ALFA

UNLOCKING THE BIOGAS POTENTIAL OF LIVESTOCK FARMING

D2.8

# ALFA Hubs Operational Plan and activities - Final Report

Q-PLAN INTERNATIONAL

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## DISSEMINATION LEVEL

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|---|---|---|
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| v0.1 | 8/10/2025 | Updated version based on ALFA Hub Activities | Q-PLAN |
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| v0.4 | 24/10/2025 | Quality Review | SIE/PEDAL |
| v1.0 | 31/10/2025 | Final version addressing partner's feedback and comments | Q-PLAN |

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## ABBREVIATIONS

| | |
|---|---|
| **AB** | Advisory Board |
| **BE** | Belgium |
| **D** | Deliverable |
| **DE** | Germany |
| **DK** | Denmark |
| **EL** | Greece |
| **ES** | Spain |
| **IT** | Italy |
| **KAM** | Key Account Management |
| **M** | Month |
| **RES** | Renewable Energy Systems |
| **SK** | Slovak Republic |
| **T** | Task |
| **WP** | Work Package |

# Executive Summary

The ALFA project aimed at scaling up the market uptake of Renewable Energy Systems (RES) by unlocking the biogas potential of agriculture and livestock farming across six European countries (Belgium, Denmark, Greece, Italy, Spain, and Slovakia). The great diversity which characterised the frameworks and specificities of local biogas markets across Europe required an adaptable application of tailor-made solutions when it came to supporting the deployment and market uptake of biogas solutions.

Thus, to accommodate this challenge and to effectively respond to the differences stemming from the framework conditions, market specificities, cultural differences, etc., the ALFA approach incorporated in its methodology the setting up and running of local structures designed to respond to region-specific challenges through interaction and engagement with the quadruple helix stakeholders (Public Authorities, Business, Academia and Civil Society). The regional Hubs model encapsulated both the need to better inform the actions and measures to be employed, but also the ability to act on them effectively.

According to the ALFA project concept, the regional Hubs were the basic implementation tools for the delivery of the support measures for the market uptake of biogas solutions in livestock farming. The Hubs were tasked with identifying, prospecting and engaging regional stakeholders in project activities, whilst facilitating the adjustment of the support in their regional context.

A baseline strategy and an operational model for the regional Hubs were outlined in the first version of this report titled, D2.1 “ALFA Hubs Operational Plan and activities – Initial report” and ensured coordinated action, based on which the regional partners defined the dedicated strategy and operational plan of their respective regional hub. A monitoring plan and framework were also defined and enabled partners responsible for the Hubs to keep track and organise their engagement activities.

This report, D2.8 “ALFA Hubs Operational Plan and activities – Final report” presents the operational plans, activities and results achieved by each regional Hub under Task 2.1 after the two rounds of the ALFA Hubs operation. This version is an update of the D2.1 “ALFA Hubs Operational Plan and activities – Initial report” submitted in May 2023 (M7).

The main updates are in Section 1 Introduction with the addition of the corresponding deliverables that describe the ALFA Hubs activities in detail, in Section 3 describing the deployed activities, while Section 4 is a newly inserted section that includes the details of the Mutual Learning Workshops and Networking event.

# 1. Introduction

## 1.1 Aim and Scope

The ALFA project aimed at scaling up the market uptake of Renewable Energy Systems (RES), by unlocking the biogas potential of agriculture and livestock farming. ALFA, through the regional ALFA Hubs, aimed to support 50 livestock farmers with tailor-made support measures tested and validated across six European countries, namely (Belgium (BE), Denmark (DK), Greece (EL), Italy (IT), Spain (ES), Slovakia (SK)).

Working towards this target, at the early stages of the project, the consortium completed both an assessment of the framework conditions impeding or favouring the uptake of biogas (available in D1.1 "Framework and value chain conditions affecting biogas uptake in livestock farming") and an analysis of the needs, perceptions, and challenges of livestock farmers, market actors and stakeholders across the six targeted regions (available in D1.2 "Perceptions, acceptance levels and needs on biogas"). On top of that, successful of biogas in the livestock sector was identified, and highlighted success factors and ways to overcome barriers (available in D1.3 "Case studies of livestock farms leading biogas uptake").

The data collected provided the basis for the co-creation of demand-driven customised support measures for the ALFA project's scope – to scale-up the involvement of livestock farmers in supporting and accelerating market uptake of biogas as a renewable energy source, a process that is described in D2.2 "Co-creation outcomes shaped to our stakeholders needs".

The ALFA methodology ensured that the solutions applied were tailor-made to region specific conditions and needs, whilst capitalising on assets, resources and accomplishments developed locally to be shared and exploited globally.

The aim of Task 2.1 was twofold:

- the development and operation of the ALFA Engagement Platform to serve as a global digital hub, aggregating relevant news, tools and resources developed by the project (reports, inventory of case studies etc.) and other relevant initiatives and networks, utilising the ALFA tools, of the Biogas Cases (Atlas Map), the Decision Support Tool, the Knowledge Centre and the Biogas Forum. The details of the ALFA support tool are reported in D2.3 "ALFA Support Tools – initial Version", and D2.6 "ALFA Support Tools – Final Version"
- the setting up of regional ALFA Hubs tasked with the mobilisation of the regional multi-stakeholder communities of our biogas markets (Farmers: livestock farmers, biomass suppliers, Authorities: regional authorities, policymakers, Business: energy suppliers, technology installers, technical consultancies, livestock-related businesses with biogas, Academia: leaders in respective research projects and studies, Civil society: NGOs, consumer associations, action groups, networks supporting livestock farmers) to ensure effective stakeholder engagement as well as efficient knowledge sharing, along with establishing a gender balance.

Overall, our development process aimed at including our stakeholders as co-creators, with a view to iteratively improving and fine-tuning our solutions according to their needs and feedback, ensuring their alignment to regional specificities. Therefore, we were developing and employing these structures, that blended online and offline means for enabling our stakeholders to be included in the development process as well as to connect, exchange knowledge, innovate and create new biogas opportunities within and across borders and the regional Hubs as a local mechanism for effective stakeholder engagement as well as efficient knowledge sharing. Furthermore, our Hubs were the

facilitators for the successful implementation of the ALFA support measures, providing a hands-on approach reflective to the local needs and ensuring successful matchmaking of needs and solutions, as described in D3.1 "ALFA Operational Plans for the deployment of support measures – First Version" and D3.3 "ALFA Operational Plans for the deployment of support services – Final Version."

The activities performed in order ALFA to develop the needed materials for the support measures are described in D2.4 "ALFA market uptake support measures – First Version", D2.5 "ALFA market uptake support measures – Interim Version", and D2.7 "ALFA market uptake support measures – Final Version", where ALFA Hubs played a significant role, either as service managers, or service providers or intermediaries between the awardees and the service provider.

The operations of the Hubs included:

- identifying and liaising with local stakeholders (such as livestock farms, biogas plant owners, biomass producers, tech providers, bioenergy end users, farmers associations, etc.).
- engaging them into our activities and events (e.g. interviews, surveys, workshops, capacity building seminars and webinars, etc.)
- facilitating the delivery of our market uptake support measures

All the abovementioned activities are described in details in D3.2 "Report on deployment of ALFA Support Measures – First Round" and D3.4 "Report on deployment of ALFA Support Measures – Second Round"

A responsive monitoring and evaluation framework, which was essential to produce credible, comparable and quantifiable evidence was also established. Based on proven evaluation methodologies tailored to the work we aimed to evaluate the performance (input, process and outputs) and the impact of our measures, co-evaluating and validating their results alongside our users, stakeholders and Advisory Board (AB) members. The results of validation and finetuning process are described in D4.1 "Report on evaluation of market uptake support measures – First Round" and D4.2 "Report on evaluation of the market uptake support measures – Second Round"

## 1.2 Report Outline

This report is divided into six sections, in addition to the **Introduction**, as follows:

**Section 2** describes the baseline strategy and the basic objectives and activities.

**Section 3** contains the operational framework and plan of their basic activities and competences within the project Work Packages and Tasks.

**Section 4** presents the outcomes of the Mutual Learning Workshops and Field Visits of the Hubs, along with the Networking Event.

**Section 5** outlines the monitoring, evaluation and reporting mechanisms in place to ensure the effective performance of the Hubs in relation to the project objectives and related KPIs.

**Section 6** identifies possible risks and the mitigating actions to overcome them.

And finally, **Section 7** summarises the main insights from this report.

# 2. Regional Hubs baseline strategy

The great diversity which characterizes the frameworks and specificities of manure and livestock sector across Europe[1] does not rule out the application of one-size-fits-all solutions when it comes to supporting the deployment and uptake of biogas solutions.[2]

Thus, the ALFA methodology employs the setting up and running local structures for effective quadruple helix stakeholder engagement, informed by a well-targeted market study to drive the evidence-based and demand-driven co-development of measures and actions for market uptake support, while at the same time providing the baseline against which we can measure our results.

There is growing evidence and consensus supporting that multi-stakeholder approaches are vital for driving the clean energy transition. Along these lines, the regional ALFA Hubs followed a multi-stakeholder approach for supporting the market uptake of biogas with a focus on delivering solutions that can effectively tackle local challenges yet also having high re-application potential. To ensure a consistent approach for their operation, this baseline strategy and operating model together with the monitoring framework, defined their key objectives and main activities along with the means to monitor their results.

Along these lines, each regional partner (WR – Belgium, FBCD – Denmark, Q-PLAN – Greece, APRE – Italy, SIE – Spain and PEDAL – Slovakia) were responsible for the establishment and operation a regional Hub in their respective region, while EDF and EBA supported with their pan European network, as shown by the following figure.

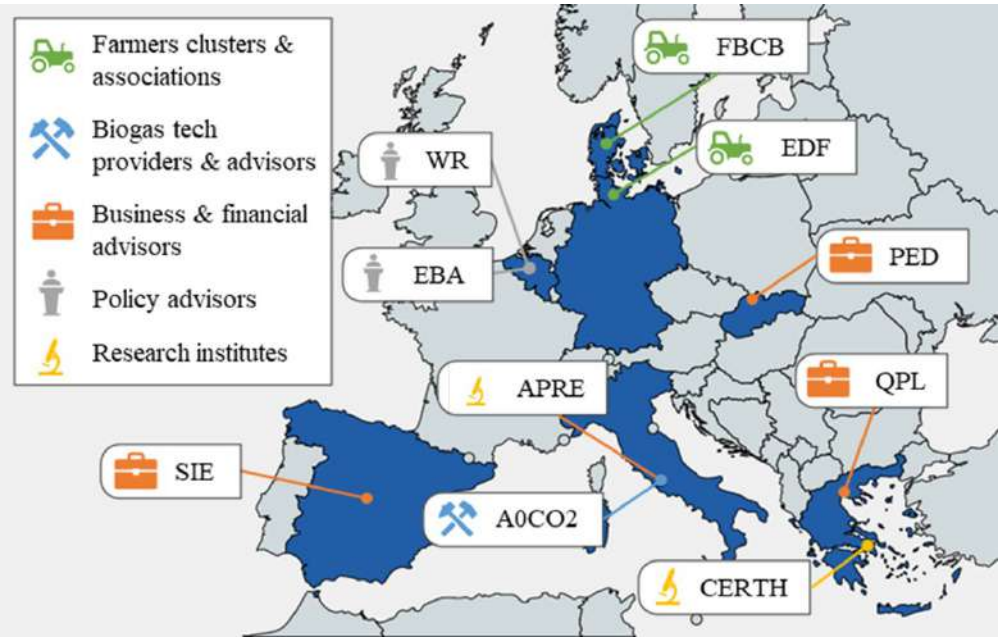



**Figure 1: Map depicting ALFA regional Hubs**

The key activities and objectives for ALFA Hubs included (these are further elaborated in Part 3 Operational Framework and Plan):

[1] IEA (2021). Potential and utilization of manure to generate biogas in seven countries

[2] Ferrario M, et al. (2018), Potential of biogas production from livestock manure in Europe

- Scouting, identification and engagement of livestock farmers with and without biogas systems and other stakeholders through the whole value chain of biogas (e.g. biogas plant owners using manure as biomass source), to receive and benefit from market uptake support measures (more info on the measures will be provided in the deployment and testing phase).
- Supporting projects from the livestock biogas value chain with tailored blends of technical and business support services, leveraging expertise available both locally as well as across borders with the help of consortium experts and other stakeholders connected to regional ALFA Hubs.
- Delivery of seminars and webinars aimed at building the capacity of livestock farmers and other key stakeholders in investing in, implementing, maintaining and upscaling biogas solutions.
- Design, implementation and monitoring of awareness raising campaigns with a view to dispelling biases and changing broad perceptions in biogas acceptance.
- Set-up of mutual learning workshops and missions to mobilise biogas value chain actors and stakeholders towards tackling key barriers as well as for catalysing connections and opportunities for new biogas projects.
- Organisation of cross-regional/-border networking event with a view to fostering knowledge exchange (on good practices, lessons learnt, etc.) for supporting the uptake of biogas systems.
- Keeping track and streamlining their activities based on feedback from stakeholders with a view to making a case for their added value and their vital role for driving the uptake of biogas market in local markets.

Aligned with this baseline, each regional partner defined and implemented a tailored strategy, for their regional hub during ALFA, considering the local capabilities and circumstances of each target market, as revealed by the rest of the preparatory activities conducted during the first semester of the project.

# 3. Operational Framework and Plan

Each regional Hub was run by a hub manager responsible for the activities of the Hub. The team of hub managers selected from people that were already closely working with regional market actors and stakeholders and were experienced, networked, trusted and thus, well-positioned to play this role under this approach.

The operational framework generally was based on a Key Account Management (KAM) approach to engage with market actors, stakeholders and communities more effectively. The importance of KAM in building long-term and trustful relationships was widely acknowledged in theory and practice, even more so in complex market environments thus making it a great fit for livestock and agricultural markets. The figure below offers an overview of our approach.

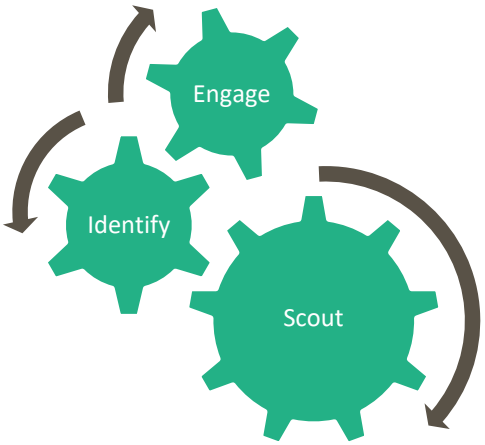

**Figure 2: Overview of KAM operation for market uptake support of projects**

A qualified KAM from our consortium was assigned by each regional hub. KAMs scouted for, identified and engaged with promising livestock projects to understand their needs, aligned on any relevant confidentiality issues and ultimately developed a personalised Service Action Plan (SAP) with KPIs and targets. In collaboration with our business and technical support partners, they aligned on the most appropriate service or services to be delivered as well as the appropriate partner to deliver them and follow up with the supported projects from the beginning to the completion of their journey, ultimately collecting feedback for co-evaluation. Service delivery leveraged a blend of personal contacts by regional KAM on the field, along with digital collaboration means for bringing in cross-border expertise.

## 3.1 Scouting, identification and engagement of projects and stakeholders

The ALFA Hubs, with the support of all partners identified, engaged and selected 53 promising projects (livestock farmers, biogas plant owners using manure, farmers' associations/cooperatives, energy communities, etc.) from 10 different countries in two rounds, which received and benefited from hands-on market uptake support services according to their needs and challenges. This process was conducted through open calls of interest across all regional Hubs to ensure an open and transparent participation process. Details on the deployment of two rounds are included in ALFA D3.2 "Report on deployment of ALFA Support Measures – First Round" and ALFA D3.4 "Report on deployment of ALFA Support Measures – Second Round".

**Figure 3: Hub engagement process**




Activities began as early as October 2023 (M12) and built upon leads generated by other project's activities (interviews, surveys, case studies developed under Work Package 1) to ensure that an adequate number of suitable projects has been identified, assessed and selected by January 2024 (M15) to timely kick-start delivery of technical support and consultancy as well as the provision of business and innovation support services. A similar process was followed for the second round. Potential projects identified were assessed against specific criteria before being selected and approached for participation. The selection of the projects was performed with a selection matrix, whereby partners scored nominated projects based on guidelines prepared by Q-PLAN. Regional Hubs contacted the winning projects and informed them about their expected involvement.

Insights of the design process of the open calls and the selection process are included in ALFA D3.1 "ALFA Operational Plans for the deployment of support measures – First Version" and ALFA D3.3 "ALFA Operational Plans for the deployment of support services – Final Version"

## 3.2 Supporting projects with technical and business support services

Support services were comprised of business, access-to-finance and technical support services for enhancing the market uptake of biogas solutions in livestock farming. These services were built upon already established successful services and well-tested methodologies and tools, ensuring that they could be delivered cost-effectively and efficiently, while also meeting the expectations of the market.

Moreover, through the KAM methodology, our services were adjusted to the needs of farmers driving biogas solutions in their facilities. The features, functions and resources required for the delivery of

these services were defined in detail by SIE, with the contribution of all partners, based on their existing service portfolio. The definition of each service included:

1. A service summary
2. Service Features
3. Resources required
4. Service process
5. Materials required for the delivery of the services, such as guidelines, questionnaires, presentations, templates, and resources.

Along these lines, the technical and business service portfolio (being developed and updated during the project) is concisely outlined below.

The **technical support services** provided to each project were customised according to their specific characteristics – such as e.g. stage of development, target deployment site, etc. – and drawn from a set of services available through the expertise of the offered thanks to the competencies of our consortium partners:

- Concept design and development for biogas systems: The conceptual design included critical aspects of biogas production, such as the determination of plant size and design, as well as the selection of appropriate technological solutions.
- Evaluation of biogas potential based on preliminary calculations: Selection of suitable mixtures of substrates that provided high biogas yield through the implementation of preliminary calculations. Biogas yield was taken into consideration as it was highly associated with biogas productivity.
- Energy and environmental analyses assessing the energy and carbon footprint across the life cycle: Evaluation of the environmental impacts stemming from biogas production through Life Cycle Analysis. LCA contributed to the identification of the most environmentally damaging stages and investigated scenarios in terms of various critical parameters, such as different feedstock types exploitation with respect to environmental aspects.
- Consultancy on the implementation and monitoring of biogas solutions, including operation and maintenance training: Contribution to the monitoring of biogas plants and to the organisation of efficient operations. Interaction with the collaborating farmers to eliminate potential concerns and obstacles.
- Technical support for farmers in the evaluation and comparison of plant suppliers' quotes: Supported the choice of optimal technical solution for biogas and biomethane production on their farm.
- Technology catalogue: Features of cleaning and upgrading equipment. A catalogue with various technologies for purifying and upgrading the biogas from an anaerobic digester.

The identification of each project's technical needs and the definition of the corresponding support provided were carried out by CERTH, A0CO2 and FBCD with the help of the Key Account Managers of the regional ALFA Hub. If these needs could not be effectively met through the expertise and service portfolio of CERTH, A0CO2 and FBCD, the projects were connected with suitable/appropriate technology suppliers, technical consultants or external professionals beyond our consortium.

The **business and financial support services** were comprised of:

- Market research: Building on primary and secondary marketing research and other techniques to analyse local biogas value chains and end users, with the objective to support livestock farmers and other stakeholders to avoid unnecessary development costs and capitalise on market opportunities to raise their chances of successfully integrating biogas solutions and unlocking the potential of their livestock manure.
- Business modelling and planning: Innovative business model analysis to de-risk and stimulate investments in RES. The aim was to support farmers in designing or improving the business models of their biogas solutions with easy-to-use and effective tools employed in practice to facilitate sustainability-oriented business model innovation from an economic, environmental (life cycle) and social perspective (triple layered business model Canvas).
- Access to finance support: Access to finance is a common barrier for deploying RES. This service supported livestock farmers and stakeholders to identify suitable financing solutions (private or public). Investment readiness support was also available depending on the availability of alternative funding (Angel Investors, Charity funding, Crowd Funding etc).
- Corporate and sustainable finance. The aim was to support livestock farmers and stakeholders in assessing the return of their investment in biogas solutions. Two major axes were identified: (i) corporate financial evaluation analysing key aspects (e.g. CAPEX, OPEX) and evaluating indicators to assess the effectiveness of the investment (NPV, IRR, ROI, etc.); (ii) sustainability evaluation using Environmental, Social and Governance (ESG) metrics; ESG metrics are used to identify potential risks and growth opportunities providing incentives for such investments and prospects for long term sustainability.
- Farmer/Expert to Farmer Advice: Mentorship and knowledge exchange from farmers and experts (who already have incorporated biogas solutions on their premises) among livestock farmers who are interested in such an activity (supported cases).

Services were provided with the help of the KAM responsible for contacting and onboarding the selected projects. The process began with a meeting (physical or digital) between the KAM and the project representative, to analyse their specific needs and to define the mix of services that could best meet their expectations. Based on the needs analysis outcome, the KAM, along with the support of the ALFA consortium, matched the project with the suitable consortium expert(s), who were then in charge of providing the required service(s), based on a tailored Service Action Plan (with KPIs and a time plan), co-defined with the project representative.

Details on the ALFA Service portfolio are included in ALFA D2.4 "ALFA market uptake support measures – First Version", ALFA D2.5 "ALFA market uptake support measures – Interim Version" and ALFA D2.7 "ALFA market uptake support measures – Final Version", while details on the deployment are in ALFA D3.2 "Report on deployment of ALFA Support Measures – First Round" and ALFA D3.4 "Report on deployment of ALFA Support Measures – Second Round".

## 3.3 Capacity Building Seminars and Webinars

All regional ALFA Hubs offered 1-day capacity building seminars aimed at training decision-makers in livestock farming, as well as regional stakeholders such as farmers, cooperatives, farmers' associations, energy communities, etc. The seminars focused on various biogas production methods and consumption approaches – including anaerobic digestion, combined heat and power generation, fertiliser production, waste management - and introduced the tools developed by the project (e.g. Decision Support Tool, Atlas Map, Biogas Forum, etc.), along with other relevant topics outlined in the table below.

The seminars were organised by the regional ALFA Hubs, who had been trained by SIE to ensure consistent quality of delivery. The resources required for their implementation (e.g. training material, presentations, exercises, quizzes, etc.) were defined and developed by experts from all partners under SIE's coordination, building upon existing content that is openly available or available to them from former activities, safeguarding efficiency and quality.

In addition to the seminars, 1-2-hour webinars were organised to attract the international audience of the livestock farming industry with material provided by SIE with the contribution of experts from the consortium.

**Table 1: Topics for Capacity Building**

| | |
|---|---|
| Challenges and needs for the uptake of biogas in livestock farming | ALFA support services, Decision Support Tool, and practical case with a Greek awardee |
| Biogas in the framework of circular economy systems | Exploring the framework conditions of ALFA regions |
| Waste management/treatment and biogas plants | Challenges and drivers for the uptake of biogas from dairy farming in EDF farms |
| The use of straw and grass for biogas production | Success cases from Italy and Spain |
| Overview of biogas in Europe | |

Details on the design of capacity building are included in ALFA D2.4 "ALFA market uptake support measures – First Version", ALFA D2.5 "ALFA market uptake support measures – Interim Version" and ALFA D2.7 "ALFA market uptake support measures – Final Version", while details on the deployment are in ALFA D3.2 "Report on deployment of ALFA Support Measures – First Round" and ALFA D3.4 "Report on deployment of ALFA Support Measures – Second Round".

## 3.4 Awareness Raising

All regional ALFA Hubs (with the support of regional partners) undertook the deployment of at least two campaigns throughout the project (one per round) to:

- inform farmers about the benefits of biogas solutions and the available opportunities,
- promote a better understanding of livestock farming challenges in the biogas market and how to overcome them.

The campaign messages, channels, target audiences, and timeframe of the online and offline campaigns per region were defined by APRE, with the support of regional partners, based on the specific barriers (limited consumer acceptance, information gaps, etc.) that each campaign was set on addressing in the regions. All partners were responsible for defining the objectives of the campaigns in their region, as well as supporting APRE with the definition of campaign strategy and plan for their region. The key messages conveyed at the regional awareness-raising campaigns were translated by the partners into their national languages and tailored to the target groups and the socioeconomic context of each region, incorporating basic behavioural levers (e.g., incentives).

**Table 2: ALFA's Targeted Stakeholder Groups**

| | |
|---|---|
| Biogas Value Chain | Actors involved in market uptake of biogas solutions in the livestock and agriculture sector from the supply or demand side:<br>• Farmers, such as livestock farmers, farmer groups and associations, agricultural cooperatives and biomass owners looking to adopt biogas solutions and unlock the RES potential of their facilities<br>• Biogas plant owners, using manure from nearby livestock farms as a biomass source |

| | |
|---|---|
| | • Biogas end users, for example, local industries, energy communities and distribution system operators<br>• Biogas technology providers seeking to introduce or already driving biogas solutions to market.<br>• Local professionals (planners, designers, installers, craftsmen) implementing biogas systems projects. |
| Energy & business advisors | Biogas technology advisors, such as ESCOs and associations (e.g. EEEC, IAEE)<br>Energy agencies and Biogas associations (e.g. IEA, IRENA, CRES, WBA, EBA, AEBIOM, etc.) are aiming to foster the adoption of biogas solutions.<br>Business, financial and policy advisors and supporting networks (e.g. EEN, private consultancies, etc.) that support businesses to bring their biogas solutions to the market. |
| Government and policy | Local authorities aiming to improve the environmental performance of the municipality (e.g. local agencies of agricultural planning, energy authorities, environmental departments, etc.).<br>Regional, national and European authorities that design biogas and biomass policies and financial frameworks at the regional, national, European and level. |
| Civil society | Action groups such as citizens' initiatives, environmentalists and NGOs.<br>Energy consumers (e.g. house owners, tenants, etc.) and their associations. |
| Academia and research | Research and development institutes researching, designing and testing biogas solutions.<br>Academics and experts within the biogas community<br>Staff of Technology Transfer Offices supporting the valorisation of biogas systems' research results. |
| Other stakeholders | Financial Institutions (e.g. local banks) financing promising private or public biogas projects. |

Our campaigns were underpinned by strong social media engagement to better appeal to farmers and stakeholders in the respective markets. Driven by communication strategies developed specifically for each target context and multiplied through ALFA Hubs and their communication channels, the campaigns conveyed simple and concise messages, translating professional and technical jargon of the identified biogas challenges and opportunities into a language that could be easily understood and resonate with people, highlighting the relevance to their daily lives and problems. The stakeholder groups that were involved in each case were routinely engaged through suitable channels (mostly social media but also other channels when deemed essential for achieving the objectives of a campaign) with a focus on spreading concise and understandable communication messages addressing the uptake challenges of each region.

