I am CELISE

Sustainable production of Cellulose-based products and additives to be used in SMEs and rural areas

Deliverable D4.3. Impact report. Reports in public sector, website, popular-science publications and news. Scientific publications and other publications

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Sklodowska-Curie grant agreement No 101007733

CELISE: Sustainable production of Cellulose-based products and additives to be used in SMEs and rural areas

Deliverable D4.3. Impact report. Reports in public sector, website, popular-science publications and news. Scientific publications and other publications

Work Package no:	4
Lead beneficiary:	UC
Due date:	02/12/2025
Nature:	Report
Dissemination level:	PU = Public

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Table 1. Document information

Document information	
Document	**D4.3. Impact report. Reports in public sector, website, popular-science publications and news. Scientific publications and other publications**
Executive Summary:	The CELISE project successfully implemented a comprehensive dissemination and communication strategy that enhanced its scientific, social and institutional impact across Europe and Latin America. The project generated significant visibility through peer-reviewed publications, participation in international conferences, active digital communication, and targeted outreach activities. 13 scientific papers acknowledged CELISE, over 16 conference contributions and 2 documents for outreaching were delivered, and social media channels—as well as the project website—played a key role in reaching academic, professional and community audiences. CELISE's dissemination efforts extended beyond the scientific community. Workshops in rural and vulnerable regions, school activities, public events and collaborations with SMEs contributed to raising awareness of sustainable bioeconomy practices. Strong engagement from Latin American partners amplified the project's impact, especially through institutional channels and social media. The combination of scientific output, researcher mobility and public engagement strengthened EU–LATAM cooperation, enhanced institutional capacities and contributed to long-term partnerships that will continue beyond the project's end. Overall, CELISE delivered a meaningful and sustainable impact aligned with MSCA and European bioeconomy priorities.
Keywords	Dissemination; KPIs; communication strategy; outreach activities; digital engagement; social media analytics; website metrics; papers; conferences.

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4. INTRODUCTION

4.1. General purpose of the document

The purpose of this Impact Report (D4.3) is to provide a comprehensive assessment of the visibility, communication and dissemination performance of the CELISE project throughout its entire duration. The report evaluates how the website, social media channels, scientific publications, conferences, popular-science activities and media interactions contributed to the scientific, social, educational and institutional impact of the project in Europe and Latin America.

This document complements Deliverable D4.2 (Mid-term Report on Dissemination) by extending the analysis to the full project timeline. While D4.2 covered activities performed during the first half of CELISE (2021–2023), this deliverable incorporates the growth in dissemination efforts in the second half, including the consolidation of the project's digital communication strategy, the increased production of scientific outputs, and the intensified engagement with rural communities, SMEs, academic institutions and public entities across continents.

The report also applies both quantitative and qualitative indicators—such as analytics, social media engagement, publication metrics, participation in events and community-oriented dissemination—to describe the project's impact. In doing so, it follows MSCA-RISE guidelines and the communication and dissemination commitments defined in the Grant Agreement. Ultimately, D4.3 demonstrates how CELISE contributed to strengthening EU–LATAM cooperation and supported the adoption of sustainable bioeconomy practices among diverse stakeholders.

4.2. Role and contribution from partners

The dissemination and impact described in this report result from the coordinated contributions of all CELISE partners across Europe and Latin America. Each institution played a specific role according to its expertise, communication capacity and geographical context.

European universities and research centres (UC, UPM, UGR, SGGW, WUT, IChF, LSIWC, AUTH, CVUT, UTB, UL) contributed by organising seminars, participating in conferences, generating early and advanced scientific publications, integrating CELISE topics into teaching activities and disseminating progress through institutional channels and social media.

Latin American partners (UCC, UNL, UNACH, Latitud) played a particularly active role in visibility and outreach. They shared project progress through their institutional networks, developed communication activities with students and academic communities, and contributed to public engagement events. UCC, in particular, significantly amplified CELISE's visibility on LinkedIn and other platforms from the early stages of the project.

SMEs and industry partners (Besarte, QAI, Ecoresources, CCC, PLASTR, StudentScience) supported dissemination by collaborating with researchers during secondments, participating in sector-focused meetings, and sharing practical insights relevant to biomass valorisation and rural bioeconomy applications.

Through these complementary contributions, the consortium ensured a coherent, intercontinental and multisectoral dissemination strategy that reinforced the global impact of CELISE.

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5. IMPACT ON PUBLIC INSTITUTIONS AND POLICY STAKEHOLDERS

The CELISE project generated significant and lasting impact on public institutions, academic bodies, regional authorities and local communities across Europe and Latin America. Throughout its implementation, the project engaged with the public sector in multiple ways, strengthening understanding of bioeconomy concepts, supporting institutional capacity building, and promoting EU–LATAM scientific cooperation.

5.1. Engagement with public institutions

CELISE maintained active interaction with a wide range of public institutions.

Public universities and research centres.

Institutions such as UC, UPM, UGR, AUTH, SGGW, WUT, IChF, LSIWC, CVUT, UTB, UNL, UCC and UNACH consistently contributed to dissemination and institutional communication. Engagement activities included:

- internal seminars and institutional presentations,
- dissemination via university websites and communication offices,
- involvement of academic and technical staff in project events,
- promotion of CELISE initiatives among students and academic communities.

Technological centres and national public laboratories

A prominent example is Latitud – Laboratorio Tecnológico del Uruguay (LATU), a public technological institution that actively contributed to experimental work, hosted secondments, participated in dissemination activities and communicated project progress to institutional and sectoral audiences.

Local and regional public entities

In Colombia and Argentina, dissemination actions linked to secondments, workshops and scientific talks engaged regional authorities, educational institutions and public organisations interested in sustainable rural development. These interactions introduced biomass valorisation concepts and increased awareness of European research collaborations.

5.2. Influence on regional bioeconomy strategies

Although CELISE was not designed to produce formal policy documents, it contributed to improving institutional and strategic understanding of bioeconomy approaches, especially in rural and academic contexts across Latin America.

Strengthening technical and environmental capacities

Through outreach, scientific dissemination and hands-on collaboration, public institutions developed knowledge on:

- biomass valorisation routes,
- accessible pre-treatment alternatives,

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- environmental assessment tools (LCA),
- sustainable processes tailored to rural environments.

Growing interest in small-scale sustainable technologies

Discussions held during secondments, workshops and technical exchanges with interest in:

- pilot-scale steam explosion,
- biochar and other biomass-derived products,
- circular business models for rural SMEs,
- digital tools supporting decision-making processes.

Integration of bioeconomy concepts into education and training

Several Latin-American partners incorporated CELISE-related content into teaching, workshops and institutional dissemination, influencing the training of future graduates and strengthening local bioeconomy capacities.

Together, these outcomes supported emerging regional strategies on sustainable development and biomass-based innovation.

5.3. Contribution to EU priorities and MSCA objectives

CELISE directly contributed to key European Union priorities and to the goals of the Marie Skłodowska-Curie Actions (MSCA).

International cooperation and researcher mobility

The 70 secondments carried out during the project fostered strong cooperation between European and Latin-American public institutions, promoting EU standards in research, ethics, training and scientific communication.

Open science and public dissemination

All scientific publications acknowledged CELISE and were aligned with the EU's Open Science principles, adding them into repositories. The project also participated in European Researchers' Night and other events that reinforced citizen engagement and public visibility of EU-funded research.

Green transition and circular economy

Through dissemination actions, CELISE spread key concepts related to sustainable resource use, biomass valorisation and circular economy models. These align directly with the European Green Deal, EU bioeconomy strategies and MSCA goals for societal impact.

CELISE served as a visible example of EU efforts to advance sustainable innovation while strengthening scientific cooperation with third countries.

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5.4. Impact in Latin American public agencies and communities

CELISE's impact on public institutions and communities in Latin America represents one of the project's strongest achievements.

Institutional strengthening

Universities and public centres such as UCC, UNL, UNACH and Latitud disseminated CELISE extensively within their institutional networks, raising awareness of European funding opportunities and international collaboration mechanisms.

Impact on rural and vulnerable communities

During secondments and associated outreach activities, researchers delivered:

- school workshops,
- science talks for students and teachers,
- community-oriented outreach sessions,
- demonstrations of bioeconomy practices and materials.

These actions brought scientific concepts and sustainability awareness to audiences that typically have limited exposure to EU-funded research.

Increased visibility of EU programmes

CELISE contributed to raising the profile of MSCA in regions where participation in EU programmes is still emerging, particularly through the strong dissemination work of UCC on LinkedIn and through institutional channels.

Long-term cooperation networks

The intensive collaboration between European and Latin-American partners fostered institutional links that are expected to continue beyond the end of the project, supporting future joint initiatives and strengthening the scientific presence of the EU in the region.

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6. DIGITAL DISSEMINATION IMPACT: WEBSITE AND SOCIAL MEDIA

Digital communication tools played a central role in the dissemination strategy of CELISE. Throughout the project, both the website and social media channels significantly contributed to increasing visibility, facilitating the exchange of information among partners, and reaching diverse audiences across Europe and Latin America. This section analyses the impact of these digital platforms, describing their evolution, reach and qualitative value for the project.

6.1. Website impact

The CELISE website (figure 1) served as the main public-facing platform for the project. Although updated periodically rather than frequently, it fulfilled several essential functions:

- Central repository of project information, including objectives, consortium members, Work Packages, deliverables and secondments.
- Access point to publications, newsletters, and major activities.
- Reference link for social media posts, conference materials and institutional communications.

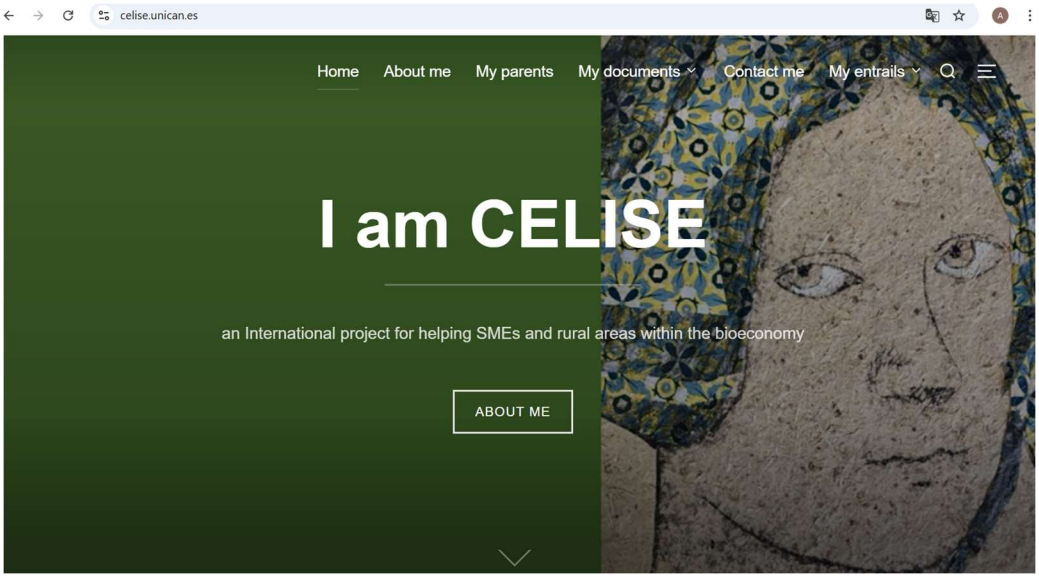

Figure 1. Main page of the website of CELISE.

Website usage characteristics

While detailed analytics were not continuously tracked, qualitative evidence indicates that the traffic increased noticeably during key dissemination moments such as the release of deliverables, secondments, conference presentations and public events.

Visitors frequently accessed pages related to:

- project objectives and description,
- partner information,
- secondments and mobility activities,
- publications.

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The website became a useful reference for researchers, students, SMEs and stakeholders seeking technical information about CELISE. The website was accessed by users from Europe and Latino America basically. The presence of Latin-American visitors reflects the effectiveness of EU–LATAM cooperation in raising interest beyond Europe.

