



# UABIO

## Biogas and biomethane market in Ukraine

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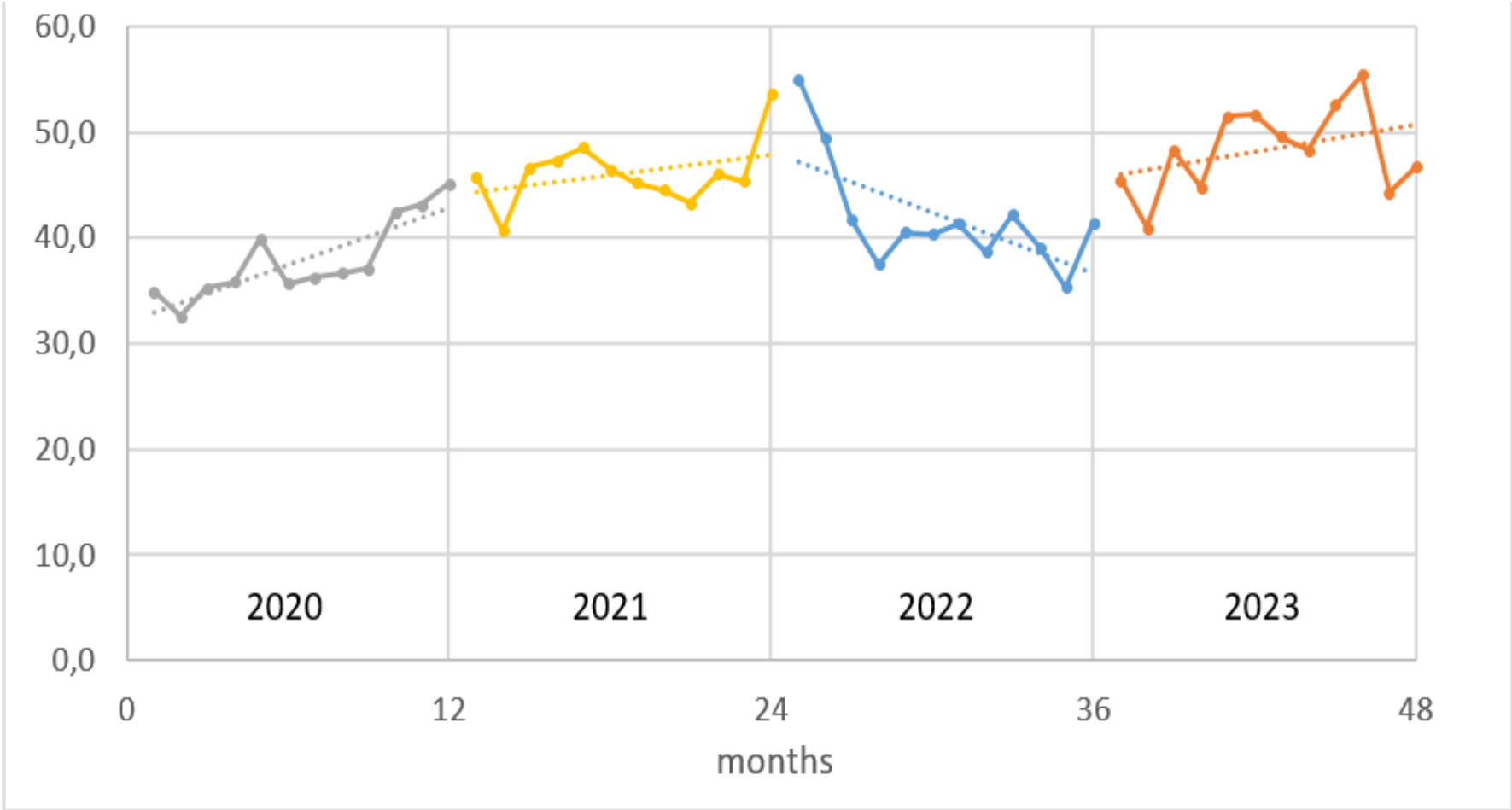
# Biogas/biomethane in Ukraine (2024)

