



PERCY

European Strategic Cluster Partnership for PolymER reCYcling

DELIVERABLE D4.2

JOINT INTERNATIONALISATION STRATEGY

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1. INTRODUCTION

This document offers a presentation of a Joint Internationalisation Strategy. This strategy combined with a strategic roadmap towards joint internationalisation serves as the final written outcome of the project: “International Cluster Cooperation for Recycling of Polymers - PERCY,” The Cosme Program, Strand 1 of the European Union.

2. BACKGROUND ASSESSMENT

The objective of the initial project was to ensure the European SMEs within the polymer industry access to new global value chains within recycling and eco-design in various industrial sectors and to enable them to take a leading global position in this field.

The consortium would meet this objective by an intensified cluster and network collaboration across borders in Europe, where a joint internationalization strategy towards countries outside Europe should be developed.

The project activities related to fulfillment of the objective were initiated on 1 September 2020 and ended on 21 October 2022.

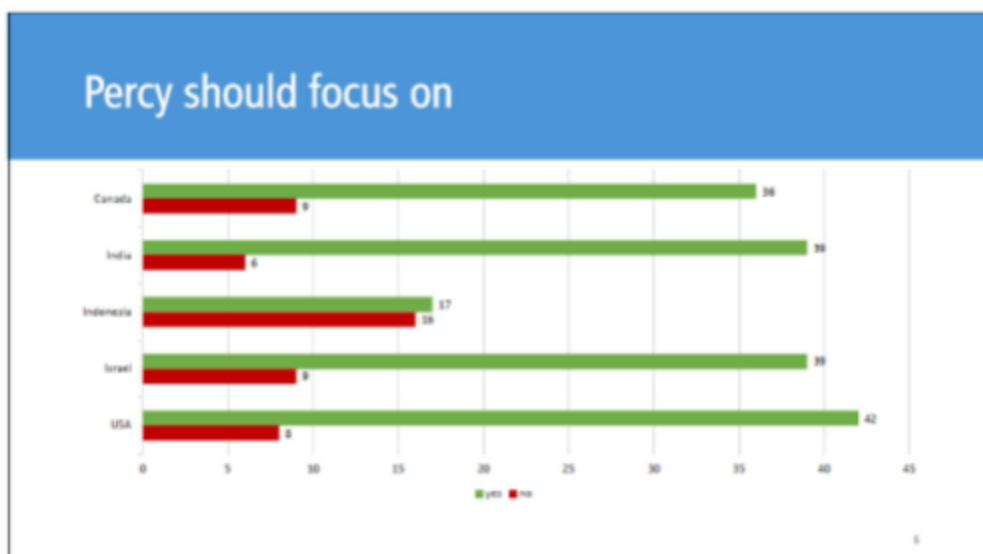
During the project period desktop analyses, focus group discussions, online surveys, and workshops were conducted. Relevant reports covering the consolidated results of the tasks were published.

Potential clusters and networks in target countries were identified and missions were planned and conducted. MoUs were signed, SWOT analyses were performed, and a concluding partner workshop was held.

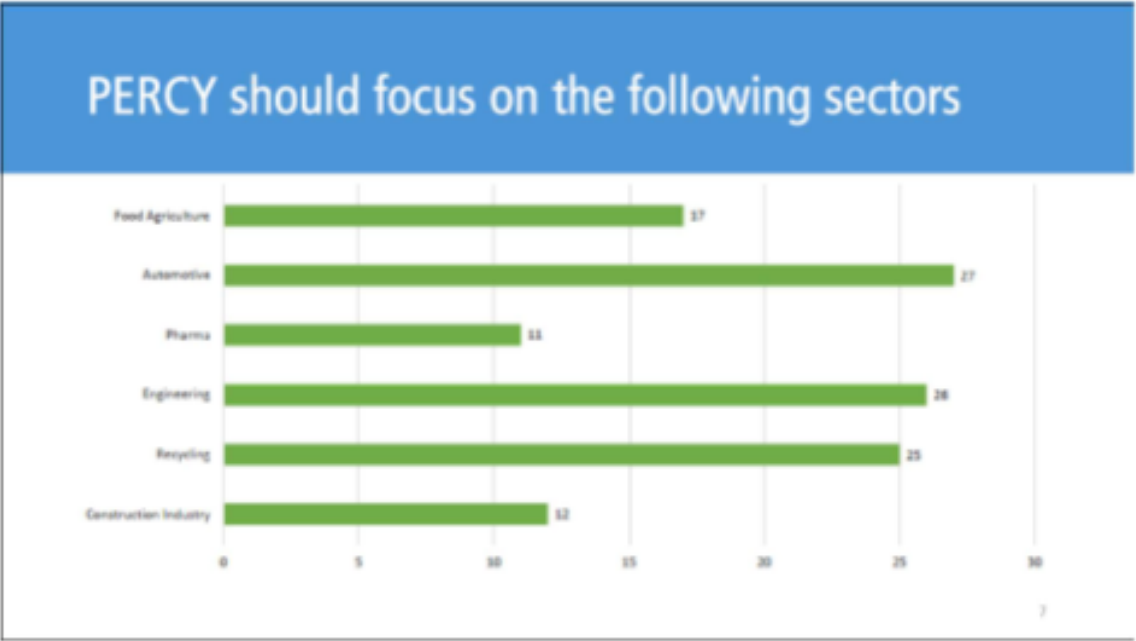
A short description of the performed work is given below:

