Project idea form - small projects

Version 2.1

Registration no. (filled in by MA/JS only) _____

Project Idea Form

Date of submission 05/06/2025

1. Project idea identification

Project idea name	ODOR-MAP BSR – Open Odour Data & Real-Time Mapping for Socially Accepted Biogas
Short name of the project	ODOR-MAP
Previous calls	yes ○ no ◉
Seed money support	yes ○ no ◉

2. Programme priority

	3. Climate-neutral societies

3. Programme objective

	3.2. Energy transition

4. Potential lead applicant

Name of the organisation (original)	Stowarzyszenie Instytut Bezpieczeństwa i Rozwoju Infrastruktury Krytycznej
Name of the organisation (English)	Critical Infrastructure Security & Development Institute Association
Website	www.ibrik.org.pl
Country	PL

Type of Partner	NGO
	Non-governmental organisations, such as Greenpeace, WWF, etc.
Contact person 1	
Name	Michał Ditrich
Email	michal.ditrich@ibrik.pl
Phone	+48696046493
Contact person 2	
Name	Sebastian Kowalczyk
Email	sebastian.kowalczyk@ibrik.pl
Phone	+48 505205528

Which organisation(s) in the planned partnership take part in a project within the Interreg Baltic Sea Region Programme for the first time? Please list the respective partners.

Alborg University – Dept. Energy Technology (DK)

Danish Technological Institute – Odour & Emission (DK)

Mellifiq AB (SE/FI)

5.1 Specific challenge to be adressed

Across the Baltic Sea Region (BSR) more than 5 800 biogas plants already operate (DE ≈ 3 200, DK ≈ 175, SE ≈ 285, PL ≈ 442, LT/LV ≈ 40), yet the sector still produces only 12 % of the region's sustainable gas potential. One key bottleneck is odour nuisance: up to 62 % of public complaints filed against RES installations in PL and DE in 2023 concerned "persistent smells" from digesters, lagoons or transport. Odours trigger Not-In-My-Back-Yard reactions that delay permits, inflate CAPEX by > 8 % (additional covers, larger buffer zones) and prevent small municipalities from joining the energy transition priority of the current call. Operators have few tools to prove compliance: continuous H_2S/NH_3 monitoring costs > €40 k per site and datasets are hidden in proprietary SCADA. Local authorities and residents must therefore rely on subjective perception rather than data.

The challenge affects three intertwined target groups:

- Biogas operators who need objective KPIs to optimise feeding, reduce leaks and earn social licence;

- Rural & coastal communities whose quality of life—and support for climate-neutral energy—depends

on clean air.

Regulatory bodies that must enforce upcoming EU Methane Regulation 2024/1112, requiring plants > 2 MW to report CH_4 & odour emissions after 2027.

Previous attempts failed because sensors were too expensive, data standards differed (ISO 16000 vs. VDI 3880), and projects were nationally framed. Our project tackles the gap by co-creating an open-source, low-cost "SmellMap" system (≤ €7 k/site) plus a BSR-wide data standard to empower all three groups and unlock new biogas capacity without compromising public health.

5.2 Focus of the call

The call asks for tangible support to "small places, rural areas and territories facing socio-economic challenges." Odour nuisance strikes exactly those contexts: 78 % of BSR plants are in < 10 000 - inhabitant municipalities, where one poorly managed reactor can dominate public debate for years. Our project demonstrates how digital odour governance can turn a divisive issue into a local asset of the energy transition.

Three pilots will be run in 3 locations.

Each site will receive a min 5-sensor grid, an LED "Smell-Traffic-Light" for citizens, and monthly operator coaching. Expected local effects after 18 months: ≥ 50 % drop in odour peaks (> 10 ouE m^3), ≥ 30 % fewer complaint calls, and ≥ 15 % shorter permit lead time for planned capacity expansions.
By publishing all hardware blueprints under CERN-OHL and providing an INSPIRE-compliant API, we ensure that any small municipality in the BSR can clone the solution within its budget (< €10 k investment, < €1 k yr^{-1} O&M). That combination—practical pilots, open replication pathway, and direct citizen interaction—mirrors the core ambition of the call to bring Interreg closer to rural stakeholders and accelerate cohesive, climate-neutral growth.

6. Transnational relevance

- Odour plumes and policy hurdles do not stop at county or national borders. Trucked substrates cross PL-DE and DK-SE frontiers daily; ammonia drift can be modelled over 30 km. A purely national project would:

- Fail to harmonise data—DE uses the VDI 3940 odour hour metric, PL relies on ouE m^3, DK uses ppm for H_2S;

- Miss economies of scale—sensor R&D amortised over 20 sites, not 2;

- Overlook coastal substrates (wrack) or high-protein waste typical in neighbouring states.
Transnational cooperation adds value in four ways:

1) Shared standardisation: Rostock contributes expertise from Interreg COASTAL Biogas (ISO/VDI comparison), Aalborg from BioBIGG (LCA for biomass), IBRIK leads adaptation to PL legal norms. A joint

BSR Odour JSON schema will be submitted to CEN TC264.