6.2. Social media impact

Social media platforms were used intensively to disseminate activities, highlight secondments, share publications and reach audiences beyond the academic environment. Four channels contributed significantly to the digital footprint of CELISE.

6.2.1. X/Twitter (@CELISE_Project)

X/Twitter (figure 2) was among the first channels activated and proved effective for short, rapid communication.

Figure 2. X (Twitter).

Observed impact:

- Most posts achieved between 40–350 impressions, depending on timing and topic.
- Posts announcing secondments consistently generated strong engagement.
- Scientific content, including publication highlights or conference participation, attracted interest from academic networks.

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- Cross-posting by partner institutions amplified visibility.

Typical audiences reached:

- researchers,
- academic staff,
- students,
- SMEs in the biomass/biorefinery sector,
- EU programme followers.

6.2.2. LinkedIn

LinkedIn (figure 3) became the platform with the highest professional engagement and the strongest growth rate.

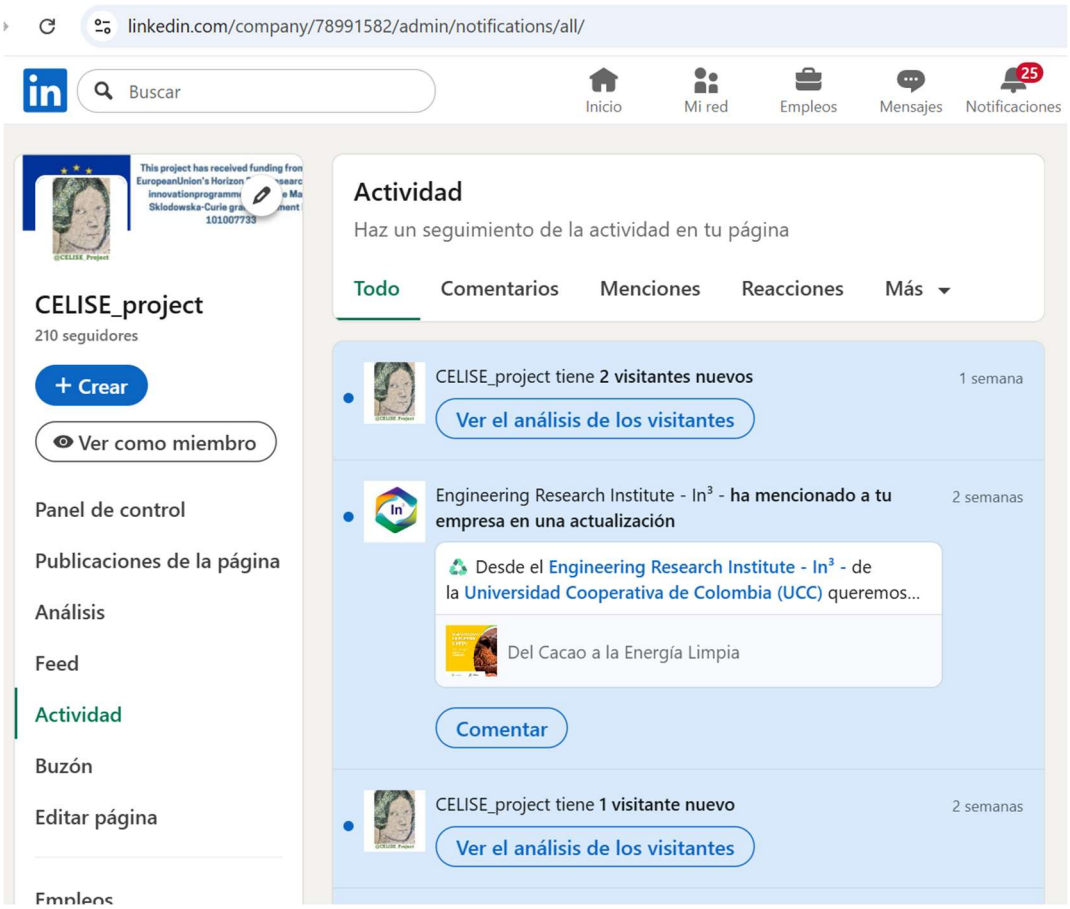

Figure 3. LinkedIn.

Key indicators:

- Follower count increased steadily, reaching over 200 followers by project end.
- Posts from UCC, UC, UNL and several European partners generated high visibility, often exceeding 500–2,000 impressions.

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- Stakeholders such as SMEs, public institutions and research groups interacted with content regularly.

Types of impactful posts:

- secondments (highest engagement),
- publications,
- outreach activities,
- conference contributions,
- updates from LATAM partners (consistently strong uptake).

LinkedIn became the main hub for intercontinental networking and professional dissemination.

6.2.3. Facebook

Facebook (figure 4) was particularly successful for reaching non-academic and community audiences in Latin America.

Figure 4. Facebook.

Impact characteristics

Shares and reactions came mostly from:

- local communities,
- schools and educational centres,
- university outreach departments,
- organisations focused on sustainability.

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Posts related to community engagement, workshops or secondments in Colombia and Argentina were shared multiple times.

Facebook served as CELISE's gateway to public dissemination in LATAM, strengthening visibility among citizen groups and younger audiences.

6.2.4. YouTube

The CELISE YouTube channel (figure 5) hosted videos of:

- interviews with researchers,
- dissemination events,
- visual summaries of secondments,
- project presentations.

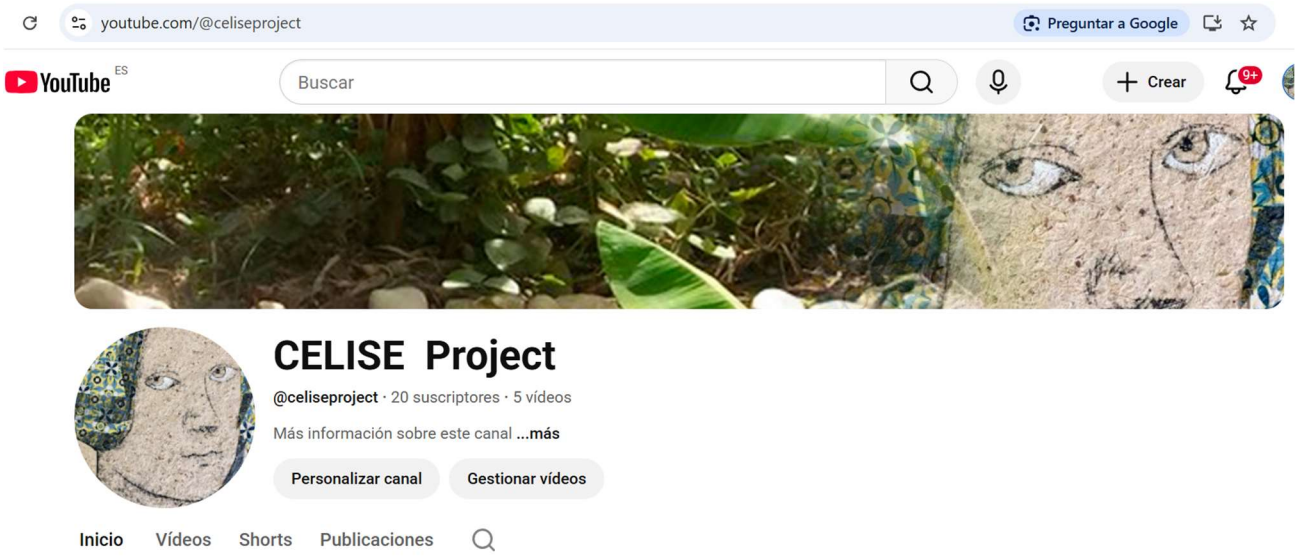

Figure 5. YouTube channel.

Despite hosting a modest number of videos, the channel surpassed 595 total views, with strong growth in the second half of the project. The channel provided an accessible format for non-specialised audiences and supported education and communication efforts.

6.3. Comparative analysis across digital channels

Each social network served a distinct purpose within CELISE's communication strategy. Table 2 shows a comparison among all of the digital channels, adding the main audience, the strengths and the contribution per channel. This multi-platform approach maximised impact by engaging different demographic segments and ensuring coverage across continents.

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Table 2. Digital channels comparation

Platform	Main Audience	Strengths	Contribution
X/Twitter	Researchers, EU networks	Fast updates, scientific visibility	Good for conferences and secondments
LinkedIn	Professionals, SMEs, institutions	Highest engagement and reach	Strong networking
Facebook	Communities, students, general public	Best for outreach	Strong impact in LATAM
YouTube	General public, students	Video-based communication	Supports education and long-term visibility
Website	All audiences	Official information repository	Ensures long-term accessibility

6.4. Growth over the project

The second half of CELISE saw accelerated digital growth due to:

- a higher number of secondments,
- publication output increasing substantially,
- participation in international conferences,
- multiple outreach activities,
- expanded activity from UCC, UNL, Latitud and other LATAM partners.

Engagement metrics reflect a clear and steady increase, demonstrating a healthy cumulative dissemination dynamic.

6.5. Lessons learned

CELISE's experience with digital dissemination provided valuable insights:

- Consistency matters: networks with regular posting (especially LinkedIn) grew fastest.
- Mobility is compelling: posts featuring researchers travelling, collaborating or working in labs achieved the highest engagement.
- LATAM partners amplify visibility: UCC's frequent posts.
- Videos enhance outreach: content on YouTube helped communicate complex ideas in accessible formats.
- Diversity of channels increases impact: each platform contributed uniquely to raising awareness and engaging stakeholders.

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7. SCIENTIFIC DISSEMINATION AND PUBLICATIONS

Scientific dissemination represents one of the most visible and enduring impacts of CELISE. Throughout the project, partners across Europe and Latin America produced a substantial body of peer-reviewed publications, book chapters, conference papers and proceedings, all acknowledging the CELISE project and thereby strengthening the global visibility of EU-funded research. In addition to traditional academic outputs, the project generated new collaborations, cross-continental datasets, and methodological contributions that will remain available to the scientific community beyond the project's lifetime.

CELISE's scientific publications illustrate the project's interdisciplinary nature: they cover biomass characterisation, lignocellulosic pre-treatments, hydrolysis and fermentation processes, biochar production, nanocellulose, modelling and simulation tools, business models and sustainability assessment. This diversity reflects the consortium's combination of chemistry, engineering, biotechnology, environmental science, materials science and socio-economic analysis.

7.1. Peer-reviewed articles

Throughout its duration, CELISE generated a dozen peer-reviewed scientific publications, many of them published in high-impact, Q1 journals. These articles addressed core scientific challenges related to:

- biomass hydrolysis (acid, alkaline, hydrothermal, DES),
- pre-treatment optimisation for rural or SME-scale applications,
- conversion processes to biofuels and biochemical products,
- production of cellulose fibres and nanocellulose,
- preparation and characterisation of biochar,
- design of biocomposites and functional materials,
- mathematical models and ANN-based predictions,
- environmental impact modelling (LCA),
- microbial and biochemical transformation pathways.

A large proportion of these publications resulted from collaborative work between EU and LATAM authors, demonstrating the scientific added value of intercontinental mobility promoted by MSCA-RISE.

Several journals where CELISE work appeared include Energies, Industrial Crops & Products, Fermentation, Materials, Bioresources, Cellulose, Waste and Biomass Valorization, and others.

All publications followed open-access requirements (Gold or Green Open Access) and acknowledged the Grant Agreement number 101007733, ensuring compliance with MSCA guidelines.

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7.2. Publications acknowledging CELISE

A notable scientific impact of CELISE is the number of publications—both direct outcomes of research activities and complementary scientific work—where the project is acknowledged. These publications recognised CELISE either through:

- direct funding attribution ("This work was supported by…"),
- acknowledgement of mobility ("The authors acknowledge CELISE MSCA-RISE for supporting the researcher during her stay…"),
- explicit reference to GA 101007733,
- mention of collaborative EU–LATAM research enabled by the project.