2.1 Market Survey on SME needs

Based on an online survey and individual workshops, it was indicated, that the selected geographic target markets should be: Canada, India, Indonesia, Israel, and Canada. Please see the table below.



After the discussions regarding the geographic target markets, the participants were asked about their sector preferences.



The results of the workshops show that the companies participating in the workshops would like to see a focus on the following industries: Automotive, Engineering, and Recycling.

2.2 Market survey on the target markets

In order to match the determined needs of the SMEs with opportunities in the target countries a desk study market survey was prepared.

The market survey covering the target countries provides comprehensive information on the sectors rated most highly by the companies.

On behalf of the market survey on the target markets, it can be concluded that these markets all hold enormous growth potentials for European companies.

2.3 Clusters Mutual assessment

The results of the surveys and workshops were presented in the form of an online meeting of the PERCY consortium. The meeting aimed to reach a joint decision (mutual assessment) regarding future priorities.

In consideration of the clear results from the surveys and discussions with the companies, it was agreed unanimously to no longer focus on Indonesia. This means that for further work in the project focus would be on Canada, India, Israel, and the USA.

For the sectors, the goal was to reduce the target sectors to 2 markets. Here the decision could not be made so clear. The results from the surveys were very complex and had to be considered in this respect.

The following issues had to be taken into account:

- It was apparent from the results that many of the companies operate on a multisectoral basis and are by no means committed to specific industries.

- 40% of the companies surveyed do not see any need for further diversification but would like to open up new markets in their traditional sectors.

In the process of the discussion, it became clear that the reduction to 2 sectors would also cut off the possibility of contacts to relevant clusters and business networks in the target countries.

Thus, it may not be possible to meet the multisectoral requirements of the companies. For this reason, the consortium decided to look at the 6 sectors most highly ranked by the companies.

This means that for further work attention was initially paid to the following sectors:

- Food industry/Agriculture
- Automotive
- Pharma
- Engineering
- Recycling/ Renewable energy
- Construction

2.4 Missions are undertaken and MoUs signed

In order to optimize resources, the work with the missions and the MoUs were divided among the cluster partners, so that each consortium partner focused on one country. All partners assisted the other partners in their actions.

Based on the conducted market surveys local contacts were sought through local experts and contacted. It was not an easy task to establish these contacts.

In the beginning, many meetings were performed online and the missions were planned in detail with the involved international clusters.

In total, four partnership missions beyond Europe were completed during April – August 2022. Each partner participated in at least two partnership missions.

All missions, but one, were carried out as planned. Only the mission to Israel was performed virtually due to an increased risk of terrorism.

One of the objectives of the PERCY project was to build new relations and partnerships with foreign clusters in the 4 target countries identified (Canada, India, Israel, and the USA).

These partnerships were formalized by the signature of the Memorandum of Understandings, MoUs.

During the missions numerous MoUs were signed:

- 6 with India
- 3 with Canada
- 1 with the US
- 1 with Israel

India: All India Plastics Manufacturers Association, Auto Cluster Development, and Research Institute Chinchwad, Indian Plastics Institute, Material Recycling Association of India, MSME Chamber of Commerce and Industry of India, Pimpri Chinchwad Plastics Association

Canada: PRIMA (innovation and research cluster on advanced materials), Alliance Polymères Québec, La Vallée des Elastomères (Sherbrooke)

USA: Greater Akron Chamber of the USA

Israel: TechMatch Israel

In other words, a platform for continued international collaboration was established.

2.5 SWOT analyses and syntheses

SWOT analyses were performed on the plastic industry in PERCY project partner countries and on the involved clusters:

SWOT analysis of the plastic industry in Denmark – including Plast Center Danmark analysis

SWOT analysis of the plastic industry in The Slovak Republic - Including SPK analysis

SWOT Analysis of the plastic industry in France - Including Polymeris analysis

SWOT Analysis of The Plastic Industry in Germany- Including Kunststoffdialog Analysis

To get a better overview of the SWOT analyses of the plastic industry in Percy project partner countries and the involved clusters, a synthesis of the findings is offered in the table below.

