

ENVIRONMENTAL AND ECONOMICAL ASSESSMENT BIOGAS PLANTS IN BELARUS

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Agricultural production is based on the use of natural resources that must be managed wisely. Environmental protection should be based on the exclusion of such methods and technologies that can lead to negative changes in the landscape. Conversion of animal waste to biogas through anaerobic digestion processes can provide added value to manure as an energy resource as fertilizer and reduce environmental problems associated with animal wastes.

From USSR times Belarus has a huge livestock farms (cattle up to 4000 and pigs up to 30 000 animals per farm) so we have a high negative environmental impact at the regions of their localisation. Nowadays Belarus has:

51 large cattle farms (total 200 000 heads);

69 huge pig plants (total 1,2 million heads)

17 large poultry factories and 48 poultry farms (total 21 million heads)

So, estimated amount of biogas production could reach 503.7 million cubic meters per year, equivalent to 433.2 thousand tons of fuel equivalent.

Existing in Belarus methods of biogas plant economic efficiency use only profits from the production of electricity and heat. In this case, our estimation of biogas plant in the poultry plant "Belorussky" (Minsk region) shows the return of consists up to 20 years at current energy prices.

Bad developed economical methods assessment of environmental effect from biogas plants implementations don't allows have profit assessment of environmental effects of biogas plants in Belarus.

We can distinguish the next effects from the use of biogas plants:

- increase the productivity of agricultural land;
- reducing the need for chemical fertilizers;
- reduces field infestation by weed's seeds, helminthes and other pathogens;
- reducing the pesticide need;
- reducing emissions of methane (greenhouse gas);
- desodoration of the territories;
- decrease water pollution

We can estimate only indirect benefits from the implementation of these environmental effects because absence of prices to a healthy environment and good methods of environmental and economic assessment in complex.

We tried to make an economic and environmental analysis of biogas complex activity in the Municipal Agricultural unitary Enterprise «Pedigree State Farm-Combine «Zapadny» (Brest region). We used only the resulting price of electricity from the combustion of biogas, the cost of sludge as the organo-mineral fertilizers. The results of the calculation suggest the feasibility of the use of biogas technology in the Republic of Belarus (return on investment is about 4-5 years). Additional benefits can be supplied for increasing of yield and reduction greenhouse gas emission, pesticide use, fuel saving from reduction of plant protection treatment.