

Framework Contract: Implementation of an integrated evaluation approach within the framework of a robust North-West Europe evaluation system (Reference 16B007)

Annex 3: Case studies

FINAL IMPACT EVALUATION

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This report was prepared for the
Interreg North-West EUROPE MANAGING AUTHORITY
c/o GEIE GECOTTI-PE – Interreg NWE
45/D, rue de Tournai
1° étage
59000 Lille
France

by
Spatial Foresight GmbH
7, rue de Luxembourg
L-7330 Heisdorf
LUXEMBOURG
www.spatialforesight.eu



in collaboration with
t33, Italy
and with a contribution by
Thomas Stumm (Eureconsult)



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1 Introduction

This Annex presents the findings of the ten case studies performed in the course of the Final Impact Evaluation. All case studies are presented in the same manner, building on a common template elaborated for them. They differentiate between project activities, the contribution to the respective Specific Objective, territorial impacts and the general impact categories as defined in the main report. Each case study closes with a list of references. In addition to these references, interviews were conducted with lead partners and other partners involved in the project to deepen insights.

2 SO 1

Case study analysis of SO 1 included the following two projects:

- ASPECT – Advanced Simulation and control of tribology in metal forming Processes for the North-West European Consumer goods and Transport sectors
- EYES – Empowering Youth through Entrepreneurial Skills

2.1 ASPECT

Case study analysis	ASPECT
Project activities	
Types of action	ToA2: Improving the competitiveness of enterprises, through cooperative actions that take forward the development of specific products, services or processes to a stage of market-readiness.
Target groups	<p>The project targeted mostly enterprises and SMEs, and to a lesser extent also research and training organisations.</p> <p>Companies and research organisations alike were effectively reached through the specific trainings delivered. The outreach to professors and researchers at technical universities and enterprises was significantly higher than anticipated, only SMEs were not addressed as anticipated (about 75% of the targeted number).</p> <p>ASPECT generated a high number of scientific and technical publications, which produced have essentially contributed to the advancement of the state-of-the-art in tribological engineering.</p> <p>Also, through ASPECT, specialised trainings were organised for the industrial experts working in automotive and consumer goods production.</p>
Addressed sectors	Innovation in the industrial sector (automotive and personal care consumer products)
Partnership / collaboration	<p>The project partnership displays cooperation between SMEs, R&D organisations and bigger companies, representing the whole sector value chain. Specifically, it is composed by 13 entities:</p> <ul style="list-style-type: none"> • 3 research and development institutes • 6 large enterprises • 2 SMEs • 2 business support organisations and innovation clusters <p>And it is supported by 1 associated partner, namely a sectoral federation.</p> <p>ASPECT built on the results of previous innovation projects carried out by the Lead Partner and other research partners.</p>

	<p>The collaboration ensured by the project brought together different expertise and experience and was effective to achieve the results.</p> <p>The project also managed to increase cooperation between enterprises and research institutions, overachieving the initially planned target.</p> <p>The partners would not have worked together without the project, and therefore would have probably delayed any work in the field for years. The industrial nature of the project, and the type of large market players involved raised a number of issues during the first phases of the project such as IPR and private interests at stake. The solutions found then were strong enough to hold until the end of the smooth project implementation.</p>
Capitalisation or subsequent activities	<p>A capitalisation proposal was submitted to the Interreg NWE 2nd call, and it was rejected. Collaboration among partners outside of the framework of the project remains limited and is affected by the turnover in the partners' staff.</p> <p>The durability of project achievements is maintained by the adoption of the innovative methods by the project partners, among them being 6 prominent European enterprises.</p> <p>Tata Steel will apply the ASPECT approach to other processes, and the Dutch SME Geerts Metaalwaren is interested in applying it to other processes in Philips and Opel.</p> <p>However, one of the interviewed partners reported that, at the time of the interview, none of their customers have taken up the innovative approach developed in ASPECT, as it is a fairly complicated system that requires time to be applied. Also, it is not easy to assess who is applying the new process outside the partnership, as those are not obliged to report to ASPECT partners.</p>
Specific Objective	
Contribution to the SO	<p>ASPECT addresses the need to boost knowledge flows between innovation stakeholders to further promote an innovation environment in which stakeholders cooperate. Specifically, the project contributes to the SO1 by developing advanced simulations technology that makes the metal shaping process more efficient and reduces the production of waste, filling a critical knowledge gap in the start-up phase of industrial metal shaping productions.</p> <p>The project focused on testing and developing the approach, as well as to disseminate it through an open training programme and public demonstrations.</p> <p>As a result, the project facilitated innovation in SMEs and beyond through the improvement of the available knowledge on tribological processes by addressing the related technological problems that hinder productivity. One involved SME came up with an innovative testing method that bridges two standardised testing methods and captures previously not capturable effects.</p> <p>Cooperation between SMEs and R&D organisations was facilitated through the partnership structure also involving other companies than SMEs.</p>
If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future	<p>The challenge that remained all along the project duration is that the working standards and style differ greatly between businesses and public funding mechanisms, and delays in financial reporting were felt until the final report.</p> <p>Some final coordination between industrial and scientific partners were delayed due to COVID-19 travel restrictions, however the project achieved most of its outputs before the pandemic-related restrictions were imposed.</p> <p>Also, some project partners did not correctly estimate the administrative difficulties of the expenditures reporting and certification process. The Lead partner believes that reporting every six months is unnecessary for certain partners and would support a more flexible approach where only one report or more than 2 could be submitted every year depending on partners' needs.</p>
Response to transnational development needs of the SO	<p>ASPECT project tackles the need to implement new technologies and products that can make the region more competitive. A pivotal factor in achieving this objective is to foster transnational cooperation between research institutions, producers and other stakeholders.</p>

	In this context, by applying a leader-follower approach the project contributed to closing the gap in terms of innovation performance among regions in NWE.
Tackling of SO-specific aspects (inclusive growth / social aspects)	<p>Not directly. No special measure was foreseen in ASPECT to promote inclusion, as it is outside the scope of the project.</p> <p>However, the new simulation and control system elaborated make production less dependent on the experience of the machine operators, thereby allowing promoting employment of young people.</p> <p>Also, through the new approach developed, the project wants to contribute to bolster production technology sector in Northwest Europe to be able to face competition from other regions and to counter relocation of enterprises.</p>
Territorial impact	
Focus on specific territories	<p>The project does not address specific territories (such as urban or rural), but the consortium was rather aimed at including the entire value chain and the associated expertise necessary to achieve its results.</p> <p>The project partners are registered in Netherlands, France, Belgium, Germany and Switzerland.</p>
Addressing of territorial distinctive features	<p>The EU industry has managed to preserve a world-leading position in sustainability and returned a €365 billion surplus in the trade of manufactured products. This was generated mainly by a few high-end technology sectors, struggling to keep its productivity performance competitive. However, both automobile manufacturing and consumer goods sectors face challenges such as significant pressures on sales, high-cost base, growing competition from imports and ultimately low profitability.</p> <p>The project addresses the need to introduce novel technologies and products to enhance the competitiveness of the region.</p>
Contribution to the following impacts:	
1. Better coordination	<p>The partnership structure was built so to engage the whole value chain of the addressed sectors, in order to facilitate cooperation between companies (SMEs and large enterprises) and R&D organisations. Also, such collaborations were fostered through the trainings, demonstrations and networking opportunities (on-line B2B meetings and parallel sessions). As a results, new partnerships were created among entities which would otherwise be competitors.</p> <p>Also, the project partners managed to overcome problems related to IPR and private interests which the industrial nature of the project entailed.</p>
2. Use of innovation through better conditions	<p>The project created better conditions to innovation thanks to a new technology developed and tested, that can be accessible to other companies, researchers and professionals, which accessed the trainings organised by ASPECT. Furthermore, the project established collaborative partnerships that facilitate innovative processes between R&D institutions and enterprises, including large manufacturing companies, SMEs and software development companies.</p> <p>For what concerns the uptake of the new model, the interviewed partners report that not all of their clients are applying it. As it is a new model with a certain degree of complexity, it will probably require time before its effects can be seen at a larger scale.</p>
3. Better and efficient processes	<p>The ASPECT model demonstrated significant improvements in productivity of the sheet metal forming processes. It contributed to improving processes by developing a new model that contributes to productivity increase (35% in the tested industries) and reduced maintenance costs (25%).</p> <p>However, the impacts will probably be seen in the future once the model will be adopted also beyond the project partnership.</p>
4. Liveability and attractiveness of NWE territories	<p>The project contributed to a better competitiveness of NWE enterprises through increased efficiency and cost reductions for metal shaping processes.</p> <p>The positive effects of the project also concern the environmental dimension, as the new model implies a reduction of waste and energy consumption.</p>

References	<ul style="list-style-type: none"> • Project website: https://vb.nweurope.eu/projects/project-search/advanced-simulation-and-control-of-tribology-in-metal-forming-processes-for-the-north-west-european-consumer-goods-and-transport-sectors-aspect/ • Presentations from the final event: https://www.m2i.nl/looking-back-at-a-successful-final-aspect-event/ • Project application form • Project progress report period 6 • Project final appraisal report • Cooperation Programme Interreg North-West Europe 2014-2020 • Three interviews with the LP and two PPs
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2.2 EYES

Case study analysis	
<i>EYES</i>	
Project activities	
Types of action	ToA3: Delivering societal benefits through innovation.
Target groups	<p>The project's target groups are young people aged 15-34 who are not in education, employment or training (NEETs), Public and NGOs organisations, enterprises providing social services related to NEETs.</p> <p>Once the project's main deliverable will be operational, it is expected to empower NEETs aged 15-34 years to more efficiently use the regular entrepreneurship and employment support schemes within their regions.</p> <p>Until the final launch of the app, it will not be possible to assess the outreach and impact of the project on the target group.</p>
Addressed sectors	Youth unemployment
Partnership / collaboration	<p>The partnership is composed by 11 entities:</p> <ul style="list-style-type: none"> • 4 local public authorities • 3 universities • 1 religious institute • 1 international organisation • 2 private sector organisations, including 1 volunteer association <p>Also, partners rely on 4 sub-partners, among which local organisation, local public authorities supporting technical implementation.</p> <p>Although designed to feature an effective blend of key stakeholders in the target sector and R&D institutions, the partnership struggled in implementing the project activities for reasons that involved, among others, very different views on the project approach, structural changes within the partnership due to Brexit, IT issues, and lack of expertise on legal aspects.</p>
Capitalisation or subsequent activities	<p>As the main project output – the app Utolo – is not finalised yet (August 2023), the partnership has not discussed future capitalisation projects or follow up yet.</p> <p>The French partner reports that they are implementing a project funded by national funds that builds on the relation between coaches and youngsters as elaborated by EYES.</p>
Specific Objective	
Contribution to the SO	EYES addresses the need to fight youth unemployment. Since vulnerable young people are rather irresponsible to classic top-down approaches and hardly connected to existing support schemes, they bear the risk of long-term labour market exclusion. In order to facilitate the integration of vulnerable groups into the economic system of NWE, the project aims to empower NEETs aged 15-34 years

