S3Chem
Interreg Europe

European Union
European Regional
Development Fund

Smart Chemistry Specialisation Strategy

www.interregeurope.eu/s3chem

Final Brochure of Phase 1

Research
and innovation

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1. Introduction

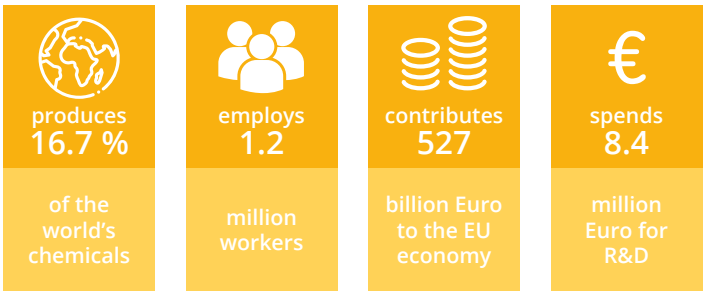
The European Chemical Industry is an important economic sector, which produces 16.7 % of the world's chemicals, employs 1.2 million workers, contributes 527 billion Euro to the economy of the European Union and accounts for 8.4 million Euro of spending in research and development (R&D) (Cefic 2014). Innovation is crucial for the sustained competitiveness of the chemical industry, which is also at the root of all other industries. Chemical innovation provides Europe with raw materials and consumer products, and therefore leads to the development of advanced materials and process technologies that enable flexible production with more efficient usage of energy, feedstocks and water. Between 2007 and 2009, the High Level Group (HLG) for the Competitiveness of the European Chemical Industry discussed the main challenges and requirements for policy improvements. The HLG stressed that more innovation and research is the key to secure the future of the European chemical industry. The HLG recommendations have been integrated into the 'Europe 2020 Strategy' for a new industrial policy. The European Territorial Cooperation, a central part of the European Cohesion Policy, supports the realisation of the 'Europe 2020 Strategy'. It aims to tackle common challenges together and find shared solutions in Europe.

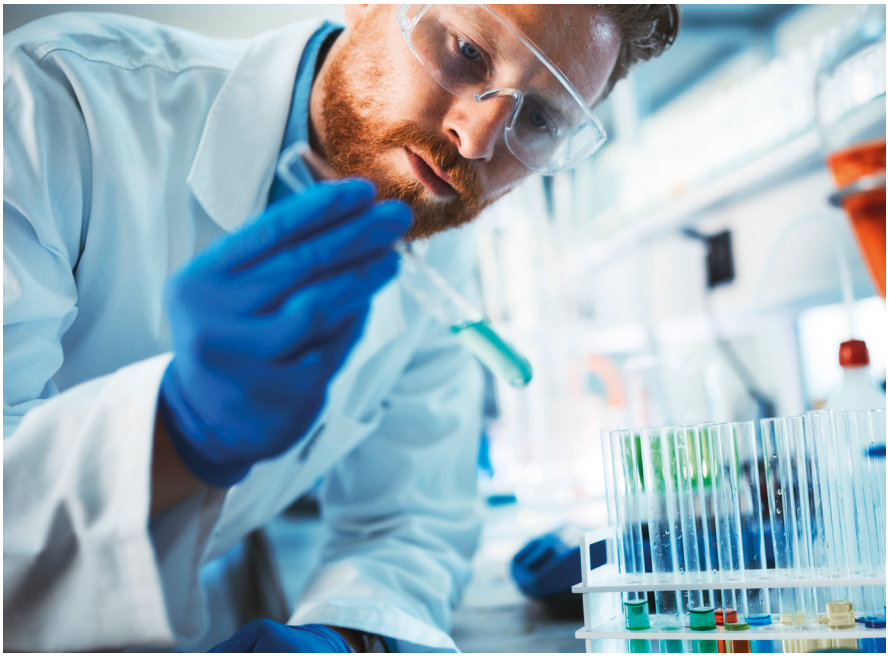
INTERREG Europe, financed by European Regional Development Fund (ERDF), is an interregional programme of the European Territorial Cooperation goal which concentrates on exchanging experience and practices across borders. The interregional exchange of practices and ideas between regions is supposed to lead to an improvement of regional strategies concerning the performance of policies and programmes in the field of regional development.

Certainly, the promotion of innovation concerning topics related to chemicals has high priority. Through the preparation of the new programme period between 2014 and 2020, all regions have developed Regional Innovation Strategies (RIS). Different funding instruments in order to initiate R&D and cooperation in the field of innovation at regional level are available in the framework of RIS.

The development and implementation of RIS based on the smart specialisation approach is a new challenge for regions with a large chemical industry. Some regions have defined clear innovation priorities with a focus on the chemical industry. Partner regions have highlighted topics related to chemicals in their RIS as a basis for ERDF innovation funding between 2014 and 2020 in order to promote innovation in the chemical industry. The European 'Smart Chemistry Specialisation Strategy- S3Chem' INTERREG project aims to improve the implementation of RIS based on the exchanging of good practices which have been identified and adopted to specific conditions in the different partner regions. Interregional cooperation helps to organise a more efficient and more focused use of European Structural Investments Funds.

The European Chemical Industry is an important economic sector:





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2. Project overview

2.1 Objectives

The S3Chem project has defined a number of objectives for the improvement of RIS implementation in European regions with a large chemical industry.

The overall project objective is to improve the implementation of RIS focusing on chemical related topics with the aid of an interregional exchange of experiences and mutual learning between public authorities from several European regions with a large chemical industry.

