

An european multidisciplinary Industrial symbiosis community

Yearly Justification report – Second Grant Period

Table of Content

Introduction	3
Update of the technical work of LIAISE COST Action	3
Grant Expenditure	4
Deliverables completed during the second grant period	12
Other Activities implemented during the second grant period	13
Young Research Programme	17
Gender Equality Programme	18
Conclusions	18

Figures Index

Figure 1. Some images of the meetings organised under LIAISE COST Action-Grant Period 2	7
Figure 2. Some images of the training schools funded under LIAISE COST Action-Grant Period 2 ...	8
Figure 3. Some images of the grants funded under LIAISE COST Action-Grant Period 2	11
Figure 4. Attendance to external events	16
Figure 5. Second Year Internal Evaluation	17

Tables Index

Table 1. Budget Grant Period 2	4
Table 2. Expenditures in meetings in the second grant period	5
Table 3. Expenditures in training schools in the second grant period	7
Table 4. Expenditures in mobilities in the second grant period	8
Table 5. Expenditures in presentations at conferences in the second grant period	9
Table 5. Expenditures in dissemination products in the second grant period	11
Table 6. OERSA expenditure in the second grant period	12
Table 7. Deliverables submitted and published during the second grant period of the Action	12

Introduction

The LIAISE COST Action (CA22110) aims to advance the adoption of Industrial Symbiosis (IS) practices by fostering collaboration among researchers, policymakers, and industry stakeholders. In its first year, the initiative successfully implemented several activities, some of them transversal and other ones across their four working groups (WGs), contributing significantly to the Action's objectives. Below is a detailed summary of the progress and achievements.

Update of the technical work of LIAISE COST Action

Working Group 1 (WG1): Technical Synergies in Industrial Symbiosis

Activities:

- Conducted six online WG meetings and several sub-team and bi-weekly core group meetings.
- Submission of the deliverable *identification and non-technical barriers related to the implementation of Industrial Symbiosis*, in cooperation with WG2.
- Meeting in Skopje with WG2 in March 2025.
- Meeting in Berlin in September 2025.
- Submission of the deliverable *identification of existing database and other IT tools for monitoring Industrial Symbiosis streams*.
- Submission of a paper related to the state-of-the-art deliverable to the Journal Cleaner Engineering and Technology. Two major revisions have been made since its submission.
- Started working on D3.3 about Key Performance Indicators.

Key Deliverables:

- D1.2. Identification of existing database and other IT tools for monitoring Industrial Symbiosis streams.
- D1.4. Identification and non-technical barriers related to the implementation of Industrial Symbiosis

Working Group 2 (WG2): IS Business Models

Activities:

- Organized two virtual meetings.
- Submission of the deliverable *identification and non-technical barriers related to the implementation of Industrial Symbiosis*, in cooperation with WG1.
- Meeting in Skopje with WG2 in March 2025.
- Conference workshop in Izmir (Türkiye) on 21th May, 2025 with a final publication of book of proceedings and also book of abstracts.
- Book study analysis with Elsevier. Possible editors will be Almudena Muñoz, Hasan Volkan Oral, Pawel Krzeminski, Radu Godina and Aleksandar Anastasovski.
- Roles of Eco-industrial Parks as Industrial Symbiosis Facilitators for Overcoming Non-technical Barriers has been submitted to Environmental Sciences Europe Journal., It is under revision since May 2025.
- Started working on D3.3 about Key Performance Indicators.

Key Deliverables:

- D1.4. Identification and non-technical barriers related to the implementation of Industrial Symbiosis

Working Group 3 (WG3): Enhance the awareness and acceptance of Industrial Symbiosis

Activities:

- Expand the work of D3.3 about Key Performance Indicators to all the WGs.
- Meeting in Pardubice with WG4 in May 2025.
- Start defining the methodology to prepare the Technology Watch and Competitive Intelligence platform.
- Meeting in Warsaw with all WGs in September 2025.
- Organised five virtual meetings.