Details on the design of Awareness Raising Campaigns are included in ALFA D2.4 "ALFA market uptake support measures – First Version", ALFA D2.5 "ALFA market uptake support measures – Interim Version" and ALFA D2.7 "ALFA market uptake support measures – Final Version", while details on the deployment are in ALFA D3.2 "Report on deployment of ALFA Support Measures – First Round" and ALFA D3.4 "Report on deployment of ALFA Support Measures – Second Round".

## 3.5 Set-up of mutual learning workshops and field trips

The ALFA Hubs in Denmark (FBCD), Italy (APRE), Spain (SIE) and Slovakia (PEDAL) organised four workshops and combined field trips that challenged cross-regional stakeholders' groups to collaborate in an exchange of good practices covering aspects from the design of biogas strategies to assessing progress in local markets. The workshops were organised in the form of full-day events and were combined with field visits to livestock farms with biogas systems or biogas plants using manure as the main biomass source. FBCD, APRE, SIE and PEDAL organised these field visits as one-day missions, where five - six market actors and stakeholders (e.g. farmers, policy

representatives, investors, etc.) from other regions were given a demonstration of locally deployed biogas solutions, facilitating the exchange of knowledge and good practices.

PEDAL also organised a networking event in Denmark as a back-to-back event with the ML Workshop following the Common Ground Camp approach in a one-day hybrid format (online and physical), engaging other EU funded projects/initiatives and formal/non-formal actors in the RES ecosystem (universities, policy makers, authorities, farmers, SMEs, investors, community groups, etc.), to facilitate cross-fertilisation, good practice exchange and co-creation of innovative approaches for facilitating RES investments. The following section presents details on the implementation of those Mutual Learning Workshops and the Networking Event.

# 4. Mutual Learning Workshops, Field Visits and Networking event

## 4.1 Introduction

As part of its mission to accelerate the uptake of renewable energy solutions in the EU, the ALFA project organised **a series of four Mutual Learning (ML) workshops and field visits across its regional hubs** in Denmark (FBCD), Italy (APRE), Spain (SIE), and Slovakia (PEDAL). These activities **fostered cross-regional knowledge exchange and supported the development of innovative approaches to biogas production from livestock farming**.

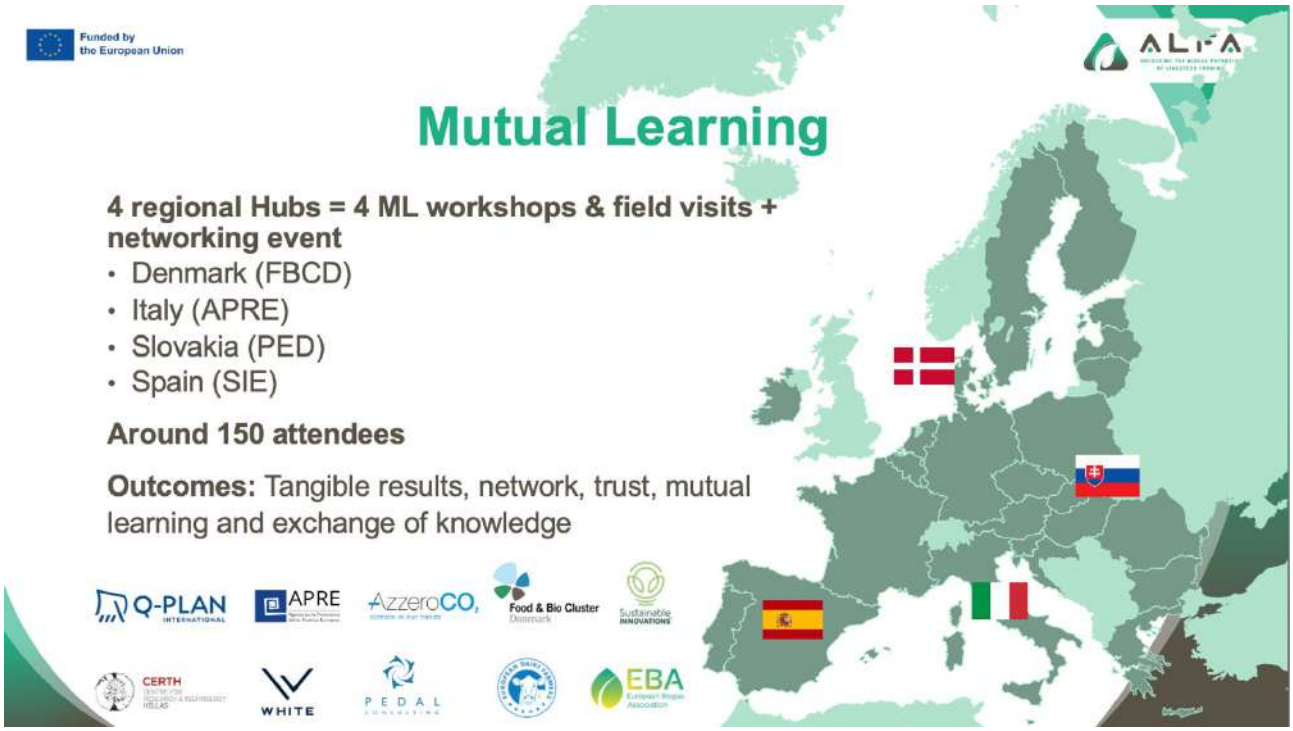



**Figure 4: ML workshops' countries**

The workshops brought together a **diverse range of stakeholders** such as farmers, agriculture organisations, biogas operators, technology providers, policymakers, researchers, investors, energy associations, etc. - representing the entire biogas value chain and embodying the quadruple helix model.

**Each event was distinctive** in both its thematic focus and practical component, combining expert presentations and interactive discussions with field visits to different biogas plants that turned theory into practice.

The first ML workshop, held in **Slovakia**, served as a model example (after the theoretical training and guidelines provided). The participants explored ways to improve biogas plant efficiency and generate alternative income sources. A visit to the EnergoTerra biogas plant illustrated these concepts in practice, showcasing the use of thermal energy to supply a nearby housing complex, a kindergarten, and a primary school. **In Denmark,** the spotlight was on advanced technologies, with visits to the Frijsenborg Biogas Plant and Aarhus University's pilot facility hosting the world's largest

biogas test site and a leader in Power-to-X research[1]. The **Italian workshop** focused on policy frameworks, complemented by a memorable field visit to Caseificio Boccea dairy, where cheese whey is transformed into biogas. **In Spain**, the emphasis was on market opportunities, with a site visit to CycleØ, a company converting waste into green gas.


**Figure 5: ML workshops' location**

Overall, the ML workshops examined both technical and policy aspects - from operational efficiency and revenue diversification to regulatory barriers, financing, renewable energy communities, and market uptake. The field visits provided hands-on insight into functioning biogas systems, ranging from commercial-scale plants injecting biomethane into the grid (Denmark, Spain) to small and mid-scale installations integrating dairy and livestock production (Italy, Slovakia). These experiences showcased best practices and enabled participants to compare regulatory environments, business models, and technological solutions across Europe.

In addition, a Networking event held in Denmark in April 2025 brought together actors from other EU-funded projects and the wider renewable energy ecosystem. Its hybrid format promoted cross-sector collaboration and strengthened the visibility of ALFA's results at the European level.

This section presents the four Mutual Learning and field visits reports (including the Networking event as a back-to-back event in Denmark), each following the same structure, to present general information, participant details, workshop and field visit organisation, results, evaluations, policy insights, dissemination activities, and annexes capturing both national contexts and shared insights.

[1] Sørensen, K. H. (2020). Biogas in Denmark – Insights and experiences from the Danish biogas sector (June 2020). Food & Bio Cluster Denmark. Retrieved from https://biogasclean.com/wp-content/uploads/2021/02/biogas-in-denmark-june-2020.pdf

## 4.2 Slovakia

**General information**

| | | |
|---|---|---|
| **Regional Hub** | **Slovakia (PEDAL Consulting s.r.o)**  | |
| **Title of the Workshop** | **Increasing the Efficiency of Biogas Plants (Alternative Revenue Sources for Biogas Plants)** | |
| **Date** | Mutual Learning Workshop | **26th November 2024** |
| | Field visit | **26th November 2024** |
| **Location** | Mutual Learning Workshop | Mamut Pub<br>Moyzesova 5400/28,<br>058 01 Poprad, Slovakia |
| | Field visit | Biogas plant Poprad-Matejovce / Energo Terra<br>Bezručova 15,<br>058 01 Poprad, Slovakia |
| **Format** | Mutual Learning Workshop | **In-person** |
| | Field visit | **In-person** |

**Attendees**

- **No. of attendees / No. of women**
  - Workshop – **25 / 8 female**
  - Field visit – **24 / 7 female**

**Categories of stakeholder:** Provider of biomass/biogas technology (8), Biogas and/or energy organization (4), Consulting company (3), Consultant/Organizer (2), Photographer (2), Research Consultancy/SME (2), Public administration - energy agency (1), Biogas plant owner (1), Farmer (1), Researcher (1)

**Organisation of the workshop and field visit**

Since the beginning, the workshop and field visit were planned to be organised in cooperation with the Slovak Biogas Association (SBA), as most of the biogas plants are SBA members.

The initial discussions took place long before its actual organisation. **Mr Michal Čarák**, the active member of SBA responsible for its biomethane section, has offered to host the field visit in the Poprad Matejovce biogas plant owned by EnergoTerra s.r.o. This specific biogas plant was selected also for other reasons, including all its heat utilisation. The use of heat as an additional source of income for biogas plants, exemplification of a practical energy community, both ignited the workshop agenda. Additionally, the plant uses manure as a primary feedstock for biogas production from its own livestock.

Figure 6: Biogas plant Poprad-Matejovce/ EnergoTerra, s.r.o.

To emphasise the impact, synergy, as well as the number of participants attending, in April 2024 **to combine the workshop with the field visit**. A bit later, to stress out the importance of workshops' main goal – the mutual learning, collaboration and exchange of good practices - also to organise **6th ALFA project meeting as a follow-up event**. The **workshop was planned to serve as a demonstration event** for ALFA partners, designed to showcase the organisation of ML workshops and the key areas of focus, ensuring their success. This initiative aimed to provide partners with a practical framework and actionable insights to confidently conduct similar workshops independently, since PEDAL Consulting s.r.o (PEDAL) is the leader of WP4, responsible also for T4.2 Mutual learning and good practice exchange.

In the summer months of 2024, the preparation phase for the workshop commenced. The strategy was, as already mentioned, to align it with the ALFA 6th project meeting hosted by PEDAL in Slovakia and use the natural environment for shooting the project's promotional video. Aiming **to maximise the outcomes, participants' attendance, and facilitate enhanced knowledge exchange.** On 9th September 2024, a Doodle form was circulated among the ALFA partners to find the most suitable date for both, ALFA Project Meeting as well as workshop combined with a field visit. Project partners, together with Mr Michal Čarák, manager of Poprad-Matejovce / EnergoTerra biogas plant and Mr David Kančo, Secretary General of SBA, agreed on 26th and 27th November 2024 to meet in Poprad, Slovakia. The dates and the place were set**.**

**Further discussions**, mostly about the workshop's agenda, continued among the PEDAL team, Mr. Čarák and Mr Kančo after the regional capacity building seminar in Bratislava, which took place on 15th October 2024. The situation in the biogas sector in Slovakia is quite alarming – the feed-in-tariff or 15-year state support of biogas plants will be coming to an end starting in 2025 for many biogas plants, and they will stand before a decision on what to do next. **The topic of the workshop**, incl. its content, was more than clear: **how to increase the efficiency of biogas plants and/or what are the alternative sources of revenue for biogas plants.** Both above-mentioned gentlemen agreed to speak at the event. Different related subtopics were put together - such as aggregation and flexibility, grid variability, energy sharing and energy communities, utilisation and monetisation of digestate, waste management, as well as additional opportunities for earnings in connection with biogas production, etc.

Figure 7: Biogas plant Poprad-Matejovce/ EnergoTerra, s.r.o.

The introductory part of the workshop was supposed to be dedicated to ALFA and SKILLBILL project promotion, as well as a short intro to the biogas market in Slovakia and in the EU.

As already mentioned, the date for the workshop and field visit was confirmed for **26th November 2024**, along with other key event details, including the format (in-person), timing (**9:00–17:30 CET**), agenda, speakers, and their presentations. Communication with SBA was conducted both via email and phone.

The workshop schedule and the duration of the field visit were carefully planned, considering winter weather conditions and the limited daylight hours in November (suitable also for ALFA promotional video shooting). The guided tour of the biogas plant was planned to be led by Mr. Čarák, the plant manager, ensuring an expert perspective and a comprehensive understanding of the facility's operations.

**Venue and location**

The venue for the workshop was chosen in the city of **Poprad**, in the northern part of Slovakia – High Tatras area, due to the biogas plant location (part of the city Poprad – in Matejovce). Hotel Mamut, along with the side-Mamut Pub restaurant, was selected as the main venue. After conducting market research, it was determined to be the most appropriate and cost-effective location, offering suitable seating arrangements. Catering services were included to support the workshop activities. Most participants were able to stay at the Hotel Mamut, which is located next to the Mamut Pub, limiting the need for additional transportation. The workshop venue was located above the restaurant, offering a modern setting ideal for the event, with catering services available on-site.


**Figure 8: Venue of the workshop – Mamut Pub, Poprad**

**Concept:** The primary objective of the workshop was to facilitate mutual learning and the exchange of good practices among participants. Each topic was presented from the perspectives of both Slovak and international speakers, ensuring a diverse range of insights and a solid base for discussions. A key emphasis was placed on providing enough time for discussion to achieve the workshop's core goal and to foster collaborative learning. Additionally, a field visit to a specific biogas plant was organised to offer a practical demonstration of one of the workshop's key themes: energy communities.

**Target audience:** The target audience for the workshop was carefully curated to represent the quadruple helix model, including farmers, agricultural cooperatives, biogas producers, technology providers, advisors, relevant authorities, industry associations, researchers, and academia.

**Agenda:** The workshop agenda was developed as already mentioned. It is described in detail in Section 8 of this document.

**Participant recruitment:** Participant recruitment was managed by PEDAL as well as ALFA project partners, utilising their own contact databases and networks (via personal contacts, phone calls, and emails). The relevant communication channels, such as the organisers' websites, social media, incl. the project's ones, were used as well. Email invitations, sent well in advance and outlining the workshop's purpose, objectives, logistical details and agenda, were sent to selected stakeholders and/or potential participants as well as ALFA partners. ALFA partners were also encouraged to invite

participants from their networks. An Infopack has been created for ALFA partners, as well as potential participants (can be found in Annex 10.2), summarising all necessary information about the venue and location of the workshop and field visit. To ALFA partners, it has been sent from Q-PLAN on 30th September 2024.

**Registration:** Registration was handled through a G-Form registration form prepared by PEDAL, with participants consenting to the processing of their personal data in compliance with GDPR regulations. The registration form is also annexed (Annex 10.1).

**Pre-event email reminder:** A few days before the event (on 21st November 2024), an email containing all necessary information, including the agenda, workshop venue, field visit location, transportation, refreshments, etc., was sent to registered participants. A copy of this email is included in Section 7 of this document.

**Evaluation/feedback:** After the workshop (on 2nd December 2024), a thank-you email, along with all presentations from the workshops, was sent to all participants. Additionally, a brief evaluation survey was distributed to gather feedback on the overall workshop experience, including content, speakers, and policy recommendations related to biogas. The feedback form is annexed (Annex 10.5) as well. Participants were also invited to reimburse the costs by filling in a reimbursement form.


**Figure 9: Visual summary of the Slovak workshop and field visit**

**Detailed summary of the workshop and field visit, and its results**

The workshop brought together key stakeholders from the biogas sector to explore alternative revenue sources for biogas plants, beyond the traditional model of selling electricity into the grid. The discussion was framed against the backdrop of the current situation in Slovakia, as already mentioned, where the **feed-in tariff and state support are set to end in 2028.** As a result, many biogas plant owners are seeking strategies to secure their future viability and continue plant operations. With 80 biogas plants currently operating in Slovakia, the future of these facilities remains uncertain.

While the gas grid and its regulation are well established at the EU level, **significant differences exist between member states**, particularly concerning feed-in tariffs. In Slovakia, the feed-in tariff is a critical factor in the long-term sustainability of biogas plants.

Currently, **biogas plays a crucial role in the circular economy**. In the past year, the EU produced 21 bcm of biogas and 4.2 bcm of biomethane, **creating 230,000 green jobs** – jobs that extend well beyond the production process itself. Biomethane's share of the market is growing, with a 20% increase in production in the past year alone. Projections indicate that **biogas production could reach 165 bcm by 2050**, with the agricultural sector playing a key role in achieving this target. Denmark, Poland, and Italy are leading the way in planned investments, and there are currently 1,548 biomethane plants in operation across the EU.


**Figure 10: Mr. George Osei Owusu (EBA)**

During the workshop, several key ideas emerged, highlighting potential alternative revenue streams for biogas plants:

**Figure 11: Mr. Michal Čarák (biogas plant manager)**

- **Upgrading to biomethane** can be a significant revenue source for existing biogas plants in the future. However, it is associated with high financial costs of transformation.
- **Change the input of feedstock** (energy balance, tank capacity, banks).
- **Cooperate with composters** to utilise the bio-waste, which has in many cases a high energy value (e.g. bakery waste).
- **Expand the portfolio** (digestate, $CO_2$, aggregation flexibility).
- **Aggregation flexibility** is crucial **for** maintaining network stability, frequency, and dilution levels.
- **Integrating biogas plants into renewable energy communities (RECs) can provide an additional revenue stream for biogas facilities.** The combination of various renewable energy sources (RES) within a single community can offer numerous advantages, such as regulated energy prices, reduced IMS costs, and lower distribution costs. However, a significant obstacle may be inadequate legislation in certain countries, including Slovakia, concerning renewable energy communities (REC). Currently, Slovakia has only four registered RECs, and the payback period for these projects is approximately 22 years**.**
- **Trading of digestate** can serve as another alternative revenue stream for biogas plants. However, the situation in Slovakia is complex, as there is currently no established market for digestate. Many farmers in Slovakia are hesitant to apply digestate to their fields due to negative perceptions. A practical solution could be the creation of platforms like **CYRKL** (a digital waste marketplace), which could help establish an online market for digestate trading, as well as for other feedstocks used in biogas plants.
- **Utilizing heat can offer an additional revenue opportunity for biogas plants**. A practical example is the Poprad-Matejovce/EnergoTerra biogas plant, which supplies heat to a nearby

residential complex. Other potential applications include providing heating for greenhouses used in vegetable production or warming facilities that house livestock on farms.

- **Other sources:**
  - **Certificates for biomethane.**
  - **CO2 capture from CHP (engine) plant/its use, and storage.**
  - **CO2 methanization and increased biomethane yield locally.**
  - **Liquid methane for the transport sector in Germany.**
  - **Pyrolysis of the fibre fraction, increased gas production and carbon storage.**

**Figure 12: Mr. Michael Støckler (FBCD)**

**Figure 13: The workshop atmosphere**

### Evaluation of the workshop and field visit

The feedback form has been circulated among participants after the workshop via email. In total **8 participants (32 % of all participants)** have filled out the feedback form. It highlights several strengths (meeting or exceeding the expectations of all respondents, various aspects of the workshop, including content, speakers, and relevance, knowledge gained, confidentiality to apply what they have learned in the workshop, field visit) as well as areas for improvement.

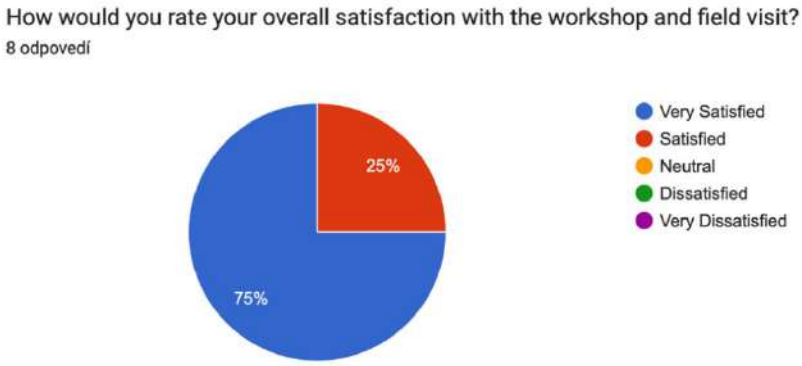



**Figure 14: Example of the Feedback Question: How would you rate your overall satisfaction with the workshop and field visit?**

Participants were pleasantly surprised by several aspects of the workshop. Key highlights included the **diversity and comprehensiveness of participants' skills**, which fostered an effective exchange of information, as well as the **sociable and inclusive atmosphere**. The **venue, accommodations, and the opportunity to interact with international guests and speakers** also stood out. Many appreciated the **open-minded approach of the speakers and participants**, the **insightful discussions**, and **the field visit**.

Suggestions for improvement focused on **expanding the event's reach and representation**. Recommendations included **involving ministry or regulatory representatives**, increasing participation – particularly from domestic attendees – and engaging the media. Other suggestions involved improving presentation consistency and ensuring the same templates for all presentations. However, some participants expressed complete satisfaction, noting the workshop as "perfect."

The feedback also provided actionable policy recommendations for local policymakers, emphasising incentives for biogas solutions, clear guidelines for digestate application, and fostering collaboration among stakeholders. It is summarised in detail in Section 6 of this report.

In summary, while the workshop and field visit were well-received, incorporating additional participants' interaction, addressing varied expectations for the field visit, and enhancing outreach efforts could further elevate future events organised by project partners.

### Policy recommendations

In the feedback form, the participants were asked the following question: "***Based on the workshop discussions, what specific policy actions do you recommend to local policymakers to support the deployment of biogas solutions, in your country? Please include specific examples, if possible***"

The results are as follows:

Participants proposed several policy actions to support biogas deployment, emphasising incentives and regulatory improvements. Key recommendations included:

- Introducing incentives for plants that modulate production to align with grid demands and for those that share heat from CHP systems, particularly within renewable energy communities.
- Providing operational support through feed-in tariffs for biomethane.
- Developing clear policies for biomethane production and use.
- Establishing better guidelines for digestate application on fields and soil.

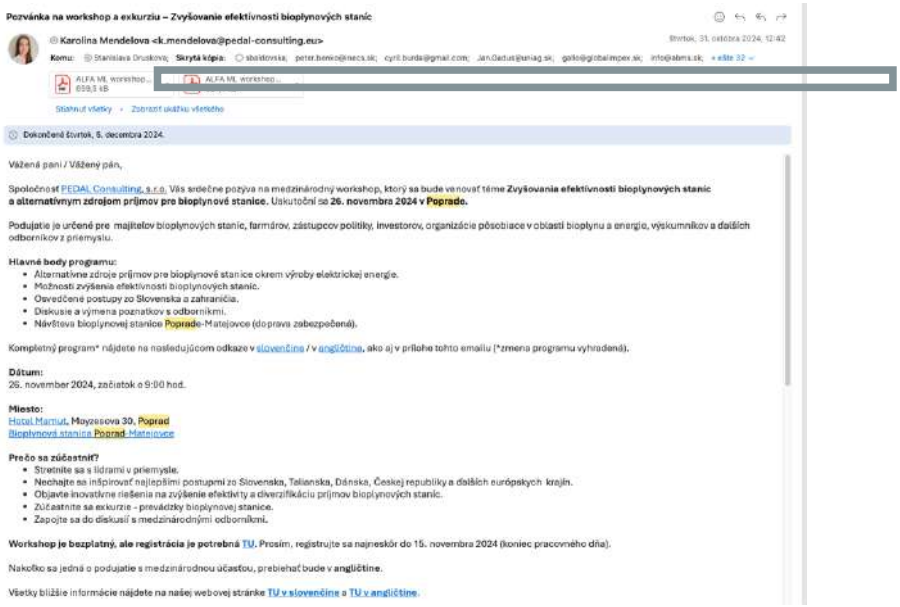
- Encouraging open communication between ministries, stakeholders, and producers.
- Promoting cooperation between biowaste producers and biogas plants to enhance efficiency and integration.
- Reducing bureaucratic hurdles, lowering tax burdens, and enhancing access to comprehensive information are critical steps to support the development of biogas initiatives.
- Establishing a dedicated funding office represents a strategic intervention to create a more enabling environment for biogas plant projects. Such a measure aligns with broader policy objectives, including the promotion of renewable energy, the reduction of greenhouse gas emissions, and the strengthening of national energy security.

These actions highlight the need for targeted financial support, clear regulations, and collaboration to advance biogas solutions.

**Dissemination and communications activities carried out before, during and after the workshop**

The recruitment of participants was done **via various channels**:

- **Invitation in-person** during the **ALFA regional seminar**: „Premeňte odpad na energiu: Možnosti a výzvy bioplynových staníc "("Waste-to-energy: Opportunities and challenges of biogas plants") in Bratislava, Slovakia on 15th October 2024.
- **Website post** in English as well as Slovak language on PEDAL website on 29th October 2024 and regularly updated with new information.
    - ENG: https://www.pedal-consulting.eu/workshop-invitation-increasing-the-efficiency-of-biogas-plants/
    - SVK:https://www.pedal-consulting.eu/pozvanka-na-workshop-zvysovanie-efektivnosti-bioplynovych-stanic/
- **Email invitation sent to selected stakeholders** on 31st October 2024.



**Pozvánka na workshop a exkurziu – Zvyšovanie efektívnosti bioplynových staníc**

Karolina Mendelova <k.mendelova@pedal-consulting.eu>

Kemu: Stanislava Druskova; Skrytá kópia: ...

Dokončené štvrtok, 5. decembra 2024.

Vážená pani / Vážený pán,

Spoločnosť PEDAL Consulting, s.r.o. Vás srdečne pozýva na medzinárodný workshop, ktorý sa bude venovať téme **Zvyšovania efektívnosti bioplynových staníc a alternatívnym zdrojom príjmov pre bioplynové stanice.** Uskutoční sa **26. novembra 2024 v Poprade.**

Podujatie je určené pre majiteľov bioplynových staníc, farmárov, zástupcov politiky, investorov, organizácie pôsobiace v oblasti bioplynu a energie, výskumníkov a ďalších odborníkov z priemyslu.

**Hlavné body programu:**
- Alternatívne zdroje príjmov pre bioplynové stanice okrem výroby elektrickej energie.
- Možnosti zvýšenia efektívnosti bioplynových staníc.
- Osvedčené postupy zo Slovenska a zahraničia.
- Diskusie a výmena poznatkov s odborníkmi.
- Návšteva bioplynovej stanice Poprade-Matejovce (doprava zabezpečená).

Kompletný program* nájdete na nasledujúcom odkaze v slovenčine / v angličtine, ako aj v prílohe tohto emailu (*zmena programu vyhradená).