SYNTHESIS OF SWOT ANALYSIS OF THE PLASTIC INDUSTRY IN PROJECT PARTNER COUNTRIES – INCLUDING THE CLUSTERS AND FOCUSED ON RECYCLING AND ECO-DESIGN

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> - Each partner cluster has expert level knowledge of polymers and recycling of polymers. - Close connections with the members due to a high level of knowledge regarding polymers, project management, and administration. - Each partner cluster is involved in many European and international projects increasing experience and interest from the members to participate. Also, clusters build bridges between industry and universities. - through project collaborations and promote innovation. - Strong plastic and rubber industry presence in each partner country. - Automation and robotization play a dominant role in the rubber and plastic industry. - The rubber and plastic industry are targeted high-end products because of the top technologies and modern forms of work organization. - The workforce is highly trained and educated. - The plastic industry is very dedicated to the recycling of plastics and many initiatives are set up to replace the use of virgin plastic with recycled plastic and to reduce the amount of plastic waste through eco-design. - Very innovative plastic recycling industry dealing with mechanical as well as chemical recycling. - Many new initiatives have been started due to public funding possibilities targeted plastic recycling initiatives. 	<ul style="list-style-type: none"> - An industry with many SMEs who struggle to stay in business. They seem to have low margins. - Plastic and rubber industrials struggle to cope with the fast evolution of regulation in terms of chemical substances, requirements for waste reduction and recyclability. - SMEs often lack time and funding support to develop new innovative projects - Lack of willingness to cooperate with other companies in innovative projects. - Reluctant to build up new business relations abroad. Many enterprises in the plastic industry see themselves as sub suppliers with no need to work abroad. - Limited cooperation between science and research and the private enterprises in the plastic industry. - The enterprises in the plastic industry are unlikely to apply for public funding of projects, for which reason the work is usually done by universities and RTOs. - Many barriers still to be overcome in order to use more recycled plastic as raw material: (price and quality) - Some polymers are still technically difficult to recycle. - The management of plastic waste has not yet been standardized. - Dependence on publicly funded projects.

<ul style="list-style-type: none"> - Academia is involved in funded recycling projects, and a lot of research goes on at the university level. 	
<p>OPPORTUNITIES</p>	<p>THREATS</p>
<ul style="list-style-type: none"> - In each partner country, research and innovation within the field of plastic recycling is a priority in national and regional policies. - Great recycling market potential, in all partners countries recycling networks are being set-up - All partners countries are moving towards a landfill ban on recyclable plastic waste - The increasing cost of energy and of fossil-based fuels motivates the governments involved to increase their emphasis on recycling of plastic. - Good funding opportunities regarding plastic recycling projects both nationally and internationally. - Society's awareness, especially in Europe, of the environmental impact of plastic waste. - An increased willingness to pay extra for items made of recycled material, using recycled material can be a selling point for plastic's industrials - The industrials in the plastic sector tend to adopt the more circular economy model - Recycling is an alternative to the substitution of plastics for other materials. - Cross-Industry cooperation. - New funding possibilities to be applied (2023/2024) 	<ul style="list-style-type: none"> - Polymer sector and industry regularly accused of having a negative impact on the environment. Overall negative attitude towards the use of plastic. - Substitution of plastic with other materials. - Shortage of raw materials due to the geopolitical framework - The multi-material solution is often chosen to substitute plastic - Uncertainty of the implication of the national governments for the next few years. - Low financial resources from EU funds.

SWOT analysis of the plastic Industry in strategic third countries was performed:

SWOT analysis of the plastic industry in India - including cluster analysis

SWOT analysis of the plastic industry in Israel

SWOT analysis of the plastic industry in Canada

SWOT analysis of the plastic industry in the United States of America

To get a better overview of the SWOT analyses of the plastic industry in strategic third countries a synthesis of the findings is offered in the table below.

SYNTHESIS OF THE SWOT ANALYSES OF THE PLASTIC INDUSTRY IN STRATEGIC TARGET COUNTRIES

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> - Academia is involved in funded recycling projects, and research goes on at the university level. - The plastic industry is very dedicated to the recycling of plastics and many initiatives are set up to replace the use of virgin plastic with recycled plastics. - Strong industry presence and plastic manufacturing base. - The public is getting more aware of the importance of recycling and the use of recyclable materials. - The increasing cost of energy and of fossil-based fuels due to the geopolitical situation motivates enterprises to increase emphasis on recycling of plastic – chemical as well as mechanical recycling. - Increasing experience with international projects and increasing interest from the members. - Triple-helix cooperation through systems. The triple helix model of innovation refers to a set of interactions between academia (the university), industry, and government, to foster economic and social development. - Ensures involvement of stakeholders (relevant ministries, intermediaries, RTOs, clusters etc.) in development and implementation of strategies and funding programs. 	<ul style="list-style-type: none"> - Very low recycling rate. - Separation of waste is not standardized and common. - No standardized legal situation concerning recycling. - Awareness of the need for recycling not established in the population. - Many barriers still to be overcome in order to use more recycled plastic as raw material: (price and quality). - High capital requirements. - Some polymers still technically difficult to recycle

OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> - The trend towards sustainable development, which allows for a reduction in environmental impact that can be translated into sound waste management. - Growing weight of clusters in policymaking and knowledge funnelling. - Network activities targeted the European plastic industry. Great opportunities for European companies to sell machines for recycling applications. - Acceleration of the digital shift. - Implementing initiatives in line with the principles of sustainable development and the circular economy - Cross-industry cooperation in the plastics sector possible - An increased willingness to pay extra for items made of recycled material, using recycled material can be a selling point for plastic's industrials. - The industrials in the plastic sector tend to adopt a more circular economy model. - Recycling is an alternative to the substitution of plastics by other materials. 	<ul style="list-style-type: none"> - The polymer sector and industry are regularly accused of having a negative impact on the environment. General negative attitude towards the use of plastics. - Replacement of plastic with other materials. - Multi-material solution is often chosen to replace plastic. - Polymer sector and industry are regularly accused of having a negative impact on the environment. Overall negative attitude towards use of plastic. - Substitution of plastic with other materials. - The multi-material solution is often chosen to substitute plastic. - Increasing regulations in terms of requirements for recyclability, waste reduction and prevention, design for disassembly etc. - General negative developments such as recession, shortage of raw materials. - Shortage of skilled workers.

During the work with the syntheses, it became evident that the focus of future work must be narrowed down to dealing only with the recycling of plastic materials with an emphasis on mechanical and chemical recycling of plastic materials.

2.6 Concluding Partner Workshop

To wrap up and draw revised conclusions of the desk and field research activities a final Partner Workshop was held on 21 October 2022 in Düsseldorf.

During the Partner Workshop, the continuation of the PERCY collaboration was discussed, modified, and specified in many aspects. Moreover, a strategy-building session went on, where the outcome is presented in the next chapters.

3. PURPOSE AND STRATEGIC OBJECTIVES

The purpose of a continued collaboration of the four clusters: DMN/PCD (Denmark), Polymeris (France), SPK (Slovakia), and WFG (Germany) is as follows:

The continued cooperation is focused on the use of plastics in general and on the recycling of plastics in various industrial sectors.

The consortium partners have come together to explore how an intensified cluster and business network collaboration across borders can meet these challenges and exploit the international business opportunities related to the topic.

The strategic objective of the partnership is to facilitate a continued collaboration with international partners based on the methodology built during the project work in this initial PERCY project.

4. STRATEGY

In this chapter, a strategy defines the direction of how the objectives set regarding the continued PERCY collaboration will be achieved.

4.1. Different fields of competencies and complementarities

An optimum consortium partnership must contain partners with relevant complementary competencies. Moreover, an interest and willingness to share knowledge among partners is important.

In the PERCY consortium partnership, all consortium partners are involved in polymers, leading and bringing services to a network of enterprises, mostly SMEs. They are all involved in European projects and international development of their members.

These are:

PCD: Works to strengthen the competitiveness and earnings of the Danish industry through the innovative use of materials and materials technologies. This is achieved through networking, matchmaking and innovation activities primarily through the innovation network Danish Materials Network, directly involved in technical development and research projects, training of employees in the plastic industry, and consultancy work regarding plastics and recycling of plastics. Board members are mainly business leaders in private businesses. However, one board member represents local business intelligence and another represents education.

The strategy of PCD is to enhance the green transition of material use with special focus on recycling of polymers and eco design.

Polymeris: Recognized by French authorities as a Competitiveness Cluster and having a Gold label of the European Cluster Excellence Initiative. Polymeris is involved in Innovation, influences through policies, and helps SMEs to meet universities and research centers to build R&D projects. The cluster is not directly involved in research projects but supports projects.

The strategic focus of Polymeris for years and for the next 4 years of the French Competitiveness clusters policy are Industry of the future

and Circular Economy. French public authorities (national, regional and local levels) and Polymeris and its members are particularly involved on the promotion of recycling of polymers and a lot of actions and projects are labelled, followed and pushed by Polymeris. For example, the cluster organized 2 technical meetings during the past 2 years on the subject, promoted at least 10 projects and is involved in different national work groups (one on the Chemical recycling of Polymers) and follows the subject at European and international levels. Polymeris is also involved on the POLREC Eurocluster project from the Single Market Programme, as well dedicated to polymer recycling under a cascade funding system.

SPK: In more than 13 years, SPK has become a partner representing primarily SMEs at the level of a central state administration body. Focusing on the training of workers in the plastic industry, Innovation projects, R&D, and becoming a certification body of biodegradable polymers. SPK holds a Silver Label of the European Cluster Excellence Initiative.

The strategic focus of SPK, in addition to chemical and mechanical recycling, is to include also biological recycling as SPK will deal with biodegradability in the upcoming years. Besides mentioned, also textile recycling will be in our scope (which is done by mechanical recycling) as well as chemical recycling (being a small country, Slovakia has only 1 plant dealing with chemical recycling) in the near future.