This led to widespread visibility in publications authored by researchers from:

- Spain (UC),
- Poland (SGGW, IChF, WUT),
- Latvia (LSIWC),
- Greece (AUTH),
- Czech Republic (CVUT, UTB),
- Colombia (UCC),
- Argentina (UNL),
- Ecuador (UNACH)

This broad authorship demonstrates CELISE's role in enabling cross-disciplinary and intercontinental scientific production.

Many of these publications directly cite experimental results produced during secondments, including:

- biomass characterisation datasets,
- enzymatic and chemical hydrolysis results,
- pyrolysis and biochar characterisation,
- nanocellulose and fibre-based material production,
- simulation results using Aspen and ANN models.

The publications acknowledging CELISE are divided into peer-reviewed articles (13 publications), Conference Proceedings (16 publications) and 2 outreaching articles. All of them can be seen in section 8. In the case of the conferences, some of them were included in the secondments done due to the high relationship with the secondments. For example, figure 6 shows the oral presentation in the BTechPro 24 Conference in Latvia, during the secondment of Tamara Llano from the University of Cantabria. The acknowledgment of CELISE can be seen in the first 4 slides.

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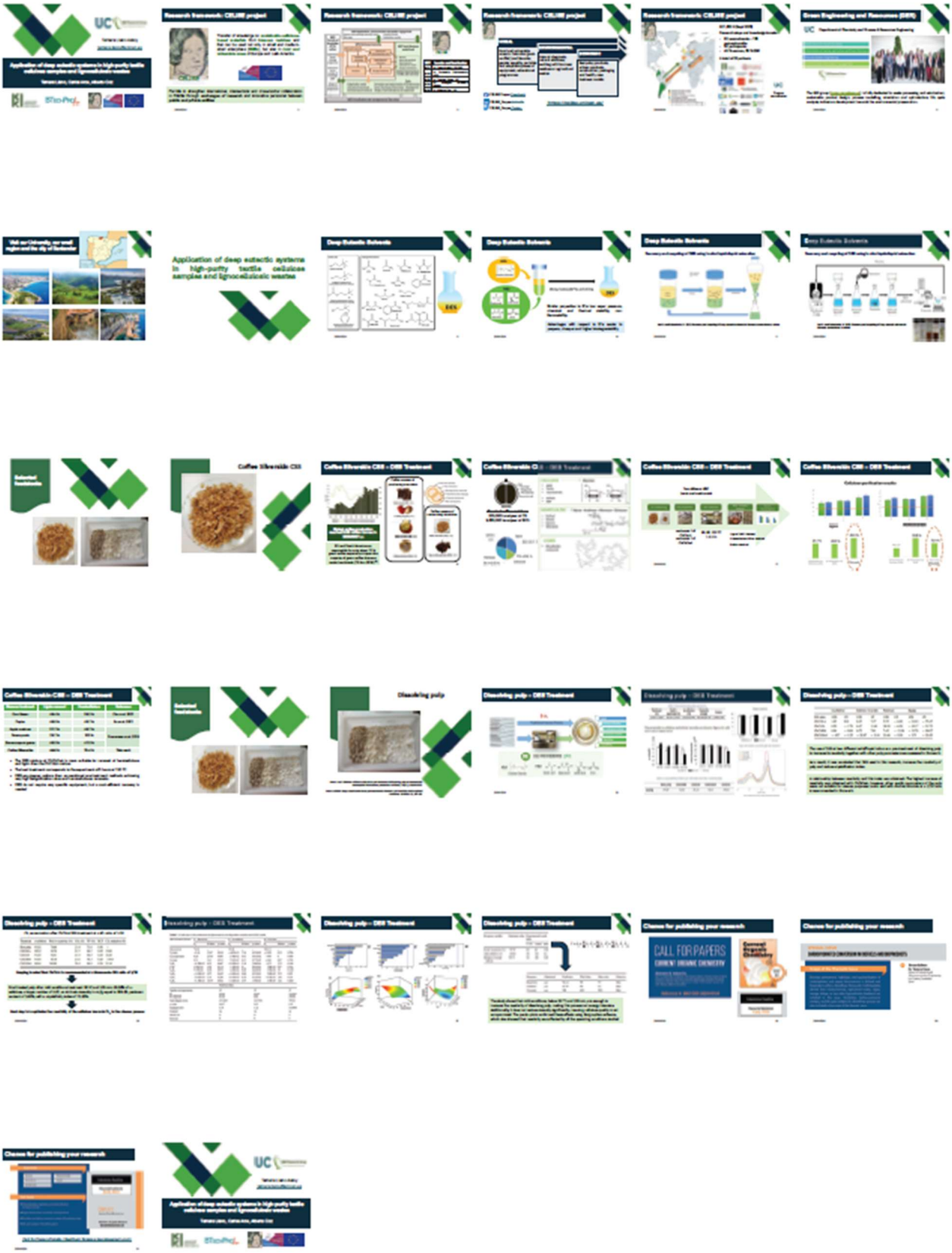

Figure 6. Example of presentation acknowledging CELISE.

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7.3. Open-access dissemination

CELISE complied fully with EU open-access requirements. All peer-reviewed journal articles acknowledging the project were made available through either:

- gold open access (published openly by the journal),
- green open access (institutional repositories),
- hybrid access where the project ensured unrestricted availability.

This ensured that:

- students and researchers in Latin America could freely access publications,
- SMEs and non-academic stakeholders could read methodological and technical outputs,
- the wider scientific community could build upon CELISE results.

Open access was particularly important for partners in Colombia, Argentina and Ecuador, where institutional repositories and digital inclusion efforts benefit strongly from unrestricted scientific outputs.

7.4. Citation trends and scientific reach

While full citation metrics vary by database, evidence from Google Scholar, Scopus and journal platforms indicates that several CELISE-related publications have already begun accumulating citations. Trends include:

- early citations appearing within the first 1–2 years of publication,
- recognition of CELISE-related work in studies on biomass valorisation and hydrothermal processes,
- citations in review articles addressing nanocellulose, biochar and biorefinery concepts,
- growing interest from researchers outside Europe.

For example, Scopus shows the following citations of the 13 papers done by CELISE:

Papers published in 2023:

- DOI: 10.1016/j.cej.2023.145687: **30 citations**
- DOI: 10.1016/j.ultsonch.2023.106306: **8 citations**
- DOI: 10.3390/fermentation9040340: **19 citations**
- DOI: 10.3390/en16052300: **8 citations**

Papers published in 2024:

- DOI: 10.15376/biores.19.4.9660-9672: **0 citations**
- DOI: 10.1016/j.ultsonch.2024.106829: **10 citations**
- DOI: 10.1007/s10570-023-05628-4: **2 citations**
- DOI: 10.1016/j.indcrop.2024.119443: **7 citations**

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Papers published in 2025:

- DOI: 10.3390/ma18071525: **3 citations**
- DOI: 10.1016/j.indcrop.2025.121098: **0 citations**
- DOI: 10.3390/en18123091: **0 citations**
- DOI: 10.1007/s12649-025-03119-0: **0 citations**
- DOI: 10.3390/agriengineering7120419: **0 citations**

7.5. Impact on the scientific community

CELISE strengthened the scientific landscape in several ways:

Intercontinental collaboration

Many publications included authors from at least two countries, and often from both continents. This increased:

- international co-authorship,
- exchange of analytical techniques,
- long-term collaboration opportunities,
- shared datasets and methodologies.

Methodological advances

The project contributed new knowledge and tools in:

- pre-treatment optimisation,
- hydrothermal processes,
- nanocellulose production pathways,
- ANN and simulation-based models for biorefineries,
- sustainability analysis for SMEs.

Training-driven research outputs

Secondments directly strengthened scientific production by enabling:

- hands-on laboratory training,
- joint experimental campaigns,
- collaborative modelling work,
- supervision of early-stage researchers.

Visibility in high-level scientific venues

The combination of conferences, publications and outreach activities facilitated wide dissemination of results and contributed to raising CELISE's profile within the international community.

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7.6. Possible future patents

Student Science, s.r.o. and Cellulose Laboratory, Latvian State Institute of Wood Chemistry have developed functionalized pH-sensitive hemp nanofiber membrane and paper with repellent properties. Novel material is prepared only from natural and biodegradable materials The pH-sensitive material for possible applications in the food industry was obtained from red cabbage and successfully tested. This material is planned as a smart novel generation of packaging material. Prepared samples of hemp/PCL/oregano oil paper and control samples (hemp paper) are currently under further development for practical testing.

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8. LIST OF THE MAIN PUBLICATIONS

8.1. Peer-reviewed journal articles with explicit acknowledgement of CELISE

8.1.1. 2023

1. DOI: 10.1016/j.cej.2023.145687. **Chemical Engineering Journal**. Zero carbon footprint hydrogen generation by photoreforming of methanol over Cu/TiO_2 nanocatalyst. K. Ćwieka, Z. Bojarska, K. Czelej, D. Łomot, P. Dziegielewski, A. Maximenko, K. Nikiforow, L. Gradoń, M. – Y. Qi, Y. – J. Xu, J.C. Colmenares. **Partners: IChF, WUT and UCC**. **Green Open Access**. Repository: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4443543
2. DOI: 10.1016/j.ultsonch.2023.106306. **Ultrasonics Sonochemistry**. Tuning the physicochemical features of titanium oxide nanomaterials by ultrasound: Elevating photocatalytic selective partial oxidation of lignin-inspired aromatic alcohols. A. Qayyum, D.A. Giannakoudakis, D. Łomot, R.F. Colmenares-Quintero, A.P. LaGrow, K. Nikiforow, D. Lisovytskiy, J.C. Colmenares. **Partners: IChF and UCC**. **Green Open Access**. Repository: https://repository.ucc.edu.co/handle/20.500.12494/52763
3. DOI: 10.3390/fermentation9040340. **Fermentation**. Techno-Economic Analysis of Macroalgae Biorefineries: A Comparison between Ethanol and Butanol Facilities. T. Llano, C. Arce, L.E. Gallart, A. Perales and A. Coz. **Partners: UC**. **Green Open Access**. https://www.mdpi.com/2311-5637/9/4/340 Repository: https://repositorio.unican.es/xmlui/handle/10902/28729
4. DOI: 10.3390/en16052300. **Energies**. Slow Pyrolysis of Specialty Coffee Residues towards the Circular Economy in Rural Areas. J. Fernández-Ferreras, T. Llano, M.K. Kochaniec and A. Coz. **Partners: UC and WUT**. **Green Open Access**. https://www.mdpi.com/1996-1073/16/5/2300. Repository: https://repositorio.unican.es/xmlui/handle/10902/28094

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5. DOI: 10.15376/biores.19.4.9660-9672. **BioResources**. Characterization of cocoa (*Theobroma cacao L.*) wood branches as a potential resource for paper production. L. Andze, O. Bikovens, M. Skute, M. Puke, I. Filipova, U. Milbreta, R.F. Colmenares-Quintero. **Partners: LSIWC and UCC**. **Green Open Access** https://bioresources.cnr.ncsu.edu/resources/characterization-of-cocoa-theobroma-cacao-l-wood-branches-as-a-potential-resource-for-paper-production/
6. DOI: 10.1016/j.ultsonch.2024.106829. **Ultrasonics Sonochemistry**. Selective (sono)photocatalytic cleavage of lignin-inspired β–O–4 linkages to phenolics by ultrasound derived 1-D titania nanomaterials. A. Qayyum, D.A. Giannakoudakis, D. Łomot, R.F. Colmenares-Quintero, K. Nikiforow, A.P. LaGrow, J.C. Colmenares. **Partners: IChF and UCC**. **Gold Open Access**. https://www.sciencedirect.com/science/article/pii/S1350417724000774?via%3Dihub
7. DOI: 10.1007/s10570-023-05628-4. **Cellulose**. Deep eutectic solvents as pretreatment to increase Fock's reactivity under optimum conditions. C. Arce, T. Llano, Á. Mowinckel, A. Coz. **Partners: CVUT and UC**. **Green Open Access**. Repository: https://repositorio.unican.es/xmlui/handle/10902/31899

