

Development of Business Model for Biomethane Production in Ukraine.

Project partners:



Rika Biofuel

| | |
|---|--|
| <p>Rika Biofuel Developments LTD (RIKA)</p> | <p>Technical advice on the cooperation agreement Rika will assist with developing the business concept regarding feedstocks, process design, technology selections, biomethane delivery pathways, carbon intensity ratings and biomethane offtake potential. Rika will also advise on the route to market and start preliminary conversations with potential offtakers.</p> |
| <p>Public Union “Bioenergy Association of Ukraine” (UABIO) info@uabio.org</p> | <p>Technical Lead UABIO is a lead partner for task 1 (BM Potential and Zoning), 4 (Development of Conditions for BM Export), 5 (BM for Transport Sector), and 6 (Dissemination). UABIO is going to support the development of a partnership, knowledge sharing, and marketing activities for biomethane production and use.</p> |
| <p>Regenerative Agriculture (ReAgro)</p> | <p>ReAgro will participate in the development of feasibility studies for typical biomethane projects. ReAgro will be responsible for the selection of 4 projects from the chain of the biomethane projects which will be developed from feasibility to the ready-to-build stages (task 3).</p> |
| <p>Scientific Engineering Centre "Biomass" (SECB)</p> | <p>SECB will be responsible for the development of feasibility studies for typical biomethane projects including the project connecting to high-pressure gas pipeline and to medium and low-pressure gas distribution system, synthetic methane production with utilisation of green hydrogen, and feasibility studies for bio-CNG and bio-LNG projects (task 2).</p> |
| <p>Marriot Davies Yapp LLP (MDY)</p> | <p>Administrative lead; legal advice on the cooperation agreement</p> |



UABIO




MDY Legal
INTERNATIONAL DEVELOPMENT

The InnovateUkraine competition, funded by UK International Development and hosted by British Embassy Kyiv

Project tasks

| # | Task | Lead partner | Advisory partner | Time |
|---|--|--------------|------------------|-----------------------------|
| 1 | Biomethane Potential and Zoning | UABIO | SECB, RIKA | April 2024 – January 2025 |
| 2 | Development of a business concept for advanced biomethane production and export in European countries (12 feasibility studies) | SECB | UABIO, RIKA | April 2024 – January 2026 |
| 3 | Development of the project design documents for the four most promising feasibility studies for advanced biomethane production projects to the Ready to Build stage with the aim of domestic use and export in European countries. | ReAgro | RIKA, SECB | April 2024 – July 2025 |
| 4 | Development of Conditions for Export of Biomethane from Ukraine to European Countries | UABIO | RIKA, SECB | April 2025 – March 2026 |
| 5 | Biomethane for Transport Sector of Ukraine (bio-CNG and bio-LNG) | UABIO | SECB | September 2024 – March 2026 |
| 6 | Dissemination Activities | UABIO | SECB | Continuous (24 months) |

The InnovateUkraine competition, funded by UK International Development and hosted by British Embassy Kyiv