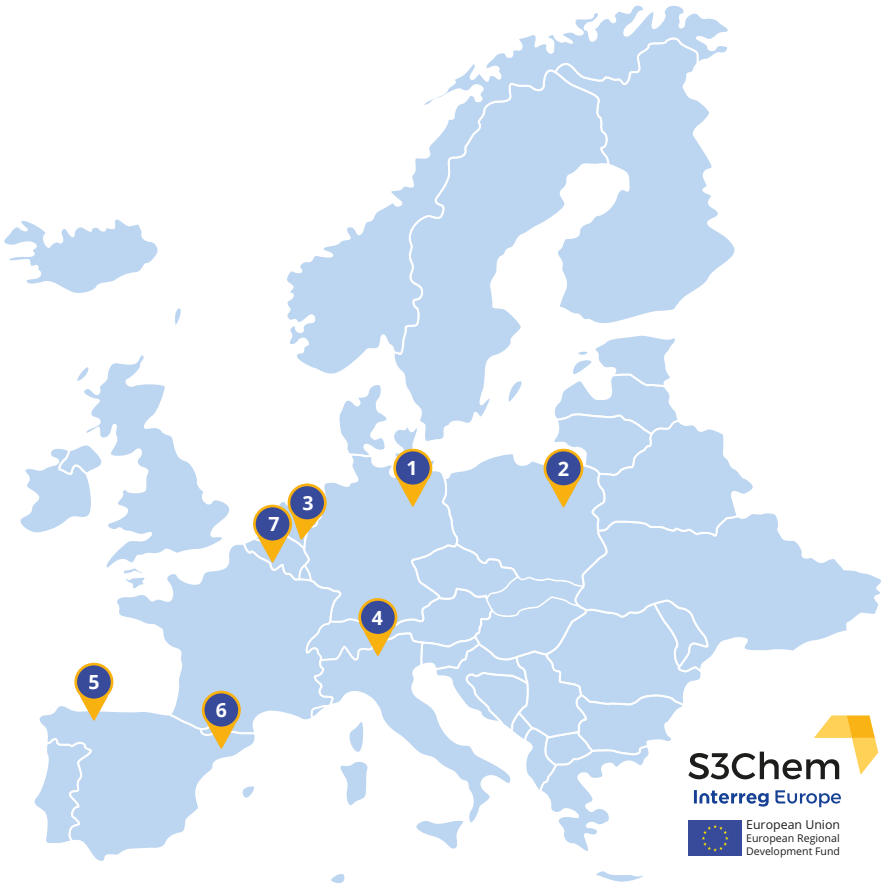
One sub-objective of the project is the support of chemical companies and relevant research institutions in order to provide better access to innovation funding provided by the regional ERDF programmes. Furthermore, the participating public authorities will cooperate closely with the regional stakeholders in the chemical innovation chain, existing triple helix clusters and networks in order to improve the governance of RIS for this specific sector and areas of innovation related to smart specialisation. The last sub-objective aims to use good practices from other partners. Responsible public authorities will use other partners' good practices in order to change the strategic focus of the RIS. The focus is placed on topics related to chemicals and their related funding instruments in order to improve the policies for the promotion of innovation.

2.2 Partnership

S3Chem brings together regional and local authorities concerned with the chemical industries from Germany, Poland, Italy, Spain, Belgium and the Netherlands.

8 Institutions from 6 EU Member States

- Ministry of Economy, Science and Digitalisation Saxony-Anhalt, DE (Lead Partner)
- isw Institute for Structural Policy and Economic Development, DE
- Mazowieckie Voivodeship (Mazovia), PL
- Province of Limburg, NL
- Regione Lombardia, IT
- IDEPA Asturias, ES
- ACCIÓ Catalonia, ES
- Public Service of Wallonia, BE



1 **Saxony-Anhalt**
Ministry of Economy, Science and Digitalisation Saxony-Anhalt & isw Institute for Structural Policy and Economic Development

2 **Mazovia**
Mazowieckie Voivodeship

3 **Limburg**
Province of Limburg

4 **Lombardy**
Lombardy Region

5 **Asturias**
IDEPA Regional Development Agency of Asturias

6 **Catalonia**
ACCIÓ Catalan Agency for Business Competitiveness

7 **Wallonia**
Public Service of Wallonia

2.3 Policy Instruments addressed

The S3Chem project addresses the developed RIS in the partner regions.

- **Saxony-Anhalt:** Regional Innovation Strategy Saxony-Anhalt 2014-2020 with focus on Lead Market Chemistry and Bioeconomy
- **Mazovia:** Regional Innovation Strategy for Mazovia up to 2020
- **Limburg:** RIS3 Zuid with Focus on Chemistry & Materials Cluster
- **Lombardy:** Regional Innovation Strategy of Lombardy Region 2014-2020 with focus on Green Chemistry and Bioeconomy
- **Asturias:** The Research and Innovation Strategy for the Smart Specialisation of Asturias (Asturias RIS3 2014-2020) with focus on Sustainable Materials
- **Catalonia:** The Research and Innovation Strategy for the Smart Specialization of Catalonia (RIS3CAT) with focus on chemical sector for Green Economy
- **Wallonia:** Strategy for Intelligent Specialisation of Wallonia with focus on ERDF Axis 2: INNOVATION 2020

3. Project approach

The first phase of the project implementation was dedicated to the interregional learning process among the project partners and preparing the implementation of the lessons which were learned from the cooperation.

The exchange of experiences lies at the core of the interregional learning process and it forms the main driver for achieving policy change. Within the implementation of the project, the interregional learning process is organised as an integrated process with a focus on both the identification, analysis and exchange of knowledge and practices in the field of the RIS as well as a focus on chemistry and the bioeconomy. The methodology of the project implementation is based on the organisation of several activities such as regular interregional working group meetings, interregional site visits, thematic seminars and workshops, peer reviews as well as regular meetings of the regional innovation stakeholder group (RISG).

Interregional Working Group

During the first phase, the interregional learning process was organised at different levels. The main place, where the individual learning took place, is the Interregional Working Group (IWG). The IWG is composed of representatives of the project partners who are responsible for the implementation of RIS and related ERDF instruments. In total, 12 IWG meetings have been held since the project was launched in May 2016. During the IWG meetings, project partners exchanged information about experiences and regional good practices. Moreover, the main findings of project analyses related to the thematic priorities. These were: RIS development, stakeholder involvement and governance of the RIS implementation, project generation, funding instruments and the monitoring and steering process related to EFRE.

IWG meeting Gijón, 07 June 2018.

"The S3Chem project has allowed the knowledge of the different approaches of the RIS3 strategy in the regions that are part of it, and the analysis allows re-thinking the instruments, improve it and good practices open the mind to new ideas. The project facilitated the participation of Stakeholders in site visit and events, generating a networking and environment for the generation of interregional cooperation projects".

