

UABIO

Development of Business Model
for Biomethane Production
in Ukraine

Biomethane Road Map for Ukraine

**Long term actions plan including national biogas production target
for 2035 and long-term national incentive package up to 2050**

Deliverable 4.2

Version 1.1

Developed by UABIO

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January 2026

BIOMETHANE ROAD MAP FOR UKRAINE TO 2050

Strategic Purpose and Scope

This Road Map outlines Ukraine's long-term strategic pathway for the sustainable development of the biogas and biomethane sector through **2050**. It establishes a clear vision, milestones and enabling conditions required to mobilise Ukraine's organic resource base and integrate its renewable gas production into both domestic energy systems and European markets.

The Road Map to 2050 defines a phased integration of Ukraine into the European renewable energy and renewable gas markets, in which biomethane, synthetic gases and other renewable gases become core export and system-forming energy carriers. During the period 2025–2026, Ukraine establishes the legal and institutional foundations for full market entry of Ukrainian biomethane into the European Union, including the alignment of regulatory frameworks, connection rules, certification systems and trading procedures. In the medium term, this enables rapid scaling of production, investment mobilisation and deep integration into European energy and climate markets. In the long-term horizon to 2050, this trajectory supports the emergence of an export-oriented renewable gas economy, underpinning Ukraine's energy security, decarbonisation pathway and post-war economic recovery.

The Road Map is aligned with the principles outlined in the **Manual for National Biomethane Strategies** and **Gas for Climate** recommendations on national strategy design and international and European frameworks that guide renewable gas deployment, including:

- **EU Renewable Energy Directive (RED II and RED III)** and associated sustainability criteria;
- **REPowerEU** ambitions to scale biomethane production across Europe;
- **Ukraine's own National Energy and Climate Plan (NECP)** and post-war green recovery strategy.

Ukraine possesses one of the largest technical potentials for biomethane production in Europe, according to the recent studies of Bioenergy Association of Ukraine (UABio) **21.8 billion cubic meters per year** from a diverse range of feedstocks including manure, crop residues, cover and sequential crops, food and agro-industrial wastes, organic municipal waste and other organic biomass.

– Structure of Biomethane Feedstock Potential in Ukraine

Feedstock Category	Biomethane Potential, bcm/year
Livestock waste	0.9
Crop residues from agriculture	5.2
By-products of the food-processing industry	0.7
Municipal solid waste (organic fraction)	0.5
Sewage sludge (municipal wastewater treatment plants)	0.1
Energy crops: maize silage (from 1 million ha)	3.8
Cover crops (20% of arable land)	9.8

Feedstock Category	Biomethane Potential, bcm/year
Biomass via thermal gasification (10%)	1.0
TOTAL	21.8

The structure of Ukraine's biomethane potential is particularly favourable for EU market integration. Almost **45% of the national biomethane potential is derived from cover and sequential crops**, which do not compete with food production and significantly improve soil quality through crop rotation and digestate return. A further **24% originates from crop residues**, and only **17% from maize silage if cultivated on approximately one million hectares**.

By contrast, livestock manure and poultry litter contribute only about **4% of the national potential**, reflecting the long-term decline in animal numbers in Ukraine since 1990. The remainder is provided by food-processing residues (about **3.6%**), municipal organic waste and wastewater sludge (about **2.5%**), and solid biomass gasification (about **4%**).

This structure means that more than **80% of Ukraine's biomethane potential comes from agricultural residues, cover crops and by-products**, fully compatible with **Annex IX of RED II and RED III**, making Ukraine structurally well positioned to supply advanced, sustainability-compliant biomethane to the EU.

Market and Policy Baseline

Ukraine is entering the biomethane market at a time when the EU is rapidly scaling renewable gas under REPowerEU and RED III, creating a strong and durable demand for sustainable biomethane imports. While the Ukrainian biogas sector historically developed almost exclusively through electricity feed-in tariffs and CHP plants, the period since 2021–2022 has marked a structural shift toward **biomethane as a gas-market commodity** that can be injected into natural gas system, used in transport and traded internationally.

This resource base positions Ukraine to contribute significantly to regional renewable gas markets and to advance energy independence. Early commercial activity in the mid-2020s, beginning with the commissioning of the first biomethane plants, has demonstrated initial deployment and catalysed market momentum:

- **In 2023–2024**, four biomethane facilities were commissioned with a total capacity of approximately **41 million m³/year**;
- **As of January 2026**, five biomethane plants are operating in Ukraine with a total capacity of **52 million m³/year**, additional plants under construction are expected to increase annual production to **111 million m³/year** already in the beginning of 2026.

Based on the national biomethane development trajectory, current installed and committed capacity of **111 million m³ per year by early 2026 represents** the first step toward the 2027 target of **0.25 bcm and the 2030 target of 1.0 bcm**. This implies a four-fold increase between 2026 and 2027 and a ten-fold increase by 2030, requiring rapid conversion of existing biogas plants, new investments and accelerated permitting.