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8. DOI: 10.1016/j.indcrop.2024.119443. **Industrial Crops and Products**. Evaluation of value-added by-products from steam explosion lignocellulosic biomass (Triticum aestivum, Zea mays, and Phragmites australis). J. Klaban, K. Meile, D. Godina, R. Tupciauskas, A. Berzins, L. Andze, V. Sedlarik. **Partners: LSIWC and UTB**. https://www.sciencedirect.com/science/article/pii/S0926669025006442?via%3Dihub

8.1.3. 2025

9. DOI: 10.3390/ma18071525. **Materials**. Coffee Silverskin as a Sustainable Alternative Filler for Plywood: Characterization and Performance Analysis. A. Wronka, N. Del Valle Raydan, E. Robles, G. Kowaluk. **Partners: SGGW**. **Gold Open Access**. https://www.mdpi.com/1996-1944/18/7/1525
10. DOI: 10.1016/j.indcrop.2025.121098. **Industrial Crops and Products**. Estimating biochar yield per hectare from logging residues in Eucalyptus globulus stands. S. Pérez, J. Fernandez-Ferreras, I. Fernandez, L. Pérez. **Partners: UC**. **Gold Open Access**. Estimating biochar yield per hectare from logging residues in Eucalyptus globulus stands - ScienceDirect
11. DOI: 10.3390/en18123091. **Energies**. Assessment of the Potential for Biogas Production in Post-Conflict Rural Areas in Colombia Using Cocoa Residues. C. Burgos-Arcos, D. Caicedo-Concha, A. Coz, T. Llano, J.C. Colmenares-Quintero, R. Colmenares-Quintero. **Partners: UNACH, UCC, IChF and UC**. **Gold Open Access**.https://dx.doi.org/10.3390/en18123091
12. DOI: 10.1007/s12649-025-03119-0. **Waste and Biomass Valorization**. Comparing the Impact of Knife and Ball Milling of Beech Chips on the Particle Size Characteristics. C. Arce, L. Krátký. **Partners: CVUT**. **Gold Open Access**. https://link.springer.com/article/10.1007/s12649-025-03119-0
13. DOI: 10.3390/agriengineering7120419. **Agriengineering**. A Critical Review of Life Cycle Assessments of Cocoa: Environmental Impacts and Methodological Challenges for Sustainable Production. R.F. Colmenares-Quintero, D.M. Caicedo-Concha, L.S. Corredor-Muñoz, S. Piedrahita-Rodríguez, A. Coz, J.C. Colmenares-Quintero. **Partners: IChF, UCC and UC**. **Gold Open Access**. https://www.mdpi.com/2624-7402/7/12/419

8.2. Conference Proceedings and other papers acknowledging CELISE

1. **BERSTIC 2022**. Characterization of cocoa (Theobroma cacao L.) woody waste as considerations of resources for cellulose-based material. O. Bikovens, L. Andze, R.F. Colmenares Quintero. **Partners: LSIWC and UCC**. BERSTIC extended abstract book, Colombia.
2. **BERSTIC 2022**. I am CELISE, an International Project to help SMEs and rural areas within the bioeconomy. A. Coz. **Partners: UC**. Invited Key note, on-line.
3. **SustEng 2022**, 1st International Conference on Sustainable Chemical & Environmental Engineering. Importance of the use of Multi-Criteria Analysis tools to make decisions in biorefinery. A. Coz, C. Rojas, C. Rueda, R. Leonardi, J. Khawam, R.N. Comelli, T. Llano. **Partners: UNL and UC**. Proceedings of 1stInternational Conferenceon Sustainable Chemical & Environmental Engineering, Greece.
4. **CONAMA 2022** - Impulso de la transición ecológica en el territorio y reto demográfico. Proyecto CELISE. Un proyecto europeo sobre el intercambio de materiales de bioeconomía. T. Llano, A. Coz. **Partners: UC**. Oral presentation, Spain.

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5. **RRB 2023,** International Conference on Renewable Resources and Biorefineries. Compatibility of ammonium persulfate oxidized nanocellulose with electrospun polymers for filtration materials. Velta Fridrihsone, D.Kimmer, L.Lovecká, M.Kovářová, I.Filipova, L.Andze, M.Skute, J.Zoldners, R.Nunes. **Partners: LSIWC**. RRB 2023 abstract book, Latvia.
6. **WCCE 2023**, 11th World Congress of Chemical Engineering. Comparison of different thermochemical processes for glucose release from soybean hulls. Leonardi, R.J., Gentile, A., Gil Rolón, M., Seluy, L.G., Llano, T., Comelli, R.N., Coz, A. **Partners: UNL and UC**. Abstracts of the 11th World Congress of Chemical Engineering, Argentina.
7. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. Bioethanol factory based on brewery spent grains: kinetics of diluted acid hydrolysis and plant simulation. T. Llano, P. García, R. Comelli, R.J. Leonardi, M. Gil Rolón, and A. Coz. **Partners: UNL and UC**. Proceedings of the CIAB 2024, Spain.
8. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. CELISE project: how to help SMEs and rural areas using the bioeconomy. A. Coz, L. Andze, R.F. Colmenares-Quintero, G. Kowaluk, J. Fernández-Ferreras, T. Llano. **Partners: LSIWC, SGGW, UCC and UC**. Proceedings of the CIAB 2024, Spain.
9. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. Could Spathaspora be a suitable partner for Saccharomyces in 2G-bioethanol production processes? R.N. Comelli, S. Racca, R. Leonardi, V. Guzmán, B.C. Bolzico, J. Khawam, T. Llano and A. Coz. **Partners: UNL and UC**. Proceedings of the CIAB 2024, Spain.
10. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. Production of Bioethanol and Xylitol from Sugarcane Bagasse. F. Bonfiglio, M. Cagno, M. Fernández and P. Rodríguez. **Partners: Latitud**. Proceedings of the CIAB 2024, Spain.
11. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. Empowering Women in the Cantabrian Canning Industry through Biodiesel Production from Anchovy Waste Valorization. A. Carriedo, T. Llano, J. Khawam, M.T. Benzzo, A. Coz. **Partners: UNL and UC**. Proceedings of the CIAB 2024, Spain.
12. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. Influence of pyrolysis variables on heating value of biochar from Cortaderia selloana. J. Fernández-Ferreras, S. Pérez, I. Fernández and T. Llano. **Partners: UC**. Proceedings of the CIAB 2024, Spain.
13. **CIAB 2024**, 5th Iberoamerican Congress on Biorefineries. Contribution to the Valorization of Textile Waste by Slow Pyrolysis. J. Fernández-Ferreras, L. Pérez-Gandarillas, S. Pérez, I. Fernández. **Partners: UC**. Proceedings of the CIAB 2024, Spain.
14. **BTechPro24**. Application of deep eutectic systems in high-purity textile cellulose samples and lignocellulosic wastes T. Llano, C. Arce, A. Coz. **Partners: UC**. Oral presentation, Latvia.
15. **Biotecnología para un futuro sostenible y saludable : 1er encuentro de Redes de Biotecnología de Argentina 2025**. CELISE: un proyecto para la valorización de biomasas a base de celulosa para nuevos procesos y productos. R. Comelli, R. Leonardi, M. Benzzo, J. Khawam, E. Psochia, A. Wronka, G. Kowaluk, T. Llano, G. Ruiz, J. Ferreras, A. Coz. **Partners: UNL, AUTH, SGGW and UC**. 1er encuentro de Redes de Biotecnología de Argentina: libro de resúmenes, Argentina.
16. **Power our Future conference (POF25).** Sustainable carbon electrode materials M.K. Kochaniec, I. Rodriguez. **Partners: WUT and Besarte**. Power our Future conference (POF25), CIC Energi GUNE. Vitoria-Gasteiz, Spain.

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17. **EU Open Research Repository**. The Use of Biomass in Colombia based on experience from CELISE project secondment. The Coffee Case. A. Wronka, G. Kowaluk. **Partners: SGGW**. **Gold Open Access**. https://zenodo.org/records/14844839
18. **Innovation News Network**. CELISE project: Seeds of sustainability in rural areas. A. Coz. **Partners: SGGW**. **Gold Open Access**. https://www.innovationnewsnetwork.com/celise-project-seeds-of-sustainability-in-rural-areas/62494/

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9. OTHER PUBLICATIONS AND MEDIA VISIBILITY

In addition to peer-reviewed scientific outputs, CELISE generated a diverse set of publications, news items, press communications, public-facing materials and multimedia content that significantly enhanced the project's visibility. These complementary dissemination products targeted broader audiences—including SMEs, rural communities, educational institutions, and the general public—and helped reinforce the social and institutional impact of CELISE beyond academic environments.

This section summarises the range of materials produced and highlights how they contributed to public awareness, outreach and cross-continental visibility.

9.1. News articles, blogs and institutional press

Throughout the project, several partner institutions disseminated CELISE activities through news articles, blog entries and press releases. These were typically published on university websites, institutional communication portals and social media pages.

Examples of institutional coverage:

- Universidad de Cantabria (Spain) published articles on visiting researchers from Argentina, Colombia and Poland, emphasising international cooperation, biomass characterisation and sustainable processes.
- Universidad Cooperativa de Colombia regularly highlighted secondments, training activities, local workshops and CELISE-related scientific updates.
- UNL (Argentina) and UNACH (Ecuador) shared news on research collaborations, teaching activities connected to CELISE and cross-institutional visits.
- Latitud (Uruguay) included CELISE in its institutional news, especially regarding its pilot-scale steam explosion reactor and training received from European partners.

These press communications increased CELISE's visibility in local communities, public institutions and regional academic networks.

9.2. Public-facing materials (flyers, brochures, guides)

CELISE developed a variety of public-facing communication materials designed to support outreach and dissemination:

- Project leaflets and flyers, explaining objectives, partners, expected impact and EU–LATAM cooperation.
- Templates and graphic materials, including posters used in exhibitions, public events and internal university fairs.
- Guides and summaries, such as simplified descriptions of biomass valorisation processes for non-specialist audiences.
- Educational materials adapted for schools and rural communities, prepared during LATAM secondments or outreach events.

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These materials were distributed in both Europe and Latin America and were especially effective during events such as European Researcher´s Night, Pint of Science, and academic workshops involving students and local organisations.

9.3. Popular-science content and videos

The YouTube channel and social media posts served as key platforms for accessible communication. Popular-science videos included:

- short interviews with researchers explaining their CELISE work,
- videos documenting secondments (e.g., laboratory activities, biomass processing demonstrations),
- public presentations on sustainability and bioeconomy,
- visual summaries of outreach events.

These videos (figure 6) accumulated 595+ views, with especially strong engagement from Latin American audiences. The visual format helped communicate complex scientific topics in an intuitive and engaging way, enabling CELISE to reach non-academic audiences such as students, rural communities and local stakeholders.

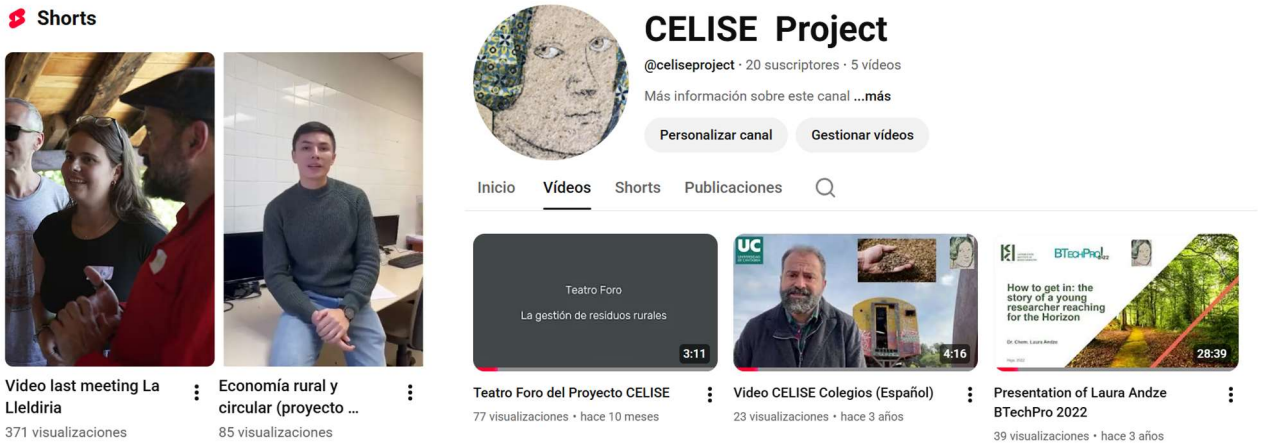

Figure 7. Open shorts and videos.

