

ECONOMIC EVALUATION OF BIOGAS PRODUCTION

Zuzana Kapustova
Slovak University of Agriculture, Slovakia
zuzana.lajdova@gmail.com

Jan Lajda
Slovak University of Agriculture, Slovakia
lajda.j@gmail.com

Jaroslav Kapusta
Slovak University of Agriculture, Slovakia
kapustaspu@gmail.com

Peter Bielik
Slovak University of Agriculture, Slovakia
peter.bielik@uniag.sk

Abstract:

Anaerobic digestion is a microbial process that occurs in the absence of oxygen where a community of microbial species breaks down both complex and simple organic materials, ultimately producing methane and carbon dioxide. Biogas refers to a secondary energy carrier that can be produced out of many different kinds of organic materials and its options for utilization can be equally versatile - biogas can be used to generate electricity, heat and biofuels. Producing energy from biomass via anaerobic digestion (AD) has experienced a lot of attention in recent years. Primary, the idea of the technology was waste management mainly in livestock production, waste of which represents an intensive agriculture's externality. It seems to be a brilliant solution for two of the main EU's issues – volatile business environment of farmers and limited conventional energy resources. The aim of the paper is to analyze economic performance of biogas sector and financial benefits of biogas plants. Therefore, a model of biogas plant in Slovakia was constructed for calculation of financial indicators as follows: net present value, payback period and estimation of ceiling price of input material. Calculation, based on maize silage forecast, predicts positive net present value. More accurately, the investment since 2013 of about 3.5 million EUR with additional operation costs is supposed to be worth 745 049.01 EUR in 15 years. The payback period of 10 years is estimated according to cumulated cash flow and also cumulated discounted cash flow. The analysis indicates economic viability of the sector, which is however, based on the accuracy of the silage maize price outlook. Such a long term price prediction tends to be unreliable due to the too many random factors effecting its price development.

Keywords: Agriculture, Biogas, Biomass, Economic Analysis, Investment Costs