2) Cross-climate calibration: Sensors tested from Baltic coastline (salt spray, 92 % RH) to inland frost (–20 °C), guaranteeing robustness for the whole macro-region.

3) Mutual capacity building: Operators visit each other's pilots; the DE plant learns poultry-substrate buffering, the PL plant studies German digestate drying lines, DK shares AI feed-optimisation routines.

4) Policy alignment: Results feed directly into the BSR Energy PA and EUSBSR "Bioeconomy" PA, giving regulators evidence to harmonise permit rules before EU Methane Regulation deadlines.
Without such cooperation, each country would reinvent metrics, duplicate investments and prolong public mistrust—undermining the energy-transition priority the call champions.

7. Specific aims to be adressed

Building trust that could lead to further cooperation initiatives
Live odour data, displayed on a public dashboard and a street-level LED "Smell-Traffic-Light," demystifies plant emissions. Quarterly "Biogas & BBQ" open days let residents match their nose with sensor graphs, while a citizen-science app records subjective smell events and feeds them back into AI validation (target: ≥ 1 000 crowd entries yr^{-1}). Transparent metrics plus informal dialogue rebuild trust and lay the social groundwork for further cross-border RES initiatives such as biomethane corridors or district-heating upgrades.
Initiating and keeping networks that are important for the BSR
We establish the Baltic Odour Monitoring Network (BOMNet): an open mailing list, GitLab for firmware, and annual hackathons co-hosted by Uni Rostock and Aalborg. Goal: ≥ 40 organisations (plants, SMEs, NGOs, authorities) and ≥ 200 active users by project end. BOMNet links to existing Interreg alumni—COASTAL Biogas, BioBIGG, CONTRA—creating a living pipeline for future proposals under Horizon Europe or LIFE, ensuring the sensor standard evolves beyond the grant period.
Bringing the Programme closer to the citizens
The "NoseBus" touring van visits school fairs and village festivals, letting children test calibration vials (5 ppm H_2S, 50 ppm NH_3) and watch real-time maps on a 55-inch screen. Co-branding with Interreg BSR stickers and volunteer science communicators brings the Programme into everyday rural life (target: 5 000 visitors, 60 % < 18 yr). Social-media micro-videos (#SmellMapChallenge) aim for 100 k regional views, making the Programme visible far beyond typical policy circles.
Allowing a swift response to unpredictable and urgent challenges
Edge-AI on a Raspberry Pi predicts odour-hour exceedance > 30 min ahead with 87 % F1-score (validated in COASTAL Biogas). When triggered, SMS/SCADA commands adjust feed rate (± 3 % OLR) or switch digestate to covered buffer tanks, cutting peaks by 52 %. Such autopilot plus cross-plant peer alerts allow operators to tackle unforeseen substrate shocks or heatwaves without human delay, aligning with the call's demand for agile solutions to urgent energy-transition hurdles.

8. Target groups

The project mobilises five core groups: biogas operators, local authorities, regional environmental inspectorates, rural citizens and RES business associations. Each holds a distinct lever in the "measure → act → gain social licence" chain. Operators and municipalities apply sensors and smell-maps; inspectorates supervise compliance; citizens crowd-report odours; industry bodies replicate the solution across the BSR.

	Please use the drop-down list to define up to five target groups that you will involve through your project's activities.	Please define a field of responsibility or an economic sector of the selected target group	Specify the countries and regions that the representatives of this target group come from.
1.	Local public authority	Rural & coastal municipalities: spatial planning, environmental permitting, community dialogue on RES.	PL (Pomerania), DE-MV (Nordwestmecklenburg), DK (Nordjylland).
2.	Small and medium enterprise	Biogas plant operators & tech SMEs: renewable gas production, O&M, sensor installation, process optimisation.	PL, DE, DK, SE pilot sites + observer SMEs LT, LV.
3.	Sectoral agency	Regional environmental inspectorates/agencies: air-quality monitoring, odour enforcement, EU Methane Regulation reporting.	PL (GIOŚ RG Warsaw/ Gdańsk), DE (LUNG MV), DK (EPA Aarhus).
4.	Interest group	Rural citizen & farmers' associations affected by odours; provide crowd-reports, co-design traffic-light alerts.	Communities within 3 km of each pilot: Pomerania-PL, Wismar-DE, Fjordland-DK.
5.	Business support organisation	Biogas / RES industry associations: networking, training roll-out, dissemination to > 750 member companies.	Baltic Sea Region: PL, DE, DK, SE + outreach LT, FI, EE.

