INTERREG BALTIC SEA REGION 2014–2020
FINAL PROGRAMME EVALUATION

FINAL EVALUATION REPORT

Annex 4 – Case studies

December 2022

CONTENTS

INTRODUCTION

The final evaluation of the Interreg BSR 2014–2020 Programme was carried out and case studies were part of the evaluation. This document, Annex 4 Case studies, supplements the final evaluation report. The case studies were used for ensuring a detailed understanding of how projects achieved their goals and to provide insights about the implementation mechanisms that delivered the observed impact. The case studies were used to analyse the detailed and circumstantiated impacts of the programme and to understand the nature of the processes producing impacts. Case studies helped to identify unintended effects, good practices or lessons learned. Information for case studies was gathered from desk research, from projects' websites and from the interviews with project partners. The methodology is discussed more thoroughly in Annex 1 (Methodology report) of the Final Evaluation Report.

Total of 15 projects were analysed in depth (Table 1), two of which were under Priority 1 "Capacity for innovation", nine were under Priority 2 "Efficient management of natural resources" and four were under Priority 3 "Sustainable transport". Project types were as follows: six regular projects (R), four extension stage projects (X) and five project platforms (C). Eight different countries were represented as lead beneficiaries.

TABLE 1: EVALUATED CASE STUDIES

NO	PROJECT ACRONYM	PROJECT NO.	SPECIFIC OBJECTIVE	LEAD BENEFICIARY COUNTRY
1	Baltic Sea Food	#R047	1.3	Estonia
2	BIC	#R048	1.3	Denmark
3	BSR WATER	#C001	2.1	Finland
4	CWPharma 2	#X017	2.1	Denmark
5	NonHazCity	#R010	2.1	Sweden
6	SuMaNu	#C002	2.1	Finland
7	Energize Co2mmunity	#X018	2.2	Germany
8	CAMS Platform	#C008	2.3	Estonia
9	LowTEMP	#R063	2.3	Poland
10	Baltic LINes	#R020	2.4	Germany
11	Blue Platform	#C003	2.4	Finland
12	CSHIPP	#C006	3.4	Finland
13	Go LNG	#R035	3.4	Lithuania
14	Sohjoa Last Mile	#X025	3.5	Finland
15	SUMBA+	#X024	3.5	Sweden

Source: Interreg Baltic Sea Region 2014-2020 Final Evaluation Inception Report, 2022

1. BALTIC SEA FOOD

PROJECT TITLE: B2B DISTRIBUTION MODEL SUPPORTING LOCAL FOOD SECTOR IN BALTIC SEA REGION RURAL AREAS

OVERVIEW

Project acronym and No.	Baltic Sea Food; #R047
Priority and Specific Objective	Priority 1 "Capacity for innovation" SO 1.3 Non-technological innovation: To advance the Baltic Sea Region performance in non-technological innovation based on increased capacity of innovation actors
Duration	42 months, between 01.10.2018 – 30.06.2021
Budget	2.43 mill. EUR (1.62 mill. EUR – ERDF contribution)
Partnership	15 partners, 10 countries (EE, LV, DK, SE, DE, NO, RU, FI, LT, PL)
Main topics[1]	Non-technological innovation
Project Type	Regular

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The Baltic Sea Food project is focused on local food producers and farmers in BSR rural areas who prefer to organise the sales through face-to-face contact or via phone in their local region[2]. As some local food networks are already established in the BSR, the project stressed the necessity to review and optimise food value chains in order to strengthen the farmers', and small local food producers' and service providers' position on the market. The idea of the project was discussed by project partners as several already had an experience in working together. The idea stressed the challenge for local food producers to compete with large players who have bigger production volumes and thus lower prices than farmers.

Therefore, the project aimed to design a sustainable and transferable business model for B2B distribution for already established local food networks and, specifically, for rural areas. The motivation for that was to provide the local food producers and farmers an opportunity to establish smooth supply chains on the local and regional levels. The overall added value of the project was an enhanced capacity of national and regional organisations within the partner countries in launching B2B distribution of local food products in business model and process innovation.

PARTNERSHIP

The project had 15 partners from 10 countries (Table 2) Baltic Sea Food partners came from different Baltic Sea countries, Estonia, Latvia, Germany, Sweden, Denmark, Norway, Russia, Finland, Lithuania, Poland. The partners of the project had different backgrounds and operational goals and included several institutions from the public sector on national, regional, and local levels, e.g., ministry, municipalities, and regions. Also, the NGO sector had an important role in the project as it involved associations, the chamber, and the

[1] Themes in Keep.eu

[2] https://www.balticseaculinary.com/project-description-aim

council which had experience in both the agriculture and tourism sectors. Also, the project involved two educational organisations, local food networks, and distributors which can be the associated organisations.

TABLE 2: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Ministry of Rural Affairs of the Republic of Estonia	142,153	National public authority
Latvian country tourism association (LCTA)	144,687	Business support organisation
Mecklenburg-Vorpommern Tourist Board	199,000	Sectoral agency
Ystad Municipality	252,525	Local public authority
Latvian Agricultural Organisation Cooperation Council	66,831	Interest groups including NGOs
Business Region Esbjerg	308,202	Business support organisation
HANEN – Norwegian Rural Tourism and Local Food association	288,908	Business support organisation
NGO Estonian Rural Tourism	109,900	Business support organisation
The Estonian Chamber of Agriculture and Commerce	167,880	Business support organisation
State budgetary vocational educational institution of the Pskov region “Pskov Agrotechnical College”	70,882	Education/training centre and school
Committee for economic development and investment policy of Pskov oblast	35,564	Regional public authority
Lahti University of Applied Sciences ltd.	198,088	Higher education and research institution
Lithuanian countryside tourism association	140,053	Business support organisation
“Polish Nature” Foundation	198,427	Interest groups including NGOs
LAB University of Applied Sciences Ltd	108,582	Education/training centre and school

The varied experience brought together different perspectives of the food industry and business. The lead partner – the Estonian Ministry of Rural Affairs has supported the local food sector for a long time as well as the other involved municipalities and regions. The NGO sector ensured access to local food networks and SMEs that they support through the implementation of initiatives and projects in the field on a daily basis. The educational organisations had the necessary experience in Research & Development (R&D) and in agricultural development. Lahti University of Applied Sciences provided expertise in business administration, tourism, and agricultural education. The variety of partners involved 109 distributors and 80 local food networks to map the real situation in the BSR.

The relationship between partners was both multi-disciplinary and cross-sectoral. The project gathered partners who had theoretical and practical knowledge of business, B2B, and digitalisation as well as hands-on experience supporting and implementing initiatives relating to local food networks and tourism. Also, the territorial project covered all the countries in BSR, representing the region in its full dimension. Additionally, the partnership grew out of an already established network back in 2015-2016 - Baltics Sea Culinary Routes. The main aim of this network was to strengthen the common culinary identity in BSR countries and promote the importance of the local food sector. As one of the tasks of this network was to support service and business model innovation in the local food sector, the partners decided to continue

their partnership in this Baltic Sea Food project in order to reach this aim. Some of the partners had already established cooperation while the others were selected through the network. In the process of team creation, it was very important to select a partner from each BSR country to expand the project territorially. Moreover, partners did not have any specific pre-agreed roles in the project while each of them had specific expertise that it shared.

The overall partnership in this project was seen as joint work. The main role of all the partners was to participate in creating the platform and business model, all of the partners participated equally and actively. Each country had some pilots and the conduction of which has provided valuable insights for the project team. To conduct pilots, all partners had to work locally, develop an action plan, support the food producers during piloting, analyse the results, gather data, propose recommendations, and involve SMEs by organising various events.

Project partners were located in both economically stronger metropolitan areas, and weaker rural areas. Partners located in the economically stronger metropolitan and other central areas: Ministry of Rural Affairs of the Republic of Estonia, Latvian country tourism association (LCTA), Mecklenburg-Vorpommern Tourist Board, Ystad Municipality, Latvian Agricultural Organisation Cooperation Council, HANEN – Norwegian Rural Tourism and Local Food association, NGO Estonian Rural Tourism, The Estonian Chamber of Agriculture and Commerce, Lithuanian countryside tourism association. Partners located in economically weaker rural areas: Business Region Esbjerg, State budgetary vocational educational institution of the Pskov region “Pskov Agrotechnical College”, Committee for economic development and investment policy of Pskov oblast, "SUCCEEDED by PP16 (01.01.2020) Lahti University of Applied Sciences Ltd, “Polish Nature” Foundation, LAB University of Applied Sciences Ltd. Even though the big number of partners are located in the metropolitan areas, the location of the partners is not so important as most of the partners were active in the rural areas throughout the project, and partners from bigger countries collaborated with local regions.

PROJECT DESIGN AND IMPLEMENTATION

The project has conducted several activities in order to reach its main goal to support and strengthen the local food networks and, precisely, local farmers and food producers. The producers involved in the program were mainly targeting such customer groups as hotels, restaurants and catering (HORECA), events and culinary tourism, special shops and retail chains, public catering, business gifts, and food souvenirs. The project’s target group was local food producers who produce end products.

The end-users were very active, as the topic appeared to be relevant. A lot of local food producers reached their capacity and wanted to enlarge their consumer base, so this network helped them to increase sales and production. Project partners have already worked with the end-users before, most local food producers have been members of different food producers’ associations.

The most valuable activities that encouraged the learning process were the ones that involved each of the project partners and increased their capabilities to work transnationally, as well as enhance their own knowledge and experience, e.g., joint activity to map the real situation in B2B and B2C distribution of local food in BSR – discussions, workshops, working groups; and allowed partners share their experience and knowledge about different situations in BSR countries/regions. Partners learned how to develop a common methodology and survey, how to reach target groups, and how to analyse data and develop reports. As the result, they not only had a better understanding of the overall situation in both B2B and B2C sectors in BSR but as well enhanced their transnational communication and were encouraged to keep in regular contact. Similarly, the designing process of the business model for local food B2B distribution and developing operational plans encouraged partners to improve their work transnationally since all of the partners were involved in this activity. Additionally, partners had to take different structures and organisational set-ups into consideration as the models were tailored to different countries and regions, business environments, and backgrounds/experiences of the target group. The differences within the BSR were shown also in the developed handbook, where partners decided to acknowledge it by including case studies from all participating regions. To improve the learning process, partners also conducted a joint

study visit to the Skane region in Sweden and Bornholm Island in Denmark to have a real-time experience of business models used in these regions.

The pilot activities took place in 11[3] local food networks. While piloting, partners tested the developed Canvas-tool model for B2B distribution locally/regionally. Pilots were planned properly thus all the necessary steps to test the business model, including selection and approaching the client groups, using efficient communication channels, identifying and promoting the customer value, and designing an appropriate pricing model and value chain (from ordering to storage, delivery and invoicing), selecting appropriate partners and using key resources. After the active part, the results have been analysed, evaluated, and summarised, main conclusions were described in reports, as well as disseminated to target groups through organised seminars, local workshops, closing conference, as well as communication channels such as media, radio, and press releases. Overall, the target group received valuable practical experience on how to implement the business plan in real life, including how to set up the operational plan, how to conduct market research, how to contact business clients and understand their needs, how to design the process of food distribution from A to Z, etc. Thus, these activities strengthen target groups' capabilities to use human and technical resources more efficiently, improved their knowledge and competencies, especially on how to reach their customers, as well as overall, provide them the knowledge on how to improve their governance structures and organisational set up.

The location of the project partners was important as it covered all BSR countries and stressed the differences in existing organisational structures as well as business environments in different countries/regions. The varied partnership allowed to get a better understanding of the existing situation in food networks in BSR as well as allowed to tailor the outputs and results for different countries/regions so the target group can use them locally.

The imposed COVID-19 restriction affected the HoReCa sector negatively which was one of the project's target groups. Another challenge was to adjust activities to the restrictions in different countries as they vary from region to region. Moreover, several pilots could not be conducted or had to be conducted on a different scale. Some of the activities were postponed to not break any COVID-19-related regulations, e.g. HoReCa pilots.

Despite the negative effect of COVID-19, some positive effects also were made, e.g., the interest in local food increased and local food producers became more relevant and visible. Many local food producers started to exploit technology and several producers switched from B2B to the B2C segment. Additionally, there were observed several unintended effects. One of them was that the project partners decided to create local food farmer platforms where consumers and businesses could buy food from local producers. Also, contact/matchmaking events were appreciated very much and, considering the growing interest of the target group, there exists a demand for the continuation of that event series. The huge interest from the target group also came as a slight surprise for project partners, as before the project the planned number of involved SMEs was 100, but in the end, the project managed to involve 800 SMEs.

The project had several outputs. The main was the development of the regional business model and e-platforms for food distribution.

BUSINESS MODEL | Within the project there was developed a series of regional business models, which were piloted in the partner regions. Piloting the business model gave practical knowledge and suggestions based on local real-life experience in 11 regions, therefore it is applicable and suitable for different countries/regions and is adapted to different conditions. The business model introduced the target group with some new ways on how to attract customers, e.g. highlighting new customer groups “Business gifts and food souvenirs”, as well as introducing new marketing and sales channel “Contact events and fairs”. During the development of the business model partners also learned that it is useful to use the common regional brand if the region is well-known for local products. This enables more efficient marketing for food

[3] A planned number of pilot projects were 13, however, due to COVID-19 restrictions it was postponed, however, the model was adapted in 13 local food networks/distributors.

producers. Overall, the partners improved their knowledge of the current situations and made solutions on how to strengthen current or develop new networks and business models.

E-PLATFORMS FOR FOOD DISTRIBUTION: During the project, partners analysed and tested local, regional, or national e-platforms for food distribution in BSR. Partners used already existing knowledge in partner country Sweden, identifying advanced e-platform and promoting it through events and public media to reach local food networks. This case was used to improve already existing e-platform services or develop new ones in partner countries (except Poland) to improve them in aspects such as communication, accounting, food networks/distributors for ordering, etc. As the result, the e-platforms were modified to such a level that it was easy for other food networks or even individual producers to use them, therefore saving important time and human resources.

Overall, the project has reached nearly 4 000 SMEs, 330 food networks, and more than 2 000 other interested persons in this field within its activities.

The project partners revealed several success factors. The contact meetings with project partners were a success in improving institutional capacity building as they expanded the network by involving new members in it. Moreover, pilots have helped partners to start new business initiatives and improve their capacity as well as have helped in the written handbook development. The number of involved SMEs was substantial which has led to improving the institutional capacity building.

CONCLUSIONS

The project strongly contributed to the improved capabilities of involved partners to work transnationally since all the partners were involved in every project activity, e.g. discussions, workshops, and work groups. Therefore, partners have gained a good insight into the food network situation in different countries/regions within the BSR, as well as evaluated the strengths and weaknesses in regions. It has also introduced partners to the best practices which already exist in the BSR. Therefore, it helps to gain the necessary knowledge and experience that could be tailored to the region's conditions. That enhances not only partners' knowledge and competencies in the field, but also passes it to the target group though locally organised seminars and other channels such as media, radio, etc. As the result, both partners and target groups have gained the necessary knowledge and competencies to use both human and technical resources more efficiently and improve their governance structures and organisational set-ups.

Overall, the project partners believe that the project was successful, as all partners were greatly involved in various activities as well as have worked with the local communities even before the project. However, if partners would not have the previous contact with the target group, it would be more complicated. Moreover, involving associations can be considered a beneficial decision as the broad network has enabled them to reach the rural areas in various places across the BSR. After the project has been finished, the partners still work together on another project.

As the project aimed to enhance the development of rural food producers, the success factor was the involvement of partners who already had an experience in communication with the end-users in the rural areas. Moreover, addressing the issue of partners being in the metropolitan areas, is not considered to be a problem as all of them were active in the rural areas throughout the project.

2. BIC

PROJECT TITLE: BIOMARKER COMMERCIALISATION

OVERVIEW

Project acronym and No.	BIC; #R048
Priority and Specific Objective	Priority 1 "Capacity for innovation" SO 1.3 Non-technological innovation: To advance the Baltic Sea Region performance in non-technological innovation based on increased capacity of innovation actors
Duration	36 months, between 01.10.2017 – 31.09.2020
Budget	2.39 mill. EUR (1.83 mill. EUR – ERDF contribution)
Partnership	9 partners, 6 countries (DE, DK, EE, FI, LT, PL)
Main topics[4]	Non-technological innovation
Project Type	Regular

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The project "Biomarker Commercialisation" goal was to solve the information asymmetry in the field of biomarkers development in the BSR area. Biomarker - a characteristic that can be objectively measured and evaluated as an indicator of a physiological or pathological process in an individual or an individual's response to a therapeutic intervention. The core reason why the project was so awaited was that researchers lacked information on the business and legal aspects of biomarker commercialisation process which gave the rise to the situation in which most of the biomarkers are discovered but never enter the market as the whole process is too complex for researchers. Moreover, even though the BSR area is the home to several worldwide famous industry knowledge hubs, there exist only weak connections between business developers and researchers, which tremendously hinders the development.

Therefore, the project aimed to and succeeded in the creation of a guide that could facilitate the business and legal knowledge gain for researchers as well as create the unified framework and infrastructure for business developers and researchers to foster collaboration and development of biomarker projects in the BSR. As a result, partners have managed to create the BIC master tool that provides guidance for all stakeholders from the stage of biomarker development till its launch on the market in three areas – biomarker development, business development, and legal. Moreover, in the process of project implementation the partners have managed to create a network of leading research and business development institutions in the region which enhances knowledge, leads to time and resource-saving measures, makes funding more accessible as well as increases the exposure to the international environment.

PARTNERSHIP

To implement the project, nine partners were involved from six countries – Denmark, Germany, Estonia, Finland, Lithuania, and Poland (Table 3). Among partners, there were business parks - organisations whose goal is to provide companies access to infrastructure among partners and facilitate communication. Also, universities and a university hospital were the partners which could be considered knowledge hubs. Finally, the project involved an organisation which main aim was project coordination.

[4] Themes in Keep.eu

TABLE 3: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Ideklinikken, Aalborg University Hospital, The North Denmark Region	806,405	Higher education and research institution
University of Copenhagen	298,500	Higher education and research institution
Tartu Biotechnology Park OÜ	164,700	Business support organisation
University of Turku	224,650	Higher education and research institution
Turku Science Park Ltd	337,214	Business support organisation
WITHDRAWAL (01/07/2019) ScanBalt	58,001	Interest groups including NGOs
BioCon Valley® GmbH	232,550	Business support organisation
Vilnius University	81,142	Higher education and research institution
Wroclaw Technology Park	182,994	Business support organisation

The varied background and fields of operation of project partners have become a powerful tool in terms of reaching the goals of the project. The leading partner in the consortium is Ideklinikken – the department of Aalborg hospital whose goal is to find, assist in implementation, and develop ideas that could benefit hospital patients specifically and society as a whole in the health industry. Ideklinikken has wide experience in the health industry and health tech due to its proximity to real-life conditions. Universities that are involved in the project can be considered as the leading research institutions in the region that do have Research and Development (R&D) experience in biotech and health tech. Business parks play another important role in the project – they, as cluster organisations, do provide better business conditions for the companies in the industry, assist with development-associated needs as well as have expertise in some specific fields such as project incubation or project potential evaluation. Moreover, they serve as the facilitators of communication between the researchers and the business. Finally, Scanbalt was the organisation that was considered to be a communication partner; however, after it went bankrupt, its responsibilities have been divided among other partners.

The relationships between the project partners can be characterised as simultaneously cross-sectoral and multi-disciplinary as the partners' main area of operation is connected to different fields – business development, consulting, healthcare, and R&D. The symbiosis created during the project was one of the key success factors in the project implementation as it provided the multidimensional view on the issue – commercialisation of biomarkers thanks to the exposure to the relevant stakeholders, expertise, as well as enabled the mechanisms for the knowledge transfer. The territorial representation was rather wide covering six countries of the BSR; however, it had not fully presented the region by excluding Latvia, Russia, and Sweden. This has the potential to create some information asymmetry among representatives of different countries in the same area.

PROJECT DESIGN AND IMPLEMENTATION

The project goal was to enhance the availability of knowledge about commercialisation and best practice sharing among SMEs and researchers with exposure to the field of biomarker development since the regulations connected to the field is complex and not always clear for them.

The main output that the project participants wanted to have, was the Mater Tool which includes several other tools on specific areas of commercialisation. The creation of such educational materials would not

be possible without the close cooperation of all partners. The cooperation and constant communication of partners was the key element in delivering a result that would include a comprehensive view of the commercialisation of biomarkers. This is proven by the project results – the partners mention that throughout the project they have arrived at the point when the cooperation between businesses, researchers, and organisations that are responsible for cooperation has created a better product as it included the vision of the tool from all 3 parties and led to more precise information in it. Throughout the initial tool development phase, the stakeholder map has been created which led to a more efficient interview and workshop planning with stakeholders. The workshops and interviews have been organised onsite in various locations in the BSR countries. After the tool development phase, the project entered the pilot phase during which researchers and representatives of SMEs had the opportunity to test the tool and provide feedback while the consortium – acknowledge it. Pilots have shown the needs of different parties that were not involved in the project development and brought value both to them by making the commercialisation path easier and faster as well as to the developers providing valuable insights.

The target group of the project – researchers and representatives of SMEs that do develop biomarkers, were involved on all the stages of the project planning. First of all, research institutions – universities, were among partners. Due to that, they have participated in the initial formulation of the problem and assisted in the later stages where have gathered information during the desk research as well as participated in the workshops and interviews. Desk research has resulted in the material that could be used for tool creation. Moreover, they have provided valuable information regarding the hands-on experience in the field. In the process of constant cooperation of tool developers with the research partners it became possible to adjust the developed material to their own needs. However, researchers and SMEs have participated not only as the project partners. Also, they had an opportunity to test the tool as well as acquire knowledge during the pilot tests. Moreover, for the sake of stakeholder attraction, different modern communication digital tools have been utilised such as the LinkedIn group which supplemented the existing official cooperation channels and enhanced better communication among all involved parties.

In the process of tool development, the six-month-long pilot was being launched. The pilot was beneficial for both parties as it provided knowledge to its users as well as tested the tool in a real-life environment. After the pilot phase, the parties involved in the tool testing provided their feedback which was mainly positive thanks to the integration of business questions into the guide for primarily non-businessmen. However, critics and suggestions were also considered and transformed into several changes in the master tool.

Since the project implementation dates did overlap with the first year of COVID-19 pandemic, it has impacted the events that were thought to take place to successfully implement the project. One of the events that has been cancelled was the Summer School at the University of Radboud Nijmegen. This pilot testing was essential for the external validity checks of the tool as well as to the possible patenting of the tool in the US; however, due to the pandemic it was hardly possible to conduct something similar. Due to that, the summer school has been replaced with a series of webinars that cannot serve as a substitution to a pilot which has been planned to test whether the tool can be used in other countries.

Finally, it is worth mentioning that COVID-19 pandemic has not greatly affected the work inside the BIC consortium as by the year 2020 the project was already almost finished, and the team was already well acquainted with each other. According to the project partners, the pandemic has surely brought several plan changes and did not let the partners to meet so often in-person; however, in their opinion, the restrictions have not severely impacted the internal work processes.

KEY ACHIEVEMENTS AND RESULTS

The project has achieved its goal; and, together with that, some unexpected problems have been solved using the developed tool.