Operational biomethane plants in Ukraine (January 2025)

No.	Company	Location (Region)	Capacity, mcm (mill m ³ /year)	Gas grid connection	Sustainability certificate	Production in 2025
1	HALS AGRO LLC	Chernihiv	3.0	GDS	ISCC	0.075 mcm
2	VitAgro Group	Khmelnyskyi	3.0	GDS	ISCC	2.5 mcm
3	MHP	Dnipropetrovsk	11.0	GDS	ISCC	8.7 mcm
4	MHP	Vinnytsia	24.0	Bio-LNG	ISCC	> 5,000 tones
5	YUM LIQUID GAS LLC	Vinnytsia	11.0	Bio-LNG	ISCC	~ 900 tones
Total			52.0			

The number of biomethane plants with a total capacity of almost 100 million m³ per year are planned to be constructed by 2028.

Biomethane plants under commissioning, 2026

No.	Company	Location (Region)	Capacity, mcm/year	Gas grid connection	Project start year
1	Teofipol Energy Company LLC	Khmelnyskyi	56.0	GTS	2026
2	HALS AGRO LLC	Kyiv	3.0	GDS	2026
3	ReAgro (Globinsk Biomethane Plant)	Poltava	3.6	GDS	2027
4	ReAgro (Novoselivka Biomethane Plant)	Poltava	5.1	GDS	2028
5	Agrocomplex Green Valley	Vinnytsia	5.0	GDS	2027
6	Goodvalley	Ivano-Frankivsk	13.0	GTS/GDS	2027
7	Group pf Companies "Technology"	Rivne	4.7	GTS	2028
8	Podillya Food Company	Vinnytsia	5.4	GTS/Bio-LNG	2028
Total			95.8		

The Road Map sets out a phased strategy that balances **near-term market activation** with **medium and long-term scaling**, enabling Ukraine to become a reliable producer and exporter of sustainable biomethane, integrated with EU markets and compliant with international sustainability and tracking systems.

At the same time, a large pipeline of biogas plants originally developed for electricity production is technically convertible to biomethane upgrading, providing a latent asset base that can be mobilised as soon as regulatory and market conditions allow.

The sector also generates **digestate** as a co-product. In Ukraine's biomethane model, digestate is a core element of soil restoration and nutrient recycling. The large-scale deployment of cover crops and crop residues for biomethane production is designed to be coupled with digestate return to fields, improving soil organic carbon, reducing mineral fertiliser use and supporting long-term agricultural productivity.

Ukraine has taken important first steps to build a biomethane market, but the framework is still in a transition phase. The Government Priority Action Plan for **2025** establishes biomethane as a strategic sector and explicitly prioritises the **international recognition of Ukrainian biomethane as a renewable gas** through negotiations with the European Commission and EU Member States. The practical benchmark for success is the creation of **legal and institutional conditions enabling biomethane exports to the EU as a sustainable renewable gas**.

Ukraine's gas transmission system is one of the largest in Europe and already physically connected to EU gas markets, giving the country a strategic advantage for biomethane exports once regulatory alignment is achieved. The policy direction is to treat Ukraine's gas system as part of the **interconnected European mass-balance area**, allowing Ukrainian biomethane injected into the grid to be traded and consumed in EU Member States.

Domestic consumption will grow in parallel with exports. By 2030, Ukraine is expected to consume 0.5 bcm of biomethane domestically, rising to 10 bcm by 2050. This means that biomethane will progressively replace fossil natural gas in Ukrainian industry, transport, district heating and municipal services at the same scale as exports.

Full participation in the European Union Database (**UDB**), mutual recognition of **guarantees of origin**, and EU acceptance of **Ukrainian sustainably produced biomethane** are therefore central to unlocking export volumes. These steps are being actively pursued through technical consultations with the EU and through amendments to Ukrainian gas market legislation and technical codes.

At the same time, domestic demand is a critical pillar of the biomethane market. Biomethane will be increasingly used as a motor fuel for transport and substitute fossil natural gas in steel production, ammonia and fertiliser manufacturing, food processing, and district heating. By 2040–2050, domestic biomethane consumption is expected to reach 4.8–10 bcm per year, enabling the production of low-carbon steel, green ammonia and renewable heat, and strengthening Ukraine's industrial competitiveness under EU carbon regulations.

Ukraine's biomethane sector in 2024–2025 is characterised by:

- early commercial production, with **52–111 million m³ per year** coming online;
- a **very large untapped feedstock potential** that far exceeds current output;
- a **clear political commitment** to integration into the EU renewable gas market;
- **strong investor interest**, still constrained by regulatory, financial and export-related risks.

This baseline places Ukraine at the threshold between **pilot deployment and industrial scale-up**, creating the conditions for rapid growth during 2025–2030 and for full integration into the European biomethane economy thereafter.