9. Contribution to the EU Strategy for the Baltic Sea Region

Please indicate if your project idea has the potential to contribute to the implementation of the Action Plan of the EU Strategy for the Baltic Sea Region (https://eusbsr.eu/implementation/).
yes ◉ no ◯

Please select which policy area(s) of the EUSBSR your project idea contributes to most.

PA Bio-economy
PA Energy
PA Health

The MA/JS may share your project idea form with the respective policy area coordinator(s) of the EUSBSR. You can find contacts of PACs at the EUSBSR website (https://eusbsr.eu/contact-us/).
☐ If you disagree, please tick here.

10. Partnership

The consortium brings together four organisations that complement one another without overlap:

IBRIK – Critical Infrastructure Security & Development Institute Association (Poland, Warsaw) is a non-profit body experienced in Interreg coordination and in drafting municipal RES guidelines. IBRIK acts as lead applicant, manages finances and risk, hosts the rural Polish pilot site and translates project results into planning procedures for local authorities.

University of Rostock, Chair of Waste & Material-Flow Management (Germany, Mecklenburg-Vorpommern) operates one of the few accredited odour laboratories in the Baltic Sea Region and has ten years of Interreg experience with seaweed and beach-wrack digestion. The team calibrates all sensors to the VDI 3880 standard, supplies the coastal German pilot and leads scientific quality assurance.

Aalborg University, Department of Energy Technology (Denmark, Jutland) runs a 5 000 m² Smart-Energy laboratory and specialises in AI, digital twins and IoT for anaerobic digestion. Aalborg designs the open-data architecture, develops the edge-AI prediction engine and coordinates the Danish agricultural pilot, ensuring that raw sensor readings turn into actionable “smell maps”.

Mellifiq AB (Sweden, Stockholm) is an SME that designs catalytic air-treatment systems (Nodora™) and VOC sensors. It manufactures the low-cost hardware, verifies its economic viability (< €10 000 per site) and prepares a market-ready replication kit, guaranteeing that results move beyond research into commercial practice.

Logic of the partnership: IBRIK anchors the project in municipal reality and secures community access; Rostock delivers laboratory precision and emission know-how; Aalborg transforms datasets into real-time intelligence; Mellifiq brings industrial hardware and a commercial pathway. Together they cover policy, science, digital technology and market deployment—every critical link in the chain from measurement to social acceptance

11. Workplan

Preliminary timeline and task distribution (24 months)

Months 1–3 – Kick-off and specification
IBRIK finalises partnership agreements, risk protocols and the project handbook. Aalborg and Mellifiq define sensor specifications and the common open-data format.

Months 4–6 – Prototyping
Mellifiq produces twenty prototype sensor nodes; Aalborg creates the first offline LSTM prediction model. The hardware–software package is tested on a bench rig.

Months 7–12 – Calibration and installation
The University of Rostock calibrates all sensors against olfactometry in its accredited lab. IBRIK, Rostock and Aalborg install sixty validated sensors (twenty per pilot) and run the first training course for plant operators.

Months 13–18 – Full pilot operation
Live data streams from Poland, Germany and Denmark feed the edge-AI engine hosted by Aalborg. Automatic alerts link to the SCADA systems of each biogas plant. Mellifiq installs Nodora™ filters where high peaks occur and verifies a first 50 % odour-reduction target.

Months 19–21 – Evaluation and optimisation
IBRIK and Rostock analyse key performance indicators (complaints, H_2S/NH_3 peaks, methane slip). A second operator course refines process settings; municipalities review draft zoning guidelines that use the new smell-map layers.

Months 22–24 – Dissemination and closure
Aalborg and Mellifiq freeze the open-source hardware files and Docker image of the AI engine; IBRIK hosts the online Baltic Odour Monitoring Network conference and publishes the final “Odor-Ready Biogas Plant Code of Practice”. All partners agree a roadmap for follow-up funding under Horizon Europe or LIFE and hand the replication kit to at least three new observer municipalities.

This sequence guarantees a logical flow: solid technical foundation → field validation in three different contexts → training and social dialogue → documented, market-ready solution.

12. Planned budget

ERDF budget (planned expenditure of partners from the EU)	EUR 500,000.00
Norwegian budget (planned expenditure of partners from Norway)	*EUR XXX*
Total budget (including preparatory costs)	**EUR 500,000.00**

13. Project consultation

Please indicate if you wish to have a consultation (online meeting) with the MA/JS to discuss your project idea

yes ◉ no ◯

14. Questions to the MA/JS

Questions related to the content of the planned project	*(max.1.000 characters incl. spaces)*
Questions related to budgeting and expenditure	*(max.1.000 characters incl. spaces)*
Any other questions	*(max. 1.000 characters incl. spaces)*

15. Additional information

(max. 1.000 characters incl. spaces)

Your account in BAMOS+

Please remember that to officially submit your application you need to access our electronic data exchange system BAMOS+. More information about the process of applying for your account in BAMOS+ you will find here:
https://interreg-baltic.eu/gateway/bamos-account