**Dátum:**
26. november 2024, začiatok o 9:00 hod.

**Miesto:**
Hotel Marriott, Moyzesova 30, Poprad
Bioplynová stanica Poprad-Matejovce

**Prečo sa zúčastniť?**
- Stretnite sa s lídrami v priemysle.
- Nechajte sa inšpirovať najlepšími postupmi zo Slovenska, Talianska, Dánska, Českej republiky a ďalších európskych krajín.
- Objavte inovatívne riešenia na zvýšenie efektivity a diverzifikáciu príjmov bioplynových staníc.
- Zúčastnite sa exkurzie - prevádzky bioplynovej stanice.
- Zapojte sa do diskusií s medzinárodnými odborníkmi.

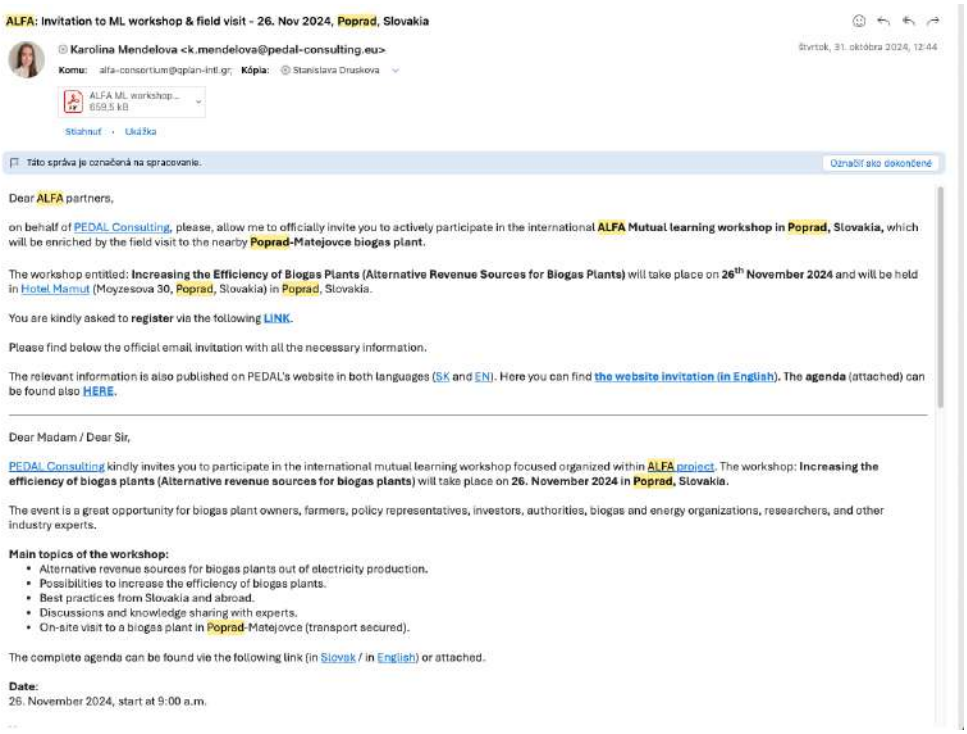
**Workshop je bezplatný, ale registrácia je potrebná TU.** Prosím, registrujte sa najneskôr do 15. novembra 2024 (koniec pracovného dňa).

Nakoľko sa jedná o podujatie s medzinárodnou účasťou, prebiehať bude v **angličtine.**

Všetky bližšie informácie nájdete na našej webovej stránke TU v slovenčine a TU v angličtine.

**Figure 15: Invitation email to local stakeholders**

- **Email invitation sent to ALFA partners** on 31st October 2024.



**ALFA: Invitation to ML workshop & field visit - 26. Nov 2024, Poprad, Slovakia**

Karolina Mendelova <k.mendelova@pedal-consulting.eu>
Komu: alfa-consortium@oplan-intl.gr; Kópia: Stanislava Druskova
štvrtok, 31. októbra 2024, 12:44

ALFA ML workshop...
659.5 kB
Stiahnuť · Ukážka

Táto správa je označená na spracovanie. Označiť ako dokončené

Dear ALFA partners,

on behalf of PEDAL Consulting, please, allow me to officially invite you to actively participate in the international **ALFA Mutual learning workshop in Poprad, Slovakia,** which will be enriched by the field visit to the nearby **Poprad-Matejovce biogas plant.**

The workshop entitled: **Increasing the Efficiency of Biogas Plants (Alternative Revenue Sources for Biogas Plants)** will take place on **26th November 2024** and will be held in Hotel Mamut (Moyzesova 30, Poprad, Slovakia) in Poprad, Slovakia.

You are kindly asked to **register** via the following **LINK.**

Please find below the official email invitation with all the necessary information.

The relevant information is also published on PEDAL's website in both languages (SK and EN). Here you can find **the website invitation (in English).** The **agenda** (attached) can be found also **HERE.**

---

Dear Madam / Dear Sir,

PEDAL Consulting kindly invites you to participate in the international mutual learning workshop focused organized within ALFA project. The workshop: **Increasing the efficiency of biogas plants (Alternative revenue sources for biogas plants)** will take place on **26. November 2024 in Poprad, Slovakia.**

The event is a great opportunity for biogas plant owners, farmers, policy representatives, investors, authorities, biogas and energy organizations, researchers, and other industry experts.

**Main topics of the workshop:**
- Alternative revenue sources for biogas plants out of electricity production.
- Possibilities to increase the efficiency of biogas plants.
- Best practices from Slovakia and abroad.
- Discussions and knowledge sharing with experts.
- On-site visit to a biogas plant in Poprad-Matejovce (transport secured).

The complete agenda can be found vie the following link (in Slovak / in English) or attached.

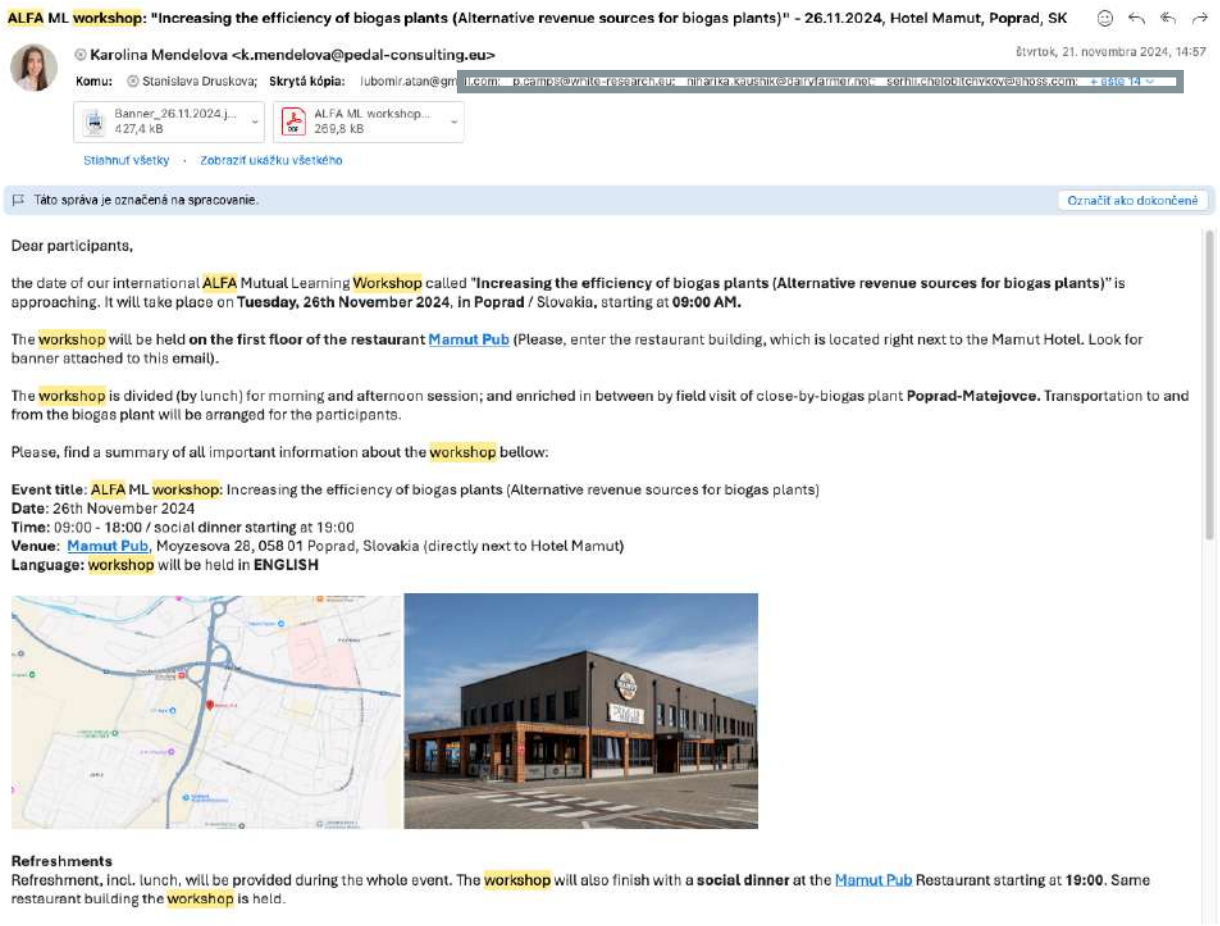
**Date:**
26. November 2024, start at 9:00 a.m.

**Figure 16: Invitation email to ALFA partners**

- **In-person recruitment at SBA Conference** (Future of Slovak Biogas 2024) in Zvolen, Slovakia, on 7th – 8th November 2024.


**Figure 17: Presentation of ALFA and recruitment of participants at SBA Conference on 7th – 8th November 2024**

- **Pre-event email reminder** sent to participants on 21st November 2024.



**ALFA ML workshop: "Increasing the efficiency of biogas plants (Alternative revenue sources for biogas plants)" - 26.11.2024, Hotel Mamut, Poprad, SK**

Karolina Mendelova <k.mendelova@pedal-consulting.eu> štvrtok, 21. novembra 2024, 14:57

**Komu:** Stanislava Druskova; **Skrytá kópia:** lubomir.atan@gm[illegible] p.camps@white-research.eu; niharika.kaushik@dairyfarmer.net; serhii.chelobitchykov@ehoss.com; + ešte 14

Banner_26.11.2024.j... 427,4 kB | ALFA ML workshop... 269,8 kB

Stiahnuť všetky · Zobraziť ukážku všetkého

Táto správa je označená na spracovanie. Označiť ako dokončené

Dear participants,

the date of our international ALFA Mutual Learning Workshop called **"Increasing the efficiency of biogas plants (Alternative revenue sources for biogas plants)"** is approaching. It will take place on **Tuesday, 26th November 2024**, **in Poprad** / Slovakia, starting at **09:00 AM.**

The workshop will be held **on the first floor of the restaurant** Mamut Pub (Please, enter the restaurant building, which is located right next to the Mamut Hotel. Look for banner attached to this email).

The workshop is divided (by lunch) for morning and afternoon session; and enriched in between by field visit of close-by-biogas plant **Poprad-Matejovce.** Transportation to and from the biogas plant will be arranged for the participants.

Please, find a summary of all important information about the workshop bellow:

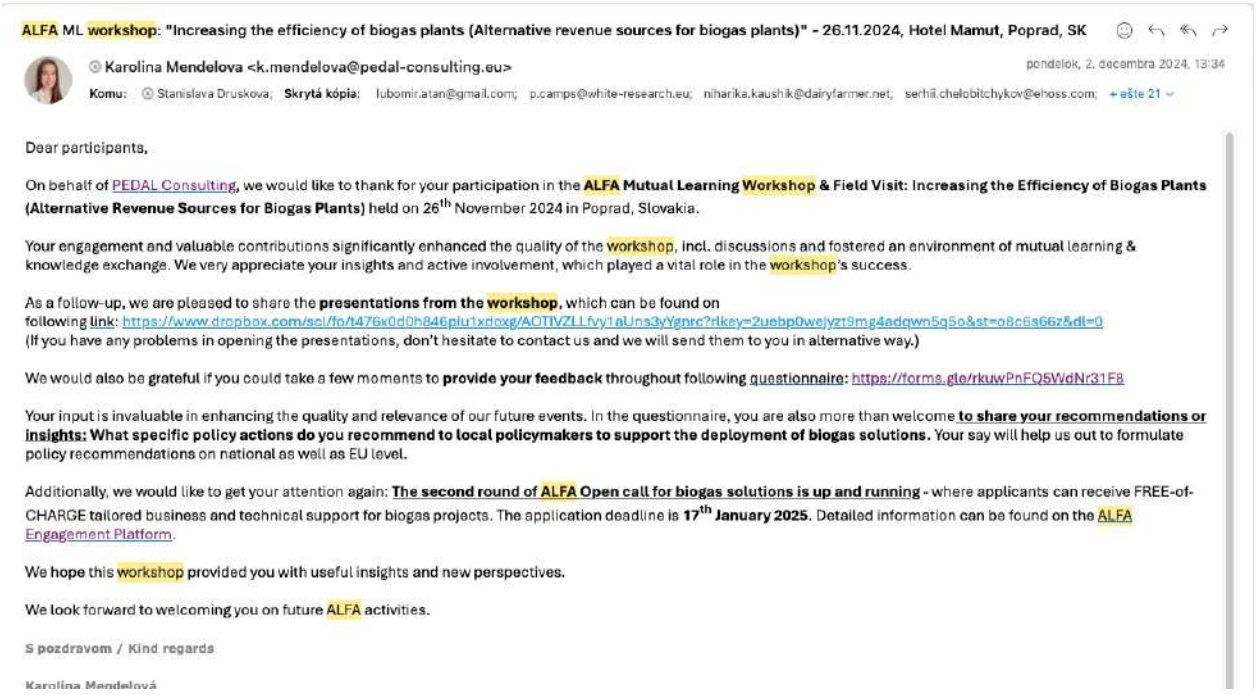
**Event title**: ALFA ML workshop: Increasing the efficiency of biogas plants (Alternative revenue sources for biogas plants)
**Date**: 26th November 2024
**Time**: 09:00 - 18:00 / social dinner starting at 19:00
**Venue**: Mamut Pub, Moyzesova 28, 058 01 Poprad, Slovakia (directly next to Hotel Mamut)
**Language:** workshop will be held in **ENGLISH**



**Refreshments**
Refreshment, incl. lunch, will be provided during the whole event. The workshop will also finish with a **social dinner** at the Mamut Pub Restaurant starting at **19:00**. Same restaurant building the workshop is held.

**Figure 18: Pre-event email reminder**

- **Thank you email** sent to all participants on 2nd December 2024.



**ALFA ML workshop: "Increasing the efficiency of biogas plants (Alternative revenue sources for biogas plants)" - 26.11.2024, Hotel Mamut, Poprad, SK**

Karolina Mendelova <k.mendelova@pedal-consulting.eu> pondelok, 2. decembra 2024, 13:34

**Komu:** Stanislava Druskova; **Skrytá kópia:** lubomir.atan@gmail.com; p.camps@white-research.eu; niharika.kaushik@dairyfarmer.net; serhii.chelobitchykov@ehoss.com; + ešte 21

Dear participants,

On behalf of PEDAL Consulting, we would like to thank for your participation in the **ALFA Mutual Learning Workshop & Field Visit: Increasing the Efficiency of Biogas Plants (Alternative Revenue Sources for Biogas Plants)** held on 26th November 2024 in Poprad, Slovakia.

Your engagement and valuable contributions significantly enhanced the quality of the workshop, incl. discussions and fostered an environment of mutual learning & knowledge exchange. We very appreciate your insights and active involvement, which played a vital role in the workshop's success.

As a follow-up, we are pleased to share the **presentations from the workshop**, which can be found on following **link**: https://www.dropbox.com/scl/fo/t476x0d0h846piu1xdoxg/AOTIVZLLfvy1aUns3yYgnrc?rlkey=2uebp0wejyzt9mg4adqwn5q5o&st=o8c6s66z&dl=0
(If you have any problems in opening the presentations, don't hesitate to contact us and we will send them to you in alternative way.)

We would also be grateful if you could take a few moments to **provide your feedback** throughout following questionnaire: https://forms.gle/rkuwPnFQ5WdNr31F8

Your input is invaluable in enhancing the quality and relevance of our future events. In the questionnaire, you are also more than welcome **to share your recommendations or insights: What specific policy actions do you recommend to local policymakers to support the deployment of biogas solutions.** Your say will help us out to formulate policy recommendations on national as well as EU level.

Additionally, we would like to get your attention again: **The second round of ALFA Open call for biogas solutions is up and running** - where applicants can receive FREE-of-CHARGE tailored business and technical support for biogas projects. The application deadline is **17th January 2025**. Detailed information can be found on the ALFA Engagement Platform.

We hope this workshop provided you with useful insights and new perspectives.

We look forward to welcoming you on future ALFA activities.

**S pozdravom / Kind regards**

**Karolína Mendelová**

**Figure 19: Thank you email**

### Agenda

### Session 1: Welcome and Introduction

The first session began with a **welcome and introduction by the PEDAL team**. **Ioannis Konstas** from Q-PLAN then delivered a **brief presentation on the ALFA project**, outlining its objectives and current activities. This was followed by **Enrico Facci** from AzzeroCO2, who presented the **SKILLBILL project**. **Dávid Kančo**, Secretary General of the Slovak Biogas Association (SBA), then spoke on the topic of **biogas in Slovakia**, addressing its challenges, possibilities, and opportunities. **George Osei Owusu** from the European Biogas Association (EBA) provided a **European perspective on the biogas market**, focusing on the role of livestock and agricultural feedstocks in biogas production, as well as growth potentials towards 2050. Due to time constraints, the first scheduled coffee break was postponed.

### Session 2: Main Workshop Session on Alternative Revenue Sources

Following the introductory presentations, the second session focused on alternative revenue sources for biogas plants. This session featured Slovak good practices, followed by international best practices, offering participants diverse perspectives and ample space for discussion.

**Michal Čarák** presented on the topic of **Aggregation Flexibility**, addressing aggregation, flexibility, and optimisation of energy supply to the grid, exemplified through the Slovak best practice of 9 biogas plants supplying the grid with electricity based upon the aggregation, optimisation and flexibility. **George Osei Owusu** then shared insights into the analysis of cost-sharing, gas quality measurements, monitoring practices in various countries, and the gas grid connections process, followed by a **discussion on the presented topics**.

The workshop then moved to the topic of energy communities. **Stanislav Laktiš** from the Slovak Innovation and Energy Agency (SIEA) presented a Slovak status quo when it comes to energy communities – in 2022 law was passed which enabled energy sharing in Slovakia. But since then, there have been only 4 established, and the ROI is very high. **Enrico Facci** followed with the Italian case of Renewable Energy Communities (REC) with a concise presentation ending with REC advantages and benefits. Next, **Erika Fečke-Gyongy** from SBA/Schaumann and **Michal Čarák** presented on additional revenue sources for biogas plants, specifically the utilisation/monetisation of digestate and heat utilisation. The morning session concluded with **another round of discussions**.

After each block of presentations, the **knowledge-sharing sessions** and **focused discussions** centred on the topics presented followed. These sessions were designed to encourage active participation, Q&As, allowing attendees to exchange insights, share best practices, and explore the practical implications of the concepts introduced during the presentations. These discussions provided a platform for deeper engagement, fostering collaborative problem-solving and enabling participants to address specific challenges or questions related to the topics at hand.

**Figure 20: Knowledge sharing session**

**Field Visit to Biogas Plant Poprad-Matejovce**

Figure 21: Field visit in Poprad Matejovce biogas plant

After a short lunch break at Mamut Pub, participants were transported to the nearby **Biogas Plant in Poprad-Matejovce for a field visit**. The transport was arranged by the organizers through a local taxi company. During the visit, Michal Čarák, the plant manager, provided a **detailed tour and professional commentary** on the plant's operations.

The biogas plant in Poprad-Matejovce combines **plant and livestock production** within both conventional and organic farming systems. Since it was built in 2013, the plant has demonstrated significant efficiency with an installed capacity of **999 kW for electricity** and **788 kW for heat.** It produces approximately **12,000 m³ of gas daily**, totalling up to 3,960,000 Sm³ of biogas annually, with a methane concentration of around 52%.

During the guided tour, the participants were able to view **various facilities of the biogas plant** with their descriptions. The tour also included a presentation on the plant's operational processes. The participants were able to see two CHP (2G) in action with a capacity of 999 kW for electricity and 788 kW for heat. Raw materials are fed from Fliegl containers through a feeder, rondomat, and conveyors into a multi-stage wet anaerobic fermenter with a concrete roof.

After fermentation, the digestate is transported to fields as fertiliser. Biogas from the secondary fermenter is dehydrated in a condensation chamber before being channelled into the gas pipeline. The cogeneration units, equipped with Liebherr engines adapted for biogas combustion, produce both heat and electricity, maximising resource utilisation.

The primary feedstocks they use include plant-based components such as **maize and grass silage,** alongside **waste from plant and food production and livestock manure** (both cattle and poultry). Most raw materials are sourced from the plant's own farm and surrounding fields, supplemented by external suppliers, including the nearby Hydinárne Kežmarok facility.

The Poprad-Matejovce biogas plant is a good example **of efficient renewable energy utilisation**. It supplies heat to the nearby housing complex Poprad-Matejovce, meeting the needs of 1,000 households, 384 apartments, and local schools.

Additionally, the facility uses its energy for fermenter operations, administrative heating, and grain drying, further showcasing its operational efficiency and sustainability.

During the tour, participants were also given the opportunity to visit the farm located within the biogas plant premises, which houses bulls. This additional aspect of the visit provided insights into the integration of livestock farming with the biogas production process, demonstrating the comprehensive and sustainable approach of the facility.

**Session 3: Additional Opportunities and Conclusion**

After returning to Mamut Pub, the final session of the workshop began. **Zuzana Špuntová** from CYRKL presented on the online waste marketplace, and **Michael Støckler** from FBCD discussed additional revenue opportunities related to biogas production, including certificates for biomethane, pyrolysis of fibre fractions, increased gas production, and carbon storage. The workshop concluded with a fruitful **knowledge-sharing discussion** on the presented topics at 17:30, as planned.

**Social Dinner**

The workshop was followed by an informal social dinner, which began at 19:00 at Mamut Pub. The informal discussions continued also there.

## Agenda

ALFA
UNLOCKING THE BIOGAS POTENTIAL OF LIVESTOCK FARMING

ALFA Mutual learning Workshop & Field Visit:

Increasing the efficiency of biogas plants
(Alternative revenue sources for biogas plants)

Date: 26th November 2024
Location: Poprad, Slovakia
Venue: Mamut Pub (directly next to Hotel Mamut) and Biogas Plant Poprad-Matejovce

AGENDA *

| Time | Topic | Who |
|---|---|---|
| **Session 1 (09:00 – 10:30): Introduction** | | |
| 9:00 – 9:10 | Welcome & Introduction | Stania Druskovš & Karolina Mendelová (PEDAL Consulting) |
| 9:10 – 9:20 | ALFA project in a nutshell | Ioannis Kostas (QPLAN) |
| 9:20 – 9:30 | SKILLBILL project in a nutshell | Enrico Facci (AzzeroCO2) |
| 9:30 – 9:45 | Intro to biogas in Slovakia: Challenges, possibilities and opportunities in Slovakia | Dávid Kančo, MSc. (Secretary General of SBA) |
| 9:45 – 10:05 | EBA: The European perspective the state of the biogas market: The share of livestock and agricultural feedstock in biogas production and growth potentials towards 2040 | George Osei Owusu (EBA) |
| 10:05 – 10:20 | Q & A (Knowledge Sharing Session/Discussion) | Moderator: Dávid Kančo |
| 10:20 – 10:30 | 10-MINUTE COFFEE BREAK | |
| **Session 2 (10:30 – 11:30): Alternative revenue sources – PART 1** | | |
| 10:30 – 10:45 | Aggregation flexibility: Aggregation, flexibility and optimization of EE supply to the grid (SK Best practice) | Michal Čarák (manager of Poprad-Matejovce biogas plant) |
| 10:45 – 11:05 | Grid Variability - Grid connection in Europe: Analysis of cost-sharing, gas quality measurements and monitoring practices in some countries + gas grid connections process + how this works in other countries | George Osei Owusu (EBA) |
| 11:05 – 11:20 | Q & A (Knowledge Sharing Session/Discussion) | Moderator: Dávid Kančo |
| 11:20 – 11:30 | 10-MINUTE COFFEE BREAK | |

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ALFA
UNLOCKING THE BIOGAS POTENTIAL OF LIVESTOCK FARMING

| | | |
|---|---|---|
| 11:30 – 11:45 | Energy sharing to increase revenues: the Italian way to Renewable Energy Communities (RECs). Legal framework, technical characteristics, incentives | Enrico Facci (AzzeroCO2) |
| 11:45 – 12:00 | Benefits of energy communities in Slovak conditions | Stanislav Laktiš (SIEA) |
| 12:00 – 12:15 | Utilisation/Monetization of digestate | Erika Fečke-Gyongy (SBA/ Schaumann) |
| 12:15 – 12:30 | Heat utilisation: Invitation to Poprad-Matejovce biogas plant | Michal Čarák (manager of Poprad-Matejovce biogas plant) |
| 12:30 – 12:45 | Q & A (Knowledge Sharing Session/Discussion) | Moderator: Dávid Kančo |
| 12:45 – 13:30 | LUNCH BREAK | |
| **Field visit (13:30 – 16:00): Biogas plant EnergoTerra, a.s. / Poprad-Matejovce** | | |
| 13:30 – 14:00 | Transportation to the biogas plant Poprad-Matejovce | |
| 14:00 – 15:30 | Tour & discussion around the biogas plant Poprad-Matejovce | Guide: Michal Čarák (manager of Poprad-Matejovce biogas plant) |
| 15:30 – 16:00 | Transportation back to the Mamut hotel | |
| **Session 3 (16:00 – 17:30/18:00): Alternative revenue sources – PART 2** | | |
| 16:00 – 16:15 | CYRKL – online waste marketplace | Zuzana Špuntová (CYRKL) |
| 16:15 – 16:45 | Additional opportunities for earnings in connection with biogas production<br>• Certificates for biomethane<br>• $CO_2$ capture from CHP (engine) plant/its use and storage<br>• $CO_2$ methanization and increased biomethane yield locally<br>• Liquid methane for the transport sector in Germany<br>• Pyrolysis of the fiber fraction, increased gas production and carbon storage | Michael Stöckler (FBCD) |
| 16:45 – 17:15 | Q & A (Knowledge Sharing Session/Discussion) | Moderator: Dávid Kančo |
| 17:15 – 17:30 | CLOSURE OF THE WORKSHOP[1] | |
| **SOCIAL DINNER (19:00 – on): Mamut Pub Restaurant** | | |

*Agenda is subject to change.

[1] Informal discussion can continue either in the same room or in the restaurant/bar below. For non-hotel-Mamut-guests there is about an hour time to go to rest/change if needed. If not, you all are more than welcome to continue with the informal discussion until the dinner is served.