Dr. Ma. Dolors Nuñez,
Chemistry, Energy & Resources
Coordinator, ACCIÓ

Regional Innovation Stakeholder Group

In order to optimise the impact of interregional learning, regional stakeholders actively contributed to the interregional learning process. During the IWG meetings, the exchange of knowledge concerning good practices and the discussions surrounding regional challenges and potential solutions were particularly based on the feedback gained from each partner's RISG. For this reason, each partner region established a RISG, bringing together the relevant companies, research institutes/ other businesses and innovation promotion stakeholders. They met once per semester to jointly analyse the current situation of a respective thematic topic, discuss regional

2019

- **Halle (Saale)** – **IWG Meeting & Dissemination Conference** & Site Visit to Chemical Park in Schkopau, Fraunhofer PAZ – February 2019

2018

- **Brussels** – **IWG Meeting** – November 2018
- **Warsaw** – **IWG Meeting** & Site Visit to Plock Industrial and Technological Park – September 2018
- **Gijón** – **IWG Meeting** & Site Visit to INCAR – June 2018
- **Venlo** – **IWG Meeting** & Site Visit to Brightlands Greenport Campus – February 2018

2017

- **Barcelona** – **IWG Meeting** & Dissemination Conference & Site Visit to Expoquimia – October 2017
- **Liège** – **IWG Meeting** & Site Visit to Reverse Metallurgy & GeMMe laboratories, Université de Liège VERDIR – September 2017
- **Milan** – **IWG Meeting & Dissemination Conference** & Site Visit to Relight Italia – May 2017
- **Oviedo** – **IWG Meeting** – March 2017

2016

- **Warsaw** – **IWG Meeting** – November 2016
- **Maastricht** – **IWG Meeting** & Site Visit to Brightlands Chemelot Campus – September 2016
- **Magdeburg** – **Kick-off Meeting** – June 2016

challenges and collect good practices and ideas for improvements from a stakeholder's perspective. These stakeholder meetings allowed the project partners to gather the information which is needed to evaluate the current situation of RIS implementation and has led to a valuable exchange of experiences and good practices.

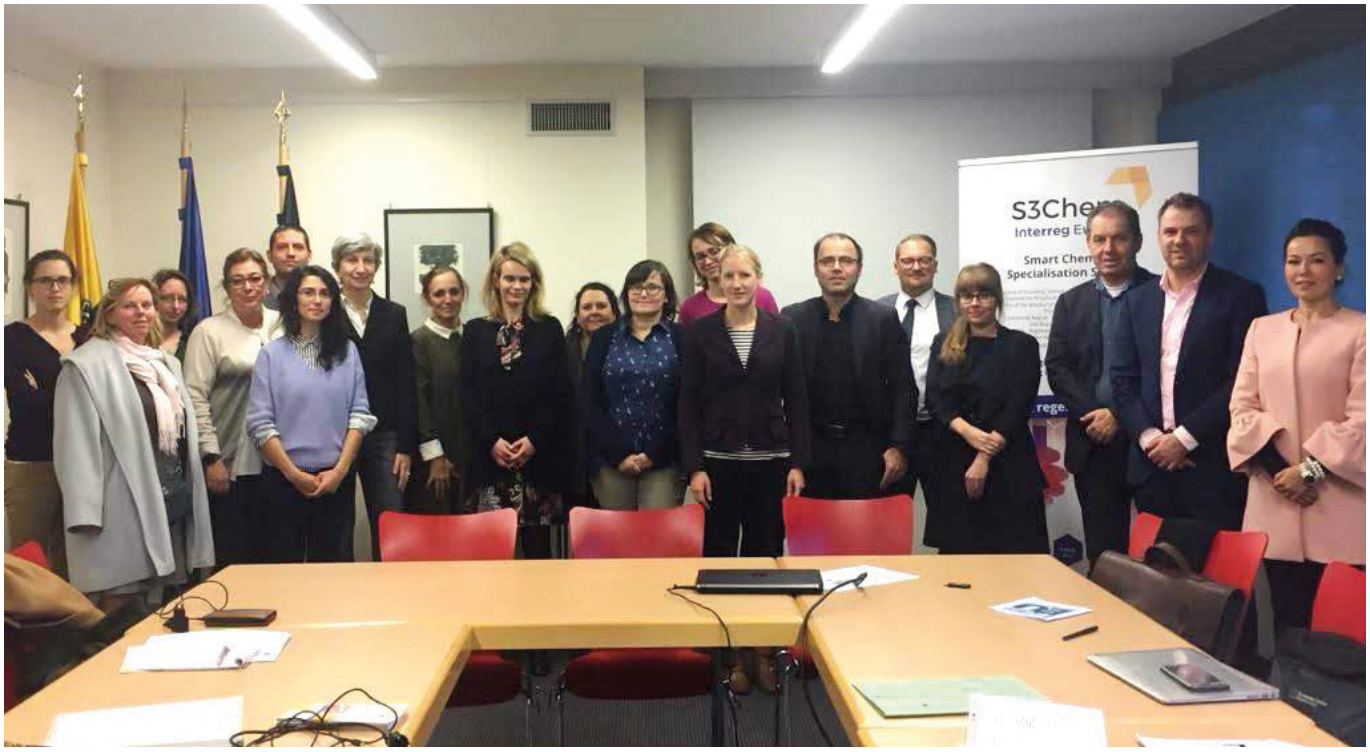
"The experience of IQS in the project S3Chem demonstrates the relevance of putting together the local stakeholders to share knowledge and create new International contacts. The seminars were excellent! Our congratulations to Accio for its organizing capacity".

Prof. Dr. Julià Sempere,
IQS School of Engineering.
Universitat Ramon Llull

Prof. Maarten Honing (Maastricht University) with Irene Punti, Dr. Pericàs, ICIQ Director and other researchers, Scientific seminar hold at ICIQ.

"The Institute of Chemical Research of Catalonia (ICIQ), has taken part in several activities within the S3Chem Project as a stakeholder of ACCIÓ. ICIQ's Business Development Manager has taken part in the site visits of Milan, Barcelona, Venlo and Plock.
Additionally, ICIQ researchers have presented their R&D expertise and results to an industrial audience in three out of four S3Chem Seminars (Flow Chemistry and Catalysis, Surfaces, Materials). As a direct result of these actions, ICIQ has carried out a contract research project for a Catalan company contacted in the Flow Chemistry and Catalysis Seminar, and is in conversations regarding a possible collaboration with a company contacted in the Materials Seminar.
Moreover, Prof. Maarten Honing (Maastricht University), who participated in the Barcelona site visit as a stakeholder of Limburg, was invited to give scientific seminar at ICIQ and had meetings with several ICIQ principal scientists. As a result, there is an idea for a joint project involving Prof. Honing and ICIQ researchers (currently looking for funding). ICIQ plans to strengthen the relationship with other S3Chem partners and stakeholders in future actions beyond the project, for instance the possible participation of S3Chem stakeholders in the 4th EuCHeMS Conference on Green & Sustainable Chemistry, organized by ICIQ on September 2019, as well as other future activities".

