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Preferential Feeding Tariff For Electricity From Biomass In Bulgaria For European Green Economy

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Abstract— The paper reviews the influence of the preferential feeding tariffs for electricity from biomass on the realization of the goals to achieve the European Green Deal for Sustainable Energy.

Keywords— Biomass; electricity feeding tarif; green deal

As underlined in 2019 Europe Sustainable Development Report (SDR) [1], the EU and its member countries next years will face the greatest challenges on goals related to climate, biodiversity, and circular economy. One of the priorities is to achieve a European Green Deal for Sustainable Energy. On the first place, the European Green Deal includes an EU-wide strategy to fully decarbonize the energy system.

The European Union (EU) suffers from insufficiency of fossil energy sources. This fact forces the governments of member countries to develop the use of renewable energy sources (RES). Special feeding tariffs are in force aiming stimulation of development of RES. The substitute of fossil fuels with RES offers both economic and environmental advantages. The economic advantage is related to the use of domestic sources instead of imported natural gas and oil, which creates economic independence. The environmental one - respectively to decreasing the level of exhausted and greenhouse gases (GHG) and fine dust particles in the air. Improvement of air quality and combating climate changes are the core of green development. Both – the use of domestic sources and substitution of fossil fuels with RES, are important elements of green future.

Bulgaria is abundant with biomass resources which is predisposition for the large use of bioenergy. The total area of Bulgaria comprises 110,910 sq km, of which the land is 110,550 sq km and the water takes 360 sq km. Approximately 60% of the territory of Bulgaria (flat countries and hills) is occupied by arable lands and agricultural breeding: arable land - 44%; permanent crops - 2%; permanent pastures - 14%. The forestry takes the second place with about 30% of the territory. Forests occupy the medium- and high-mountain regions (Fig. 1).

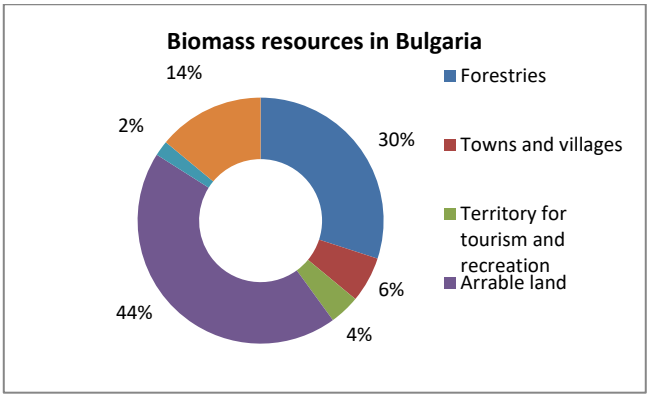

Fig. 1 – Biomass resources in Bulgaria [2]

Last decades the production of energy from biomass underwent rapid development, caused to the availability of biomass and the problem with of climate changes. Considerable numbers of power plants for generation of electricity and recent years for cogeneration of heat and power have been installed. Preferential prices for bioenergy as well as for other RES have been settled. Preferential feeding tariff for energy from RES is subject of changing every year. The tariff for energy from biomass is presented in Table 1, based on the latest decision of Energy and Water Regulation Commission from 2019 [3].

Table 1 - Preferential Feeding Tariff for Electricity from Biomass

Type of Power Plant (year of installment)	Price, BGN/MWh
Power plants with an installed capacity up to 5 MW operating by thermal gasification of wood biomass derived from wood residues from forest clearance, forest pruning and other wood waste, combined cycle (2015):	349,48
Power plants with an installed capacity of more than 1.5 MW to 5 MW, operating indirectly through the use of biomass from plant and animal substances (2014)	388,89