Infrastructure and Market Integration

The successful scale-up of Ukraine's biomethane sector depends not only on production capacity but on its full physical, digital and regulatory integration into both the national gas system and the European renewable gas market. Ukraine enters this transition with a major structural advantage: one of Europe's largest and most flexible gas transmission and distribution systems, already interconnected with the EU.

Ukraine's natural gas transmission system (GTS) and distribution system (GDS) are technically suitable for large-scale biomethane injection. Biomethane produced at decentralised agricultural plants can be injected into local distribution networks or directly into high-pressure transmission pipelines, allowing it to flow across the country and into EU markets without requiring dedicated new export infrastructure. This enables both physical export through cross-border interconnections and virtual trading through mass-balance mechanisms.

Biomethane volumes injected into the Ukrainian gas system must be fully traceable, verifiable and compliant with EU sustainability rules. This is achieved through expected Ukraine's participation in the EU UDB, which provides a common mass-balance and traceability platform for renewable gases across Europe.

This integration is reinforced by the alignment of Ukrainian gas quality standards, sustainability certification and guarantees of origin with EU regulatory frameworks, including RED III and its implementing acts. Ukrainian biomethane certified under EU-recognised voluntary schemes becomes eligible for use by EU energy suppliers, industrial consumers and transport operators seeking to meet renewable energy and greenhouse-gas reduction obligations.

Physical infrastructure development focuses on optimising connections between feedstock-rich agricultural regions and the national gas grid. Priority areas are identified where high livestock density, crop production and agro-industrial activity coincide with existing pipeline infrastructure. These regions become biomethane clusters, linking farms, processing facilities, upgrading plants and gas injection points into efficient regional value chains.

Liquefied biomethane (Bio-LNG) adds a second export and utilisation pathway. By liquefying biomethane at strategic locations, Ukraine gains access to decarbonised heavy-duty transport, inland shipping, rail freight and maritime fuel markets, both domestically and for export. Bio-LNG terminals also enable access to EU transport corridors and future low-carbon shipping fuels markets.

Market integration is further strengthened by fiscal and regulatory neutrality. Biomethane exports are not subject to discriminatory customs duties or taxes in the EU and Energy Community countries, ensuring that Ukrainian producers compete on equal terms with EU suppliers. At the same time, biomethane is recognised as a renewable motor fuel, enabling its use as Bio-CNG and Bio-LNG in transport markets across borders.

Export and Domestic Market Regulatory Barriers for Biomethane

A. Export-oriented regulatory barriers

Ukrainian biomethane exports are constrained primarily by misalignment between Ukrainian regulatory, technical and digital systems and the EU framework governing renewable gas trade. The most critical bottleneck is the absence of full operational synchronisation between the Ukrainian Biomethane Registry and the EU Union Database (UDB). Without this integration, Proofs of Sustainability (PoS) cannot be automatically transferred to EU counterparties, which prevents Ukrainian producers from accessing the EU mass-balance system, voluntary biomethane markets and transport decarbonisation schemes under RED II/III.

Export operations are further restricted by technical incompatibilities at grid level, particularly where Ukrainian methane quality and higher heating value (HHV) parameters do not fully match EN

16723-1 requirements applied at EU interconnection points. This directly limits the physical injection of EU-compliant biomethane into cross-border gas flows.

A major commercial barrier exists for exports to non-EU European markets, especially Switzerland and the United Kingdom. Under Law No. 309-V, biomethane exported to countries outside the Energy Community is subject to an export duty, which makes Ukrainian biomethane structurally uncompetitive in premium markets despite full sustainability compliance.

These factors mean that Ukrainian biomethane can technically be produced and certified, but cannot yet move through the EU market at scale, because digital traceability, physical grid compatibility and commercial customs rules are not aligned.

Export-critical regulatory barriers

Policy area	Barrier	Impact on export	Required change
GTS Code	HHV limits do not match EN 16723-1	Restricts injection of EU-compliant biomethane	Amend GTS Code: HHV $\leq$ 10.5 kWh/m ³
Technical Regulation for Natural Gas	No biomethane-specific gas regulation	Delays EU harmonisation	Adopt regulation with biomethane parameters
Certification	Manual PoS processing, no UDB sync	Slows or blocks mass-balance export	Full digitalisation and UDB automation
GTS Operator rules	No UDB data exchange	Prevents cross-border verification	Authorise GTS to submit injection/ withdrawal data to UDB
Law No. 309-V	Export duty for non-EC countries	Blocks UK/ Swiss markets	Cancel export duty

As a result, the transition from pilot export volumes in the mid-2020s to the multi-billion cubic metre export levels envisaged in this Road Map is structurally constrained by regulatory and digital bottlenecks rather than by resource availability.

B. Domestic market and system-integration barriers

The export and **domestic biomethane market is constrained not by sustainability rules, but by missing demand-side regulation and grid integration mechanisms**. Ukraine currently lacks binding targets for biomethane use in industry, transport and district heating, which suppresses domestic offtake and forces producers to rely almost exclusively on exports.