	<p>to more efficiently benefit from entrepreneurship and employment support schemes within their regions, through a digital platform that can enhance the access to such schemes.</p> <p>The co-designed EYES approach combines entrepreneurial education with personal coaching: the project elaborated training materials for professional and volunteer coaches, and guidance for the local implementation of such approach.</p> <p>The main output of the project is the design of an app for that can engage and support the NEETs aged 15-34 with a fragile background to connect them with potential employers, to be empowered for launching their entrepreneurial project and to be supported by a network of peers and of social workers that can also motivate them in their paths.</p> <p>However, as the project is still in the implementation phase, even though it officially ended on 31 May 2022, the project effectiveness can be fully assessed after the implementation as it depends strongly on the actual usability and uptake of the revised EYES/ Utolo app.</p>
<p>If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future</p>	<p>Throughout its implementation, the project faced a high number of major problems which hindered the achievement of results.</p> <p>COVID-related restrictions significantly cut off the project partners from the target group, as many vulnerable young people simply struggled with other issues which were not necessarily related to their employment struggle. Also, the pandemic made local and regional cooperation much more difficult.</p> <p>Furthermore, the finalisation of the app suffered from severe delays primarily due to the withdrawal of the technical partner in charge for it because of Brexit (British partner), so the IT-related activities had to be contracted out at an already late stage of the project. According to the interviewed French partner, having an external IT provider turned out to be an obstacle for the partnership, as the designers had a pure commercial relation with their “customer” (project partners). In addition, according to LP, part of the delay in the design of the app was also due to difficulties in identifying a design that could suit all the different national systems and the social services’ organisational structures.</p> <p>Due to these issues, the project has underperformed in terms of outputs. Nevertheless, despite the closure of the project, the partnership created a so called “EYES emergency” fund to finance the needed app adjustments. The app is expected by the end of 2023. Also, the French and Belgian partners were and are implementing the approach through a paper version of the tools.</p> <p>Further issues were related to the lack of partners’ expertise on GDPR and other privacy issues, which were crucial for the activities.</p>
<p>Response to transnational development needs of the SO</p>	<p>EYES project tackles the transnational need to develop and implement new technologies, products and services to create an impact on societal challenges, namely youth unemployment, by supporting NEETs entrepreneurship.</p> <p>While entrepreneurial education has become an EU priority to fight labour market exclusion, the relevant knowledge across NWE is fragmented and a consistent approach to systematically integrate vulnerable young people is missing.</p> <p>In this context, EYES developed common training tools and sessions for coaches that accelerate the knowledge transfer from leader to follower and improved the awareness of local policy makers to develop a transnational strategy to reduce the NEETs rate in NWE.</p>
<p>Tackling of SO-specific aspects (inclusive growth / social aspects)</p>	<p>The project is primarily tackling the inclusion of marginalised groups into the labour market, with a specific focus on NEETs.</p> <p>With regards to equality between men and women, the project had a neutral impact, as it targeted disadvantaged young people irrespective of their gender, sex, ethnicity or other backgrounds. However, the training activities for the coaches included content to raise awareness of gender-specific challenges to be taken into account during the coaching activities.</p>
<p>Territorial impact</p>	

Focus on specific territories	The target territories are five urban areas of Germany, UK, Belgium, France, and the Netherlands, specifically Ruhr area, Greater London, Flemish triangle, European Metropolis of Lille, and Tilburg.
Addressing of territorial distinctive features	<p>In many deprived NWE metropolitan areas, NEET rates are distinctly higher. Since NEETs bear a systematic risk of labour market exclusion, they can cause high permanent social costs and put a substantial risk to smart and inclusive growth in NWE.</p> <p>Economic and social inclusion of young people is structured differently in each partner's location. As an example, in France the responsibility belongs to social centres, but in Belgium and UK this is managed through private companies. This affects the approach at the national level, yet such differences were used as an asset by the partnership to elaborate a transnational approach that could find new solutions.</p> <p>Each project partner defined the target group according to the specificities of its context (and to the partner's human resources availability): in France the EYES tool is used not only for young people aged 16-20. In Germany, the LP concentrated on the 24-30+ age range including youngsters with a higher level of education struggling with entering the labour market.</p>
Contribution to the following impacts:	
1. Better coordination	<p>The project improves coordination among different types of stakeholders in the social services and employability sector: universities, associations and social services were called to work together on the design, testing and feedback phases of the project. Also, the interaction among representatives of different countries promoted comparison of the partners' national systems and approach to the issue of NEET inclusion.</p> <p>The partnership established a transnational innovation network of NWE cities that integrate international entrepreneurial education systematically into their local NEET policy.</p>
2. Use of innovation through better conditions	<p>As long as the Utolo app is not finalised and launched, it is difficult to assess this impact.</p> <p>So far, the project has revealed that digital social innovation, especially for vulnerable target groups, requires a certain level of legal expertise (e.g., data protection) otherwise, designers and developers run the risk of providing digital solutions that do not stand legal checks. Thus, such aspects should be taken into account before an initiative or even a policy is launched.</p>
3. Governance capacities of decision makers	<p>The project empowered public authorities at the local level on how to improve their policies towards NEETs. However, it is still early to assess this impact.</p> <p>Once finalised, the Guideline for local governments to integrate EYES into existing support schemes for NEETs is expected to support the governance of decision makers in social inclusion and employment improvement.</p>
4. Better and efficient processes	Along with capacity building activities directed to youth workers on the topic of empowering vulnerable youth, the trainings encompassed also legal issues like personal data protection (GDPR) and liability.
5. Impact on policy agendas, policy changes, laws and regulations	At the moment, as the app is not operational yet, it is not possible to assess this impact.
6. Liveability and attractiveness of NWE territories	<p>By the project conclusion, 8 enterprises have been receiving support from EYES/Utolo: ACSW (Association des Centres Sociaux de Wattrelos) created a new social enterprise for coached app. Among EYES end-users, City of Tilburg coached seven Utolo/ EYES end-users who thereupon started their own businesses. All of these enterprises are operating to date.</p> <p>However, it is still early to see this impact at a larger scale. This result can be effectively measured once the app will be operational, as it is expected to positively</p>

	impact on NEETs' capacities in establishing entrepreneurial projects and to increase their chances to access the labour market.
References	<ul style="list-style-type: none"> • Project website: https://vb.nweurope.eu/projects/project-search/eyes-empowering-youth-through-entrepreneurial-skills/ • Project application form • Project progress report period 5 • Project final appraisal report • Cooperation Programme Interreg North-West Europe 2014-2020 • Two interviews with the LP and one PP

3 SO 2

Case study analysis of SO 2 included the following two projects:

- ECCO – Creating new local Energy Community Co-Operatives
- HeatNet NEW – Transition strategies for delivering low carbon district heat

3.1 ECCO

Case study analysis <i>ECCO</i>	
Project activities	
Types of action	ToA4: Promoting carbon reduction in cities and regions
Target groups	<p>The target group predominately focused on local and regional public authorities and rural communities, such as citizens, SMEs (rural stakeholders, primarily farmers) and energy cooperatives.</p> <p>The project provided them with tools to support development of Renewable Energy Community Co-Operatives (ECCOs): the project partners engaged with the target group through series of policy inspirational workshops, Masterclasses, Flying expert activities and national & regional events. As a result, they became active partners and funders of the ECCOs developed by the project.</p> <p>The project worked with various stakeholders from public sector (namely regional and local authorities) supporting them in transposing EU regulations into national legislation.</p> <p>Target group goals have been exceeded (some 10x more than originally anticipated). The only target group, which was not reached in full were SMEs (target value: 3.000, reached: 2.641).</p>
Addressed sectors	Decentralized energy management in rural setting
Partnership / collaboration	<p>The partnership builds on the results and synergies of another Interreg NWE project, and it displays the appropriate complementary expertise to achieve the project outputs and results.</p> <p>Specifically, the partnership displays rural energy community cooperatives support services, agricultural/rural innovation agencies, regional development organisations, specialised research organisations, a European federation (of RE cooperatives) and 2 partners for capitalisation and liaising with other projects.</p> <p>The partnership benefits from 9 sub-partners, mostly already established ECCOs and consulting partners, and it is supported by 51 associated partners, out of which beacon ECCOs, authorities & policy makers from different governance levels,</p>

	<p>representatives of rural farming community and sustainable energy producers and energy consultancy organisations.</p> <p>Also, in order to support the target group in transposing EU regulations into national legislation, the ECCO project also collaborated with COME RES, Horizon 2020 project that wants to advance renewable energy communities.</p>
Capitalisation or subsequent activities	<p>The project was selected for the 2021 Interreg NWE call for capitalisation, to allow the project to integrate the novelties originated from the EU directive that allows renewable energy communities to trade the energy they produce on the commercial energy market, and thus to enter an entirely new economic sector.</p> <p>Partners reported the intention to present a follow up.</p> <p>The one-stop-shop (OSS) operability after the project end is ensured by transferring it to REScoop.eu (project partner) and incorporating it to their website with the longer-term intention to bring together useful tools and practical knowledge from other European projects, so that energy communities can find and use all the necessary expertise centrally on this website.</p>
Specific Objective	
Contribution to the SO	<p>The project addresses the need to reduce GHG emissions and pollution and optimise the NWE regions' energy consumption and production and tackles the issue by working on accelerating the development of local ECCOs as a means to decentralise energy production, exploit renewable energy resources, enhancing transmission losses and reduce GHG emissions through a community-based approach.</p> <p>The project contributes to the SO with the enhancement of existing knowledge base, improvement of the effectiveness of existing and future ECCOs and acceleration of the start-up and development of new ones. This is done by facilitating and organising a number of activities such digital community, flying experts, conferences and masterclasses. Also, the project developed the one stop shop as a central repository for all the tools and methodologies that were developed by the project and is free to use by any interested party.</p> <p>The project strived for increasing capacity of public institutions in implementing low carbon measures effectively and at promoting the adoption of a regulatory framework for energy communities, as well as fostering the facilitation of the policy level.</p> <p>The most interesting deliverable of the project is the one-stop-shop, which gathers tools, methodologies and knowledge for establishing ECCOs and will be kept operational by one of the partners.</p>
If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future	<p>The partners report facing primarily external issues.</p> <p>The Covid-19 pandemic hampered engagement and communication with farmers and rural communities, which was particularly important considering that the target group is inherently less accessible with online means. Furthermore, the restrictions also negatively affected capitalisation activities and dissemination of project results to key stakeholders.</p> <p>The partners report facing difficulties related to the fragmented regulatory framework for energy communities in the EU (the transposition of the EU directive provisions on energy communities is ongoing and is being transposed in a heterogeneous way among EU MS).</p> <p>Also, the one-stop-shop website crashed during the viral attack of Microsoft and it was restored with LP's own resources in June 2023.</p>
Response to transnational development needs of the SO	<p>The project targets the need of increasing the share of renewable energies in the production and consumption mix, by facilitating the development of energy community in a context in which the national regulations are often weak and outdated, and the EU directive is being transposed slowly and in a heterogeneous way among EU countries. In these regards, the project aims at contributing to smoothing the regulatory framework of energy communities in NWE so to ensure easier and more accessible procedures.</p>