SPK will also support the activities of the newly established Association for Packaging Recycling, which brings together manufacturers of packaging not only based on plastic and recycled plastics (rPET) but also glass and cardboard. In cooperation with the aforementioned association, SPK will cooperate with 3 key producers of rPET in the established backup system in the Slovak Republic.

WFG: WFG is an economic development agency that transformed itself into a cluster organization. Starting with three distinct cluster initiatives AutomotiveDIALOG (Automotive), KunststoffDIALOG (Polymers), MetallDIALOG (Metal processing) those are being merged into a new TransformotiveDIALOG. This new cluster initiative will focus on the automotive sector and production in general, their suppliers of machinery and parts and their service providers. On the suppliers' side metal processing and polymers remain by large the dominant sectors. WFG acts as main networking node for its small and mediumsized members and the regional universities and research institutions.

WFG has great experience in managing relations with foreign cluster organizations and other intermediaries. WFG holds a Bronze Label of the European Cluster Excellence Initiative for its KunststoffDIALOG and MetallDIALOG and is currently starting the auditing process to receive the silver label for the TransformotiveDIALOG.

WFG's board is broader than might be expected as companies from the aforementioned sectors, banks, municipalities and politicians. This

ensures that WFG’s know-how and experience is heard when it comes to defining economic development strategies at NUTS 2 level such as the S3 Strategy of Baden-Württemberg, and the strategic position of the TransformativDIALOG is adjusted to match the regional strategies whenever appropriate.

One of the dominant federal strategies is to overcome the transformation processes in the automotive industry and the production sector as a whole. The TransformativDIALOG receives substantial funding to support companies in their transformation efforts. This includes mainly the metal and polymer processing companies. The automotive industry is undergoing profound changes towards green products and processes. This trend is especially noticeable in the polymer processing industry. TransformativDIALOG is currently starting a process to build new value chains within the circular (bio)economy including established companies, startups and the world of academia.

Competences of the consortium:

(1) Managing Networks, (2) Used to work at European level (3) Used to work at International level, (4) Business and economic development, (5) Business Intelligence, (6) Support of R&D projects, (7) Training, (8) Consultancy work, (9) Great knowledge of polymers and (10) Great knowledge polymer recycling

The PERCY Consortium Competences										
Competences	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Cluster										
PCD/DMN	x	x	x		x	x	x	x	x	x
POLYMERIS	x	x	x	x	x	x		x	x	x
SPK	x	x	x	x		x	x	x	x	x
WFG	x	x	x	x	x			x	x	

The competencies of the consortium partners are clearly additional and complementary. During the project, all partners have been willing to share knowledge and cooperate. Therefore, this partnership is seen as strong and with a good partner match.

4.2 Background information about previous international activities

To verify sufficient experience with international activities background information is provided. This information is about previous international activities and cross-sectorial cooperation activities of each Partnership member and between them.

PCD/DMN:

Innovation Express – Focus on the medical device industry in Ireland. 01.01.2015-31.12.2015.

Innovation Express – Focus on the thermoset industry in Lithuania. Collaboration with the Lithuanian plastic cluster. 01.01.2015 – 31.12.2015.

Innovation Express – SUSFOOTECH a promotion of Danish equipment manufacturers for the food process industry in Germany. 01.01.2015 – 31.12.2015.

Innovation Express – Focus on packaging & process equipment in Catalonia. 01.01.2016 – 31.12.2016.

Innovation Express – Focus on Cross Sectorial Cooperation with Lithuanian Industries. 01.01.2017 – 30.06.2018.

Innovation Express – Materials Excellence Cooperation with German cluster WFG on the project MaTex. 01.01.2018 – 30.06.2019.

Innovation Express – Sustainable materials for marine purposes for the Danish and Norwegian plastics and metal industries. 01.01.2018 – 30.06.2019.

P2L2 EU financed project in cooperation with the Ministry of Higher Education and Science regarding cooperation between European clusters – the aviation industry was involved. 01.04.2016 - 31.03.2020.

Horizon 2020 Net assisting Danish SMEs in applying for EU funding. 01.01.2016 – 31.12.2018.

Polymeris:

WIINTECH: promoted the internationalization of European cluster and developed world-class cluster practices. European Cluster Excellence Initiative, 2012 – 2014.

MATERIALIX: Strengthen cluster management excellence along the industrial new materials value-chains. Cluster Excellence Programme under COSME Programme 2016-2018.

ELCA: project focusing on internationalisation strategy for lightweight materials applications in transport in mobility sectors. Targeted countries: USA, Japan, Middle-East and India. COSME Go International 2020-2022.

SPK:

COS-CLUSTER-2018-03-02 Extratex - European TEXTile-TRANsport-Sustainability paradigm for industrial clusters EXcellence in cross-sector innovation 02/2020 - 02/2022 – EXTENDED TO 11/2022

Epic - Educational Package for SMEs to Increase their Innovation capabilities and productivity Project number:2020-1-HU01-K202-078669, 10/2020 - 09/2022.