The **industrial sector** is structurally well suited to absorb biomethane because Ukrainian metallurgy, fertiliser, food processing, ceramics and building-materials industries are all based on natural-gas-fired thermal processes. Biomethane is a **drop-in substitute** for natural gas and enables Ukrainian industry to meet EU Carbon Border Adjustment Mechanism (CBAM) benchmarks for steel, ammonia and other products. However, this potential is not yet reflected in national energy and climate policy.

From an industrial perspective, **biomethane represents one of the most immediately deployable tools for reducing the carbon intensity of Ukrainian exports to the EU**. The use of

certified biomethane in gas-intensive industries such as metallurgy, fertiliser production, food processing, ceramics and construction materials allows direct substitution of fossil natural gas without changes to existing equipment or processes.

This enables Ukrainian producers to reduce embedded emissions in exported products and to improve compliance with the EU **Carbon Border Adjustment Mechanism (CBAM)**, particularly for steel, ammonia and other energy-intensive goods. In this context, biomethane functions not only as a renewable energy carrier, but also as a cost-effective industrial decarbonisation instrument that strengthens the competitiveness of Ukrainian exports on the EU market.

According to sectoral analyses underpinning Ukraine's biomethane concept, industrial heat demand represents the most immediate and scalable domestic sink for biomethane. However, the absence of explicit industrial biomethane targets and support mechanisms in national energy and climate planning prevents this demand from materialising.

Physical system integration also limits domestic utilisation. In many regions, biomethane plants are connected to **gas distribution systems (GDS)**, but summer demand is low and there is **no reverse-flow** capacity to move biomethane from GDS into the transmission system (GTS), which prevents balancing and industrial offtake. This constraint affects not only export balancing, but also domestic industrial consumers connected to the transmission system, who cannot access biomethane produced in distribution networks.

Domestic market and system-integration barriers

Policy area	Barrier	Impact on domestic market	Required change
Energy Strategy 2050	No biomethane targets for transport or industry	Weak domestic demand	Introduce sectoral biomethane targets (5–10% by 2030)
GDS Code	Lack of reverse-flow capability	Local oversupply, curtailment	Support reverse compressor installation
Law "On Alternative Fuels" & Technical Regulation (2024)	Bio-CNG/Bio-LNG not operationalised	Transport market blocked	Adopt regulations
DSTU standards	No Bio-CNG/Bio-LNG standards	Certification impossible	Develop DSTU standards
Environmental legislation	Digestate not recognised	High OPEX, waste costs	Adopt digestate standard
Land-use law	No definition of sequential cropping	Annex IX feedstocks restricted	Introduce legal definition

The transport sector has now been partially unlocked through the **Technical Regulation on Alternative Motor Fuels (2024)**, but Bio-CNG and Bio-LNG markets cannot develop without:

- DSTU technical standards,
- operational rules for refuelling stations,
- and incorporation of biomethane into national fuel-quality regulation.

Environmental and land-use regulation also affects domestic viability. Digestate is not fully recognised as a biofertiliser, increasing disposal costs, while the absence of a legal definition of

sequential cropping limits the use of Annex IX feedstocks, which are the backbone of Ukrainian biomethane potential.

Without the creation of stable domestic industrial demand, biomethane deployment risks remaining only export-driven, increasing exposure to regulatory and market volatility.

Road Map of Ukrainian biogas/biomethane sector development

The Road Map defines a phased development pathway that enables Ukraine to evolve from early biomethane deployment into a fully integrated, large-scale renewable gas economy by 2050. The pathway balances **near-term market activation with medium-term industrial scaling and long-term system integration**, ensuring that Ukraine becomes both a secure domestic supplier of renewable gas and a strategic exporter to the European Union.

This trajectory aligns Ukrainian energy, agricultural and climate policy with EU regulatory frameworks, enabling biomethane to serve as a cornerstone of Ukraine's post-war recovery, energy independence and integration into European clean energy markets.

Near-term (2026–2027)

This phase establishes Ukraine as a **legally recognised, technically interoperable and commercially credible biomethane supplier** for the **EU market**, while simultaneously creating the domestic foundations for large-scale sector growth.

By 2025 Ukraine moves from **pilot biomethane production** to **formal market entry**. During 2023–2024 the first four biomethane plants with a total capacity of **41 million m³ per year** were commissioned. By **2026**, four additional plants under construction will increase national capacity to **111 million m³ per year**, enabling Ukraine to move from **demonstration** to **structured market participation**.

The **central objective of 2025-2026** is **international recognition of Ukrainian biomethane** as a **renewable gas by the EU**. The formal success criterion defined by the Government is the creation of **legal, regulatory and institutional conditions** that allow Ukrainian biomethane to be **exported to** the EU as a sustainable renewable fuel.

To enable this, biomethane injected into Ukraine's gas networks must be **fully traceable, verifiable** and **compatible with EU sustainability and mass-balance rules** through **integration with the EU UDB**. Once connected, biomethane produced in Ukraine and certified under **EU-recognised voluntary schemes** becomes eligible to be **traded, counted and consumed across the EU**.