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**Figure 22: Agenda of the workshop and field visit**

## Photos

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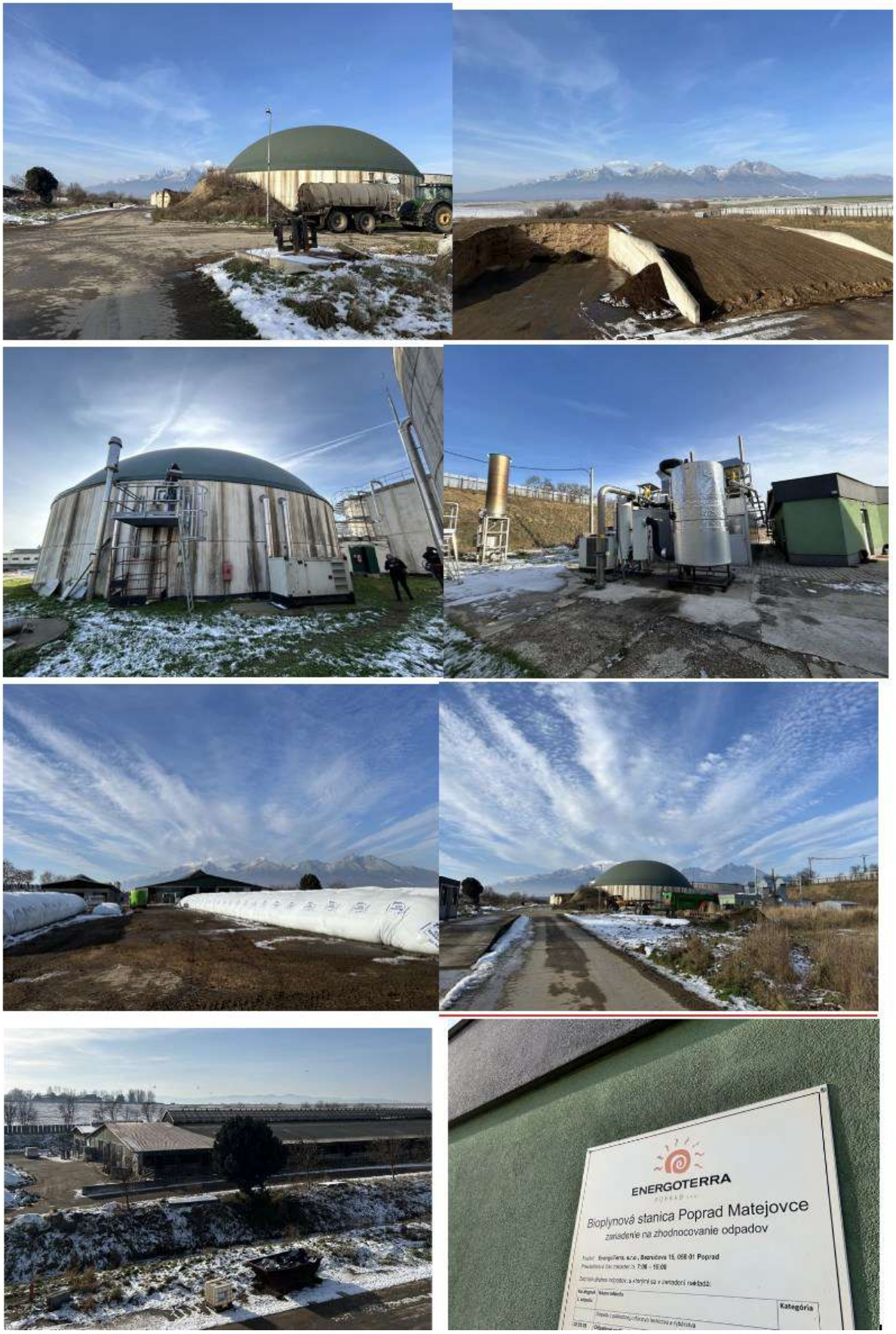
ENERGOTERRA
Bioplynová stanica Poprad Matejovce
zariadenie na zhodnocovanie odpadov
Kategória

**The list of attendees signed by participants is kept by the organiser.**

## Infopack:

# INFOPACK

## ALFA Mutual Learning Workshop & Field Visit and ALFA 6th Project Meeting

**Dates:**

- 26th November 2024 – Mutual Learning Workshop & Field Visit
- 27th November 2024 –ALFA 6th Project Meeting

**Location: Poprad, Slovakia**

Here is everything you need to know about ALFA Mutual learning workshop & Field-visit and ALFA 6th Project Meeting organised by PEDAL Consulting.

**Venue**

ML workshop & ALFA 6th Project Meeting (same venue for both days/events)
Hotel Mamut
Adress: Moyzesova 30, 058 01 Poprad
Website: https://hotelmamut.sk/


*Figure 1: Venue map*



### Field visit

The field visit will take place during or after the ML learning workshop - on 26th November 2024. We will be visiting the biogas plant Poprad-Matejovce (EnergoTerra, s.r.o.), one of ALFAs success biogas case, located in city-part Poprad Matejovce (around 6 km away from the venue).

What makes this biogas plant special is that the excessive heat from the plant is used for the community heating in the nearby area. The plant manager – Mr. Michal Čarák is also member of Slovak biogas association and was the beneficiary of ALFA business & technical services during its 1st round.

Transport to the biogas plant from venue will be organised.

*Figure 2: Biogas plant Poprad-Matejovce/ EnergoTerra, s.r.o.*

**How to reach Poprad**

Traveling by plane to Poprad directly (Poprad-Tatry Airport (TAT), Slovakia – 5 km) may be the most convenient, however there are not many regular flights operating directly there - please, check your airlines (www.skyscanner.net). The nearby airports are in Košice (the closest one), then Bratislava, or Vienna (Austria):

- Poprad-Tatry Airport (TAT), Slovakia – 5 km
- Košice International Airport (KSC), Slovakia – 130 km
- Bratislava Airport M. R. Štefánika (BTS), Slovakia – 320 km
- Vienna Airport Schwechat (VIE), Austria – 390 km

### Arrival to the city Poprad

**From Poprad-Tatry Airport:**

To get from Poprad-Tatry Airport to Poprad city center, you have a few options. The distance is about 5 km and takes around 10 minutes. There is no public transport to/from the airport, so you can only use taxis or rental cars:

**Taxis**

There are no mobile apps like Bolt or Uber in Poprad, so you can only use classic taxis. There are usually plenty



of them waiting outside the airport building for each scheduled arrival. The official service is provided by radiotaxi-poprad.sk. Prices to the centre of Poprad are about 8 €.

**Rental cars**

Several car rental companies, such as Budget or Sixt, also have a branch at the airport.

### From Košice Airport:

To travel from Košice Airport to Poprad city, you have several options. The distance is about 120 km and takes around 2 – 4 hours depending on the type of transportation.

**Train**

The train is generally the most popular option. First take public transport from Košice Airport (bus line 23) to Košice main train station (Staničné námestie - end station), or you can use taxi. Tickets for public transport cannot be bought from the driver, but from vending machines at the bus stop. One ticket cost 1,00 € for 30 minutes or 1,20 € for 60 minutes.

From there you can take one of the trains operated by ZSSK (Slovak Railways) to destination Poprad-Tatry. The train journey takes approximately 1 hour and 20 minutes depending on the connection and cost around 5,30 €. Tickets for the train can be bought direct in the train station or through the website of Slovak railways. All connections can be found on the official website of Slovak railways.

**Bus**

First take public transport from Košice Airport (bus line 23) to Košice main bus station, next to the main train station (Staničné námestie - end station), or you can use taxi. Tickets for public transport cannot be bought from the driver, but from vending machines at the bus stop. One ticket cost 1,00 € for 30 minutes or 1,20 € for 60 minutes. From there you can take one of the following buses to the destination Poprad. The bus journey takes approximately 1.5 – 2 hours and cost around 11 - 20 €. Tickets for the buses can be purchased in bus but recommend buying ticket online in advance. On this road operate local bus carriers (mostly connection with transfer) or Flixbus (direct connection).

**Own vehicle / rental car**

You can rent a car at Košice Airport and drive to Poprad via the D1 highway. The drive takes about 1.5 – 2 hours. Several car rental companies, such as RAI Car rental, PRESTIGE rent-a-car or Sixt, have a branch at the airport.

### From Bratislava Airport:

To travel from Bratislava Airport to Poprad city, you have several options. The distance is about 330 km and takes around 3 – 4 hours depending on the type of transportation.

**Train**

First take public transport from Bratislava Airport (bus line 61) to Bratislava main train station (Hlavná stanica - end station), or you can use taxi. Tickets for public transport cannot be bought from the driver, but from vending machines at the bus stop. One ticket cost 1,10 € for 30 minutes or 1,60 € for 60 minutes. From there you can take one of the following trains operated by ZSSK (Slovak Railways) to destination Poprad-Tatry. The train journey takes approximately 4 hours depending on the connection and cost around 14,84 €. Tickets for the train can be bought direct in the train station or through the website of Slovak railways. All connections can be found on the official website of Slovak railways.



**Bus**

There are bus connections between Bratislava and Poprad, however they are not frequent. Therefore, we recommend taking the train or a car.

**Own vehicle / rental car**

Renting car is probably the fastest and most convenient way how to get from Bratislava Airport to Poprad city. The journey takes around 3 hour 30 minutes. Several car rental companies, such as Global Rent-a-Car, PANEK or Sixt, have a branch at the airport.

### From Vienna Airport:

To get from Vienna Airport to Poprad, Slovakia, you have several travel options. The distance is about 400 km and takes around 4 – 6 hours depending on the type of transportation.

**Train**

The train journey from Vienna Airport to Poprad will require a change in Bratislava. You can take a train from the Vienna airport to Vienna's main train station. Trains leave every 30 minutes; journey takes about 15 minutes and cost around 5,00 €. From Vienna main train station, you can take a train operated by ÖBB (Railway company of Austria) or ZSSK (Slovak Railways) to Bratislava - Petržalka station. Train from Vienna main train station to Bratislava-Petržalka cost 18,00 € (return train ticket) and usually takes about 1 hour. You can buy tickets at the train station or online.

From there you take public transport to the Bratislava main train station (bus line 93 direction Hlavná stanica - end station). From there you can take direct train to Poprad-Tatry, like already mentioned.

**Bus**

There is also a bus connection between Vienna Airport and Poprad. FlixBus operates routes between Vienna and Poprad. Depending on the time of day and service, some buses are direct, while others may require a transfer in Bratislava. The bus journey can take around 5 to 7 hours, depending on stops and traffic.

Several bus companies operate direct routes from Vienna International Airport to Bratislava, including FlixBus, Slovak Lines, and RegioJet. Buses leave frequently (around every hour), and the journey takes approximately 1 to 1.5 hours, depending on connection. You can get off at Bratislava Nivy Bus Station (connected to Bratislava Hlavná Stanica, the main train station via public bus line 40 direction Hlavná stanica). From Bratislava main train station, you can catch a direct train to Poprad-Tatry station, like already mention above. You can buy bus tickets online via FlixBus, Slovak Lines, or RegioJet websites, or at the airport bus stop.

**Own vehicle / rental car**

You can rent a car at Vienna Airport and drive to Poprad. The driving distance is about 390 km. The drive usually takes about 4 to 5 hours depending on traffic and weather conditions. You would drive via the A4 highway from Vienna, then cross into Slovakia, continuing the D2 and D1 highways toward Poprad.

**Flight**

While there are no direct flights from Vienna to Poprad, you could fly to Košice Airport (KSC), which is around 1.5 hours away from Poprad by bus or train (see already mentioned information). You can find connecting flights via Bratislava or other cities, but it's generally not the most convenient option.

## Accommodation

For the convenience we recommend staying in accommodation direct in Poprad city. Please find here below some of the recommended accommodations that are close to the venue:
(click on the name to be redirect to the accommodations website for more information)

- Hotel Mamut – place of the venue
  - accommodation types:
    - Standard room - price per person per room 60€/night
    - Deluxe room (balcony + view of the Tatras) - price for one person per room 65€/night
    - Apartment CITY - price 125€/night
    - Apartment PANORAMA (balcony + kitchen) - price 135€/night
    - Apartment FAMILY (terrace + kitchen + living room) - price 135€/night
  - breakfast not included (+ 9€)
  - surcharges: local tax 2,50€/ person/ night
  - reception contact: recepcia@hotelmamut.sk, + 421 940 444 777
- Boutique Hotel Villa ZAUBER
- Garni Hotel Tatramonti
- HOTEL 63
- Hotel SATEL
- Tatra Hotel

## How to move around Poprad with public transport

To move around city of Poprad you can use public transportation – buses (blue&white from outside). You will also recognise Poprad public transport buses under the sign "365 CITY POPRAD". When travelling by public transport, we recommend buying single tickets - adult - 30 minutes (1,00 €) or 60 minutes (1,60 €). Single tickets are sold at the bus driver, and payment is possible in cash. Alternatively, it is possible to buy tourist tickets directly from the bus driver (payment in cash). They are valid for a set number of hours from the time of purchase - 24 hours - 5,00 € or 72 hours - 12,00 €. (Map of public transport lines in Poprad).

*Figure 3: Map of public transport lines in Poprad*

The stop in the near of the venue is "Bajkalská" (bus line n.1 - yellow line).

However, the city of Poprad is relatively small and walkable, and that's why there might not be a need to use the public transport if staying in the in the city centre.



## Catering & Social dinner

The catering will be provided during the whole Mutual Learning workshop & Project Meeting. We would like to ask you to let us know your special dietary preferences, food allergies or intolerance by adding your information in the Google Form in the Participation form.

There will be a social dinner held on the 26th November 2024. If you want to join us, please, *don't forget to confirm your participation* in the Participation form. We will provide you with the information on the place of the social dinner later.

## What to do in Poprad and in the nearby?

***Poprad Highlights***

One of the key landmarks in Poprad is the St. Egidius Basilica, a 13th-century Gothic church located in the town's center. Its historic architecture and peaceful surroundings make it a must-see for visitors interested in local history. The town's main square, Námestie Svätého Egídia, is lined with charming cafés, restaurants, and local shops. November's cool weather offers the perfect opportunity for a relaxing stroll through this picturesque area.

If you're interested in learning more about the region's rich history and culture, Podtatranské Museum is a great place to visit. The museum features exhibit on local archaeology, history, and ethnography, giving visitors a deeper understanding of the area.

***Exploring the High Tatras***

The High Tatras (Vysoké Tatry), just a short distance from Poprad, are one of Slovakia's most stunning natural attractions. In November, while some higher-altitude hiking trails may be closed due to snowfall, the lower trails remain accessible. These offer breathtaking views of the mountains as they transition into their winter beauty.
The cable cars at Tatranská Lomnica operate year-round, allowing visitors to take in panoramic vistas of the snow-capped peaks.



A particularly beautiful spot is Štrbské Pleso, a glacial lake surrounded by forest and mountains. It's an ideal place for a peaceful walk and to experience the quiet charm of early winter. For those who enjoy a more active experience, Tatranská Lomnica is a great destination. While the ski season may not be in full swing in November, the area still offers scenic views and opportunities for light exploration.

## Travel arrangements for the guest of ML workshop and field visit

Each participant of ML workshop is responsible for her/his travel & accommodation arrangements. We will reimburse her/him to their respective account based upon filling the Reimbursement form (attached to this Info pack) and based on the invoices collected.

*Please note that the travel and accommodation costs can be guaranteed and covered in the maximum amount of 500 EUR per person (depending on first-come-first-serve rule as budget is limited).

## More questions?

Anything else you'd like to know? Help with your travel arrangements? Feel free to contact us:

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Email: s.druskova@pedal-consulting.eu
Tel. number: +421 905 628 657



PEDAL CONSULTING

## REIMBURSEMENT OF TRAVEL & ACCOMMODATION EXPENSES

| Name | E-mail | |
|---|---|---|

**TRIP DATES**

| Date | Purpose |
|---|---|
| | ALFA (HEU, GA no. 101075659): Mutual learning workshop and field visit in Poprad, Slovakia |

**EXPENSES**

| Category | Dates | Details | Amount |
|---|---|---|---|
| Travel | | Air, Train, Own car, other | |
| | | | |
| | | | |
| | | | |
| Accommodation* | | Location + Name of Hotel | |
| | | | |
| Dates | | | |
| | | Total** | |

** Please note that the **travel and accommodation costs can be guaranteed and covered** in the maximum amount of **500 EUR** per person (depending on first-come-first-serve rule as budget is limited).*

**BANK ACCOUNT INFORMATION**

| | |
|---|---|
| Name of the account holder | |
| Street and number | |
| Zip code and city | |
| IBAN | |
| BIC | |

| Signature | Date |
|---|---|

PEDAL Consulting
Securing the right funding for the right problems

Adress. Bystrovova 5/31, 03601 Martin, Slovakia
Email. sekretariat@pedal-consulting.eu
Website. www.pedal-consulting.eu

## 4.3 Denmark

**General information**

| | | |
|---|---|---|
| **Regional Hub** | **Denmark (Food and Bio Cluster Denmark - FBCD)**    | |
| **Title of the Workshop** | **Biogas Production in Denmark** | |
| **Date** | Mutual Learning Workshop | **01 April 2025** |
| | Field visit | **01 April 2025** |
| **Location** | Mutual Learning Workshop | Agro Food Park 15, ML1, 8200 |
| | Field visit | Frijsenborg Biogas, Fuglsangvej 100, 8450 Hammel<br>Aarhus University Biogasplant, Borregårdsvej, 8830 Tjele |
| **Format** | Mutual Learning Workshop | **In-person and online** |
| | Field visit | **In-person** |

**Attendees**

For the **two site visits** to the Frijsenborg Biogas Plant and Aarhus University's biogas plant in Foulum, there were 21 physical participants, all of whom are mentioned in the table below.

**No.. of attendees / No. of females: 21/8**

**At the Mutual Learning worksho**p held in Skejby, there were 29 physical participants and 26 registered online participants. The list of those who were registered as physical attendees is below.

**No.. of attendees / No. of female (in person): 29/10**

**Organisation of the workshop and field visit**

The planning and implementation of the two-day event was carried out by FBCD.

Mutual Learning workshop, site visits and network meeting were planned for 01/042025 and 02/04/2025. After the network meeting in the morning on 02/04/2025, a Project Meeting was held in the afternoon.

The overview of the overall program was as follows:

31/03 Arrival in Aarhus from the various destinations

01/04 Site visit to Frijsenborg Biogas Plant

Site visit to Aarhus University Biogas Plant in Foulum

Lunch

Mutual learning workshop in Skejby

Network dinner in Aarhus

02/04 Network meeting in Skejby

Project meeting in Skejby

Closing

The Frijsenborg biogas plant was chosen as a model for a typical Danish biogas plant with upgrading of the produced biogas and injection of the upgraded biomethane into the Danish gas grid.

The Aarhus University biogas plant in Foulum was chosen because it is the world's largest pilot plant for optimising biogas processes. In addition, there is extensive research and testing of processes within Power2X.

Workshop, network meeting and project meeting were held at Agro Food Park in Skejby, where Food and Bio Cluster Denmark have its headquarters.


**Figure 23: Visual summary of Danish workshop and field visit**

### Detailed summary of the workshop and field visit, and its results

Site visits started with a visit to Frijsenborg Biogas Plant, which is owned by the company Biocirc. Biocirc also owns 7 other biogas plants, all of which are larger than this one.

The participants were shown around the biogas plant by plant manager Karsten Bo Søresen.

The plant is built with anaerobic digestion tanks and covered storage tanks.

The biogas is upgraded in a membrane system to biomethane, which is injected into the Danish gas grid. The plant produces approx. 14 million m3 of biogas per year.

The biogas plant is heated by firing wood chips in a boiler.

All slurry and biomass are transported to the plant by truck, and the plant processes more than 400,000 tons/year.

The degassed biomass is used as fertiliser on the surrounding fields.

**Figure 25: Figure 43: Heating station at Frijsenborg Biogas plant**

**Figure 24: Bioreaktor at Frijsenborg biogas plant**

At Aarhus University's biogas plant, the participants were shown around by plant manager Mogens Møller, who spoke about the various tests and experiments carried out at the plant.

The presentation was supplemented by a presentation by Christian Dannesboe, who spoke about the experiments that the company Topsoe is carrying out within Power2X, E-methane, methanol, plastic, ammonia and several other products that can be produced.

**Figure 26: Aarhus University Biogas Plant for test and trials**

**Figure 27: Aarhus University Biogas test facility or Power2X**

After the visit to the facilities, the participants were driven back to Skejby on the outskirts of Aarhus, where Food and Bio Cluster Denmark have its headquarters. The MLW was conducted in meeting room 1 with several presentations as described in the detailed program. The workshop was conducted as a hybrid event with both in-person and online participants.


**Figure 28: Photos from MLW in Agro Food Park 15 in Skejby**

From the morning of 2 April, PEDAL Consulting s.r.o. conducted the networking event as described in the program. The network was conducted as a hybrid event with both in-person and online participants. The networking meeting lasted until lunch and then the project partners held a project meeting.

## The Networking event: Green Energy Connection: BIOGAS, BIOMETHANE AND BEYOND

### General information

The event took place on **2 April 2025** at **Agro Food Park in Aarhus**, Denmark - a symbolic hub for innovation, green technologies, and agri-bioeconomy. Hosted by **Food & BioCluster Denmark (FBCD)**, the meeting followed a hybrid format, combining in-person interaction with online participation to ensure inclusiveness and wide geographic reach.

### Attendees

- **No. of attendees / No. of women**
  - Onsite – **21 / 6 female**
  - Online – **31 registered/ 14 female**


**Figure 29: Banner**

### Organisation of the Networking event

The networking event “Green Energy Connection: Bioga and organised by PEDAL Consulting s.r.o. (Slovakia) in close cooperation with Food & BioCluster Denmark (FBCD) and with the active contribution of other ALFA project partners.

The event aimed **to foster collaboration, knowledge exchange, and cross-border networking** among stakeholders in the biogas and biomethane sectors, while showcasing synergies between several Horizon Europe initiatives, notably ALFA, SEMPRE-BIO, and BIOMETHAVERSE. These projects, among others, belong to the cluster of biofuels and biomethane-related projects funded by CINEA - the European Climate, Infrastructure and Environment Executive Agency of the European

Commission. The Networking Event also served to share good practices from ALFA Open Call beneficiaries and to promote cooperation for a greener, more circular energy future.

**Preparatory steps for the Networking Event included:**

- *Selection of the venue* in *Agro Food Park* – a strategic innovation hub for agriculture and bioresources in Aarhus.
- *Coordination with speakers and project partners*, including CETAQUA, ISINNOVA, CERTH, EBA, Q-PLAN, and Azzero$CO_2$.
- *Design of the agenda* to align with ongoing initiatives and ensure complementarity of topics.
- *Development and promotion* of registration materials, information packs, and communication outputs.
- *Dissemination* through ALFA's stakeholder and partner networks.
- *Technical preparation* to ensure smooth hybrid participation and audiovisual logistics.
- *Follow-up communication*, including the distribution of presentations, feedback forms, and thank-you notes.

**Venue and Location:**

The event was hosted at the **headquarters of Food & BioCluster Denmark (***Agro Food Park 26, M1 K51–K52, Skejby, 8200 Aarhus N, Denmark)*,

**Detailed summary of the event and its results**

The networking event *"Green Energy Connection: Biogas, Biomethane and Beyond"* was structured to combine project showcases, case studies, and open discussions. It was moderated by **PEDAL Consulting (Slovakia)**, with the support of **Food & BioCluster Denmark (FBCD)**, and was designed to highlight synergies among ongoing Horizon Europe initiatives that share the goal of accelerating the market uptake of biogas and biomethane technologies.

***Introductory Session – Setting the Scene***

The event opened with an **introductory address by Stania Druskova from PEDAL Consulting**, presenting the overall objectives of the Networking event to facilitate knowledge exchange among regional hubs in Slovakia, Denmark, Italy, Spain, Greece, and Belgium. The introduction was followed by a presentation from **Q-PLAN International** (Greece) by Ioannis Konstas outlining the ALFA project's rationale and progress to date. Q-PLAN highlighted that despite Europe's technological readiness, the full potential of manure-based biogas remains underutilised. The presentation summarised ALFA's technical and business support to farmers and plant operators and stressed the importance of awareness-raising, replication guidance, and targeted capacity-building activities for rural stakeholders.

Next, **ISINNOVA (Italy)** introduced the **BIOMETHAVERSE project**, which aims to diversify biomethane production pathways across Europe. Coordinator **Stefano Proietti** detailed five innovative demonstration concepts - electromethanogenesis in France to thermochemical and biological methanation pilots in Greece, Italy, Sweden, and Ukraine. The session emphasised how technological diversification and replicability analysis can de-risk investments and accelerate the deployment of renewable methane solutions at scale.

The following contribution came from **CERTH (Greece)**, represented by **Aliki Zioga**, who provided an overview of CERTH's applied research and technical services in the biogas and biomethane sector. Her talk connected three EU-funded projects - **$CO_2$SMOS**, **BIOMETHAVERSE**, and

**SoilCircle** - demonstrating the integrated circular approach pursued by CERTH. She presented the Greek BIOMETHAVERSE pilot based on the Sabatier reaction, producing pipeline-quality biomethane, and showcased laboratory facilities capable of substrate characterisation, anaerobic digestion testing, and life-cycle sustainability assessments. The presentation highlighted how scientific R&D directly supports industrial decarbonisation through advanced $CO_2$-to-chemicals technologies.

Subsequently, **Azzero$CO_2$ (Italy)** introduced the **SKILLBILL project**, focusing on the human capital dimension of the green transition. **Enrico Giovanni Facci** explained how SKILLBILL develops educational pathways and professional training to upskill workers and citizens for the renewable-energy sector, while tackling the gender gap in STEM. The project's online "Green Portal" and its European master and vocational programmes were presented as complementary tools that can also benefit stakeholders engaged in biogas and biomethane initiatives.

A presentation by **Alejandra Córdova** followed, introducing the **SEMPRE-BIO project**, which pioneers new cost-effective biomethane production pathways in Spain, France, and Belgium. She presented three demonstration sites (Baix Llobregat, Bourges, Adinkerke) and described how advanced $CO_2$ valorisation and microalgae fermentation are used to transform captured biogenic carbon into marketable biochemicals and protein-rich biomass. The project's goal - to enhance cost-effectiveness and circularity while demonstrating semi-industrial-scale innovations - resonated strongly with ALFA's ambition to strengthen European biomethane ecosystems.

***Showcasing Good Practices and Ongoing Initiatives***

The second part of the programme was devoted to **practical experiences from ALFA Open Call beneficiaries**, offering first-hand insights into deployment barriers and local innovation practices. **Elisabetta Quaini** from *Barbiselle srl Società Agricola* (Italy) shared her farm's biogas investment story in the Po Valley, illustrating both the opportunities brought by long-term feed-in tariffs and the persistent hurdles in permitting and financing processes. She underlined the importance of maintaining incentives and recognising digestate as a valuable fertiliser.