	Furthermore, the project wants to contribute to the public acceptance of renewable energy production in NWE regions.
Tackling of SO-specific aspects (inclusive growth / social aspects)	<p>The project generated a positive contribution to sustainable development since its focus was on enabling and promoting local energy communities and make ECCOs more effective to improve local energy management. This resulted in GHG reduction but also contributed to social and economic stability and re-vitalisation of rural communities. It had a neutral contribution to the prevention of discrimination as well as equal opportunities between men and women.</p> <p>Also, being rural communities the chosen target, the project also gave a contribution to reducing disparities by integrating more remote and rural areas with lower participation rate to Interreg in the past, in order to strengthen territorial cohesion in NWE.</p>
Territorial impact	
Focus on specific territories	The focus was on rural areas, as they offer the physical and social resources needed for a decentralised, community-based approach to providing RE.
Addressing of territorial distinctive features	<p>In NWE area, energy community initiatives often face limitations due to lack of knowledge on technology, marketing, access to finance and management. The available tools and methodologies remain fragmented and uneasily adaptable to the local needs. This prevents energy communities to become active renewable energy providers, and rural areas and farmers in NWE have a high potential which the project explored.</p> <p>Furthermore, despite the presence of best practices (e.g. Germany), the area lacks harmonised policy frameworks.</p> <p>Also, most of the energy community initiatives already developed are born mainly upon sensitivity towards climate and environment, instead of seeing it also as a potentially remunerative business.</p>
Contribution to the following impacts:	
1. Better coordination	<p>The project improved cooperation between different geographical areas. ECCO's locally and nationally rooted partners employed their vast national and regional networks to insert the transnationally built-up ECCO legacy into local and regional energy policy initiatives and concrete development of local energy communities.</p> <p>The project established a network that enables interaction and subsequently coordination among international and national partners. Also, ECCO fostered collaboration between local partners and central authorities, creating a channel for dialogue and cooperation. Such collaborations can lead to policy discussions and potential alignment of objectives.</p> <p>For instance, the Energy Community Federation in Ireland (CEFI) was established in February 2022 as part of ECCO project (led by the Irish project partners South Kerry Development Partnership and Munster Technological University), with the objective of advocating and encouraging the development of Renewable Energy Communities in Ireland. SKDP reports that CEFI is already working on supporting the central level in identifying the most suitable legal setting for energy communities.</p>
2. Use of innovation through better conditions	Especially thanks to the established one-stop-shop website, the project contributes to systematising and sharing of knowledge (tools, methodologies, financial instruments) and of best practices among interested stakeholders regardless of their level of experience (beginner or advanced). Also, the platform serves as an online networking platform to enhance spill over and scalability of innovation in renewable energy.
3. Governance capacities of decision makers	Even though the project does not involve central government entities as full partners, ECCO succeeded in enhancing governance's ability to make informed and effective choices related to energy community initiatives.
4. Better and efficient processes	The knowledge base that was set up through the one-stop-shop contributes in systematising knowledge on the set up of energy communities. The website collects the project deliverables, such as the guide for financing, and it allows users to be put in touch with sector experts and professionals.

<p>5. Impact on policy agendas, policy changes, laws and regulations</p>	<p>Even though the project does not involve central government entities as full partners, ECCO succeeded in impacting at the national level. For instance, in Ireland the local partner (South Kerry Development Partnership) managed to effectively advocate at the central level for a facilitation of procedures, eventually resulting in achieving a facilitation of the permission process for energy initiatives.</p> <p>Also, the project funded professional feasibility studies that would not have been funded by the public sector, showing the benefits of establishing energy communities, with the final aim to obtain political support and inspire policymakers.</p>
<p>6. Liveability and attractiveness of NWE territories</p>	<p>The project enhanced energy security and decentralised energy supply, as a result of initiating new ECCOs, resulting in reduced GHG emissions and saving of CO₂, as well as cost savings.</p> <p>By the end of the project, 200 new ECCOs were supported, most of them being currently in progress.</p> <p>The project managed to leverage almost 20 million euros from SMEs, citizens and authorities, exceeding the initially planned target by 4 times.</p> <p>Furthermore, by showcasing renewable initiatives projects as drivers of economic development and revenue generation, the project challenged the perception of renewables as solely environmentally driven initiatives. This change in perspective could contribute to a more supportive policy environment.</p>
<p>References</p>	<p>Add information on documents and websites used</p> <ul style="list-style-type: none"> • Project website: https://vb.nweurope.eu/projects/project-search/ecco-creating-new-local-energy-community-co-operatives/ • Project OSS: https://ecco-oss.ie/ • REScoop.eu platform to which OSS was transferred: https://energycommunityplatform.eu/about/ • Project application form • Project progress report period 6 • Project final appraisal report • Cooperation Programme Interreg North-West Europe 2014-2020 • Two interviews with the LP and one PP

3.2 HeatNet

<p>Case study analysis <i>HeatNet NWE</i></p>	
<p>Project activities</p>	
<p>Types of action</p>	<p>ToA4: Promoting carbon reduction in cities and regions</p>
<p>Target groups</p>	<p>The target group covers decision makers, public authorities (mostly urban local), infrastructure and public service providers, SMEs.</p> <p>The HeatNet platform was designed specifically to engage target groups, namely public Sector/Decision makers, business community and economic operators. A very good example of involvement of the target groups is the Kortrijk/Leiedal workshop process which engaged with stakeholders to agree on the content and targets of the roadmap. The roadmap was cited as a best practice example by regional authorities. Peer-to-peer and site tour events for the stakeholder audience were important to involve the target groups. In this context expert partners and municipality leaders demonstrated the viability of district heating systems and the municipal utility model.</p>
<p>Addressed sectors</p>	<p>Heating and cooling systems in urban settings</p>
<p>Partnership / collaboration</p>	<p>The LP and partners all confirmed that the partnership structure was suited to the project, exemplified by the fact that the project reached all its goals. Partners supported each other and had a significant amount of exchange.</p>

	<p>The partnership displays a blend of regional and local public authorities, research organisations, associations and a private sector organisation. Also, partners relied on 4 sub-partners, among which research entities and local public authorities for pilot sites.</p> <p>One of the subpartners was brought in as a full partner in order to provide for the PP7 which did not have control of the investment site. According to the LP, the proper level of governance was not involved at an early stage for this partner and therefore their level of engagement was underestimated from the start.</p>
Capitalisation or subsequent activities	<p>The sustainability of the results after the official completion of the project will be maintained through the HeatNet online platform.</p> <p>The partnership has already discussed future projects. Also, Mijnwater, one of HeatNet project partners from Netherlands, is leading the Interreg NWE D2GRIDS project, which is further continuing some of the actions implemented in the HeatNet project.</p> <p>The interviewed partners are currently further developing the project results through national and regional funds.</p>
Specific Objective	
Contribution to the SO	<p>HeatNet NWE addresses the need to reduce the carbon footprint and to increase the uptake of renewable energy in Northwest Europe, through the creation of an integrated transnational NWE approach to the supply of renewable and low carbon heat (including waste heat) to residential and commercial buildings.</p> <p>The project focuses on 4th generation District Heating and Cooling (4DHC) with minimised heat loss, integrated energy storage and supply to multiple low energy buildings.</p> <p>Specifically, the project contributed to SO2 by enhancing the existing knowledge base, creating a transferrable model for implementing 4DHC schemes in NWE, organising six living labs that test and demonstrate the HeatNet model through investments.</p> <p>To date, all six pilots are operational.</p> <p>The project prepared the guide to the HeatNet model and, thanks to the pilots, the total amount leveraged by partners is more than 43 million EUR from non-commercial sources, compared to the 8 million EUR initially planned. The high amount shows the increased interest in the subject of DHC and is in part due to the additional funding provided by the Irish government thanks to the HeatNet project investment in South Dublin.</p> <p>In facts, HeatNet managed to impact the policy level more than it initially planned: the project partners were able to demonstrate to policy makers on the ground what District Heating could look like.</p>
If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future	<p>Some project partners faced difficulties due to an initial lack of experience in the project technical sector. This was partially mitigated thanks to the support provided by the technical partners and the involvement of professionals.</p> <p>Delays were faced in the procedures for procurement, given the significant number of investments, which were aggravated by COVID, resulting in additional time to complete the investments. In the case of South Dublin, the pandemic slowed down the export of materials and service.</p> <p>Stad Kortrijk highlighted issues caused by the change in the local government. The newly elected administration required time to align with the project's objectives and make informed decisions. Conversely, the fact that the project is EU funded obliged the administration to accomplish the project.</p>
Response to transnational development needs of the SO	<p>The project targets the need to increase the share of renewable energies in the production and consumption mix, by facilitating the use of 4DHC systems that can improve energy efficiency, decrease carbon footprint and promote greener economy. To do so, HeatNet focuses on overcoming the financial, regulatory and organisational barriers preventing the development of 4DHC in NWE.</p> <p>The project wants to contribute to increased public acceptance towards the adoption of low carbon technologies in NWE regions.</p>

Tackling of SO-specific aspects (inclusive growth / social aspects)	The project had a positive impact on inclusion through the provision of affordable warmth for groups excluded or at risk of exclusion from society through economic deprivation. As a matter of fact, three of the pilots supply heat to social housing. With regards to equality between men and women, the project had a neutral impact.
Territorial impact	
Focus on specific territories	The target territories are selected urban areas of Ireland, UK (until Brexit), Belgium, France, and the Netherlands. Urban setting was selected due to the fact that DHC by its nature is an urban solution as it needs certain heat demands for it to be economically viable.
Addressing of territorial distinctive features	NWE regions share the low uptake of 4DHC, which goes together with a lower level of technological preparation in comparison with other areas of the EU, and this links them together and gives them a shared interest. The conditions in NWE are not different from the rest of the EU in terms of technical feasibility, however, the challenge is the disparities in DHC development which stem from differences in policy, regulation, planning, experience, knowledge, finance and economic conditions (for instance the fact that other sources such as gas have a lower taxation policy and it is challenging for DHC to compete on pricing). Another feature is that heat as a source of energy supply is not effectively targeted in national level policy, planning and strategies as it is inherently a local level issue, but at a local level, there are no requirements, expectations or experience to plan for heat supply. Thus, there is a lack of cooperation on the multi-level governance. HeatNet wants to address these shortcomings by increasing competences, cooperation and awareness at the policy level, providing guidance on the establishment of DHCs, while showcasing their benefits through pilot actions.
Contribution to the following impacts:	
1. Better coordination	The project improves coordination among stakeholders by creating new connections between the local administration and research centres, schools and businesses. Also, through enhanced capacities, the project stimulates more informed interaction between local and central levels. Thanks to the project, Ireland set up the first National DH association. Also, Codema and South Dublin were asked to advise a senior Government committee on policy and regulation on district heating as none exists at present.
2. Use of innovation through better conditions	Transnational cooperation has been a major highlight of the project: some of the partners are more experienced and district heating is more mature in their market, thus less experienced partners benefitted from input into policy, legal and regulation documents. Technical advice to investment partners and knowledge exchange site visits were key to influence decision makers. HeatNet created a better and more effective cooperation to share good practices, transfer knowledge and mutual learning on a modern and technology such as 4DHC. The project created also a more ready policy system that can scale up the use of this technology, as well as improving its perception in the general public. Also, the project identified and promoted funding opportunities available for DHC technologies, to encourage stakeholders to explore and invest in new solutions. The whole context benefits from new networks and partnerships among researchers, technology provided and general stakeholders.
3. Governance capacities of decision makers	Thanks to HeatNet and through its capacity building events, all organisations have upskilled in the area of DHC, but especially the public authorities in the learner regions. The project contributed to knowledge dissemination, providing decision makers with comprehensive information about DHC and their potential impact on low carbon footprint. This was done not only in theory (workshops, studies, guidelines) but also with a practical approach through pilot sites. HeatNet addressed the gap in skills within the local level: the current practice is that national level policies dominate the energy sector in NWE, while the local level is overlooked and lacks capacities. HeatNet provides the tools needed for local