Key Deliverables:

- N/A

Working Group 4 (WG4): Dissemination and Exploitation

Activities:

- Submission of the deliverable *compilation database of relevant stakeholders identified in LIAISE related to Industrial Symbiosis topic*.
- Meeting in Pardubice with WG3 in May 2025.
- Conducted social media campaigns, increasing visibility across platforms like LinkedIn and YouTube.
- Preparation and publication of two podcasts about ESG.
- Published a second newsletter summarizing key activities and achievements of the second grant period.
- Published press releases to promote the Action.

Key Deliverables:

- D4.5. Compilation database of relevant stakeholders identified in LIAISE related to Industrial Symbiosis topic

Grant Expenditure

Table 1. Budget Grant Period 2

LIAISE Budget GP2	Budget (EUR)
Meetings	125,517€
Training Schools	43,539€
Mobility of Researchers and Innovators	19,000€
Presentations at Conferences organised by Third Parties	7,500€
Dissemination and Communication Products	6,500€
OERSA	500€
FSAC (15%)	30,383.40€

TOTAL	232,939.40€
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This year's budget was €117.844,51, which means that we spent €7,672.49 less than expected. Below is an explanation of the expenses incurred in each category:

Meetings

This category includes the following events:

Table 2. Expenditures in meetings in the second grant period

Meeting description	Place and Date	Attendants	Budget
Third General Meeting	27/11/202 Zagreb (Croatia) Hybrid Meeting	43	24,099.34€
Sixth Thematic Workshop with stakeholders: "Aspe 2030: Circular Innovation and Industrial Symbiosis"	18/12/2024 Aspe (Spain) F2F Meeting	19	1,197€
Seventh Thematic Workshop with stakeholders: "Circularity and Industrial Symbiosis in Industrial Parks as Green Transition Tool"	15/01/2025 Trondheim (Norway) F2F Meeting	19	4,312.35€
Working Group 1 and 2 Meeting	04-05/03/2025 Skopje (North Macedonia) Hybrid Meeting	33	20,510.73€
WG2 Workshop "Industrial Symbiosis from a business perspective: challenges and opportunities"	21/05/2025 Izmir (Türkiye) Hybrid Meeting	35	14,792.80€
Working Group 3 and 4 Meeting	27-28/05/2025 Pardubice (Czech Republic) Hybrid Meeting	31	18,754.56€
Working Group 1 Meeting	03/09/2025 Berlin (Germany) Hybrid Meeting	22	13,336.05€
Working Groups Meeting	07/10/2025 Warsaw (Poland) Hybrid Meeting	26	20,841.68€

As we can see, there are a total of 8 meetings, of which 2 are stakeholder workshops, 1 is a technical conference/workshop, 4 WGs meetings and 1 general Action meeting (GC, MC and WGs). It can be seen that the diversity of actions has been adequate and that the number of participants has always been high, including, in many events, a large presence of stakeholders from outside the action.





Figure 1. Some images of the meetings organised under LIAISE COST Action-Grant Period 2

Training Schools

This category includes two activities:

Table 3. Expenditures in training schools in the second grant period

Training School Description	Date	Attendants	Budget
ECO4ALL Training School	12-14/02/2025	9 (2 trainers + 7 trainees)	9984,48€
LIAISE Industrial Symbiosis Training School	17-19/03/2025	15 (4 trainers + 11 trainees)	19,691.19€





Figure 2. Some images of the training schools funded under LIAISE COST Action-Grant Period 2

Mobility of Researchers and Innovators

This category includes the following grants.