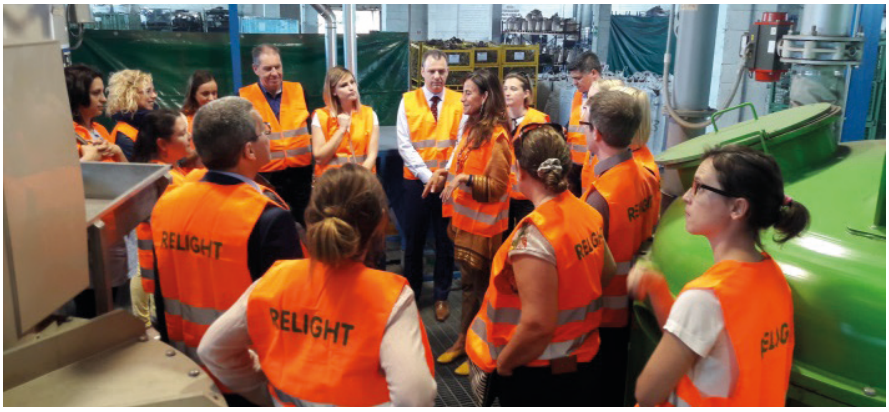
Irene Punti, Business Development Manager, ICIQ



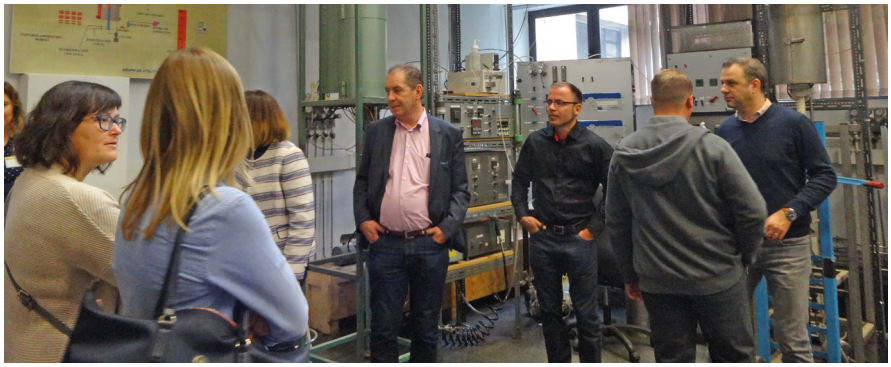
IWG Meeting in Brussels, 22 November 2018.

"The visit to Brightlands Campus Venlo was really interesting from the point of view of learning from experiences of a very active region in the field of the sustainable chemical industries. Netherlands is often considered as one the most dynamic countries both in the field of Food Technology and the Chemical Processes Engineering. In the last years, this region is also well-known for its initiatives (involving both private and public organisms) for ensuring the sustainability of the processes. The delivered speeches were very illustrative at this point. The interphase between a sustainable food process industry and the role of the agriculture as a source of new materials for increase the green character of the chemical processes was a key idea of the meeting. This idea can be extrapolated to many other European regions".

Salvador Ordoñez
(University of Oviedo)



Site visit to the waste treatment centre Relight Italia in Rho (Milan), 18 May 2017.



Site visit to INCAR – CSIC in Oviedo, 08 June 2018.

Site Visits

The exchange of experiences was further investigated through study visits and peer review workshops. The site visits were organised at least alongside every second project meeting. For example, site visits took place to the Brightlands Chemelot Campus in Limburg, the Relight Italia waste treatment centre in Rho (Milan), GeMMe's laboratories in Wallonia, the Brightlands Greenport Campus in Venlo, the INCAR – CSIC in Oviedo, the Plock Industrial and Technological Park in Poland as well as the Chemical Park in Schkopau. The site visits were particularly useful for learning about successful initiatives and good practices which contribute to the development of innovative processes for the efficient management of resources in the chemical and bioeconomic sectors.

With the help of the site visits and the IWG meetings, the project facilitated cooperation between regional stakeholders. As a direct result of the S3Chem project, the Fraunhofer Institute for Microstructure of Materials and Systems IMWS in Halle (Saale) and Brightlands Materials Center – an initiative of the Province of Limburg and TNO – in the Netherlands are going to collaborate. Together, the partners want to optimise fibre-reinforced thermoplastics in order to make them ideally suited to 3D printing on an industrial scale.

Peer Review Workshops

In terms of peer review, the outcomes of the activities were discussed within a joint meeting with the regional stakeholder group in the region, where the IWG meeting took place. Peer review workshops have been organised every half year in order to present and discuss the results of a thematic topic with the regional stakeholders, to obtain advice at a company and research level and to carry out final fine tuning of recommendations for policy improvements.

External Learning Activities

Besides the internal interregional learning activities, external learning also took place. For instance, ECRN meetings have been used to discuss project activities and results with other chemical regions.

"We are very happy to have been introduced to one another within the framework of S3Chem and excited to start this partnership with Fraunhofer IMWS. This collaboration gives us access to great skills and facilities to support our own ambitions in the field of continuous fiber reinforced 3D printing".

Marnix van Gurp, Managing Director of Brightlands Materials Center

In order to communicate and disseminate the generated knowledge and identified good practices to a broader audience, the project organised three dissemination conferences. The project´s first dissemination conference took place in Milan on 17 May 2017 and had a great success in raising the awareness of innovation policy and business approaches towards the circular economy.

The second dissemination event took place within the framework of the 'Expoquimia' international chemistry fair in Barcelona that was held between 4 and 6 October 2017. There, project partners and regional stakeholders took part in several networking activities and showcased project activities and initial results. There was a panel discussion organised by the project, in which researchers, representatives of chemical companies and cluster initiatives from partner regions actively contributed in an exciting discussion concerning the latest developments in chemistry and the bioeconomy.

The final conference in the first phase took place in Saxony-Anhalt on 26 February 2019. The final conference presented results of the S3Chem project and discussed them with representatives from industry, science and politics. In any case, the developed action plans paved the way forward in order to continue improvements in funding innovation within the chemical sector in Europe.

The key good practices are also disseminated by providing input into the online programmes/good practice database which enables the good practices identified on the project's website to be published. Furthermore, existing contacts with the European Commission and other representations (e.g. Cefic) are used to articulate joint interest and recommendations at an EU level.