WFG:

Innovation Express – Materials Excellence Cooperation with Danish cluster DMN on the project MATEX 01/2018 - 06/2019.

EVOLUTE - wE striVe fOr cLUStEr Excellence in the Automotive and Land Machine Industry. European Cluster Excellence Programme with ClusterXchange scheme connecting ecosystems and cities. 03/2022.

The above information is about previous projects is provided to emphasize that all partners participating in the consortium are very experienced in working with international projects and can provide important input to future international collaborations regarding plastic recycling.

Also, to be mentioned all partners are involved in additional international projects running at the moment, such as POLREC, AMULET and REGIOPLAST 2030. WFG submitted an application for an Interreg project "INNOVATION EXPRESS FOR CIRCULAR BIOECONOMY VALUE CHAINS - INNOBIOVC" with 4 other partners.

4.3 Expected advantages

The expected advantages of a continued collaboration are that the consortium partners will be stronger internationally if they come as Europe with a pooled member base and not as individual clusters of four countries.

Moreover, there will be the following advantages will be obtained for the individual clusters:

- More offers for members
- International relations
- More convincing and more attractive to the members
- Good inter-cluster relations
- Facilitate technology transfer through specific projects

4.4 The selected targeted third countries

Based on an online survey and individual workshops on SME needs, it was indicated, that the target geographic markets should be: Canada, India, Israel, and the USA.

During the work with the missions, the SWOT analyses, and the final partner workshop it was concluded, that the third countries initially targeted, are still the right ones.

For future work all four countries remain targeted:

- Canada due to many opportunities
- Israel due to the height of innovation
- India is evolving – the new China – with a lot of cultural learning, investing in the future
- USA due to many opportunities

Moreover, all consortium partners have an interest in working with additional relevant third countries and in further involvement in future international projects.

4.5 The cooperation interest in terms of sectors

Based on the results of surveys, workshops, and a mutual assessment regarding future priorities further work attention was initially paid to the following sectors:

- Food industry/Agriculture
- Automotive
- Pharma
- Engineering
- Recycling/ Renewable energy
- Construction

Based on the experiences from the missions, the SWOT syntheses, and the Partner Works Shop these target sectors have been narrowed down to:

- Canada: Chemical recycling, transportation including snow scooters
- India: Chemical and mechanical recycling of plastics
- Israel: Chemical and mechanical recycling of plastics
– Israel is not very good at recycling
- USA: Chemical and mechanical recycling of plastics and automotive

4.6 The potential international cooperation partners

Based on previous contacts and the signed 11 MoUs further relations to the clusters will be developed. Based on the discussion on the Partner Workshop the following clusters will be addressed for further collaboration:

- Canada:
- PRIMA (innovation and research cluster on advanced materials)
MoU signed
 - Alliance Polymères Québec
MoU signed
 - La Vallée des Elastomères in Sherbrooke
MoU signed
- India:
- All India Plastics Manufacturers Association, AIPMA
MoU signed
 - Indian Plastics Institute
MoU signed
- Israel:
- Techmatch Israel
MoU signed
- USA:
- Israel Innovation Authority
 - Greater Akron Chamber of the USA
MoU signed
 - Pennsylvania Department of Community & Economic Development

Moreover, the consortium partners will build and/or maintain relations with specific SMEs on a cluster basis.

4.7 Expected mutual added value and interest

Among the consortium partners, there is a clear mutual interest in developing further contact with the targeted third countries.

Contacts have been established and clusters have met. Results will come later if relevant activities for the involved consortium partners as well as their members are initiated. The same applies to the clusters in the targeted third countries.

To increase awareness the continued PERCY activities must be extended toward cluster members in all clusters involved.

To ensure member involvement MoUs of targeted clusters may have to be revised to address this important issue.

SPK, being the leader of the dissemination package, has organized a seminar with the title “Trends in the plastic industry” (November 2022) with a presentation of the PERCY project. This presentation as well as a leaflet will be shared with all project partners (in English).

4.8 The expected economic impact

The expected economic impact for Europe and the Partnership SME members in terms of growth, new jobs, and increased investment is almost unlimited, as the planned collaboration has a perfect match with a vast majority of the European initiatives to turn the plastic industry into a sustainable and circular business.

A short description of these important initiatives is offered below:

The EU Green Deal

A roadmap to sustainable economies with an investment plan of at least € 1 trillion.

One area of this roadmap embraces the EU action plan for the Circular Economy (CEAP) II. This action plan focuses on resource-intensive sectors where the potential for circularity is high. Aiming to keep resources in economic cycles as long as possible, the plan addresses key product value chains: Electronics and ICT, batteries and vehicles, packaging, plastics, textiles, and food.

The EU plastics strategy

Almost 26 million tons of plastic waste are generated in Europe every year. Around 80% of marine litter is plastic. 87% of Europeans are worried about the impact of plastic products on the environment.