Table 4. Expenditures in mobilities in the second grant period

Grant Description	Date	Budget
STSM: Merim Kasumović - Academic Stakeholder Mapping	13-20/05/2024	1,750€
STSM: Isaak Trajkovic: Research on the influence of pigment additives in PLA material in order to	15-30/01/2025	2,600€

reduce the amount of waste due to inadequate product planning		
VM: Llesh Lleshaj - Critical Social and Cultural Drivers for Effective Industrial Symbiosis (IS) Implementation	17/03-28/04/2025	700€
STSM: Aleksandar Petrovski: Investigation on the potential for Industrial and Urban Symbiosis	01-25/04/2025	3,000€
STSM: Dzintra Atstaja: Networking for joint projects and publications by Circular economy and Industrial symbiosis	21-26/04/2025	1.200€
STSM: Mine Gungormusler: Sustainable Biorefineries: Methodologies for Industrial-Scale Biohydrogen Production within a Circular Economy Framework	23-30/04/2025	1,700€
STSM: Blisard Zani: "Reconnoitering social and economic KPIs: Barriers and obstacles of Industrial Symbiosis implementation"	11-17/05/2025	1,700€
VM: Nazim Kuyer - Innovative Grant Writing for Young Researchers in Industrial Symbiosis and the Circular Economy	01/04-01/06/2025	1,000€

It can be seen that a wide variety of topics related to the Industrial Symbiosis and the research and capacity building objectives of the action have been funded.

Presentations at Conferences organised by Third Parties

This category includes the following grants.

Table 5. Expenditures in presentations at conferences in the second grant period

Grant Description	Date	Budget
ITCG: Olivija Filipovska: Finance for Circularity: Innovations and Challenges	12-14/02/2025	1,500€
ITCG: Andreas Kyriakidis: ITC Grant	13-16/02/2025	1,200€
ITCG: Anđelka Stojanović: The position of European countries regarding opportunities for Industrial Symbiosis: A comparative analysis employing multi-criteria decision-making tools	30/03-05/04/2025	800€
ITCG: Besa Shahini: Integrating Waste Management and Carbon Mitigation through Industrial Symbiosis: Strategies for Green Urban Development in Eastern Europe	15-18/05/2025	1,700€
ITCG: Aleksandar Petrovski: INVESTIGATION ON THE POTENTIAL FOR INDUSTRIAL AND URBAN SYMBIOSIS	21-25/05/2025	700€
ITCG: Ana Ramos: Participation in the 6th Symposium on Circular Economy and Sustainability	15-19/06/2025	2,000€

- Advancing Industrial Symbiosis from an RTO's training perspective		
ITCG: Isidora Milošević: Industrial symbiosis: Encouraging circularity through cross-sector cooperation	10-11/07/2025	700€
ITCG: Llesh Lleshaj: Inclusiveness Target Countries Conference Grant	04-05/09/2025	500€
ITCG: Dilber Ayhan: Participation in the 12th International Conference on Life Cycle Management (LCM 2025) in Palermo with an oral presentation by the LIAISE COST Action ITC Conference Grant	09-12/09/2025	2,426€
ITCG: Aida Szilagyi: Dissemination of Industrial Symbiosis Practices at ERSCP Conference	14-17/09/2025	1,600€
ITCG: Sanela Arsić: Multi-Criteria Assessing Industrial Symbiosis Potential in European Countries: An Integrated Entropy-COPRAS Approach	16-18/09/2025	1,100€
DCG: Apostolos Michopoulos: Participation in an International Conference	15-19/06/2025	1,200€
DCG: Almudena Muñoz Puche: Attendance to 6th Symposium on Circular Economy and Sustainability	15-19/06/2025	1,500€





Figure 3. Some images of the grants funded under LIAISE COST Action-Grant Period 2

Dissemination and Communication Products

This category includes the following products.