Parameter	Biogas	Biomethane
Installed capacity, MWe	<b>140</b> (33 MW for LFG)	<b>6 mill m<sup>3</sup>/year</b>
Number of plants	<b>83</b> (33 for LFG)	<b>2</b>
Gas networks (km)	33 400	
Gas refilling stations for CNG	~ 300	

- The individual projects ranged from **125 kW<sub>e</sub>** to **26 MW<sub>e</sub>** installed capacity.
- **A wide range** of industries and different types of **feedstock**
- **The first biomethane project** was constructed in April 2023 on the basis of an existing biogas plant



# Power production from biogas in Ukraine in 2020-2023, GW\*h/month



5 Power production from biogas is growing even during the war!



## Why biomethane?

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- Biomethane is completely ready for injection into the gas network today. There is no need for investments in the modernization of gas networks (GTS and GDS) and gas equipment (gas burners, engines, turbines, ...).
- Today, it is the cheapest possible renewable gas.
- Biomethane plants, in addition to biomethane, generate digestate, which can become the main organic fertilizer necessary for the revival of Ukrainian soils.

## Why in Ukraine?

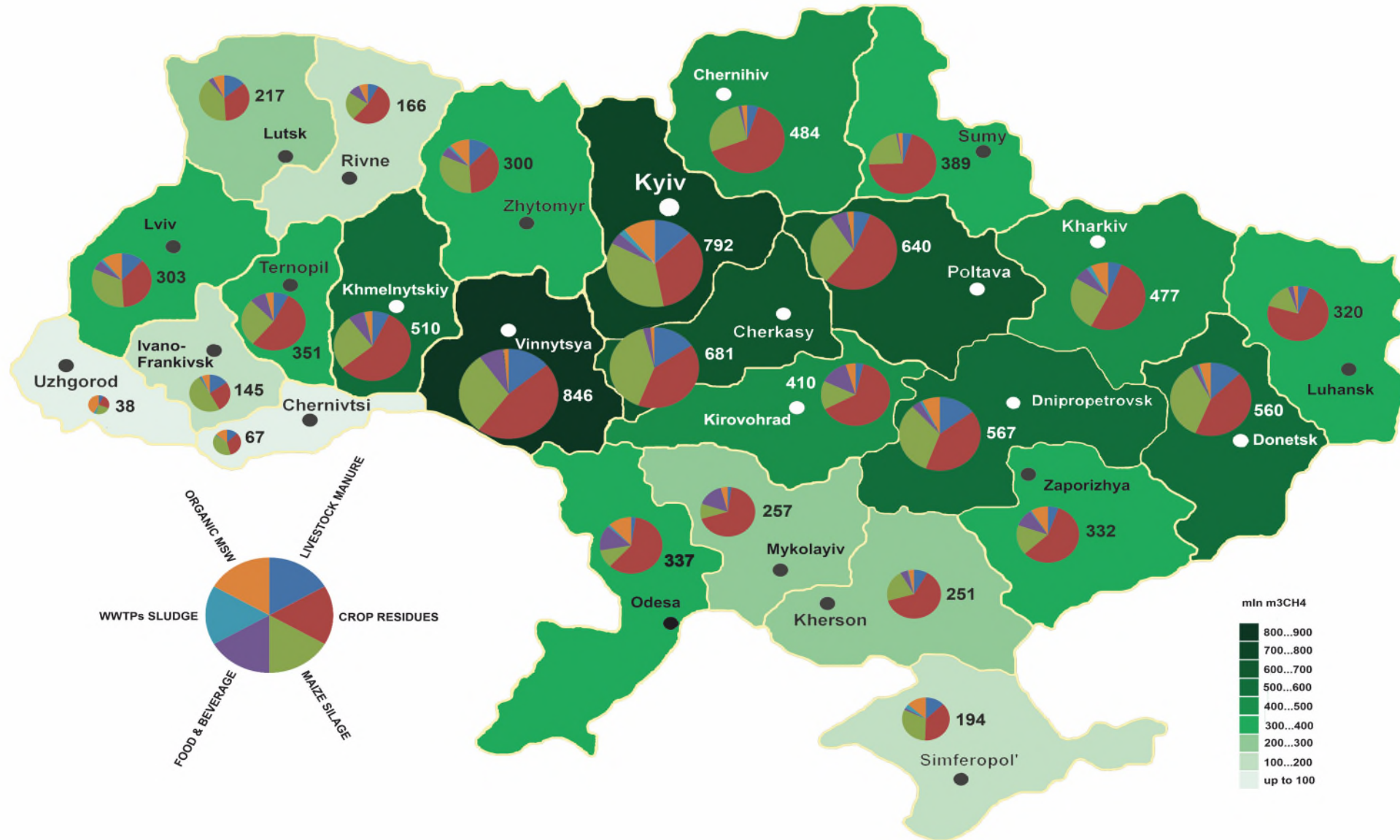
- Ukraine has the largest area of agricultural land in Europe, and, accordingly, one of the best agricultural raw material potentials for biomethane production in the world.
- Ukraine can offer the cheapest raw materials for the production of biomethane and really compete with any countries on the biomethane market.
- Ukraine has a developed system of gas networks (GTS and GDS).
- The structure of agricultural enterprises is favorable for the production of biomethane (a large share of large and medium-sized enterprises).
- The possibility of exporting biomethane to the premium EU market, which has adopted ambitious plans for the production of biomethane (REPowerEU): **35 billion m<sup>3</sup>/year in 2030**. Ukraine can potentially provide up to **20%** of this need.