	<p>authorities to implement local heat strategies based on the expertise and on-the-ground learnings of the partnership from pilot investments.</p>
4. Better and efficient processes	<p>The project contributed to improving regulations by comparing them among project partners.</p> <p>Also, the knowledge base that was set up through the website contributes in systematising knowledge on the policy and planning, financial and technological aspects connected with DHC. The website lists the 6 pilots as case studies and provides useful resources in form of guides for public sector, energy companies and energy consumers.</p>
5. Impact on policy agendas, policy changes, laws and regulations	<p>The project brought positive changes in relevant heating and planning legislation (e.g. in Ireland) to better take into account GHG emissions and the integration of local district heating systems in waste heat from large producers.</p> <p>The main aim of the project was to make recommendations for policy and regulation, it was not envisioned that these would be implemented during the lifetime of the project but that is what happened: in Ireland template contractual and legal documents are now available to set up not for profit heat companies. Also, Mijnwater's procurement guidelines are based on HeatNet.</p> <p>In some regions that had no policies for DHC before the project, regulation and policies were developed. HeatNet has significantly influenced policy in Flanders, Ireland and the UK.</p> <p>One of the main outputs of the HeatNet NEW project was the creation of 6 transition roadmaps for DHC. These have been adopted by the 6 partner regions.</p>
6. Liveability and attractiveness of NWE territories	<p>The project has achieved an increase of urban population benefitting from low-carbon strategies: the number of residential units connected to the DHC systems was more than 7.000 (in comparison with an initial target of 3.000).</p> <p>Furthermore, DHC maintenance costs and costs to the consumer are typically lower as well, thus the uptake of this technology is also expected to decrease energy poverty.</p> <p>Those benefits are expected to be exponentially higher in the future, thanks to the project's impact at the policy level.</p> <p>For what concerns economic benefit, the market for district heating in NWE at present is still economically marginal but there are first signs for change.</p>
References	<p>Add information on documents and websites used</p> <ul style="list-style-type: none"> • Project website: https://vb.nweurope.eu/projects/project-search/heatnet-transition-strategies-for-delivering-low-carbon-district-heat/#tab-1 • District heating guide: https://guidetodistrictheating.eu/ • Project application form • Project progress report period 5 • Project final appraisal report • Cooperation Programme Interreg North-West Europe 2014-2020 • Two interviews with the LP and one PP

4 SO 3

Case study analysis of SO 3 included the following two projects:

- FORESEA – Funding Ocean Renewable Energy through Strategic European Action
- SMART-SPACE – Smart Sustainable Public Spaces across the NWE region

4.1 FORESEA

Case study analysis <i>FORESEA</i>	
Project activities	
Types of action	Joint zero/low carbon technology demonstration schemes and facilities, including fab labs and R&D/ testing facilities
Target groups	<p>The project was useful for its target groups (research centres involved with ocean energy, marine technology developers, policy makers/governments). For the first time, it gave technology developers (mainly SMEs) the chance to test their devices in the sea with lower costs. This has helped them to bring their products closer to the market.</p> <p>FORESEA (Funding Ocean Energy through Strategic European Action) project launched 5 calls for proposals. The calls aimed to help developers of offshore low carbon technologies to test their products or services in real sea environments. There was a continued demand for support of real-sea operations and demonstration projects from offshore technology developers and supply chain companies. The last call was thought to help bridge the gap between FORESEA and a potential follow-up project.</p>
Addressed sectors	Ocean energy (SMES and other companies and research centres working with ocean energy/ in the energy sector).
Partnership / collaboration	<p>World-leading network of ocean energy test centres: European Marine Energy Centre (EMEC): Orkney Islands, UK SmartBay: Galway, Ireland SEM-REV: Nantes, France Dutch Marine Energy Centre: Alkmaar, Netherlands.</p> <p>The structure of the partnership was effective to achieve the results. The project included the four main test centres in North-West Europe as well as the leading lobbying organisation for ocean energy in Europe (Ocean Energy Europe). They knew each other from H2020 projects and networking before the project.</p> <p>The lead partner also confirmed that the relatively small size of the partnership was easy to handle and allowed smooth decision-making (e.g. on the call requirements, selection of SMEs etc.). The LP mentioned that including other stakeholders in the core partnership, such as technology developers, would have created conflict of interest in the decision-making process and would have made the project less effective.</p> <p>It should be noted that technology developers that were selected in the calls were included as sub-partners (under the responsibility of partners EMEC, Smart Bay and DMEC). This was done due to state aid reasons so that GBER could be applied for the sub-partners. These sub-partners were only punctually involved, during their testing phase and were not involved in the decision-making and regular steering meetings. The lead partner confirmed that it was quite an administrative effort to have 25 sub-partners in the partnership. But since they were not all active at the same moment, it was manageable.</p>

<p>Capitalisation or subsequent activities</p>	<p>The closure of the FORESEA project is not the end of the story. Demand to test innovative ocean energy technologies in open sea is higher than ever and the industry is growing at a rapid pace. Ocean DEMO - a new €13m Interreg North West Europe project - was launched in January 2019 and will follow in FORESEA's footsteps. It will provide funding to developers of marine renewable technologies to test their products or services in real-sea environments. However, it will go one step further towards industrial rollout by focusing specifically on multi-machine ocean energy installations.</p> <p>The transition from single machine to pilot farm scale is critical for the future of the ocean energy sector. Scaling up to multi-machine farms will improve the competitiveness of the technology by bringing down costs across the supply chain. This transition comes with higher capital requirements and investors require a proven business case before they get further involved. Ocean DEMO will ease the transition towards pilot farms and build upon FORESEA's successes to deliver a thriving ocean energy sector in Europe.</p> <p>According to an interview: not possible because of BREXIT (for the Lead Partner from Scotland), but within Ocean Energy Europe and in H2020 projects, cooperation continues.</p>
<p>Specific Objective</p>	
<p>Contribution to the SO</p>	<p>FORESEA has been successful in deploying 33 low carbon technologies in real sea environment, more than any other project before. The results (at the end of the project) are in line with the targets envisaged in the application form and were even exceeded. Partners managed to develop a strong pipeline of technology developers which was essential to have developers ultimately test their devices in the sea and, thus, to meet the targets. The demonstration of technologies has proven to be an effective argument to attract further public and private investments.</p> <p>The project helped to remove barriers and improve conditions for low carbon technologies, providing support to test low carbon offshore renewable technologies in real sea condition and demonstrating their potential.</p>
<p>If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future</p>	<p>One challenge that was faced were the missing licenses for PP3, SmartBay, Ireland. The consenting process took much longer than expected (launched before the start date of the project) and prohibited the partner from offering any testing prior the second half of 2019. Thus, a big part of their budget has been shifted internally, mainly to PP1, EMEC, UK.</p>
<p>Response to transnational development needs of the SO</p>	<p>This project responded to one of the defined transnational development needs for this SO, as defined in the OP:</p> <ul style="list-style-type: none"> - Increase the share of renewable energies in the production and consumption mix, with a focus on stimulating demand rather than supply.
<p>Tackling of SO-specific aspects (inclusive growth / social aspects)</p>	<p>There was no direct social effect or link to social aspects in the project.</p> <p>From a territorial perspective, the project results can be used by coastal, peripheral regions at the Sea to develop ocean energy and research centres. This would help them to develop technologically and economically and create new jobs. However, not all coastal regions are less developed, so the benefits would not automatically go to the regions with highest needs. In addition, this would be an impact caused by man projects, policies, programmes and actions to take place in the long-term, and cannot be only attributed to this NWE project.</p> <p>The project followed the leader-follower approach and linked strong regions (Amsterdam) with weaker regions (Orkney Islands, Galway Bay, Pays de la Loire) in the NWE area. From a research point of view, this project linked strong regions in the NWE area (strong in ocean energy because of an existing research centre).</p>
<p>Territorial impact</p>	
<p>Focus on specific territories</p>	<p>The focus was on coastal regions, especially those with ocean energy research centres.</p>

	<p>Interestingly, the project even analysed conditions, services and skills needed for ocean energy research in relevant research and technology centres, even outside the NWE area. Through Ocean Energy Europe, they connected and had positive knowledge spillovers also with the other European ocean energy research centres.</p>
Addressing of territorial distinctive features	<p>Regions with research centres dealing with ocean energy. In fact, to test new technology under real sea conditions, a coastline and access to the Sea was needed.</p> <p>A specific publication of the project (“Ocean Energy and the Regions - A Partnership for Growth”) analyses the benefits that ocean energy test centres bring to the host regions. The line of argument is that test centres are crucial steps on ocean energy’s path towards commercial roll-out. Test centres become clusters of ocean energy excellence: Supply chain builds up around test sites. Experience and expertise build up within these supply chains. This knowledge is shared to establish common industry standards. And test centres devise common testing procedures to reinforce these standards. The comprehensive range of ocean energy test facilities is therefore an important competitive advantage for Europe.</p>
Contribution to the following impacts:	
1. Better coordination	<p>High contribution to better cooperation and coordination between stakeholders. Before FORESEA, partners were competitors and reluctant to share information. FORESEA changed the working relationships and partners built mutual trust. The FORESEA partners are now more confident to share information and support each other to secure further testing and other kind of collaboration. For example, the test sites investment strategy identified future collaboration tasks (beyond the project):</p> <ul style="list-style-type: none"> • Perform tests on a site and enable certification from the team of another site (EMEC accredited) • Build a project of Environmental Impact Assessment of marine renewable energy at EU level on several test sites • Organise a feedback conference on various operations and safety procedures • Sharing good practices about common topics among several test sites (control system and SCADA (remote control system of test site instrumentation, power and devices, electrical engineering, maintenance of test sites...))
2. Use of innovation through better conditions	<p>The FORESEA project helped developers leverage nearly €70 million, all of it injected directly into the ocean energy sector and growing it even further.</p> <ul style="list-style-type: none"> • Tested new technology under real sea conditions. • Raised awareness on ocean energy. • Clear contribution to offshore renewable energy technology development. <p>A particular highlight has been Orbital Marine Power clocking up over 3 GWh of electricity within one year of testing at EMEC’s Fall of Warness tidal test site. This is a massive achievement for the tidal energy industry.</p> <p>A diverse range of technologies could be demonstrated through the programme, including wave, tidal and wind energy, as well as underwater data centres, biofouling solutions, acoustic monitoring, and forensic decommissioning.</p> <p>FORESEA has been successful in deploying 33 low carbon technologies in real sea environment, more than any other project before. The results (at the end of the project) are in line with the targets envisaged in the application form and were even exceeded. Partners managed to develop a strong pipeline of technology developers which was essential to have developers ultimately test their devices in the sea and, thus, to meet the targets. The demonstration of technologies has proven to be an effective argument to attract further public and private investments.</p>
3. Better and efficient processes	<p>Processes such as the involvement of SMEs into technological development of ocean energy has been tested. There was a total of five competitive calls to companies (technology developers and supply chain companies), mostly SMEs,</p>

