Polish support schemes for renewable and cogeneration sources

Introduction

Ever since the Energy Law came into force, i.e. since 1997, country legislator saw the need to support renewable energy sources (RES) in order to promote energy generation from these sources. Starting from 2000 onwards, solutions aiming at supporting cogeneration sources were being put in place, and in 2011 agricultural biogas support scheme was introduced.

Currently applicable support schemes regarding RES (since 2004), cogeneration (since 2007) and agricultural biogas (since 2011) have been based on quota system, i.e. the system whereby relevant entities must have in their purchase portfolio appropriate quantities and types of certificates of origin, with potential non-compliance punishable with the state sanction of monetary fines. Thus, this system is based on the amount of electricity from renewable, biogas and cogeneration sources, in contrast to price-oriented systems (feed-in-tariff mechanisms). Support system currently applied in Poland has been based on the so-called certificates of origin (Energy Law, Article 9e), certificates of origin from cogeneration (Energy Law, Article 9l), and certificates of origin from biogas (Energy Law, Article 9o) and ensuing property rights. With these solutions, quasi securities can be obtained in the form of various types of certificates, which – upon being entered into the register of certificates of origin on the commodity exchange or another regulated market as the so-called property rights – become marketable and represent exchange commodity referred to in the Law on Commodity Exchanges, as of October 26, 2000, Article 2, point 2, letter d.

„Certificates of origin“ – their types and purposes

A) „Green certificates“

Support system for renewable sources generating electricity has been based on the possibility of obtaining certificates of origin, commonly known as the green...
In accordance with Energy Law provisions, Article 9e, certificate of origin testifying to the source of electricity generation from a renewable source serves as the evidence of such generation. In consequence, this kind of support is available for all types of renewable sources generating electricity on the basis of renewable primary fuels. These sources include those based on wind energy, solar energy, geothermal energy, wave, sea current and tidal energy, hydro energy, as well as the energy obtained from biomass, landfill gas, and biogas produced in the process of wastewater discharge or treatment, or decomposition of plant and animal remains. Energy generated from renewable sources includes electricity generated, in particular by: a) hydro-plants and wind farms, b) biomass and biogas-based sources, c) solar photovoltaic cells and thermal collectors, d) geothermal sources, and also e) a part of energy recovered from incineration of municipal waste.

B) „Brown certificates”

Pursuant to Energy Law amendment as of 8 January 2010, certificates of origin from biogas were introduced, referred to as the brown certificates – they testify to the fact of production and, at the same time, introduction to the gas distribution network of agricultural biogas. In other words, a biogas certificate of origin can be obtained only for agricultural biogas production and introduction to the gas network, and in the case when electricity is generated from such biogas, an entrepreneur can obtain a green certificate, not a brown one. At the same time, the legislator has introduced a legal definition of agricultural biogas. It denotes gaseous fuel derived from agricultural raw materials, agricultural by-products, liquid or solid manure, by-products or residues of agro-food industry or forest biomass in the process of methane fermentation. What makes biogas, including agricultural biogas, stand out among other types of primary fuels used for the generation of renewable energy obtained from biomass is the possibility to use components with significant content of water or organic matter, as well as those that require treatment (e.g., slaughter waste), and the basic distinction here is the fact that biogas is obtained through the process of methane fermentation.

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4 Cf. Regulation of the Minister of the Environment on detailed technical conditions for qualifying a part of energy recovered from heat treatment of municipal waste (Journal of Laws of the Republic of Poland, 2010, No 117, item 788)

5 Journal of Laws of the Republic of Poland, 2010, No 21, item 104
Thus, pursuant to the definition worded in such a way, agricultural biogas is a gaseous fuel identified according to the type of raw material used in the process of its production. The range of designates from which agricultural gas can be derived has been questioned ever since this solution was put in place\(^6\), and that is why there are now plans to change that definition. According to the most recent, proposed amendment to the Energy Law, agricultural biogas will be defined as a gaseous fuel obtained in the process of methane fermentation of agricultural raw material, agricultural by-products, liquid or solid manure, by-products or residues from the processing of agricultural produce of forest biomass, except for the gas obtained from material from sewage treatment plants and landfills.