Action Plan Development

The identification, analysis and exchange of good practices and policy experiences were used as a basis for the development of regional action plans with a view to improve the effectiveness of regional policy instruments. In total, seven action plans will be developed to describe concrete improvements related to policy instruments. Their implementation will be monitored in the final two years of the project.

"S3Chem project was a great opportunity to share knowledge about chemical projects within members of the Project. Some of the projects were so interesting that we contacted companies from our Park to start cooperation.

In different chemical regions in Europe we conduct sometimes the same examinations on the same topics instead of joining forces and share final results. I hope that results of S3Chem Project will help us to create the permanent links between chemical R&D centers across Europe".

Zbigniew Bednarski, Płock Industrial and Technological Park

Second dissemination conference in Barcelona, 04 - 06 October 2017.

4. Project outputs

4.1 Thematic analysis and recommendations for improvement

1st project semester – RIS implementation

In the first semester, the project partners carried out a first analysis describing the current situation and the challenges in implementing RIS focusing on topics related to chemicals. They tackled the following issues:

- Partner regions and their related chemical industry
- RIS from a general perspective and thematic priorities within topics related to chemicals
- ERDF Operational Programme: general structure, responsible bodies, priority axes and available funding
- Governance of the RIS: relevant innovation stakeholders from industry, academia, active networks and clusters

2nd project semester – RIS governance

The second semester of the project was dedicated to RIS governance and focused on the following question: What kind of methods and tools will the project partners be using in order to involve stakeholders in the RIS implementation process? The partners investigated the following topics:

- RIS development and the involvement of regional stakeholders
- Current implementation process of RIS and the working structure of RIS governance
- Challenges concerning the participation of regional stakeholders, with regard to level and quality of regional stakeholder participation
- Expectations of regional stakeholders

At the end of the second semester, the partners assessed the strengths and weaknesses of the existing RIS governance process and the involvement of regional stakeholders.

3rd project semester – ERDF project generation

In the third semester, an analysis took place concerning project generation and the development of funding for innovation with focus on chemistry and the bioeconomy within the framework of RIS. The main questions were:

- How the regional partners promote the generation of project ideas and the development of project applications for RIS funding?
- What are the main drivers of projects? What are the experiences of the partnership?

Based on specific project examples, the project partners identified best practice examples in order to draw lessons for further generations regarding other new projects. At the end of the third semester, the partners summarised strengths and weaknesses as well as challenges and barriers regarding project generation. They gave recommendations for improving project generation, identifying potential topics and forming partnerships.

4th project semester – ERDF funding instruments

In the fourth semester, the project partners analysed the ERDF funding instruments within the framework of RIS and their application for the chemical/bioeconomy sector. In detail, each partner region described the following:

- What kind of funding instruments are used to promote innovation? How are topics related to chemicals/the bioeconomy supported by funding instruments?
- What are the experiences in the implementation of funding instruments? Are there strengths and weaknesses related to funding instruments?

At the end of the fourth semester, the partner regions had identified needs concerning improvements in the implementation of funding instruments.

5th project semester – Monitoring and policy steering process

In the fifth semester of the first phase of the project, the partner regions analysed the monitoring and policy steering process of ERDF innovation funding focusing on the chemical/bioeconomy sector:

- What kind of monitoring and evaluation system has been established
- Involvement of stakeholders
- Measurement of the impact of innovation funding

In doing so, they revealed the strengths and weaknesses of the monitoring system. Recommendations were then gathered for improving the monitoring system. The partners also measured and analysed the progress of the policy steering circle. In this regard, they discovered deficits and developed/implemented recommendations for improvements.

6th semester – Development of action plans

The last semester of the first phase of the S3Chem project was dedicated to the development of action plans. Each partner region created an action plan based on the results of the analyses and interregional exchange of experiences implemented over the course of the project. Furthermore, they indicated the activities they plan to implement over the next two years in order to improve the RIS with a focus on chemistry/bioeconomy in

"One of the things I learned in the first phase of the project was that Wallonia had a great variety of support from the public administration in relation to public funding directly linked to the ERDF program: Investments, vouchers, loans, advices, etc."

Laurie Delmer,
Public Service of Wallonia

the areas of stakeholder involvement and governance, project generation, funding instruments and monitoring/evaluation.

Within the framework of the thematic analyses, the partners investigated crucial challenges facing the chemical/bioeconomy industry. Europe has to face up to different challenges due to the current economic environment, global competition, the aging of the population, climate change, the better use of resources and the circular economy. Innovative solutions need to be found to all these challenges by the regions in Europe with a large chemical industry. Here, the role of the public sector and policy makers is important to promote a new chemical/bioeconomy and processing sector, strengthen the traditional sector helping it to make the transition towards a new model and create opportunities for technologies and emerging companies in the regions. Therefore, the following recommendations for improvements for policy makers and companies could be investigated:

General recommendations for policy makers

1. Support the industrial reactivation of the chemical regions and the implementation of new industrial activities based on the bio and circular economy.
2. Governments should contribute to create cross-sectoral ecosystems in which the private sector and academia can establish mechanisms of dialogue and strategic development. Facilitate the incorporation of new technologies and hybridisation between different fields of knowledge and application.
3. Promote interregional relations creating an environment that favours joint solutions for global challenges
4. Harmonisation of policies and regulatory frameworks and standardisation of products and secondary raw materials. This should allow a more transparent, competitive, accessible and internationally compatible market.
5. Allocate research and development funds for the development of new concepts and products with greater emphasis on sustainability issues like improving energy efficiency, reducing costs, circularity of processes, increasing the life of products, improving the quality of life of citizens.
6. Measure the impact of RDI projects not only in economic terms, but also due to their contribution to meet the SDGs, mitigate climate change and favour the energy transition and a low carbon economy.
7. Support unique projects that act as demonstrators of possible innovative solutions in different areas where chemistry can provide knowledge.
8. Promote networks of R&D infrastructures and equipment's to propose integral valorisation cycles of by-products and residues.
9. Support companies that explore new business opportunities, emerging technologies and create links between knowledge and small and medium enterprises, developing simple and flexible instruments.
10. Promote and value the contribution of chemistry to the new models of bio and circular economy.
11. Dissemination of good practices and social awareness of the importance of science in general and chemistry in particular. Promote education in different branches of chemical science and at different educational levels.