From Slovakia, **Matej Štefánek** presented the **BPS Borcová** case. Operating since 2013, this agricultural biogas station has supplied heat to a nearby village and integrated photovoltaic generation. His talk focused on the upcoming transformation of the plant for biomethane production, explaining regulatory uncertainties surrounding the end of operational feed-in tariffs and efforts to form Slovakia's first group providing flexible energy from biogas within the European PICASSO and MARI platforms.

The **Greek case** was presented by **Vasileios Filippou** from the **Energy Community of Karditsa (ESEK)**. He described the cooperative's long-standing experience in renewable energy and its efforts to expand into biogas and solid biofuel production. The presentation offered detailed figures on available biomass resources and identified key national barriers - high initial investment, complex permitting, and insufficient public awareness - while also stressing opportunities created by the EU Green Deal and RED III targets.

An important contribution came from **Niharika Kaushik**, the **European Dairy Farmers (EDF)** network, represented by the EDF Farms Study. Their presentation summarised findings from a survey involving 137 dairy farms across 20 countries on the *production of green energy at the farm level*. It revealed that while 74% of respondents already produce renewable energy (mainly photovoltaic), only 27% have adopted biogas, largely due to high investment costs, limited profitability without subsidies, and complex permitting. The study highlighted that integrating biogas into dairy operations offers multiple benefits—from manure management and fertiliser quality improvement to emission reduction and income diversification—but underlined the need for stable

policy support, fair milk pricing, and better access to financing to make such investments viable for farmers.

The academic perspective was provided by **Assoc. Prof. Yelizaveta Chernysh** (Czech University of Life Sciences Prague) compared the environmental performance of biogas and natural gas, drawing from recent research and European production data. Her analysis underlined the rapid growth of biomethane in Europe - reaching 52 TWh in 2023 - and advocated a balanced transition strategy that combines renewable gas expansion with existing infrastructure to secure energy resilience.

Finally, **George Osei Owusu**, from the **European Biogas Association (EBA),** presented updated data on the **state of biogases in Europe**. The session outlined that in 2023, Europe produced 22 billion m³ of biogases - equivalent to 7% of EU gas consumption - with the largest growth recorded in biomethane. The EBA stressed the ongoing shift towards sustainable feedstocks, the rise of bio-LNG facilities, and the increasing potential of agricultural residues and manure as core resources for future growth.

Together, these sessions provided a **comprehensive overview** of the technological, policy, financial, and socio-economic developments currently shaping Europe's biogas and biomethane landscape. The diversity of presentations - from cutting-edge research institutions and innovation clusters to farm-scale practitioners, cooperatives, and European associations – created a **lively and knowledge-rich dialogue** that bridged scientific insight with practical experience.

***Interactive Discussion and Networking***

The event thus evolved from a sequence of presentations into an **interactive forum for open exchange**, where participants could discuss common challenges, compare national contexts, and identify areas of potential collaboration. This dynamic setting highlighted ALFA's growing role as a **European catalyst for cooperation**, connecting regional initiatives and fostering a shared vision of sustainable, circular energy systems across borders.

Via moderated discussion, the speakers and participants were encouraged to touch upon the financing models, permitting barriers, and the integration of biogas into circular agro-systems. The conversation revealed both country-specific differences and shared concerns regarding investment security and policy stability.

The in-person setting in Aarhus also enabled informal bilateral meetings between participants, while online attendees actively engaged through chat. This hybrid format proved highly effective in combining the energy of face-to-face networking with the inclusivity of remote participation, ensuring that insights from all hubs were heard and documented.

***Key insights:***

- Biogas production across EU continues to grow with 21 bcm of biogas and 4.2 bcm of biomethane produced in the last year
- Denmark, Italy, and Poland are leading in planned biomethane investments
- Case studies from Italy (Barbiselle dairy farm), Slovakia (Borcova & Poprad-Matejovce BPS) and Greece (ESEK) provided tangible lessons on energy self-sufficiency and market readiness

***Ideas generated:***

- Monetisation of side streams: digestate trading, heat valorisation, $CO_2$ capture
- Building Renewable Energy Communities (RECs) as new operational models
- Use of platforms like CYRKL for the waste-to-energy marketplace

- Combining multiple RES sources in biogas clusters

***Main observations:***

- Projects demonstrated strong complementarity and demand for coordinated EU policy frameworks
- Many Eastern and Southern EU stakeholders emphasised the need for support in REC establishment and biomethane certification schemes
- Strong appreciation for practical, farmer-led insights and applied examples

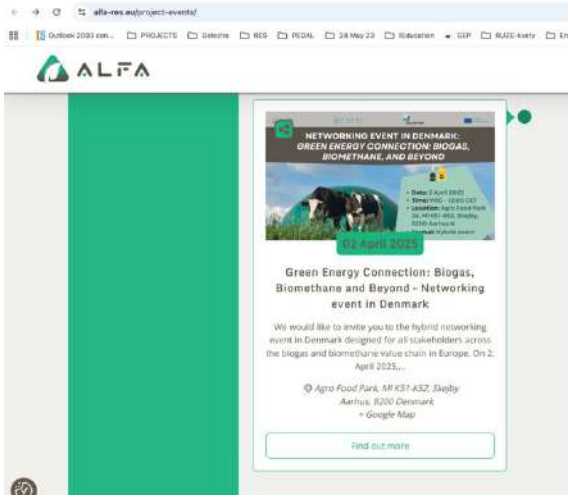
**A key strength** of the whole programme in Denmark was the synergy effect achieved by combining several ALFA activities within a two-day sequence, a networking event included. It brought far greater impact and showed the efficient use of project resources as well.

The Networking Event in particular delivered significant benefits:

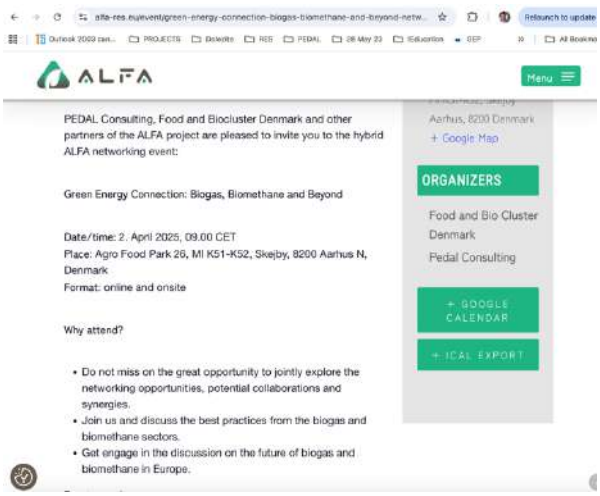
- **Cross-project collaboration and clustering**: strengthening cooperation and opening prospects to related CINEA-funded projects for joint communication and policy activities.
- **Knowledge transfer and capacity building**: linking researchers, technology providers, policymakers, and end-users to exchange experiences across the full biogas value chain.
- **Showcasing real-life practices:** featuring ALFA Open Call beneficiaries and EDF farmer case studies that demonstrated concrete progress and challenges in plant deployment.
- **Enhanced stakeholder engagement:** bringing together 52 participants onsite and online, expanding the ALFA network and reinforcing its visibility within the European biogas community.
- **Policy and market relevance**: generating insights into key bottlenecks (permitting, financing, incentive schemes) that feed directly into ALFA's policy dialogue activities.
- **Synergies with skills and education**: through SKILLBILL and EDF contributions, linking biogas uptake to workforce training, gender equality, and rural employment.
- **Promotion of circularity and sustainability**: underlining how manure, residues, and $CO_2$ streams can be turned into valuable bio-resources, supporting EU climate and circular-economy goals.

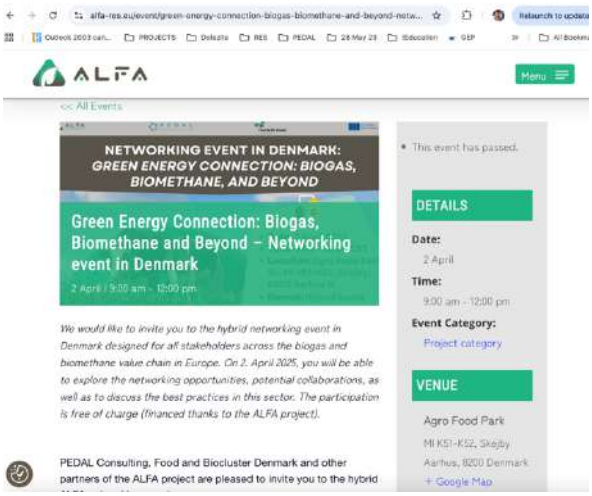
**Dissemination and communications activities**

https://alfa-res.eu/project-events

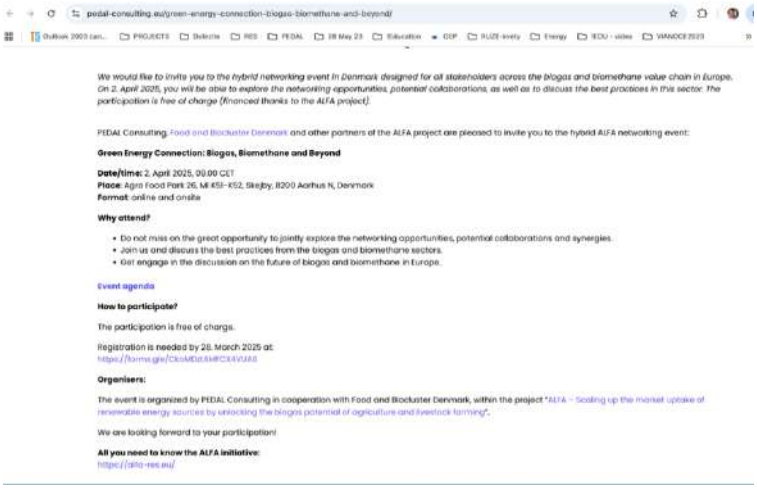


https://alfa-res.eu/event/green-energy-connection-biogas-biomethane-and-beyond-networking-event-in-denmark/

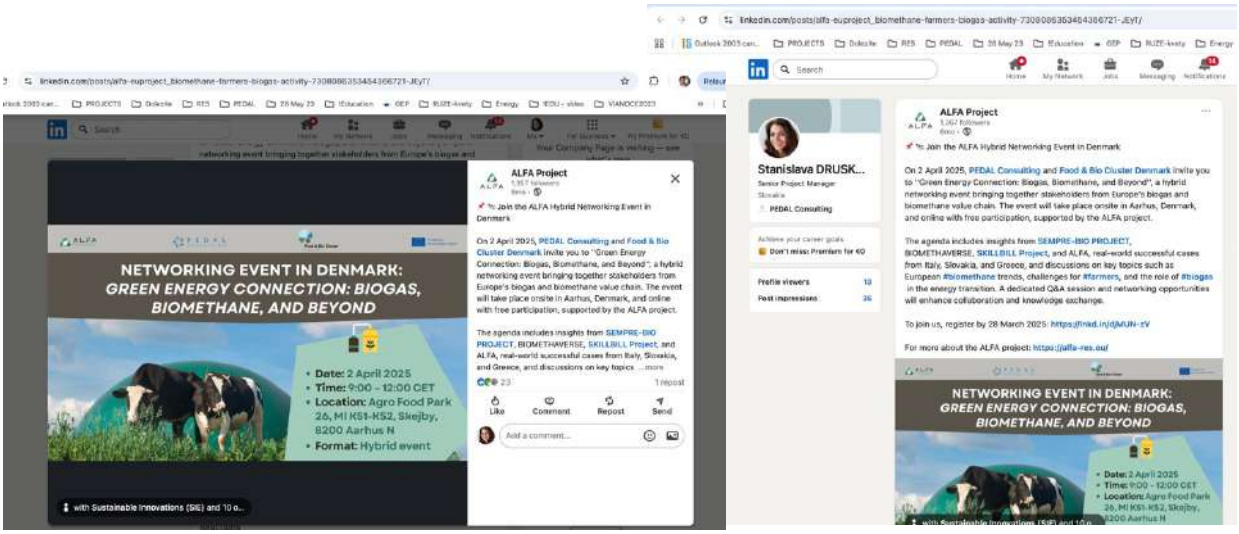


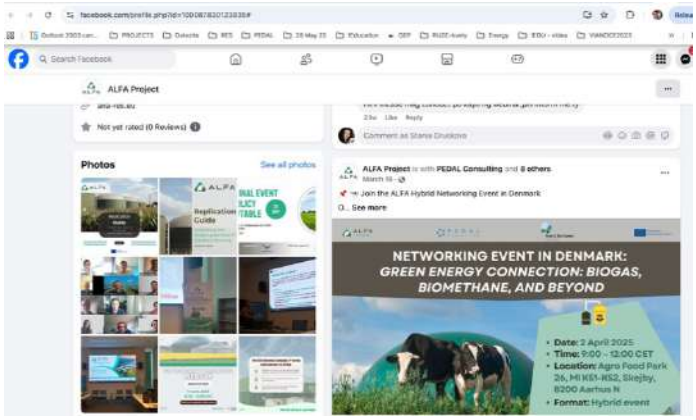

https://www.pedal-consulting.eu/green-energy-connection-biogas-biomethane-and-beyond/




https://www.linkedin.com/posts/alfa-euproject_biomethane-farmers-biogas-activity-7308086353454366721-JEyT/



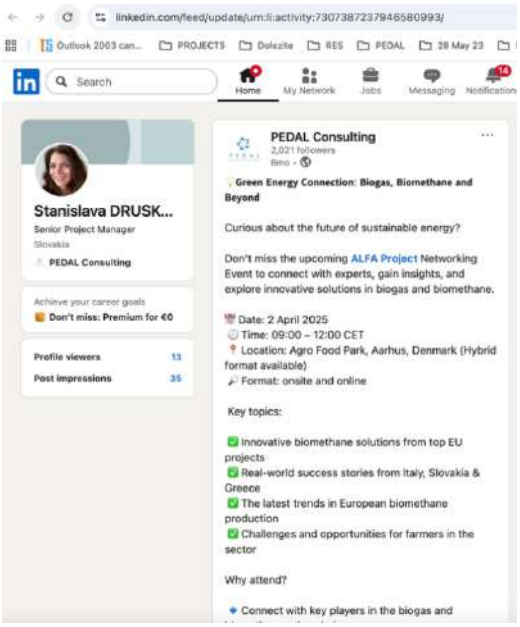
https://www.facebook.com/photo/?fbid=632153396388992&set=a.114380904832913

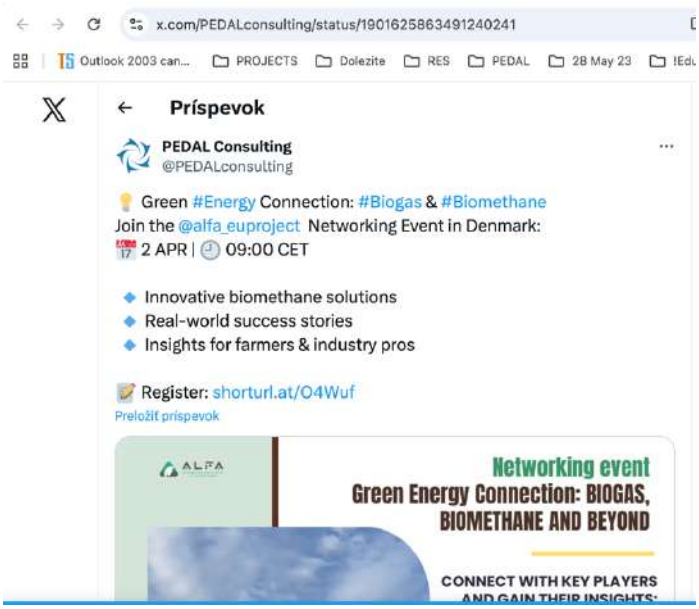



17.3.2025 – on PEDAL's social media:

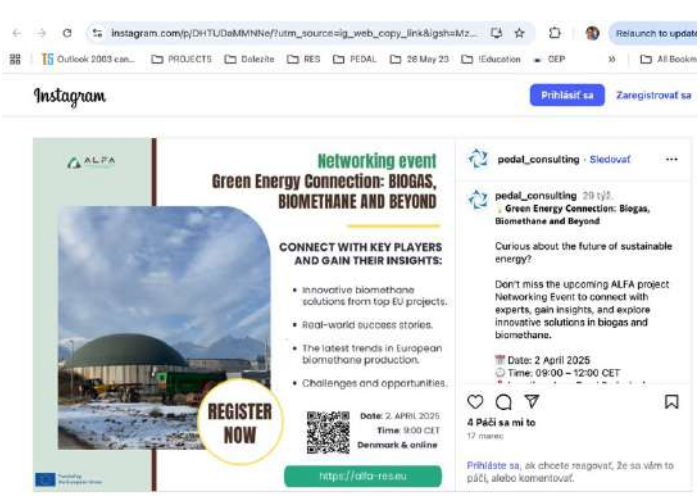
LI: https://www.linkedin.com/feed/update/urn:li:activity:7307387237946580993

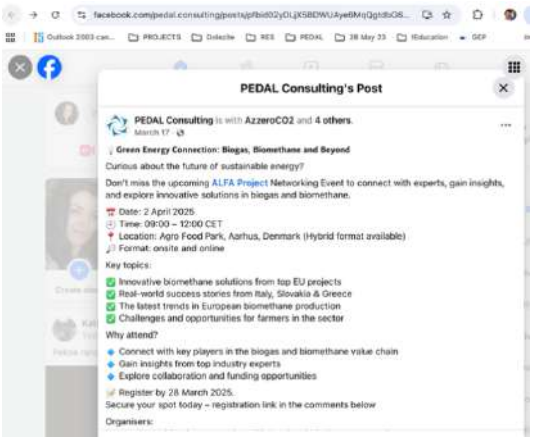
X: https://x.com/PEDALconsulting/status/1901625863491240241



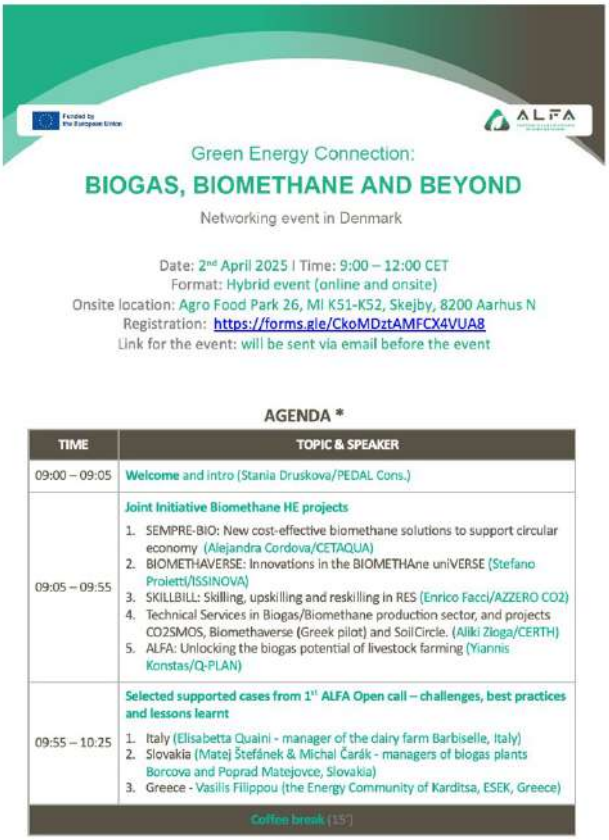




FB: Green Eergy Connection: Biogas, Biomethane... - PEDAL Consulting | Facebook




## Agenda



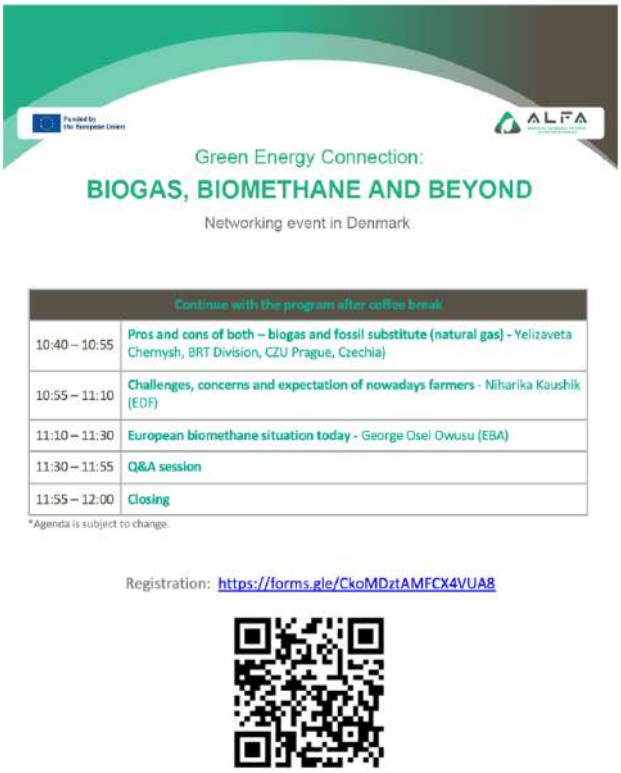




**Figure 30: Networking event agenda**

**Registration:** https://forms.gle/CkoMDztAMFCX4VUA8

**Participant list: The signed attendees list is kept by teh organiser.**

**Photos:**

Figure 32: In-persons participants at the same event

Figure 31: Stania Druskova leading the networking event

**Evaluation of the workshop and field visit**

ALFA Workshop Denmark. April 01, 2025

Number of participants this event survey: 24

Number of responses this event: 13

Response rate: 54%

1. How satisfied are you with the PROFESSIONAL content (All numbers in %)

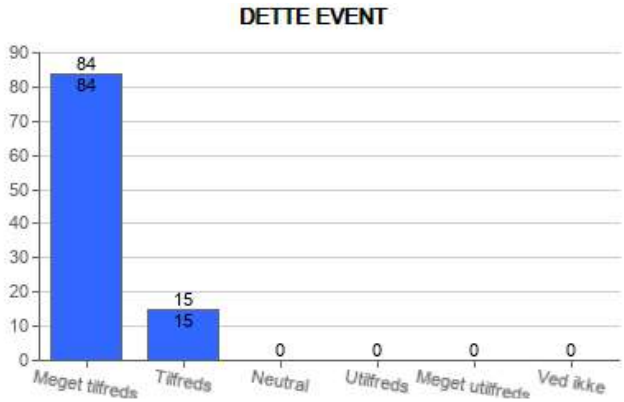



Figure 33: How satisfied are you with the PROFESSIONAL content

2. How satisfied are you with the IMPLEMENTATION? (All figures in %)

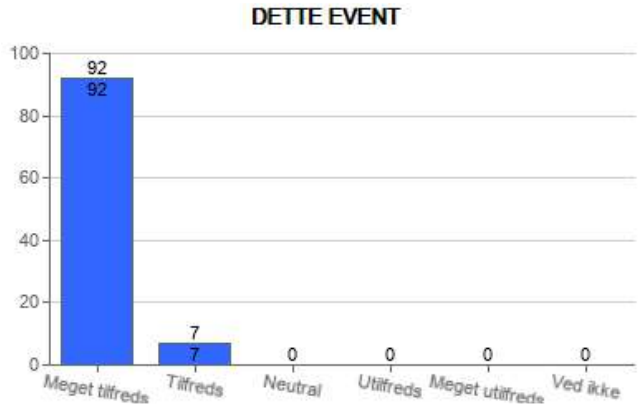



**Figure 34: How satisfied are you with the IMPLEMENTATION?**

3. What benefits did you get from participating in the event?

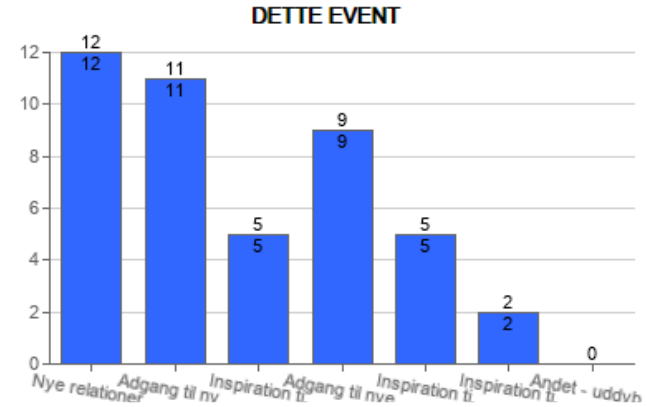



**Figure 35: What benefits did you get from participating in the event?**

## Policy recommendations

Policy and regulations for biogas production are partly a national matter and partly a question of policy and regulation at the EU level. There are major national differences between the participating countries, and there is currently no overall overview of these differences. In connection with the upcoming work on preparing the policy recommendations, this information will be collected from the participating parties. The overall conditions at the EU level were, among others, highlighted by George Osei Owusu from EBA, while the national Danish conditions were highlighted by Bruno Sander Nielsen from Biogas Danmark.