The project “Biomarker Commercialisation” main goal was to facilitate knowledge and provide guidance for researchers and SMEs in the field of biomarker creation to successfully commercialise their findings as

the current level of knowledge in this field is low. To solve the issue, the project partners planned to spread information using the BIC master tool.

During the project implementation, the BIC master tool has been created which can be considered a valuable instrument as it includes the interests of all involved stakeholders – business developers and researchers providing information, pieces of advice, and step-by-step guidance from the biomarker discovery phase to the commercial launch and clinical implementation biomarker. The tool covers such areas as clinical needs, commercial viability, and feasibility & IPR. Thanks to the wide topic coverage, pilot test participants have highly evaluated the master tool. The researchers have noted that the tool provides excessive information on the business aspects which are often forgotten by them, while SMEs have noted that the tool is unexpectedly helpful not only in terms of the information assistance and guidance but also in terms of cost saving. The cost saving appears thanks to the fact that the companies do not have to work with technological and innovation consultancies throughout the commercialisation phase which can save up to 5% of equity for small start-ups on their early stages. Moreover, thanks to the increased efficiency of SMEs and the higher likelihood that biomarkers being developed will enter the market it may be easier to attract funding for the projects in the industry. That may further result in the creation of new workplaces for highly qualified specialists in the BSR area.

Another project outcome is connected to the improved conditions for cooperation among different parties involved in the creation and commercialisation of the biomarkers. Thanks to the tool, there exists a unified system that is adjusted to the needs of business developers, researchers, and SMEs, which helps to create synergies faster and brings value to all parties involved as they can work and develop innovative biomarkers under the same framework. Moreover, the network established during the project can serve as the key infrastructure element for knowledge transferring in the BSR which could further assist its members in positioning in the market. Surprisingly to the project partners, the network has consolidated with a great pace which may serve as a sign that the project was very awaited.

The fact that the consortium BIC has succeeded in the main aim of the project is mainly connected to the close cooperation of partners among each other as well as the involvement of stakeholders from the industry. Thanks to the cooperation of all involved parties, it has appeared to be possible to adjust the tool to the needs of all parties. Moreover, pilots have contributed a lot as they have provided real-life tests to the tool and have helped to identify several weak points of it. However, COVID-19 has impacted the successful implementation of the project further as it has not let to conduct the external validity test in the Netherlands outside of the BSR. Moreover, there were other challenges besides COVID-19. First of all, one of the project partners – Scanbalt, went bankrupt throughout the project. This was the reason to some regulatory and legal difficulties; however, it has almost not affected the project itself as the responsibilities of Scanbalt were successfully divided among the rest partners. Beside the bankruptcy problem, there existed an issue connected to the limited participation of one of the project partners. Due to that, there was a necessity to redistribute responsibilities as well as change budgets as otherwise there would be a case of ineffective resource allocation inside the project.

However, even though the main goal of the project has been achieved – to create the tool used in the biomarker commercialisation, the capacity building processes have been affected by the COVID-19 pandemic. The initial plan has included the organisation of an international conference, as well as conducting a great number of pilots both inside and outside of the BSR. The vast majority of the pilots have been organised before the pandemic has started so it has mainly not affected the development and the quality of the tool itself; however, the conference has been replaced by the series of online events which has substantially reduced the visibility of the tool. Due to that, the capacity building process has been affected rather negatively.

CONCLUSIONS

The project has contributed to the industry in many fields simultaneously. The most visible change that has been noted by the stakeholders was connected to the enhanced institutionalised knowledge and competence which resulted in more efficient use of human and technical resources thanks to the developed BIC master tool; the increased capability to work in a transnational environment due to close

cooperation of stakeholders, better international structures and developed infrastructure. Together with that, the development of such infrastructure has contributed to the ability to attract new financial resources thanks to the better efficiency and higher likelihood of the biomarker being launched on the market. Overall, the project covers all five dimensions of institutional capacity building and highly contributes by that to the program objectives.

The project has appeared to be successful. Its success as well as the high quality of delivered work is mainly connected to the constant cooperation of partners with each other from the very beginning of the project implementation as well as the lead/coordinator support and task tracking. This contributed to the way that partners had the opportunity to discover the views of all involved stakeholders on an ongoing basis, which led to a faster adjustment of the tool to real-life needs. Also, it has been noted that the flexible reporting has positively affected the tool quality as there was more time available for the research itself. Besides that, partners do consider as an additional opportunity the fact that there are no strict limitations to the industries inside the project. That builds bridges between people with different backgrounds and interests which creates additional opportunities for learning.

However, the partners have also noted several aspects to be improved. One of them is connected to the geographical limitations of the program. In the case of this project, it appeared to be rather complicated to find a suitable partner in the countries in the BSR, while there were a lot of them in the other EU countries. Also, it has been mentioned that the bigger funding would be beneficial as it would provide an opportunity for the partners to meet each other in-person more often which is essential as it helps to facilitate the cooperation between partners, especially on the earlier stages of the project.

The project “Biomarker commercialisation” implementation was both before the pandemic times and during it. Thanks to that, partners have the necessary experience to compare the work conditions. Throughout the interviews, several partners have mentioned the fact that online communication is a good and effective way to communicate; however, it is important to have the balance. Partners have noted that online communication is effective since it provides the opportunity to meet each other more often which leads to a better accountability of partners. However, some activities as brainstorming should not be conducted online as it decreases the involvement of participants dramatically. Also, it has been mentioned that on the earlier project stages it is essential to have more in-person meetings as it helps the team to get acquainted with each other better which, in its turn, makes the work more efficient.

3. BSR WATER

PROJECT TITLE: PLATFORM ON INTEGRATED WATER COOPERATION

OVERVIEW

Project acronym and No.	BSR WATER; #C001
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.1 Clear waters: To increase efficiency of water management for reduced nutrient inflows and decreased discharges of hazardous substances to the Baltic Sea and the regional waters based on enhanced capacity of public and private actors dealing with water quality issues
Duration	36 months, between 01.10.2018 – 30.09.2021
Budget	1.13 mill. EUR (0.77 mill. EUR – ERDF, 0.12 mill. EUR ENI + RUSSIA contribution)
Partnership	10 partners, 6 countries (DE, EE, FI, LV, PL, RU)
Main topics[5]	Clear waters
Project Type	Platform

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

BSR WATER is a project platform, which aimed to enhance cross-sectoral cooperation in smart water management by providing a possibility for transnational experience exchange and delivering comprehensive policy overview as well as delivered comprehensive overview of the current and future regional policy. The project platform united seven projects, as follows: Interactive Water Management (IWAMA), Advanced manure standards for sustainable nutrient management and reduced emissions (Manure Standards), Water emissions and their reduction in village communities (VillageWaters), Better Efficiency for Industrial Sewage Treatment (BEST) and Baltic Blue Growth funded by Baltic Sea Region; NutriTrade, Integrated Storm Water Management (iWater), Blastic and Waterchain funded by Interreg Central Baltic, and Reviving Baltic Resilience (RBR) funded by Interreg South Baltic, as well as the BONUS EU funding programmes.

Important aspect was to bring the lessons learned from previous cooperations to the regional policy making level. The platform cooperation was based on practical achievements and results of different projects addressing unprecedented water management challenges: water pollution from households, industry, and agriculture; eutrophication, climate change, excessive water, and energy use.

During the interviews, the partners pointed out that one of the motivations for this project was that there were still issues that were relevant and needed to be addressed further. The Baltic Sea is under great pressure, therefore all possible measures to protect it should be implemented. The measures include fresh water, storm water, sea water and wastewater. A lot of research has been conducted on these issues and BSR WATER gathered findings from the previous projects in a form of developed tools, tested good practices and technical solutions.

PARTNERSHIP

The project brought together ten partners (Table 4Table 4) and 19 associated partners from nine countries altogether. The project partners were from six countries (Finland, Estonia, Germany, Latvia, Poland, Russia). The project included three higher education and research institutes, one international

[5] Themes in Keep.eu

organisation, one educational centre, and one enterprise. Three local public authorities and one regional public authority also participated.

TABLE 4: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Union of the Baltic Cities, Sustainable Cities Commission c/o City of Turku	260,944	Local public authority
Baltic Marine Environment Protection Commission - Helsinki Commission (HELCOM)	118,925	International organisation, EEIG
Berlin University of Technology	166,720	Higher education and research institution
University of Tartu	133,000	Higher education and research institution
Gdansk University of Technology	45,000	Higher education and research institution
SYKLI Environmental School of Finland	100,069	Education/training centre and school
Riga City Council	74,942	Local public authority
City of Helsinki	95,129	Local public authority
State Geological Unitary Company «Mineral» (SC Mineral)	65,260	Small and medium enterprise
State Autonomous Institution of the Kaliningrad region "Environmental Center "ECAT-Kaliningrad"	73,449	Regional public authority

BSR WATER brought together experts representing diverse projects that have generated through transnational cooperation many replicable as well as unique solutions, covering broad variety of water-related issues, like smart nutrient management and sludge handling, storm water management, domestic and industrial wastewater treatment, manure management, environmental knowledge spreading and energy efficiency. Universities had great experience in research with good results from the previous projects. Local authorities (Helsinki, Riga) had a great role in the implementation because their work in general is persistent. HELCOM was the key partner for facilitating the policy related topics. From the interview it was pointed out that a national public authorities would have been a great addition because if there is a change in the legislation, it is up to them to decide how it will be adapted.

The relationship between project partners was multidisciplinary, transnational, and cross-sectoral. From the interview it was confirmed that the assumption of the project was to not work across the sector, but holistically cross-sectorally. It was important to include partners from different sectors. It is good to have proper balance of different stakeholders, if different stakeholders are brought to same table, it was fruitful, the partners were happy to hear so many different angles and found a common understanding of issues. Many of the partners had collaborated before in the projects synthesised during this project and all the project partners had been previously involved also in the seven projects that were united during the project platform. The communication between the partners was fast and efficient. Overall, in the interviews it was pointed out the applied scientific cooperation was much harder online, but the partners managed to do it anyway.

PROJECT DESIGN AND IMPLEMENTATION

The project was divided into four work packages with different aims, mainly the focus was on Baltic Smart Water Hub, dissemination, and facilitation of the regional policy dialog on sustainable water management.

These aims were supported by several activities by partners, like collecting good practices, solutions, and tools, creating a functional network of experts for cooperation in water-related issues, and improving the uptake of novel technologies and approaches. All these findings were published on the Baltic Smart Water Hub. The partners participated in different Interreg projects' events, to introduce the Baltic Smart Water Hub and get good practices from there. It was the most efficient when the events were physical and after online-shift it got much harder to gather good practices. Additionally, as part of the WP3, the partners mapped and synthesised outreach methods for successful engagement of water sector professionals and tested and embedded models of exchange to attract new platform users.

Also, the partners developed regional policy recommendations on nutrient recycling and recommendation on hazardous substances, constructed integrated model for Water-Sludge-Energy cooperation and developed policy recommendations for implementing sustainable urban storm water management. The role of local authorities was also important carrying out the activities. For example, City of Helsinki participated in gathering water protection and water management good practices and tools.

Numerous events supported the project and capacity building. During the interviews, it was pointed out that they put a lot of effort on communication, as different stakeholders need different approach. Also, the partners used regional events and workshops intensively, which were found perfect for networking and mobilising new partnerships The partners introduced their findings and results in many seminars, forums, conferences, and workshops. The online shift was a challenge, because disseminating the results through participating in physical events was part of the implementation strategy. Therefore, they had to adapt to new conditions, which the partners managed successfully. They were able to use this strategy almost a half a year before COVID-19 started. As at some point, there was an abundance of online events and people got tired of them.

The target groups of Baltic Smart Water Hub were mostly water experts, but overall the project was targeted to water companies and associations, local authorities and technology companies, NGOs, and water protection foundations from the Baltic Sea region countries.

KEY ACHIEVEMENTS AND RESULTS

The most notable achievements are the regional policy recommendations on nutrient recycling, recommendations on hazardous substances, the Baltic Smart Water Hub, integrated model for Water-Sludge-Energy cooperation and policy recommendations for implementing sustainable urban storm water management.

Baltic Smart Water Hub resulted in 115 examples of smart water operations. These examples include good practices, technical solutions, and tools on how to manage fresh, sea, storm and waste waters more efficiently. The platform also enabled to create a lasting network of some twenty-five water experts. These experts and hub partners reached out to more than 6000 practitioners and decision-makers: water companies and associations, local authorities and technology companies, NGOs, and water protection foundations from the Baltic Sea region countries. The Hub will be up and running for many years after the project ended. The Hub has a great impact to capacity building, as it contains examples from projects under different international fundings as well as private fundings, and all these practices are reachable, well explained, and necessary contact details are also provided.

The project platform was very successful in influencing the policy[6], as it contributed to the revision of the HELCOM Recommendation 23/5 related to storm water management to update it based on the knowledge accumulated in the consortium and participating projects. The palette of solutions for nutrient recycling developed by the partners contributed to the development of the new Baltic Sea Regional Nutrient

[6] https://www.bsrwater.eu/facilitation

Recycling Strategy and the revision of the HELCOM Baltic Sea Action Plan. This was also the first time when during the life of the project, the policy change produced by the project made it into legislation (stormwater). This worked better and more was achieved than it was expected by the partners initially. Also, it was pointed out as an unintended positive effect during the interviews.

Water-Sludge-Energy cooperation developed a cooperation model among main stakeholders dealing with water, wastewater, energy/electricity/heating, sludge handling, waste utilisation, biogas production and public transportation. This is an important cross-sectoral and multidisciplinary capacity building tool.

The shift to digital tools helped to be visible and organise many online events. Even though, the partners were convinced that the outreach of the final event could have been much better, if they could have been able to organise the physical event.

CONCLUSIONS

The project's aims were fulfilled. It was an efficient format to bring and extend the visibility of the projects and to have a cross-sectoral cooperation as the enhanced cooperation on the transnational and cross-sectoral basis will allow better outreach of the project outputs to appropriate end-users and decision-makers across the region. Over the project duration, BSR WATER provided a significant input into the regional policies. Already in the scope of this project, the platform accumulated, synthesised, prepared, submitted – and received an acceptance – of several strategic policy briefs and recommendations. The variety of results, produced in the platform, are not only shaping the regional decision-making plan, but can also be used by different regional stakeholders, including practitioners in the water sector.

One of the positive aspects is that the partners now know that it is possible to contribute vastly into legislation, even though it might seem a complicated system. During the interview, it was mentioned that in the future it would make sense to combine projects that are not in an initial stage.

Online shift wasn't seen totally positive by partners, because it is easier to reach people physically than via emails. It was pointed out that is easy to make some agreements online, but difficult to do substantive work. But on the other hand, it gave a great boost to knowledge of digital tools, as everyone knows different video conference and document sharing platforms.

4. CWPHARMA 2

PROJECT TITLE: CLEAR WATERS FROM PHARMACEUTICALS EXTENSION STAGE

OVERVIEW

Project acronym and No.	CWPharma 2; #X017
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.1 Clear waters: To increase efficiency of water management for reduced nutrient inflows and decreased discharges of hazardous substances to the Baltic Sea and the regional waters based on enhanced capacity of public and private actors dealing with water quality issues
Duration	9 months, between 01.04.2021 – 31.12.2021
Budget	0.82 mill. EUR (0.64 mill. EUR – ERDF contribution)
Partnership	9 partners, 6 countries (DE, DK, EE, FI, LV, PL)
Main topics[7]	Clear waters
Project Type	Extension stage

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

CWPharma 2 is an extension stage project of CWPharma. In CWPharma 2, water authorities and operators of wastewater treatment plants (WWTP) apply guidelines developed in CWPharma in practice. They conducted checks and run feasibility studies and pilots to test more effective methods for removing pharmaceuticals from wastewater. The focus of the CWPharma 2 project was on the practical implementation of CWPharma's one of the main outputs "Guideline for advanced active pharmaceutical ingredients (API) removal processes", which provided a summary of relevant aspects to be considered when planning or operating a WWTP with a pharmaceutical reduction stage.

The predecessor project CWPharma gathered 15 partners from Finland, Sweden, Denmark, Germany, Poland, Latvia, and Estonia to develop tools and recommendations for policymakers, national and regional authorities, municipalities, and the pharma industry to enable reduction of the emissions to the Baltic Sea. They mapped the current situation, conducted pilot activities, and developed an action plan to reduce API emissions to the Baltic Sea. Also, they raised environmental awareness on the topic.

The relevance of the project comes from the seriousness of the pharmaceuticals' topic. It is estimated that up to 2200 tons of API reach the Baltic Sea every year, which is almost 30% of the pharmaceuticals sold[8]. APIs are active medicines, e.g., hormones, analgesics, and antibiotics, which reach the Baltic Sea via wastewater treatment plants. APIs in the marine environment are a relatively new but rapidly growing environmental problem. They are a direct threat to fish and animals, affecting their behaviour and inhibiting reproduction. Residues of medicines enter the marine environment because of human activities, because even though they are dangerous waste, many people still throw medicines into the household waste or release them into the environment through sewage. The inputs not only have a negative impact on the aquatic environment, but they can also end up in groundwater and thus in drinking water in the long term.

[7] Themes in Keep.eu

[8] https://helcom.fi/action-areas/industrial-municipal-releases/pharmaceuticals/status-report/

PARTNERSHIP

The project had nine partners from six different countries: Denmark, Germany, Finland, Estonia, Latvia, and Poland (Table 5). The project involved four higher education and research institutions, three infrastructure or public service providers, one interest group and one sectoral agency. Thus, no public or national authority was directly related.

TABLE 5: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Aarhus University (AU)	185,850	Higher education and research institution
Berlin Center of Competence for Water (KWB)	163,620	Higher education and research institution
German Environment Agency (UBA)	77,500	Sectoral agency
Kalundborg Utility (Kalfor)	63,400	Infrastructure and public service provider
Latvian Institute of Aquatic Ecology, Agency of Daugavpils University (LIAE)	81,750	Higher education and research institution
Estonian waterworks association (EVEL)	36,000	Interest groups including NGOs
Institute of Environmental Protection - National Research Institute (IOS)	71,250	Higher education and research institution
Hillerød Utility (HFORS)	91,211	Infrastructure and public service provider
Helsinki Region Environmental services Authority (HSY)	50,250	Infrastructure and public service provider

The participating project partners had in-depth knowledge in providing different water and research related fields. The lead of the project Aarhus University (AU) and The Berlin Centre of Competence for Water (KWB) in Denmark had expertise in developing technologies for removing micro pollutants from wastewater. Kalundborg Utility and Hillerød Utility (HFORS) in Denmark and Helsinki Region Environmental Services Authority (HSY) in Finland brought in the experience of wastewater treatment plant operators especially in development of large-scale treatment processes and advanced treatment methods. German Environment Agency (UBA) is the leading environmental organisation in Germany. Estonian Waterworks Association (EVEL) is a national association of water companies with special focus on knowledge exchange amongst wastewater treatment plant operators. The Institute of Environmental Protection – National Research Institute (IOS) in Poland and Latvian Institute of Aquatic Ecology (LIAE) are national research institutes in the field of environmental protection. The wide expertise of the partners was crucial in this multidisciplinary project. The relationship between the project partners were multidisciplinary, cross-sectoral and transnational. The partners relied on the fact that all the partners in the project had their own social networks and were able to address a lot of people relatively rapidly and effectively.

Partners located in rather economically stronger metropolitan and other central areas: Aarhus University (AU), Berlin Center of Competence for Water (KWB), German Environment Agency (UBA), Latvian Institute of Aquatic Ecology, Agency of Daugavpils University (LIAE), Estonian waterworks association (EVEL), Institute of Environmental Protection - National Research Institute (IOS), Hillerød Utility (HFORS), Helsinki Region Environmental services Authority (HSY). Partners located in economically weaker rural areas: Kalundborg Utility (Kalfor).

The project was an extension project from CWPharma. CWPharma had 15 partners from 7 countries around the Baltic Sea. Indeed, CWPharma was led by Finnish Environment Institute (SYKE) and it was not participating in CWPharma 2. Eight of the partners were the same in both projects, and besides lead partner, CWPharma had six more partners. Sweden was not participating in the extension project at all.

PROJECT DESIGN AND IMPLEMENTATION

The extension stage project focused on a practical implementation of CWPharma findings from "Guideline for advanced API removal processes", which provided a summary on relevant aspects to be considered when planning or operating a WWTP with an API elimination treatment stage. The project partners were supporting the WWTP operators during the implementation process. Therefore, main activities by the project partners were fitness check for API removal technology, feasibility studies, applying recommendations for planning of API removal and plant optimization and detailed planning of API removal implementation stage at WWTP Hillerød. All of which contributed to capacity building process.

Partners chose three sites for implementation (Helsinki WWTP, FI; Hillerød WWTP, DK; Kohila WWTP, EE). These sites were chosen so that they could cover a broad range of boundary conditions (e.g. WWTP size, combination of API and phosphorous reduction) and therefore cover multiple aspects of the guideline.

During the first stage of the project, the partners discovered that there was a lack of awareness about this topic, therefore on the second stage the partners aimed to raise awareness on APIs in the environment and the proper disposal of unused APIs, focus on Baltic States & Poland. The location of the project was also important. As in CWPharma project, it was clear that in some countries the topic is not discussed so widely, and general public awareness is rather low (Poland, Estonia). The good practices were given based on Swedish example.

The main target group was water treatment plant operators, but the knowledge and data would enable a multitude of stakeholders, from municipal organisations, supervisory and permitting authorities, operators of waste disposal sites to pharmaceutical industry and research, to make decisions in tackling pharmaceutical emissions. Also, the general public and professionals such as doctors, pharmacists, veterinarians, and farmers were targeted with the knowledge.

The need for the extension stage came because the topic is very complex and needed more practical implementation, as well as awareness rising in public. During the interview, it was pointed out that the motivation for continuing with the extension project was that there are a lot of utilities that would probably need to do something about the issue in the future, thus they wanted to make sure that they get it done in the right way, not by obscure ways. Also, extension project helped to increase the visibility and dissemination of CWPharma outcomes.

The online shift had both positive and negative effects. One the positive side, they had two conferences of around 300 people, which the partners saw as completely unthinkable physically. The negative thing was that they missed physical meetings (coffee breaks) with other partners or stakeholders, where you start asking the questions.

KEY ACHIEVEMENTS AND RESULTS

The key result of the initial project was the palette of measures which are available to reduce API emissions. Therefore, the main result of the extension project was the knowledge how the "Guideline for advanced API removal processes" can be used in practice. First, based on the guideline's recommendations, a fitness check of the WWTP were conducted prior to any implementation of API removal technologies. Fitness check was performed for 80 WWTPs in the BSR. As a result of fitness check was a short report which highlighted the current situation, the advantages, and disadvantages of the API elimination technologies, and provided recommendations for further actions required to enable the WWTP to eliminate APIs more effectively. This was important in relation to capacity building. Conducted fitness-checks and feasibility studies can be used as templates for the evaluation of other WWTPs and, thus, enabling relevant actors such as WWTP operators, water authorities or engineering companies to make accurate decisions based on profound knowledge.