# Biogas/biomethane production potential in Ukraine

<b> BIOGAS/BIOMETHANE, billion m<sup>3</sup> CH<sub>4</sub>/year</b>	
Biogas from animal waste	0,9
Biogas from harvest residues of agricultural crops	5,2
Biogas from by-products of the food processing industry	0,7
Biogas from municipal solid waste (MSW)	0,5
Biogas from municipal waste water treatment plants	0,1
Energy crops: biogas from corn silage (from 1 million hectares)	3,8
<b>Biogas from cover crops (20% of arable land)</b>	<b>9,8</b>
Biogas from biomass obtained by thermal gasification (10%)	1,0
<b>TOTAL BIOGAS/BIOMETHANE, billion m<sup>3</sup> CH<sub>4</sub>/year</b>	<b>21,8</b>

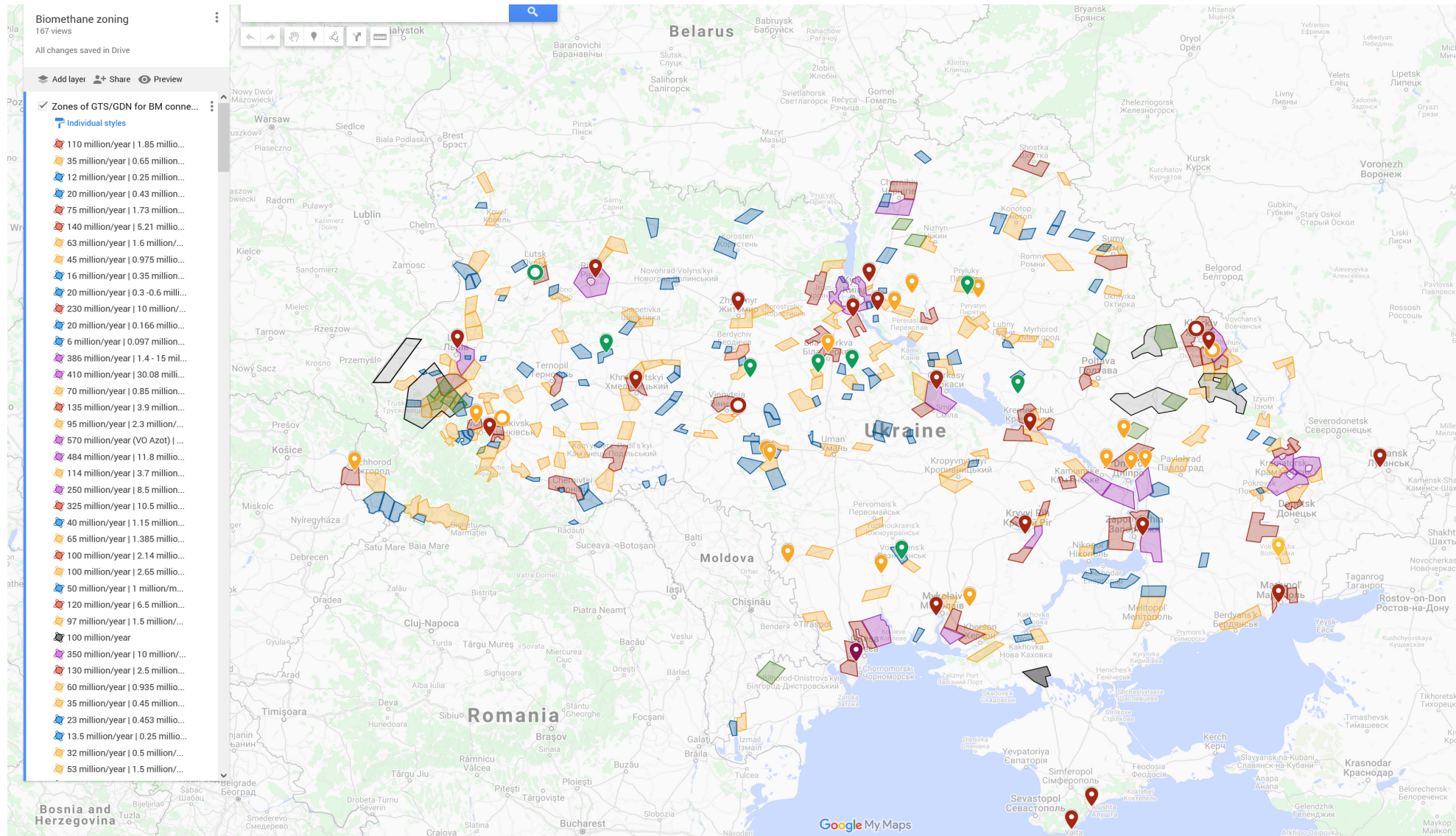
**Ukraine has the highest biomethane potential in the EU!**

# Regional structure of biomethane potential in Ukraine





# Interactive map of optimal zones for location of biomethane plants in Ukraine



Link to the map: [https://www.google.com/maps/d/u/0/edit?mid=1ttZ12uWjd2NxxH-xc3Lin61fN\\_4JrE1D&usp=sharing](https://www.google.com/maps/d/u/0/edit?mid=1ttZ12uWjd2NxxH-xc3Lin61fN_4JrE1D&usp=sharing)

## Feasibility study of biomethane production (10 mill m<sup>3</sup>/year)

Indicator		straw/corn stalks + manure
Straw/Corn stalks price	€/t	40
Biomethane price	€/MW*h	90
CAPEX	mill €	16,3
NPV	mill €	28,2
<b>IRR</b>	<b>%</b>	<b>28,3</b>
Simple payback period	years	3,6
LCOE (biomethane)	€/MW*h	49,7

# Basic legislation implemented in Ukraine for the development of the biomethane sector

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- **Law of Ukraine "On Amendments of some Laws of Ukraine regarding the development of biomethane production"** № 1820-IX from 21.10.2021 p. Definition of the term "biomethane", establishment of the biomethane register and the GoO system for biomethane.
- **Law of Ukraine "On state support of investment projects with significant investments in Ukraine"** No. 3311-IX dated August 9, 2023

For projects on production of bioethanol, biogas and biomethane with total investments more than 12 mill Euro:

- 1) exemption from payment of certain taxes and fees;
- 2) exemption from import duty taxation of new equipment and accessories for it;
- 3) the predominant right to land use of state or communal property;
- 4) provision at the expense of budget funds for the construction of engineering and transport infrastructure or compensation for such construction;
- 5) compensation of costs for connection to engineering transport networks;
- 6) exemption from compensation for forestry production losses.