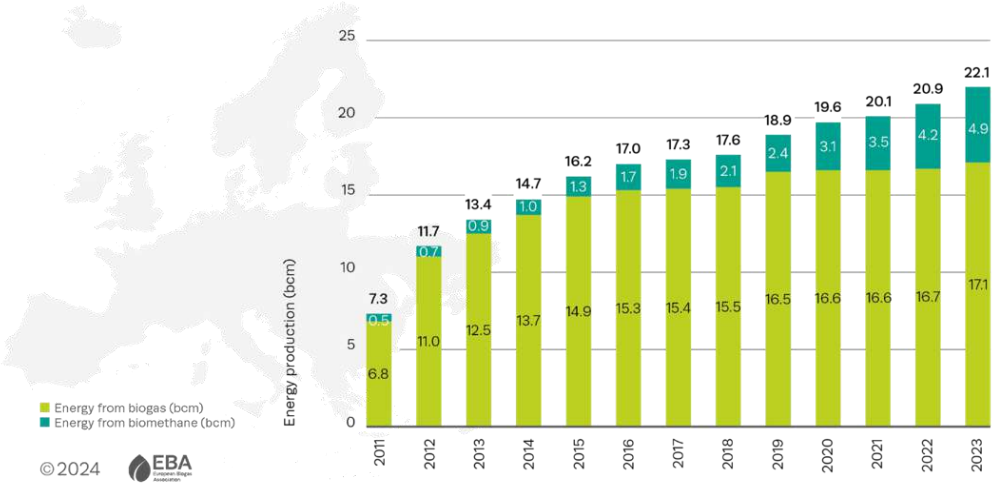



**Figure 36: Combined biomethane and biogas production in Europe, EBA**

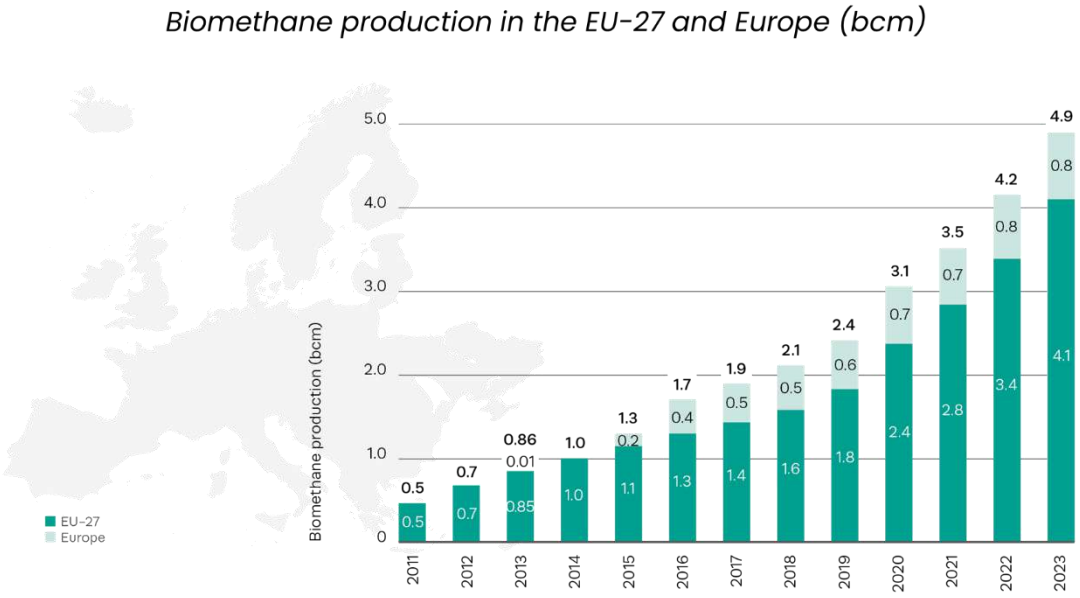



**Figure 37: Biggest growth on biomethane production to date, EBA**

The two figures show the tremendous growth in biogas production in the EU in recent years, with upgraded biomethane gaining ground.

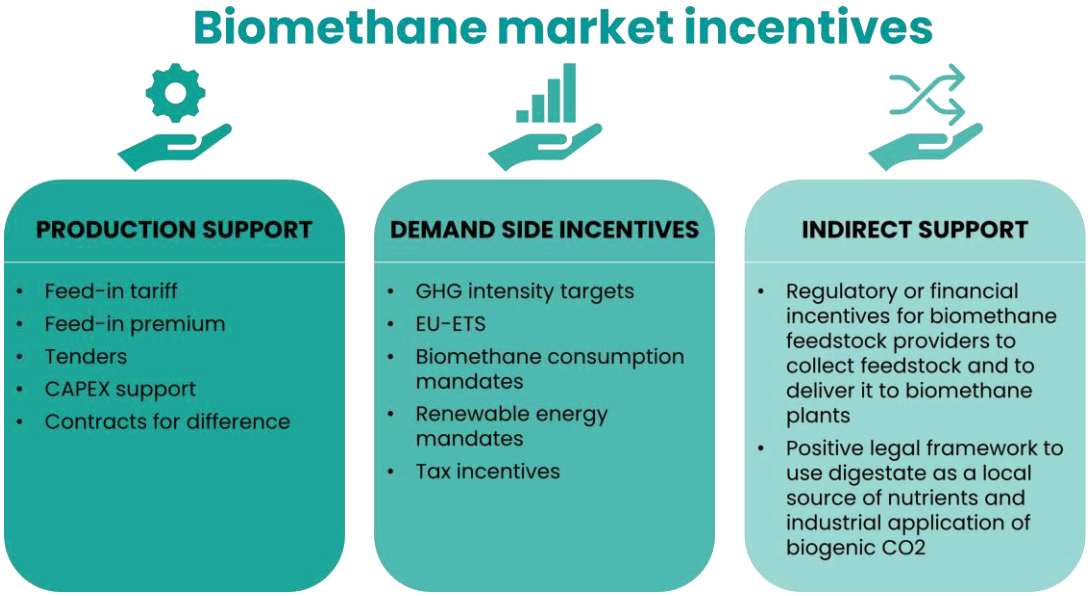



**Figure 38: Biomethane market incentives summarised by George Osei Owusu - Technical and Project Officer, EBA at the meeting**

The Danish biogas plants are crucial in handling livestock manure and residues from households, industry and agriculture. The biogas plants ensure that nutrients in waste and residues are recycled and reused as fertilisers in agriculture. At the same time, the energy content in the biomass is utilised to produce biogas, which substitutes for fossil fuels. Before injecting the biomethane into the gas grid, the biogenic $CO_2$ is separated. The sector is actively developing the use of this $CO_2$ to produce Power-2-X fuels and $CO_2$ storage.

Biogas Outlook 2024, produced by Biogas Danmark (the Danish industry association for biogas), shows how 2023 was the year when all biogas records were broken, as biogas covered 45 per cent

of total gas consumption in Denmark, including the biogas delivered directly from biogas plants to customers.

Although there are bioresources to more than double biogas production, it is also the story of how the development of biogas production has stagnated in 2023 with few development opportunities to deliver more biogas to the gas grid in the future, as deteriorated framework conditions will both increase biogas producers' costs and at the same time limit their earning potential, unless the framework conditions change significantly.

Today, the development of biogas is 100 per cent dependent on market conditions in the export market, as market conditions are challenged in Denmark.

A comprehensive package with several initiatives in a policy proposal, Biogas Danmark suggests several initiatives aimed at transitioning biogas production from subsidy-dependent to market-driven:

1. Refund $CO_2$ levy for biogas, verified by origin guarantees.
2. Tighten $CO_2$ requirements for the transport sector beyond the ETS2 quota, like Germany.
3. Enforce $CO_2$ displacement requirements for gas suppliers for heating, inspired by the Dutch model.
4. Implement climate footprint rules for transport infrastructure, akin to building regulations.
5. A minimum 50 per cent basic deduction in $CO_2$emissions for livestock manure digested in biogas facilities before the $CO_2$ e levy is determined (corresponds to Model 2+3).
6. Stop Evida's proposal for injection tariffs and propose a green tariff model.
7. Cut biogas tender funds by half to 10 years, with potential origin guarantees reducing subsidy requirements and advancing the last tenders to expire in 2026.

**Dissemination and communications activities carried out before, during and after the workshop**

In relation to the workshop, the following dissemination and communication activities have been carried out:

In collaboration with Stanislava Druskova from PEDAL Consulting, Food & Bio Cluster Denmark sent out direct mails to various relevant stakeholders, among others the speakers in the workshop and the Danish and Slovak biogas associations, to promote the event and to recruit participants before the event.

Moreover, on 25 March 2025, the workshop was promoted through a social media post in Danish to attract the Danish biogas community on Food & Bio Cluster Denmark’s LinkedIn account, resulting in 1,173 impressions, 75 engagements and an engagement rate of 6.39% (statistics as of 30 April 2025).

After the project visit to Denmark, Food & Bio Cluster Denmark summarised it all in a post on LinkedIn, resulting in 1,495 impressions, 783 engagements and an engagement rate of 52.37% (statistics as of 30 April 2025). The post was written in English to reach all participants in the two-day event as well as other relevant international biogas stakeholders.

See screen dumps of the LinkedIn posts below.

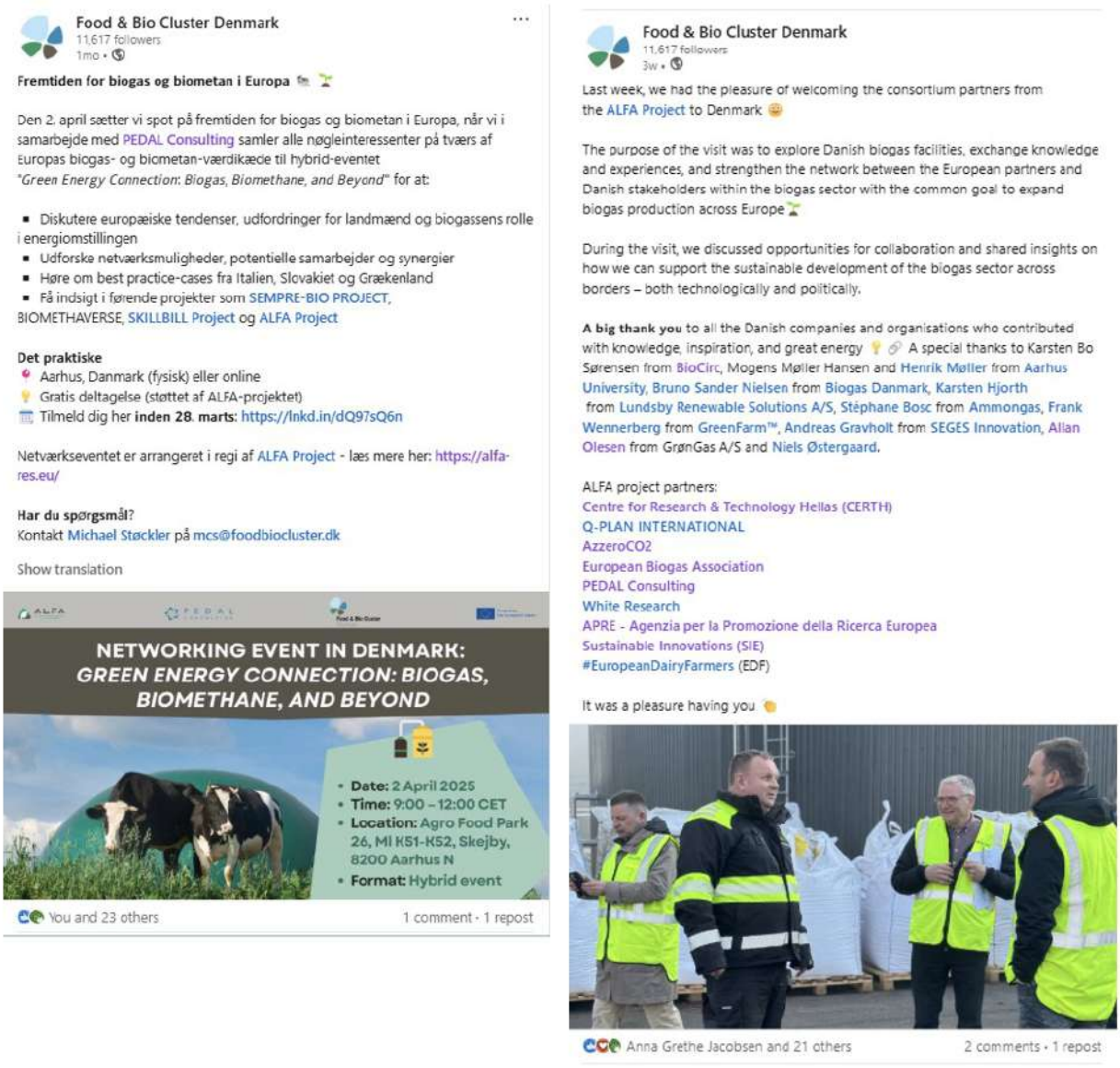



**Figure 39: LinkedIn posts**

## Agenda

| 2025 | Time | Activity | Location |
|---|---|---|---|
| 31/03 | | Arrival and accommodation in Aarhus | Hotel, ex. Radisson Blu Scandinavian Hotel, Thomas Jensens Alle 1, 8000 Aarhus |
| 01/04 | 08.30 | Departure by bus to the biogas plant | Hotel, bus |
| | 09.00 | Site visit at the biogas plant. Presentation and tour by Manager Karsten Bo Sørensen. | Frijsenborg Biogas, Fuglsangvej 100, 8450 Hammel |
| | 10.30 | Transportation | Bus |
| | 11.00 | Aarhus University's biogas plant in Foulum. Presentation and tour by Plant Manager Mogens Møller | Aarhus University Biogasplant, Borregaardsvej, 8830 Tjele |

| | | | |
|---|---|---|---|
| | 12.30 | Lunch in the canteen, Aarhus University, Foulum | Aarhus University, Foulum. Blichers Alle 2, 8830 Tjele |
| | 13.15 | Transportation | Bus |
| | 14.30 | Mutual Learning Workshop<br>FBCD, Michael Støckler. Introduction to the workshop.<br>Biogas Denmark, Technical Director Bruno Sander Nielsen (Board member ALFA).<br>The development of biogas production in Denmark. Status and policy.<br>Aarhus University, Professor Henrik B. Møller (Board member ALFA). Next-Generation Biogas: Pioneering Research at Aarhus University.<br>Lundsby Renewable Energy, CBDO Karsten Hjorth: Experience with establishing large-scale biogas plants as a total contractor.<br>Ammongas, Stephane Bosc: Development and operation of upgrading facilities for biomethane.<br>Green Farm, Frank Wennerberg: Local energy production at biogas plants with CHP installations.<br><br>Joint discussion about:<br>○ The technical development of biogas production and optimisation of operations.<br>○ Discussion of the necessary political measures for an expansion of biogas production in the EU.<br>○ Discussion of the technical possibilities for optimising operations, including:<br>• Challenges with the biomass used, the content of sand, straw, and industrial products<br>• The optimal use of biogas, upgrading, CHP, $CO_2$, P2X<br>• The quality of the degassed biomass as fertiliser | Food and Bio Cluster Denmark, Agro Food Park 15, ML 1. Skejby, 8200 Aarhus N |
| | 16.30 | End of the day and transportation | Hotel, Aarhus |
| | 19.00 | Networking and Dinner in a restaurant in Aarhus | Aarhus, Restaurant “Flammen”, Toldbodgade 6, 8000 Aarhus |
| | | | |
| 02/04 | 09.00 | Welcome and intro (Stania Druskova/PEDAL Cons. | Agro Food Park 26, Ml K51-K52, Skejby, 8200 Aarhus N |
| 02/04 | 09.05 | Joint Initiative Biomethane HE projects<br>1. SEMPRE-BIO: New cost-effective biomethane solutions to support circular economy (Alejandra Cordova/CETAQUA) | Networking, Hybrid<br>Registration: https://forms.gle/CkoMDztAMFCX4VUA8 |

| | | | |
|---|---|---|---|
| | | 2. BIOMETHAVERSE: Innovations in the BIOMETHAne uniVERSE (Stefano Proietti/ISSINOVA)<br>3. SKILLBILL: Skilling, upskilling and reskilling in RES (Enrico Facci/AZZERO CO2)<br>4. Technical Services in Biogas/Biomethane production sector, and projects CO2SMOS, Biomethaverse (Greek pilot) and SoilCircle. (Aliki Zioga/CERTH)<br>5. ALFA: Unlocking the biogas potential of livestock farming (Yiannis Konstas/Q-PLAN) | Link for the event: will be sent via email before the event |
| | 09.55 | Selected supported cases from 1st ALFA Open call – challenges, best practices and lessons learnt<br>1. Italy (Elisabetta Quaini - manager of the dairy farm Barbiselle, Italy)<br>2. Slovakia (Matej Štefánek & Michal Čarák - managers of biogas plants Borcova and Poprad Matejovce, Slovakia)<br>3. Greece - Vasilis Filippou (the Energy Community of Karditsa, ESEK, Greece) | |
| | 10.25 | Coffee break | |
| | 10.40 | European biomethane situation today - George Osei Owusu (EBA) | |
| | 11.00 | Challenges, concerns and expectation of nowadays farmers - Niharika Kaushik (EDF) | |
| | 11.15 | Pros and cons of both – biogas and fossil substitute (natural gas) - Yelizaveta Chernysh, BRT Division, CZU Prague, Czechia) | |
| | 11.30 | Q&A session | |
| | 11.55 | Closing | |
| | 12.00 | Lunch in Agro Food Park | |

**Photos**

**Figure 40: Frijsenborg Biogas Plant 01/04-2025**


Figure 41: Frijsenborg Biogas Plant

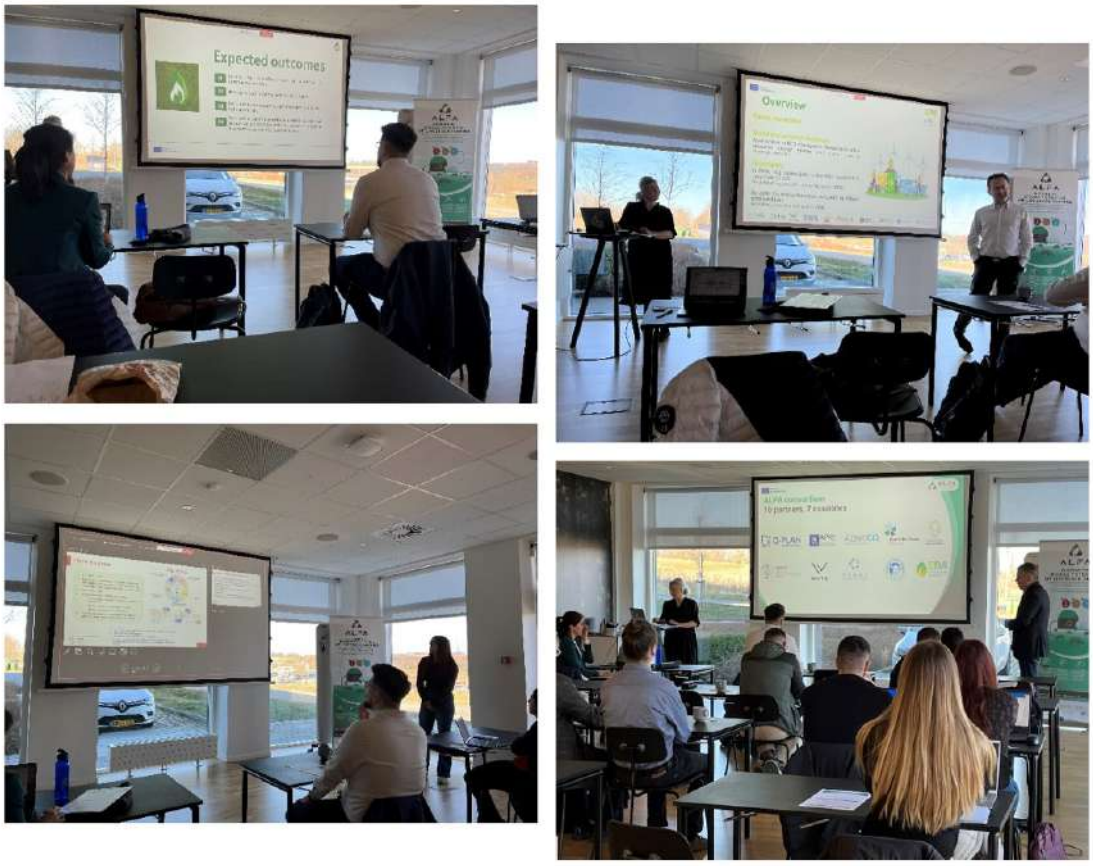



Figure 42: Networking event

## Annexes

1 Biogas outlook 2024. Production and use of biogas in Denmark 2023-2045. Biogas Denmark

## 4.4 Italy

### General information

| | | |
|---|---|---|
| **Regional Hub** | **Italy (APRE & AzzeroCO2)**  | |
| **Title of the Workshop** | **Policies, actions and measures aimed at supporting the biogas solutions market** | |
| **Date** | Mutual Learning Workshop | **15th April 2025** |
| | Field visit | **15th April 2025** |
| **Location** | Mutual Learning Workshop | APRE – Headquarters<br>Via Cavour 71, 00184, Rome (RM), Italy |
| | Field visit | Azienda Agricola Marella – Caseificio Formaggi Boccea<br>Via Locana 97, 00166, Rome (RM), Italy |
| **Format** | Mutual Learning Workshop | **In-person** |
| | Field visit | **In-person** |

### Attendees

- **No. of attendees / No. of women**
  - Workshop: 19/5
  - Field visit: 24/6

**Categories of stakeholder:** Biogas and/or energy organisation (2), Consulting company (5), Consultant (1), Organiser (3), Energy expert and journalist (2), Public administration - energy agency (4), Biogas plant owner (1), Farmer (4), Researcher (2)

### Organisation of the workshop and field visit

When the Italian Hub began planning the event, the first step was to identify the most suitable biogas plant for the field visit, based on various criteria. A thorough search and review of several facilities across the country was conducted, focusing mainly on central Italy for logistical reasons. The process began by evaluating livestock farms with biogas plants with which the Italian Hub already had existing relationships or contacts.

Initially, the selected facility was the Antonio Trionfi Honorati livestock farm, located in the Marche region, as this farm was already featured among the Italian good practices listed in the Atlas Map on the ALFA project website. The owner, Mr Antonio Trionfi Honorati, was contacted by email.

The Italian Hub was surprised by Mr Trionfi Honorati's response. Although he was pleased to have been contacted and expressed willingness to collaborate, he informed us that it would not be possible to carry out the field visit for this event at his farm. Furthermore, he added – regretfully - that after 15 years of operation, he had decided to shut down the biogas plant at his farm.

This unexpected development led to a deeper dialogue aimed at understanding the reasons behind this decision. From this conversation and the story of his farm, the idea for the workshop's main theme was born, namely **Policies, actions and measures aimed at supporting the biogas solutions market**, and the strategies aimed not only at promoting the adoption of biogas but to prevent production shutdowns in first-generation biogas plants.

Following further desk research, the Marella Farm – Caseificio Formaggi Boccea – was identified as a potential collaborator. Located just a few kilometres outside the city of Rome, the company operates both a dairy facility and a biogas plant. It proved to be a highly relevant and engaging example to showcase to all event participants, from livestock farmers to biogas experts. Naturally, Mr Antonio Trionfi Honorati was immediately invited to participate as a speaker at the workshop, so that he could share his experience, which served as a meaningful case study and starting point for discussion.

Figure 43: APRE Headquarters

### Venue and location

**Workshop**: The workshop was held in the morning, from 9:00 AM to 1:00 PM, in the large meeting room at the headquarters of APRE – the Agency for the Promotion of European Research – located at Via Cavour 71, 00166, in the centre of Rome. The venue is very close to Termini Station, which made the location highly convenient from a logistical perspective for both participants and speakers.

Initially, the morning workshop was planned to take place at a different location, specifically at the agritourism and multifunctional centre that the Marella Farm – Caseificio Formaggi Boccea is currently building next to their stables. This new space is intended to host various events and educational activities in the future. However, following a site inspection by APRE's project managers, it was determined that the construction works were still too far from completion and there was a significant risk they would not be finished in time for the event. Additionally, the location – in the Roman countryside, outside the Grande Raccordo Anulare (GRA) – is not well connected by public transport, which could have posed logistical challenges for attendees.

Therefore, despite the appeal of the initial option, it was later decided to hold the workshop at APRE's headquarters instead – the most appropriate and cost-effective location - a choice that ultimately worked out very well. Catering services - welcome coffee and morning coffee break - were included to support the workshop activities.

At the end of the workshop, a social lunch was organized by APRE at CENTRO, a restaurant located just below APRE's headquarters. The proximity of the venue made it easily accessible, allowing participants to move seamlessly from the workshop to the lunch without any time lost in transportation. After lunch, all participants were picked up directly in front of the restaurant by a private coach hired by APRE. The coach transported the group together to the location of the scheduled afternoon field visit.

**Field visit**: The field visit took place in the afternoon, from 3:00 PM to 5:00 PM, at Marella Farm – Caseificio Formaggi Boccea, specifically in the facility where both the dairy and the biogas plant are located (a separate site from the stables and the multifunctional centre currently under construction, as mentioned above). The dairy is situated at Via Locana 97, 00166 Rome, in the beautiful Roman countryside. Although it lies outside the Grande Raccordo Anulare (GRA), it is only about 30 kilometres from APRE's headquarters in central Rome, making it a convenient location for the visit.

**Figure 44: Biogas plant - Caseificio Formaggi Boccea**

**Concept:** The primary objective of the workshop was to facilitate mutual learning and the exchange of knowledge and good practices among participants. Topics were presented from the perspectives of both Italian and international speakers, ensuring a diverse range of insights and a solid base for discussions. A key emphasis was placed on providing enough time for discussion to achieve the workshop's core goal and to foster collaborative learning. Additionally, a field visit to a specific biogas plant was organised to offer a practical demonstration of one of the workshop's key themes.

**Target audience:** The target audience for the workshop was curated to represent the quadruple helix model, including farmers, biogas producers, advisors, relevant authorities, industry associations, researchers, and academia.

**Agenda:** The workshop agenda was developed as already mentioned. It is attached in Section 8 of this document.

**Participant recruitment:** Participant recruitment was coordinated by APRE and the ALFA project partners, leveraging their respective contact databases and networks through personal outreach, phone calls, and emails. Relevant communication channels, including the ALFA project website and APRE's LinkedIn page, were also utilised to promote the event.

Email invitations were sent well in advance to selected stakeholders and potential participants, clearly outlining the workshop's purpose, objectives, logistical details, and agenda. ALFA partners were also encouraged to invite participants from their own networks to ensure broader outreach.

An Infopack was prepared for ALFA partners and prospective participants (see Annex 10.2), summarising all the necessary information regarding the venue and location of both the workshop and the field visit.

**Registration:** Registration was handled through a G-Form registration form prepared by APRE, with participants consenting to the processing of their personal data in compliance with GDPR regulations. The registration form is also annexed (Annex 10.1).

**Evaluation/feedback:** After the workshop (on 23rd April 2025), a thank-you email was sent to all participants. Additionally, a brief evaluation survey was distributed to gather feedback on the overall workshop and field visit experience. The feedback form is annexed (Annex 10.4) as well. Participants were also invited to reimburse the costs by filling in a reimbursement form.


**Figure 45: Visual summary of Italian workshop and field visit**

**Detailed summary of the workshop and field visit, and its results**

The Mutual Learning Workshop and Field Visit provided a unique opportunity for cross-sectoral dialogue and knowledge sharing on the present and future of biogas and biomethane production within the livestock and agricultural sector.

The first section began with a **welcome** from APRE and an introductory presentation by **Luna Del Pizzo**, Project Manager at APRE, who briefly outlined the **objectives and current activities of the ALFA project.**

This was followed by the presentation of **George Osei Owusu** from the **European Biogas Association (EBA),** which provided a **European perspective on the biogas market**, focusing on the role of livestock and agricultural feedstocks in biogas production, as well as growth potentials towards 2050.

**Giuseppe Dell'Olio** from **GSE – Gestore dei Servizi Energetici** provided a presentation about the biogas and biomethane market in Italy, giving valuable insights into the current Italian market trends, Italian regulatory frameworks, and growth potential, as well as barriers to development in the sector. The presence of an expert representative from GSE (Gestore dei Servizi Energetici) was particularly appreciated by participants, as it provided attendees with valuable insights into national policies, incentive programs, and practical support mechanisms available for


**Figure 46: Giuseppe Dell'Olio**

stakeholders in the renewable energy sector, particularly biogas.

