan, 5) India (2015).

Firstly Ukraine got shortlisted in this ranking in 2012 after adoption of first law on feed-in tariffs, and was on the 29 place (among 40 countries in the list) and in 2015 Ukraine was not included in this list. It happened because of many negative reasons, but the main reasons are political obstacles in the area of renewable energy.

Figure 2
Dynamic of Ukraine's RECAI



Source: own calculations on the basis of: *Renewable energy country attractiveness index report* (2016).

Conclusions

On the basis of energy development in the world, we can conclude that the transition into renewable energy is a common future for all countries. Now in Ukraine there are many obstacles in this sphere and the main of them are the next: an unstable political and economy situation in the country, war on the East of Ukraine and the main reasons are political obstacles in the area of renewable energy.

The best opportunities for the development of renewable energy can provide only competitive environment. Therefore, it is important for Ukraine to overcome all obstacles which exist in this area as soon as possible. Only in such way Ukraine's government will be able to attract foreign investment into the renewable energy sphere. Only such way can give Ukraine energy independence so and in no other way Ukraine becomes an energy efficient modern state.

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System taryf gwarantowanych na Ukrainie: doświadczenie i obecna sytuacja

Streszczenie

Celem badania jest opis sytuacji w systemie taryf gwarantowanych („zielonych") na Ukrainie. Omówiono podstawowe cechy wyróżniające i braki w porównaniu z ustawodawstwem krajów europejskich. W tym celu dokonano analizy ustaw Ukrainy w tej sferze oraz danych uzyskanych z takich stron internetowych, jak Eurostat i Ernst&Young Global Limited Company. Dokonano analizy podstawowych braków ustawodawstwa ukraińskiego w systemie taryf gwarantowanych. Najważniejsze z nich są następujące: 1) przepis dotyczący lokalnego komponentu w systemie taryf ulgowych; 2) zbyt wysokie stawki taryf ulgowych na energetykę słoneczną na Ukrainie w porównaniu z krajami europejskimi; 3) niedostateczna uwaga zwracana na kwestię wykorzystania odnawialnych źródeł energii wytworzonych z biomasy. W roku ubiegłym wprowadzono pewne ulepszenia w tych dziedzinach, ale zaczną one działać głównie tylko do roku 2017. Obecnie na Ukrainie istnieje wiele przeszkód w tworzeniu odnawialnych źródeł energii, ale głównymi są te o charakterze politycznym. Lepsze możliwości dla rozwoju odnawialnych źródeł energii może zapewnić jedynie środowisko konkurencyjne. Tylko w taki sposób Ukraina stanie się energetycznie efektywnym współczesnym państwem.

Słowa kluczowe: odnawialne źródła energii, taryfy gwarantowane, ustawodawstwo, Ukraina.

Kody JEL: F18, F64, K32

Система зеленых тарифов в Украине: опыт и нынешняя ситуация

Резюме

Цель этого исследования – описать ситуацию в системе «зеленых» тарифов в Украине. Рассматриваются основные отличительные черты и недостатки по сравнению с законодательством европейских стран. Для этого анализируются и сравниваются законы Украины в этой сфере и данные, полученные с таких сайтов, как Евростат и Ernst & Young Global Limited Company. Анализируют-

ся основные недостатки украинского законодательства в системе «зеленых» тарифов. Главными из них были следующие: 1) положение о местной составляющей в системе льготных тарифов; 2) слишком высокие ставки льготных тарифов по солнечной энергетике в Украине по сравнению с европейскими странами; 3) недостаточное внимание к вопросу использования возобновляемых источников энергии, произведенных из биомассы. В прошлом году были сделаны некоторые улучшения в этих областях. Но они будут действовать в основном только до 2017 г. В настоящее время в Украине существует много препятствий в сфере возобновляемых источников энергии, но основными причинами являются политические препятствия в области возобновляемых источников энергии. А лучшие возможности для развития возобновляемых источников энергии может обеспечить только конкурентная среда. Только таким образом Украина станет энергетически эффективным современным государством.

Ключевые слова: возобновляемые источники энергии, зеленые тарифы, законодательство, Украина.

Коды JEL: F18, F64, K32

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