Exploitation plan

| Project plan | Months | | | | | | | | | | | | | | | | | | | | | | | |
|--|--------|---|---|---|---|---|---|---|---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| Task 1 – Biomethane Potential and Zoning - UABIO | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.1 Estimation of biomethane production potential in Ukraine based on available/potential feedstock | | | | | | | | | | | | | | | | | | | | | | | | |
| 1.2 Development of the biomethane production map on the structure of Ukrainian natural gas transit (GTS) and distribution (GDS) systems and availability of different feedstocks | | | | | | | | | | | | | | | | | | | | | | | | |
| Task 2 – Development of a business concept for advanced biomethane production (12 cases) - SECB (688 days) + UABIO (324 days) | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.1 Development of FSs for typical biomethane projects within capacity range of 2-50 mcm/yr with connection to high-pressure GTS or to medium and low-pressure GDS | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.2 Development of FSs for biomethane and synthetic methane production with utilisation of green hydrogen obtained from solar and wind electricity | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.3 Development of FSs for BIO-CNG and BIO-LNG projects for domestic or EU countries export use | | | | | | | | | | | | | | | | | | | | | | | | |
| 2.4 Development of the list of potential BM investors and provision of consulting services (UABIO) | | | | | | | | | | | | | | | | | | | | | | | | |
| Task 3 – Development of the most promising projects to the RTB stage for advanced biomethane production and domestic use (4 cases) - RegAgro | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.1 Initial data collection and evaluation, identification of the 4 most promising projects from the chain of 12 biomethane plants | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.2 Conduct a final analysis, finalising technical and financial plans, and conducting a sensitivity analysis to assess risks of 4 RTB projects | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.3 Development of project design documents | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.4 Preliminary negotiation and agreements with off-takers and technology equipment suppliers | | | | | | | | | | | | | | | | | | | | | | | | |
| 3.5 Ready to Build stage (obtainment of necessary permits and licenses) | | | | | | | | | | | | | | | | | | | | | | | | |
| Task 4 – Development of Conditions for Export of Biomethane from Ukraine to European Countries - UABIO | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.1 Development of Guideline for Export of Biomethane from Ukraine to EU | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.2 Defining long term actions plan including national biogas production target for 2035 and long-term national incentive package up to 2050 | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.3 Development of biomethane Road Map for Ukraine | | | | | | | | | | | | | | | | | | | | | | | | |
| 4.4 Introduction of dialogue among stakeholders (producers, users, decision makers, other official) | | | | | | | | | | | | | | | | | | | | | | | | |
| Task 5 – Biomethane for Transport Sector of Ukraine (bio-CNG and bio-LNG) - UABIO | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.1 Analysis of barriers for use of biomethane in mobility application | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.2 Development of draft legislation for overcoming of barriers for use of biomethane as a motor fuel | | | | | | | | | | | | | | | | | | | | | | | | |
| 5.3 Development of FSs for typical biomethane projects for use of biomethane for transportation | | | | | | | | | | | | | | | | | | | | | | | | |
| Task 6 – Dissemination Activities - UABIO | | | | | | | | | | | | | | | | | | | | | | | | |
| Reporting - UABIO | | | | | | | | | | | | | | | | | | | | | | | | |

What are the expected outcomes of the project?

- Greater understanding of (i) **barriers to biomethane use** and how to overcome them; and (ii) **biomethane production potential**.
- **Feasibility studies on 12 potential biomethane projects.**
- Development of **4 Ready to Build stage projects.**
- Commercial and technical viability testing of **new types of raw materials**, for example, covered/intermediate crops, for use in biomethane production.
- **Identification of potential investors;** experts to assist project development; knowledge sharing (publications, presentations, seminars).
- **Guidelines for export of biomethane to EU; biogas and biomethane action plan to 2050; draft legislation for biomethane as a motor fuel.**

What impact will this project have for Ukraine?

UABIO scenario of production and consumption of Ukrainian biomethane until 2050

| | 2027 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--|------|------|------|------|------|-------------|
| Biomethane production, bcm | 0.25 | 1.00 | 2.1 | 4.5 | 9.5 | 20.0 |
| Export biomethane, bcm | 0.13 | 0.50 | 1.05 | 2.25 | 4,8 | 10.0 |
| Biomethane consumption of the inner market, bcm | 0.13 | 0.50 | 1.05 | 2.25 | 4,8 | 10.0 |
| Number of biomethane plants, pcs | 50 | 200 | 420 | 900 | 1900 | 4000 |
| Necessary investments, billion € | 0.5 | 2.0 | 4.2 | 9.0 | 19,0 | 40.0 |
| Reduction of GHG emissions, million tons of CO2-eq | 0.6 | 2.5 | 5.3 | 11.3 | 23,8 | 50.0 |
| Created jobs, thousand units | 3.1 | 12.5 | 26.2 | 56.2 | 118 | 250 |