	<p>within the project and 25 sub-partners were involved. They were selected to test under real sea conditions.</p> <p>The FORESEA's model was found effective at accelerating large scale testing that it is now being used in several other projects, e.g. BLUE-GIFT (Interreg Atlantic Area).</p>
4. Liveability and attractiveness of NWE territories	<p>Impact directly through FORESEA: local economic impact around participating test centres (job creation, settling of supply chain companies, "in-migration" of technical experts/staff).</p> <p>In the long run, the exploitation of ocean energy can improve the attractiveness and liveability of coastal regions in the NWE area (with new investments, jobs, economic development, secure energy supply). FORESEA has contributed to make this possible.</p>
References	<ul style="list-style-type: none"> • FORESEA Final Appraisal Report • Publication FORESEA Success Stories (2019) • Publication Ocean Energy and the Regions: A Partnership for Growth (2018) • https://vb.nweurope.eu/projects/project-search/funding-ocean-renewable-energy-through-strategic-european-action/news/foresea-is-back-for-more/ • https://vb.nweurope.eu/projects/project-search/funding-ocean-renewable-energy-through-strategic-european-action/ • https://vb.nweurope.eu/projects/project-search/funding-ocean-renewable-energy-through-strategic-european-action/news/foresea-end-of-project/ • www.oceandemo.eu • Two interviews with the LP and one PP

4.2 SMART-SPACE

Case study analysis SMART-SPACE	
Project activities	
Types of action	Delivering and roll out of emerging energy technologies
Target groups	<p>The project was a successful way to reach out to a larger number of target groups (a total of 247 participants or participating organisations).</p> <p>Benefits:</p> <ul style="list-style-type: none"> • Municipalities can use the developed methodology to engage stakeholders and users of the public space in the design of a smart light system. • Involvement of the stakeholders and users of the public space in the design of the public lighting leads to increased user satisfaction, etc. • Raised efficiency related to the maintenance of the public lighting for the municipalities/grid operator due to the communication platform of SPIE (PIMS) that is also useful as a remote management tool. <p>By the end of the project, the target value of 300 local public authorities was not reached officially. Although the project has reached already 573 067 people, they are still far from the target number of 30 million people.</p> <p>However: Dissemination of project results: publication of a report by LUCI within the project "Cities' Guide to Smart Lighting". Interview with LUCI: <i>Since we started rolling it out in December 2021, it has been downloaded by 730 people (our most successful download to-date). We have sent over 400 print copies to all our membership database+ additional copies to all Smart space partners that agreed to receive them to disseminate in their own networks. We have a remaining stock of print copies that we have disseminated and will continue to disseminate in LUCI events in the coming years.</i></p>
Addressed sectors	Public Sector, public lightning infrastructure and systems

<p>Partnership / collaboration</p>	<p>Innovative co-operation from enterprises with research institutions has been realized in the partnership.</p> <p>The 2 technical partners have been able to test their technologies and products in the 4 pilot sites. End of June 2021, 41 enterprises excluding SMEs (450% of the target value) and 26 SME's (93% of the target value) have been informed on smart public lighting.</p> <p>The transnational cooperation brought together the expertise and experience that was needed. It also helped to make the smart light system more adaptable to different situations as the context of public lighting is different from one country to another (e.g., the light norms implemented, the experience with engaging stakeholders in the design of the public lighting, the role and responsibilities of the municipalities versus the grid operators....).</p> <p>The project has stimulated interactions between actors (end users (cities) and technical partners) via the realisation of the pilots.</p> <p>No lasting partnership has been formed; cooperation was only active during the project.</p> <p>During the project, the Flemish service provider Fluvius took over all public lights in Flanders. They joined the project and have now a huge effect on applying and rolling out the new knowledge also in other Flemish municipalities.</p> <p>Apart from this, the outreach to almost 300 municipalities increased governance capacities on smart public lightning. At least, first steps, information and awareness might have been improved to facilitate further action.</p>
<p>Capitalisation or subsequent activities</p>	<p>Capitalisation and outreach to other countries, regions, stakeholders via LUCI – Lighting Urban Community International.</p> <p>The partnership was working on a way to keep the installed equipment working after the project end. The Service Level Agreement is being drafted between the 4 cities and technical partners.</p> <p>Still, after project closure, the partners continue to work together (also with the technical service providers) on the smart systems. This is envisaged to continued until 5 years after the project end.</p> <p>According to an interview, they meet every two months. There are also still technical problems, so that cooperation and collaboration is still required to make the systems work without issues.</p> <p>Sustainability through LUCI: Everything “valuable” that was produced in the Smart space Knowledge Center will be kept and still available for LUCI Hub users.</p> <p>Publication by LUCI: “Cities’ Guide to Smart Lighting”. (Interview LUCI): <i>Some of the learning from this publication have been integrated in the 2022 year of LUCI focused on the “future of urban lighting” and the important text that stems out of this year: the “LUCI Declaration for the future of urban lighting”</i> https://www.luciassociation.org/luci-declaration-for-the-future-of-urban-lighting/</p> <p>Another spillover effect is the cooperation between LUCI and FLUVIUS after the project: see the example: <i>Within the framework of the European “Lifelong Learning” policy, the IBE-BIV organisation (Belgian Illumination Institute) is organising a Back2School (B2S) webinar programme 2023 entirely dedicated to Smart Lighting and Circularity. 5 experts will cover the aspect of smart lighting and circularity in their particular area of expertise. Next session is ensured by Fluvius, represented by Filip Broekaert, for the first part, then by LUCI Association, represented by Jasmine Van der Pol for the second and final part.</i> https://www.luciassociation.org/luci-talks-of-public-lighting-in-flemish-municipalities-22-june-9am/</p>
<p>Specific Objective</p>	
<p>Contribution to the SO</p>	<p>The project has tackled different barriers to promote more efficient public lighting. Through communication activities target groups have been reached and gained knowledge and awareness on smart lighting. The smart lighting system that has been created uses standards for communication. A transition roadmap has been</p>

	<p>created that offers an organisational structure and overview of the steps and activities that are needed in the implementation of smart lightning systems.</p> <p>The experiences in the pilot cities and discussions with follower cities, showed that the realization of an integrated smart lighting system is still quite challenging, both for technological reasons, as well as organizational reasons.</p> <p>The project has achieved preparatory steps to reduce energy use in public lightning systems, but the effect still needs other measures and actions and lies in the future.</p> <p>The target value of 300 local public authorities has not yet been reached. Although the project has reached already 573 067 people, they are still far from the target number of 30 million people.</p>
If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future	<p>The project partnership had requested a project time extension period of 8 months in October 2020. Unfortunately, the delays in the implementation of the smart lightning system could not be fully absorbed within the extra time.</p> <p>Important to mention is that there has not been a lowering down of the target values related to the project's main outputs. In terms of the budget, the underspending is related to the major spending left for installations which were delayed and came to the end of the project.</p> <p>Lessons learnt:</p> <p>The actual realization of smart lighting faces problems which were not anticipated in the beginning of the project. Further roll-out of smart public lighting requires efforts and sometimes changing attitudes from the main end users (the municipalities). Examples are:</p> <ul style="list-style-type: none"> - The repositioning of the lighting department in the municipality because public lighting is no longer only a technical issue. - New capabilities that are needed, e.g., the important role of the lighting designer to make the translation from needs and wishes of stakeholders to technical design of the public lighting. - The importance of data handling (GDPR related) especially in the use of more sophisticated sensors. - The importance to use an integral design in the beginning of the process and to coordinate the decisions on hardware, light design and functionalities. Decisions taken too early can lead to system design limitations. - The will or the daring to involve users of the public space in the design of the public lighting.
Response to transnational development needs of the SO	<p>SMART-SPACE: This project addressed on the one hand to promote the 'Ledification' of public street lightning infrastructure but addressed also the soft aspects of renewable energy development such as ensuring more efficient and transparent permitting procedures, increasing public acceptance and speeding up the deployment process.</p>
Tackling of SO-specific aspects (inclusive growth / social aspects)	<p>SMART-SPACE: No leader-follower approach observed. No specific social impact. Tackles (energy-efficient) streetlights as public good.</p>
Territorial impact	
Focus on specific territories	<p>The projects focused on urban areas of small/mid-size municipalities. This has not to do with excluding other areas or with the character of the area or region, but with the fact that public street lightning is in the centre of the project, and middle-sized municipalities were partners in the project.</p>
Addressing of territorial distinctive features	<p>The reason for the project to focus on urban areas was:</p> <p>Municipalities play a pivotal role, as they account for 70% of the NWE energy consumption and CO2 emission. Especially, standard public street lighting accounts for ~30% of municipalities' total electricity consumption.</p>
Contribution to the following impacts:	
1. Better coordination	--