The GSE is a state-owned joint-stock company, wholly owned by the Italian Ministry of Economy and Finance, which therefore plays a key role in promoting and supporting sustainable development in Italy. The GSE's mission includes supporting citizens, professionals, businesses and local authorities in the development of renewable energy sources and the improvement of energy efficiency.

The organisation manages over twenty incentive mechanisms aimed at promoting electricity generated from renewable sources and improving energy efficiency. GSE's clientele includes individuals and enterprises seeking incentives for renewable energy production and energy efficiency projects, as well as public institutions and municipalities involved in initiatives that integrate energy efficiency, sustainable mobility, and the use of renewable energy sources.


Figure 47: Mr Antonio Trionfi Honorati

A particularly impactful moment was the presentation of a **case study by Antonio Trionfi Honorati**, owner of a farm that, after 15 years of biogas production, made the difficult decision to shut down its plant. His honest account highlighted key challenges faced by small-scale producers, such as the high costs of maintenance, limited incentives, the difficulty of becoming self-sufficient once incentives from GSE – which are by nature temporary – come to an end, and complex bureaucracy.

This case set the tone for deeper reflections throughout the day on how to prevent such shutdowns and support the long-term sustainability of biogas initiatives.

The second session was focused on **strategies to revitalise and sustain biogas development in agricultural and livestock farms**, with a strong emphasis on cooperation models, technological innovation, and public incentives - the promotion of **energy communities,** investment in **multi-functional agriculture**, and increased **state support schemes**.

**Lorenzo Maggioni**, former Head of R&D at the Italian Biogas Consortium (CIB), provided an in-depth overview of the **biogas and biomethane market in Italy**, highlighting critical challenges and future opportunities. Italy is currently the second-largest biogas market in Europe, with over 2,380 plants and 114 biomethane installations. However, the sector faces major risks: over 700 first-generation plants may shut down after their incentives expire in 2027. Key barriers include **technological obsolescence, high operational costs, complex regulation, and delays in grid connections**. Maggioni stressed the urgency of reallocating unspent NRRP funds and extending deadlines to avoid project failures in the fifth auction. Strategic solutions discussed included integrating biogas with solar energy, supporting revamping efforts, developing cooperative producer models, diversifying biomass sources, and improving predictive maintenance through digital technologies.


Figure 48: Lorenzo Maggioni

For Maggioni, despite many obstacles, strong EU support, sector expertise, and abundant feedstock potential offer promising prospects for achieving Italy's goal of 6 bcm of biomethane annually.

Figure 49: Alessandro Rosati

**Alessandro Rosati** (AzzeroCO2) provided a comprehensive overview of **Renewable Energy Communities (RECs)** and their potential to foster shared benefits through collective energy production and consumption. He outlined the current limitations in the liberalised energy market, including the inability of many users to invest in RES installations and mismatches between energy needs and available infrastructure. Rosati explained the legal and operational framework for RECs in Italy, including eligibility criteria, energy sharing mechanisms, and member rights. A key takeaway was that RECs operate entirely through the public grid, with no physical connections between members—everything is managed virtually and regulated through private contracts. Among the main benefits highlighted were **lower energy costs, reduced emissions, support for local economies, and access to national incentives**. Notably, Italy's new incentive scheme includes a 20-year feed-in tariff for shared renewable energy and capital grants of up to 40% for installations in small municipalities. Rosati emphasised the untapped potential of integrating **biogas into RECs**, noting that while the framework was originally designed for photovoltaics, biogas—being a dispatchable source—could play a vital role with proper regulatory adjustments. This opens new opportunities for biogas producers, especially in rural areas, to participate in **collective energy models.**

Figure 50: Dario Colombari

**Dario Colombari** researcher at RSE (Ricerca sul Sistema Energetico), presented an in-depth overview of emerging technologies in the biogas sector, with a strong focus on innovation as a key enabler for overcoming current limitations. He highlighted the **slow growth of the sector in Italy**, driven by high operational and electricity generation costs, limited integration with existing infrastructure, and low investor confidence due to feedstock dependency. The presentation emphasised that **technological innovation** is essential to improve both technical performance and economic viability. Colombari introduced three promising technology areas: **Solid-Oxide Fuel Cells (SOFCs)**, offering highly efficient and flexible electricity generation from biogas; **Biological Methanation**, enabling increased biomethane yield by converting $CO_2$ in the biogas stream; and **Integrated Systems Modelling**, aimed at optimising the deployment and synergy of innovative technologies. His conclusions stressed the need for high-efficiency and flexible systems to revitalise the biogas sector and


Figure 51: Caseificio Formaggi Boccea

improve its integration with other renewable energy sources, providing insights into how advanced technologies can unlock the sector's full potential. However, he also noted key barriers: limited hydrogen availability, lack of a standardised framework for technology assessment, and critical infrastructure gaps.

Figure 52: Luca Zambelli

**Luca Zambelli**, an expert in renewable energy and animal welfare, presented a compelling case for the integration of **biogas in circular agriculture**, stressing that good and healthy food must begin with sustainable farming. He introduced **circular agriculture** as a model that not only mitigates environmental impact but also improves the economic viability of farms by turning livestock waste into valuable energy and fertiliser. He highlighted that even **small- and medium-sized farms** can benefit significantly from **small-scale biogas plants**, which use only on-site waste to generate renewable energy. Zambelli outlined a four-step process: collection of effluents, anaerobic digestion, cogeneration of green electricity and thermal energy, and the use of **digestate as organic fertiliser**. This system reduces greenhouse gas emissions, enhances animal welfare, and generates direct energy savings and financial returns through feed-in tariffs. He emphasised that methane, if not captured, has **85 times more climate impact than $CO_2$** over 20 years. Utilising it through biogas plants turns a problem into a solution. Thermal energy can be reused on-site for cleaning, heating water, and supporting animal health. Zambelli concluded that **biogas is a practical tool for a truly circular agricultural economy**, enabling farms to be more sustainable, resilient, and independent, while improving the environment and animal well-being.

The workshop concluded with a **knowledge sharing session** moderated by **Riccardo Coletta** (Project Manager at APRE and ALFA Italian Hub manager), where participants engaged in a dynamic Q&A, exchanging experiences, doubts, needs and ideas for policy improvements, collaboration, and technical support to improve resilience in the sector.

During the workshop, a journalist from ***QualEnergia.it*** - a leading Italian web magazine dedicated to analysing energy markets and scenarios to accelerate the decarbonization of the economy, conducted interviews with three key speakers: **Giuseppe Dell'Olio** (GSE), **Lorenzo Maggioni**, and **Antonio Trionfi Honorati**. The following day, an article summarising their insights and contributions was published and is available in Italian at this link.


Figure 53: Ricotta from Caseificio Formaggi Boccea

In the afternoon, participants visited the **Marella Farm – Caseificio Formaggi Boccea**, a small but innovative dairy farm located just outside Rome in the Lazio countryside, which integrates traditional dairy production with renewable energy practices. Since 2010, the company has embraced a strong commitment to sustainability, beginning with the installation of a fully integrated **100 kW photovoltaic system**, replacing an old asbestos roof. This solar installation produces approximately 125,000 kWh/year, covering the facility's energy needs and feeding surplus electricity into the grid.

Figure 54: Emanuelle Marella

In 2017, the farm installed a **60 kWe and 40 kWt biogas plant that utilises whey**, a by-product of cheese production, as its primary input. The facility produces around 518,000 kWhe/year of electricity—sold to the grid—and 345,000 kWht/year of thermal energy used internally. Previously, the disposal of whey (Category 3 waste) was both logistically and financially burdensome. Today, not only has the company eliminated those costs (saving approx. €20,000/year), but the farm also collects surplus whey from neighbouring dairies/producers, demonstrating a **local cooperation model** that supports waste management and resource sharing among small businesses, creating a local circular economy.

Despite its small size, the company is recognised as a best practice in sustainable rural innovation, and its story has been featured on several media platforms.

Led by owner and CEO Dr. **Emanuele Marella**—who also serves as President of the *Consorzio di tutela della Ricotta Romana DOP*— participants were guided through the dairy facility and every step of the cheese and ricotta production process, from milk reception (mainly sheep and goat milk from local farms) to aging, packaging and distribution. A key highlight of the visit was the company's innovative use of renewable energy, particularly its biogas plant.

Mr Marella shared detailed technical and economic data -including that the biogas plant generates approximately €100,000/year from electricity sales and saves an additional €10,000/year in heating costs- about the **costs of constructing the biogas plant**, the **daily inputs required**, the **amounts of electricity and thermal energy produced**, and the **maintenance workload**. The plant produces electrical and thermal energy, as well as **clean water used for irrigating fields**, embodying a closed-loop, sustainable approach and showcasing how even a small-scale system can drive significant environmental and economic benefits.

Furthermore, the facility is further equipped with LED lighting, inverters on electric motors, and systems for heat recovery from whey heating. Advanced water purification and waste treatment technologies—including sludge drying—ensure minimal environmental impact.

The main outcomes and takeaways from the visit have been:

- A practical demonstration of sustainable rural innovation on a small scale.
- Evidence of effective local cooperation among small dairies.
- Data and operational transparency provide valuable insights into renewable energy integration.
- Inspiration for other small to mid-sized agricultural and dairy operations across Italy.

### Evaluation of the workshop and field visit

The workshop gathered valuable input on market trends, challenges, and opportunities for biogas in Europe and Italy. It also provided concrete case studies, data on biogas operations, and best practices in technological innovation and cooperative models. Key ideas included the expansion of **energy communities**, new **policy incentives** to support aging biogas infrastructure, and enhanced

**cooperation between farms** to share resources and reduce costs. Participants also emphasised the importance of **training, innovation uptake, and knowledge transfer**.

The combination of high-level expertise and real-life experiences created a rich learning environment, and the visit to the Marella Farm reinforced the practical feasibility and community impact of sustainable biogas solutions. The personal story shared by Antonio Trionfi Honorati gave a human dimension to the structural challenges facing the sector and sparked meaningful dialogue on how to design more resilient, farmer-friendly energy systems.

Overall, all participants expressed that the event was a positive and valuable experience. Many attendees thanked and congratulated the organisers for bringing together such a diverse group of experts — from representatives of the national agency managing renewable energy incentives in Italy, to researchers working on cutting-edge technologies and future applications, as well as farmers and agricultural practitioners sharing their hands-on experiences. Participants particularly appreciated the opportunity to engage directly with the speakers, ask questions, and deepen their understanding of both technical and practical aspects of biogas production. They found both the workshop and the field visit to be highly interesting and stimulating.

Among the participants was also a livestock farming company currently receiving biogas consultancy services from APRE and FBCD. The representatives expressed their satisfaction at being able to take part in the event and benefit from this additional learning and networking opportunity.

Also, thanks to participants' feedback, APRE stands that the event succeeded in creating a space for **mutual learning**, **policy reflection**, and **technical exchange**, aligning with the ALFA project's objectives of accelerating the green transition through inclusive and cooperative practices in the livestock sector, thanks to the biogas market uptake.

Following the event, a Google Form link for the event evaluation and feedback was sent to all participants by email. In total, 10 participants have filled out the feedback form.

Overall, the feedback and responses collected indicate that the experience was positive and satisfying for participants in terms of content, organisation and implementation. Sixty percent of respondents indicated that they gained access to new knowledge from participating in the event; 30% said they gained new personal relationships and contacts, and 10% said they were inspired for future professional development within their company. Here are the results.

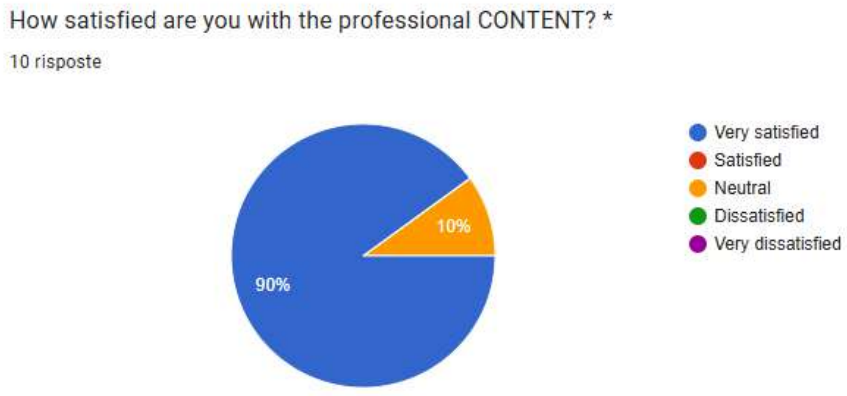



Figure 55 : Question - How satisfied are you with the professional CONTENT?

**Figure 56: Question - How satisfied are you with the ORGANISATION of the event?**

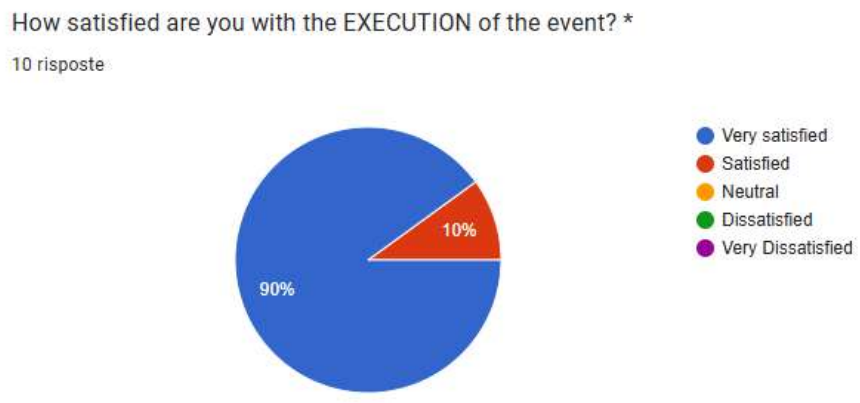



**Figure 57: Question - How satisfied are you with the EXECUTION of the event?**

**Policy recommendations**

During the ALFA Project workshop, the discussions revealed a set of policy actions, recommendations and insights to support the deployment of biogas systems in livestock farms.

The main barriers preventing livestock farms from introducing biogas include **complex permitting**, **high initial costs**, **fragmented regulations, technical challenges**, **lack of rural expertise**, and misconceptions.

Participants stressed the need for **operational support** (e.g., feed-in tariffs for biomethane) over short-term installation subsidies. Suggestions included:

- Incentives for **CHP systems** and **production modulation** based on grid demand.
- **Tax reliefs** and easier access to capital for farmers.
- Creation of a **dedicated funding office** to guide applications
- Support for **pilot projects** and **innovation-driven solutions** that can sustain themselves beyond the incentive phase.

Regarding policy effectiveness and recommendations, participants' discussion highlighted the need to:

- Invest in **R&D and innovation**, not just incentives.
- Enhance **inter-ministerial coordination** and long-term policy visibility.
- Promote **local cooperation** among farmers, waste producers, and municipalities.
- Support **training** and **knowledge transfer** for rural operators.

In summary, the workshop emphasized that sustainable biogas deployment in livestock farming must combine targeted incentives, innovation, and simplified governance to ensure long-term viability.

**Dissemination and communications activities carried out before, during and after the workshop**

The workshop was promoted through multiple communication channels to ensure wide visibility and reach among relevant stakeholders. Participants were recruited using the following methods:

**Online Promotion:**

- During the ALFA Webinar *"Biogas: A possible, yet unknown ally. The role of Biogas in the transition to Circular Economy"*, organized by SIE and APRE on 19th March 2025.

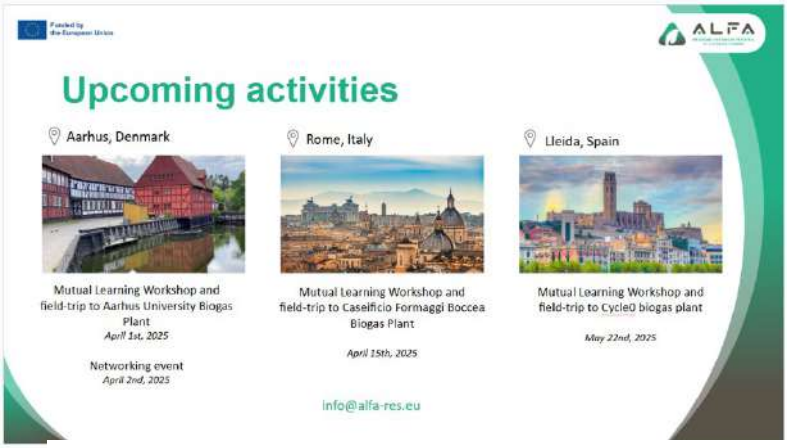



**Figure 59: Recruitment of participants at ALFA webinar on 19th march 2025**


**Figure 58: Promotional post on the ALFA website**

- An English post was published before the event on the ALFA website, accessible at this link.
- An English post was shared on the ALFA LinkedIn page before the event, accessible at link.
- A promotional post in Italian was published on the LinkedIn page of APRE – Agenzia per la Promozione della Ricerca Europea.


**Figure 61: Promo on APRE LI page**

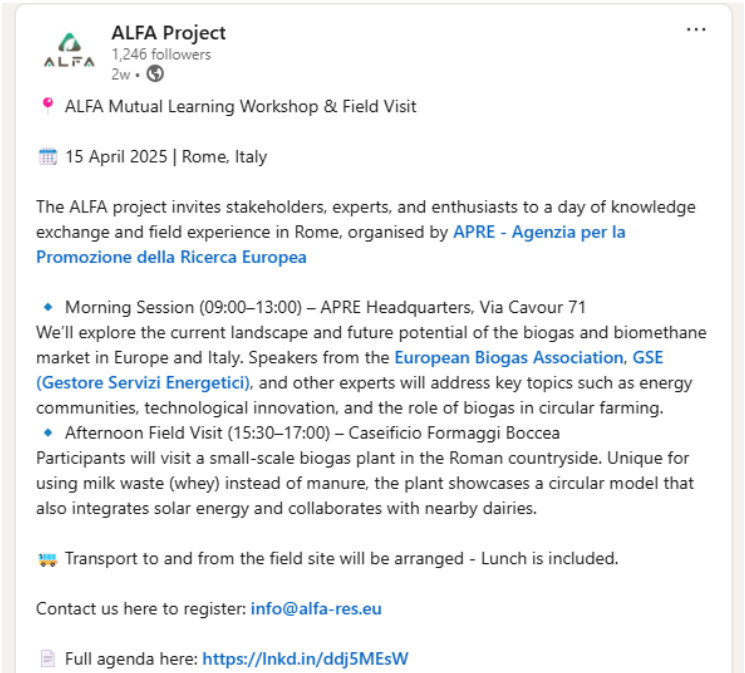



**Figure 60: Promotional post on the ALFA LinkedIn page**

- A promotional article in Italian was published in the web magazine *Ruminantia*, available at this link.


**Figure 62: Promotional in the web magazine Ruminantia**

**Email invitations:**

- Invitations were sent to all ALFA partners on 04/03/2025.
- Invitations were sent to selected stakeholders on 06/03/2025.

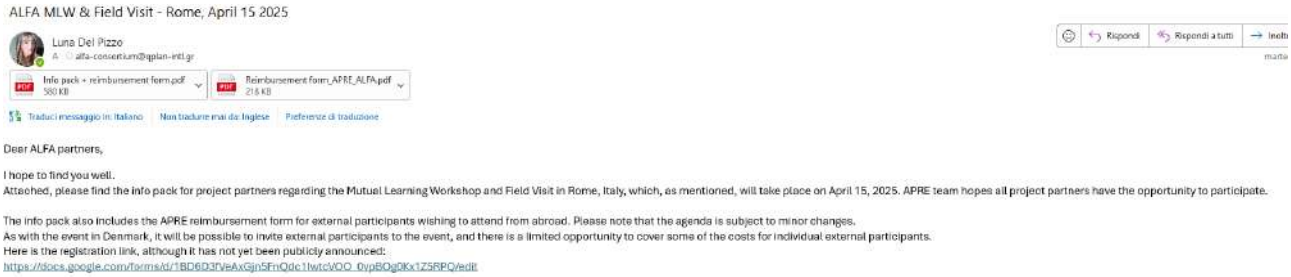



**Figure 63: Invitations to ALFA partners**

Gentilissimi,

Con la presente e-mail ho il piacere di invitarvi a partecipare all'evento **ALFA Mutual Learning Workshop & field visit,** che stiamo organizzando a Roma il 15 aprile, nell'ambito delle attività di Capacity Building & Awareness Raising del progetto ALFA.

Si tratta di una intera giornata (9:00 – 17:00) che include due diverse sessioni in presenza:
**Mutual Learning Workshop** – Sede APRE (9:00 – 14:00)
Indirizzo: Via Cavour 71, 00184 Roma

**Field Visit** – Impianto di biogas presso il Caseificio Formaggi Boccea (15:30 – 17:00)
Indirizzo: Via Locana 97, 00166 Roma
Sito web: www.formaggiboccea.it

**Figure 64: Invitations to stakeholders**

## Post-event communication:

- A thank-you email was sent to all participants on 23rd April 2025.

Dear all,

Thank you once again for attending the **ALFA Mutual Learning Workshop & Field Visit** in Rome, Italy.
I kindly ask you to take just **two minutes** to complete this short questionnaire **to help us evaluate the event**.
Your feedback is very important to us: link

Thank you, I wish you a good day and look forward to staying in touch.
Best regards,

**Figure 65: Thank-you email to all participants**

## Agenda

**ALFA Mutual Learning Workshop & Field Visit:**
**Policies, actions and measures aimed at supporting biogas solutions market**

Date: April 15, 2025
Location: Rome, Italy

- Mutual Learning Workshop Venue: *APRE Headquarters, Via Cavour, 71, 00184 Rome, RM*
- Field Visit Venue: *Biogas Plant - Caseificio Formaggi Boccea*, Via Locana 97, 00166 Rome, RM

| Time | Topic | Who |
|---|---|---|
| **Session 1 (09:00-10:30) Introduction** | | |
| 09:00 – 09:15 | Welcome & Introduction<br>ALFA project in a nutshell | Luna Del Pizzo - APRE Agency for the Promotion of European Research |
| 09:15 – 09:45 | Perspective for the Biogas/biomethane market in Europe | George Osei Owusu - EBA - European Biogas Association |
| 09:45 – 10:15 | Perspective for the Biogas/biomethane market in Italy | Giuseppe Dell'Olio - GSE - Gestore Servizi Energetici |
| 10:15 – 10:30 | Case Study – the story of a farm that decides to cease production | Antonio Trionfi Honorati – owner of Antonio Trionfi Honorati Farm |
| 10:30 – 10:45 | Coffee break | |
| **Session 2 (10:45-13:00) Strategies to revitalize the development of biogas in agricultural and livestock farms in Italy** | | |
| 10:45 – 11:15 | Strategies to promote the adoption of biogas and to prevent production shutdowns in first-generation biogas plants | Lorenzo Maggioni - former Head of R&D at CIB - Consorzio Italiano Biogas. Senior consultant and expert in biogas, biomethane and multifunctional agriculture. |
| 11:15 – 11:40 | Energy communities | Enrico Facci – Engineer at AzzeroCO2 |
| 11:40 – 12:10 | Innovations in biogas sector - technologies, infrastructures and synergy with solar energy | Colombari Dario – Researcher at RSE Ricerca sul Sistema Energetico |
| 12:10 – 12:40 | Biogas for small and medium-sized agricultural and livestock farms and Circular Economy | Luca Zambelli - Consultant in renewable energy, biogas, and animal welfare |
| 12:40 – 13:00 | Q & A (Knowledge Sharing Session/Discussion) | Riccardo Coletta - APRE - Agency for the Promotion of European Research |
| 13.00 – 14:00 | LUNCH BREAK | |
| **Field visit (15:30-17:00) Caseificio Formaggi Boccea biogas plant** | | |
| 14:15 – 15:15 | Transportation to the biogas plant Caseificio Formaggi Boccea | |
| 15:30 – 17:00 | Tour & discussion around the biogas plant Caseificio Formaggi Boccea | Emanuele Petrella: manager of Caseificio Formaggi Boccea biogas plant |
| 17:00 – 18:00 | Transportation back to APRE Headquarters | |

*Agenda is subject to change.

* Event moderated by Riccardo Coletta, Italian Hub Manager - APRE – Agency for the Promotion of European Research

**Figure 66: ML workshop and field visit agenda**

## Photos


## Annexes

## Infopack

# AGENDA & INFOPACK

**ALFA Mutual Learning Workshop & Field Visit**
**Date: 15th April 2025**
**Location: Rome, Italy**

Mutual Learning Workshop – APRE Headquarters
Address: Via Cavour 71, 00184, Rome

Field visit – Biogas plant Caseificio Formaggi Boccea
Address: Via Locana, 97 00166 Rome
Website: https://www.formaggiboccea.it/


## Travel arrangement for the guest of ML Workshop and field visit

Each participant is responsible for arranging their own travel and accommodation. Reimbursements will be issued directly to your account upon submission of the **Reimbursement Form** along with the corresponding invoices.

*Please note that APRE will only reimburse the travel and subsistence expenses related to participation in the event.

Eligible expenses include:

- Accommodation (up to €150 per night)
- Meals (up to €40 per meal)
- Economy-class flight tickets
- Public transportation
- Taxi fares
- VISA fees

## How to reach Rome

The most convenient option is to travel directly to Rome by plane. There are usually direct flights to Rome. You can arrive at:

- **Leonardo da Vinci International Airport – Rome Fiumicino (FCO).**
- **Rome Ciampino – G.B. Pastine International Airport (CIA).**

It is recommended to check flight availability with airlines on www.skyscanner.net.

## Accommodation

**Staying in the City of Rome**

In Rome, there are several accommodation options available; however, we recommend choosing a hotel near Termini Station. Termini Station is conveniently located close to the APRE Headquarters at Via Cavour 71, where the Mutual Learning Workshop will be held. On April 15, following the Mutual Learning Workshop and lunch, a shuttle service will be arranged to pick you up in front of the APRE Headquarters and transport you to the field visit event venue. Likewise, at the conclusion of the field visit, the shuttle service will return you to the designated meeting point at the APRE Headquarters.

Below are a few examples of hotels in the area that also offer breakfast:

Hotel Big Bang
Hotel Nordizzi Americana

## Field visit

Following the Mutual Learning Workshop at the APRE Headquarters and the lunch, the field visit will take place in the afternoon.
Transport to the biogas plant site and back to APRE Headquarters will be organised by APRE.
We will visit the small biogas plant of Caseificio Formaggi Boccea, which is located in the Roman countryside. What makes this biogas plant special is that it is not fed with manure, but rather with milk waste (whey). Additionally, neighboring dairies also contribute their waste to the farm. The biogas produced is converted into heat for heating purposes and electrical energy. The company also operates a photovoltaic system, further enhancing its commitment to sustainability.

## Catering

The catering for the morning coffee break and the lunch will be provided. We would like to ask you to let us know your **special dietary preferences, food allergies or intolerance,** by adding your information in the Google Form in the Participation form.