9.4. Engagement with external media outlets

In some cases, CELISE activities achieved visibility beyond institutional channels:

- Local newspapers and community pages shared posts or articles related to workshops, especially in Colombia, where outreach activities reached rural and indigenous communities.
- Sectoral organisations occasionally reshared CELISE content, amplifying visibility in the bioeconomy and sustainability sectors.
- LinkedIn and Facebook interactions extended dissemination to professionals, educators, community leaders and SME representatives.

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This external amplification demonstrates that CELISE's dissemination strategy was effective in engaging audiences outside the consortium, especially in regions where science communication is less connected to EU-funded mechanisms.

9.5. Impact on the broader public and societal awareness

One of the strengths of CELISE's dissemination efforts was its capacity to connect scientific research with public interest topics such as sustainability, circular economy and rural development. Through press articles, multimedia content, educational materials and outreach activities, the project contributed to:

- increasing public awareness of biomass valorisation as a sustainable alternative for rural areas,
- promoting the visibility of EU-funded research in Latin America,
- supporting environmental education among young students,
- familiarising citizens with global challenges related to waste, renewable energy and resource management,
- engaging communities in discussions on green technologies and their practical implementation.

This multidimensional visibility significantly strengthened CELISE's societal impact, complementing its scientific outputs and reinforcing its EU–LATAM cooperation narrative.

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10. IMPACT OF CONFERENCES, WORKSHOPS AND EVENTS

Conferences, workshops and events were among the most significant drivers of visibility and scientific exchange within CELISE. Participation in these activities enabled partners to disseminate results to international audiences, strengthen collaboration networks, interact with SMEs and policy stakeholders, and engage directly with students, communities and industry professionals. The diversity of events—scientific, educational, institutional, community-oriented and sectoral—reflects the multidisciplinary character of CELISE and its balanced combination of scientific excellence and societal engagement.

10.1. Scientific conferences

CELISE partners presented results at 16 scientific conferences across Europe and Latin America. These contributions included oral presentations, posters, invited talks and conference proceedings acknowledging the project.

Representative scientific venues included:

- WCCE11 (World Congress of Chemical Engineering)
- CONAMA (Spain)
- POF25 (Spain)
- BERSTIC (Bioeconomy and Renewable Systems Congress – Colombia)
- CIAB (Argentina)
- SUSTENG (Greece)
- National and regional chemistry, materials science and engineering meetings
- Events hosted at partner institutions (UC, UPM, Besarte, CVUT, IChF, SGGW, UCC)

Notable peer-reviewed conference papers

Several manuscripts submitted to international biomass, materials and cellulose-related conferences were done.

Impact

Participation in scientific conferences:

- increased visibility among international experts,
- facilitated new collaborations beyond the CELISE consortium,
- provided feedback to early-stage researchers,
- contributed to the high number of publications acknowledging CELISE,
- strengthened CELISE's interdisciplinarity by bringing together chemical engineers, chemists, biotechnologists, environmental scientists and material scientists.

10.2. Institutional seminars and academic dissemination

Seminars and academic talks were organised by numerous partners to share CELISE activities with students, researchers and institutional staff.

Examples:

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- Universidad de Cantabria (Spain) hosted seminars by visiting researchers from Argentina, Poland, Colombia and Greece.
- Besarte (Spain) and CVUT (Czech Republic) hosted some workshops and meetings with different actors.
- UNL (Argentina) presented CELISE-related content in departmental seminars and faculty activities.
- LSIWC (Latvia) and IChF (Poland) integrated CELISE-related work into institutional academic cycles.
- Latitud (Uruguay) delivered institutional presentations highlighting steam-explosion pilot plant activities linked to CELISE.

These seminars supported capacity building and promoted internal academic uptake of CELISE results.

10.3. SME and industry engagement

CELISE had strong participation from SMEs and industrial partners, who contributed both to scientific sessions and practical workshops.

Key examples:

- BESARTE (Spain) presented natural-fibre products and artisan-scale materials.
- Carbon Compost Company (UK) shared pyrolysis demonstrations and industrial biochar methodologies.
- VoCATE (UK) conducted workshops with UC and UCC on entrepreneurship, rural innovation and communication methods.
- Ecoresources (Greece) contributed their work on smart systems and sustainable process optimisation.
- StudentScience and PLASTR (Czech Republic) contributed to biopolimers and biocomposites in several applications.

Their involvement reinforced CELISE's relevance for real-world applications, particularly in rural and SME contexts.

10.4. Public engagement events

CELISE made a significant effort to communicate science to society, particularly through events aimed at the general public.

Key outreach activities:

- Pint of Science (Spain)
- Researchers from the consortium presented biomass valorisation topics to non-specialist audiences in accessible, informal settings.
- European Researchers' Night (Spain)
- Forum Theatre, an initiative between UC and CELISE for increasing the visibility of the project in rural areas.
- Demonstrations of cellulose fibres, biochar, natural additives and sustainable products were showcased.

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School activities and local workshops

Partners in Colombia, Argentina and Uruguay delivered presentations to:

- secondary schools,
- technical institutes,
- rural educational centres,
- indigenous Wayúu community groups.

These events increased interest in sustainable technologies and introduced students and community members to EU-funded research.

10.5. Cross-continental cooperation impact

CELISE's event participation significantly strengthened EU–LATAM scientific cooperation.

Cross-continental workshops

During secondments, researchers organised joint sessions on:

- hydrolysis and fermentation techniques,
- steam explosion processes,
- LCA and sustainability assessment,
- ANN and simulation modelling,
- community engagement methodologies,
- fibre technologies and nanocellulose preparation.

These workshops helped harmonise methodologies, create shared datasets and ensure that both continents benefited equally from knowledge transfer.

Institutional benefits

Increased awareness of EU-funded mobility programmes in Latin America.

Reinforcement of long-term collaborations expected to continue after CELISE.

Inclusion of new partners (e.g., Uruguay, Slovenia) during amendments and through shared training events.

10.6. Workshops and events of CELISE

Apart from the kick-off meeting, the mid-term meeting and the meetings of the advance of the project, four workshops/events were organised during the life of CELISE.

CELISE held a first workshop about Pre-treatment and fractionation of biomass residues by novel and sustainable methods on the 29/09/2023. Aristotle University of Thessaloniki (AUTH) and ECORESOURCES IKE organised the workshop and it will be on-line. Figure 8 shows the agenda of the workshop and figure 9 shows some pictures.

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Sustainable production of Cellulose based products and additives to be used in SMEs and rural areas (CELISE)

Event: 1st CELISE workshop "Pre-treatment and fractionation of biomass residues by novel and sustainable methods"

Date: 29.09.2023

Location: Online (Zoom)

Organization: Aristotle University of Thessaloniki (AUTH)
ECORESOURCES IKE

Chair: Prof. Konstantinos Triantafyllidis, AUTH

Zoom connection link

https://authgr.zoom.us/j/96465781170?pwd=cEZNWGtZdC9pUjA3VHU4cGRYY1JqQT09
Meeting ID: 964 6578 1170
Passcode: 936292

Agenda

Time (CET)	Session/Presentation	Speaker / Organization (s)
09:00 – 09:30	*Connections to the Zoom*	
09:30 – 09:40	Welcome to the 1st workshop of the CELISE project	K. Triantafyllidis / Aristotle University of Thessaloniki (AUTH)
09:40 – 10:00	Presentation of the CELISE project	A. Coz / University of Cantabria (UC)
	Session 1: Biomass/waste type, feasibility, availability, logistics	
10:00 – 10:20	Towards a sustainable and inclusive Colombia: opportunities and challenges in biomass-based initiatives	F. Colmenares / Universidad Cooperativa de Colombia (UCC)
10:20 – 10:40	Portable equipment for bio-product and energy production in rural areas	Steven Baines / TWI
10:40 – 10:50	*Q&A*	
10:50 – 11:10	*Break*	
	Session 2: Biomass pretreatment and fractionation methods	
11:10 – 11:30	Hydrothermal (LHW)/mild acid and Organosolv pretreatment of forest and agricultural biomass wastes	Antigoni Margellou / AUTH in collaboration with UCC and IChF
11:30 – 11:50	Impact of process variables on mechanical size reduction of biomass	C. Arce / Czech Technical University (CVUT) in collaboration with UC
11:50 – 12:10	Hydrolysis methods for soybean hulls	R. Leonardi / FICH-National University of Litoral, in collaboration with UC
12:10 – 12:30	Steam explosion method for lignocellulosic biomass (pre)treatment	R. Tupčiauskas / Latvian State Institute of Wood Chemistry (LSIWC)
12:30 – 12:40	*Q&A*	
12:40 – 13:40	*Lunch Break*	

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Sustainable production of Cellulose based products and additives to be used in SMEs and rural areas (CELISE)

	Session 3: Biomass pretreatment and down-stream valorization of fractions	
13:40 – 14:00	Nano-cellulose from biomass wastes and use in polymer composites	Eleni Psochia / AUTH
14:00 – 14:20	A novel pre-treatment of coffee residues	T. Llano / University of Cantabria (UC), in collaboration with IChF and CVUT
14:20 – 14:40	Extracts from birch bark with high added value	J.Rizikovs / Latvian State Institute of Wood Chemistry (LSIWC)
14:40 – 14:50	*Q&A*	
14:50 – 15:10	*Break*	
	Session 4: Biochar production, properties and perspectives	
15:10 –15:30	Biochar production, activation and use as efficient adsorbent	Dimitrios Giannakoudakis / AUTH
15:30 – 15:50	Why are carbonaceous materials used in heterogeneous photocatalysis?	Juan Carlos Colmenares / IChF
15:50 – 16:30	*Conclusions, questions, and closure of the meeting*	A. Coz / UC, K. Triantafyllidis / AUTH

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Figure 8. Agenda of the first workshop.

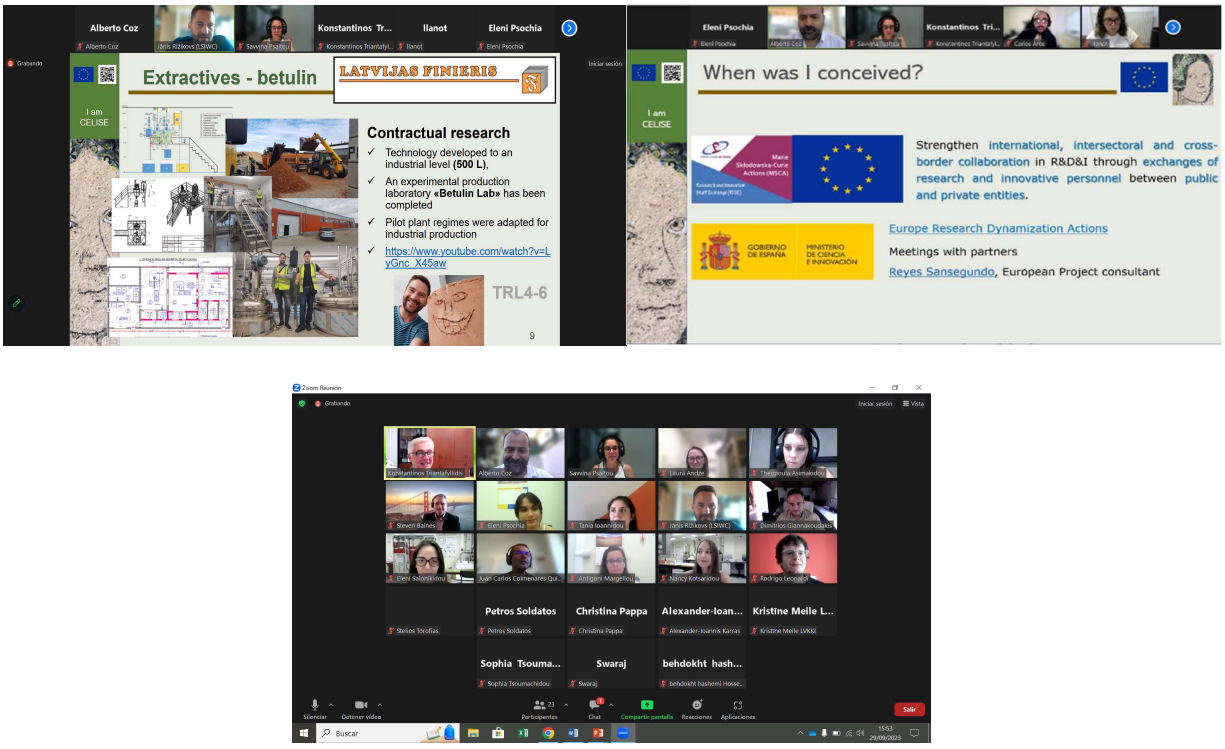

Figure 9. Pictures of the first workshop.