Power plants with an installed capacity of more than 500 kW up to 1.5 MW, operating by indirect use of biomass of plant and animal substances, combined cycle (2014)	452.52
Power plants with an installed capacity of up to 5 MW by thermal gasification of biomass derived from wood residues and wastes from forest clearing and pruning, combined cycle (2014)	351,38
Power plants with an installed capacity of up to 5 MW from biomass derived from wood residues, biomass, forest clearing, forest pruning and other wood waste (2013)	206,06
Power plants with an installed capacity of up to 5 MW from biomass derived from wood residues, biomass, forest clearing, forest pruning and other wood waste, by cogeneration (2013)	294,45
Power plants with an installed capacity of more than 5 MW from biomass derived from wood residues, biomass, forest clearing, forest pruning and other wood waste (2013)	138,28
Power plants with an installed capacity of more than 500 kW up to 1.5 MW, operating by indirect use of biomass from plant and animal substances, by cogeneration (2013)	459,06
Power plants with an installed capacity of up to 500 kW operating through the indirect use of biomass from plant and animal substances , by cogeneration (2013)	461,40
Power plants with installed capacity up to 5 MW by thermal gasification of biomass and / or biodegradable fractions, cogeneration (2013)	390,21
Power plants with installed capacity up to 5 MW by thermal gasification of biomass and / or biodegradable fractions, cogeneration (2012)	360,20
Power plant with an installed capacity of more than 5 MW, working with wood residues, biomass derived from forest clearing, forest pruning and other wood waste (2012)	149,52
Power plant with an installed capacity up to 5 MW, working with wood residues, biomass derived from forest clearing, forest pruning and other wood waste (2011)	235,94
Power plant with an installed capacity up to 5 MW, working with wood residues, biomass derived from forest clearing, forest pruning and other wood waste, combined cycle (2011)	300,35
Power plant with an installed capacity of more than 5 MW, working with wood residues, biomass derived from forest clearing, forest pruning and other wood waste (2011)	149,48
Power plants with an installed capacity of more than 150 kW up to 1 MW, operating by indirect use of biomass from plant and animal substances. (2011)	437,49
Power plants with an installed capacity of up to 5 MW operating through thermal gasification of biomass and / or biodegradable fractions, combined cycle (2011)	392,72

Preferential prices are changing in the years and depend on the technology and power of the generating plants.

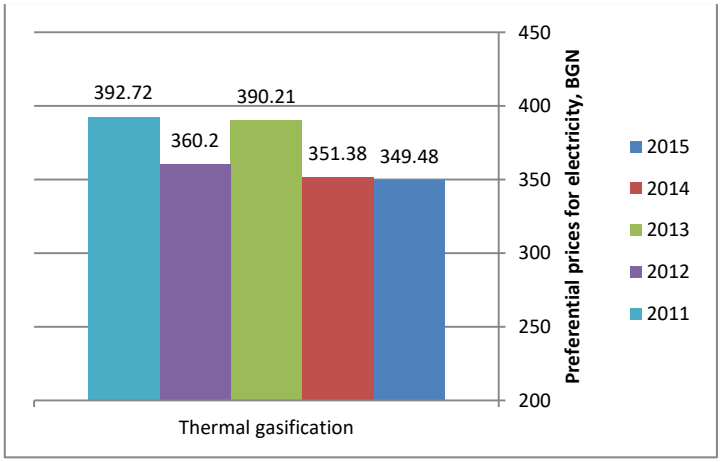

Fig. 2 – Development of preferential tariff for electricity generated by Power plants operating by thermal gasification of wood biomass, by years.

On Fig. 2, the development of preferential tariff for electricity generated by power plants operating by thermal gasification of wood biomass, in the years is presented. Higher prices accounted for 2013 and 2011, are settled for cogeneration of heat and power. Very slight reduction of prices in the years can be noticed.

Preferential feeding tariff depends also on the technology used for power generation (Fig. 3). Lowest price is settled for power plants operating by direct combustion of biomass derived from wood residues, biomass, forest clearing, forest pruning and other wood waste, with installed capacity more than 5 MW, followed by the same type plants with capacity between 1,5 and 5 MW. From the diagram in Fig.3 it can be seen that the lower the installed capacity the higher price is. Depending on the technology the higher prices are for electricity from power plants, operating by indirect use of biomass from plant and animal substances. From Fig.3 it can be seen also that highest prices are for power plants with installed capacity less than 500 kW , followed by the plants with capacity in the interval 500-1500 kW.

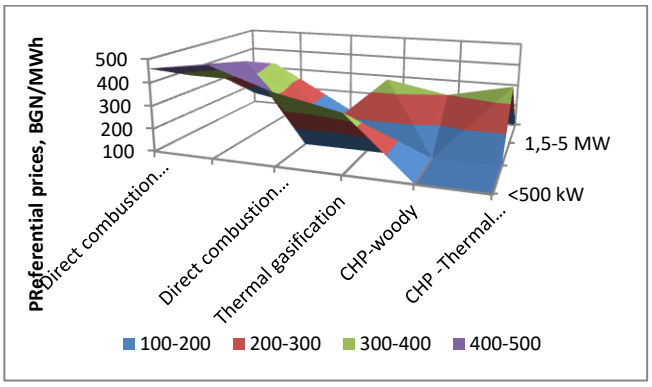

Fig. 3 – Preferential prices for different operating plants and different installed capacity.

Preferential feeding tariff for green electricity aims to stimulate the development of this branch by making the investment in creating power plants for green energy more attractive. In the same time, it should stay acceptable for the customers. This balance is in the base of yearly decision about the prices of electricity.

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