<p>2. Governance capacities of decision makers</p>	<p>Increased awareness on potential savings in public street lightning and on adapted systems for more safety and comfort for the citizens. Roadmaps and methods on how to switch to new systems. Outreach to almost 300 municipalities.</p> <p>SMART SPACE Knowledge Center. Roadmap and accompanying toolbox which includes 1) guidelines for implementation; 2) specifications of smart lighting systems; 3) policy recommendations; 4) procurement standards and 5) implementation tools for large-scale roll-out.</p> <p>Publication “Cities’ Guide to Smart Lighting”. (Interview LUCI: <i>This publication is a real tool for cities and a potential industry great influencer, due to the fact that for the first time, it brings together technical and societal issues of smart cities/smart lighting (that are rarely discussed together), from the perspective of the cities. It is very useful for cities to understand better the field and take the right decisions, but it is also a great potential insight for the industry to listen to the clients and be aware of the needs.</i>)</p>
<p>3. Better and efficient processes</p>	<p>Successful processes tested in the four partner cities. Potential contribution to benefits in other cities if they use the knowledge generated in the project:</p> <ul style="list-style-type: none"> - Municipalities can use the developed methodology to engage stakeholders and users of the public space in the design of a smart light system. - Raised efficiency related to the maintenance of the public lighting for the municipalities/grid operator due to the communication platform of SPIE (PIMS) that is also useful as a remote management tool. - Involvement of the stakeholders and users of the public space in the design of the public lighting leads to increased user satisfaction, etc.
<p>4. Impact on policy agendas, policy changes, laws and regulations</p>	<p>In all the participating countries, strategies have been rolled out for the “Ledification” of the public lighting (e.g., in Flanders Fluvius (service provider) wants to foresee all the public lighting with LED by 2030).</p> <p>Since the SMART-SPACE project focuses on carbon/GHG reduction and energy efficiency, there is a strong link with European, national and/or local strategies to tackle mitigation and adaptation to climate change (specific to carbon/GHG reduction). In other words, the project focus is to have a more sustainable public lighting, and by this means to contribute to the overall climate ambitions of the NWE regions.</p> <p>The project has stressed out once again the importance of the use of standards to create maximum interoperability amongst regions.</p>
<p>5. Liveability and attractiveness of NWE territories</p>	<p>The SMART-SPACE project aimed to improve the liveability and safety of the public space for all citizens in municipalities of the NWE region. Indirectly, there has been a contribution, at least in the four pilot municipalities.</p>
<p>References</p>	<ul style="list-style-type: none"> • SMART-SPACE Final appraisal report • Project website: https://vb.nweurope.eu/projects/project-search/smart-space-smart-sustainable-public-spaces-across-the-nwe-region/ • https://www.luciassociation.org/join-smart-space-kc/ • Publication: https://www.luciassociation.org/accueil/cities-guide-to-smart-lighting/ • Two interviews with the LP and one PP

5 SO 4

Case study analysis of SO 4 included the following two projects:

- CHIPS – Cycle Highways Innovation for Smarter People Transport and Spatial Planning
- H2Share – Hydrogen Solutions for Heavy duty transport Aimed at Reduction of Emissions in North West Europe

5.1 CHIPS

Case study analysis	CHIPS
Project activities	
Types of action	This CHIPS project concentrated on implementing solutions for optimised traffic management through developing and improving multimodal transport (freight and passengers). The project's activities focused on developing and promoting cycle highways as an effective and cost-efficient low-carbon solution for commuting to and from urban employment poles. Activities included different steps of redesigning existing bike paths and roads, by implementing tunnels and bridges to enable bike users to commute more easily and faster: planning, design, concept promotion and results monitoring.
Target groups	<p>Target groups addressed with the activities were local public authorities, regional public authorities, the general public, enterprises, infrastructure providers, national public authorities, higher education and research, business support organisation and interest groups / NGOs. The key target groups identified by the SO4 of the Programme correspond to the groups addressed within this project.</p> <p>The tangible benefits for national, regional and local authorities were cycle highway academies and online manual on cycle highways.</p> <p>For companies and commuters, the tangible benefits were five pilot cycle highways, but also other new cycle highways in the partner regions and in other NWE regions that have been inspired by CHIPS.</p>
Addressed sectors	The project addressed the transportation sector by involving the public sector (local authorities), academic partners, bicycle-related civil society organisations and private companies.
Partnership / collaboration	The partnership included 9 partners from 4 countries: Belgium, the Netherlands, Germany and the United Kingdom. The partners were: Provincie Vlaams-Brabant (BE), Provincie Gelderland (NL), Regionalverband FrankfurtRheinMain (DE), Regionalverband Ruhr (DE), Verband Region Rhein-Neckar (DE), European Cyclists' Federation (BE), Flanders' Bike Valley vzw (BE), Sustrans (UK) and Stichting NHTV internationale hogeschool Breda (NL). The partnership cooperated successfully, and it managed to achieve the planned results. The partners were not used to working together before the CHIPS project, but they plan on continuing to work together in the future as they created a strong collaboration.
Capitalisation or subsequent activities	The follow-up project Cycle Highway Academy was not approved. However, the Cycle Highway Manual on how to plan and design cycle highways is still available on the website of the project and the website is still being used. Also, the CHIPS manual was an important source for the new Guidelines for cycle highways of the region of Brussels. Moreover, defining the cycle highways and proposed standardisation of cycle highways are important outputs for the future development of cycle highways.
Specific Objective	

<p>Contribution to the SO</p>	<p>The CHIPS project contributed to SO 4: To facilitate the implementation of transnational low-carbon solutions in transport systems to reduce GHG emissions in NWE. The CHIPS project developed and promoted cycle highways as an effective and cost-efficient low-carbon solution for commuting to and from urban employment poles, thus addressing passenger transport. The project developed models for future cycle highways and their development. This shall encourage citizens to exchange their cars for new generation bikes (e.g. e-bikes), reducing commuting time and CO2 emissions (i.e. contributing to shifting to more environmentally friendly transport for passengers).</p> <p>The project has not yet influenced the environmental performance of the transport sector as such (this would require a larger scale and more time) but contributes to a decrease in CO2 via the increase of cycling.</p> <p>There were also additional results: The Gelderland and Brabant pilots are national examples used for national future planning for Cycle Highways and a new standard for wayfinding in NL. In Flanders, Flemish Brabant is a regional example and in Brussels as well. Branding will be used on a national scale thanks to CHIPS. There has also been cooperation with Copenhagen and interest from the city of Oslo. There was also a participant from Russia. He started a local bike rental pilot which stimulated over 30k of funding in a month.</p>
<p>If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future</p>	<p>There were three project modifications during the project's lifetime. These were needed mostly because of the delayed investments. This was also needed because the initial budget turned out to be less accurate therefore a budget shift was needed to compensate for the increased/decreased costs of equipment such as bikes. Most issues were manageable by the partnership, except the lack of government in Northern Ireland which could not be foreseen nor remediated by the project.</p> <p>The main issue throughout the project was with Sustrans and RVFRM partners who, although engaged in the project, faced administrative issues that were beyond their control. Despite these issues, the CHIPS project has delivered all investments and all deliverables per the project plan.</p> <p>Concerning the continuation of activities (e.g. maintenance of online manual), lack of funding after the finalisation of the project was identified as a challenge. Also, the project's duration of three years was identified as not enough time to achieve all planned results.</p>
<p>Response to transnational development needs of the SO</p>	<p>The project has contributed to the challenge of shifting the transport systems more towards low carbon mobility. It contributed also to strengthen the link between (inter)regional public transport, cycling highways and the E-bike systems.</p>
<p>Tackling of SO-specific aspects (inclusive growth / social aspects)</p>	<p>The project in itself promotes inclusive growth as cycling is the most democratic mode of transport. The new attractive cycle highways linking urban centres and important employment zones will support inclusive growth as cycling is a much cheaper way of transport than using a car or public transport. As a part of the project, surveys on opinions on cycle highways of different groups were conducted.</p>
<p>Territorial impact</p>	
<p>Focus on specific territories</p>	<p>The project was focused on the development of more sustainable transport in the NW Europe. The knowledge on cycling (infrastructure) in the Netherlands and Flanders was shared with the UK and the German partners.</p> <p>The project's main focus was not on regional development strategies but rather greener transport and carbon reduction. There is of course a territorial relevance, but that was not the main focus of the CHIPS project.</p>
<p>Addressing of territorial distinctive features</p>	<p>The leader-follower approach is visible in the exchanges between Hart van Holland where the cycling infrastructure is well established and Sustrans for example where the cycling programme is at its beginning phase.</p> <p>The knowledge on cycling (infrastructure) in the Netherlands and Flanders was shared with/transferred to Sustrans/UK and the German partners, whereas the knowledge on campaigning with Sustrans and to a lesser extent the Dutch partners was transferred to the other partners. Between the German partners knowledge on</p>

	infrastructure and promotion of cycling was also intensively exchanged, with some partners being more advanced (i.e. RVR on infrastructure, national host to a cycling infrastructure platform) in at least certain aspects.
Contribution to the following impacts:	
1. Better coordination	Sub-partner & associate partner involvement helped inter alia in realising the outreach to enterprises and business support organisations. CHIPS has contributed to improved cooperation and governance between different geographical levels.
2. Use of innovation through better conditions	Development of an approach how to design and plan cycle highway, the introduction of the maturity assessment tool and establishment of a cycle academy represent the use of innovation in the CHIPS project.
3. Governance capacities of decision makers	In Germany, Regionalverband Ruhr has organised national meetings on cycle infrastructure where the CHIPS outcomes are being transferred to the federal level. In the Netherlands, a platform called “Tour de Force” is being developed on how to stimulate cycling at a higher level.
4. Better and efficient processes	The Cycle Highway Manual was originally planned as a hard document, but in the end was produced as an online document as that solution was more sustainable and effective.
5. Impact on policy agendas, policy changes, laws and regulations	The CHIPS project triggered a policy change regarding e-bikes in the UK. UK regulation considers e-bikes as a motorbike which prevented the CHIPS project from fully carrying out its pilot. Also, European Cyclists’ Federation is working with DGMOVE on road safety memoranda and regulations where that include cycle highways.
6. Liveability and attractiveness of NWE territories	This project enhanced the infrastructure of cycle highways and strengthened the link between public transport, cycling highways and E-bike which improved the liveability and attractiveness of NWE territories.
References	<ul style="list-style-type: none"> • CHIPS Application Form • CHIPS Progress Report (December 2017) • CHIPS Final Appraisal Form • Project website (https://cyclehighways.eu/) • Two interviews with the LP and one PP

5.2 H2Share

Case study analysis	<i>H2Share</i>
Project activities	
Types of action	Developing and testing low-carbon transport solutions – 27-ton rigid truck on hydrogen (the first truck on hydrogen in Europe) and one flexible low-energy mobile refueller. Both achievements have been demonstrated at 5 end users in 4 countries and these demonstrations were used for producing a roadmap for the region.
Target groups	H2Share project was useful for the main target groups - enterprises in the transport sector, local and regional public authorities and public transport organisations: <ul style="list-style-type: none"> • VDL built its first rigid truck; • Wystrach built its first mobile refueller; • Colruyt, DHL and Breytner got experience driving and fuelling trucks and • Hydrogen Europe, Automotive, TNO and WaterstofNet learned from these results and implemented the results in future visions/plans.