In parallel, Ukraine finalises the **core regulatory backbone** required for market operation, including:

- guarantees of origin and sustainability certification,
- gas quality and calorific value standards aligned with EU network rules,
- formal recognition of biomethane in transport, distribution and balancing systems,
- removal of export barriers and discriminatory taxation.

A key element of this phase is the **elimination of export duties and fiscal barriers**, ensuring that Ukrainian producers can sell biomethane in **any EU Member State on equal terms**. At the same time, biomethane is explicitly recognised as a **renewable motor fuel**, enabling the development of **Bio-CNG and Bio-LNG** markets.

From an infrastructure perspective, **grid access** becomes the **primary market gateway**. Biomethane plants connect to Ukraine's gas transmission and distribution systems, which are linked to the **interconnected European gas market** under **EU mass-balance rules**, allowing Ukrainian biomethane (or its virtual equivalents) to reach EU buyers **without physical border constraints**.

At the same time, **domestic demand channels** are activated to create an early **revenue base**. Biomethane is introduced into:

- municipal and agricultural vehicle fleets,
- public transport (buses and waste trucks),
- captive industrial consumers,
- decentralised rural gas grids.

This dual domestic–export structure provides early revenue stability while export volumes scale.

Feedstock mobilisation accelerates during this period. Ukraine's biomethane expansion is primarily based on agricultural residues, cover and intermediate crops, and livestock manure, in line with the technical feedstock structure presented in this Road Map.

According to current estimates, livestock manure contributes **around 0.9 billion m³** of biomethane per year, reflecting the technical potential under existing livestock numbers and realistic collection conditions. Crop residues and cover crops provide the dominant share of the overall potential, while agro-industrial by-products and other organic streams further complement the feedstock base.

The expansion of biomethane plants therefore creates regional feedstock markets, logistics chains and digestate outlets from the outset, supporting circular bioeconomy principles and strengthening linkages between agriculture, energy production and soil nutrient management.

By the end of **2027**, Ukraine is no longer an experimental producer. It becomes:

- a certified participant in the EU renewable gas market,
- a commercial exporter under UDB and EU sustainability rules,
- and a domestic supplier of renewable gas for industry, transport and agriculture.

This **market activation phase** provides the **platform for large-scale industrial expansion** after 2027.

Looking beyond this phase, Ukraine's **biomethane production could exceed 1 billion m³ per year by 2030** under a realistic deployment scenario based on projects in operation, under construction and at an advanced development stage. Under the medium-term roadmap trajectory, and subject to sustained investment, regulatory alignment and feedstock mobilisation, national biomethane production could further increase **to around 4.5 billion m³ per year in the following decade**.

Key actions include:

1) Regulatory and market entry

- Complete EU recognition of Ukrainian biomethane as a renewable gas eligible under RED III.
- Finalise integration into the EU Union Database (UDB) for traceability, mass balance and cross-border trade.
- Implement a national biomethane registry, guarantees of origin and sustainability certification compatible with EU schemes.
- Remove export duties and discriminatory taxation for biomethane sold to EU markets.
- Finalise gas quality, calorific value and network codes enabling biomethane injection into GTS and GDS.

2) Infrastructure and grid access

- Connect new biomethane plants to the gas transmission and distribution systems as the primary export and domestic market gateway.
- Ensure operational recognition of biomethane in balancing, dispatch and transport rules.

3) Demand creation

- Launch domestic use of biomethane in industry and flexible electricity production
- Enable Bio-CNG and Bio-LNG for transport pilots.

4) Feedstock and agriculture

- Establish regional feedstock aggregation systems for manure, residues and agro-industrial waste.
- Introduce digestate return schemes linking plants to surrounding farmland.

Expected Results by 2027

- Ukraine becomes a certified participant in the EU renewable gas market.
- Ukrainian biomethane is fully tradable under UDB and EU sustainability rules.
- Production capacity exceeds 100 million m³/year, with bankable projects replicating.
- A dual market is established: domestic demand + EU exports.
- Feedstock and digestate markets are operational at regional level.

Medium-term industrial scaling (2027–2035)

During the period **2027–2035**, Ukraine's biomethane sector transitions from early market activation to **full industrial deployment** and **European market integration**. This phase transforms biomethane from a niche renewable gas into a **systemic pillar** of the national energy, transport and agricultural economy, while establishing Ukraine as a **large-scale exporter to the European Union**.

The primary quantitative target for this phase is the increase of biomethane production from around **111 million m³ in 2026** to **at least 1 billion m³ by 2030** and approximately **2.1 billion m³ by 2035**. This expansion is driven by continuous construction of new biomethane plants across livestock- and crop-producing regions, supported by predictable regulation and long-term demand from both domestic and EU markets.

The expansion is underpinned by the systematic mobilisation of agricultural feedstock, including livestock manure, plant cultivation waste and secondary agricultural by-products, which together can produce more than 6.0 bcm of biomethane per year, while agro-industrial by-products, organic wastes, cover and energy crops significantly increase the total potential. During 2027–2035, national and regional authorities map and prioritise feedstock-rich territories, enabling the creation of biomethane clusters connected to gas infrastructure.