This strategy aims to transform the way plastic products are designed, produced, used, and recycled in the EU.

EU policy on plastics aims to protect the environment and human health by reducing marine litter, greenhouse gas emissions, and our dependence on imported fossil fuels. The EU also aims to:

- Transform the way plastic products are designed, produced, used, and recycled in the EU
- Make a transition to a sustainable plastics economy
- Support more sustainable and safer consumption and production patterns for plastics
- Create new opportunities for innovation, competitiveness, and jobs
- Spur change and set an example at the global level

EU adopted the European strategy for plastics in January 2018. It is part of the EU's circular economy action plan and builds on existing measures to reduce plastic waste. The plastics strategy is a key element of Europe's transition towards a carbon-neutral and circular economy. It will contribute to reaching the 2030 Sustainable Development Goals, the Paris Climate Agreement objectives, and the EU's industrial policy objectives.

The Packaging and Packaging Waste Directive

On 30 November 2022, the Commission proposed to revise the Packaging and Packaging Waste Directive. This review contributes to reaching the objective of the European Green Deal and the new circular economy action plan to ensure that "all packaging on the EU market is reusable or recyclable in an economically viable way by 2030". It will also contribute to the commitment of the 2018 Plastics Strategy to ensure that by 2030 all plastics packaging placed on the market can be reused or recycled in a cost-effective manner".

This revision aims to:

- Prevent the generation of packaging waste, reducing it in quantity, and promoting reuse and refill
- Ensure that all packaging on the EU market will be recyclable in an economically viable way by 2030
- Increase the use of recycled plastics in packaging, thus enabling more high-quality ("closed loop") recycling and substituting virgin materials

The key measures to bring about change on the ground include:

- Targets for packaging waste reduction at the Member State level, and mandatory reuse targets for economic operators for selected packaging groups
- Restricting over-packaging and certain forms of unnecessary packaging, and supporting reuse and refill systems
- Establishing criteria for design for recycling to be applied to all packaging
- Minimum inclusion rates for recycled content in plastic packaging
- Mandatory deposit return systems for plastic bottles and aluminum cans
- Harmonized labelling of packaging and waste bins to facilitate correct consumer disposal of packaging waste

SUSCHEM

SusChem is the European Technology Platform for Sustainable Chemistry. It is a forum that brings together industry, academia, policy makers and the wider society.

SusChem's vision is for a competitive and innovative Europe, where sustainable chemistry and biotechnology together provide solutions for future generations. SusChem's mission is to initiate and inspire European chemical and biochemical innovation to respond effectively to societal's challenges by providing sustainable solutions.

To sum up - recycling is a vital element in creating a closed loop for sustainable plastics. Improvements in collection and sorting, coupled with new ways to recycle complex plastics, help to retain the value of plastic through its lifecycle. And with targets defined by the European Union for mandatory recycled content, innovation and investments are key elements in finding better ways to reduce waste and improve recycling efficiency every step of the way.

Consequently, the companies in the planned partnership main-streaming sustainability in their industrial processes will benefit heavily from the planned activities and get the opportunity to conduct business with other European countries but will also obtain competitive advantages in other international markets due to the perfect match with the many additional European initiatives.

4.9 Benchmarking information on existing international cooperation activities

Benchmarking information on existing international cooperation initiatives directed at similar target countries and thematic areas.

Intercluster projects to develop a common strategy and roadmap for internationalization of European SMEs in the energy and environment sector have been identified:

Name of project	Objective	No. of partners	Partner Countries	Target Countries	Duration
eT4S	The mission of the SmartCityTech partnership is to facilitate global cooperation between city stakeholders aiming at the development and realization of innovative value models for urban areas enabled by smart systems.	5	- Spain - Poland - Bulgaria - Denmark - Belgium	Canada China Singapore USA Taiwan	01/10/2020 31/12/2022
ELBE +	The main goal of ELBE Alliance is to support and reinforce internationalisation of European SMEs and other relevant stakeholders in selected Blue Energy markets in North America (US, Canada) and Asia (Japan, Korea, Taiwan) , while also identifying new potential markets for upcoming activities.	6	- UK - Belgium - France - Spain - Denmark - Sweden	Canada Japan South Korea Taiwan USA	01/09/2020 01/09/2022

COSMEN ERG-4i	The COSMENERG-4i partnership is committed to foster international networking & collaboration in the emerging industries of eco-, bio-energy, renewable energy, and environmental technologies to enhance the technological transfer from environmentally destructive business processes to a green economy at European level and beyond.	5	- Romania - Hungary - Serbia - Germany - Poland	- Indonesia - Israel - Jordan - Malaysia - Qatar - Singapore - UAE - Vietnam	15/01/2018 15/01/2020
EUT	The main objective of the EU Techbridge project is to implement the joint internationalization strategy the 5 involved partners have developed to help SMEs fully utilize the rising demand for sustainable energy and water-smart technologies in the USA and Canada .	5	- Denmark - Spain - Italy - Netherlands - Sweden	- Canada - USA	01/09/2020 - 01/09/2022

These COSME EU projects have targeted 14 countries, with the United States, Canada, and Singapore being the most popular. The international innovation partnerships that were built through these projects, worked to make international supply and value chains more resilient, adapting to recent changes in consumer demand. As a result, cooperation agreements were signed in each project: 6 for the eT4S project, 5 for the ELBE + project and 15 for the COSMENERG-4i project.