C) „Colors of Cogeneration“

As far as support for cogeneration sources is concerned, analogically to RES support, it is set forth in the Energy Law that the fact of electricity generation from a highly efficient cogeneration source is acknowledged with the relevant certificate of origin of that electricity. However, support mechanism for electricity from cogeneration is a multi-layered mechanism, in the sense that the type of support is contingent on the capacity of the source, as well as the types of fuels applied. At the same time, the support as such has been channeled to appropriately developed generation technology which is conducive to primary energy savings (with reference to distributed systems), used for the purpose of generation of both electricity and heat in one technological process. Cogeneration means simultaneous generation of heat and electricity or mechanical energy in one technological process. It should be remembered, however, that support is provided for the so-called highly efficient cogeneration, i.e. the one that triggers adequate savings in primary energy consumed by cogeneration unit. With respect to the source of electricity with installed capacity below 1 MW, any amount of savings is acceptable, and in the case of other units savings must be equivalent to no less than 10% compared with the generation of electricity and heat at distributed systems with efficiency reference values for distributed generation\(^7\).

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“Yellow certificates”
Support scheme in the form of the so-called yellow certificates has been targeted at the entities that generate electricity in highly efficient cogeneration fired by gaseous fuels (irrespective of the capacity installed) or with total electrical capacity installed at source below 1 MW. The issue of source capacity is evaluated in the context of a specific energy enterprise rather than the generation units owned by the producer. Licenses are issued for a total capacity installed with a given entrepreneur, irrespective of the number of generation units involved. The notion of gaseous fuels, in turn, denotes high-methane or nitrogen-rich natural gas, including liquefied natural gas and propane-butane or other flammable gas, supplied via the gas network, and agricultural biogas, regardless of their purpose. At the same time, neither the law nor the regulation on the detailed conditions for gas system operation contain a definition of gas network. Thus, taking into account definitions of a network, transmission network and distribution network set forth in the Energy Law, gas network should be understood as the network whose operation in within the responsibility of a relevant system operator (transmission or distribution, or a combined system), and network substitute in the form of a direct pipeline.

Concluding, whenever a cogeneration unit is fired with gaseous fuels or it is a unit with total capacity below 1 MW, regardless of the type of fuel used, it may obtain support in the form of yellow certificates.

“Purple certificates”
Support in the form of cogeneration certificates of origin in the shape of the so-called purple certificates has been targeted at units fired with methane released and captured during underground mining work in active, liquidated or closed down hard coal mines, or with gas obtained from biomass processing in the meaning of Article 2, paragraph 1, point 2, Law on Biocomponents and Liquid Biofuels, regardless of capacity installed in such units.

Purple certificate support mechanism is available, first of all, for the entities that utilize methane obtained from mines, and secondly for the entities that use biomass methane. At the same time, for the purpose of specification of the kind of material from which this

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type of biogas can be obtained, the legislator did not refer to the definition of biomass presented, for example, in renewable sources regulation\textsuperscript{10}, but to the definition set forth in Biocomponents and Biofuels Law. In accordance with the latter Law, biomass should be understood as solid or liquid substances of plant or animal origin which are biodegradable, derived from products, waste and residues from agricultural and forest produce, industries processing such produce, as well as a part of other waste that is biodegradable, and in particular agricultural commodities. In turn, agricultural commodities are the plants grown on farm land or a part of that land intended for the manufacturing of bio-components, and in the case of cogeneration support system - biogas from biomass. In other words, each type of biogas is eligible for the support scheme in the form of purple certificates (agricultural biogas, which in every state of aggregation and regardless of the manner in which it is delivered to electricity generation installation is considered by definition as a gaseous fuel, can be supported through a yellow or purple certificate, and the choice is with the applicant.) Purple certificate support scheme can be applied, for example, for the generation of electricity from biogas obtained from landfills or sewage treatment plants.