Another important output was the awareness rising. For this the partners produced an easy communicable video (in national languages of Latvia, Lithuania, Estonia, and Poland) on APIs in the environment and correct disposal of unused pharmaceutical and spread it via social media. Therefore, this activity was targeted to countries with lower awareness, even though the partners from these countries were not

considered as partners from economically weaker areas. During the interview, it was noted that the awareness rising campaign was very successful, as the contact person received a lot of calls as a result.

Different countries have different practices, which means that pharmaceuticals waste management is up to the country and its authorities should decide how to proceed. The two projects gave good insight which measures are available. Therefore, local authorities should step up more to raise the awareness and tackle the problem. Furthermore, it was pointed out during the interview that they got a lot of attention and outreach, but the partners felt that they only reached people who were fluent in English, therefore leaving out many operators in the region.

CONCLUSIONS

The project contributed greatly to the programme objectives. Agricultural, environmental and health ministries together with municipalities and regional authorities have received a lot of information about the pharmaceutical's situation in their area. Therefore, the capacity was increased within many stakeholders, but the level of awareness differs between regions greatly. Additionally, sometimes the risks are not known, but before implementing measures, it is good to first have a picture what is the problem. So, for this kind of projects, first the in-depth research is important.

There are regulations on the EU level that require the countries to set up take-back schemes and disposal of unused medicine. However, on the national level, there is not always a unified approach or strictly obliging regulations that would accelerate actions on tackling the challenge. It was concluded that the municipalities have key role in many things when it comes to reducing the emissions of APIs and from the project, they got a package of knowledge in clear format. They now know what the measures, problems, and information gaps are and now they need to start tackling the problems.

5. NONHAZCITY

PROJECT TITLE: INNOVATIVE MANAGEMENT SOLUTIONS FOR MINIMIZING EMISSIONS OF HAZARDOUS SUBSTANCES FROM URBAN AREAS IN THE BALTIC SEA REGION

OVERVIEW

Project acronym and No.	NonHazCity; #R010
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.1 Clear waters: To increase efficiency of water management for reduced nutrient inflows and decreased discharges of hazardous substances to the Baltic Sea and the regional waters based on enhanced capacity of public and private actors dealing with water quality issues
Duration	36 months, between 01.03.2016 – 28.02.2019
Budget	3.54 mill. EUR (2.80 mill. EUR – ERDF contribution)
Partnership	18 partners, 7 countries (DE, EE, FI, LT, LV, PL, SE)
Main topics[9]	Clear waters
Project Type	Regular

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

NonHazCity is a project that aimed to analyse and demonstrate the methods and possibilities for municipalities, private households, and businesses to reduce emissions and usage of priority hazardous substances (HS) and other pollutants in urban areas that cannot be effectively removed by traditional water treatment and enforcement techniques. The activities of the project included contributing to the development of Chemicals Action Plans (CAP) for cities, information campaigns and trainings for different stakeholders including raising awareness of the inhabitants of the partner cities.

The project's NonHazCity importance comes from the need for protecting the environment, especially the Baltic Sea, and our own health from hazardous substances. The Baltic Sea is susceptible to changes in its catchment area, where 85 million people live. Therefore, it is also important for small businesses and households to reduce their HS emissions, not only for large industries. Emissions from industrial sources are formally regulated, but people running small-scale businesses or households have little knowledge of which chemical products to select and which to avoid for protecting both their own health and the environment. Hence, raising awareness about harmful substances, and how to avoid or replace them, is important.

PARTNERSHIP

The project had 17 partners from seven countries (Table 6). The partners were from Germany, Estonia, Finland, Latvia, Lithuania, Poland, and Sweden. As a joint project, funding was received from the Swedish Institute to include Eco-partnership (a Belarussian NGO) as associated partner. The project involved local public authorities from seven municipalities, one water utility company, one sectoral agency, one NGO with four branches and four higher education and research institutions. Involved partners had an experience in conducting research in the field of chemistry, chemical waste management, wastewater treatment, implementing CAP and coordinating environmental policies.

[9] Themes in Keep.eu

TABLE 6: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Municipality of Stockholm	782,653	Local public authority
City of Västerås	199,426	Local public authority
Swedish University of Agricultural Sciences	205,210	Higher education and research institution
Turku University of Applied Sciences	330,596	Higher education and research institution
Pärnu City Government	94,794	Local public authority
Baltic Environmental Forum Estonia	246,702	Interest groups including NGOs
Riga city	147,685	Local public authority
Baltic Environmental Forum Latvia	215,945	Interest groups including NGOs
University of Gdansk	255,045	Higher education and research institution
Municipality of Gdansk	51,542	Local public authority
Gdansk Water Utilities Ltd.	93,390	Large enterprise
Baltic Environmental Forum Lithuania	183,440	Interest groups including NGOs
Environmental Protection Department under the Ministry of Environment	51,658	Sectoral agency
Institute of Applied Ecology	120,630	Higher education and research institution
Baltic Environmental Forum Germany	479,162	Interest groups including NGOs
Kaunas District Municipality	34,075	Local public authority
Municipality of Šilalė district	49,840	Local public authority

The responsibilities for partners were divided based on their specialty. The lead partner (Municipality of Stockholm) had administrative and leading role in the project. As Stockholm already had a CAP when the project started, this was used as an inspiration and partially as a template for development of the CAPs in the other partner municipalities. The NGO, Baltic Environmental Forum, with branches in Germany, Estonia, Latvia, and Lithuania, provided substantial support to the municipalities in the respective countries concerning the NonHazCity actions. Furthermore, the Turku University of Applied sciences, one of the project partners, was performing NonHazCity actions and engaging the City of Turku in these, same for the Swedish University of Agricultural Sciences and City of Västerås, while Gdańsk water utilities provided support to the municipality of Gdańsk. During the interview, it was noted that there could have been some business or industry actors in the partnership, as a trade organisation between project partners and businesses they targeted.

The relationships among the partners were both cross-sectoral and multi-disciplinary, also transnational. One aim of the NonHazCity project was for municipalities to share experiences and suggestions for activities with the other partners in the project to accomplish progress within the different areas. Another aim of the NonHazCity project was to share experiences outside the project partners' organisations.

PROJECT DESIGN AND IMPLEMENTATION

During the implementation process, each municipality had to monitor their own situation, make own conclusions about what is important in their context as the contamination situation would be also different. The interviewee also confirmed that the idea was for everyone to make their own actions, but at the end the results didn't differ that much, because the aim was also to learn together and learn from each other, rather than everybody doing different things.

The pilot activities were trainings in municipalities, business and family visits, consultations for business and inventory and substitution of chemical products or materials. The project wasn't affected by COVID-19, therefore physical meetings were possible. Also, the partners gathered the information and knowledge of HS in the wastewater and aquatic environments of the pilot municipalities, also in indoor dust, inhabitants' bodies and in commonly used products. Pilot activities' results were transferred to CAP development and businesses' and citizens' awareness.

The overall target groups of the whole project were municipalities, small businesses, and households. These three groups were involved in activities of defining the substance reduction measures and setting the chemical risk reduction goals. The project addressed different business sectors in the partner municipalities – independent of the size of the companies – to assess the chemical issues associated with their activities and to encourage them to engage in voluntary hazardous substance reduction actions. The communication channels reaching target groups were indirect and direct. Indirect advice was given by partners through website, social media channels and brochures. Direct advice was given through trainings for professionals, household visits, info days on street fairs, visits to schools and companies.

MUNICIPALITIES | After completing pilot activities for HS release reduction within the project, the partners started to design concrete activities for entities within the municipality, to include in the CAP. Overall, the project encouraged nine municipalities in Estonia, Finland, Germany, Latvia, Lithuania, and Poland to develop their own chemical plans.

Different municipalities implemented the CAPs in different ways. For example, In Gdańsk and Riga, the plan stands on its own, beside other action plans. In Kaunas and Šilalė, the CAP is incorporated as a part in the development plans or other similar structural documents. In Pärnu the waste plan is part of "Pärnu City Development Plan until 2025". In Stockholm and Västerås, the experiences from the project were incorporated in updated versions of the existing CAP.

BUSINESSES | The project activities concerning business sector included identification of local target groups, approaching target groups, screening, inventorying, and consulting, and conducting trainings.

During the interview it was pointed out that the partners had to put a lot of emphasis on how to approach businesses as it was the most challenging during the implementation of the project and how to motivate them to implement concrete chemical reduction measures. The techniques approaching the businesses included promoting interested businesses through various municipal visibility tools, offering visible acknowledgement to the businesses that agreed to reduce the amount of some HS, organising trainings or seminars, and offering information materials. One-on-one communication was also important as this is the best way of establishing an open and effective dialogue. Continuous training combined with integrated practical exercises had the greatest impact on businesses' substitution of hazardous substances.

HOUSEHOLDS | Almost 50 households were visited by the NonHazCity experts, and they found hazardous substances in everyday products like cosmetics, toys, and household chemicals. The households received information about the products in their home and advice on how to reduce the usage of HS. Different approaches were used for raising the awareness in different municipalities (urine samples, traffic light system, workshops). During a second home visit, the households showed what changes they had made,

for example some had exchanged kitchenware such as non-stick pans and plastic food containers as well as reduced the number of detergents.

For education and dissemination purposes, different materials were also prepared[10]. From the project's website one can find different information materials addressed to consumers, municipalities, and companies. Consumers can learn about hazardous chemicals and synthetic substances in different everyday products (cosmetics, toys, household chemicals etc.). Municipalities can learn about their local hazardous substances, green procurement, and other useful handbooks about chemical free environment variating between participating municipalities.

KEY ACHIEVEMENTS AND RESULTS

The main outcome for the municipalities was the chemical action plan, for businesses the report on "Hazardous substance reduction potential at local businesses" and for households it was increased level of awareness about HS.

CHEMICAL ACTION PLAN FOR MUNICIPALITIES | CAP contains long term strategies and concrete actions to be carried out after the project. Namely, some 100 concrete actions to reduce hazardous substances. The partners developed the plans in cooperation with the municipality and organisations working on the national level in their respective countries. These actions include training the staff responsible for purchasing in educational, medical, and social care institutions and the staff responsible for procurement in renovation, construction, and cleaning. In addition to internal changes in the administrative body, actions also involved targeting enterprises in the local area in certain sectors and information campaigns to residents. Additionally, the project partners reached 200 additional municipalities to teach how to reduce the amounts of hazardous substances entering the wastewater, sewage sludge and stormwater.

LOCAL BUSINESSES | The project improved knowledge on the potential for hazardous substance reduction in businesses. Owners of 40 companies received tailor-made advice on how to improve their handling of hazardous substances by partners. In addition, 340 companies and business associations and chambers of commerce attended training courses and more than 3500 received information from the project. The first steps in hazardous substance reduction are for a business to learn about hazardous substances, to make an inventory of chemicals used and identify products containing hazardous substances. Awareness of chemical issues can be raised by organising seminars for businesses, as was done in the NonHazCity partner municipalities. From the NonHazCity project partners' experience it might be concluded that the general awareness of the business sector about chemical safety, cleaner production and safer product choices is rising.

AWARENESS | NonHazCity has reached more than 15 000 inhabitants face-to-face in its events or visits and almost 1 000 000 persons by its social media campaigns. After the visits to almost 50 private households, participators claimed to have an increased awareness towards household products in their everyday life. The project website reached roughly 3000–4000 users per month and in total ~15 000 brochures were printed. Project teams received very positive feedback from school visits.

One of the results was also the need for the continuation project. In the project NonHazCity 2 the partners assessed the plans' effectiveness and adaptability during the implementation and a guide on how to integrate chemical risk management into the environmental management system.

CONCLUSIONS

The project contributed vastly to programme objectives by raising awareness about HS in different products, making HS reduction action plans and introducing ways for businesses to reduce HS usage. As a result, the representatives of municipalities and wastewater treatment plants, owners of local businesses and inhabitants received a practical set of tools to reduce emissions. As the project reached a great number of other municipalities, businesses, and citizens, who are now more aware of the issue and ways to tackle it. Additionally, it has made real actions towards cleaner environment from hazardous substances.

[10] https://thinkbefore.eu/en/

The conclusion is that the information on complex issues is difficult to deliver if it remains only indirect. Therefore, direct communication means should be kept for the future as well. Also, it was pointed out that if people relate to the problem, they are willing to change their behaviour. The project stressed that municipalities are the key actors for reducing the emissions and spreading awareness in all levels. The project produced a basic setup of activities that municipalities can implement when working towards cleaner environment.

6. SUMANU

PROJECT TITLE: SUSTAINABLE MANURE AND NUTRIENT MANAGEMENT FOR REDUCTION OF NUTRIENT LOSS IN THE BALTIC SEA REGION

OVERVIEW

Project acronym and No.	SuMaNu; #C002
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.1 Clear waters: To increase efficiency of water management for reduced nutrient inflows and decreased discharges of hazardous substances to the Baltic Sea and the regional waters based on enhanced capacity of public and private actors dealing with water quality issues
Duration	36 months, between 01.10.2018 – 30.09.2021
Budget	1 mill. EUR (0.77 mill. EUR – ERDF contribution)
Partnership	9 partners, 7 countries (DE, DK, EE, FI, LV, PL, SE)
Main topics[11]	Clear waters
Project Type	Platform

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

SuMaNu (Sustainable Manure and Nutrient Management) is a project platform, which analysed and synthesised approaches to sustainable manure and nutrient management promoted by four international projects, as follows:

- Baltic Slurry Acidification, funded through Interreg Baltic Sea Region (BSR) program. The project investigated one specific technological measure to reduce the emissions of nitrogen in the chemical form of ammonia.
- Manure Standards, funded through Interreg Baltic Sea Region (BSR) program. The project created a forum for innovative technologies for sustainable manure management to aid communication between farmers and other end users, businesses and enterprises, advisors, researchers, authorities, and policy makers.
- GreenAgri, funded through the Interreg Central Baltic Program. This project focused on identifying/ developing best practices at farm level, which included the planning of fertilizing and storage and spreading of manure in the best way.
- BONUS PROMISE, funded through the BONUS Programme. This project concentrated on studying the fit of manure as a fertilizer and consolidated scientifically that manure is a good option for more sustainable farming

Other results from previous Interreg BSR funded projects Baltic COMPASS, Baltic DEAL and Baltic MANURE were taken up and used in the activities of the project platform.

By combining and promoting the results of the projects described above, the SuMaNu project platform addresses one of the biggest problems common across the Baltic Sea, namely eutrophication[12]. This

[11] Themes in Keep.eu

[12] As defined by the European Environment Agency, eutrophication is process of pollution that occurs when a lake or stream becomes over-rich in plant nutrient; as a consequence it becomes overgrown in algae and other aquatic plants. The plants die and decompose. In decomposing the plants rob the water of oxygen and the lake, river or stream becomes lifeless. Nitrate fertilizers which drain from the fields, nutrients from animal wastes and human sewage are the primary causes of eutrophication.

phenomenon happens when excess nutrients, mostly nitrogen or phosphorus, enter the water environment and causes a decrease in biological diversity, denser water blooms, decreased water transparency, decreased oxygen content, deterioration of the appearance of the coast and a decrease in fish stocks. Nutrients enter the Baltic Sea both from natural sources and because of human activity. Diffuse sources account for half of the nutrient load to the Baltic Sea, which mainly come from agriculture[13], which is the result of inefficient management of nutrient loads on agricultural land. Therefore, efficient manure and nutrient management in agriculture is the foundation of securing sustainable food production in the future without harming the environment.

PARTNERSHIP

The project had nine partners from seven countries (Table 7) and additional five associated organisations. SuMaNu partners came from different Baltic Sea countries, Finland, Estonia, Latvia, Germany, Poland, Denmark, and Sweden. The project involved four higher education and research institutions, two interest groups including NGOs, one international organisation, one national public authority, and one enterprise. The partners had deep knowledge in research related to agro-food sector policies and innovation, agrotechnology, capability of bridging policy and science and promoting nature and human welfare.

TABLE 7: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Natural Resources Institute Finland (Luke)	221,271	Higher education and research institution
Baltic Marine Environment Protection Commission - Helsinki Commission (HELCOM)	122,000	International organisation
The Foundation for a Living Baltic Sea (BSAG)	181,100	Interest groups including NGOs
Estonian Crop Research Institute (ECRI)	65,413	Higher education and research institution
Union Farmers Parliament (ZSA)	66,069	Interest groups including NGOs
Agricultural Advisory Center in Brwinow (CDR)	64,930	National public authority
Organe Institute Aps	69,314	Small and medium enterprise
Julius-Kühn-Institut (JKI), Federal Research Centre for Cultivated Plants	100,910	Higher education and research institution
Research Institute of Sweden (RISE)	106,950	Higher education and research institution

As SuMaNu was a project platform built on existing data, it was important that the partnership had representation from those organisations that had a significant role in the previous projects. All the partners knew their results and they could effectively put them together during SuMaNu. HELCOM played an important role in the partnership, as one of the aims of the project platform was to collect the feedback to the policy recommendations and they brought in the policy viewpoint. Really important partners were the advisory organisations, dealing with farmers, who have a better reach to them. It was essential to include interest groups, like Union Farmers Parliament, which had better reach to the target groups, as they represented farmers both at national and EU level. Also, the associate partners helped to reach the target groups and end-users as well (e.g., Ministry of Agriculture and Forestry of Finland, The European Sustainable Phosphorus Platform).

[13] https://balticsumanu.eu/reducing-the-nutrient-load-to-the-baltic-sea-through-sustainable-cooperation/

The cooperation between the project partners was multidisciplinary, cross-sectoral and transnational. As the project was more about Baltic Sea regional recommendations for the countries not for municipalities, there weren't many municipalities involved as partners. Nevertheless, the opinions, ideas and feedback from public authorities supported the work of SuMaNu very much and the partners were able to communicate their results and information effectively. The partners involved in SuMaNu were mostly partners from two Interreg Baltic Sea Region projects. It was pointed out in an interview that the project couldn't have had too many partners because the budget and expected work needed to be in balance. But with more partners there could have been better geographical coverage of the whole region. The previous partners were also invited to the events SuMaNu organised.

PROJECT DESIGN AND IMPLEMENTATION

The project was divided into four work packages (WP), each of which had its own responsibilities for reaching the aims. The reports on how to improve traditional manure management chain (WP1) and on the need and possibility of manure processing (WP2) were the basis for the policy recommendations (WP3) on steps towards improved nutrient recycling in the BSR region. WP4 was established to support communication of these results. However, WP2, WP3 and WP4 consisted of different activities. WP2 and WP3 had three groups of activities and WP4 had four groups of activities planned, which helped the implementation process.

The policy recommendations were promoted in international events, some of which were co-organised with the relevant policy areas of the EU strategy for the Baltic Sea Region. Additionally, each country participating in SuMaNu disseminated the recommendations in diverse ways from webinars to organising field days, where more advanced manure spreading technologies were promoted to replace broadcast spreading. As part of WP3 activities, SuMaNu partners organised altogether nine national stakeholder events, some were even lucky enough to have traditional, real live events. However, the online meetings worked very well, and they were a good way to organise the events and gathered participants from diverse stakeholder groups. The aim of the events was to get feedback to the SuMaNu policy recommendations. Project partners conducted a gap analysis so that the promotion of SuMaNu's recommendations concerning best nutrient and manure management practices could be better targeted and more effective if the gaps are first clarified between envisaged and realised impacts.

The project platform SuMaNu organised in cooperation with other organisations three international workshops contributing to the SuMaNu policy recommendations. The aim of the workshops was to ensure the regional relevance of the joint policy recommendations. This was done by presenting and discussing the outputs of WP2 and the draft policy recommendations that were created based on the project results. This step was also seen important among the partners.

As highlighted in the project's materials[14], the target groups of the SuMaNu platform were authorities (e.g. national agricultural and environmental ministries, local and regional authorities and policy implementors), policy makers in the international level (HELCOM, EUSBSR, DG Agri, Envi and Regio, MEPs etc.), other relevant international organisations (i.e. European Sustainable Phosphorus Platform), related other projects or communities (i.e. Horizon projects, Greppa Näringen etc.), advisors, environmental agencies and NGOs, academic and scientific institutions, technology providers, producers of recycled nutrients, farmers and farmers' unions. The main target groups are authorities, policy makers, advisors, and farmers.

For education and dissemination purposes, different video materials were also prepared, on how to manage nutrients & manure, how to store animal manure to reduce water pollution and many other educational videos. These can be found on the projects' website[15].

KEY ACHIEVEMENTS AND RESULTS

The most notable achievement is the impact that the project had on the HELCOM Baltic Sea Action Plan. There are many measures addressing eutrophication and nutrient recycling that are in line with SuMaNu's

[14] INTERRG platform project proposal SUMANU (helcom.fi)
[15] https://balticsumanu.eu/

policy recommendations, and the project had a significant impact in communicating their need. The joint policy recommendations were made in cooperation with the target groups to make sure that they are useful for policy making and on the farm level. More than 200 national and regional authorities, farmers and their advisories supported the objectives and the focus of these recommendations. Two of the key outputs are policy recommendations and the report on "Technologies and management practices for sustainable manure use in the Baltic Sea region".

SuMaNu recommendations can be identified in the entire HELCOM BSAP (eutrophication measures), not just the BSR Nutrient Recycling Strategy. This means that the important results the partners synthesised will be addressed in the BSR region in the following years. Whether the measures are national or transnational (jointly advanced), the information SuMaNu collected and published is available as support.

Each policy recommendation concentrated on a specific topic of nutrient and manure management, which form a coherent set of recommendations for pan-Baltic organisations and national authorities, farmers, and their associations as well as agricultural advisories. There are six recommendations, which included measures on national level as well. Therefore, institutions need to create additional incentives to support implementing the actions that need to be taken.

The project also produced a gap analysis [16] on the challenges related to implementing the recommendations for improving manure and nutrient management practices in agriculture and thus decrease agricultural nutrient loads to the Baltic Sea. The gap analysis describes potential pitfalls in project design and implementation that could cause projects to achieve their expected impacts. It also provides recommendations in relation to improving policymaking.

These challenges relate to that many recommendations require national level approach and further development, which might lead to uneven regulations between different countries. This is causing gold-plating, that will further restrict farmers and cut into their already thin profit margins and lower their competitiveness in relation to countries without the strict regulations. Therefore, not only national but also transnational regulations, action plans and strategies can and should push improved nutrient management forward as an integral part of a sustainable food system and efficient circular economy. Another problem in implementing the recommendations is related the increased costs to consumers, farmers, and governments to achieve the lowered emissions.

CONCLUSIONS

The project established policy recommendations for more sustainable use of manure and nutrients in the BSR. The recommendations were targeted to national and international level policymakers, and the communication was addressed also to other stakeholders, like farmers through farmers' unions and advisory services. The established recommendations not only help to manage the nutrient loads, but contributed to reducing greenhouse gas emissions, reducing runoff, or leaching and increased on-farm nutrient use. Sustainable manure management strategies should consider the whole manure handling chain so that the benefits of adopted measures at one handling stage are not lost later down the chain. There is a need to develop cost effective technologies and practices for sustainable manure use, since if the measures are not profitable, they will not be implemented unless forced to through regulations.

During the interview it was pointed out that the platform for knowledge synthesis and discussion between different stakeholder groups is necessary. Implementing project platform gave more holistic results than those of the separate projects as different issues are merged. The holistic approach with lively discussions and influence on policies were the spice of the platform work, which are also the advantages of the project platforms. Direct approach was seen as necessary for addressing the issues, also in the future. Farmers would want to have more concrete examples and numbers related to the economic issues on manure and nutrient management.