Hotel Corona
Hotel Igea
Hotel Tirreno
Hotel Julia

## Ho to reach the city of Rome

**From Fiumicino Airport**
To reach central Rome from Fiumicino Airport, the Leonardo Express train is the most convenient option. This non-stop service departs every 15–30 minutes and takes about 32 minutes to travel directly to Termini station, with a ticket costing roughly €14. There are also several bus services available, but the Leonardo Express is generally the fastest and most reliable option. Termini is Rome's main railway hub and offers connections not only for local metro services, but also for long-distance trains and connections.

**From Ciampino Airport**
Ciampino Airport does not have a direct train connection to central Rome. Instead, several bus services run between the airport and Termini station, typically taking around 40 minutes depending on traffic. Taxis and car rental services are also available if you prefer a direct transfer.

**Taxi Services in Rome:**
Official white taxis are available outside the terminals.

- **Apps:**
  - Free Now: Allows you to book and pay for taxis via the app.
  - itTaxi: Enables taxi booking and payment through the app.
  - appTaxi: Another option for booking taxis in Rome.
  - Uber
- **Phone Bookings:**
  - Radio Taxi: Call +39 06 3570.
  - Pronto Taxi: Call +39 06 6645.
  - Other Companies: +39 06 5551, +39 06 4994, +39 06 4157

## More questions?

Anything else you'd like to know? Help with your travel arrangements? Feel free to contact us:

Luna Del Pizzo
Email: delpizzo@apre.it

**A scanned copy of the list of participants signed by participants is kept by the organiser**

## 4.5 Spain

**General information**

| | | |
|---|---|---|
| **Regional Hub** | **Spain (Sustainable Innovations – SIE)**  | |
| **Title of the Workshop** | **Biogas Opportunities in Spain: Lessons from Europe** | |
| **Date** | Mutual Learning Workshop | **22 May, 2025** |
| | Field visit | **22 May, 2025** |
| **Location** | Mutual Learning Workshop | Hotel B&B Ciudad de Lleida |
| | Field visit | CYCLEØ |
| **Format** | Mutual Learning Workshop | **In-Person** |
| | Field visit | **In-Person** |

**Attendees**

**No of attendees/No. of women: 22/9**

**Categories of stakeholder** (policy, SMEs, general public etc.): Provider of biomass/biogas technology (1), Biogas and/or energy organization (4), Consulting company (7), Consultant/Organizer (2), Research Consultancy/SME (2), Public administration - energy agency (1), Biogas plant owner (1), Farmer (4)

**Organisation of the workshop and field visit**

The Mutual Learning Workshop of the Spanish HUB, led by SIE, was held on 22 May 2025. Its organisation began three months in advance, during which SIE contacted potential speakers to participate in the session. Rather than a large-scale event, the workshop was designed as a focused expert session involving stakeholders and farmers. The central theme was biogas plants, aiming to both highlight Spain's opportunities and shortcomings in the biogas sector and to share successful case studies from Spain and other European regions, fostering the exchange of best practices.

The field visit was co-organised with CycleØ, one of the pioneering successful biogas plants in Spain, located in Lleida. By integrating the workshop and field visit into the same day, the organisers minimised costs and reduced the time commitment required from participants, ensuring higher engagement and logistical efficiency.

Key **organisational steps** included:

- Early coordination of speakers from diverse backgrounds, including industry associations, technology providers, and international experts.
- Designing an agenda that covered the full spectrum of biogas-related issues, from policy to practice.

- Securing a suitable venue for the workshop and arranging transportation logistics for the field visit.
- Coordinating with CycleØ to allow access to their facilities and ensure a guided technical tour of their operations.

**Venue and location:** The workshop was held at the Hotel B&B Ciudad de Lleida, a venue chosen for its spacious and comfortable conference facilities, and its strategic location, only 30 minutes by bus from the biogas plant, facilitating seamless transport logistics. The field visit included two main stops: first, the Grid Injection Point, where the plant's Director provided an in-depth explanation of the operations and infrastructure; and second, the biogas plant itself, where a detailed technical tour showcased its functioning. CycleØ, operating in various European regions, was selected as a demonstration site due to its status as a proven success story in the biogas sector.


**Figure 67: Visual summary of the Spanish workshop and field visit**

**Detailed summary of the workshop and field visit, and its results**

**Key data**: The workshop and field visit provided a wealth of qualitative data through presentations, expert exchanges, and interactive discussions. Speakers offered insight into the current state of the biogas and biomethane sectors in Spain and across Europe. Key data gathered included:

- Legislative and regulatory challenges (e.g. nitrogen/ammonia limits, complex permitting processes).
- Operational experiences from various regions, particularly regarding digestate treatment, social acceptance, and grid integration.
- Technological best practices and innovations, including successful case studies from Italy and Spain.
- Specific policy support mechanisms in place in other countries (e.g. feed-in tariffs, incentives, “silent approval” procedures in Italy).
- First-hand perspectives from livestock farmers and biogas professionals on the barriers to adoption and areas requiring support.

- What ideas were generated?

Numerous **actionable ideas** emerged during both the roundtable discussions and the technical visit:

- The need for more structured collaboration between farmers, associations, and policymakers.
- Promoting smaller, appropriately scaled biogas plants tailored to farm size.
- Implementing broad awareness campaigns (via media) to foster public and farmer engagement.
- Streamlining administrative processes to speed up authorisations and reduce red tape.
- Adopting incentive models from countries like Italy to support investment and uptake.
- Enhancing EU policy alignment, especially around Guarantees of Origin and fertiliser legislation.
- What are the main impressions and observations that you made?

The event successfully fostered an open dialogue between stakeholders, where practical experience and expert knowledge complemented each other. Several key observations were:

- There is a strong interest among farmers, but also a persistent lack of awareness and technical understanding.
- Social acceptance and administrative complexity remain critical bottlenecks to deployment.
- The Spanish biogas sector lags some European counterparts in terms of incentives and strategic alignment.
- The CycleØ facility showcased the technical viability and innovation potential of biogas plants in rural contexts.

**Challenges with this workshop/field visit:** While the overall organisation was smooth, a few challenges were noted:

- Balancing the agenda to accommodate both technical depth and broader policy dialogue within a single-day event.
- Ensuring that highly technical topics, such as digestate treatment or methane injection systems, were accessible to all participants, including non-specialists.
- Coordinating travel and timing logistics for a combined event involving both indoor and field-based activities.

**Key successes:** The workshop and field visit achieved several significant successes:

- Brought together a diverse group of stakeholders—including farmers, industry representatives, researchers, and policymakers—in a constructive and collaborative format.
- Successfully integrated international perspectives, with valuable contributions from Italian experts, which reinforced the cross-border relevance of biogas solutions.
- Highlighted a successful Spanish case (CycleØ), demonstrating the real-world potential of biogas deployment when technical, social, and policy factors align.
- Generated practical recommendations for EU-level policy harmonisation, farmer engagement strategies, and infrastructural development.

**Policy recommendations**

Please, provide a comprehensive summary of the policy recommendations related to biogas adoption that were discussed and collected during the workshop. Please make sure to discuss and clearly outline the following, including specific examples (if possible):

- **Deployment barriers/challenges/opportunities**: One of the main barriers to biogas deployment in Spain is the highly complex and fragmented regulatory environment, particularly concerning permitting and digestate management. However, the agricultural sector offers a strong opportunity for biogas expansion due to its abundance of organic waste and the potential for circular economy integration.
- **Financial incentives**: Currently, financial incentives are limited and uneven across regions. Participants emphasised the need for national feed-in tariffs, investment grants, and tax benefits, as well as non-financial support such as technical assistance and simplified administrative procedures.
- **Permits**: The permitting process in Spain is rated as extremely complex (5 out of 5) due to long timelines, inconsistent requirements across regions, and excessive bureaucracy, which significantly delays project implementation.
- **Policy effectiveness:** Existing policies such as the Spanish Biogas Roadmap have shown limited effectiveness, mainly due to slow and partial implementation. Unlike countries like Italy, Spain lacks consistent national support schemes or regulatory mechanisms that can effectively stimulate the sector.
- **Further recommendations for policymakers** to facilitate biogas deployment, policymakers should prioritise regulatory simplification, introduce targeted financial incentives, harmonise permitting processes, and launch awareness campaigns to improve social acceptance and stakeholder engagement.

**Dissemination and communications activities carried out before, during and after the workshop**

**Promotion of the workshop:** The workshop was promoted through a strategic multi-channel communication campaign to maximise visibility and engagement before and after the event. Prior to the workshop, Sustainable Innovations published announcements and the agenda across key social media platforms, including LinkedIn, X (formerly Twitter), and the ALFA project's own LinkedIn profile. These posts highlighted the workshop's objectives, speaker line-up, and relevance to current challenges in the biogas and biomethane sectors.

After the event, a detailed summary and photo highlights were shared via the Sustainable Innovations website, along with further dissemination through their LinkedIn, X, and Instagram channels to extend reach and sustain momentum.

CycleØ supported the promotional effort by issuing an official press release and generating visibility across specialised energy and industrial platforms, including IndustriaAmbiente, OpenPR, ElPeriodico de la Energia, BioEnergy News, Salón del Gas Renovable, Industria Química. This media coverage ensured the workshop reached a broader audience, including policymakers, industry professionals, and the general public.

**Participants invitation:** Participants were invited through a targeted outreach strategy coordinated by Sustainable Innovations. The process began several weeks in advance, identifying key stakeholders from the biogas and agricultural sectors, including industry experts, researchers, policy representatives, and farmers. Personalised invitations were sent via email, followed by direct contact through phone calls and professional networks to ensure engagement. The selection aimed to create

a balanced and interactive group for meaningful dialogue during both the workshop and the field visit.

### Agenda

**Workshop sessions:** The workshop consisted of a series of expert-led presentations followed by an interactive roundtable discussion, all focused on sharing best practices, identifying challenges, and proposing solutions for the adoption of biogas and biomethane technologies in Spain and across Europe. The session opened with welcome remarks from representatives of Sustainable Innovations and CycleØ, followed by an introduction led by Carla Sebastiani from SIE to the ALFA project and its focus on waste valorisation. Presentations were delivered by key figures including the Vice President of AEBIG, experts from Italy (Luca Zambelli and Elisabetta Quani), GEA (Nicolas Branchesi), BETA Technological Centre (Ricard Carreras), and Vendula Dolezalova from Slovakia, who provided a diverse and international perspective on biogas innovation, policy, and practice. The morning concluded with a roundtable discussion involving all participants, enabling a deeper exchange of views and practical experiences.

**Tools selected and why:** The main tools used during the workshop included a digital presentation setup (projector and screen) for visual support of the speakers' content, and printed agendas to guide participants through the day. These tools were chosen for their reliability and effectiveness in ensuring smooth information flow and active engagement. The roundtable discussion format was conducted through mentimeter to foster open dialogue and capture participant insights in a structured yet inclusive way.

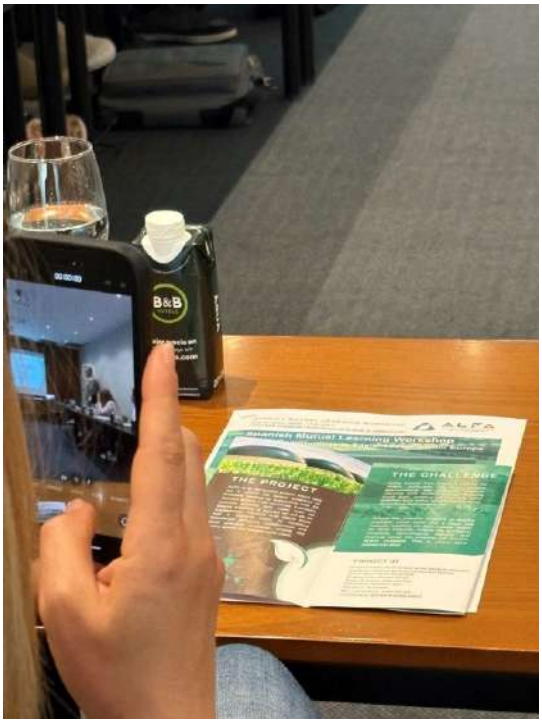


### Photos

## Annexes

**Participants list, signed by the participants, is kept by the organiser**

**Copies of materials used to promote the event**:




## SUSTAINABLE INNOVATIONS AND CYCLEØ ORGANISE A MUTUAL LEARNING WORKSHOP UNDER THE ALFA PROJECT

By: SIE | On MAY 23, 2025 | 0 COMMENTS

Lleida, Spain – May 22, 2025 — Sustainable Innovations and CycleØ successfully organized a Mutual Learning Workshop in Lleida as part of the European ALFA Project.

The event brought together key stakeholders from the biogas and biomethane sectors to exchange best practices, discuss challenges and opportunities, and explore innovative technologies aimed at advancing sustainable energy solutions in Europe.

The session began with a welcome from our Communications Manager, Pablo Morales, and the General Director of CycleØ in Lleida, Jordi Berenguè, followed by our Business Developer Manager, Carla Sebastian, who introduced the ALFA project and its focus on waste valorization and biomethane production. David Fernández, Vice President of AEBIG, presented the challenges and opportunities of biogas in Spain, while Luca Zamboli and Elisabetta Quasi shared best practices from Italy, highlighting the key role of farmers. Nikolas Grzechesi (GEA) spoke about digestate management, and Ricard Carreras (BETA) showcased practical cases of technological innovation. Vendula Dolezalova concluded the presentations with initiatives for energy recovery from waste. The session ended with a roundtable discussion involving all participants.

Representatives from Sustainable Innovations, CycleØ, AEBIG, BETA Technological Center, and other livestock farmers shared valuable insights and case studies during the roundtable discussions.

In the afternoon, participants took part in a technical field visit to a biomethane grid injection plant operated by CycleØ in Vallfogona de Balaguer. The guided tour included a technical presentation, a Q&A session, and closing remarks highlighting the potential of biomethane as a key contributor to Europe's renewable energy goals.

**Sustainable Innovations (SIE)**
9,163 followers
2w •

Mutual Learning Workshop on Biogas Opportunities in Spain

On May 22, 2025, Sustainable Innovations (SIE) in collaboration with CycleØ will organise a session in Lleida, Spain, as part of the European ALFA Project.

The event will cover key topics such as:

Implementation of best practices for biogas production in Italy and Spain.

Challenges and opportunities for the biogas sector in the Spanish context.

Best practices and insights from CycleØ, AEBIG, Sustainable Innovations (SIE), BETA Technological Center, GASIFY, #WasteToEnergy Projects, and other sector experts.

The day will also feature a field visit to the CycleØ facilities, where we will meet the biomethane grid injection point.

The workshop aims to promote knowledge exchange on sustainable biomethane production and use across Europe.

Stay tuned, we will share the outputs and insights generated with you!

**Sustainable Innovations (SIE)**
9,163 followers
12m • Edited •

An unforgettable Mutual Learning Workshop!

This week, we have travelled to Lleida (Spain) for the **Mutual Learning Workshop** of the ALFA Project, bringing together experts and stakeholders to exchange ideas on the future of #biogas across Europe.

The day was packed with insightful presentations and discussions on best practices from #Spain, #Italy, and #Slovakia. Yesterday's sessions were followed by a field visit to CycleØ, whose collaboration is proving extremely valuable in showcasing innovative biogas solutions on the ground.

Special thanks to all the attendees and speakers:

Sarah Willis MCIM, Liang Xie, CFA Jordi Berengué for the incredible field visit to CycleØ

David Fernández and Gema Peribáñez from AEBIG

Luca Zambelli, Elisabetta Quani and Luna Del Pizzo for bridging success cases from Italy

Stanislava DRUSKOVÁ and Vendula Doležalová for sharing insights from Slovakia.

Ricard Carreras Ubach from the BETA Technological Center

Nicolás Branchesi from GEA Group

And of course, our Business Developer Manager Carla Sebastiani and our Communications Manager PABLO MORALES MOYA for coordinating the session.

At Sustainable Innovations (SIE), we are proud to contribute to the knowledge exchange and support the uptake of sustainable biogas technologies in rural areas.

Read more on our website: https://lnkd.in/dgmnkvaM


Pablo Ariño Aguilar and 2 others 3 comments · 1 repost

# Summary

The four Mutual Learning workshops, field visits, and networking event organised under ALFA demonstrated both the strong interest in biogas and the significant challenges shared across all hubs.

**Common barriers identified:**

- Complex permitting procedures and regulatory fragmentation, particularly in Spain and Italy.
- Dependence on feed-in tariffs and financial incentives, raising concerns about long-term viability (Italy, Slovakia).
- Limited social acceptance and awareness among farmers and the public, especially in Spain and Slovakia.
- High operational costs and outdated technologies in first-generation plants.

**Promising opportunities highlighted:**

- Revenue diversification through heat use, digestate valorisation, and renewable energy communities (Slovakia, Italy).
- Integration of biogas with other renewable sources and Power-to-X technologies (Denmark).
- Replication of successful business models such as CycleØ in Spain or Marella dairy in Italy.
- Growing EU policy momentum on biomethane and Guarantees of Origin, offering a supportive framework for national uptake.

The workshops also yielded **tangible results**: stakeholders jointly developed policy recommendations on regulatory streamlining, stable financing schemes, technology adoption, and social awareness. The field visits provided concrete evidence that biogas is not only a waste-to-energy solution but a driver of circular rural economies - enhancing energy independence, cutting greenhouse gas emissions, and creating local jobs.

The networking event in Denmark underscored the value of connecting EU projects, research organisations, SMEs, and policymakers to build synergies, avoid duplication, and co-design innovative pathways for renewable energy integration.

Yet, **the greatest value of these events was the networks and trust that emerged**. Farmers sat next to policymakers, researchers next to industry, and NGOs next to technology suppliers. This diversity of perspectives enriched the discussion, fostered cross-border cooperation and knowledge exchange.

Ultimately, the ML workshops confirmed t**he value of mutual learning** as more than a knowledge-transfer tool: it creates a space where technical, practical, social, and policy expertise are equally valued. Together, these activities advanced ALFA's goal of unlocking Europe's biogas potential from manure by linking technical, financial, and policy learning with real-world demonstrations.


**Figure 68: Lessons learnt**

This experience reinforced a key insight: the transition to sustainable biogas is not only a technological challenge, but a social and collaborative one. By investing in dialogue, capacity building, knowledge-sharing, and co-creation, ALFA has helped build the networks and shared understanding needed to accelerate biogas uptake across Europe.


**Figure 69: Photos from the workshops**

# 5. Monitoring, evaluation and reporting

Every six (6) months, the regional Hubs' responsible project partners were tasked to provide an account of key activities within their short progress report in accordance with the Management Quality Plan (MQP), which was prepared by each project partner to summarise the work progress (including progress against targets) and costs incurred in the reporting period. In this report, partners responsible for the operation of the regional ALFA Hubs described their activities and progress towards their goals, along with the rest of their activities within the ALFA project.

In the framework adopted in this Baseline Strategy for ALFA, monitoring and evaluation were not disconnected activities from the development of the other Work Packages. They were rather to be seen on a continuum and contribute to the same process. They were linked together through "result-oriented monitoring", which provided an overall framework reflecting the ALFA project concept**.** The ALFA Co-Creation Workshops scheduled for June-July 2023, with the support of all partners, enabled us to engage in a series of co-creative activities with key stakeholders to co-define key aspects of our market uptake support measures as well as of our performance monitoring and impact assessment system (including KPIs), while details on the monitoring framework and the validation process along the fine-tuning are available in ALFA D4.1 "Report on evaluation of market uptake support measures – First Round" and ALFA D4.2 "Report on evaluation of the market uptake support measures – Second Round" .

In that respect, the table below presents the timeline of critical steps for the operations of the regional ALFA Hubs in terms of performance monitoring and impact assessment.

**Table 3. Final Timeline for the Operation of ALFA Hubs**

| ALFA Hubs Activities | 2023 | | | | | | | | | | | | 2024 | | | | | | | | | | | | 2025 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October | November | December | January | February | March | April | May | June | July | August | September | October |
| | M5 | M6 | M7 | M8 | M9 | M10 | M11 | M12 | M13 | M14 | M15 | M16 | M17 | M18 | M19 | M20 | M21 | M22 | M23 | M24 | M25 | M26 | M27 | M28 | M29 | M30 | M31 | M32 | M33 | M34 | M35 | M36 |
| Regional Hubs Establishment and Operation for multi - stakeholder engagement | | | D2.1 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | D2.1 |
| Scouting, engagement and selection of promising farmer projects | | | | | | | | | | D3.1 | | | | | | | | | D3.3 | | | | | | | | | | | | | |
| Deployment of technical support services | | | | | | | | | | | | | | | | | | | D3.2 | | | | | | | | | | D3.4 | | | |
| Deployment of business and financial support services | | | | | | | | | | | | | | | | | | | D3.2 | | | | | | | | | | D3.4 | | | |
| Deployment of capacity building activities | | | | | | | | | | | | | | | | | | | D3.2 | | | | | | | | | | D3.4 | | | |
| Deployment of regional awareness raising campaigns | | | | | | | | | | | | | | | | | | | D3.2 | | | | | | | | | | D3.4 | | | |
| Mutual Learning Workshops | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | D2.1 |

# 6. Risk Management

An essential part of ALFA was the quality assurance and risk mitigation approach with a view to ensuring project outcomes were of high quality and offered value to the project stakeholders. The underlying management and quality assurance mechanisms, which were described in the Management Quality Plan, were obligatory for all ALFA partners, while they aimed at complementing (and not replacing) the Grant Agreement and the Consortium Agreement of the project.

Risks that may considerably affect the progress and quality of the project had been identified and relevant contingency plans had been elaborated. Regarding the Regional Hubs, possible risks had been identified as shown by the table below. The list of risks on the project level and on the regional Hubs level was updated on an ad hoc basis or once every six months.

**Table 4: Risks and contingency plans related to the regional ALFA Hubs**

| Description of risk | Linked WP | Risk mitigation measures |
|---|---|---|
| Limited capacity is impeding the set-up and operation of the Hubs (Low probability / High impact) | WP2 | If a partner responsible for operating a regional hub prove to miss the needed skills, then it will be supported by another partner of ALFA with vast experience and expertise in such activities. |
| Lack of interest from market actors to receive our services or follow their Service Action Plans (Low probability/ High impact) | WP3 | We have tasks for scouting a long list of actors, running awareness-raising campaigns to foster interest and engagement of additional actors. Service Action Plans will be developed based on actual needs to align with their interests. |
| Lack of expertise in the consortium required to support a particular case (Low probability/ High impact) | WP3 | If the needs identified by the Hubs cannot be addressed with the consortium's expertise and service portfolio, those cases will be connected with suitable external organisations. |
| Limited involvement of appropriate stakeholders in mutual learning (Low probability/ High impact) | WP4 | The partners are well connected in their respective countries while some partners (EDF, EBA and FBCD) incorporate members from all over the EU, facilitating the selection of stakeholders to participate in the activities. Travel costs will also be reimbursed. |
| Limited technical expertise and involvement of technology providers for the implementation of biogas stations (Low probability / High Impact) | WP3 | We already bring on board of our consortium technology partners with expertise in the implementation of biogas installations as well as access to broad stakeholder networks of technology providers. In case of limited involvement of technology providers or availability of respective expertise, these networks will be mobilised to identify and engage suitable providers (e.g. from EBA members and/or technical contacts of A0CO2, CERTH, FBCD and others). An initial pool of such providers for the needs of WP3 will be pro-actively developed to this end. |

# 7. Conclusions

This report, **D2.8 "ALFA Hubs Operational Plan Activities – Final Report,"** developed under **Task 2.1**, outlines the updated strategy, operational plan, and activities carried out by each ALFA Hub, along with the results achieved. It also presents the revised monitoring framework that was implemented by the Hubs to streamline, track, and report their progress throughout the project, following two rounds of regional ALFA Hub operations.

**Key achievements include:**

- Six **ALFA Hubs** were established, tailored to local contexts, and successfully built regional networks.
- Six **co-creation workshops** were held to identify local needs and collaboratively design the service portfolio.
- The **ALFA Engagement Platform** was launched and is fully operational.
- **Eleven services** were developed and refined through two **validation workshops** with expert input.
- Two **open calls** were launched, through which the ALFA Hubs identified and engaged with promising projects.
- **Support was provided to 53 projects** across the regions.
- A total of **six seminars** and **seven webinars** were conducted, reaching and training **463 participants**.
- **Twelve awareness-raising campaigns** were implemented to boost visibility and engagement.
- Four **Mutual Learning workshops** and **field trips** took place.
- One **networking event** was organised to foster collaboration among stakeholders.
- A **final conference** was held to present key outcomes and foster dialogue.
- Six **policy briefs**, a set of **policy recommendations** (discussed during a **Policy Roundtable**), and a **Replication Guide** were produced to support future adoption and scaling of the initiative.

ALFA
UNLOCKING THE BIOGAS POTENTIAL OF LIVESTOCK FARMING

# The project

ALFA has the objective to help unlock the EU's biogas production potential by fostering the adoption of technologies using manure to produce biogas, thus helping increase the adoption of renewable energy sources in the EU and helping reduce emissions from untreated animal waste. The project will identify drivers and barriers for the uptake of biogas in the EU livestock farming industry and will support farmers from 6 EU countries (Italy, Denmark, Belgium, Slovakia, Greece and Spain) through its own co-created solutions, including financial, business, and technical support services as well as capacity-building seminars. In parallel, the project will develop an Engagement Platform to host tools that facilitate collaboration and knowledge exchange among industry actors and provide credible estimations of each farm's biogas potential, prospect profits, and environmental and social impacts. Moreover, ALFA will inform all relevant stakeholders via awareness-raising campaigns and policy recommendations and will provide guidelines for replication of its results in other regions.

Coordinator: **Q-PLAN**

| PARTNER | | SHORT NAME |
|---|---|---|
| Q-PLAN INTERNATIONAL | Q-PLAN INTERNATIONAL ADVISORS PC | QPL |
| APRE | AGENZIA PER LA PROMOZIONE DELLA RICERCA EUROPEA | APRE |
| AzzeroCO2 climate in our hands | AZZERO CO2 SRL | A0CO2 |
| CERTH CENTRE FOR RESEARCH & TECHNOLOGY HELLAS | CENTRE FOR RESEARCH & TECHNOLOGY HELLAS | CERTH |
| Food & Bio Cluster Denmark | FBCD AS | FBCD |
| Sustainable INNOVATIONS | SUSTAINABLE INNOVATIONS EUROPE SL | SIE |
| WHITE | WHITE RESEARCH SRL | WR |
| PEDAL CONSULTING | PEDAL CONSULTING SRO | PED |
| EUROPEAN DAIRY FARMERS | EUROPEAN DAIRY FARMERS E.V. | EDF |
| EBA European Biogas Association | EUROPEAN BIOGAS ASSOCIATION AISBL | EBA |

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