Addressed sectors	Transport and logistic sector (Enterprises in the transport sector, public institutions, and organisations).
Partnership / collaboration	<p>The partnership of H2Share consists of complementary partners, each with a clear role and expertise. The organisations that are part of the partnership are distributed over 3 countries (BE, DE, NL) in 4 regions (Flanders, Baden-Württemberg, North Rhine-Westphalia and Brabant). The partnership consists of different types of partners:</p> <ul style="list-style-type: none"> • Sectoral agency/regional business support organisations – WaterstofNet, E-mobil BW and Automotive NL; • EU Grouping – Hydrogen Europe; • Research institute – TNO; and • Enterprises – VDL Bus & Chassis, VDL ETS and Wystrach.
Capitalisation or subsequent activities	Some partners will continue to work together after the project's end. Also, some partners are already working together on new project ideas, so cooperation is already now established between several partners. H2Share was a catalyst of projects focused on hydrogen technology. The results of H2Share are used in follow-up projects (H2Haul, HyTrucks) with focus areas in the region North-West-Europe. Many lessons learned from H2Share were implemented in the follow-up projects. The aim of H2Haul is to scale up the number of trucks. HyTruck project aimed to go from prototype and research to real commercial deployment. Also, the H2Share project was important for H2Accelerate and R'HYSE (Interreg Med).
Specific Objective	
Contribution to the SO	The key achievements of the project were the development and testing of the truck on hydrogen and flexible low-energy mobile refueller. These achievements contributed to the shift to more sustainable transport solutions in the logistics sector. NW Europe region has many environmental issues because of high traffic density and logistic activity. The development of hydrogen truck represents an opportunity to support the shift to a more environmental mode of freight transport.
If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future	The project received an end date extension due to COVID delays which postponed the delivery of the equipment needed for the project. Moreover, some planned pilots needed to be reorganised due to delays. Also, there were some shifts concerning partners and the project management team. The limited financial support and strict rules when it comes to accepting costs for the expensive technology that was used in the project were recognised as an issue. Moreover, the LP noted that the end users were reluctant to communicate because the companies only wanted to communicate once they were sure to have successful demonstrations. The LP learned that the communication aspect should have been done better, keeping in mind the sensitive nature but still drawing attention to the project.
Response to transnational development needs of the SO	<p>This project responded to one of the defined transnational needs for this SO, as defined in the OP:</p> <ul style="list-style-type: none"> - Reduced environmental impact of the transport sector in NWE and decreased emissions.
Tackling of SO-specific aspects (inclusive growth / social aspects)	This project has no direct impact on inclusive growth or social aspects. The development of hydrogen trucks will decrease GHG emissions and air pollution which will have a positive impact on the health of the population of the NW Europe region.
Territorial impact	
Focus on specific territories	Parts of the inner-city of Rotterdam are zero-emission areas for trucks and that was the key reason to initiate the demonstration at Breytner in Rotterdam. The link between local strategy and H2Share was established as the H2Share truck was allowed to enter the region. In the future more zero-emission regions will be established and H2Share perspectives will become more valuable. The project showed an insufficient level of standardisation of hydrogen refuelling infrastructure across the Member States involved in the project. The project produced a roadmap that contributes to reducing these disparities.

Addressing of territorial distinctive features	The area of NW Europe is CO ₂ , SO _x and NO _x hot spot due to traffic density as this area has one of the highest logistic activity in Europe. Decarbonisation of transport modes in the regions is necessary for the attractiveness of the region.
Contribution to the following impacts:	
1. Better coordination	Before the project, there was no real cooperation between the partners. Some partners will continue to work together after the project's end on the new projects. The transnational cooperation was crucial for the H2Share as hardware (mobile refueller and truck) have been built in Germany and the Netherlands and an on-site demonstrations have been realised in the Netherlands, Germany, Belgium and France. The lessons learned from the first demonstration in the Netherlands have been transferred to other demonstrations. Also, many conclusions and lessons from the project were implemented in the development of the new European policy on hydrogen. The project contributed to better cooperation and coordination between stakeholders. Many lessons from this project have been used in developing a new European policy on hydrogen. According to the European hydrogen strategy, heavy duty transport is recognised as one of the key areas for the implementation of hydrogen. Follow-up project HyTruck focuses more on active communication with policy makers at different levels.
2. Use of innovation through better conditions	The aim of H2Share was to develop/build/demonstrate a first truck to get experience and view on the possibilities. Also, this project developed first mobile refueller. Technological innovation was a key focus of this project. The important aspect of the project is that endusers valued the possibility to have hands on experience.
3. Governance capacities of decision makers	The demonstrations were successful: the demonstrations at Breytner (Netherlands), ABCLogistik (Germany), DHL (Netherlands) and Colruyt (Belgium and France) gave a very large reach out to many stakeholders. The demonstrations helped local authorities to learn to deal with permitting of hydrogen trucks. In the future, more zero-emission regions will be established and lessons from H2Share demonstrations will become even more valuable.
4. Better and efficient processes	The need for continuous dialogue between partners and Interreg has been highlighted. The need to think about how to make change process more flexible was emphasized.
5. Impact on policy agendas, policy changes, laws and regulations	The main results of the project were communicated globally and specific results have been used in creating new a European policy on hydrogen. According to the European hydrogen strategy, heavy duty transport is recognised as one of the key areas for the implementation of hydrogen. The HyTruck project has active contact with policymakers at different governmental levels, working on new regulations for hydrogen with EC.
6. Liveability and attractiveness of NWE territories	This area has many environmental issues (e.g. CO ₂ , SO _x , NO _x hot spot) as a consequence of traffic density. The achievements of the project contributed to the shift to more sustainable transport solutions in the logistics sector. NW Europe region has many environmental issues because of high traffic density and logistic activity. This project can support decarbonisation and therefore could improve the liveability and attractiveness of the area.
References	<ul style="list-style-type: none"> • H2SHARE Application Form • H2SHARE Progress Report (December 2021) • H2SHARE Final Appraisal Form • Project website (https://vb.nweurope.eu/projects/project-search/h2share-hydrogen-solutions-for-heavy-duty-transport/) • Two interviews with the LP and one PP

6 SO 5

Case study analysis of SO 5 included the following two projects:

- FoodHeroes – Improving resource efficiency through designing innovative solutions to reduce food waste
- Phos4You – Phosphorus Recovery from waste water for your Life

6.1 FoodHeroes

Case study analysis	FoodHeroes
Project activities	
Types of action	FoodHeroes developed and implemented a collaborative approach to increase the usefulness of waste by developing and testing 17 solutions to increase the value of food products and reduce losses in the food production in a co-creational approach. For example, Joint Action teams worked on reducing the field losses of carrots and potatoes, food products from oyster mushroom stalks, new products from white fish from the bones after filleting as well as new products from goat meat of juice production from vegetable remains. Other actions connected farmers with other actors of the supply chain, such as processors and manufacturers.
Target groups	<p>The resource intensive food industry, specifically food production and processing. Particularly farmers who usually have an isolated position in the supply chain and are considered not to have much influence on food waste and losses were strengthened in their role.</p> <ul style="list-style-type: none"> • 120 SMEs of which 40 collaboratively worked with research institutions to develop solutions • Supermarkets and consumers were included because of the product standards that disqualify products from the market • Food processors and manufacturers • Several knowledge institutes <p>The project required a high diversity of actors since the whole supply was involved.</p>
Addressed sectors	Food waste and losses in the primary sector (production)
Partnership / collaboration	<ul style="list-style-type: none"> • 7 business support organisations • 1 regional public authority • 1 interest group (including NGO) • 2 sectoral agencies • 2 higher education and research institutions • 2 SMEs <p>The project built up on cooperation from previous (EU) projects, with some long-lasting partnerships and a close connection of the Dutch and Belgian food and creative industry. In general, the cooperation was sufficient and was most intense during the co-creative approach, which was well-perceived by all partners despite their differing approaches in the food production sector (innovative or conservative, e.g. the Irish fishing industry). The intensity of engagement in the international cooperation varied among the partners, but also among the Joint Action Teams depending on how specific the technical solution was. The partner AC3A e.g., started involving additional stakeholders from the whole supply chain and the university of Lincoln increasingly focused on the practical implementation of their research thanks to the close partnerships. FoodHeroes additionally was a case study of the H2020 Liaison project which helped to reflect on the co-creative</p>

	<p>approach and transnational cooperation. The regions benefited from each other's experience and different levels of preparedness and follower regions that encountered more difficulties getting started learned from the leader regions (Netherlands, Germany, Belgium) as well as different approaches (innovative vs. more conservative practices) got inspired by each other through the co-creative approach.</p> <p>Though the project generally facilitated the connection of different governance levels regarding food waste (especially regional and national level e.g., North Brabant), the higher policy levels are still more disconnected in terms of policy and implementation, according to the lead partner. Yet, it initiated discussions and enhanced cooperation by connecting partners to the Flemish Food Chain Platform and thus the EU Platform on Food Losses and Food Wastes.</p> <p>The cooperation between the partners was limited to the duration of the project and no lasting partnership has been established, apart from exchanges between some stakeholders in the sector.</p>
<p>Capitalisation or subsequent activities</p>	<p>Follow-up: There is an increasing interest in the potato industry to reduce food losses in the field. In the Netherlands, the campaign #Hetezomeroogst (#hotsummerharvest) was launched by the partners ZLTO and PNB in 2018 and re-launched in 2019 by the Dutch Ministry of Agriculture, impacting consumer awareness and supermarket specifications. EIP-Agri established a focus group in 2018 – 2019 to address food losses on the farm; and in 2019 a special H2020 call was launched to address food waste in the complete supply chain: 'RUR-07-2020: Reducing food losses and waste along the agrifood value chain'. The project also led to other new projects and cooperations: a follow-up to one of the developed solutions (H2020 DEMETER), a national follow-up project (OptiBerry) and new opportunities for future research for the University of Lincoln, Wageningen University and ILVO. The project conferred the FoodHeroes award to a Joint Action team from each category and a general winner, contributing to a stronger network. The EU Commissioner was part of the jury, raising political attention.</p> <p>The project partner claimed that the project facilitated a discussion also in other sectors of how to measure by-products more scientifically and how to make valuable use of them, also in cross-sectoral collaboration. They see an overthinking and application of different approaches on a larger scale and in different geographic markets. The project also promoted the co-creative methodology, which is still being used in the partner institution.</p>
<p>Specific Objective</p>	
<p>Contribution to the SO</p>	<p>FoodHeroes contributed to the first two SO objectives from the OP indirectly since it mainly focused on methods to reduce food waste and losses as well as on increasing the value of the products. This leads to a reduced need for resources and a more circular approach to food production. It also facilitated the application of environmental management requirements in the resource intensive industrial sector and raised awareness among stakeholders of the complete supply chain and political actors. It therefore contributed to the removal of barriers for stakeholders to eco-innovate and to the capacity of the food production sector to eco-innovate.</p>
<p>If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future</p>	<p>Internal: The project started with delay (01/2017) due to the need to adjust the AF to comply with technical requirements after getting formally approved (09/2016). One partner had difficulties to arrange funding and started with 1.5 years delay. There are regional differences regarding the advancement in the food sector e.g., since not everywhere there are farmers with direct access to the market through own processing facilities or strong partnerships and many farmers do not feel involved due to lack of influence on food waste. The French partner e.g. encountered difficulties to engage stakeholders interested and willing to act or where in the supply chain to intervene, while the Dutch and German partners were already advanced in taking off their process. One technical solution required budget alignment due to unexpected machine availability and the need for market research. Budget was shifted from partners with difficulties of fulfilling their targets to more promising projects.</p>