Table 6. Expenditures in dissemination products in the second grant period

Dissemination product	Link	Budget
Action Website update	ICT Repository: https://www.liaise-action.eu/digital-tools/ IS Stakeholders repository: https://www.liaise-action.eu/industrial-symbiosis-stakeholder-directory/	2,360€
Dissemination Materials: <ul style="list-style-type: none">- Design of book of abstract and book of proceedings WG2 workshop- Roll ups printing- Leaflet printing- Design of newsletter	https://www.liaise-action.eu/publication/proceedings-book-industrial-symbiosis-from-a-business-perspective-challenges-and-opportunities/ https://www.liaise-action.eu/publication/book-of-abstract-industrial-symbiosis-from-a-business-perspective-challenges-and-opportunities/ https://www.liaise-action.eu/wp-content/uploads/2025/10/liaise-newsletter-2-rev02.pdf https://www.liaise-action.eu/wp-content/uploads/2024/06/liaise_leaflet.pdf https://www.liaise-action.eu/wp-content/uploads/2024/11/ARTES-FIMNALES-POSTER-3-sin-marcas.pdf	3,810.80€

	https://www.liaise-action.eu/wp-content/uploads/2025/10/liaise-newsletter-2-rev02.pdf	
Multimedia content (videos)	https://www.youtube.com/@liaiseproject	1,040€

OERSA

This category includes the following items.

Table 7. OERSA expenditure in the second grant period

Items	Budget
Virtual Communication tool (Zoom)	500€
Shipping Costs: <ul style="list-style-type: none">- Shipping cost of roll up for the WG3 and WG4 meeting- Shipping cost of roll up for the MC meeting + WG1 & WG2 meeting	79.46€
Bank charges	275€

Deliverables completed during the second grant period

Table 8. Deliverables submitted and published during the second grant period of the Action

	Title	Month
1.2	Identification of existing database and other IT tools for monitoring Industrial Symbiosis streams (WG1)	M24
1.4	Identification of technical and non-technical barriers related to the implementation of Industrial Symbiosis (WG1 and 2)	M18
4.5	Compilation database of relevant stakeholders identified in LIAISE related to Industrial Symbiosis topic (WG4)	M24

Other Activities implemented during the second grant period

Monthly Webinars

The LIAISE COST Action organized monthly webinars to provide members with a platform to share their projects, research, and innovative ideas. These webinars aimed to integrate more participants into the network, fostering inclusivity and collaboration. They also served as a critical opportunity for members to present their work, exchange insights, and explore potential synergies.

For attendees, the webinars were an invaluable chance to stay informed about ongoing activities, learn from diverse perspectives, and identify opportunities for interdisciplinary cooperation. This initiative has been instrumental in strengthening the Action's community and advancing its goals.

In addition, these webinars are recorded and uploaded to the YouTube channel account.

- November 2025: Sharing Success: Experiences from LIAISE COST Action Grant Recipients - First Grant Period. <https://www.youtube.com/watch?v=Pt1WTPHGklI>
- December 2025: Empowering Industrial Symbiosis: Training, Regional Initiatives, and Quadruple Helix Innovation in Life Sciences. <https://www.youtube.com/watch?v=AH6Az56bCPA>
- January 2025: Policy Frameworks for Industrial Symbiosis: Navigating Regulations and Incentives. <https://www.youtube.com/watch?v=FDErRBOeiM8>
- February 2025: Empowering women in science: Bringing Gaps & Building Futures. <https://www.youtube.com/watch?v=3NC297ghWOU>
- March 2025: Industrial Symbiosis and Energy. <https://www.youtube.com/watch?v=sIDyg27elhQ>
- May 2025: Industrial Symbiosis and Biopolymers. <https://www.youtube.com/watch?v=9jqpmZvz1yk>
- May 2025 (April delayed): Industrial Symbiosis on product design. <https://www.youtube.com/watch?v=u5yGtyMO19k>
- June 2025: Industrial Symbiosis and Life Cycle Assessment. <https://www.youtube.com/watch?v=xg8b41a7Byc>
- September 2025: Industrial Symbiosis and water. <https://www.youtube.com/watch?v=o4J3vL0pJDQ>
- October 2025: Stakeholders' engagement. <https://www.youtube.com/watch?v=6TSH6mAuQNo>

Science Café Initiative

A Science Café serves as an informal, interactive platform designed to facilitate open discussions on pressing scientific and societal topics. The primary objective is to engage diverse audiences, including researchers, practitioners, policymakers, and the general public, fostering knowledge exchange and encouraging collaborative problem-solving.

