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# **"ECONOMICS FOR ECOLOGY"**

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## TABLE OF CONTENTS

<i>Yevhen Mishenin, Inessa Yarova</i>	FACILITATION IN THE MANAGEMENT OF SUSTAINABLE SPATIAL DEVELOPMENT OF FORESTRY	6
<i>Yevhen Mishenin, Inessa Yarova</i>	ENVIRONMENTAL TAXATION IN THE SYSTEM OF SOCIO-ECOLOGICAL AND ECONOMIC SECURITY	8
<i>Konoplenko Andrii</i>	ANALYSIS OF THE IT OUTSOURCING MARKET: TRENDS AND FORECASTS	11
<i>Wenyan Liu</i>	A CITATION AND PUBLICATION PERFORMANCE ANALYSIS ON INNOVATION, BUSINESS AND DIGITALISATION	13
<i>Vladyslav Piven, Oleksadra Karintseva</i>	THE IMPACT OF DEMOCRACY ON SUSTAINABLE DEVELOPMENT: A CASE OF THE EU	15
<i>Raminta Vaitiekuniene, Kristina Sutiene, Rytis Krusinskas, Bohdan Kovalov</i>	FINANCIAL AND INNOVATION PERFORMANCE OF THE COMPANIES IN THE CONTEXT OF GREEN DEAL TARGETS	17
<i>Artem Borukha, Oleksandr Kubatko</i>	DISRUPTIVE TECHNOLOGIES TO ENSURE ECONOMIC AND RESOURCE SECURITY OF UKRAINE	21
<i>Iryna Burlakova, Anastasiya Kuzchenko, Zumrut Alic</i>	THEORETICAL AND INSTITUTIONAL FOUNDATIONS OF SOCIAL SOLIDARITY ECONOMY	23
<i>Chang Shengchun</i>	THE IMPACT OF THE DIGITAL ECONOMY ON CARBON REDUCTION POTENTIAL	25
<i>Mykhailo Chortok</i>	THE ROLE OF SOCIAL SOLIDARITY ECONOMY FOR SUSTAINABLE DEVELOPMENT ESTABLISHING	29
<i>Yuliia Chortok, Solodovnyk O.</i>	FAIR-TRADE AS A TREND FOR SOCIAL SOLIDARITY ECONOMY DEVELOPMENT	31
<i>Du Shutong</i>	ESG POLICY IN BANKING AND FINANCES SECTOR: CASES OF EUROPEAN COMPANIES	33
<i>Gawel Solowski</i>	MICROBIAL HYDROGEN PRODUCTION'S RECENT ACHIEVEMENTS	35
<i>Inna Koblianska</i>	TOWARDS PROACTIVE POLICY: A FRAMEWORK FOR SAFE AND SUSTAINABLE FERTILISER MANAGEMENT	42

