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# "ECONOMICS FOR ECOLOGY"

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For scientists, scientists, students, graduate students, representatives of business and public organizations and higher education institutions and a wide range of readers.

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## STIMULATING BIOGAS PRODUCTION: ECONOMIC JUSTIFICATION*

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Biogas plants are specialised facilities designed to produce biogas through organic waste processing. Organic materials such as plant residues, solid waste, manure, and other biomass undergo biological decomposition in specific conditions where oxygen is absent. This process produces biogas, the main components of which are methane, carbon dioxide, hydrogen, and other gases. More details on the biogas production process can be seen in Figure 1 [1].

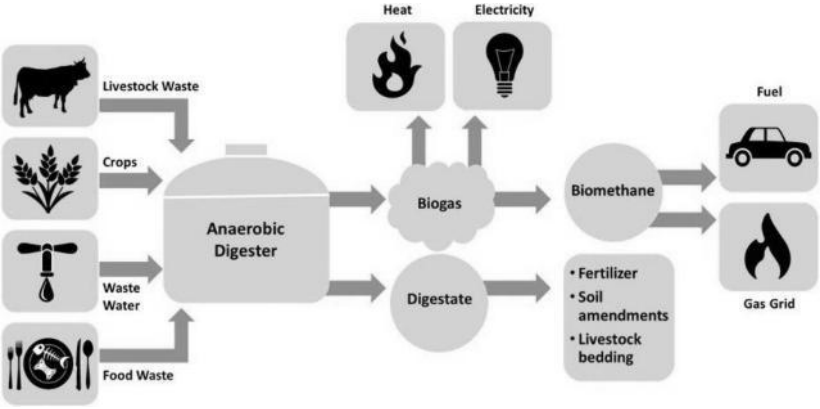


Fig. 1. The Process of Biogas Creation

The effective utilisation of organic waste in biogas plants enables its conversion into valuable fuel, which can be used for generating electricity and heat. This contributes to reducing costs associated with waste disposal, as they can be processed on-site. Biogas plants can have a significant impact on reducing greenhouse gas emissions. Utilising biogas as an energy source helps reduce methane emissions produced during the decomposition of organic waste. This makes biogas an effective tool in combating climate change.

The construction of biogas plants can also stimulate the development of the local economy by creating new job opportunities and promoting infrastructure development in the vicinity of the facilities. This can lead to attracting investments and fostering entrepreneurial activity in the region.

The efficiency of waste utilisation and the establishment of energy independence make constructing biogas plants a crucial step towards sustainable development and environmental resilience [2].

Additionally, the construction of such a plant reduces costs associated with waste disposal. Building a biogas plant allows the process of organic waste on-site,

enabling efficient utilisation of waste as an energy source and reducing the need for waste disposal to landfills or other disposal sites. Reducing waste disposal costs can significantly alleviate local governments' and businesses' financial and environmental burdens. This opens possibilities for reinvesting these funds into developing other sectors, such as infrastructure, education, and healthcare. Furthermore, reducing emissions through the efficient use of organic waste can also decrease environmental impact and improve air and soil quality in the region [4].

It can become a crucial step in implementing innovative waste management technologies and creating sustainable energy systems. By reducing waste disposal costs and simultaneously creating an efficient energy source, biogas plants can become a vital element in building a sustainable and environmentally friendly future.

Biogas plants play a crucial role in providing a sustainable renewable energy source. Utilising organic waste for biogas production allows for closing the loop of resource utilisation and reducing dependence on unstable energy sources such as coal or oil. Establishing a sustainable energy source is a crucial aspect of developing modern energy systems, which need to be environmentally clean and efficient [6].

The construction of biogas facilities can stimulate local economic development by creating new job opportunities and providing additional income for local businesses and service providers. Additionally, investments in the construction and operation of biogas plants can contribute to infrastructure development and improve the overall quality of life in the region.

The analysis of the economic viability of building a biogas plant can reveal its potential for generating profit and ensuring compliance with environmental standards. The reduction in costs associated with waste disposal and the utilisation of organic waste, along with creating a sustainable energy source, can make biogas plants economically viable investment projects.

Utilising biogas as an energy source can contribute to reducing greenhouse gas emissions and minimising the impact on the environment. Additionally, the efficient use of organic waste helps conserve natural resources and reduces the adverse effects on ecosystems [3].

In summary, constructing a biogas plant can offer significant economic and environmental advantages. From the perspectives of financial feasibility and job creation to reducing greenhouse gas emissions and preserving natural resources, these projects can represent a step towards sustainable development and environmental resilience. Integrating such technologies into production processes can improve the quality of life and ensure energy independence in various regions.

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