General recommendations for companies

1. Carry out a strategic and transversal thinking of its business model taking into account the new models and challenges of the bio and circular economy and new value chains.
2. Participate in hybrid ecosystems that allow us to understand needs and challenges.
3. Participate in clusters that include different organizations along the value chain, companies, universities, research and technological centres, end users to design and provide integrated solutions of added value.
4. Look for industrial symbiosis approaches to increase the presence of raw materials in industrial processes.
5. Explore alternative sources of funding.
6. Adjust the technological solutions to the different scenarios, both in terms of cost and benefit. Explore existing technologies and think how they can be used in different applications and segments.
7. Design business models taking into account the different scenarios provided by the bio and circular economy.
8. Think about the possible evolution and circularity of the products. Make a special emphasis on innovation and market knowledge to design flexible and efficient products.
9. Especially for small and medium-sized companies to establish relationships with other elements of the value chain and cluster, also at the international level, to achieve a greater potential of the products, a more robust business model and better knowledge of the market.
10. Increase the level of innovation to find new markets and improve their competitiveness.
11. Actively participate in the exchange of good practices and knowledge.
12. Agree with stakeholders a communication protocol to show society new R&D proposals in advance.

4.2 Identification of Good Practices

The exchanging of experiences among partners is an interregional learning process which is supported by the identification and dissemination of good practices. Good practices include projects, processes or techniques which have proved to be successful in a region and which are of potential interest to other regions. This is the case where the good practices have yielded tangible and measurable results. This being said, valuable learning also derives from bad practices where the lessons learnt can be taken into consideration in the exchange of experiences.

In the course of the S3Chem project, partner regions identified several good practices with valuable transfer potential. The following section outlines the best practices from the partner regions.

"Participation in international projects is very important for ARMSA. It gives us the access to the knowledge, contacts and the experiences. Moreover, it let us to implement the some existing in another territories solutions as a good and successful example.
Drawing on good examples (projects, success stories, etc.) from partner countries, we can better support the development and maintaining the position of our Mazovia region.
Taking part in international projects like S3Chem is an invaluable advantage for us as a team and also plays an important role for the quality of the activities undertaken."

Agnieszka Zdanowicz, Mazovia Development Agency (ARMSA)

"It is very positive that we have the possibility to interconnect and know the work they do from other actors in the same sector with very different aspects, specialties and projections".

Dr. Nuria Llorca-Isern, Head of Materials Engineering Studies, Section of Science and Materials Engineering, Department of Materials Science and Physical Chemistry, Faculty of Chemistry, University of Barcelona

Saxony-Anhalt – Technology Roadmap for Lead Market Chemistry and Bioeconomy

The RIS Saxony-Anhalt has defined the chemistry and bioeconomy sectors as an important innovation priority. Five main sub-themes have been identified – new polymers, the bioeconomy, regenerative hydrogen, coal chemistry – the CO_2 economy as well as specialty and fine chemicals. In order to support the development of concrete innovation projects, a technology roadmap has been implemented for this lead market. The following topics have been analysed in an intensive consultation process with companies and research entities: strategic framework, operational implementation, innovation priorities, lighthouse projects and networks. Milestones and a time plan have been developed for each sub-theme. A first estimation of investment costs is also included. The roadmap was implemented by an external research institute, which has organised several larger meetings and bilateral interviews with companies and research entities. Over 100 stakeholders have been involved in this process. A questionnaire was developed and completed in order to identify the needs of the innovation actors. The final technology roadmap contained several innovation project proposals for each sub-theme with a description of the partnership, thematic focus and financial estimates. These results have been discussed and adopted in the Lead Market Working Group in coordination with the Ministry of the Economy, Science and Digitalisation. Based on the roadmap, the companies and research entities have developed concrete project applications to be funded by ERDF.

Limburg – Brightlands Chemelot Campus Ecosystem

Brightlands Chemelot Campus is a unique ecosystem for open innovation in the domains of performance, biobased and biomedical materials + R&D enabling processes. Brightlands Chemelot Campus was founded as a triple-helix initiative by the Province of Limburg, Royal DSM and Maastricht University in order to create an environment for research and business to co-operate and face regional challenges within the chemical industry. Brightlands Chemelot Campus, together with the adjacent Chemelot Industrial Park, is one of the largest chemical and materials communities in Europe (8 km²) with over 150 companies and over 100 years of history. Its unique strengths are founded on world leading business positions and the unique knowledge that is associated with this in the field of performance materials, bio-based chemistry and materials, biomedical materials and R&D, thus enabling competences including process technology and analytical chemical expertise. Brightlands Chemelot Campus has a broad mix of tenants consisting of world leading multinationals, innovative SMEs, high-potential start-ups, public-private knowledge institutes and educational institutions at postgraduate, undergraduate and further education levels, plus a group of specialist service providers. The campus is an open innovation ecosystem in which the many forms of cooperation between tenants are all focused on accelerating innovation and business growth

on the one hand and creating synergistic value on the other. A public-private knowledge institute has been founded for each unique business and knowledge domain, whereby businesses and universities can make use of the knowledge on campus.