\textit{„Red certificates”}

Generation sources with total capacity installed above 1 MW or those fired with fuels other than gaseous fuels, mining methane or biogas from biomass, may benefit from a red certificate support scheme. Each generation unit which generates electricity from highly efficient cogeneration is thus eligible for a support scheme. In other words, if a unit does not qualify for yellow or purple certificate support scheme, it can always resort to the red certificate support mechanism.

D) \textit{„Several colors” for one cogeneration source}

Currently, according to the Energy Law it is possible to obtain several cogeneration certificates for the generation of electricity in one generation source (unit). The principles governing participation in the support scheme for entities co-firing gaseous fuels, methane from coal mines and gas obtained from biomass with other fuels were

\textsuperscript{10} Regulation of the Minister of Economy of 14 August 2008 on detailed scope of obligations in respect to obtaining certificates of origin and submitting them for cancellation, payment of a substitution fee, purchase of electricity and heat from renewable energy sources, as well as the obligation to confirm the data on the amount of electricity produced from a renewable energy source (Journal of Laws of the Republic of Poland, No 156, item 969, as amended).
legally sanctioned. The rule is that when various fuels are co-fired, electricity generated from highly efficient cogeneration eligible for support intended for gaseous fuels, mining methane or gas from biomass may include a portion of electricity equivalent to chemical energy of these types of fuels in chemical energy of fuels utilized for the generation of total energy, calculated on the basis of **actual calorific values of particular fuels.** Thus, depending on the amount of utilized fuel type, one can obtain relevant categories of certificates of origin from cogeneration testifying to the fact of electricity generation from highly efficient cogeneration. That means that one generation unit may obtain both yellow, purple and red certificates in the part corresponding to the utilization of relevant fuels eligible for each ‘color’ of support. At the same time, an additional requirement for the source that wants to benefit from that type of support was introduced – namely, the unit must be ‘metered’. Cogeneration regulation is supposed to define requirements related to measurements, registration and manner of calculation of electricity and utility heat produced in highly efficient cogeneration in cogeneration units referred to in Article 9l, paragraphs 1 and 1a, including the requirements connected with **direct** metering of the quantities of electricity and utility heat as well as the fuels utilized for their generation, made for the purpose of cogeneration certificate issuance process.

**E) „Rules governing combinations of certificates”**

In the amended Energy Law there is unambiguous treatment of quite controversial principles regarding the so-called ‘accumulation of support’, whereby it is possible to obtain several certificates for the ‘generation of 1 MWh’ of electricity. Changes developed in that regard can be summarized under three basic solutions:\(^{11}\):

1) Compliance with the requirement referred to in the Energy Law, Article 9a, paragraph 1, point 1, **does not include** redeemed certificates of origin issued for electricity generated in a renewable source of energy that consumes, in the processing, energy derived from agricultural biogas (green certificate), in respect of which energy enterprise involved in the production of agricultural biogas **has already applied for** or **will apply for** a biogas certificate of origin (brown certificate),

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2) President of ERO **issues certificates of origin and cogeneration certificates of origin** for electricity generated in a renewable source of energy which also meets the conditions of highly efficient cogeneration (e.g., agricultural biogas plant generating energy in highly efficient cogeneration may obtain, at the same time, green certificates and yellow certificates for the entire production).

3) For a unit of electricity generated from highly efficient cogeneration which also meets the requirements for eligibility for support mechanism targeted at the sources up to 1MW or fired with gaseous fuels (yellow certificates) and fired with methane obtained from mines or gas derived from biomass processing (purple certificates), **one and only one type of cogeneration certificate of origin shall be issued**.

In summary, one should note that the proposed amendment to the Energy Law first of all allows for concurrent use, in some specific cases, of support mechanisms intended for renewable and cogeneration sources, and secondly it eliminates the possibility of obtaining the support twice in the situation when the entrepreneur wants to or has benefited from support mechanism developed for agricultural biogas and was granted one of available support schemes for highly efficient generation.

**Source:**
Zdzisław Muras, PhD, Director for the Department of Energy Enterprises of Energy Regulatory Office, „Rainbow vertigo” – or a description of Polish support schemes for renewable and cogeneration sources, Clean Energy 2011, No. 5.