VIII International conference
SUSTAINABLE POSTHARVEST AND FOOD TECHNOLOGIES - INOPTEP 2023
Subotica – Palić, hotel Elitte Palić, 23. – 28. april 2023.

THE EXPERIENCES OF THE REALIZATION OF PV POWER PLANTS AFTER IMPLEMENTATION OF THE PROSUMERS STATUS

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INTRODUCTION

In the close period after the Law on Energy has been changed and the Decree on privileged power producer (renewable energy sources), between 2010. and 2016., approximately 10 MW of PV power plants had been built. Since the decree has limited the quotation for the privileged power producer status at exactly the same amount (10 MW), and was therefore filled the further interest in installation of PV power plants somewhat died out.

After the long wait, when political conditions have been met and new concept of incentive measures have been agreed upon, the wait was over. In 2021. the new Law on use of renewable energy sources has been adopted and appropriate Law on energy was changed.

MATERIAL

The Republic of Serbia is a country in the southeast of the continent, meaning that compared to most of the European countries it has better solar potential. Total yearly global radiation for the horizontal plane in Serbia ranges from 1200 kWh/m^2 and 1500 kWh/m^2, based on the PVGIS estimate. This amount of solar energy makes the specific system production range from 1100 kWh/Wp to 1300 kWh/kWp.

The improved Law on energy and new Law on use of renewable energy sources modified the incentive measures in regard to previous legislation. New law for the fist time defines energy production or self-consumption, called the prosumer status, where previously passive power consumers become an active member in the energy market with the possibility of energy management based on the available production and consumption.

DISCUSSION

The comparative analysis on the developed project in prosumer status, for household and agricultural subject will be presented. Net metering for households meant that the surplus of delivered quantity of electrical energy within the month will reduce the net measurement of electrical energy during the following month. Net calculation that is reserved for industry subjects means that surplus of delivered quantity of electrical energy is calculated within one month and charged based on the contract between the prosumer and guaranteed supplier.

The exemplary household within the manuscript has a higher than average consumption in regard to the national average in Republic of Serbia. This is due to heating system that constitutes from heat pump heating and ventilation system, reaching yearly energy consumption of 12398 kWh. Monthly average achieved 1033,2 kWh, while the new prosumer status offered the possibility of financial benefits, since the heat pump consumption is usually in the winter months when PV system production is the lowest. The consumption of the household, the estimated production of the PV power plant and the monthly net energy is shown in figure 1.

The example of agricultural prosumer status is presented for a pig farm in Vojvodina with the installed power of 150 kW. The estimated production for this powerplant annually is 211,9 MWh. Monthly production and consumption (in the higher tariff - HT) is shown in figure 2. Total consumption in the higher tariff is 819,8 MWh, while the complete energy need for the farm annually is 1165,8 MWh.

Figure 2 shows the balance of electrical energy, considering HT, where it is clear that PV power plant with the installed power of 150 kW would not have a surplus energy provided to the DSEE.

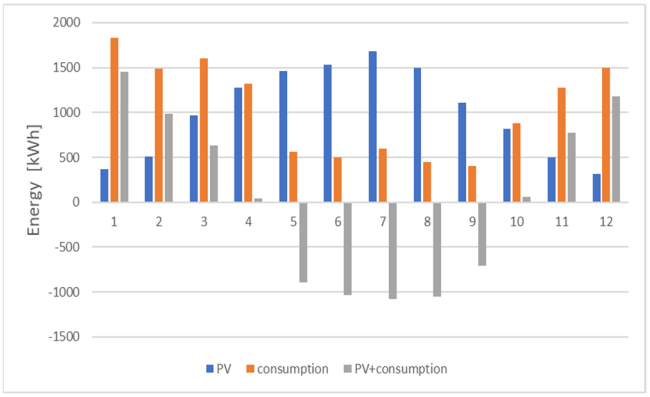

Fig. 1. Energy balance for household

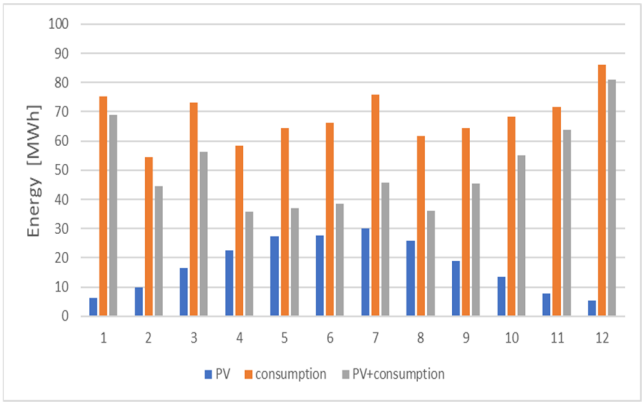

Fig. 2. Energy balance for livestock farm

CONCLUSION

Previously untapped potential of solar energy in Republic of Serbia can now be utilized by the widest variety of people, although, truth be told, due to the system inertial and different interpretation of the legislation there are some inconsistencies and hurdles for full utilization.

In order to achieve full effects of the prosumer status, the most important thing in the long term is the balance between consumption and the production of electrical energy.

With all the things considered, since the prosumer status was introduced, by the end of February of 2023, in Republic of Serbia there were 6185,4 kW of PV power plants installed for the households, while non-households installed 5340,3 kW in total.

Key words: photovoltaic power plants; prosumers status; agriculture.