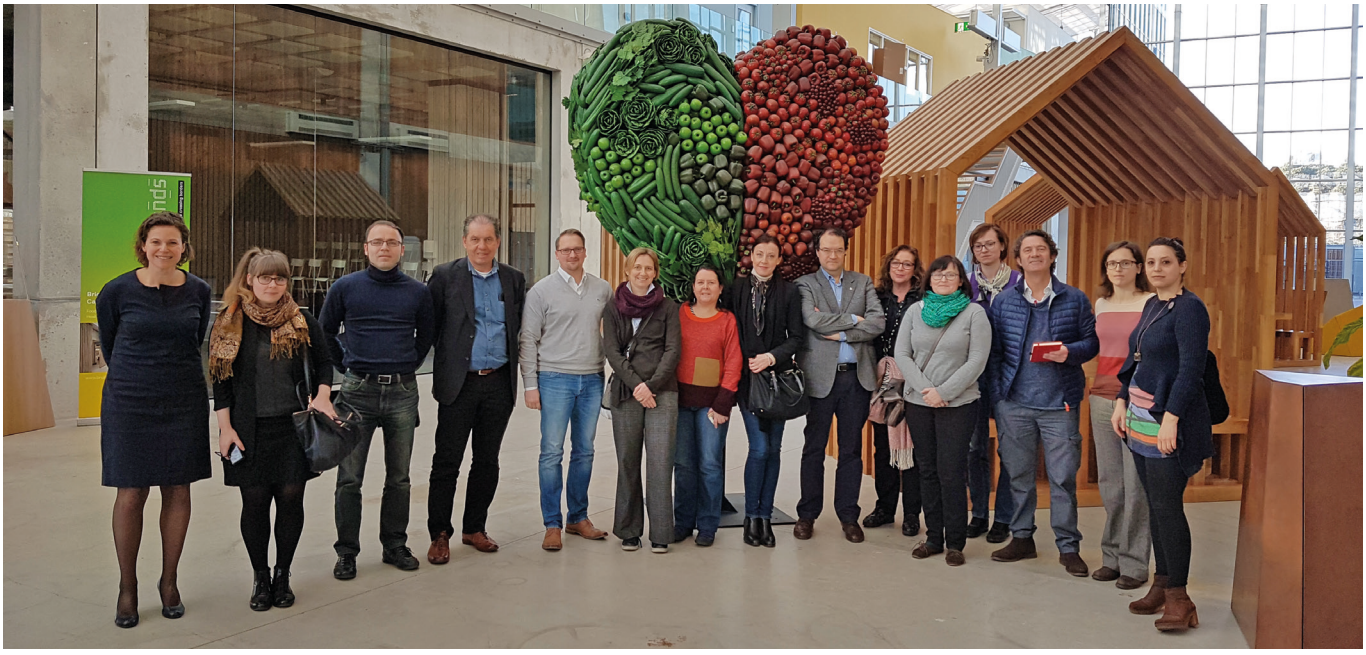
Lombardy – Open Innovation Platform

Open Innovation platform is a collaborative tool in order to implement a new policy model for the regional innovation governance system. The Open Innovation platform aims to provide an environment where citizens can play an active role alongside professionals and use competences, ideas and solutions in the whole life cycle of the regional research and innovation policy: from the definition of strategic goals to the monitoring and evaluation phase. Within it, there is a strong focus on a shift from institutions and organisations to individuals. Today, the platform (www.openinnovationlombardia.it) includes over 7,000 participants, both from the R+I community and from the public at large, lending substance to the principle of multi-actor, public engagement. The platform offers a broad range of tools which inform and engage, promote the competences of local actors, design and manage research and open up innovation projects, for the dissemination and valorisation of results. The software framework powering the platform has been recently released under a free, open source licence with the specific aim of facilitating its adoption in similar or complementary user scenarios and promoting collaboration among them (other regions, company networks, clusters, large collaborative projects etc.). It also aims to maximise content sharing and interoperability. As such, valorisation, training and networking actions are necessary in order to promote the use of the tool at all levels: locally, nationally and internationally. (www.open2.0.regione.lombardia.it)

The platform is a permanent communication channel for all stakeholders in accelerating the innovation process coordinated by the regional government; it establishes collaboration and creates networks with other regions and projects sharing the same idea of open innovation. The regional platform was awarded by the 'Triple Helix Association', during the event in Dubai in November 2018, as the best initiative supporting collaboration among academia, industry and public administration.

Wallonia

Wallonia has modified its Economic development policy, based on its smart specialisation strategy (S3). The approach to S3 is based on its Clusters policies, which aim to develop niches of activity in areas of regional specialisation, supplemented by horizontal approaches in order to stimulate innovation, creativity and entrepreneurship. The objective of the region was to develop a critical mass of stakeholders around key domains in the regional economy and to drive growth at the regional level, building on existing potential, reinforcing interactions between stakeholders. The aim was to develop potentials in those domains and to be competitive at a global scale. The selection of the domains was based on an external analysis, the main objective of which was to identify key economic domains with assets, both in terms of industrial potential and bringing Walloon industry to the forefront. Five broad domains were selected: life sciences, logistics, mechanical engineering, aeronautics/space and the agroindustry. The government launched a call for interest among stakeholders with the objective of creation one pole per domain. The expectations of the government,



Site Visit to Brightlands Greenport Venlo Campus in Limburg, 22 February 2018.

the definition of a pole and the policy were described in a detailed terms of reference. It was up to the stakeholders to get together, build the partnership, define a strategy around specialisation niches, mixing both industrial and technological potentials, and to identify projects for this strategy.

Mazovia – Innovator of Mazovia

The 'Young Innovative Enterprise' category addresses small and medium-sized enterprises in the region of Mazovia which have existed for less than ten years. Enterprises participating in the competition have to provide a documented and innovative product, service or technology which was introduced over the past five years. Furthermore, it is necessary for it to be implemented in daily business practice. The 'Innovative Young Scientist' category is dedicated to young scientists under the age of 39 years who obtained a doctoral degree in the last three years. In addition, they need to have addressed the subject of innovation in their Ph.D. dissertation. The competition promotes the modern practices of young scientists and enterprises from the Mazovian region. The main goal of the competition is to select young talents in the field of science and entrepreneurship and to promote innovative attitudes in the region. The competition recognises new innovative solutions in enterprises which influence the improvement of work as well as take care of human resources and the environment. In any event, the competition is also appreciated by scientists, whose Ph.D. dissertation is important for the development of science in Poland and in the world. The process of competition is as follows:

1. Selection of competition partners
2. Call for proposals
3. Search for experts and scientists
4. Assessment of applications (1 application evaluated by 2 reviewers)
5. Meeting of the reviewers
6. Organisation of the final conference

The main stakeholders are: companies, scientists and scientific experts.

Catalonia – 'Nuclis': International Cooperative Research Projects

The research and innovation strategy for the intelligent specialisation of Catalonia (RIS3CAT) adds to the EU 'Europe 2020' strategy for smart, sustainable and inclusive growth through Strategy 2020 (ECAT 2020). This giving coherence to investments in research and innovation and optimises the impact in terms of economic and social development. The RIS3CAT strategy prioritises the annual call for projects related to industrial research centres and experimental development. These actions must be structured on the basis of ERA-net initiatives, international bilateral agreements between ACCIÓ and other regions, countries or initiatives with a leading international character in which Catalan companies cooperate with other companies and international entities. Additionally, a scheme of collaboration between Catalan companies and partners from other territories has also been developed to carry out joint R & D projects without being linked to any agreement established between ACCIÓ and the agencies of these territories. The objective is to create international consortiums in order to carry out high-impact R & D business projects in any sector, and give rise to new products and services of high technological value or improve production processes.

These grants are co-financed with the ERDF and are aimed at encouraging the realisation of R & D projects carried out in Catalonia with a high impact on the territory and the companies. The projects must have a strong impact in terms of the internationalisation of results and technology. They must also enable companies to access international R & D calls and, in particular, the European Union's Horizon 2020 programme.