Different activities generated by EU funding have been implemented for this purpose, such as the participation in international business forums/conferences/fairs organized in the target industry, exploratory missions covering all the targeted countries and webinars with selected stakeholders.

However, in some projects, such as the EU's Techbridge project, the strategy was focused on matchmaking and business-to-business events rather than exploratory missions. They created the SOLVED platform for cooperation opportunities. Through this platform, users can select the opportunities they are most interested in and sign up for discussion groups to request one-on-one meetings with other SMEs operating in the same field.

The eT4S project also organized events in the EU such as webinars and matchmaking missions to target markets to prepare companies for internationalisation. The project followed up on business agreements and, in total, the eT4S project supported about 160 individual matchmakings and organized at least 16 events. 75 companies have benefited and have worked to increase turnover and employment by 5%, according to the companies involved.

The strategy of the ELBE+ project was to organize networking events or direct missions to the target countries with European companies and organizations to participate in international events and B2B meetings, to visit targeted infrastructures or orga-

nizations and to organize meetings with key market players in the target countries. These activities have improved the performance of participating SMEs.

In addition, one of the strategies of the COSMENERG-4i partnership was to evolve the project results into additional international joint projects. Thus, 100 business projects were developed, including 20 cross-border R&D&I SME projects, 80 others: Trade, investment, technology/know-how transfer.

The objectives of the PERCY project were at a very limited budget to ensure the European SMEs within the polymer industry access to new global value chains within recycling and eco-design in various industrial sectors and to enable them to take a leading global position in this field.

The consortium met this objective by an intensified cluster and network collaboration across borders in Europe, where a joint internationalization strategy towards countries outside Europe was developed.

These objectives were met in terms of:

- 11 MoUs signed
- 4 missions outside Europe
- Continued cooperation with 9 clusters
- Continued cooperation with 8 companies in target countries
- 9 revisits in Europe by targeted clusters and companies
- 1 international development project between Danish and Indian partners (funding 1.4 million Euros)

It is not possible to benchmark the PERCY project directly against the identified inter-cluster projects listed above, but it can be concluded that all objectives were met, and a great amount of value was created to the benefit of the clusters and companies involved. More can be done, for which reason the partners decided to go on collaborating in the next years.

4.10 A joint branding and marketing strategy statement

In the very early stages of the PERCY project, a dissemination and communication strategy was built.

During the partner workshop the existing strategy was discussed, and the following branding and marketing statements were made:

- The previous plan must be updated and revised to become more strategic.
- The partnership must continue, but we go with a gentlemanly agreement of keeping in touch on a regular basis, with at least two meetings every year (one online and one physical meeting) during the next 2 years, the physical meeting being organized in each of the partners countries.
- An already existing platform such as SUSCHEM may be used.
- The PERCY logo will be updated to a version telling more of the purpose of the partnership:

PERCY – Polymer Recycling Partnership

1. draft of the new logo:



5. CONCLUDING NOTES

The outcome of the strategic work is a methodology of how to set up future international cluster collaboration with the involvement of relevant SMEs.

This strategy is, as mentioned in the introduction, followed by a strategic roadmap towards joint internationalisation. The strategic roadmap is to be seen as a tool that helps visualize our strategic plan.

The strategic roadmap captures activities to be completed within a timeframe of two years and communicates upcoming work in one view.

The roadmap is built based on the activities and methodology from the PERCY project:

1. Awareness: Raising interest and awareness towards the European SMEs from the recycling sectors of the opportunities and technologies in markets outside Europe, collecting the wishes and ambitions of these companies towards these countries and sharing information on the PERCY project activities.
2. Internationalisation strategy: With the organization of the international missions, and with the MoU signed and relationships created, the PERCY partnership managed to create a long-term relationship with clusters, agencies and other organisations outside Europe and in the targeted countries. This will also lead to further activities, based on each partner budget, but towards the internationalisation of SMEs.
3. Further activities for PERCY partners: Throughout the project, the PERCY partners confirmed their willingness to keep the partnership and network working and visible at European level.

In the coming years, the partners will meet frequently – 1 time online and 1 physical meeting. They will continue to share updates on their activities towards international markets and innovative recycling technology. Intelligence and scouting will be made to look for new funding opportunities to further develop the PERCY actions and keep the support to the SMEs through the internationalisation strategy.