Small and medium-sized farms are integrated into supply chains through cooperative models, offtake contracts and logistics platforms, ensuring stable feedstock supply and **strengthening rural incomes**.

The period **2027–2030** focuses on large-scale expansion of production capacity, including construction of new biomethane plants, their integration into the national gas distribution and transmission systems, the introduction of a **national certification scheme and guarantees of origin**, and the launch of financial instruments to stimulate private investment, alongside continued **harmonisation with EU law**.

The broader period 2027–2035 is dedicated to stabilising and scaling the sector, achieving target production volumes, expanding exports to the EU, improving biomethane technologies and energy efficiency, and updating strategic objectives in line with **European climate and energy policy**.

During this period Ukraine completes its **integration into the European renewable gas market**, including full participation in the **EU Union Database (UDB)**, mutual recognition of guarantees of origin and sustainability certificates, and recognition under RED III. As a result, Ukrainian biomethane becomes fully tradable across the EU.

To support this scale-up, the state deploys investment de-risking instruments including long-term offtake guarantees, feed-in premiums, tax incentives and credit support, complemented by international financing from the EU, EBRD and the World Bank. According to the Road Map investment trajectory, cumulative investment in biomethane production, upgrading, grid integration and logistics is expected to reach approximately **€2.0 billion by 2030** and continue to increase through 2035.

Exports become a dominant market segment. Ukraine supplies biomethane to EU industry, heating and power generation, while expanding into **Bio-CNG and Bio-LNG** for transport. Liquefied biomethane enables access to heavy road freight, rail and inland shipping, aligning Ukraine with European decarbonisation pathways.

By **2035**, biomethane functions as a **core industrial system** embedded in Ukraine’s energy mix, agricultural economy and European energy markets, delivering **energy security, export revenues, rural development and climate benefits**.

Key actions include:

1) Industrial deployment

- Scale production to >1 bcm by 2030 and 2.1 bcm by 2035 through continuous plant construction.
- Convert part of existing biogas plants to biomethane upgrading and grid injection.
- Develop regional biomethane clusters optimised for feedstock, logistics and grid access.

2) European market integration

- Maintain full UDB participation and GO recognition.

- Enable long-term offtake contracts with EU utilities, industry and transport operators.
- Expand Bio-CNG and Bio-LNG markets for heavy transport, rail and shipping.

3) Finance and investment

- Deploy offtake guarantees, feed-in premiums, tax incentives and credit guarantees.
- Mobilise EU, EBRD, World Bank and private capital through blended-finance structures.

4) Agricultural integration

- Scale digestate use into national soil-fertility and nutrient-recycling systems.
- Integrate SME farms through cooperative supply and logistics platforms.

Expected Results by 2035

- Biomethane becomes a core component of Ukraine's gas balance.
- Ukraine becomes a large-scale EU supplier of renewable gas.
- Bio-CNG and Bio-LNG are mainstream in heavy transport.
- More than €4 billion invested in plants, upgrading, grids and logistics.
- Rural regions benefit from stable farm income, fertiliser substitution and jobs.

Long-Term Scaling and System Integration (2036–2050)

From **2036 to 2050**, Ukraine's biomethane sector evolves from industrial expansion into a **fully integrated renewable gas economy**, embedded in domestic energy systems and **tightly connected to European carbon and energy markets**. Building on earlier phases of market activation and industrial scale-up, this period positions Ukraine as a **strategic producer, exporter and climate partner for the European Union**.

By **2050**, Ukraine is projected to produce approximately **20.0 bcm of biomethane per year** under high-potential scenarios. This growth is enabled through **development of new biomethane hubs integrated with feedstock clusters** allowing rapid scaling by using established assets and logistics. At this scale, Ukraine can supply substantial part of **EU biomethane demand by 2050**, creating a **strategic export niche** aligned with European decarbonisation targets.

Throughout this period, Ukraine's biomethane sector is fully aligned with **EU regulatory and market frameworks**. Biomethane injected into the Ukrainian gas system is **tracked through the UDB**, enabling **cross-border mass-balance accounting** under **RED III**. **Guarantees of origin and sustainability certificates** are mutually recognised, gas quality and grid codes remain harmonised with EU norms, and a **non-discriminatory trade regime** ensures unrestricted export to EU Member States. This makes Ukrainian biomethane **technically and legally interchangeable** with EU renewable gas products and fully tradable in European markets.

Biomethane also becomes a **core instrument in climate policy and CBAM compliance through** its direct use in gas-intensive industrial processes. Substituting fossil natural gas with certified biomethane in metallurgy, fertiliser production, food processing and construction materials reduces the

embedded carbon intensity of exported products, lowers CBAM-related costs and improves the competitiveness of Ukrainian industry on EU markets.