[16] Microsoft Word - SuMaNu_Report_2-3_Gap_analysis_Organe_Report_Final.docx

7. ENERGIZE CO2MMUNITY

PROJECT TITLE: REAL-LIFE IMPLEMENTATION OF RENEWABLE COMMUNITY ENERGY PROJECTS

OVERVIEW

Project acronym and No.	Energize Co2mmunity; #X018
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.2 Renewable energy: To increase production and use of sustainable renewable energy based on enhanced capacity of public and private actors involved in energy planning and supply
Duration	9 months, between 01.04.2021 – 31.12.2021
Budget	0.67 mill. EUR (0.52 mill. EUR – ERDF contribution)
Partnership	9 partners, 6 countries (DE, DK, EE, FI, LT, LV)
Main topics[17]	Renewable energy
Project Type	Extension stage

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The Energize Co2mmunity is an extension stage of the project Co2mmunity. The projects' Co2mmunity main aim was to improve the knowledge concerning community energy (CE) in the Baltics Sea region (BSR). The CE in both projects is seen as an important aspect of the energy production system, where local communities "play an active role in the production of renewable energy from local sources such as wind, solar, biomass, hydropower, or geothermal"[18], additionally supporting sustainable energy distribution. As the result, the initial project helped to implement CE projects in several municipalities, regional energy planning agencies, and citizens' associations within the BSR by introducing the Renewable Energy Co-operative Partnerships (RENCOPs). It included guidelines development for the participatory mobilisation process to set up a RENCOP & CE Partner Agreement and policy recommendations to support CE, the Policy Paper for energy stakeholders in the BSR as well as guidelines developing a roadmap on how to increase CE using the RENCOP model. Within the Co2mmunity, partners tested nine RENCOPs in eight countries with different strategies and focus areas. During the implementation of RENCOP partners faced the challenge that some of the regions already implemented theoretical pilot projects; however, some of the regions faced difficulties to launch them.

Therefore, in the extension stage Energize Co2mmunity's main aim was to launch real-life pilot projects of renewable CE in BSR. The main objective was to increase the production of renewable energy in the BSR by piloting renewable CE projects and taking into consideration findings in the initial project, as these projects foster the energy transition and have a high social acceptance through citizens´ involvement in the co-development, co-financing and/or co-operating process.

PARTNERSHIP

The extensions stage project involved nine partners from six countries – Germany, Denmark, Estonia, Finland, Lithuania, Latvia. Represented partners were universities, NGOs, municipalities, planning regions, energy agencies, and clusters (Table 8). The overall experience among the partners varied both in research and implementing services.

[17] Themes in Keep.eu

[18] https://interreg-baltic.eu/project/co2mmunity/

TABLE 8: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Kiel University	87,732	Higher education and research institution
Green City Experience GmbH	79,000	Small and medium enterprise
Heinrich-Böll Foundation Schleswig-Holstein e.V.	95,250	Interest groups including NGOs
Municipality of Middelfart	108,500	Local public authority
Tartu Regional Energy Agency	65,650	Sectoral agency
Green Net Finland	69,325	Business support organisation
Kaunas Regional Energy Agency	58,150	Sectoral agency
Riga Planning Region	72,550	Regional public authority
Aalto University	30,500	Higher education and research institution

Involved partners had experience in conducting research in the field of energy, sustainable societal and political change promotion which includes the involvement of citizens in sustainable societal transformation, implementing energy projects and services, developing a smart and low-carbon urban environment, etc. Among the partners were also municipalities that piloted RENSCOPs, e.g., there were implemented renewable energy community demonstration projects in Latvia that made use of solar energy solutions with the purpose to demonstrate how the prosumer approach can be applied in practice and how renewable energy communities can operate.

Therefore, the responsibilities of partners were divided based on their experience. The lead partner (Kiel University in Germany) had an administrative role leading the project; several municipalities from Latvia, Denmark, Estonia, and Lithuania were responsible for implementing the pilot projects. Partners with experience in the energy field and engagement of citizens were responsible for coordinating the transnational pairing of RENCOPs and community energy pilots through study visits and exchange of experience.

Relationships among the partners were both cross-sectoral and multi-disciplinary. The involved partners represented several sectors such as the public, including universities and municipalities, private, and NGOs. Furthermore, they not only were experienced in research in the field of energy, but some of them had a hands-on experience in engaging society in activities related to CE.

The partnership in the initial project Co2mmunity included 16 partners from eight countries of which seven did not participate in the extensions stage. This partnership compared to the extension stage also included partners which did more theoretical work, they gathered and analysed data and information about CE in partner countries, compared national and regional conditions in BSR, searched for the best already existing examples in BSR, analysed the existing and possible barriers related to CE projects, introduced RENCOPs, handbooks, roadmaps, as well as marketing activities. In the initial project, nine partners from eight (EE, DK, FI, DE, LV, LT, PL, SE) countries also tested RENCOP. However, not all the partners from the initial project have been involved in the extension stage project. This is since the aim of the extension stage was specifically to conduct piloting activities while not all of the involved partners during the first stage had the needed competence, capabilities as well as willingness to do that. Moreover, some of the potential partners have faced several hurdles while obtaining governmental co-financing, therefore did not join in extension stage.

Even though the vast majority of extension stage partners are from metropolitan areas, the pilots were mainly conducted in rural areas, which enhanced the development of rural areas in the BSR.

PROJECT DESIGN AND IMPLEMENTATION

The initial project's main aim was to improve the capacity in BSR to produce renewable energy based on the CE approach, therefore, in the extension stage, the partners were willing to test two outputs that were introduced in the initial project - "Guidelines for participatory mobilisation process to set up Renewable Energy Cooperatives (RENCOP)" and the "Transnational CE partner agreement".

The first activity was to launch six real-life pilot projects of renewable CE. In this activity partners used already established cooperation in the initial project in Renewable Energy Cooperatives. The chosen pilot partners and regions were the ones that were already developed out of the RENCOPs in the initial project; however, still, facilitation was required to successfully implement the pilots. The activity included actions such as piloting, development of solutions for CE projects; and overcoming barriers in the development of CE.

The second activity was aimed to ensure that pilots were launched successfully and received the necessary support. Within the project three pairing partners were matched, where paired regions had similar context and renewable energy solutions, to exchange solutions regarding technical, ownership, financial, or stakeholders´ involvement topics. Matched partners were – Latvia and Germany, Finland and Estonia, Denmark and Lithuania. The meetings included transnational study tours with the personal exchange, detailed presentation of and discussion about the specific pilots being implemented in the partner countries during the project as well as expertise and knowledge exchange. Moreover, meetings have enabled the know-transfer in relation to important issues regarding the successful implementation of CE projects, as well as the concrete definition of long-termed basic concepts on how to deepen and confirm the transnational cooperation beyond the project. The transnational cooperation ensured the transfer of knowledge and capabilities to successfully implement CE and to find the best solutions for occurring barriers and other difficulties.

At the end of the pilot, all partners introduced the main findings, milestones, achievements, CE solutions, and barriers that they had overcome, as well as lessons learned during the piloting phase. Some of the partners, e.g., the Riga Planning region (Latvia) expressed the willingness to transfer the good practices and the project results to other municipalities in the region after the successful implementation of the pilot.

The target group of the project was the citizens that produced energy on their own; municipalities that have some buildings in ownership that are suitable for the installation of renewable energy equipment such as solar panels, instance; and policy stakeholders or decision-makers. The end-users are the local inhabitants of the areas affected. To reach the target audience, project partners have implemented the storytelling method during various online and in-person events. The storytelling has emphasised the success stories of the pioneers of local renewable energy production as well as enlightened about the pros and cons of such energy production and the green positive impact of the technology. The first target group that has been aimed at specifically was farmers. Even though it has appeared to be a bit harder to engage the target group via online tools, it has also proven its effectiveness.

COVID-19 has impacted also this project. To cooperate, project partners successfully switched to online means of communication. To avoid restrictions and not break them, project partners participated in the local tours as well as focused on various online events instead of international tours for experience sharing. However, several creative communication methods have been introduced such as movie and short video creation for sharing the results and experience or videoconferences from the building sites.

KEY ACHIEVEMENTS AND RESULTS

Several outputs were introduced in initial projects such as guidelines for a participatory mobilisation process to set up a RENCOP and CE Partner Agreement, Policy Paper for energy stakeholders in the BSR, White Paper: on policy recommendations to support community energy and Roadmap on how to increase community energy using the RENCOP model. Thus, these outputs resulted in better knowledge of CE in BSR, as well as they identified the main barriers which were hindering some of the countries/regions to

launch the CE in the first place through piloting. Therefore, the extension stage was a necessity to gain a deeper knowledge of how to implement the RENCOP model and improve renewable CE in the region.

As a result of the extension stage, six renewable CE projects were piloted in six different partner regions. The pairing activity ensured that partners had a stable and available communication arena to share best practices and knowledge about CE and to receive the necessary support in implementing CE. It also increased the partners' capabilities to work in a transnational environment as piloting included study tours, presentations, discussions, etc.

Another result of the project was a compilation of findings for CE solutions. All partners identified their milestones and achievements, the lessons learned and overcame barriers. All the findings were not only shared on the projects' webpage but also transferred to other national/ regional/ local level stakeholders, through the organised conference as well as other presentations and seminars, etc. Overall, the project increased the knowledge about the current situation of CE in BSR, learned about the existing organisational structures, and also, in some cases, identified ways to improve them, e.g. in case of Latvia there was no clear regulatory framework for renewable CE, therefore the pilot project also included the cooperation with the national energy policy maker – Ministry of Economics. In fact, it can be supposed that the regulations that have been developed in Latvia, for instance, are partly the result of the project which was rather unexpected by the project partners.

The switch to digital tools made some changes in the pilot implementation, however, the activities which were planned in the physical environment were successfully transformed to the digital one, e.g., Denmark organised a virtual tour of their pilot site. Moreover, since the piloting activities were also connected to the experiments with sustainable energy generation, it was not complicated to build the system even during the COVID-19 times. Also, the more classical online event types such as webinars worked well.

The project has several success factors. One of them is connected to communication – weekly meetings have been organised throughout the project implementation phase which contributed to fostering collaboration between partners. Moreover, there were special transnational meetings that were dedicated specifically to the result evaluation and comparison. That facilitated the interproject knowledge transfer. Another success factor was the careful choice of partners. That benefited a lot since every partner was highly motivated to conduct the pilot as well as had the capacity, competence, and capabilities to do that. However, there also was a major hindrance in some countries – bureaucracy. In Germany, for instance, it was necessary to extend the pilot stage by one year due to the collection of all the required documentation. Also, the reporting in the extension stage appeared to be complicated and included several detailed and picky questions which required a lot of time to reply to.

CONCLUSIONS

The initial project let partners estimate the renewable CE situation in BSR, and by implementing RENCOP pilots they identified the driving forces and barriers in terms of CE. However, the Energize Co2mmunity tested it in the real-life project, and found out how the RENCP model works in real-time situations. The collaboration let partners enhance their transnational communication as different regions were paired, it also ensured stable and direct support from each paired partner, including knowledge transfer between both the partners and the stakeholders in each partner region.

Throughout the project, several positive points have been identified in the online shift. During the COVID-19 pandemic due to the imposed restrictions, it was almost completely impossible to conduct in-person meetings and travel internationally. At that time the regularity of online communication proved its importance as it enabled information sharing in the absence of any other communication channels. Secondly, it has been noticed that online events such as webinars might not be so much engaging; however, they do bring value and increase institutional capacity substantially by enabling the mechanisms of knowledge sharing between partners and everyone interested.

Together with that, there can be mentioned the other good practices that is not connected to the online shift. First of all, partners have noted the fact that throughout this project it was possible to finance the piloting activities such as new energy network creation from the project budget which cannot be afforded

by most of the projects. Also, it is important to mention that the staff cost reporting has been simplified which provided some extra hours of work on the project as well as reduced the bureaucratic burden.

Finally, as a result of the project, the partners have captured the lessons learned. These lessons do include the fact that it is always necessary to account for different bureaucratic barriers that are common in some countries as they potentially can delay the project implementation. Also, it should be a rule of thumb that the lead role in the partnership is assigned based on competencies and experience and is not based on human resource availability. This is essential since the existing system where the lead partners are chosen based on human resource availability excludes small but experienced organisations from the leading roles.

8. CAMS PLATFORM

PROJECT TITLE: CLIMATE ADAPTATION AND MITIGATION SYNERGIES IN ENERGY EFFICIENCY PROJECTS

OVERVIEW

Project acronym and No.	CAMS Platform; #C008
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.3 Energy efficiency: To increase energy efficiency based on enhanced capacity of public and private actors involved in energy planning
Duration	32 months, between 01.09.2019 – 31.03.2022
Budget	1.05 mill. EUR (0.75 mill. EUR – ERDF, 0.10 mill. EUR ENI+RUSSIA contribution)
Partnership	9 partners, 6 countries (DE, DK, EE, LV, PL, RU)
Main topics[19]	Energy efficiency
Project Type	Platform

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

CAMS Platform (Climate Adaption & Mitigation Synergies) is a project platform, which aimed to learn from existing projects co-financed by the EU Structural Funds and to research the potential of energy efficiency measures for increasing the resilience of the housing sector. During the project, an existing qualification programme on energy efficient refurbishment of multi-apartment buildings was updated and adopted for the BSR context.

The CAMS Platform improved energy efficiency measures by aligning research, recommendations, audits and investments from 11 projects across the Baltic Sea region. CAMS platform brings together knowledge and experience from the projects Effect4Buildings, LowTemp, Area 21, CO2Community, ActNow, SUMBA, BEA-APP, RDI2CluB that are funded by Baltic Sea Interreg and HERON, SIM4NEXUS, ENLARGE, PANEL 2050 funded by Horizon 2020 and ACREE funded by EuropeAid. CAMS Platform provides access to data of 33 pilot energy audits of buildings and premises elaborated in the Baltic Sea Region in 2020-21. The CAMS Platform as energy audit database serves as reference source and a collection of pilot cases which can provide the professional data and comparative evidence. During the project, partners tested a new energy auditing methodology and developed a macroregional energy audit database.

Due to population growth, migration to cities, household size changes, increasing levels of wealth and lifestyle, the need for housing will increase alongside with the energy demand. Buildings are responsible for approximately 40% of EU energy consumption and 36% of EU greenhouse gas emissions thus contributing to climate change processes. To achieve the target of making Europe climate-neutral by 2050, renovation of buildings is an important initiative to increase energy efficiency in the building sector, to reduce greenhouse gas emissions and at the same time to improve the resistance against climate change events. Another challenge is the climate change that is triggering the need for a change in the ways we are used to. Energy efficiency (EE) measures such as renovation of buildings can address some of the vulnerabilities to climate change impacts and counteract the increased energy demand, such as climate proofing buildings against extreme weather events using solar engineering, carbon neutral refurbishment materials, cool or green roofs or switching to distributed generation secures simultaneously climate change adaptation. Co-benefit of synergic mitigation-adaptation can contribute to the environment and human quality of life decreasing the vulnerability to the climate risks.

[19] Themes in Keep.eu

PARTNERSHIP

The project had nine partners from six different countries: Latvia, Estonia, Russia, Poland, Germany, Sweden (Table 9). The project involved four interest groups including NGOs, two higher education and research institutions, one international organisation, one local public authority, and one national public authority. Additionally, a service provider, Nordic Energy Audit AB (Sweden), was contracted to develop and implement the methodology and as well support the project with a digital platform to facilitate the work.

TABLE 9: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Tartu Regional Energy Agency	180,600	Interest groups including NGOs
County Administrative Board of Dalarna	219,059	Local public authority
Permanent International Secretariat of the Council of the Baltic Sea States	137,925	International organisation, EEIG
Ministry of Economics	112,065	National public authority
Foundation of Energy Saving in Gdansk	62,650	Interest groups including NGOs
Baltic Environmental Forum Latvia	42,002	Interest groups including NGOs
Baltic Environmental Forum Germany	96,325	Interest groups including NGOs
Stockholm Environment Institute Tallinn Centre	79,686	Higher education and research institution
Peter the Great St.Petersburg Polytechnic University	116,190	Higher education and research institution

The participating project partners had in-depth knowledge in sustainable energy management and development, including energy efficiency, efficiency mobility by the lead partner and Foundation of Energy Saving in Gdansk. Also, there were competences from institutions that normally ensure that decisions from the parliament and the government are implemented in the country by County Administrative Board of Dalarna also intergovernmental institution for regional cooperation competence (Permanent International Secretariat of the Council of the Baltic Sea States). Baltic Environmental Forum manages various projects, creating awareness and promotes environmental management. Stockholm Environment Institute carries out applied research and stakeholder engagement in the Baltic Sea Region and the EU.

The project was a project platform, which brought together knowledge and experience from previous projects. Reaching stakeholders beyond the project partnership was based on information and contacts established during previous projects and applying a 'snowball effect' for getting acquainted with more specialists. The cooperation between project partners was multidisciplinary, cross-sectoral and transnational. The project partners made a transnational field visit for auditing and organised different events and webinars where they shared experience within the project partners and with the wider audience. Project partners contribution to different tasks were related to the activities they were involved and responsible for.

PROJECT DESIGN AND IMPLEMENTATION

Project was divided into four work packages (WP) to divide activities and separate outputs. Activities within WP1 included management and communication, running project website for outreach, and arranging meetings. It was also for dissemination, and reporting and was led by Tartu Regional Energy Agency. The aim for WP2 was capitalising of ongoing energy efficiency projects in BSR, enhancing building energy

performance auditing. Lead partner was County Government of Dalarna. Activities included developing the energy audit database. WP3 was led by BEF Germany focused on capitalisation of the results of the ARCEE project and foresaw preparations of the Qualification programme on housing refurbishment for BSR which were adjusted to all participating BSR countries. WP4 was led by CBSS facilitated the climate adaptation and mitigation policy dialogue, which resulted in policy recommendations and guidance for climate proofing ESIF projects.

The target groups differed among the project platform outputs. The target groups were higher technical and vocational educators, who could use the results as a basis for introducing the topic to relevant professionals. Also, policy planners and practitioners responsible for energy audits, design, and implementation of energy-efficient renovation of buildings were among the target groups of the project.

One of the ways delivering the results or discussing dilemmas were workshops, webinars, press release and even an international roundtable. During the webinars or workshops the presenters were also able to engage participants from different institutions and countries. During the interviews it was pointed out that the implementation of project activities, preparation of Guidelines, Qualification programme required communication and consultations with various experts at national and regional authorities e.g., ministries, energy agencies, planning regions, universities as well as companies providing energy technologies. During this communication there was a good opportunity to introduce the project, its goals and materials prepared.

As one part of the project plan, National Energy audit days were arranged, where different national stakeholders were invited to participate. The National energy audit days were conducted in an online format due to the COVID-19 situation and two presentations, “Introduction to the SPEEED methodology” and “State of the art in energy auditing”, based on the project was held. The discussions afterwards and feedback were in general good and engaging. Afterwards, the survey on energy audit methodology and digital tools was performed. In total 28 respondents from 5 countries participated and the respondents almost exclusively were energy engineers or equivalent.

In the interviews, it was pointed out that shifting to online mode of cooperation did not have an important impact on cooperation between project partners in general. It allowed more flexibility in arranging joint project partners meetings in smaller working groups. However, having almost no face-to face meetings reduced the opportunity for in-depth experience exchange between partners in situ, and to some extent had also a negative impact on “project team feeling”. On the other hand, the partner said that the positive effect of “online shift” was that the bearing surface was significantly wider than it would have been physically. They had a workshop between the macro-regions and there were the Adriatic and Alpine regions, in any case the coverage area expanded.

In this project, a new methodology (the SPEEED-methodology) which utilises digitalisation for energy audits and BEPC was developed and in practice implemented to enable the many benefits from improved energy data handling. For unification and harmonisation of the energy audits across the BSR, a series of pilot energy audits in Estonia, Latvia, Poland, and Sweden were carried out by respective project partner’s experts (licensed auditors). Thus, the usage of digital tools implementing energy efficiency measures is essential.

The role of public authorities in the implementation was important. Public authorities as project partners were responsible for elaboration of policy recommendations on energy auditing (e.g., Latvia Ministry of Economics) and elaborating benchmarking and methodology for energy auditing (e.g., County administrative board of Dalarna, Sweden). Both institutions organised the discussions with target groups and networking with other stakeholders in the countries and gave valuable inputs to preparation of other project deliverables.

KEY ACHIEVEMENTS AND RESULTS

The project platform delivered several outputs that can be categorised to energy auditing, qualification programme, climate policy support, and a number of project events. The most important results are a new energy auditing methodology and a macroregional energy audit database. The developed data platform

has the potential to assist in standardizing and verifying energy performance criteria for buildings, developing guidance on achieving synergy between climate change mitigation and adaptation, as well as presenting a catalog for energy efficiency and climate adaptation measures.

ENERGY AUDITING | Firstly, project partners published a state-of-the-art report on energy auditing, where the new methodology along with the results is explained in detail. In total, 33 audits with the applied methodology were registered in the project. Though, all partner countries testified that the competence of auditors is generally not high enough and for most partner countries there is not a system for quality control of auditors. Another very important output is the database of energy audits, which provides access to data of these 33 pilot energy audits of buildings and premises. Lastly, the partners wrote another report on Policy recommendations on introduction of energy audit data systematisation method (NEAD platform) in Baltic Sea Region.

QUALIFICATION PROGRAMME | In the qualification programme book on EE refurbishment of apartment buildings, the authors explain overall approaches to refurbish a residential building with a focus on reducing the energy consumption of the building. In total, this book consists of 10 modules that address different aspects of the refurbishment process. This is addressed to a wider audience, like semi-professionals that want to learn more details about the refurbishment process, working e.g. in housing associations, planning departments or energy agencies. It is also suitable for students of environmental or sustainability studies that want to learn more about energy efficiency in the building sector. The project partners held an online seminar on Validation of Qualification Programme for Housing Refurbishment to present the programme, introduce new aspects included and discuss dissemination paths.

CLIMATE POLICY SUPPORT | To support the climate policy, the project partners published a report on combining climate adaptation measures within EE projects in BSR; guidelines for climate proofing EE projects, and policy recommendations for mainstreaming climate into MFF 2021-27. Also, dialogue meeting on climate policy, energy efficiency was organised and transnational meetings of Climate Action Coordinator of the EU Macro-region Strategies.

The project platform has in some ways succeeded in influencing the policy as a number of suggestions and policy recommendations from CAMS Project Platform were taken up by the European Commission in a new Strategy on Adaption to Climate Change. Also, policy recommendations were further used by Sustainable and prosperous region Unit of the Permanent Secretariat of the Council of Baltic Sea States one of the partners of the project, and by the Expert Group on Sustainable Development of the CBSS, as one of the tools for monitoring the implementation of the Baltic 2030 Action Plan and UN SDG-s in BSR where climate actions have been prioritised. One possible outcome with improved handling of energy efficiency measures was to provide financial institutions with real proof that efficiency measures are profitable, which can increase the pace of green loans and thereby increased pace of energy efficiency.