The second one was organised together with the BERSTIC Conference in Warsaw. The event included some conferences in relation to the importance of the social issues (cultural and education, basically) and the communities. One person from the Wayúu Community was invited to the event (Reyes Maria Lindao Uriana, director of the Ethno-educative Institution La Paz in Manaure, La Guajira) in order to join the education part of he vulnerable communities in the project. Figures 10 and 11 show the agenda of the event and some pictures. The agenda was divided into the BERSTIC Conference and the CELISE workshop.

Agenda

Building a Sustainable & Inclusive Future of Colombia based on Engineering Business Opportunities for Hydrogen Industry

Warsaw - Friday September 20th, 2024

Time	Activity
8.40 – 9.00 (CET)	**Event Opening** Prof. Adam Kubas – Director of IPC-PAS and Mr. Juan Sebastián Bayona, First Secretary of Foreign Affairs of the Embassy of Colombia
9.00 – 9:30 (CET)	**Keynote 1: "Towards a sustainable and inclusive Colombia: Closing Knowledge and Needs Gaps via a Diplomacy for Science, Technology, Innovation and Culture"** Speaker: Prof. Dr. Fernando Colmenares – Engineering Research Institute (In3)/Universidad Cooperativa de Colombia – BERSTIC Network
9:30 – 10.00 (CET)	**Keynote 2: "Communicating science to all audiences: a case study of the CELISE project"** Speaker: Prof. Dr. Alberto Coz - Universidad de Cantabria
10.00 – 10:30 (CET)	**Coffee break**
10:30 – 11:00 (CET)	**Keynote 3: "Education for the Wellness of People & Planet: Integrating Lifestyle Medicine into Environmental Stewardship"** Speaker: Dr. Olga Rostkowska – Medical University of Warsaw
11:10 – 11:30 (CET)	**International cooperation under the Horizon Europe calls** Speaker: Marina Martinez, PhD – CDTI/SOST The Spanish Office for Science and Technology in Brussels
11:30 – 12:30 (CET)	**Elevator Pitch Sessions (2-3 minutes presentations for ideas, solutions, partneship, sponsorship)**
12:30 – 13:30 (CET)	**Lunch**
13:30 – 15:00 (CET)	Panel session on **Artificial Intelligence and Digitalisation, Water Management, and Hydrogen Production** Moderator: Prof. Dr. Juan Carlos Colmenares – IPC-PAS Panelists: • Prof. Dr. Adam Kubas – IPC-PAS • Mr. Marcin Gradzki – Air Protection and Climate Policy Office, Warsaw City Hall • Mr. Tomoho Umeda – Hynfra • Dr. Tomasz Poprawka - Polish Science Contact Agency (PolSCA) in Brussels
15:00 – 16:30 (CET)	Panel session on **Education and Culture** Moderator: Prof. Dr. Fernando Colmenares – In3 - Universidad Cooperativa de Colombia

Zoom link: https://zoom.us/j/94111600218?pwd=SNpD77YP8te4beroH9q7nJZXCeOZwE.1

Meeting ID: 941 1160 0218; Passcode: 446907

CELISE Symposium in Warsaw

Event and date: CELISE Symposium in Warsaw, IChF, 19 September 2024

Location: Institute of Physical Chemistry, Warsaw, Poland, and online

Chairs: Prof. Juan Carlos Colmenares, IChF / Prof. Fernando Colmenares, UCC

Zoom connection link

https://zoom.us/j/94111600218?pwd=SNpD77YP8te4beroH9q7nJZXCeOZwE.1

Meeting ID: 941 1160 0218

Passcode: 446907

Agenda

Time (CET)	Session/Activity	Speaker/ Organization	Notes
08:30 – 08.40	**Opening Welcome.** Deputy Director of Scientific Affairs, IChF	Jan Paczesny IChF	
08.40 – 08.50	**Welcome to the Symposium of the CELISE project.** Remote participants and arrangements.	Prof. Juan Carlos Colmenares, IChF / Prof. Fernando Colmenares, UCC	
08:50 – 09:20	Efficient milling of lignocellulosic biomass for biorefinery use	Lukáš Krátký / CTU Prague	30 min. Presentation, Q&A
09:20 - 09:35	Steam explosion of olive tree prunings towards a facile biopolymers and bioethanol production approach	Eleni Psochia / AUTH	15 min. Presentation, Q&A
09:35 – 09.50	Biomass Termotreatment Modelling by Means of Artificial Neural Networks	Francisco Fernández / UPM	15 min. Presentation, Q&A
09:50 – 10:00	WP1, Biomass processing	Laura Andze, LS-IWC	10 min. Presentation, Q&A
10:00 – 10:10	WP2, Social business model tools	Fernando Colmenares, UCC	10 min. Presentation, Q&A
10.10 – 10:40	**Coffee break**		
10:40 – 10:50	WP3, Transfer of knowledge of the action	Tamara Llano / UC	10 min. Presentation, Q&A
10:50 – 11:00	WP4, Exploitation, communication and public engagement	Grzegorz Kowaluk, SGGW	10 min. Presentation, Q&A
11:00 – 11:10	WP5, Coordination and management of the action	Alberto Coz / UC	10 min. Presentation, Q&A
11:10 – 11:40	What next after CELISE?	Alberto Coz / UC	30 min. Presentation, Q&A
11:40 – 12:00	**Conclusions, questions and closure of the Symposium.**		
12:00 – 13:00	**Lunch**		
13:00 – 14:00	**Integrative-Networking and Public-Relations**		
14:00 –	**Tour in Warsaw**		

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Figure 10. Agenda of the second event.

The third event was related to Intelligent Bioeconomy with short presentations. The event was held in Medellín, Colombia, with a hybrid format (in person and on-line). In this case, some of the main stakeholders were invited to the event. Figures 12 and 13 show the agenda and some pictures.

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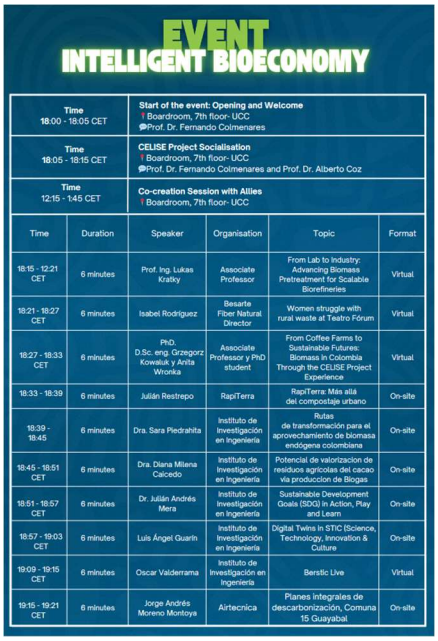
Figure 11. Pictures of the second event.



EVENT
INTELLIGENT BIOECONOMY

Time 18:00 - 18:05 CET	**Start of the event: Opening and Welcome** Boardroom, 7th floor- UCC Prof. Dr. Fernando Colmenares
Time 18:05 - 18:15 CET	**CELISE Project Socialisation** Boardroom, 7th floor- UCC Prof. Dr. Fernando Colmenares and Prof. Dr. Alberto Coz
Time 12:15 - 1:45 CET	**Co-creation Session with Allies** Boardroom, 7th floor- UCC

Time	Duration	Speaker	Organisation	Topic	Format
18:15 - 12:21 CET	6 minutes	Prof. Ing. Lukas Kratky	Associate Professor	From Lab to Industry: Advancing Biomass Pretreatment for Scalable Biorefineries	Virtual
18:21 - 18:27 CET	6 minutes	Isabel Rodriguez	Besarte Fiber Natural Director	Women struggle with rural waste at Teatro Fórum	Virtual
18:27 - 18:33 CET	6 minutes	PhD. D.Sc. eng. Grzegorz Kowaluk y Anita Wronka	Associate Professor y PhD student	From Coffee Farms to Sustainable Futures: Biomass in Colombia Through the CELISE Project Experience	Virtual
18:33 - 18:39	6 minutes	Julián Restrepo	RapiTerra	RapiTerra: Más allá del compostaje urbano	On-site
18:39 - 18:45	6 minutes	Dra. Sara Piedrahita	Instituto de Investigación en Ingeniería	Rutas de transformación para el aprovechamiento de biomasa endógena colombiana	On-site
18:45 - 18:51 CET	6 minutes	Dra. Diana Milena Caicedo	Instituto de Investigación en Ingeniería	Potencial de valorizacion de residuos agricolas del cacao via produccion de Biogas	On-site
18:51 - 18:57 CET	6 minutes	Dr. Julián Andrés Mera	Instituto de Investigación en Ingeniería	Sustainable Development Goals (SDG) in Action, Play and Learn	On-site
18:57 - 19:03 CET	6 minutes	Luis Ángel Guarín	Instituto de Investigación en Ingeniería	Digital Twins in STIC (Science, Technology, Innovation & Culture	On-site
19:09 - 19:15 CET	6 minutes	Oscar Valderrama	Instituto de Investigación en Ingeniería	Berstic Live	Virtual
19:15 - 19:21 CET	6 minutes	Jorge Andrés Moreno Montoya	Airtecnica	Planes integrales de descarbonización, Comuna 15 Guayabal	On-site

Figure 12. Agenda of the third event.

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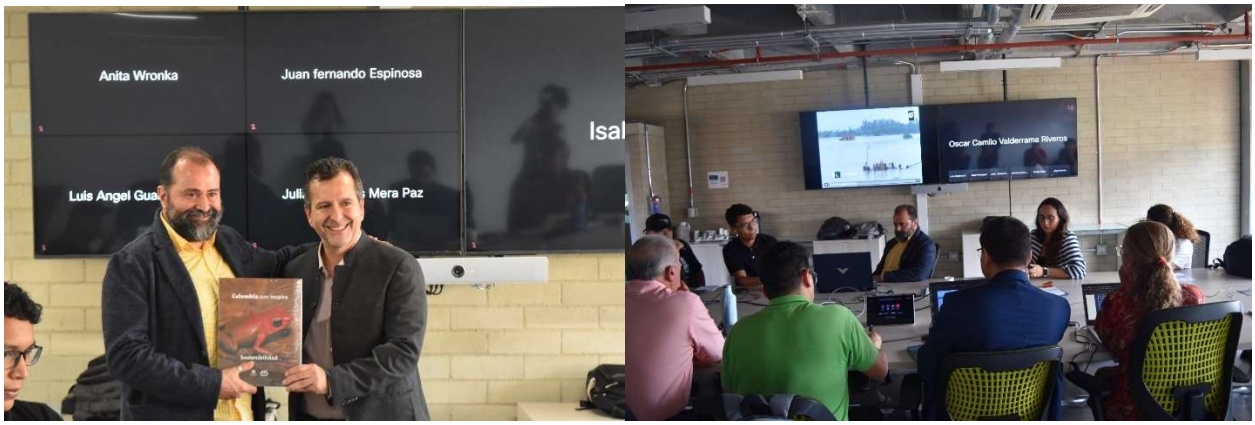

Figure 13. Pictures of the third event.