In February, the LIAISE COST Action successfully organized the second Science Café focusing on health ageing in a changing climate. This event brought together experts and stakeholders to explore innovative health solutions and strategies for climate challenges. Discussions centred on technological, economic, social and political trends.



Figure 4. Science Café topic

Other Actions carried out: Newsletter

The LIAISE COST Action launched an annual newsletter to keep members, stakeholders, and the broader community informed about the latest developments, achievements, and upcoming activities. The newsletter served as a key communication tool, sharing highlights from working group progress, event summaries, and important publications.

By distributing the newsletter regularly, the Action ensured that its objectives, impact, and resources were effectively communicated, fostering ongoing engagement and awareness among all participants and the public.

The link to the newsletter is here: <https://www.liaise-action.eu/wp-content/uploads/2025/10/liaise-newsletter-2-rev02.pdf>

Other Actions carried out: Second and Third podcast

The LIAISE COST Action launched in the first grand period a podcast series to provide a platform for in-depth discussions on Industrial Symbiosis and related topics. The podcast featured interviews with experts, researchers, and stakeholders, offering insights into ongoing projects, challenges, and innovative solutions.

This initiative aimed to reach a wider audience, including those who prefer audio content, while also giving members an opportunity to share their work and findings in a more accessible format. The podcast contributed to raising awareness of the Action's goals, fostering collaboration, and promoting knowledge exchange across diverse networks.

The second and the third episodes, both centred in Environmental, Social and Governance (ESG):

- https://www.youtube.com/watch?v=nIU4j_M8kI0
- <https://www.youtube.com/watch?v=ZuNg-KHjoZY>
- https://open.spotify.com/episode/4yp412Dw3ocfs8cDqq3P3?si=RDp-edvqS_Cz9OCGpfcFqA
- https://open.spotify.com/episode/1p5MQHjM6nyYFGvxA4iPHR?si=QX5J3nTDTMqv8Xmd29e_KQ

Other Actions carried out: Attendance to other events

The LIAISE COST Action actively participated in various external events to raise awareness and foster collaborations with other initiatives. These events included conferences, workshops, and symposia focused on sustainability, circular economy, and Industrial Symbiosis. By attending and contributing to these gatherings, the Action was able to expand its network, share its progress, and learn from other stakeholders in the field.

Notable events attended included the CIRCULARMENTE congress on current trends in sustainability and circular economy research, as well as the 6th CE symposium, where representatives from the LIAISE Action presented findings and engaged in discussions on key issues in circular economy and industrial symbiosis topics. These activities were crucial for building synergies and positioning the LIAISE COST Action as an active participant in the global dialogue on sustainable development.



Figure 4. Attendance to external events

Other Actions carried out: Yearly Internal Evaluation

This Yearly Internal Evaluation Report provides a comprehensive overview of the LIAISE COST Action's achievements, challenges, and overall progress during the first grant period. The purpose of this report is to evaluate the effectiveness of the Action activities, assess the alignment with strategic goals, and outline areas for improvement as they prepare for the next second grant, which just started in November 2025.

The Yearly Internal Evaluation Report demonstrates the significant progress and accomplishments of the LIAISE COST Action during its second grant period, establishing a strong foundation for its future endeavours. Participants acknowledged the great network; the collaboration made in WGs to showcase the practicality of IS of the quality of deliverables.

These outcomes highlight the Action's capacity to foster collaboration, knowledge dissemination, and engagement among its diverse network of researchers and stakeholders.

While the Action exceeded or met expectations for most respondents, areas for improvement were identified. Key challenges included science outreach or the lack of practical examples and site visits. Suggestions such as leverage the existing network to build more European Consortium is one of key points mention; another one is to keep up the work.

Feedback from the Management Committee and Working Group members consistently emphasized the Action's strengths, including a dedicated and hardworking people, excellent management of the mobilities. The evaluation further underscored the importance of maintaining transparency, strategic planning and opportunities for networking.