Ukraine's **gas transmission and distribution system** plays a central role in enabling this scale. Large volumes of biomethane are injected and transported through existing infrastructure without major pipeline upgrades. Expansion includes **regional biomethane hubs**, **Bio-LNG terminals** serving heavy transport and maritime markets, and **virtual trade mechanisms** based on guarantees of origin and mass-balance accounting. **Digital systems** manage traceability, balancing and carbon accounting, ensuring regulatory compliance and market transparency.

By 2036–2050, biomethane is deeply embedded across **energy, agriculture and transport**. It displaces fossil gas in **industry, heat and power**, strengthens **energy security**, and creates stable markets for **manure, crop residues and agricultural waste**, generating consistent income for farmers and supporting **soil-based circularity through digestate use**. **Bio-CNG and Bio-LNG** become mainstream fuels for **heavy freight, rail and inland shipping**, supporting the decarbonisation of transport sectors that cannot be electrified.

By **2050**, biomethane supports **thousands of jobs** across production, logistics, certification and agriculture, anchors rural economic growth, and attracts sustained **foreign direct investment** through long-term offtake contracts and climate-linked financing mechanisms.

Biomethane Development Trajectory in Ukraine (2027–2050)

Indicator	2027	2030	2035	2040	2045	2050
Production of biomethane, bcm/year	0.25	1.00	2.1	4.5	9.5	20
Export of biomethane, bcm/year	0.13	0.50	1.05	2.25	4.8	10
Consumption in Ukraine, bcm/year	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, Mt CO ₂ -eq/year	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

Key actions include:

1) System integration

- Use Ukraine's gas transmission and storage system as a backbone for renewable gas trade.
- Expand biomethane hubs and Bio-LNG export terminals.
- Enable virtual trade through mass-balance and guarantees of origin.

2) Climate and CBAM alignment

- Embed biomethane into Ukraine's industrial decarbonisation and CBAM strategies.
- Use biomethane to reduce embedded emissions in exported products.

3) Bioeconomy and new markets

- Develop biomethane as feedstock for chemicals, fuels and advanced materials.

- Promote circular bio-economy pathways based on digestate, CO₂ and bio-based products.

Systemic role of biomethane in Ukraine's energy economy

Dimension	2030	2035	2050
Position in gas system	Emerging renewable gas replacing fossil imports	Core component of national gas balance	One of the main domestic gas sources
EU market role	Initial commercial exports	Large-scale, stable EU supply	Strategic long-term EU renewable gas partner
Agricultural integration	Digestate use and feedstock markets established	Circular nutrient management at scale	Full bio-circular agriculture integrated with energy
Transport decarbonisation	Bio-CNG pilots	Bio-CNG & Bio-LNG mainstream	Dominant zero-carbon fuel for heavy transport
Climate & CBAM relevance	Early emissions reduction	CBAM exposure reduced for exports	Structural climate advantage for Ukrainian industry

Expected Results by 2050

- Ukraine produces 20 bcm of biomethane per year.
- Ukraine is a strategic renewable gas partner of the EU.
- Biomethane is a major domestic energy source replacing fossil imports.
- Ukrainian exports gain a structural CBAM advantage through low-carbon energy.
- Agriculture, energy and industry operate as a single circular bio-energy system.

Governance, Monitoring and Strategic Oversight

At the strategic level, overall policy direction is set by the Government of Ukraine through the national biomethane programme and related energy, climate and agricultural strategies. The Ministry of Energy acts as the lead authority responsible for renewable gas policy, regulatory alignment with the EU, and coordination with the GTS Operator and European institutions.

A permanent inter-ministerial coordination mechanism links the Ministry of Energy, Ministry of Economy, Ministry of Agrarian Policy, Ministry of Infrastructure, and environmental authorities. This ensures that biomethane development is synchronised across energy, transport, agriculture, climate and industrial policy, avoiding regulatory conflicts and creating a stable investment environment. This coordination mechanism also ensures alignment of biomethane policy with Ukraine's National Energy and Climate Plan, industrial decarbonisation priorities and export-oriented energy policy.

Monitoring of Road Map implementation is based on a structured set of key performance indicators that track both market development and public-policy outcomes. These include biomethane production volumes, volumes injected into the gas grid, exports and cross-border trade under the UDB, the number and capacity of operating plants, investment flows, jobs created in rural and industrial regions, greenhouse-gas emission reductions, and volumes of digestate returned to agriculture. These indicators allow the Government to measure not only energy outputs but also climate, economic and agricultural

impacts. Monitoring data are consolidated by the Ministry of Energy with technical inputs from the GTS Operator, GDS operators and the National Biomethane Registry, ensuring consistency between physical gas flows, digital traceability and sustainability reporting. A **detailed action plan** for near-term period, including specific measures, responsible institutions, implementation timelines and expected outcomes, is provided in **Annex I**.