Finally, the last event of the project was the same day of the last meeting of the CELISE project. The event took place on 17 September 2025 in a rural area of Cantabria, Spain (Merilla), bringing together consortium partners and local collaborators to share project achievements, present results, and reinforce cooperation between science, industry, and rural communities. The event also highlighted CELISE's social and cultural dimensions, integrating education, art, and community engagement into the development of sustainable bio-based solutions.

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The morning programme included a wide range of presentations and activities related to biomass valorisation, circular economy, rural innovation, and social entrepreneurship. Participants visited local initiatives such as La Fermentería and attended talks on waste management, rural associations, EU-funded projects, youth entrepreneurship, and the role of global education in engineering. Artistic contributions demonstrated how creative approaches can enhance environmental awareness and add value to biomass-derived materials. In the afternoon, the consortium participated in collaborative workshops focused on synthesising the conclusions of the project's Work Packages. These group discussions enabled partners to consolidate knowledge, reflect on shared outcomes, and outline possibilities for future cooperation. The meeting concluded with a joint discussion on the continuation of CELISE and a closing activity in the surrounding rural environment.

A total of 21 participants from universities, research centres, and companies in Spain, Latvia, Poland, the Czech Republic, Argentina, and Colombia attended the event. Key outcomes included the successful integration of science, society, and art to promote sustainability; strengthened partnerships between academic institutions and local stakeholders; dissemination of new biomass-based materials and methods; and the promotion of gender equality and rural entrepreneurship through initiatives such as the TEDA Association and Forum Theatre.

The final conference significantly enhanced CELISE's visibility at regional and international levels through videos, cultural activities, and outreach actions. Overall, the event demonstrated that technological innovation can achieve greater social impact when combined with community perspectives, education, and cultural identity.

Figures 14 - 16 show the agenda, some pictures and a video of the event.

Time	Session/activity	Speaker/ Organisation	Notes
08:00	**Bus transfer in Santander**	Alberto Coz and Fernando Pigazo / UC	Pick the attendances up in Santander by bus
09:30–09:50	**Reception and Introduction to the agenda.**	Isabel Rodríguez / Besarte	Explanation of meeting dynamics and agenda
09:50 10:00	**Materials from biomass waste**	Alberto Coz / UC	Exhibition Indors-set
Morning: CELISE conference – rural and social projects			
Rural projects			
10:00-11:00	**Rural BioFermentation project**	Sarah Hart / La Fermentería	Visit on product testing by shifts of 9 people
11:00–11.10	**Management of waste in fermented products**	Raúl Comelli / FICH-UNL	Video projection
11:10-11:20	**TEDA Rural Association Project**	Isabel Fernandez	Oral presentation
11:20-11:30	**EU-Fund Next Gen. Research**	Angela Barazón / Programa Viernes	Video projection
Biomass as rural progress source			
11:30-11:40	**Cantabria Coopera's project**	Fernando Colmenares / UCC	Oral presentation
11:40-11:50	**BAPUR project**	Sofía Gómez / UC	Oral and poster presentation
11:50-12:00	**SostenLaFlota project**	Fernando Pigazo / UC	Oral and poster presentation
12:00-12:10	**Prepa. After-lunch Workshops**	Alberto Coz / UC	Oral presentation
Education, Art and Culture in research projects			
12:10-12:20	**The importance of Global Education in engineering projects**	Adelina Calvo / UC	Oral presentation
12:20-12:30	**Forum theatre for rural women**	Alberto Coz / UC	Oral presentation
12:30-12:40	**Waste increasing value by Art**	Josito Crespo and Aitor Saraiba / Lana Robla	Oral presentation
LUNCH			
12:40-14:00	**Coctel Tray format**	All	Food and rest

Time	Session/activity	Speaker/ Organisation	Notes
Afternoon: CELISE workshop and meeting			
CELISE project Workshops			
14:00-15:00	**part 1.** Discussion of the main issues of the project	Alberto Coz / UC	Discussions in groups
15:00-15:15	**part 2.** Summary of conclusions	Alberto Coz / UC	Discussions in 3 groups
15:15-15:30	**part 3.** Conclusions of the **WP1**	WP1 leader	Summary: Conclusions poster/scheme/diagram
15:30-15:45	**part 4.** Conclusions of the **WP2**	WP2 leader	Summary: Conclusions poster/scheme/diagram
15:45-16:00	**part 5.** Conclusions of **WPs: 3-4-5**	WP3-5 leader	Summary: Conclusions poster/scheme/diagram
Future and closing			
16:00-17:00	**Future of the CELISE project**	Alberto Coz and all people	Discussion
17:00-18:00	**Closure of the meeting and knowledge of the environment**	Whole group	Closing and relaxing in the chosen rural area
18:00-18:30	**Farewell to all participants**	Whole group	Return to Santander by bus

Figure 14. Agenda of the fourth event.

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Figure 15. Pictures of the fourth event.

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11. OUTREACH TO COMMUNITIES AND THE EDUCATION SECTOR

Beyond its scientific contributions, CELISE achieved a strong societal impact through outreach actions directed at rural communities, schools, universities, SMEs and vulnerable groups. These activities helped translate the project's scientific advances into accessible knowledge, strengthened public awareness of sustainable bioeconomy practices and reinforced the visibility of EU–LATAM cooperation. Many of these actions were carried out during secondments, which proved to be effective catalysts for community-oriented dissemination.

11.1. Engagement with rural and vulnerable communities

CELISE partners—particularly in Spain, Colombia, Argentina and Uruguay—conducted multiple outreach activities targeting rural and socio-economically vulnerable groups. These activities focused on sustainability, biomass valorisation, waste reduction practices and the potential for local bioeconomy initiatives.

Examples of community engagement:

- Wayúu Indigenous Communities (La Guajira, Colombia):
- Seconded researchers delivered talks and interactive demonstrations on natural fibres, sustainable materials and environmental stewardship.
- Forum Theatre initiative

Rural villages in Cantabria, Spain:

- Social meetings with entrepreneurial women and Forum Theater in rural areas of Cantabria, Spain.

Rural villages in Antioquia, Colombia:

- Workshops addressed biomass residues as valuable resources, introducing concepts of circular economy and artisan-scale bio-based products.

Local cooperatives and community organisations:

- Sessions focused on practical applications of biomass valorisation, such as composting, biochar and natural fibre processing.

Impact on communities:

- Increased environmental awareness.
- Introduction to sustainable rural technologies.
- Empowerment through knowledge and practical examples of bio-based solutions.
- Strengthened relationship between universities and local actors.

These activities supported MSCA goals related to public engagement and societal impact.

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11.2. Educational impact (students, courses, workshops)

Education was a central component of the project's outreach vision. CELISE partners actively integrated project topics into undergraduate and postgraduate teaching as well as school-level educational activities.

University-level engagement:

UC (Spain), UCC (Colombia), UPM (Spain), UNL (Argentina) and IChF (Poland) incorporated CELISE-related content into coursework on:

- bioeconomy and circular processes,
- biomass characterisation,
- environmental engineering,
- modelling and simulation,
- sustainable materials.

Students participated in simplified laboratory demonstrations and seminars led by seconded researchers.

In some cases, CELISE contributed to thesis work or capstone projects, particularly in Colombia and Spain.

School-level outreach:

Classroom sessions delivered during UNL and Latitud secondments explained sustainability principles and biomaterials using child-friendly demonstrations.

Activities included hands-on experiments such as:

- observing natural fibres under low-cost microscopes,
- simple demonstrations of sustainable materials,
- workshops explaining "what is biomass?" and "how waste becomes a resource".

Educational materials:

Partners prepared adapted teaching materials including:

- short presentations,
- printed worksheets,
- interactive demonstrations,
- videos uploaded to YouTube,
- posters and visuals used during school visits.

These activities greatly amplified the project's visibility among younger generations.

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11.3. Awareness raising in Latin America

Latin American engagement was exceptionally strong throughout CELISE. Dissemination was facilitated by:

- highly active communication from UCC on LinkedIn, which significantly increased digital visibility;
- outreach activities linked to secondments in Colombia, Argentina and Ecuador;
- collaborations with local institutions, universities and community leaders.

Key results:

- CELISE became known across multiple LATAM academic networks.
- Public-sector institutions and NGOs in Colombia and Argentina reshared CELISE content on their platforms.
- Teachers and students expressed interest in incorporating sustainability topics into curricula.
- Discussions arose on using local biomass residues for artisan-scale or SME-level applications.
- CELISE thus supported public awareness in regions still developing structured bioeconomy strategies.

11.4. Training impact of secondments

Secondments played a dual role: they strengthened scientific collaboration and served as direct vehicles for community and educational outreach.

Examples of training-based outreach:

- Workshops in Uruguay (Latitud) demonstrated steam explosion, fibres and ANN analysis to visiting students and technical staff.
- In Colombia, visiting researchers from Spain, Poland and Greece delivered training sessions for students and junior researchers using CELISE datasets and tools.
- In Argentina, secondments enabled integrated sessions on fermentation, sustainable processing, and LCA concepts for early-career researchers.
- Outreach activities often ran in parallel with scientific work, allowing local audiences to observe experiments, learn new techniques and interact with visiting researchers.

Long-term training impact:

- Several institutions reported strengthened research capacity as a result of CELISE activities.
- LATAM institutions integrated elements of CELISE into their scientific training and laboratory practices.
- The project inspired new collaborative initiatives and opened pathways for future Erasmus+ and Horizon Europe cooperation.

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12. QUANTITATIVE IMPACT INDICATORS

The quantitative indicators presented in this section provide a measurable overview of CELISE's dissemination and impact across scientific, digital, institutional and societal dimensions. These figures reflect the cumulative activity of the consortium between 2021 and 2025 and demonstrate the scale, reach and effectiveness of the project's communication strategy.

12.1. Scientific Production Indicators

Peer-reviewed publications

- 13 peer-reviewed scientific publications acknowledging CELISE (GA 101007733).
- Publications across Q1 and Q2 journals, including Industrial Crops & Products, Chemical Engineering Journal, Energies, Fermentation, Ultrasonics Sonochemistry, Cellulose, Materials, Bioresources, among others.
- More manuscripts (more than 5) under revision or submitted.
- Open-access availability.

Conference outputs

- 16 scientific conference contributions (oral, poster, keynote, proceedings).
- 2 outreaching papers.
- Engagement across two continents (EU + LATAM) and 10+ countries.

12.2. Digital Communication Indicators

12.2.1. Website

Highest-accessed content: project description, partners, secondments, publications.

12.2.2. LinkedIn

- 210 followers (end of project).
- 2,256 yearly impressions (2024).
- 100 reactions and multiple shares.
- Most successful posts: secondments, LATAM activities, cross-continental workshops.

12.2.3. X/Twitter

- Typical post reach: 40–350 impressions.
- Peaks above 450 impressions for major announcements.
- High engagement for secondment posts and publication highlights.

12.2.4. Facebook

Strong impact in Latin America.

Posts shared by schools, rural communities, universities, local organisations.

Several posts with 10+ shares.

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12.2.5. YouTube

- 595+ views across all videos.
- Videos include interviews, demonstrations and outreach content.
- Highest engagement from Colombia and Argentina.

12.3. Outreach and Education Indicators

Community engagement with outreach workshops in LATAM targeting:

- rural populations,
- indigenous communities (Wayúu, Colombia),
- environmental and youth groups.

Educational activities. Hundreds of students reached through school visits, seminars and university classes.

CELISE content integrated into:

- university courses (UC, UPM, UNL, UCC, IChF),
- student workshops,
- laboratory sessions,
- dissertation and capstone projects.

Public events

- Participation in European Researchers' Night, Pint of Science, and local STEM events.
- Multiple presentations delivered to general audiences.

12.4. SME and Industry Engagement Indicators

Seven SMEs/industry partners involved in dissemination:

- Besarte, CCC, Ecoresources, StudentScience, QAI, VoCATE.
- More than 20 industry-related dissemination actions (workshops, presentations, collaborations).
- Participation in both EU and LATAM events.
- Multiple exchanges during secondments that resulted in industrial demonstrations (pyrolysis, fibres, steam explosion) and possible patents (LSIWC and StudentScience).