Looking ahead, the insights gained from this evaluation provide a valuable framework for refining operations in the third grant period. By addressing areas of concern and building on established successes, LIAISE COST Action is well-positioned to advance its objectives, drive impactful research, and strengthen its contributions to Industrial Symbiosis and sustainability.

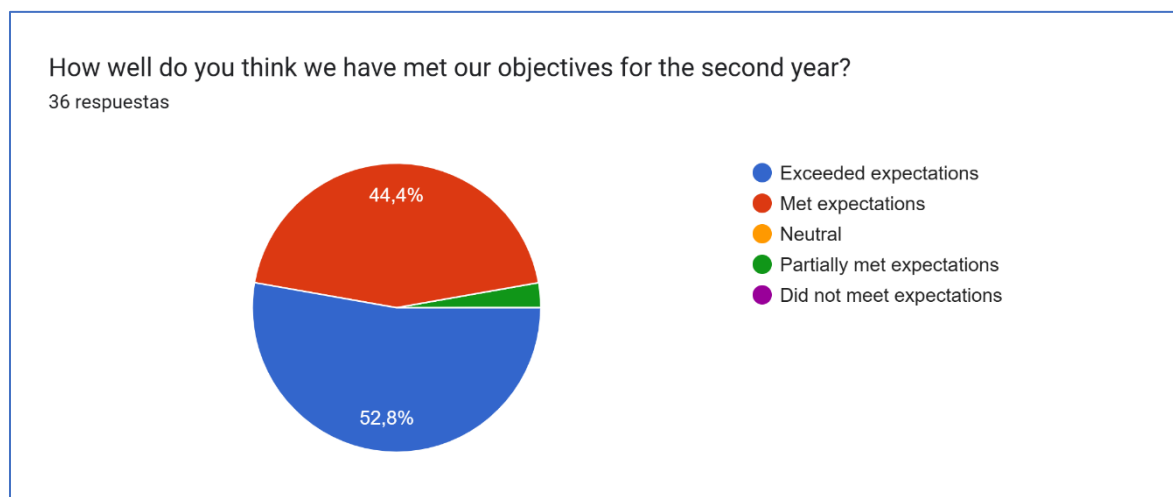


Figure 5. Second Year Internal Evaluation

Young Research Programme

The Young Researcher (YR) Programme, coordinated by Dr. Taner Sar and Dr. Eda Orhun, was designed during the first grant period to empower and support early-career researchers within the LIAISE COST Action.

Actions Implemented during the second grant period:

- Training Pills: A series of short training sessions, such as workshops on How to Write a research paper or How to Write Successful Research proposals were organised to help young researchers in building essential skills for academic and professional success.
- Specific Workshops: These workshops are organized to provide young researchers with the opportunity to present their work, receive feedback, and engage with a broader scientific community. One about agriculture topic were organised.

- Digital Connection Survey: The survey created during the first year to promote connections for Young Researchers, encouraging participation in Short-Term Scientific Missions (STSMs), either as students or hosts, continue being very active.
- Increase YR Representation: Efforts were underway to increase the number of young researchers from various countries within the Management Committee (MC), ensuring diverse representation and strengthening the network across regions.

This programme is central to enhancing the visibility and integration of young researchers within the LIAISE COST Action, fostering the next generation of leaders in Industrial Symbiosis and related fields.

Gender Equality Programme

Based on the Gender Equality Plan created last year by Dr. Puksas and Dr. Bessa Vilela, the different activities of the Actions have promoted balance in their different activities.

Conclusions

The second year of the LIAISE COST Action demonstrated significant progress in fostering Industrial Symbiosis. The collaborative efforts across WGs, combined with strategic dissemination and inclusivity initiatives, have set a strong foundation for achieving the Action's long-term goals. Future activities will build on these successes, expanding stakeholder engagement and addressing technical and policy-related challenges to IS implementation.