To realise the identified improvement opportunities and as well as to address areas that were less covered in the project, the following two projects to be initiated in the future: a project focusing on implementing energy efficiency measure database(s) and a common project on improving and harmonising energy audit methodology and data handling

CONCLUSIONS

The project CAMS Platform contributed to programme objectives by facilitating integrative cross-sectorial policy discussions and alignment of policies in the BSR countries, including mainstreaming of climate change mitigation and adaptation into construction, housing, and service sector policies. The project platform allowed learning from various useful and relevant experiences and approaches obtained beyond the Baltic Sea region. It allowed linking the science, policy and practice thus giving an opportunity to tackle the issue of climate change mitigation and adaptation, energy efficiency from broader perspective. The platform promotes the best practices and innovative methodologies of multiple BSR and pan-European energy efficiency project. In the future the transnational cooperation should be continued.

This project constitutes a concrete Proof of Concept for how to improve energy audit methodology, utilise digitalisation within energy efficiency and how to generate new key knowledge for e.g. policy design and

evaluation. Furthermore, all project partners welcome stronger regulation and tougher implementation of Directives and more incentives for voluntary energy audits. It was pointed out during the interviews, that in public institutions there is still lack of specialists on energy efficiency issues that could bring forward the knowledge and information prepared within the frame of CAMS Platform project to broader audience of stakeholders e.g., at regional and local level municipalities. Additionally, more focus could be put on implementation of pilot actions creating good practice examples of activities at local and regional level.

9. LOWTEMP

PROJECT TITLE: LOW TEMPERATURE DISTRICT HEATING FOR THE BALTIC SEA REGION

OVERVIEW

Project acronym and No.	LowTEMP; #R063
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.3 Energy efficiency: To increase energy efficiency based on enhanced capacity of public and private actors involved in energy planning
Duration	42 months, between 01.10.2017 – 31.03.2021
Budget	3.77 mill. EUR (2.84 mill. EUR – ERDF, 0.17 mill. ENI + RUSSIA contribution)
Partnership	19 partners, 9 countries (DE, DK, EE, FI, LT, LV, PL, RU, SE)
Main topics[20]	Energy efficiency
Project Type	Regular

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The project LowTEMP promoted smart and future-oriented district heating by providing know-how and strategic tools. The goal was to improve strategic tools on planning, financing, installing, and managing low temperature district heating (LTDH) systems allowing to significantly decrease heat loss. The targets of the project were in line with the objectives of the Energy Efficiency Directive (2012) and complied to the Renewable Energy Directive (2009) and the Energy Performance of Buildings Directive (2010), which require Member States to develop ambitious policies as regards the use of renewable energy sources and energy efficiency in heating and cooling networks.

The energy demand for heating and cooling in Europe and the Baltic Sea Region (BSR) is responsible for more than one third of the final energy consumption. Thus, the deployment of more efficient and innovative district heating (DH) technologies is key to a successful energy management in cities and districts. Efficient DH with LTDH technologies offers new possibilities for increased energy efficiency with reduced fossil energy consumption, which will help to achieve the EU targets in reduction of CO2 emissions. Therefore, the heating systems in the BSR need to be upgraded to become more sustainable.

PARTNERSHIP

The LowTEMP partnership was composed of 19 full partners (Table 10) and 30 associated partners from 8 EU Member States (Poland, Germany, Denmark, Sweden, Estonia, Finland, Latvia, Lithuania) and Russia. The partners represented four municipal and regional authorities, four higher education and research institutions, four sectoral agencies, two infrastructure service providers, one business support organisation, one interest group, one large and two medium enterprises. The project partners combined the relevant competences and network contacts to jointly work for the improvement of the DH infrastructures in the BSR.

TABLE 10: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Institute of Fluid Flow Machinery, Polish Academy of Sciences (IMP PAN)	524,500	Higher education and research institution
Brandenburg University of Technology (BTU) Cottbus - Senftenberg	281,336	Higher education and research institution

[20] Themes in Keep.eu

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
ZEBAU - Centre for Energy, Construction, Architecture and the Environment GmbH	210,325	Small and medium enterprise
Holbaek Municipality	169,912	Local public authority
Gate 21	115,664	Interest groups including NGOs
Sustainable Business Hub (SBHub)	237,738	Business support organisation
Thermopolis Ltd.	280,000	Sectoral agency
District Heating Kurikka	80,000	Infrastructure and public service provider
Tartu Regional Energy Agency (TREA)	173,070	Sectoral agency
Riga Technical University (RTU)	250,000	Higher education and research institution
Vidzeme Planning Region	149,878	Regional public authority
Gulbene Municipality Council	180,000	Local public authority
Klaipeda University	208,740	Higher education and research institution
Public Institution Housing Energy Efficiency Agency	28,040	Sectoral agency
ANO Energy Efficiency Centre (ANO EEC)	199,747	Sectoral agency
District Heating Enterprise Ltd. - OPEC Gdynia	170,000	Large enterprise
AGFW-Project-GmbH	163,886	Small and medium enterprise
Kalundborg Municipality	123,619	Local public authority
Halmstad Energy and Environment (HEM)	221,300	Infrastructure and public service provider

The project partners had experience in urban energy use and efficiency, energy and climate action plans, carbon emission monitoring, developing new energy and resource efficient solutions, regional climate strategies, energy concepts, urban refurbishment projects and municipal climate protection concepts. Additionally, they have conducted fundamental research in the areas of principles of operation, design, construction, and development of machinery for energy conversion in flows. All these competencies together provided a strong basis for successful cooperation. Also, during the interview it was confirmed that having partners from district heating companies was important.

Partners located in rather economically stronger metropolitan and central areas: Brandenburg University of Technology (BTU) Cottbus – Senftenberg, ZEBAU - Centre for Energy, Construction, Architecture and the Environment GmbH, Holbaek Municipality, Gate 21, Sustainable Business Hub (SBHub), Thermopolis Ltd., District Heating Kurikka, Riga Technical University (RTU), Public Institution Housing Energy Efficiency Agency, ANO Energy Efficiency Centre (ANO EEC), District Heating Enterprise Ltd. - OPEC Gdynia, AGFW-Project-GmbH, Kalundborg Municipality, Halmstad Energy and Environment (HEM), Institute of Fluid Flow Machinery, Polish Academy of Sciences (IMP PAN), Klaipeda University. Partners in economically weaker rural areas were Tartu Regional Energy Agency (TREA), Vidzeme Planning Region, Gulbene Municipality Council.

The relationship between partners was multidisciplinary, cross-sectoral and transnational. An important aspect pointed out by the project partner during the interview was that the project had some full and associated partners who knew about low temperature district heating and could transfer their knowledge in the project context to other partners in the beginning. Partners from all the Baltic Sea region countries were invited because there is a high rate of DH in that region (Baltic states, Poland), therefore the location

of partners was relevant in the project. The online shift did not affect the communication between the partners drastically, as noted on the interviews.

PROJECT DESIGN AND IMPLEMENTATION

The project partners implemented several activities that supported the aim of the project, from the data collection to promoting of LTDH solutions. Activities that supported the learning process were study visits, development of a "Train the Trainer" seminar programme, development of a local stakeholder platform and pilot projects. The project partners ensured far-reaching communication and capacity building on LTDH locally and nationally throughout the project period, coordinated awareness raising and knowledge transfer in the selected municipalities and regions.

The target group of the project was wide and depended on the outputs as the key aim of LowTEMP was to raise awareness and achieve capacity building in the field of smart and sustainable DH system. For example, LTHD methodology target group was municipalities and its DH network operators, heat suppliers, energy agencies and other relevant stakeholders. The DH Knowledge Platform was addressed to DH operators and engineers, urban planners, and energy managers in municipalities. The training programme was transferred also to other BSR municipalities, energy agencies, planners, or DH suppliers via a "Train the Trainer" approach, thus increasing the durability of the project know-how and outcomes. The funding gap calculation tool was targeted at district heating operators, investors, and funding authorities. Pilot energy strategies were for municipalities and public authorities, utility companies, especially heat suppliers and operators of DH systems, planners, and engineers as well as housing associations and house owners. The project didn't target citizens directly, but experts can advise residents and building owners to connect a building to the DH grid. But the related infrastructure needs to be supplied by municipalities and the DH companies.

In parallel to the development of the strategies, tangible pilot activities were realised. Therefore, several of the municipalities participating in LowTEMP implemented activities to test and/or start the implementation of LTDH in their DH infrastructure. The pilot measures had different characters, depending on the current type of the DH supply infrastructures, connected types of buildings, existing problems and potentials for improvement.

The location of the project partners was also relevant because district heating systems are somehow widespread in the BSR, but the current generation of heating grids and technologies is outdated. Thus, the installation of low temperature grids or its integration into existing district heating systems is a challenge, for economic and technical planning because investments require high upfront costs, while construction works on the pipeline system require the coordination of experts and public authorities. Which means that a relevant support by an DH expert is necessary for implementation. Also, the location of the municipality plays a significant role. When implementing the systems, the whole city or region should be investigated by taking account of regional differences and key needs, which might be even more challenging depending on the location of the municipality.

KEY ACHIEVEMENTS AND RESULTS

All the key achievements account for capacity building, as the main aim was to raise the awareness about DH and LTDH in BSR. Also, one of the most relevant outputs LowTEMP partners developed was the LowTEMP training package, which was also pointed out on the interview. It allows the target groups to learn about the various aspects of low temperature district heating.

The LowTEMP training package[21] contains the key know-how, innovative strategies and tools to enable DH stakeholders to realise LTDH. 26 seminar modules cover different aspects – from background material to strategies and concepts, from technical aspects to best practice. The training material is mainly for the use of energy agencies responsible for strategic development and implementation of low carbon strategies

[21] Training - LowTEMP

and measures, cluster agencies and business hubs related to a green economy, municipal representatives responsible for climate issues.

Furthermore, the partners developed District Heating Knowledge Platform[22], which serves as an essential information and data collection as the basis for sustainable applicable heating strategies and provides actors responsible for energy supply systems in BSR cities and regions with all relevant basic information to support the process of integrating LTDH. Moreover, the partners developed transferable guidelines, that are called pilot energy strategies. They provide several options and scenarios for the transition to smart LTDH systems with various customer types (i.e., residential, commercial, and industrial heat demand as well as low and high heat density areas). Publication of "Methodology for strategies to implement LTDH"[23] provides a step-by-step guideline on how to compile an energy strategy and apply it at municipal level to increase energy efficiency in existing and new district heating networks. Also, LowTEMP investigated the economic framework conditions and funding gaps[24] that are necessary for the installation of LTDH systems and at the same time, collected knowledge on existing business models.

Municipalities' institutional capacity increased by directly participating in the project, but also by participating in LowTEMP events. It was about learning about the importance of sustainable heat supply and how these techniques work with low temperatures. The partners managed to provide this knowledge to them, and they made the target groups more aware and capable of having influence on their DH supply. One of the most important aims of the project was a capacity building and during the interviews it was noted that thanks to online shift they reached more people than they could have with physical events. The gained knowledge on the implementation of sustainable DH technologies was compiled and afterwards disseminated and promoted within the LowTEMP partner municipalities and regions as well as to important experts in the project partners' networks. The next step within the LowTEMP capacity building activities was the development of training materials and programmes to educate the target groups in the planning, financing, and managing of sustainable LTDH grids.

The major challenges when it comes to LTDH are not so much related to technical issues but often connected to economic or organisational aspects. DH systems are monopolistic by nature, i.e., strictly regulated in terms of prices and tariff models. Also, investments in LTDH seem to be a financial burden in the first realisation phase and funding schemes seem to be missing.

The project was also followed by LowTEMP 2.0. Within the extension stage project LowTEMP 2.0, the partners adapted the training material to their national conditions, and additional language versions of all nine partner languages were created in addition to the English version. Furthermore, they developed an e-learning programme which supplements the training package.

CONCLUSIONS

The project raised awareness and know-how among the responsible public and private stakeholders about the necessity to deploy sustainable energy supply systems that allow the use of renewable or unused surplus heat and low temperature heat distribution. In the future, it is important to continue transnational cooperations, as it helps to achieve goals that are relevant for the overall region and Europe to become sustainable, competitive, and smart. Economically weaker areas were able to implement pilots alongside with partners from economically stronger areas, as a result they received pilot energy strategy, which they continued using as a follow up. Within this kind of project, the pilots have a tremendous effect, as this is something that can be presented to public, and it also contributes to institutional capacity building. Therefore, pilot activities are something that should be kept also in the future programmes. The overall success and outcomes depended on all the participating partners, who were very keen on the topics, which was noted also on the interviews.

[22] http://www.dhknowledge.eu/
[23] Methodology-for-strategies-to-implement-LTHD.pdf (lowtemp.eu)
[24] LowTEMP_Manual-for-determining-economic-efficiency-and-funding-gaps-of-LTDH-projects.pdf

10. BALTIC LINES

PROJECT TITLE: COHERENT LINEAR INFRASTRUCTURE IN BALTIC MARITIME SPATIAL PLANS - BALTIC LINES

OVERVIEW

Project acronym and No.	Baltic LINes; #R020
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.4 Resource-efficient Blue Growth
Duration	37 months, between March 2016 – April 2019
Budget	3.4 mill. EUR (2.67 mill. EUR – ERDF contribution)
Partnership	15 partners, 9 countries (DE, SE, PL, LT, LV, EE, FI, DK, NL)
Main topics[25]	Blue Growth
Project Type	Regular

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The Coherent Linear Infrastructure in Baltic Maritime Spatial Plans (Baltic LINes) project of the Interreg Baltic Sea Region Programme 2014-2020 was developed to coordinate the planning of the national sea area in the Baltic Sea countries, by developing tools for mapping spatial shipping scenarios. Maritime spatial planning (MSP) is a complex task considering that it is shaped by the different sectoral interests (transportation, environment, fisheries, maritime, energy, etc.) which must be carefully weighed against each other, as well as by the territorial conflicts which must be addressed, and by the planning solutions that must arise as a result.

Across the entire Baltic Sea Region (BSR), there has been a growing competition amongst multi-sectoral actors that battle for the use of a limited space and scarce resources. In an effort to eliminate current impediments and situations whereby, for instance, shipping corridors collide with wind farms and other fixed installations, the project developed solutions which address such matters while further nourishing blue growth opportunities.

In order to combat the series of challenges affecting respective industries, sectors and countries, the 2014 EU Maritime Spatial Planning Directive came into force to ensure transnational cooperation and coherent national special plans across the sea-basin, as well as the adoption of MSPs for all sea areas by 2021. In this context, the project was designed to work towards a coordinated maritime spatial planning, which in turn had to increase the transnational connectivity while simultaneously safeguarding the natural Baltic Sea ecosystem.

As a whole, the Baltic LINes project came at a time where maritime spatial planners, as well as the authorities involved, and the different industry stakeholders lacked effective cooperation, common planning criteria, and alignment on decisions related to energy infrastructures and shipping routes. Hence, in order to establish coordinated shipping routes, energy infrastructure and ecosystem considerations, first, a set of pan-Baltic spatial data infrastructure was required which enabled the gathering of information from target countries. As such, this Interreg project was designed and implemented with a clear objective, to increase the transnational coherence of shipping routes and energy corridors in the Maritime Spatial

[25] Themes in Keep.eu

Plans across the Baltic Sea Region. Thus, throughout the project, maritime spatial planners developed the means to exchange their national plans, and thus, improve connectivity across the BSR.

PARTNERSHIP

As Baltic Sea countries began cooperating through a maritime spatial planning initiative, various actors were selected in order to achieve regional cohesion with regards to the layout of shipping routes, submarine cables, pipelines, wind farm connections as well as other offshore linear infrastructure. As such, in order to harmonise the different uses of the Baltic Sea area, the Baltic LINes project engaged national maritime planning authorities, international initiatives, research institutes and several specialised organisations (Table 11). Nonetheless, as the Baltic and North Sea planning practitioners have common challenges and opportunities in MSP, the NorthSEE project was set up as a sister project of the Baltic LINes, thus enabling an impactful degree of information-sharing and exchange of experiences. The NorthSEE project, which was financed through the 2014–2020 Interreg VB North Sea Programme, considering that the two projects are able to strengthen each other's output. As such, these projects have some overlap of partnerships, including in their Lead Partner which essentially information and findings are spread among all partners, overlap on the two thematic sectors as the NorthSEE project focuses directly also on the environmental aspects. Moreover, the projects are similar in that they embody a 3-step approach of Identifying status quo, future trends and planning solutions, while both use the MSP Challenge to identify future trends and consult planning solutions with stakeholders.

The Baltic LINes project of the Interreg BSR Programme was led by the German Federal Maritime and Hydrographic Agency, with the support of partner organisations that are based in Germany, Denmark, Sweden, Poland, Latvia, Lithuania, Estonia, Netherlands and Finland. In addition, several entities were able to participate in the Programme as associated organisations, in a limited capacity. Overall, the project encompassed partnerships spanning across several NUTS 2 regions such as Hamburg, Mecklenburg-Vorpommern, Helsinki-Uusimaa, Latvia, Västsverige, Pomorskie, Lietuva, Eesti, Hovedstaden and West-Noord-Brabant.

TABLE 11: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Federal Maritime and Hydrographic Agency	684,000	National Public Authority
Baltic Marine Environment Protection Commission - Helsinki Commission (HELCOM)	392,635	International organisation
State Regional Development Agency, the Republic of Latvia (representing VASAB secretariat)	168,000	Interest groups including NGO
Ministry of Energy, Infrastructure and Digitalization Mecklenburg-Vorpommern	138,706	National Public Authority
Swedish Agency for Marine and Water Management (SwAM)	200,000	National Public Authority
Maritime Office in Gdynia (MOG)	12,400	National Public Authority
Maritime Institute in Gdansk (MIG)	157,179	Research Institution
Coastal Research and Planning Institute (CORPI)	166,586	Research Institution
Ministry of Environmental Protection and Regional Development	245,500	National Public Authority
University of Tartu	210,000	Higher education and research institution
Aalborg University	279,450	Higher education and research institution

Finnish Environment Institute	222,413	Higher education and research institution
Finnish Transport Infrastructure Agency	58,000	National Public Authority
Breda University of Applied Sciences	244,800	Higher education and research institution

In an effort to improve coherence between the different countries and sectors involved in maritime spatial planning, the engagement of practitioners was of paramount importance. In this regard, the Baltic LINes project proved to be effective in that all the partners involved had efficient working relations considering the fact that they had previously participated in different projects under similar partnerships. Accordingly, while specialised institutions and expert organisations contributed with knowledge and industry expertise, research institutions were able to provide insights into geopolitical considerations thereby "finding mismatches and providing possible solutions". In this regard, the high representation of research institutions in the project was proportional to their contribution. As such, by involving stakeholders from universities for instance, the project lead was able to bring actors that focused on different topics, hence obtaining input that is both multi-disciplinary and cross-sectoral.

PROJECT DESIGN AND IMPLEMENTATION

As maritime spatial planning must integrate a wide area of present and future demands, the Baltic LINes project was designed and implemented to provide an understanding of a specific space in the relevant spatial plans for shipping purposes. In order to illustrate how much space is needed for shipping purposes in each location, the project focused on facilitating the development of spatial shipping scenarios. The project was unique for its kind, as it piloted for the first time ever in the region, Maritime Spatial Planning data infrastructure. Accordingly, it provided access to the transnational MSP data that is needed in making spatial allocations for use in shipping and energy. Moreover, the project was designed in three steps. Baltic LINes first focused on analysing the status quo of MSP in different sectors and BSR countries, as well as intro respective forecasts. In the second stage, the different stakeholders were added, while in the final stage, the project aimed at identifying solutions for the possible mismatches found across all sectors and countries.

In the implementation of the project, the participating entities aimed at mapping the different trends and scenarios within the BSR for the project to develop a set of preliminary requirements for maritime spatial plans with regards to the regional shipping and energy sector. In addition, in order to be able to centralise all the information collected by the different stakeholders, the project further harmonised the MSP data infrastructure for the different shipping routes and energy corridors in the BSR. In doing so, two guidelines were developed which would be employed by maritime spatial planners to exchange and disseminate MSP data. These guidelines provide step-by-step information on how to allocate transport corridors and energy infrastructures. Furthermore, as part of the project design and implementation, the partners were required to identify and agree on transnationally coherent planning of linear infrastructures. In doing so, the guidelines proved effective in that they enabled all the stakeholders involved to compare their different approaches, understand the planning processes in other BSR countries and align their own MSP. In the end, one of the main project outputs was to provide recommendations concerning a formalised Baltic Sea Region agreement on transboundary consultations focusing on linear infrastructures within the Maritime Spatial Planning process.

In this context, the project was allocated a communication manager, who would distribute project information on a regular basis, while the other partners contributed by creating content. In this context, the online shift proved fruitful as it enabled the involvement and enlargement of the target group, a responsibility done by all the participating partners, as well as the communication manager which has been

working closely with pan-Baltic organisations. As a whole, online solutions enhanced the dissemination of information towards a wider network of communication.

Throughout the implementation of the project, depending on the sector, each entity was involved in a different manner. For instance, private companies contributed by building wind farms for the project, however, they were also able to participate in national consultations alongside other stakeholders, as well as in meetings and additional project activities such as workshops. Overall, according to an interviewee "everyone could learn something from everyone". Furthermore, considering the fact that the project was implemented when the European Union had already adopted the 2014 MSP Directive, thanks to the non-binding legal framework that is at play in maritime spatial plans, the stakeholder involved in the project were able to freely identify solutions for the mismatches found amongst BSR countries without aligning to strict and binding criteria. In this context, the Baltic LINes project partners succeeded in compiling spatial requirements for shipping and energy, while also mapping future scenarios and forecasts for 2030 and 2050.

KEY ACHIEVEMENTS AND RESULTS

The Baltic LINes project took into consideration the industrial developments, as well as the forecast economic, environmental and technological developments in order to uncover the requirements of the shipping and energy sectors for MSP and their spatial implications. Such information is imperative in developing lasting solutions. As such, the project collected all the relevant data which can be visualised in scenarios using MSP Challenge, a virtual simulation game in which the planning authorities from all the BSR countries can simulate different scenarios depending on the parameters they select. Thus, by using the MSP Challenge, countries can build their plans for the future uses of sea space over a period of several decades, as they also observe the consequences of their decisions for energy, shipping and the marine environment.

To help countries make better planning decisions and improve transnational coherence of shipping routes and energy corridors, the project partners established BASEMAPS, as one of the project outputs, which is the first online database that provides regional up-to-date transnational Maritime Spatial Planning data. BSEMAPS is indicative of the institutional learning experience the project had brought, in that it is a tool that brings together and provides Baltic maritime spatial planning decentralised data from official sources which are based in Denmark, Estonia, Finland, Germany, Latvia, Lithuania, Poland and Sweden. This web-based tool is an effective source of information for maritime spatial planning practitioners, such as the national and regional authorities responsible for maritime spatial planning, as well as representatives from the energy and transport sectors, as it helps them align maritime spatial plans across the borders. Throughout the project, respective entities ensured that BASEMAPS is user-friendly and can thus allow practitioners to view and download datasets, view their metadata, click on geographical features to get information, and zoom in to get more details of the area.