12.5. Cross-continental Mobility Indicators (WP3 link)

- More than 105 PM of secondments completed
- 24 women, 25 men, 29 ER, 17 ESR, 3 technicians

Geographic distribution:

- 41 person-months EU → LATAM
- 27 person-months LATAM → EU
- 37 person-months additional EU–EU

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These mobility indicators directly amplified dissemination through scientific seminars, community outreach and institutional presentations. Table 3 shows the main indicators.

Table 3. Table of Key Indicators

Category	Indicator	Value
Scientific	New projects among partners	6
	Peer-reviewed publications	13
	Conference contributions	16
	Patents	Future possibility
Digital	LinkedIn followers	> 210
	Yearly LinkedIn impressions	2,256
	X/Twitter impressions per post	40–350 (up to 450)
	Facebook shares per post	Up to 11+
	YouTube views	> 595
Outreach & Education	Outreaching papers	2
	Community workshops	> 10
	Students reached	Several hundred
Public events	Multiple	Pint of Science, ERN, Forum Theatre
Workshops and other events organised by CELISE	Events with multiple formats and characteristics, including social issues, culture, education and the main stakeholders in rural areas	4
Industry	SMEs engaged	7+
	Industry dissemination actions	> 15
Mobility (WP3)	Total secondments	64
	Person-months	~100

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13. QUALITATIVE IMPACT INDICATORS

While quantitative indicators demonstrate the measurable reach of CELISE, qualitative evidence reflects the depth, relevance and long-term value of the project's dissemination and communication activities. This section synthesises observations, testimonials, internal evaluations and contextual feedback gathered informally throughout the project, providing a richer understanding of the social, academic and institutional impact of CELISE.

13.1. Testimonials and anecdotal evidence

Throughout the secondments and outreach activities, participants reported that CELISE significantly enriched their professional experience, broadened their perspectives and enhanced their scientific skills. Although these elements are not always captured numerically, they represent some of the most meaningful impacts of the project.

Representative examples of qualitative feedback:

- Researchers from Latin America frequently expressed that CELISE offered them their first exposure to European research infrastructures, methodologies and interdisciplinary collaboration models.
- European researchers highlighted the unique opportunity to work directly with biomass sources, rural communities and environmental challenges specific to Latin America, deepening their understanding of global sustainability issues.
- Participants from Uruguay (Latitud) underscored the value of learning about ANN modelling and hydrothermal processing from European partners while providing pilot-scale steam explosion expertise in return.
- Several students and early-stage researchers described the project as transformative for their academic development, expanding career aspirations toward international research.
- Indigenous community members and rural stakeholders showed enthusiasm for the idea that local biomass residues could be converted into value-added materials, reinforcing cultural and environmental engagement.

These testimonials reflect the human dimension of the project and the multidirectional learning process encouraged by CELISE.

13.2. Perceived value by participants and partners

Dissemination activities produced several non-quantifiable but highly impactful outcomes:

<u>Strengthening institutional identity and visibility</u>

Latin American partners reported increased recognition of their institutions due to CELISE's international exposure.

For universities such as UCC and UNL, CELISE became a flagship example of participation in EU-funded projects, improving internal motivation and external visibility.

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Building confidence and capacity

Participants described gaining confidence in public speaking, cross-cultural communication and scientific dissemination.

Many early-stage researchers learned to present their work at international conferences, contributing to their professional growth.

Improved interdisciplinary understanding

Partners noted that CELISE fostered an integrated perspective where chemistry, engineering, materials science, bioeconomy and social impact coexisted.

Workshops and joint sessions helped bridge disciplinary boundaries and encouraged collaborative problem-solving.

Motivation for future collaborations

Several partners expressed explicit intention to pursue new Horizon Europe or Erasmus+ proposals based on CELISE's success.

Academic relationships formed during secondments are expected to continue independently of project funding.

6 new projects have been achieved among partners:

- Biofuel and Biochar Cooperation Project (UCC and UC with the Government of Cantabria, 2024–2025)
- Young PW Project (WUT, UC and UCC, 2023–2025)
- Photocatalysis Project (IChF and UCC, 2024–2028)
- BAPUR Project – M-ERA.NET (UC, UTB, UL, LSIWC, with the collaboration of Åbo Akademi University), 2024–2027
- OPUS 2026 (UCC and IChF)

13.3. Network consolidation and new collaborations

The CELISE consortium evolved from a partnership of research institutions and SMEs into a continental network with strong interpersonal and institutional links. Qualitative evidence highlights several forms of network consolidation.

Strengthened EU–LATAM scientific collaboration

Reciprocal secondments created bonds that go beyond formal project structures.

Researchers from Argentina, Colombia, Latvia, Greece, Spain, Poland and Czech Republic developed strong collaborative relationships.

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Integration of new partners

The inclusion of Spain (Besarte, QAI), Czech Republic (UTB, CVUT, StudentScience), Slovenia (UL) and Uruguay (Latitud) among others during project amendments was seamless, thanks to the collaborative culture established early in the project. All institutions quickly became active players in dissemination and mobility activities.

Emergence of new interdisciplinary teams

Joint publications and submitted manuscripts often resulted from international, cross-sectoral and interdisciplinary collaborations initiated during CELISE secondments.

External networking

CELISE members connected with new academic groups, public organisations and SMEs not originally part of the proposal, expanding the project's ecosystem and influence.

Long-term sustainability

Several partners expressed commitment to maintaining the network beyond 2025, with joint academic visits already planned and new project ideas under development.

13.4. Added value of cultural, linguistic and regional diversity

One of CELISE's strongest qualitative impacts arises from its multicultural and multilingual context.

Cross-cultural scientific communication

Participants gained experience working across differences in language, academic culture and scientific tradition. This strengthened their adaptability, communication skills and global awareness.

Engagement with rural and indigenous contexts

Exposure to rural environments, local challenges and indigenous knowledge systems helped European partners contextualise scientific research in broader societal frameworks.

Mutual respect and knowledge exchange

Latin American partners appreciated access to EU laboratories and methods, while European partners valued learning from LATAM environmental and social contexts. This mutual reinforcement enriched the project's scientific and human outcomes.

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14. OVERALL IMPACT ASSESSMENT

The CELISE project produced substantial and wide-ranging impact across scientific, technological, educational, social and institutional dimensions. By integrating partners from Europe and Latin America through interdisciplinary research, sustained mobility and multi-level dissemination activities, CELISE achieved an influence that extends well beyond its original objectives. This section provides a consolidated assessment of the project's overall contribution to the scientific community, public sector, SMEs, local communities and future collaborative frameworks.

14.1. Alignment with project objectives

CELISE's dissemination and communication actions were strongly aligned with the objectives laid out in the Description of Action (DoA), particularly the goals related to promoting sustainable biomass processing, supporting EU–LATAM cooperation, strengthening researcher training, and increasing public awareness of the bioeconomy.

Scientific objectives

Dissemination activities successfully communicated:

- advances in hydrolysis, fermentation and pre-treatment technologies,
- progress in nanocellulose, fibres and biocomposites,
- modelling tools including Aspen simulations and ANN development,
- possible patents for biomaterials in medical applications,
- environmental and socio-economic frameworks supporting rural innovation.

Publications, conferences and institutional seminars ensured that scientific progress reached both technical audiences and interdisciplinary communities.

Training and transfer objectives

Dissemination linked directly with researcher development through:

- presentations at international conferences,
- institutional seminars during secondments,
- student presentations and workshops,
- mobility-based knowledge exchange between continents.

These actions strengthened the skills and visibility of both early-stage and senior researchers.

Social and rural impact objectives

Outreach activities targeted schools, rural communities and indigenous populations, contributing directly to:

- raising awareness of sustainable biomass use,
- supporting environmental education,
- reinforcing CELISE's intention to connect scientific innovation with societal needs.

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14.2. Strategic impact

CELISE's influence extended beyond publications and events, supporting broader strategic outcomes for institutions, SMEs and international cooperation.

Strengthening EU–LATAM cooperation

CELISE became a strong example of intercontinental scientific collaboration, demonstrating:

- the feasibility and value of two-way mobility between continents,
- the importance of sharing laboratory resources, industrial facilities and regional expertise,
- the potential for sustained long-term collaboration beyond the project.

Institutional strengthening

Universities and research centres reported increased visibility and recognition due to CELISE's participation in publications, conferences, press articles and institutional media.

Latin American partners, in particular, benefited from:

- enhanced institutional prestige,
- improved research capacity,
- increased participation in international networks.

SME and industry engagement

Industrial and SME partners (e.g., CCC, Besarte, Ecoresources, VoCATE) gained:

- exposure to novel scientific results,
- participation in training and workshops,
- visibility in conferences and digital platforms,
- strengthened connections with academic institutions.

These collaborations support future innovation pathways beyond CELISE.

Contribution to EU priorities

CELISE directly contributed to:

- the European Green Deal and the EU Bioeconomy Strategy,
- open science and open access dissemination practices,
- international cooperation priorities of Horizon Europe,
- societal engagement objectives of MSCA.

14.3. Sustainability of impact after project end

One of CELISE's most important achievements is the sustainability of its impact beyond the formal project timeline.

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Long-term collaborations

Partners in both continents have already identified areas for continued cooperation including:

- joint Horizon Europe, Erasmus+, other calls and cooperation proposals,
- continuation of bilateral student exchanges,
- shared use of laboratory and pilot facilities (e.g., Latitud, UC, SGGW),
- co-authorship of future publications.

Ongoing dissemination beyond CELISE

Scientific manuscripts submitted in 2023–2025 ensure ongoing visibility after the project end date. Additionally, public-facing materials, videos and social media posts remain accessible and continue to attract engagement.

Educational integration

Course modules, teaching materials and student projects based on CELISE work will continue to:

- inform technical education,
- support student training,
- strengthen the presence of sustainability and bioeconomy topics in curricula.

Sustained community benefits

Knowledge disseminated during outreach events (e.g., in Colombia, Argentina, Uruguay) empowered local communities with tools and ideas that continue to support environmental awareness and sustainable practices.

Institutional legacy

CELISE demonstrated a successful model for EU–LATAM scientific cooperation, setting the stage for future international partnerships based on real mobility, shared infrastructure and mutual learning.

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15. CONCLUSIONS

The CELISE project has successfully achieved its objectives by combining scientific innovation, intercontinental cooperation, researcher mobility, digital dissemination and strong engagement with both academic and non-academic audiences. Over its lifetime, the project generated significant scientific knowledge on biomass valorisation, lignocellulosic processes, biobased materials, sustainability assessment and digital tools for rural biorefineries. Through a comprehensive dissemination strategy, these advances reached diverse stakeholders, including researchers, students, SMEs, public institutions, rural communities and the general public.

The project delivered a rich set of scientific outputs, including some possible patents in medical applications, thirteen peer-reviewed publications, numerous conference contributions, and several manuscripts still in progress. In addition, four events were organised by CELISE. Its communication channels—website, social media platforms and public-facing media—were widely used to share progress, promote events and increase visibility across Europe and Latin America. Outreach activities further strengthened societal impact, contributing to environmental awareness, education and the promotion of sustainable bioeconomy practices in rural and vulnerable communities.

CELISE also demonstrated the effectiveness of EU–LATAM cooperation, enabling 105 PM of secondments, fostering interdisciplinary collaboration, and creating a network of institutions that will continue to work together beyond the end of the project. The integration of partners from Europe and Latin America, including universities, research centres, SMEs and public laboratories, laid the foundation for long-term partnerships and new joint initiatives.

Overall, CELISE delivered high-quality scientific results, reinforced international collaboration, contributed to researcher training, and generated social and institutional impact aligned with MSCA and EU priorities. The dissemination efforts described in this report ensure that CELISE's contributions will continue to benefit the scientific community, SMEs, public institutions and society at large, supporting future developments in sustainable materials, biorefineries and the global bioeconomy.

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