<i>Yuliia Lukianova</i>	PACKAGE LABELING AND SUSTAINABLE DEVELOPMENT	45
<i>Helena E. Myeya</i>	STAKEHOLDERS' ROLE IN IMPROVING SMALLHOLDER FARMERS' RESILIENCE TO CLIMATE CHANGE EFFECTS IN CENTRAL, TANZANIA	49
<i>Anna Shcherbak, Olena Nazarenko</i>	PROJECT-BASED LEARNING AS A METHOD OF FOREIGN LANGUAGE TEACHING	53
<i>Iryna Sotnyk, Maryna Nikulina</i>	STRATEGIC MANAGEMENT IN SMALL IT BUSINESS SECTOR	55
<i>Oleksandra Pavliv</i>	VIRTUAL EXCHANGE PRACTICE AS A PROCESS OF DEVELOPING SOCIOCULTURAL COMPETENCE	57
<i>Vladyslav Piven, Oleksandr Kubatko</i>	ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT: THEORETICAL ANALYSIS OF KEY FACTORS	59
<i>Tetyana Sakhnenko, Viacheslav Voronenko</i>	STIMULATING BIOGAS PRODUCTION: ECONOMIC JUSTIFICATION	61
<i>Iryna Sotnyk</i>	DEVELOPMENT OF REMOTE EMPLOYMENT AS A RESPONSE TO MODERN SOCIAL CHALLENGES IN UKRAINE	64
<i>Iryna Sotnyk, Jan-Philipp Sasse, Evelina Trutnevyte</i>	SHAPING THE DECARBONIZED FUTURE OF THE ELECTRICITY INDUSTRY IN UKRAINE	66
<i>Iryna Sotnyk, Tetiana Kurbatova</i>	COST-EFFICIENT AND GREEN: TRANSFORMING HOUSEHOLD HEATING IN UKRAINE FOR A SUSTAINABLE FUTURE	70
<i>Iryna Ushchapovska</i>	FROM THE LANGUAGE THAT SUSTAINS TO THE LANGUAGE OF SUSTAINABLE DEVELOPMENT	73
<i>Vnuchkova Viktoriia, Chulanova Halyna</i>	GAMIFYING SUSTAINABILITY EDUCATION FOR CULTURALLY DIVERSE CLASSROOMS	76
<i>Wang Fujin</i>	KEY ELEMENTS OF SUCCESSFUL ESG POLICY: EUROPEAN EXPERIENCE	79
<i>Wang Yimeng</i>	THE IMPACT OF DIGITAL ECONOMY ON THE EFFICIENCY OF GREEN TRANSFORMATION IN CHINESE CITIES	81
<i>Kostiantyn Zavrzhnyi, Anzhelika Kulyk</i>	HARNESSING GENERATIVE ARTIFICIAL INTELLIGENCE FOR SUSTAINABLE BUSINESS TRANSFORMATION	84

<i>Amina Gura, Oleksandra Kubatko</i>	FUNCTIONING OF THE ENTERPRISE IN THE CONDITIONS OF WAR: SOCIO-ECONOMIC, ENERGY AND ENVIRONMENTAL CONSEQUENCES	87
<i>Ding Lin, Oleksandra Kubatko</i>	ECONOMIC, ECOLOGICAL AND RENEWABLE ENERGY ASPECTS OF PETROCHINA COMPANY ACTIVITY	90
<i>Tetyana Sakhnenko, Oleksandr Ponomarenko, Oleksandr Kubatko</i>	RESTRUCTURING OF ECONOMIC SYSTEMS IN THE DIRECTION OF ENSURING SUSTAINABLE DEVELOPMENT	94
<i>Jerzy Gilarowski</i>	TOURISM AS A WAY OF DEVELOPMENT AND INTEGRATION OF SUB-SAHARAN AFRICA	96
<i>Ponomarenko Ihor</i>	ECOLOGICAL TRANSFORMATION: CURRENT TRENDS IN THE IMPLEMENTATION OF GREEN TECHNOLOGIES	98
<i>Pavlo Hrytsenko, Tao Senlin</i>	THE ROLE OF VIRTUAL BUSINESS ENVIRONMENTS IN "GREEN ECONOMY" ENTITIES	101

## 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].

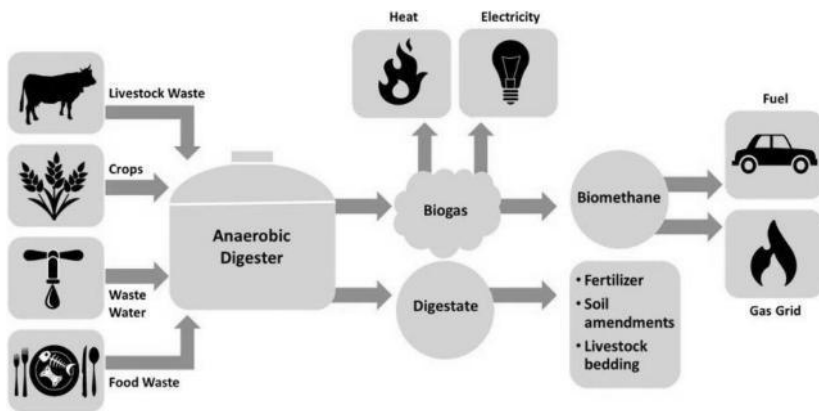


Fig. 1. The Process of Biogas Creation

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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