Another output that came as a result of the Baltic LINes project is the two guidelines mentioned above. The practical guidelines for the designation of energy and transport infrastructure in the Baltic Sea are an effective instrument for the project entities and countries involved, however, they can also form a good basis for future projects. According to one project partner, the guidelines can be easily transferred to other projects that could directly apply the conclusions and the findings while taking into consideration the lessons learned.

The success of the project can also be attributed to the diversity of the implementing partners, as well as to their open communication and collaboration in aligning their different methodologies and the different dimensions of priority areas for shipping. In a context that lacks an established intergovernmental collaboration or body to coordinate activities in the offshore energy field, one of the challenges identified was the fact that the routing cable corridors did not match at the border of the exclusive economic zone. In such cases, effective partnerships are of utmost importance. As such, because each partner had its

priorities and tasks well identified, when a mismatch would be uncovered, a discussion would take place in order to plan a shipping route and to find the means to implement it. In concrete terms, the mismatches of MSPs across borders are avoided by showing national MSPs always within the context of their surrounding areas including the adjoining MSPs.

Nonetheless, according to one partner, the key of the success of the project can be attributed to the strong industry knowledge. As partners knew each other, their profiles, expertise and strengths, the project culminated in a final conference which was also the first of its kind to bring together experience sharing from the Baltic and North Sea and united the entire Baltic Sea Region under one umbrella. Thanks to such outreach, the project findings were also disseminated during forums on China, Azores and North Sea countries which have later established a similar platform for cooperation which was developed based on the BSR model.

Overall, the comparative overview on the various planning scenarios, the technical design criteria, the underlying methods used by the different countries, as well as the clear distribution of the stakeholders and their contribution also helped overcome mismatches and other project challenges. For instance, as one partner left the project, the challenge was remedied once another project partner was able to take over those remaining tasks. As a whole, the Baltic LINes project illustrates the importance of creating good opportunities for direct meetings and knowledge exchange. As evidenced, such dialogue should not only be limited to planners within the Baltic Sea Region.

CONCLUSIONS

The Project Baltic LINes was designed and implemented to enhance transnational coherence around shipping routes and energy corridors, as it enables countries with access to information regarding each other's MSPs through an open-course decentralised web-based tool. Today, the results of the project and its outputs, including BASEMAPS and the two guidelines are not only employed by the planners themselves, but the outputs are also provided in the Interreg Baltic Region project platform, available here, in order to nurture a wider, cross-sectoral and trans-national collaboration in maritime spatial planning. Moreover, the wide impact of the project can be further identified through its contribution to the EU Strategy on te Baltic Sea Region, as the project was able to provide an action plan and relevant findings which both informed and shaped the EU Strategy on the region.

Considering that the Baltic LINes project helps prevent cross-border mismatches while ensuring transnational connectivity, the Baltic LINes has been essential in developing the most efficient framework conditions for Blue Growth activities, such as maritime transportation, offshore energy exploitation or coastal tourism. Accordingly, by optimizing MSPs in the BSR, the project feeds into the objective of Interreg Baltics Programme regarding resource efficient blue growth. In this context, one of the most notable achievements of the project has been the overview it provides on the planning and technical design criterias in each country, as well as the comparison of the methods used in the design process of the zones for shipping and energy infrastructures. As a result, by delivering transnationally coherent planning solutions for linear energy infrastructures and shipping routes, the project in essence aligns with the ecosystem-based approach that was lacking in MSP. As such, the project was able to bring such an approach to represent the backbone for decisions and solutions that are integrated into national cross-sectoral MSPs which will be further updated by the respective countries.

11. BLUE PLATFORM

PROJECT TITLE: BIOECONOMY FOR BLUE GROWTH IN THE BALTIC SEA REGION – A PLATFORM PROJECT TO CAPITALISE ON THE OUTPUTS OF COMPLEMENTARY

OVERVIEW

Project acronym and No.	Blue Platform; #C003
Priority and Specific Objective	Priority 2 "Efficient management of natural resources" SO 2.4 Resource-efficient blue growth: To advance sustainable and resource-efficient blue growth based on increased capacity of public authorities and practitioners within the blue economy sectors
Duration	42 months, between 01.10.2020 – 31.03.2022
Budget	1.05 mill. EUR (0.79 mill. EUR – ERDF contribution)
Partnership	9 partners, 9 countries (FI, DE, SE, PL, LV, LT, EE, DE, RU)
Main topics[26]	Resource-efficient blue growth
Project Type	Platform

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The project platform "Blue Platform" goal was to promote Blue Bioeconomy in the Baltic Sea region by sharing knowledge collected during 13 other projects on eight topics - mussels, blue biotechnology, aquaculture, macro-algae, spatial planning, multi-use, marine litter, and ocean literacy. The project was relevant and awaited as it aimed to improve the general framework conditions for Blue Bioeconomy as well as facilitate knowledge transfer and involved parties' community building in the region which contributes to the development of bioeconomy as the one relying on renewable resources. Moreover, since in the last few years the number of new ventures was continuously growing as well as older enterprises joined the movement, there had appeared a need to connect business owners with business developers and public authorities to ensure efficient business processes and resource allocation.

The projects that created the base for the project platform have significantly contributed to the knowledge accumulation in the region. These projects are 6 Interreg Baltic Sea Region projects – ALLIANCE, Baltic Blue Growth, Baltic LINes, Smart Blue Regions, Go LNG and BalticRIM. These projects were aimed at the creation of networks, promotion of Blue Bioeconomy, market research, and cultural heritage integration. Also, the project borrowed findings from several other programs through which they were funded such as Interreg Central Baltic and Interreg South Baltic, Interreg North Sea Region, BONUS, H2020, EMFF, and the projects were Plan4Blue, InnoAquaTech, BIOCAS, Blue WEBS, MUSES, Baltic SCOPE, and PanBaltic SCOPE. They were aimed at increasing cooperation in marine spatial planning in the BSR area as well as at promoting cooperation and knowledge in various fields connected to Blue Bioeconomy. Thanks to such wide scope of topics covered by the projects, the Blue Platform project has managed to collect the excessive amount of data, findings, materials, interviews, etc. on one website in a concise manner. Moreover, during the project an online conference, as well as numerous amounts of roundtables, webinars, and workshops, have been organised both online and in-person which promoted the platform among stakeholders in the BSR. Finally, the project has created a valuable tool – Blue Bioeconomy Actors map for the BSR area which creates a network of more than 1 600 stakeholders from entrepreneurs to business developers and public authorities that are interested in the Blue Bioeconomy topic in the region.

[26] Themes in Keep.eu

PARTNERSHIP

The project had a rather diversified set of nine partners from nine countries in the BSR – Estonia, Latvia, Lithuania, Russia, Poland, Germany, Denmark, Sweden, and Finland (Table 12). This set included research institutes, municipalities, technology parks, state regulatory institutions as well as the already existing platform for sustainable development in the Baltic Sea. Moreover, the active involvement of municipalities and enterprises in all countries in the BSR area has contributed to the project due to the more efficient knowledge transfer.

TABLE 12: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Finnish Environment Institute	178,000	Higher education and research institution
Submariner Network for Blue Growth EEIG	287,228	International organisation, EEIG
Swedish Board of Agriculture	67,928	National public authority
University of Gdansk	96,390	Higher education and research institution
Latvian Institute of Aquatic Ecology, Daugavpils University Agency	98,487	Higher education and research institution
Klaipeda Science and Technology Park	102,500	Interest groups including NGOs
University of Tartu	100,000	Higher education and research institution
Guldborgsund kommune	68,695	Local public authority
Kaliningrad State Technical University	53,600	Higher education and research institution

The unique experience of every partner has contributed to the common goal. This project had 2 lead partners – SYKE or Finnish Environmental Institute and Submariner Network for Blue Growth. SYKE has a long history of marine, environment, and nature research in the Baltic Sea being the leading institution of such kind in the country. Submariner Network for Blue Growth has an experience in the creation of cooperation platforms with the goal of promoting the sustainable and innovative use of marine resources. The other partners of the project are 4 research and/or higher education institutions from Latvia, Estonia, Poland, and Russia that specialises in the environment, aquaculture as well as assist in regulatory questions and have a solid experience in research and development (R&D), thus can be considered to be so-called knowledge hubs; Danish coastal rural municipality that is a front-running bioeconomy champion with ongoing international collaborations in developing new and existing blue/green value chains for rural communities; Lithuanian technology park that promotes innovation and assists in project development; and Swedish Board of Agriculture – a public authority which representative was the bioeconomy area coordinator. The responsibilities of the area coordinator include the promotion of the subject matter to the other public institutions throughout the BSR.

Considering the background of partners which includes business development, R&D, cooperation facilitation, etc., the relationships between them may be characterised as both multi-disciplinary and cross-sectoral. Also, the partners have theoretical and practical experience in the related field which facilitates knowledge transfer; and have hands-on experience in innovation promotion and business development, which may highly contribute to the stakeholders in the area. Moreover, the project partners represent all countries in the BSR area which excludes a possible information asymmetry due to misrepresentation of several countries. These two factors might be considered core factors in reaching the project goal due to the wide scope of information accessible to the partners.

PROJECT DESIGN AND IMPLEMENTATION

Since the project's main goal was to collect and modify the data and knowledge produced in different blue bioeconomy projects in the BSR to an easy-to-use format into interactive webpages to help all the actors in the field, several types of research have been used to provide the required information to the target group on 8 topics covered by Baltic Blue Bioeconomy framework: mussels, blue biotechnology, aquaculture, macro-algae, spatial planning, multi-use, marine litter, and ocean literacy.

Throughout the project implementation, several types of research have been used; however, the main was desk research and interviews. Particularly these types of research were the most helpful as the majority of the information has already been collected during the other ongoing or completed projects on the related topics in the BSR area such as Smart Blue Regions, Baltic Blue Biotechnology Alliance, Baltic Blue Growth, MUSES, etc. The mentioned above projects also covered such fields as R&D, funding, legislation, and policies that influence the stakeholders. Thanks to such a wide scope of topics as well as prepared documentation and materials, the platform could not only consider collecting the information in several documents but also consider creating a so-called knowledge hub with the help of the existing platform. To successfully implement the project as well as share obtained knowledge, it was planned to conduct a conference as well as organise pilots in each country where the local project partners were the responsible for them. However, due to the COVID-19 related restrictions it was not possible to organise everything in-person, so most activities were conducted in an online format.

The target group of the project consists of both practitioners in public administrations and policymakers, as well as researchers and entrepreneurs that are active in the Baltic Blue Bioeconomy field. However, the total number of stakeholders is much bigger and includes not only the mentioned above parties that have direct or indirect exposure to any of the 8 topics covered by the project, but also the partners of the project, public institutions, policy area coordinators, and business developers that will have an opportunity to use the collected knowledge for their needs and assist the companies in their daily operations. During the project implementation phase, stakeholders actively participated in the activities suggested by the project coordinator. Activities included participation in interviews, gatherings of industry specialists with the aim to collect information on some topic, and participation in round tables, webinars, and workshops. Moreover, every active participant of Blue Bioeconomy in the BSR region could be added to the Actors map which included more than 1,600 participating legal entities across 9 countries by the beginning of September 2022.

Throughout the project implementation stage the partners have collected a notable amount of information that has been provided by the representatives of projects from various platforms. The Blue Platform partners note that thanks to the cooperation with people from different programs it became possible to bring a lot of added value and involve more people in the project as it has initially been planned. However, it has been noted that to increase the institutional capacity even more it may be useful to create project platforms during the other projects implementation stage, but not after. That is likely to foster and facilitate the knowledge sharing among different project participants.

Regarding the shift to online mode, platform partners admitted that most challenging was to organise events, such as workshops, online. Not only the shift to online mode itself caused a need to restructure and delay the planned events, thus affecting both time and human resources, but it also affected the human interaction in these events, which was different than expected before, especially at the very beginning of COVID-19 pandemic, when the audience was not familiar with the meeting platforms. As for shift to online mode throughout the communication among the partners, it was stressed out that the online meetings when discussing issues did not gave the same result as face-to-face meetings, especially if the partners were not known beforehand. Also, the shift to online mode came with some technical difficulties, as some of the connections did not work that well. However, it also showed that sometimes it is more convenient to have project meetings online. Though, overall, project partners considers that the shift to online mode did not the implementation of the project much, as partners were from different time zones and were used to discuss topics via e-mail.

KEY ACHIEVEMENTS AND RESULTS

The project has achieved its goal; and, together with that, some unexpected problems have been solved via the creation of the knowledge database.

The project platform's Blue Platform main goal was to improve the existing framework as well as to increase awareness and capacity of involved parties in the field of Blue Bioeconomy in the BSR by collecting the knowledge base that has been created throughout 13 other projects in the same area and promote the results to everyone interested who include business development organisations, enterprises, public institutions, etc.

Throughout the project implementation phase, all five dimensions of institutional capacity have been tackled. First of all, this project platform has enhanced institutionalised knowledge and competencies. This has been reached by the creation of the common knowledge hub on the base of the already existing Submariner Network website. The knowledge hub includes findings, documents, and other units of knowledge that have been created or collected in the process of implementation of the other 13 projects that now contribute to the platform. The information that can be accessed on the website covers legal, business, and funding fields on eight topics connected to Blue Bioeconomy in the BSR – mussels, blue biotechnology, aquaculture, macro-algae, spatial planning, multi-use, marine litter, and ocean literacy. Moreover, three valuable documents have been developed throughout the project – the roadmap, the alignment of the regulatory framework, and a report on interventions into the Blue Bioeconomy in the BSR. These three documents do highly contribute to the community involved in the Blue Bioeconomy by enabling mechanisms of knowledge transfer and utilisation. Also, wide access to knowledge creates favourable conditions for efficient use of human and technical resources in the industry by private and public parties.

Secondly, during the project there was created a valuable network of different parties involved in the Blue Bioeconomy. The created network includes more than 1 600 participants in nine countries of the BSR. Thanks to the utilisation of this network, participants involved in the field are able to attract new financial resources faster and easier due to the inclusion of business development organisations in it as well as due to the wider access to the information on parties interested in the field across the region. This can be proved by one of the partners involved in the project who mentions that thanks to the platform and collected information as well the network, it is visible how the industry is booming in Finland, for instance. Moreover, access to such network creates the soil for an increased capacity to work in the transnational environment and for the cooperation of different types of stakeholders among each other. Such kind of cooperation can benefit in several ways. First, it enhances the faster knowledge and technology exchange which facilitates the development of both countries. Secondly, the cooperation may be the first step for new or existing venture scaling internationally which will benefit not only communities of enthusiasts or public institutions involved in the Blue Bioeconomy, but also the society in the regions due to the creation of new working places, infrastructure, or educational activities.

Together with the goals that were planned be reached, the project platform can also share several unintended effects it has created. First, it is worth mentioning that while the project was active, there was installed an interregional innovation investment fund which allows to obtain funding for innovative projects and the platform has assisted in the development of several funding proposals and documentation for them as was deeply into the topic. Thanks to them, some of the innovative projects have obtained funding.

According to the opinions of the project partners, the platform has influenced the policy changes and serves as an example of what should be supported. Even though it has never been mentioned in any official documents, partners suppose that thanks to the Blue Platform project roadmap and outputs the EU-wide mission "Ocean" has appeared. The circumstantial evidence for that is the fact that the mission refers to several projects of Blue Platform as well as to the information collected throughout the project; and since the mission replicates the initial requests of the Blue Platform.

Moreover, the Better of Blue event series has been organised online and replaced the planned conference as it was not possible to conduct it onsite during the pandemic times. Furthermore, throughout the project, it has been planned to conduct several events in each of the countries in the BSR to raise awareness and capacity of institutions in various fields that include legal questions, business strategy, funding opportunities, and solutions and are connected to the blue bioeconomy in the region. However, almost in each country there existed the need to move these events to the online mode due to the restrictions imposed. This has negatively affected the capacity building processes as the participants were not as involved as they would be during the in-person event.

CONCLUSIONS

The project platform "Blue Platform" has contributed to the industry in many ways. The most visible change is connected to the enhanced institutionalised knowledge as well as to network creation. Thanks to the project, there was created a map of actors that are active in the Blue Bioeconomy field has substantially facilitated access to funding and increased the likelihood of international cooperation. Moreover, the creation of a network may be considered as the driver for further experience and best practice sharing among its participants which could contribute to more efficient work of organisations as well as new workplace creation thanks to the appearing scaling opportunities. Finally, it is highly likely that the project platform served as the model for the EU-wide mission "Ocean".

During the COVID-19 pandemic, each state had its own regulations, so it was not possible to conduct in-person events in each country. This has led to the lower capacity building level as the human interaction has been substantially limited due to the online event mode. However, the pandemic has let the partners to organise more events online than it has been initially planned in-person which could positively affect the gained knowledge level. Regarding the shift to online mode, it did not affect the project too much, as some of the partners were already used to have discussions via e-mail, however, the challenges were faced in communication with partners that were not known beforehand, in this case the meeting in persons on discussing issues would be more suitable.

Blue Platform project has united several projects from not only Interreg program but also from other programs active in the region. That has additionally enhanced the institutional capacity building by providing the end-users information on different topics connected to the Blue Bioeconomy. However, the introduction of the project platforms could benefit the capacity building process even better if the platform would have started earlier during the other project implementation phases as that would enable the mechanisms of experience and knowledge sharing already at that point.

The other success factor of the project is connected to the correct choice of the lead partner – Submariner Network – an already existing network which main area of operations was the blue bioeconomy promotion. It appeared to be so successful as the partner had the existing expertise and network, which benefited to the project output.

12. CSHIPP

PROJECT TITLE: CLEAN SHIPPING PROJECT PLATFORM (CSHIPP)

OVERVIEW

Project acronym and No.	CSHIPP; #C006
Priority and Specific Objective	Priority 3 "Sustainable transport" SO 3.4 Environmentally friendly shipping: To enhance clean shipping based on increased capacity of maritime actors
Duration	30 months, between October 2018 - March 2021
Budget	1.08 mill. EUR (0.69 mill. EUR – ERDF contribution)
Partnership	14 partners, 7 countries (DE, DK, EE, FI, SE, PL, RU, NO)
Main topics[27]	Clean shipping
Project Type	Platform

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The Baltic Sea Region is exemplary with regards to clean shipping. In doing so, the region faces one main impediment, namely, the gap between research, business and policymaking which prevents an effective development of the field. Accordingly, the Clean Shipping Project Platform, financed through the 2014-2020 Interreg Baltics Programme emerged to bridge this gap by connecting stakeholders from the research sector, business actors and policy makers, thereby facilitating dialogue through events and workshops. As such, the project platform was used as a tool to bring together different existing projects, all of which had a diverse range of aspects and a wide impact on environmental shipping.

In this context, CSHIPP brought together various projects and organisations that were working on enhancing clean shipping in the Baltic Sea region from different angles and through distinct means. Hence, the project platform was able to increase the impact of existing projects and connect them, thereby creating a unified working field for clean shipping. By connecting all the relevant initiatives and efforts related to clean shipping, CSHIPP built a concise synthesis and a holistic outlook of the different projects results.

As a whole, the project platform was able to contribute to the shipping field through its activities that were divided into two themes. On one hand the activities related to (1) the environmental effects of shipping in the BSR, while on the other hand activities focused on (2) the business potential of clean shipping in the Baltic Sea region. Nonetheless, while the activities and partner organisations were generally distributed according to the relevant theme, the workshops and events addressed the themes both individually, as well as simultaneously, therefore, underlining the fact that environmentally friendly shipping and profitable business are complementary, as opposed to a general belief regarding their incompatibility.

The projects represented in this platform emerged as a result of various Programmes. Interreg Baltic Sea Region Programme financed: EnviSuM which helps develop a shipping environment that is compliant with the 2015 IMO emission regulations, Baltic LINes which helps maritime spatial planning actors develop shipping scenarios, Go LNG project focused on increasing the adoption of Liquified Natural Gas as a clean fuel for shipping in the region, ECOPRODIGI developed digital solutions that increase eco-efficiency, BSR

[27] Themes in Keep.eu

electric fosters e-mobile solutions in the area, while COMPLET was developed to prevent the introduction of alien species in the sea. In addition, the SHEBA project which was financed from BONUS in order to compile a holistic assessment of ecological, economic and societal impacts of operational shipping on the environment of the Baltic Sea region. Lastly, the platform also included the CompMon project financed by Connecting Europe Facility.

PARTNERSHIP

Cross-sectoral collaboration is imperative in challenges that are wide-ranging and equally complex. Towards this end, the CSHIPP project enabled the participating partners to establish their internal organisational structure and to participate in a collaborative way. The project platform brought together initiatives and entities spanning across sectors such as academia, public and private fields (Table 13). Such a diversity created synergies and incentivized the partners to collaborate and achieve an optimal performance. In addition, partnerships under CSHIPP had effective working relations despite their diverse location, sector and expertise, considering that some of the partners had previously worked together in several regular projects. According to one informant "many participants of CSHIPP have been partners in past and ongoing joint projects which makes it easy to interact because we already know most of the people". Nonetheless, as a whole, the university-industry cooperation facilitated a fruitful combination of subject-matter-experts and research- oriented individuals, thereby giving rise to a platform for sharing their specific tacit knowledge and expertise.

The project platform has received a positive attitude in light of the cross-sectoral and transnational cooperation it has nurtured. In this regard, participating partners spanned across the entire Baltic Sea Region, originating in countries such as Germany, Denmark, Sweden, Norway, Russia, Estonia, Norway as well as several NUTS 2 regions, including Etelä-Suomi, Helsinki-Uusimaa, Västsverige, Oslo og Akershus, Eesti, Schleswig-Holstein, Mecklenburg-Vorpommern, Zachodniopomorskie and Hovedstaden. Partners from the entire region reported that there were many things that they had learned from each other. In this regard, while universities were able to contribute with their wide information resources and freedom to explore, companies added value to the project platform through the industry-specific data that is needed by universities to achieve effective results.

TABLE 13: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
University of Turku	192,465	Higher education and research institution
Centrum Balticum Foundation	98,500	Interest groups including NGO
Finnish Meteorological Institute	50,000	National Public Authority
IVL, Swedish Environmental research Institute	99,399	National Public Authority
Baltic Marine Environment Protection Commission - Helsinki Commission (HELCOM)	92,752	National Public Authority
Norwegian Meteorological Institute	78,300	National Public Authority
Chalmers University of Technology	50,450	Higher education and research institution
Tallinn University of Technology	50,000	Higher education and research institution
Helmholtz-Zentrum Geesthacht Centre for Materials and Coastal Reseach	54,485	Higher education and research institution

ATI Küste GmbH - Association for Technology und Innovation	57,696	Interest groups including NGO
Maritime University of Szczecin	52,800	Higher education and research institution
MDC (Maritime Development Center)	51,000	Interest groups including NGO
Aalborg University	53,232	Higher education and research institution

PROJECT DESIGN AND IMPLEMENTATION

The CSHIPP project is a cornerstone of the overall capacity development of maritime actors. Accordingly, the project was developed with a set of activities that target various sectors such as the research industry, business sector and the policy-making field. In this regard, the project sought to put the different actors and initiatives in dialogue and to disseminate the results of several projects thereby enabling new ideas and synergies to emerge.