Asturias – Primas Proof of Concept

In March 2015, IDEPA and Oviedo University signed a collaboration agreement for the implementation of the 'Primas Proof of Concept' programme. Since then, three editions have been carried out, all of which have been respectively co-financed by ArcelorMittal, Industrias Lácteas Asturianas and the ThyssenKrupp Elevator Innovation Centre. In each edition, IDEPA invites the leading companies to co-finance proofs of concept proposed by researchers from the University of Oviedo. The 'Proof of Concept' consists of the validation of scientific ideas linked to Asturias RIS3' priorities in an industrial environment. The process begins with the signing of the adhesion protocol by the driving company and a public call to the researchers, who have 2 months to present their candidacy. The candidacies are defended in terms of a public act before the jury. The jury selects the candidacies based on criteria of scientific excellence, originality of the idea and its foreseeable impact in the market. The researchers are awarded €30,000 and have one year to carry out the validation tasks. In the end, they present their conclusions or results and a final report. Dissemination and advertising is an outstanding element of this good practice as the Primas not so much focus on the project, but on the analysis of the feasibility and the flow of knowledge that takes place between the researcher and the company. This befits an instrument which is based on open innovation.

(https://www.idepa.es/web/guest/innovacion/asturias-ris3/primas-proof-of-concept)

Partners presented possible actions for the regional action plan at the partner meeting in Brussels, 22 November 2018.

4.3 Action Plan Development

The first phase of the S3Chem project was solely dedicated to the exchange of experience among project partners. In order to transform the findings from interregional learning into actions, regional action plans were prepared at the end of the learning phase. The action plans provide details on how the lessons learnt from the cooperation will be implemented within the regions. They specify the nature of the actions, their timeframe, the stakeholders that are involved, the costs and funding sources. Each action included in an action plan was derived from lessons learnt from the project and in particular from the interregional exchange of experience. In addition, the project partners themselves decide how many actions they would like to implement in their regional action plans. From the lessons learnt and identified good practices, the following planned regional action plans were developed in order to improve regional innovation funding focused on chemistry and the bioeconomy.

When designing the action plans the project partners took the S3 platform into consideration. The S3 Platform aims to support European countries and regions as well as to design and implement their research and innovation strategies in the field of smart specialisation. In this context, the S3 Platform provides information, methodologies and expertise, and gives advice to national and regional policy makers. Moreover, the promotion of mutual learning, transnational cooperation and the contribution to academic debates concerning the concept of smart specialisation are part of the tasks of the S3 Platform. The S3 platform is basically divided into three subject areas: agri-food, energy and industrial modernisation. Those areas are further subdivided for specialisation. The 'chemistry' topic has been added to the area of industrial modernisation since 24 October 2018. The focus of this thematic partnership is on the chemical industry and its related industries. The main objective is to modernise the chemical industry into a sustainable, energy and resource-efficient sector that is both globally competitive and offers innovative solutions. The interregional cooperation in this area was established due to the long-term partnership within the framework of the European Chemical Regions Network (ECRN) and the INTERREG Europe project, S3Chem. In more detail, the 'chemistry' topic concentrates on new technologies, production methods, smart materials and business models that are focused on:

- Sustainable production based on renewable raw materials and clean energy (decarbonised fossil fuels and solar and wind energy) which contribute to the protection of the environment
- The reduction of greenhouse gases (mainly CO_2) and the consumption of energy and resources in chemical plants
- The promotion of new value chains and their integration across regional borders and across sectors e.g.: logistics, agriculture, forestry, energy, etc., so that regional specialisations are complemented
- Support for products close to the market, scale-ups, pilot and demo facilities

Apart from Saxony-Anhalt and Asturias, almost all S3Chem partners are already official partners of the S3 Chemistry Platform. Therefore, both regions implemented a joint action concerning the potential participation in this platform within their action plans. As such, international cooperation (both bilateral and multilateral) should be promoted in the long run. (http:/s3platform.jrc.ec.europa.eu/chemicals)

Scan QR Code and
directly to the website

Overview of planned regional actions

Region	Planned regional actions
Saxony-Anhalt	• Improving Funding Directive Research and Development • Implementing new Event Format „Future Dialogue" for Lead Market Chemistry/Bioeconomy • Participation in S3 Chemistry Platform – increase international cooperation (bilateral or multilateral) • Transparent Presentation and Communication of Innovation Projects Funded by ERDF
Limburg	• Improving final call for proposals with respect to biobased materials • Leading and actively participating in the S3 Chemical Platform • Further enhancing the cooperation between BMC and Fraunhofer IMWS towards regionals SME's
Lombardy	• Improvement of Regione Lombardia's RIS3 and the Eco-Industry (sustainable chemistry and bioeconomy) Work Programme, supporting the process of identifying, initiating and developing new projects • Enhancement of cooperation among Industry and Research awarding Lombard excellences
Wallonia	• Organising the involvement of various Walloon stakeholders in the S3 Chemistry Platform • Transparent presentation and communication of innovation projects funded by ERDF through a website and with organisation of thematic events • Undertaking a feasibility study of application and implementation process of ERDF projects through a centralised platform • Collaborate with the Coordination Department of the Structural Funds for the implementation of an evaluation of ERDF programming • Evaluate how to anchor the S3 within the ERDF programming, from the selection to the end of the projects • Establishment of a competent regional body responsible for the management of the smart specialization strategy
Mazovia	• Active participation in S3 Platform (generation of the new project ideas through stakeholders and network) • Strengthening cooperation between research and companies (Better use of research and the potential of research centres) • Increasing the role of the business environment institution accreditation system (MSODI project) • Transformation of chemical industry in circular economy (increased awareness among entrepreneurs) • Sectoral competence councils (Improvement of RIS implementation by enables entrepreneurs to influence educational services)
Catalonia	• Improving Interregional R&D Programme • Impulse circular and Bio-economy • Encourage Project Generation
Asturias	• To assess the viability of a new instrument: Circularity Hub, a place for demonstration industrial symbiosis initiatives • To improve the acceptance of industrial projects for the recovery of waste by society, and to agree on a model for the validation of R&D projects by stakeholders in order to support new technological responses to a societal challenge

Thanks to all project partners

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Mazovia.
heart of Poland

provincie limburg

Regione Lombardia

Gobierno del Principado de Asturias

IDEPA
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ACCIÓ

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