The Road Map is subject to regular review and adjustment. A formal progress review is conducted every three to five years and aligned with updates of Ukraine's National Energy and Climate Plan, EU climate legislation and market developments. Extraordinary updates may also be initiated in response to significant changes in EU legislation, including RED III implementation, Union Database requirements or CBAM-related developments. This ensures that the biomethane strategy remains responsive to technological progress, price signals and regulatory changes in the European Union.

Stakeholder participation is an integral part of governance. Industry associations, agricultural organisations, gas system operators, local authorities, financial institutions and civil society are engaged through structured consultation platforms. Industry associations and market participants also play a consultative role in assessing export readiness, regulatory bottlenecks and alignment with EU biomethane market requirements. This guarantees that market rules, infrastructure planning and sustainability standards reflect real-world conditions and maintain public trust.

Through this governance and monitoring framework, the Road Map functions as a living strategic instrument rather than a static policy document, enabling Ukraine to manage the transition from early biomethane deployment to a fully integrated renewable gas economy by 2050. This governance framework is also a prerequisite for building long-term confidence among EU buyers, financial institutions and public authorities in Ukraine's capacity to deliver biomethane at scale under stable and predictable market conditions.

Action Plan for Improving the Legal and Regulatory Framework for Biomethane Development

Measure	Responsible authorities	Timeline	Expected result
<i>Objective. Improvement of the legal framework for the development and functioning of biomethane production, including alignment with European Union legislation and harmonisation of legal mechanisms for recognising guarantees of origin of biomethane</i>			
1. Preparation of a negotiation framework to identify regulatory legal acts that require clarification for the full accession of Ukraine to the Union Database	Ministry of Energy Ministry of Economy	2026	Approval of an agreed framework for communication with the European Commission regarding the designation of central executive authorities and the list of regulatory legal acts requiring clarification
2. Ensuring technical consultations between the Ministry of Energy, Gas Transmission System Operator of Ukraine LLC, and representatives of the European Union Database (Union Database) to facilitate the adoption of a decision at the EU Member State level on the traceability of biomethane units produced in Ukraine	Ministry of Energy NEURC (National Energy and Utilities Regulatory Commission) State Agency on Energy Efficiency and Energy Saving	2026	Introduction of necessary amendments to the Gas Transmission System Code and the Gas Distribution System Code, enabling the state to track biomethane batches
3. Initiation of negotiations on the conclusion of an agreement between Ukraine and the European Union on the mutual recognition of guarantees of origin for biomethane produced in Ukraine	Ministry of Energy Ministry of Economy State Agency on Energy Efficiency and Energy Saving	2026	Opening of unrestricted biomethane trade between Ukraine and the EU

Measure	Responsible authorities	Timeline	Expected result
4. Ensuring communication with the European Commission regarding the official clarification for EU Member States that Ukrainian biomethane injected into the gas network and certified in accordance with voluntary certification schemes recognised by the European Commission complies with relevant EU directives in the field of renewable energy and may be counted towards the renewable energy targets of EU Member States (in accordance with RED III and Commission Implementing Regulation (EU) 2022/996 of 14 June 2022 on sustainability and greenhouse gas emission saving criteria, including low ILUC risk criteria)	Ministry of Energy Ministry of Economy	2026	Ensuring unrestricted receipt of premium for biomethane exported from Ukraine to the EU
5. Support in the Verkhovna Rada of Ukraine for the draft law on the abolition of export duty on biomethane produced in Ukraine when exported to third countries	Ministry of Finance Ministry of Energy	Until adoption of the law	Expansion of the geographical scope of biomethane trade beyond Energy Community countries
6. Submission to the Cabinet of Ministers of Ukraine of a draft resolution "On approval of the Technical Regulation for natural gas", which provides for an acceptable higher heating value threshold of not less than 10.5 kWh/m³ at 25°C / 0°C	Ministry of Energy	2026	Creation of conditions enabling the injection of biomethane into the gas transmission system of Ukraine
7. Development of regulatory legal acts governing the use of biomethane as a motor fuel	Ministry of Economy State Agency on Energy Efficiency and Energy Saving	2027	Expansion of the use of environmentally clean fuels for transport

Measure	Responsible authorities	Timeline	Expected result
8. Development and submission to the Cabinet of Ministers of Ukraine of a draft law providing for the abolition of CO₂ emission tax for biofuels, including biomethane, in line with the European Union system	Ministry of Energy Ministry of Finance	Q4 2026	Promotion of biofuel use
9. Introduction of a national biomethane certification scheme	Ministry of Economy Ministry of Energy State Agency on Energy Efficiency and Energy Saving	2027–2028	Compliance of the national biomethane certification scheme with EU requirements; ensuring the possibility for economic operators to choose between international certification schemes or a national biomethane certification scheme; improved state control over biomethane compliance with sustainability criteria
10. Development and amendments to the Code of Gas Distribution Systems regarding the approval of the Technical Agreement on the Conditions for the Reception and Transmission of Natural Gas (biomethane)	NEURC Operator of GDS	2026	Determining the procedure for the Reception and Transmission of Natural Gas (biomethane)