In light of the flagship status for CSHIPP, the participating partners were able to embark on a learning process which fed directly into institutional capability. In this regard, the implementation of the project platform aimed at helping the partners gain access to relevant discussions in the field. The direct dialogue facilitated throughout the project implementation was valuable to the participants. The actual working links at the intersection of policy and science were able to target project activities in a manner in which the ongoing projects could already fulfil the acute policy or scientific needs they had encountered.

As a project that was designed to enhance cross-sectoral dialogue for increased capacity of maritime actors, it naturally targeted groups and end users that represent the scientific community, researchers and students from atmospheric, marine and climate research, environmental economics, political and social science, as well as environmental and transport agencies, environmental managers from governmental, regional, and local organisations, and representatives from the Maritime transport sectors. In doing so, the lead partner was able to use the platform to bring together the different projects, all of which had different aspects and impact on environmental shipping. While many of the participating partners had already worked together in different projects, CHSHIPP was able to add value by actually developing cooperation between new and existing projects. This ensures that the outputs of on-going projects may be tailored to better meet policy stakeholder needs. Such a fruitful project design is illustrated by an informant who declared that the “project idea was developed by discussions with complementary projects that were working in the same content area. The main motivation was to exchange project results and to better understand intersections with other projects in order to consolidate results under cross-sectional aspects and to figure out new project ideas for future research and applications”.

As a whole, the engagement strategy that was behind the project platform was composed of several elements such as the website demonstrating the effects of shipping on air and water quality, or the story map focusing on clean shipping in the Baltic Sea region, as well as the animation on clean shipping in the Baltic Sea Region that can be viewed here. In addition, the project was organised according to different development packages. Essentially, the activities and partners were divided into relevant packages and working groups. In this context, the story map created openness; thereby allowing such a diverse area of partners to stay informed about the state of their efforts and the status of the industry itself.

In the end, such a design supported the policy process in the shipping sector. As such, on the basis of the policy recommendations from the participating projects as well as the extensive discussions with the relevant authorities, the partners formulated two priority policy options to ensure clean shipping: scrubber wash water and onshore power development. Together with the HELCOM Maritime working group, the partners identified the next steps toward developing future recommendations for HELCOM (the Baltic Marine Environment Protection Commission) on clean shipping in the Baltic Sea area. In addition, the platform partners cooperated intensely with the coordinators of the EUSBSR policy area Ship in the policy

work. The close contact with HELCOM, as a project partner, sustained a smooth project implementation. In this regard, CHRIPP developed institutional capacity in that all of the partners involved were committed to the process of providing information that would feed into the reforms. The project managed to collect a considerable amount of information for policymaking, which was considered valuable for regulators in light of the many inquiries received by the project partners from internal and external stakeholders. In this sense, CHSIPP was designed and implemented for informing policymaking by providing data on evidence. Considering this reality, it can be concluded that the project directly contributed to the BRS strategy. Since the partners had given direct input to the HELCOM recommendations and to the action plans developed by HELCOM. Nonetheless, aside from the BSR strategy, the project also had an impact on the national plans and strategies. For example, in Finland, the partners were able to help the authorities working with shipping and the environment by providing information for them on their plans and strategies.

KEY ACHIEVEMENTS AND RESULTS

CHSHIPP achievements and results revolve around the new synergies that were created across the maritime sector, thereby representing an illustrative case of the impactful work undertaken through EU funds. As illustrated by an informant, the project gave "the opportunity to deeper discuss inter-sectoral results even with projects that didn't seem to have direct overlapping areas, but during the project work it turned out that the project results had a lot of common points that lead to new ideas."

The project delivered five independent outputs that are imperative for clean shipping in the Baltic Sea Region. Overall, the project platform was able to synthesise knowledge on reducing the environmental effects of shipping, thereby making shipping cleaner and enhancing its business potential. It managed to do so through its outputs and results. For instance, one of the outputs concerned the state of play and the future needs of clean shipping which can be found in a report that encompasses knowledge on control of emissions from ships, alternative fuels for shipping, operational energy efficiency management and alternative operating modes for clean shipping. Such information is imperative for the whole maritime cluster, in particular for ship owners, operators and shipbuilders. A second output that emerged as a result of the project is the policy guidance on scrubber wash water and the development of shore power at ports which provides direct support to the work of the HELCOM Maritime Working Group and the EUSBSR policy areas Ship and Energy on the topic of clean shipping. Additional outputs include the story map mentioned above, as well as two repositories, one concerning best practices in clean shipping financing in Europe and one on the knowledge gaps and research strategies on the environmental impacts of shipping and their mitigation.

According to several project partners, these respective outputs were achieved thanks to the collaboration established in previous projects, with each actor contributing in a distinct manner. For Instance, the business industry was able to participate in different workshops and provide information on the knowledge gaps. Today, the repository mentioned above, and its respective report help stakeholders identify the missing information and the means necessary to gather the relevant data and fill an existing gap. As one informant describes the results "In this kind of project platform, you can discuss different aspects and decide what to focus on more, on those particular knowledge gaps. Now the industry knows more about decarbonisation and climate change".

Despite the success of the project, CHIPP brought to light several shortcomings and challenges that were an impediment for managing knowledge production and exchange across boundaries. These challenges were rooted primarily in the different information processes found across the region, giving rise to incompatible routines or protocols that resulted in a breakdown of knowledge transfer. In addition, the cultural disparities also contributed to the project challenges. In this sense, the partners embodied sector-specific norms and values, as well as different ways of understanding and situating knowledge in practice. In this context, the fact that only a small subset of project partners of other project was able to participate due to low budget and short project time, reduced significantly the access to project results and new ideas. Lastly, a set of challenges came from the political sphere considering that knowledge is inseparable from the interests and action of any individual and sector-specific interests which can impede such a cross-border initiative. Nonetheless, several informants and partners consider that no other sea region has such

an extensive environmental reporting in place as the Baltic Sea area. The work done for the Baltic Sea shipping and its environmental impact assessments has also contributed to support the establishment of the Mediterranean Sea SOx Emission Control Area. The tools developed for the Baltic Sea shipping were also applied there and policy support was provided for EU member states and REMPEC in order to apply for SECA status at the IMO. Working closely with EMSA, EEA, DG MOVE, DG ENV, and DG CLIMA should be encouraged, but it requires active dialogue to understand what the user requirements are.

As a whole, the project attained its capacity building objective in that such processes that enhance capacity took place through meetings, working groups and conferences which disseminated the project results and gave the opportunity to invite and discuss the project results with non-project members, thereby bringing new insights.

CONCLUSIONS

As a whole, the CSHIPP project platform synthesised knowledge on how to reduce the environmental effects of shipping, make shipping cleaner, and enhance its business potential. The partners focused on the results of the Interreg Baltic Sea Region projects and enriched the synthesis with the outcomes from projects of the BONUS research programme and the Connecting Europe Facility. In this manner, the Interreg platform CSHIPP pushed clean shipping forward in the Baltic Sea region by bringing research, business, and policy makers together to introduce new policies and discuss promising technological change. Hence, the partners compiled the technologies and policy measures to reduce harmful emissions and decarbonise the maritime industry and introduced them to the shipping industry, policy makers and national authorities in the Baltic Sea region.

In this regard, the main findings of the project illustrate that digital tools and solutions provide concrete benefits for the maritime industry. Such changes ripple effects such as a potential reduction of up to 20% in fuel consumption and emissions, improved utilisation of assets and resources, as well as more efficient processes and better productivity. As such, because the nature of the platform was so extensive, it comes with an increasing number of guidelines, rules and restrictions that are not found in a regular project. Nonetheless, the platform gave the participants new tools, as well as the opportunity to have more communication of the results, this illustrates a continuity of the work as well as more visibility.

Overall, the research done throughout the project was able to contribute to a continuous update of the description of ships in the traffic models concerning fuel type, use of engines in different modes as well as the use of abatement measures following the technological and policy development which are essential for all efforts concerning clean shipping. In addition, it was able to improve, update and develop new emission factors of air pollutants, underwater noise energy, specific volumes of the different waste streams (gray water, black water, food waste, etc.) as well as concentrations of nutrients and contaminants in these streams and their discharge patterns. The project illustrates the extent to which alternative fuels and energy sources, such as hydrogen, ammonia, electricity and biofuels, could provide viable options for decreasing harmful emissions from shipping.

13. GO LNG

PROJECT TITLE: LNG VALUE CHAIN FOR CLEAN SHIPPING, GREEN PORTS AND BLUE GROWTH IN BALTIC SEA REGION

OVERVIEW

Project acronym and No.	Go LNG, #R035
Priority and Specific Objective	Priority 3 "Sustainable transport" SO 3.4 Environmentally friendly shipping: To enhance clean shipping based on increased capacity of maritime actors
Duration	35 months, between May 2016 – April 2019
Budget	3.05 mill. EUR (2.24 mill. EUR – ERDF contribution)
Partnership	19 partners, 7 countries (DE, SE, NO, PL, DK, EE, LV)
Main topics[28]	Clean Shipping
Project Type	Regular

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The GO LNG project financed through the Interreg Baltic Sea Region 2014-2020 Programme was developed as a response to the increasing air pollution in port cities and the rigid legal framework governing environmental protection which motivated relevant industries such as maritime and transport to find alternative fuel and energy sources, thus reaching the Liquefied Natural Gas (LNG) as a solution. There is a general agreement concerning the fact that LNG infrastructure is a pricing bottleneck. In this regard, the GO LNG project was intended to portray relevant possibilities that show how the existing LNG infrastructure and technology can benefit all LNG users and make it more competitive in terms of availability and pricing.

The project was developed in a context where, during the last decades, ships in the Baltic Sea Region (BSR) have increased in size and cargo. Today, ships in the region manage approximately 15% of the total world cargo traffic, a level that continues to expand yearly by 5%. Simultaneously, the BSR encompasses an ecologically sensitive environment which is being semi-enclosed with brackish water and is highly eutrophic because of anthropogenic pollution. Due to the fragile nature of such an environment, the region has, moreover been assigned as a SECA (Sulphur Emission Control Area) region by the IMO, through the Convention on Prevention of Pollution by Ships (MARPOL). In this context, LNG is considered as an alternative fuel to heavy oil and ship diesel which emit large amounts of CO2 and harmful substances containing sulphur and nitrogen when burned in ship motors, while LNG as a fuel emits no sulphur, no nitrogen, and less CO2 than classical ship fuels. Accordingly, the GO LNG project aimed at exploring opportunities for LNG a transitional green fuel for shipping in the Baltic Sea region and other international markets by bringing together actors from the scientific and business spheres. In this context, the project emerged as Lithuania, one of the project regions, had already established a strategy for building an LNG knowledge terminal to address the energy security issue. As a whole, the project was developed in order to establish stronger regional development and innovation by bridging the gaps between technology, knowledge and business and by providing operational and strategic approach towards exploitation of LNG and value creation from LNG business.

[28] Themes in Keep.eu

PARTNERSHIP

The GO LNG project emerged in at a time of clear increasing pace of integration in transportation and energy markets. In this regard, the project lead brought together 19 partners spanning across the private, public and academic sectors in an effort to upscale a solution developed in Lithuania towards the entire region (Table 14). According to one informant, "the idea was to look from a regional perspective, which lead to a regional approach that included Lithuania, Poland, Denmark and Sweden." As the idea emerge in one of the BSR countries, the lead partner found that such local solutions might in fact be fruitful from a regional perspective. In this regard, a regional approach enabled to downstream possibilities and business opportunities in markets that are of similar nature and thus, face similar challenges about fuel and energy consumption. In doing so, throughout the project design, the lead partner had already started to look for stakeholders with the competence needed to advance such an initiative. Accordingly, first, an alliance of scientific institutions was developed in order to integrate in the project the infrastructure such institutions have. Then, the focus turned on to specialised institutions that have innovated the field; these actors contributed with good access to the industry and knowledge about developing such business. The final set of stakeholders envisaged by the project were actors with competencies in green environmental solutions. In light of this reality, the project partners originated from Denmark, Sweden, Estonia, Norway, Germany, Lithuania and Poland, while their representation across the NUTS 2 regions was found in Lietuva, Mecklenburg-Vorpommern, Sydsverige, Hovedstaden, Midtjylland, Oslo og Akershus, Eesti, Zachodniopomorskie, Pomorskie, Västsverige, Hamburg.

TABLE 14: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Klaipeda Science and Technology Park	331,185	Interest groups including NGO
NPPE Klaipeda Shipping Research Centre	135,145	Higher education and research institution
Hochschule Wismar, University of Applied Sciences: Technology, Business and Design	299,682	Higher education and research institution
inwl non-profit Limited Institute for sustainable Economics and Logistics	100,000	Interest groups including NGO
World Maritime University	300,000	Higher education and research institution
Blekinge Institute of Technology	200,000	Interest groups including NGO
Maritime Development Center (MDC) / Transport Innovation Network /	265,000	Interest groups including NGO
Municipality of Samso	270,000	National Public Authority
OSK-ShipTech A/S	54,850	Interest groups including NGO
Shipping & Offshore Network	200,000	Interest groups including NGO
Baltic Ports Organisation	20,000	Interest groups including NGO
Maritime University of Szczecin	320,000	Higher education and research institution
SC Klaipedos nafta	67,400	Interest groups including NGO
ATI erc gGmbH education, research and furtherance of cooperations	51,501	Higher education and research institution
WITHDRAWAL Logistics Initiative Hamburg	58,798	Interest groups including NGO

WITHDRAWAL Swedish Maritime Technology Forum	49,562	Interest groups including NGO
Motus	136,735	Interest groups including NGO
Clean Shipping Index AB (svb)	100,600	Interest groups including NGO
RISE Research Institutes of Sweden AB	50,439	Higher education and research institution
Logistics Initiative Hamburg	41,101	Interest groups including NGO

Considering that the idea behind the project came from a bottom-up perspective, thus addressing a need that was raised by the industry itself, it proved extremely valuable to engage the different countries in the region through a consortium led by Lithuania. In such a consortium, each partner was able to have a distinct contribution. For instance, with Norway on board as experienced partner in dealing with LNG, the project was equipped with considerable confident competence in development and utilisation of LNG.

PROJECT DESIGN AND IMPLEMENTATION

GO LNG was designed for contribute to the implementation of the EU Clean Fuel Strategy and the EU Directive on Deployment of Alternative Fuel Infrastructure, and thus to establish a strategic approach for the development of LNG infrastructure and promote its usage in the transport industry.

The Go LNG project in the BSR region was established on the basis of 3 pillars. First was the internationalisation aspect of the solution and strategy, which entailed setting up the energy availability in all the countries in the region. Second, what was required next in order to materialise the project, was the competence. In this context, energy was a new subject for the region, hence, in order to downstream such efforts there was a needed for a lot of personnel who would bring industry specific knowledge and the relevant capacity to implement it. The third pillar was the involvement of the entire value chain. Namely, the idea behind the project was a large-scale opportunity, for which some partners contributed with knowledge while other partners had the infrastructure which enabled the involvement of the entire value chain. In this case, SMEs also needed to get involved. For these reasons, an energy cluster was developed in the BSR. In addition, the project was designed and implemented with due regards to a 4th element, namely the strategic direction and the sustainability of LNG. The project perceived LNG as a transition fuel because it is cleaner than diesel and marine fuel, but it is a fossil fuel so it will need to go away. Accordingly, at the time, the partners were able to foster the energy because there wasn't enough on the market. In this regard, the project promoted this solution, namely, to add LNG into energy structures, which nonetheless also has positive technical and environmental impact.

As part of the project design, several key value groups across the LNG value chain were differentiated in order to attain optimal implementation. The first group was comprised of customers, a group which enables cross-sectoral and intermodal collaboration, internationalisation, networking, and clustering. The second key group focused on performance, specifically, on the internal business processes, thereby achieving environmental, technological, economic, governance and social feasibility that are enabled by LNG. Such a group enables the delivery of shared value across different transport modes and industry or business sectors and respective customers. An additional group referred to the finances, in order to attain economic feasibility of LNG by achieving innovation, diversification, and efficient distribution, thus lowering investment and operational costs, but also the sharing of the costs, for instance by using the same infrastructure. The last key value group was concerned with learning and growth. In this manner, the project was able to bring competence building for LNG application, transfer, and development, as well as collaboration and interactions in knowledge, competence, and experiences transfer. Thereby, enabling cross-sectoral learning and improving research infrastructure. Overall, such as project design allowed a value generation for its recipients, the customers that vary across industries.

According to an informant, the CSHIPP project fostered an "evolution instead of revolution", referring to the project as "one of the good projects", in that it attracted a lot of attention, it trained over 1000 people, it facilitated simulations, and so much more good work which pushed LNG much further. As a whole, with such project activities, the project was able to target key players such as the policy makers, the ship owners, and mainly the gas companies who are the LNG bunkering facilities operators. Such targeting is due to the fact that policy makers have aimed at facilitating investments in LNG infrastructure while the financial investments in LNG infrastructure has come predominantly from shipping companies and gas companies. As a whole, such a diverse targeting enabled operators of the LNG bunkering facilities to make profits out of trading LNG, and thus can be considered as an advantage for all parties involved.

KEY ACHIEVEMENTS AND RESULTS

The BSR region GO LNG project focused on developing the demand and accessibility of Liquefied Natural Gas (LNG) in the Baltic Sea region. Having such aims, project partners were able to create a strategic approach to LNG development and a technological approach for consolidating the LNG value chain and provided skills and business partnerships for infrastructure development. As a result, GO LNG has established the first macro-regional business cluster in Europe for LNG. Such a business networks brings together over 300 businesses of different size and scope. Moreover, the project also managed to set up a competence centre of scientific institutions to spread the knowledge needed to promote and develop LNG.

In discussing the concrete outputs that emerged as a result of the project, one can identify two such concrete results that enhanced the institutional learning experience. First, is the report concerning Liquid Biogas Business Concept Field to Ferry. The report presents a business model concept for renewable shipping fuel from local resources in coastal communities in the BSR. It is based on a test case of using liquefied biogas (LBG) from the "green island" Samsø in Denmark within the GO LNG project. The report analyses briefly the emerging market for both liquefied bio-methane for marine transport and the corresponding market for coastal communities to produce biogas and to concentrate the bio-methane in a liquid form either for heavy duty road traffic, for trains or for ferries. The Samsø Field to Ferry business concept is perhaps a one-of-a-kind case, but inspiration can be taken for other localities with similar aims and options. The report combines the biogas planning manual from Denmark with a generalised business concept model and ideas of crowdfunding into a conceptual model for other coastal communities. The second output that impacts the institutional capacity is the GO LNG platform which is a competence centre of scientific institutions aimed at spreading the knowledge needed to promote and develop LNG. In this regard, the organisation unites LNG related industries from around the Baltic Sea and serves as the networking platform for national LNG organisations. The competence centre is essentially a network of scientific and business organisations which provides training on LNG for industry and public stakeholders. The network develops and promotes knowledge on LNG, and thus enable new research and competence development initiatives to support LNG infrastructure development in Baltic Sea region.

Despite the fact that overall, the project is considered a success, throughout its implementation several impediments hindered its effective implementation. In this regard, one of the informants pointed out that the policy field and the relevant framework did constitute impediments. As it was pointed out, managing the interest of policy makers was a challenge which was prevailed by connecting all the platforms and the different interests. Nonetheless, the main barriers can be grouped into four categories. First, from an environmental perspective, the accidents with LNG hampered its public awareness and acceptance, and hindered harmonisation of safety regulations and hazard prevention (flammable), leading to higher time spent outside ECA. The second barrier category is represented by technology. Accordingly, ship tank size reduces cargo space and LNG uses approximately twice the volume of fuel oil for the same energy content leading to a limited research & innovation records because of limited demand. The third barrier is found in an economic lens due to the lagging motivation of ship owners and operations to switch to LNG without any clear investment back-up and established harmonised LNG network, as well as the price uncertainty, long depreciation costs for ships, high initial investment and the lack of public financial support for LNG. In the end, the fourth category looks at the governance. In this regard, there is a lack of harmonised standards for refuelling points or bunkering facilities; moreover, one also identifies the lack of harmonisation of

bunkering procedures at ports for small or medium scale operations; simultaneous LNG bunkering while cargo, passenger loading, embarking, as well as slow permit issuing processes.

From a digital perspective, the project was developed and finalised before the shift towards remote working in light of the COVID-19 pandemic. Nonetheless, the project did take into consideration the increasingly digitalised environment in which it operated. Accordingly, it developed the online platform mentioned above, as well as a new tool. Zero Vision Tool (ZVT) is a collaboration method and project platform for a safer, more environmentally friendly and energy efficient transport by sea (ZVT, 2016). Within the platform, representatives of industry, academy, agencies, and administrations meet to share experiences and to find common, workable, and sustainable transport solutions.

Furthermore, due to the success of the project and the manner in which it was designed, the BSR energy cluster managed to build partnerships with Chinese energy cluster which is remarkable. Projected partners visited the Chinese energy cluster in Shanghai. In this regard, the business contribution was over the estimation, as companies gave project partners positive feedback and requests for more information, and questions on future energy events.

CONCLUSIONS

As a whole, the project created a strategic approach to LNG development and a technology approach for consolidating the LNG value chain and provided skills and business partnerships for infrastructure development. In this regard, it is considered that in essence the project incentivises the promotion of LNG as an important tool in facilitating the market uptake of LNG. These may stem from industry, NGOs, or from governments; with each incentive in the BSR bringing more effect on LNG deployment than others.

The GO LNG project managed to foster effective collaboration that transcends the project itself. According to one informant, many companies are still working together. Moreover, green transport and green ports are involved today because many companies are moving towards LNG. Environmentally differentiated port fees are a financial incentive used to support or encourage shipping companies to reduce their environment “truck-to-ship” air emissions footprint. It is an excellent tool which enables a port to deal with external pollution from ships.

Generally speaking, “we manage to contribute to many small projects but also Interreg projects.” In this sense, the project results are outlined in a video developed through the project were the partners talk with the industry and focus on the benefits that they get. One can identify that it was very specific impact on the different countries, which is nonetheless natural. Even so, the project is geographical. The interest differs, so it is valuable that a project brought different results to different countries and these respective countries come together today in some kind of a strategic way.

14. SOHJOA LAST MILE

PROJECT TITLE: SOHJOA LAST MILE – BALTIC SEA REGION TRANSITIONING INTO ECHO-FRIENDLY AUTONOMOUS LAST MILE PUBLIC TRANSPORTATION

OVERVIEW

Project acronym and No.	Sohjoa Last Mile; #X025
Priority and Specific Objective	Priority 3 "Sustainable transport" SO 3.5: Environmentally friendly urban mobility: To enhance environmentally friendly transport systems in urban areas based on increased capacity of urban transport actors
Duration	9 months between 01.04.2021 – 31.12.2021
Budget	0.90 mill. EUR (0.53 mill. EUR – ERDF contribution + 0.13 mill. EUR Norway)
Partnership	7 partners, 5 countries (DK, EE, FI, PL, LV)
Main topics[29]	Sustainable Transport
Project Type	Extension stage

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

Sohjoa Last Mile is an extension project financed under the Interreg Baltic Sea Region 2014-2020 Programme. This project was developed based on a previous project, but also on the partnerships that emerged in similar Baltic Sea projects. The initial project entitled Sohjoa Baltic aimed to develop the capacity that is needed for establishing environmentally friendly and smart automated public transport. Having such objectives, the project focused on researching, promoting and piloting automated driverless electric minibuses as part of the public transport chain, especially for the first and last mile connectivity. As a result, the initial project was able to provide guidelines on the legal and organisational frameworks needed to operate a service of this kind in an efficient way. As a whole, both projects were developed with due regard to a singular end goal, namely, to facilitate the functioning of fully automated busses.