- **NEURC (the Regulator) amendments** on 8 June 2023 to a number of its resolutions aimed at supporting the development of the biomethane sector in Ukraine. The concept of a Reverse Flow Compressors has been introduced.
- **Law of Ukraine "On amendments to the Customs Code of Ukraine and other laws of Ukraine regarding the peculiarities of customs control and customs clearance of certain categories of goods"**, 3613-IX from 20.03.2024.
- **ORDER of the Ministry of Finance** of Ukraine On making changes to some regulatory legal acts of the Ministry of Finance of Ukraine on customs matters. N 1250/42595 dated August 15, 2024. Custom clearance details for biomethane have been established.



# First Ukrainian Biomethane Plant

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Location: biogas plant of Gals Agro company (Chernihiv reg.) Start of operation: April 2023

Production of **3 mill m3 of biomethane/ year** (eq. 1,3 MWeI) on the base of existing biogas plant of 6,9 MWeI.

Feedstock: manure, sugar beet pulp, corn silage

Upgrading: membrane technology



# Biomethane plant VITAGRO (1 stage)

Biomethane plant with a capacity of **3 mill cubic meters/year** of biomethane

The first phase of the complex will be commissioned by the end of 2023

**Location:** Khmelnytskyi region

Biogas is used to produce biomethane

**Main indicators of the biomethane plant:**

- Processing of pig manure, cattle manure, straw, silage
- Investments – **6 mill. Euro**





# Yuzefo-Mykolayivska Biogas Company LLC

1 – stage- 3.2 MW el.

**Project:** Biogas/biomethane plant first stage 3.2 MW installed capacity, the second stage of **5.2 MW el.** + upgrading to biomethane (amine scrubber).

**Location:** village Mykhaylyn, Vinnytsia region.

**Biogas** is used:

- 1) Production of electricity and heat.
- 2) Replacement of natural gas.
- 3) Production of biomethane (in progress).
- 4) Raw materials: beet pulp, sugar beet tails, chicken litter, apple pulp, straw.

**Investments – \$11 million Euro (without the biogas upgrading station).**



1 and 2 – stages 5.2 MW el.





## Biomethane projects planned for launch in Ukraine in 2024

N	Company	Location	Capacity, million m <sup>3</sup> /year	Connection	Sustainability certificate
1	Hals Agro LLC	Chernihiv region	3.0	GDN	ISCC
2	VITAGRO group of companies	Khmelnyskyi region	3.0	GDN	ISCC
3	"Theofipol Energy Company" LLC	Khmelnyskyi region	56.0	GTN	ISCC
4	Hals Agro LLC	Kyiv region	3.0	GDN	
5	"YUM LIQUID GAS" LLC	Vinnytsia region	11.0	Bio LNG	
6	MHP	Vinnytsia region	24.0	Bio LNG	ISCC
7	MHP	Dnipropetrovsk region	11.0	GDN	ISCC
	<b>TOTAL</b>		<b>111.0</b>		

First projects are ready to start! Biomethane export start is expected in November 2024.

## UABIO's optimistic scenario of Ukrainian biomethane market until 2050 (under removal of all barriers)

	2027	2030	2035	2040	2045	2050
Production of biomethane, bcm/y	0,25	1,00	2,1	4,5	9,5	20
Export of biomethane, bcm/y	0,13	0,50	1,05	2,25	4,8	10
Consumption in Ukraine, bcm/y	0,13	0,50	1,05	2,25	4,8	10
Number of biomethane plants, units	50	200	420	900	1900	4000
Necessary investments, billion €	0,5	2,0	4,2	9,0	19,0	40
Reduction of GHG emissions, mill t of CO <sub>2</sub> -eq./y	0,6	2,5	5,3	11,3	23,8	50
Created new jobs, thousand units	3,1	12,5	26,2	56,2	118,7	250

Welcome to  
Ukraine and  
UABIO!

UABIO

Bioenergy Association of Ukraine  
[uabio.org](http://uabio.org)

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