In the Sohjoa Baltic project, the idea was to test bussed without the embarkation operators and with remote operating, while in Sohjoa Last Mile the project aimed to demonstrate how busses without drivers can be a game changer as the costs for the operator of a vehicle can be up to 60 % of the entire costs. In this regard, Sohjoa Last Mile, as a project, showcased the manner in which automated shuttles could promote an impactful change in urban public transportation. As such, Sohjoa Last Mile of the Interreg BSR 2014-2022 demonstrates how to run automated shuttles without a safety operator hence testing, learning, and documenting the lessons learned.

PARTNERSHIP

The Sohjoa Last Mile project was developed through a partnership of academic institutions, as well as representatives of the public sector. Under the coordination of the Metropolia University of Applied Sciences, both the initial project, as well as the present one developed a consortium of partners from Finland, Estonia, Latvia, Germany, Poland and Norway, bringing together cross-border public transport planning expertise, as well as legal and technical understanding which are a perquisite for autonomous traffic (Table 15).

[29] Themes in Keep.eu

Giving that Sohjoa Last Mile was developed on the basis of previous projects and extensive partnerships that were built throughout the initial project, as one informant declared, “the idea was to go one step further”. While the consortium group for this extension project was smaller than that of the initial project, decreasing from 12 partners to 7, each partner knew their place in the project and the contribution they were able to bring. In addition, the partners of the project consortium spanned across several NUTS2 regions, such as Helsinki-Uusimaa, Põhja-Eesti, Pomorskie, Sør-Østlandet and Zemgale representing municipalities, towns and cities with a varied degree of interconnectivity. As one partner declared regarding the consortium size “In that case [Sohjoa Baltics], it was ok to have that many partners and from that many countries. But for the extension project it was good that the group got smaller, given the time constrain”. From a geographical standpoint, one can draw that Sohjoa Last Mile was able to focus also on less developed regions. For instance, in Sohjoa Baltic it was the first time for Poland and Latvia to having a pilot on automated buses. In this sense, the project is perceived as a success in that it managed to implement such initiatives in new areas, leaving people excited to see it emerging.

TABLE 15: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
Metropolia University of Applied Sciences	161,953	Higher education and research institution
Tallinn University of Technology	126,682	Higher education and research institution
Forum Virium Helsinki	83,250	Interest groups including NGO
The City of Gdansk	179,500	National Public Authority
City of Tallinn	16,817	National Public Authority
The Municipality of Kongsberg	250,000	National Public Authority
Zemgale Planning Region	35,000	National Public Authority

PROJECT DESIGN AND IMPLEMENTATION

The Interreg BSR project Sohjoa Last Mile was built to illustrate how to implement automated shuttles in lack of a safety operator. In doing so, the project focused on testing, learning and documenting the lessons learned in demonstrating how such electric minibusses can and in fact are a game changer for the entire industry of transport carriers. As the project aims at alleviating the capacity and maturity in autonomous driving technology, the target group was public sector entities and autonomous vehicle producers who would be able to advance the supportive regulatory changes regarding the EU-level legal framework and national regulations on deployment and development of autonomous public transport services.

In a context designed for innovating public transport, piloting activities were central to the project design and implementation. In Sohjoa Last Mile project, piloting aimed also to analyse the technical capabilities and risks when driving without a safety driver, human perception towards the driverless bus together with recommendations on the future language of driving, the communications network requirements for remote-control driving as well as evaluate 5G network advantages based on pilots. The pilots took place both in closed and open areas and provided information for the future remote fleet operating. As the experience, resources and local circumstances of the three sites are very different, the pilots also differed considerably. Each pilot had unique features. For instance, the pilot in Gdansk, which is a northern Polish city, was implemented thanks to the municipality which for the second time in a row proved to be the only actor nationwide to organise an autonomous bus pilot and probably the first worldwide to run it at the cemetery and delivered valuable experience for future procurements and implementations. Moreover, the

pilot in the Norwegian municipality of Kongsberg was established as the first such pilot in the country whereby the driverless operation was tested, but also the driverless phase included on-demand transport, to eliminate empty trips and pointless energy consumption. The pilot in the Estonian capital, Tallinn was operated thanks to Taltech, a company that managed to execute driverless operation from day one, and to maximise in-house resources. However, the teleoperation software was outsourced, the local remote-control centre at the campus worked simultaneously to the one in Riga, in order to build competence at the University. What is even more interesting, certain signs for future language of driving were developed.

In light of the piloting activities found at the core of the project, the partners decided to allocate resources for a situational analysis focused on what is needed in order to enable the driving of such busses on public roads. This legislative matter, however, was not an impediment for all project regions. For instance, Finland was able to start implement such activities before other regions because the legal framework does not embody many restrictions in this regard. In doing so, the partners identified one key challenge, namely, to get the permission from different locations for the piloting when doing it on public roads. Nonetheless, considering past experiences, the partners were able to overcome these challenges by allocating more time for getting all the required licenses and the permissions in place. Accordingly, having the support of local authorities was incremental to fulfilling a fruitful project.

The project is considered to have been fruitful and of valuable impact also considering its response to the COVID-19 pandemic. In this regard, while the project was offered the possibility to receive a 6-month extension, the partners decided not to take the proposal as they did not need the extra time to finalise the project. As such, while the resulting digital transition did not carry a negative impact on the project implementation, one partner did declare that it was often challenging to communicate via messaging centres, causing a lengthy and delayed response.

KEY ACHIEVEMENTS AND RESULTS

As the project aimed at the electric, automated shuttle buses which are packed with technology that currently is not mature enough to all situations and environments, deploying a pilot required detailed planning from route selection to ensuring vehicle provider, permits, test-plates, insurances, and suitable infrastructures. In this context, one partner outlines that the different activities depended on the funding that was available. However, the same interviewee declared that the initial project is a good example of the value such projects bring. Namely, Sohjoa Baltics it is a good example that not all activities stop if the funding stops. Accordingly, in Norway, there was an automated bus running in the city and it continued with the local funding from the local public transport authorities. The interviewed partner declared that “It was really good to see that it is ongoing and that it was something that started from the project, and which would not have started otherwise”. As a result, one may draw that the piloting municipalities are much more ready to move towards normal operations, not only on project-based operations. Such experiences illustrate that Sohjoa Baltics and Sohjoa Last Mile did carry a valuable impact as can be seen in the video produces throughout the project.

It has been generally the case that both the original and the extension project brought a considerable contribution to the capacity of the stakeholders involved. As one partner declares, “I think the capacity increased quiet much in the partnering organisations, for everybody involved and for those new to the project who are now ready to do something more and to get the funding to do it.”

As part of the project results, one can identify the test-permit-application processes, logistics and different types of administrative steps that are required for testing an autonomous vehicle. Amongst the achievements, the project also recorder the pilot route and the selected vehicles. The effectiveness of the project was also based on the broad local collaboration for support that was developed. Accordingly, in Norway, Kongsberg Municipality outsourced practicalities to Applied Autonomy and collaborated with the Norwegian Public Roads Administration (NPRA), Viken County, the regional public transport company Brakar, and their transport provider Vy, as well as EasyMile, the supplier of autonomous vehicles. In this case, NPRA and Brakar contributed financially to the project, with a view towards learning about the technology and processes.

Such cooperation was valuable in light of its multidisciplinary mindset, as an example, in Estonia, the project brought together three different units in Tallinn University of Technology (TalTech): the School of Engineering, the School of Business and Governance and the Smart City Center of Excellence. All units had their specific focal points, and the interdisciplinary approach allowed to study more closely both the technical requirements and challenges related to fully autonomous driving, and the societal context and focus on challenges for cities and users. Throughout the project, TalTech was supported by the authorities and Tallinn Transport Department.

Another aspect of paramount importance was the fact that the project allowed for knowledge-sharing across organisational and national borders. As such, the Kongsberg Municipality and TalTech had previous experience in pilot implementation on a larger scale and in varying weather conditions as well as in-house resources in the form of an autonomous electric bus. In contrast, the City of Gdansk had previously implemented a small-scale pilot, again had the opportunity to learn from more experienced partners.

As a whole, all the project achievements and results are anchored in one fundamental aspect, namely, the commitment to long-term development work from pilots to regular services. As such, in lack of a clear plan for transition, no city jumps from one small scale pilot instantly to a permanent regular autonomous shuttle bus solution. The persistent work with the local ecosystem actors has resulted in Kongsberg as the bus route number 450, the autonomous bus service seeded from the Sohjoa Baltic project. This is because the starting point was zero for many of the actors involved. Thus, participating in such a project gave them a capacity in this sense as illustrated both in the video available here.

CONCLUSIONS

Following the project design and its implementation, a fundamental gap was identified. As several partners declared, it was a challenging that legislation varies between the countries, also for the companies developing these buses. Such partners have argued that in order to mainstream the initiatives developed in the project, it would be “best if there were EU wide rules on what can be done and what cannot be done in the area. In some countries like Finland, it is easier to get the vehicles on the road. While in other countries I think their legislation would need some changes.” As an example of the existing legal gaps in the framework governing autonomous transport, in Poland, the administrative requirements are quite heavy, as one needs many signatures in the case of simple papers. Furthermore, some restrictions come also from the vehicle side, as the buses cannot do what the partners would have liked them to do. Such a lack of technological developments also poses a challenge which nonetheless is bound to be improved with time.

Moreover, another aspect of the project which the partners identified as being able of further improvement is the ability to get someone new involved which “is quite tricky”. Throughout the project, many partners have arranged different workshops and activities to participate in. In this regard, as one partner declares “It is difficult to get people to participate in these kinds of things specially in the beginning of the project when there isn’t something happening concretely. Once you get people to the pilot site and test it; they get more interested. The piloting helps engage people.” Nonetheless, actors become interested in the project also in light of its proximity, as “it depends where the piloting site is. If it is in a smaller municipality and you want to engage someone from the capital, it is not easy. Nonetheless, once you get people on the road, they know what they think of it and can give their input.”. Such aspects could indicate that piloting, project activities and similar initiatives should be extended to other areas and regions that would also benefit from the deployment and development of autonomous public transport services.

15. SUMBA+

PROJECT TITLE: SUSTAINABLE URBAN MOBILITY AND COMMUTING IN PRACTICE

OVERVIEW

Project acronym and No.	SUMBA+; #X024
Priority and Specific Objective	Priority 3 "Sustainable transport" SO 3.5: Environmentally friendly urban mobility: To enhance environmentally friendly transport systems in urban areas based on increased capacity of urban transport actors
Duration	9 months between April 2021 – December 2021
Budget	0.83 mill. EUR (0.67 mill. EUR – ERDF contribution)
Partnership	10 partners, 4 countries (DE, EE, SE, LV)
Main topics[30]	Sustainable Transport
Project Type	Extension stage

BRIEF DESCRIPTION OF CONTEXT AND OF THE PROJECT

The SUMBA+ project financed by the Interreg Baltic Sea Region 2014-2020 programme is an extension of its original project entitled SUMBA. The project emerged in order to address various challenges in sustainable transport, such as the car-based commuter traffic whose harmful effects are, amongst others, congestion, high greenhouse gas and air pollution in cities. In this context, the SUMBA+ project was developed to support the implementation of commuting master plans developed by the SUMBA project into practice. This includes further work on commuting master plans, providing data-evidence from transport models and lobbying for political and financial support on local, regional, and national levels. Accordingly, one must first outline the origins and rationale of the initial project. The SUMBA project focused on data-driven and participatory planning for intermodal and sustainable transport, while the extension project SUMBA+ intended to take this work further. In this case, it is important to state that the initial project was able to develop and test tools, such as the commuting master plan template, thereby helping urban and transport planners to assess, plan, and integrate intermodal mobility solutions into transport plans and policies of their cities and municipalities. In doing so, the initial project demonstrated how to effectively change suburban city commuting towards more sustainable and inter-modal patterns in 10 pilot regions. The pilot regions analysed their situation with the benchmarking tool and the SWOT analysis, collected data and chose suitable tools to plan or model their transport system. Based on the finding of these activities, commuting master plans and accompanying action plans were developed in the pilot regions in a participatory way. Results of this process were summarised in a publication and presented in the projects' final conference.

As an extension project, SUMBA+ was a short and intense nine-month project with a tighter consortium of five partner cities and regions that took their commuting master plans and high-priority measures to the next step. This work was done with the support and expertise from partner organisations BEF in Estonia, Latvia and Germany as well as the Institute of Transport Research at the German Aerospace Center (DLR).

PARTNERSHIP

As part of the Interreg BSR programme, SUMBA+ emerged across a consortium of 10 partners (Table 16) and 37 associate partners spanning across 4 countries, namely Sweden which led the project, Latvia,

[30] Themes in Keep.eu

Germany and Estonia and several NUTS2 regions, including Eesti, Latvia, Småland med öarna**,** Hamburg, Berlin. Such a wide and well-connected network was the building block for the project as it ensured that the results are spread and that the main outputs are used in the daily work practice of the partners and target groups.

TABLE 16: PROJECT PARTNERS

PROJECT PARTNER	BUDGET SHARE (EUR)	TYPE
The Municipality of Town Växjö	201,161	National Public Authority
Baltic Environmental Forum	27,742	Interest groups including NGO
City of Tallinn	65,238	National Public Authority
Union of Harju County Municipalities	69,339	National Public Authority
Tartu City Government	164,888	National Public Authority
Baltic Environmental Forum Latvia	35,861	Interest groups including NGO
Riga Planning region	79,920	National Public Authority
Baltic Environment Forum Germany	59,223	Interest groups including NGO
German Aerospace Center	53,385	Research Institution
City of Hamburg, Borough of Altona	76,440	National Public Authority

Considering the platform nature of the project, the partners involved had already established effective working relations, whether through the initial project or during similar past projects. In essence, the interest partners had in sustainable mobility, as well as their experience in the field, simplified the process of allocating tasks and dividing responsibilities. For instance, the partners from Estonia were already in contact with the national Political-Environmental Forum, previous to the Interreg programme, as they had conducted studies and similar collaborations.

Considering that the aim of the project was a wide dissemination of the project tools to urban and transport planners in BSR cities, such a consortium was imperative to the success of the project. In this regard, the successful dissemination of the project's results contributed directly to the efforts to make mobility more sustainable in the Baltic Sea Region and ultimately to the efforts of reducing GHG emissions from the transport sector – an important step to turning the Baltic Sea Region into a low-carbon region.

From a technical standpoint, the partners spanned across a wide range of industries, such as research, the public sector and private institutions. Due to the multisectoral expertise brought in the project, each partner had a distinct contribution. For instance, Växjö, as lead partner, performed a feasibility study for a circulation plan in the city thanks to its transport model. In addition, mobility hubs including park & ride, bike ride facilities in the municipality were analysed, while methods of integrating emissions with modelling tools were examined by Växjö and Riga Planning Region in order to evaluate the effects of the proposed measures on carbon emissions.

Another project partner, Tartu, was responsible for starting a bicycle library. Together with Växjö they created a handbook for other cities interested in starting their own bicycle library. In Tallinn, Riga Planning Region and Altona were able to produce further feasibility studies for mobility hubs in their respective areas. Towards this end, Tartul continued by working with GIS-based tools and developing a real-time modal share tool using traffic (bike, car) counts at various points in the city combined with public transport data. Since many cities and regions face similar challenges there were twinning activities involving thorough study visits and good practice exchange between similar cities in the consortium. Lastly, the progress and development of the SUMBA approach including the CMP process were reviewed and updated.

Furthermore, interproject cooperation was common in the SUMBA project and Riga was one of the best examples for this, including joint activities together with other projects (e.g. NSB CoRe, cities, multimodal, BSR Electric, Baltic LOOP, which furthermore aimed at combining local stakeholder engagement and hosting an international conference. In Växjö, the SUMBA project combined resources with South Baltic project CoBiUM to create Växjö's bicycle library with an even more extensive selection of bicycles and the ability to communicate the pilot as good practice across different platforms.

As a whole, in several partner cities, cross-border cooperation helped to create new partnerships, especially related to public transport planning and infrastructure.

PROJECT DESIGN AND IMPLEMENTATION

SUMBA+ was designed and implemented to support the roll-out of the measures planned in the commuting master plans developed in the SUMBA project. The initiative was structured in three pillars accordingly. First, the project focused on working on specific measures laid down in the commuting master plans. Then, the partners were oriented around further providing data-evidence from transport models and lastly, they centered their efforts on lobbying for political and financial support on local, regional, and national level.

Overall, the approach taken by the project is grounded by the philosophy of addressing commuting in a systematic way following the sequence: analyse – reflect – respond, which is guided by data and participation.

In implementing the project philosophy, the project partners undertook a diverse set of activities in reaching the respective target group. In this regard, the project was designed to include various participatory processes and dialog activities, as well as working groups, reference groups, workshops, public outreach and surveys. These were an important part of the project and helped to anchor the SUMBA-approach as good practice in transport and mobility planning.

The SUMBA+ project was distinctive in that it incorporated an element of "twinning" activity, thereby enabling interaction and knowledge exchange between the pilot regions in the project Tallinn & Harju County, Riga Planning Region, Växjö, Hamburg-Altona and Tartu. The initial idea was to focus on direct experience exchange amongst municipal experts and to provide an opportunity to discuss important topics with other municipalities. These activities were structured across 4 themes, Theme 1 addressed "Streets for people – moving space from cars to people. How to get residents and politicians on board", Theme 2 focused on Sharing systems and on 'How to establish them beneficially for the whole society and city', Theme 3 looked at Mobility hubs – "Come together": good practices and perspectives, while the fourth theme Theme 4 was concerned with "Mobility trends in planning – new technologies and mobility options: A boost for better transport?".

Such a design and cooperation framework were incremental to the project result. In this context, one partner declared that such a framework facilitated a smooth piloting. Piloting in this context is very important as it enables an understanding of the different uses, and what solutions work and what doesn't work. Towards this end, several partners acknowledged that such an invaluable piloting would not have been possible if there wasn't political and public support in terms of mobility and pilots.

KEY ACHIEVEMENTS AND RESULTS

As sustainable mobility issues have been coming more actual starting since 2013-15, it was important to contribute with input into transport and mobility. In this context, the project focused on the aim of dismantling barriers to use transport models and assessment tools by providing information and guidance, including cost efficient solutions for open source software and alternative data sources. In doing so, the project provided strategic and data-based approaches to find good solutions. In particular, SUMBA pilot cities developed commuting master plans, based on a thorough data-based analysis using SWOT analyses and transport modelling.

As part of this endeavour, one of the main issues regarding mobility and urban planning processes in today's cities is their fragmentation along administrative as well as departmental borders. When cross-

border cooperation is not working well enough, the result is a fragmented transport system where various services and bits of infrastructure are not connected into coherent routes and journeys between relevant destinations throughout the urban area. This is especially true for public transport and active modes of transport such as walking or biking, as the infrastructure and organisational solutions for these modes are still in the development process in most cities. In this regard, one partner points out to the challenges posed by existing socio-political fragmentation. The partner declares "one thing that was complicated, was to bring these project results into a development strategy and document, as it was quite hard to get this political support for new agreements."

The challenge brought by the diverse political culture found across project countries is often widespread. Nonetheless, considering that SUMBA+ was developed and implemented across the Baltic Sea Region, one partner outlined that "in the BSR region, we are thinking in the same way in general". Such a cultural understanding in fact enabled a smooth and flexible project implementation.

From a more technical standpoint, the status of active modes as modes of transport relevant to commuting (as opposed to a recreational activity) is very recent and, at times, still contested. As such, the political will and administrative capacity to develop these modes (across municipal borders or as means of access to public transport) is often lacking when compared to motorised transport. Thus, poor cooperation between neighbouring municipalities within the same functional urban area is a significant issue for developing a well-functioning transport system for PT and active modes of transport.

By taking a holistic approach on the project implementation, one may draw one final impediment, A fundamental challenge with regards to SUMBA+ was the insufficient coordination between land use planning and mobility planning which is currently a widespread barrier for developing a sustainable and well-functioning transport network. In addressing these disparities, the project had one important output. Namely, the Intermodalyzer - a Benchmarking Scheme to assess the City's Transport System with regard to Intramodality. The "Intermodalyzer index" measures how intermodal a city or functional urban area is. The index is described in a methodological report that enables municipal planners as well as transport non-governmental organisations (NGOs) to evaluate the transport situation. Accompanying such tools is the guideline for transport modelling and data collection which further standardises data sets and information. The guidance for modelling describes how transport modelling tools work. In addition, it describes the available commercial and free transport models as well as planning support tools.

In addition, during the SUMBA+ project, the partners also focused on developing the "template for commuting masterplans" which explains the steps to be taken to develop a commuting masterplan for a functional urban area, i.e. the core city and its surrounding area. It is a supportive document for regional and urban planners in municipal administrations. Based on such contributions, one may draw that SUMBA+ outputs directly contribute to the capacity of the public sector in developing efficient and effective sustainable transport. Towards this end, the project developed accessibility and feasibility studied for intermodal transport hubs, the installation of a bicycle library following the example from the SUMBA main project, and studies how to integrate estimation of GHG emission reduction potential of transport measures and real-time modal split estimations into the implementation of commuting master plans.

In addition, as the project was designed and implemented throughout the COVID-19 pandemic, it was necessary for many partner organisations to transfer to digital and other means of engaging the public and for coordinating meetings with stakeholders. In several cases during the project, this resulted in missed target groups such as elderly residents who are not familiar or comfortable with digital communication. To overcome this challenge, Riga reached out to elderly residents with the help of representatives that facilitated video conferences with transport planners to help understand the needs and issues of elderly residents in the city's transport system. Växjö shifted in-person workshops on traffic safety to a digital version that was communicated through social media. Certain target groups like school children were missed as a result. Further surveys using digital mapping tools were therefore used to fill this gap by identifying important school routes and gathering suggestions for improvements to traffic safety according to school children.

CONCLUSIONS

SUMBA+ was developed to push the implementation of actual measures to support intermodal, non-car-based commuting in the pilot cities. In doing so, the project sets a good example on both the national and international level as it illustrates to other planners and decision makers the manner in which the SUMBA approach is effective in supporting the transition in the mobility sector.

As illustrated above, the project did attain its objective considering that it did push the implementation of actual measures to support intermodal, non-car-based commuting in the pilot cities and enhance environmentally friendly transport options in the participating countries and cities.

Participating partners were able to draw a set of lessons throughout the project implementation. In doing so, the lessons of the project (SUMBA) are categorised under four different themes: guiding documents; surveys, modelling, and data gathering; participation and cooperation and international collaborations. In general, based on the input of project partners, the stakeholders pointed out to one common recommendation, namely that the programme should give more attention to piloting because it is essential for development. The lack of funding dedicated to piloting activities is considered “a weakness of the programme”. In overcoming such an impediment, it has been argued that a solution could be to approach a more flexible funding, thereby enabling the lead partner with a wider mandate for allocating the budget as needed. In general, such an approach would make the project design and implementation both flexible and smooth.