	<p>External: A significant hailstorm in 2016 destroyed glass houses of a sub-partner causing a delay of 2 years and testing the new machine only until prototype phase. The Covid-19 pandemic hampered the access to international markets and thus limited the cross-border selling of food loss. Stakeholder engagement was difficult for one of the partners (AC3A) who thus created additional communication material to inform farmers and other actors on their region. Due to the pandemic, also the final event had to be postponed and finally conducted virtually, impeding the networking and collaborative concept of the project.</p> <p>The project partner (BIM) claimed that they had understanding for the need of administrative issues but that the high effort limited their capacities for actually implementing the project and research. Additionally, they claimed that the limitation of finding use of by-products for the human food chain hampered the development of relevant other uses, e.g. pet feed.</p>
Response to transnational development needs of the SO	<p>FoodHeroes responds to the SO5 specifications since it had a co-creative approach among the transnational partners. The project lived from the different circumstances and levels of research and advancement in the field of food waste in the primary sector in the different countries and the stakeholders could learn from others' experiences and practices (leader and follower regions). The leader regions Germany and the Netherlands could e.g. inspire the follower region France which had difficulties engaging motivated actors in the supply chain.</p>
Tackling of SO-specific aspects (inclusive growth / social aspects)	<p>The project did not directly address social aspects. However, by developing technologies for a more sustainable and efficient food production, directly linked to food security, FoodHeroes contributed to social equality / wellbeing through innovation and environmental protection.</p>
Territorial impact	
Focus on specific territories	<p>The project represented leader regions (Netherlands and Belgium) and follower regions (North-Western France) in terms of food waste management and animal welfare due to the co-creative approach. Due to the project's focus on food production and involvement of farmers, actors from rural regions were involved but since FoodHeroes involved the whole supply chain, the territories and stakeholders needed to be diverse. That mostly included areas where not only food producers, processors and manufacturers are located but also the market i.e. the consumers are close.</p>
Addressing of territorial distinctive features	<p>There are regional differences regarding the advancement in the food sector e.g., since not everywhere there are farmers with direct access to the market through own processing facilities or strong partnerships and many farmers do not feel involved due to lack of influence on food waste.</p>
Contribution to the following impacts:	
1. Better coordination	<p>The project enabled interaction and strengthened the connection between the regional and national governance levels regarding the topic of waste and losses in the food production. Thus, the regional level gained influence in decision-making processes, e.g., the Province of North Brabant got connected to the national strategy to reduce food waste in the Netherlands or the Belgian partner ISP which became member of the Flemish Food Chain Platform, which is also part of the EU Platform on Food Losses and Food Wastes.</p> <p>The project strengthened the position of farmers in the supply chain and got them out of their rather isolated role by demonstrating their capacity to contribute to the reduction of food waste.</p> <p>The interviewed project partner stated that the transnational cooperation strengthened the collaboration and exchange between partners, and that they still get approached by actors interested in the technologies.</p>
2. Use of innovation through better conditions	<p>FoodHeroes connected enterprises along the supply chain (farmers, processors, distributors) as well as with different related stakeholders such as technology providers and research institutes. This enhanced the capacity of the food production sector to eco-innovate and improved the conditions for further cooperation.</p>

	Several solutions took off on the market like the facilities detecting the sex of chick embryos inside the egg to prevent the elimination of male chicks or the economically viable breeding of male chicks for meat production. In general, this topic generated much interest.
3. Better and efficient processes	<p>Though not all technical solutions were developed beyond the prototype stage, many Joint Action Groups managed to develop solutions to reduce waste and increase the value of products in the sectors of fish, meat and fruits & vegetables production such as decreasing the number of potatoes left in the field during the harvest and examining uses of by-products of fishing and so far unused parts of oyster mushrooms as well as alternatives to the elimination of male chicks.</p> <p>The project partner claimed that the processes and technologies developed directly in the project benefitted their institution but opened up a discussion on how to measure by-products from fishing more scientifically and the potentially valuable uses of them. This also raised interest and awareness from companies at a higher end of the scale and different sectors. It enabled a long learning effect.</p>
References	<ul style="list-style-type: none"> • Project Website: https://vb.nweurope.eu/projects/project-search/food-heroes-improving-resource-efficiency-through-designing-innovative-solutions-to-reduce-food-waste/#tab-1 • Final Appraisal Report • Two interviews with the LP and one PP

6.2 Phos4You

Case study analysis <i>Phos4You</i>	
Project activities	
Types of action	The project involved research and development of 7 innovative phosphorus recovery technologies including pilot testing, demonstration of these technologies at wastewater treatment plants, knowledge sharing, capacity building, and technology implementation as the key types of action.
Target groups	<ul style="list-style-type: none"> • Infrastructure and (public) service providers: wastewater treatment plants, water authorities • National public authorities: involvement for approval of demonstration plants and providing information about potential new products • Interest groups including NGOs: EU-fertiliser stakeholders – industries, trade etc.)
Addressed sectors	The Phos4You project primarily addressed the wastewater treatment sector, with a focus on improving phosphorus recovery technologies. The outcomes of the project also had implications for the broader water management and environmental sectors.
Partnership / collaboration	<p>The partnership consisted of the Lippeverband (LP) and another infrastructure and (public) services institution, six universities or research institutes, one enterprise (NV HVC) and a local public authority (Emschergenossenschaft). In retrospect the LP claimed that it could have been helpful to involve actors of the fertiliser production as full project partners to increase commitment.</p> <p>Generally, the LP and interviewed partners considered the exchange during the project as sufficient and viable. However, the different approaches among the regions regarding sewage sludge disposal challenged the exchange and discussions. The broad spectrum of sizes of sewage plants was generally nourishing, especially for technical and legal context, but it could sometimes lead to overwhelming of the opposite. The discussions about methodologies and different theoretical approaches sometimes diverged significantly, which especially the universities prioritised.</p> <p>In addition to that, since the technologies were to be brought to the market, the competitive atmosphere between the actors slightly limited the exchange.</p>

	Communication about sensitive data had to be considered carefully and the actors shared knowledge strategically.
Capitalisation or subsequent activities	<ul style="list-style-type: none"> • Dissemination through reports, publications, and conferences • Attraction of further investments and collaborations, led to the scaling up of technology implementation in wastewater treatment plants, policy discussions on sustainable resource management, and ongoing research and development in the field. • No follow-up project, but some subsequent cooperations were initiated (AMPHORE: 5 water associations of North Rhine-Westphalia) • The German partners reported that the timing of the national funding was lucky so they could initiate the follow-up project AMPHORE, which is continuing with the results from Phos4You. The partners see an added value from the project as a starting point for further research and to link it with the actual implementation.
Specific Objective	
Contribution to the SO	The Phos4You project successfully developed and deployed cutting-edge phosphorus recovery technologies, surpassing the expected targets. The project's outcomes demonstrated the effectiveness of these technologies in extracting phosphorus from wastewater, thus contributing to sustainable resource management and the circular economy. The demonstration of the technologies provided a strong case for their wider adoption in wastewater treatment facilities. It was aligned with SO specifics since it focused on the uptake of technologies beyond the laboratory and testing in real life conditions.
If relevant: things that went wrong (prevented project from achieving results, impact), can be improved in future	<p>The COVID-19 pandemic caused delays in project activities, limited access to test sites, and hindered knowledge exchange through in-person meetings and events. Especially the scale-up study for implementation in Ireland and the business case for implementation of microalgae technology at Barend were hampered.</p> <p>Project/programme-internal issues included unforeseen technical challenges during the pilot testing phase, requiring adjustments and additional research efforts. Additionally, the amount of recovered Phosphorus was limited due to the bankruptcy of an external enterprise.</p> <p>The LP claimed that some technologies were more successful than others and could be developed to the next levels, also after the termination of the project – the ones they know about. Other technologies, especially the ones in smaller sewage treatment plants, faced downscaling issues but are still considered to be developed after the project.</p>
Response to transnational development needs of the SO	<p>The project considered and demonstrated the heterogeneity in sewage sludge disposal strategies and technical approaches as well as the legal regulations concerning Phosphorus recovery of the participating countries.</p> <p>The project enabled a joint approach integrating different perspectives on phosphorus recovery and knowledge sharing. The transnational dimension also facilitated the mobilisation of stakeholders from the whole value chain of the fertiliser sector as well as the addressing of local/regional issues in the European context.</p> <p>The project partner claimed that the transnational dimension gave the whole topic another level of relevance and strengthened its impact significantly, particularly regarding outreach and awareness.</p>
Tackling of SO-specific aspects (inclusive growth / social aspects)	The project did not directly address social aspects. However, by developing technologies for phosphorus recovery which is linked to food production and food security and a more sustainable procedure of fertiliser production, Phos4You contributed to social equality / wellbeing through innovation and environmental protection.
Territorial impact	
Focus on specific territories	While the Phos4You project operated in multiple territories across Europe, it focused on regions with significant wastewater treatment capacities and phosphorus-related environmental challenges. It targeted territories with a high potential for phosphorus

	<p>recovery, ensuring that the outcomes had a meaningful impact on local communities and the environment.</p> <p>According to the (lead) partner, the project addressed rural, urban and port areas, since Phosphorus is mostly needed in rural areas as fertiliser or feed additive and then later wasted in mostly urban areas, where more than 80% of the population of the NWE territory lives and often processed in port areas.</p> <p>According to the lead partner, the project did not require territorial focus because the heterogeneity of the sizes of sewage plants was the decisive factor. However, it considered countries with different approaches and degrees of prioritisation, mostly opening the topic in FR and IE. The final outputs include differentiated scenarios and solutions for urban (D, NL and SUI) and for rural regions.</p>
Addressing of territorial distinctive features	<p>The Phos4You project recognized and addressed territorial distinctive features by tailoring the phosphorus recovery technologies to suit the specific characteristics and requirements of each wastewater treatment plant, which differed significantly in size. The consideration of the regionally different legal contexts regarding through sewage sludge disposal (from promoting to prohibiting land application) depicted the largest challenge for Phosphorus recovery.</p> <p>The lead partner stated that while the “leader” countries (DE, BE, NL, CH) established the approach of processing burned sewage sludge, the “follower” countries (FR, IE) pursue agricultural processing of the sewage sludge. In addition to that, the degree of legal anchoring of the process varies a lot. The project considered all these various aspects in the EU recommendations, making the technologies more adaptable to different contexts.</p> <p>Despite the different levels of “progression” within the countries, the project demonstrated that the uptake of phosphorus recovery from wastewater will still take longer than firstly assumed due to the technology development and regulatory framework.</p>
Contribution to the following impacts:	
1. Better coordination	<p>Since the value chains necessary to address for the recovery of Phosphorus, actors from different geographical levels need to be included (local to international). The coordination thus improved e.g. through the cooperation of an enterprise that developed a recovery technology, used by a regional water board, from where phosphoric acid is returned to the global market via chemical distributors and by-products can be used regionally.</p> <p>According to the lead partner, the distinct feature of Phos4You was, that each country already had established phosphorus networks, so no new corporation was necessary, but the project strengthened and connected these networks. The project was also active in the EU Phosphorus network and enhanced the international collaboration. The lead partner also stated that they still receive many requests, e.g. regarding the technologies or project processes from universities. However, the exchange between project partners only takes places punctually but the interviewed partner claimed that having these established contacts is beneficial.</p>
2. Use of innovation through better conditions	<p>By developing and implementing 7 innovative phosphorus recovery technologies, Phos4You created better conditions for sustainable resource management, reducing reliance on traditional wastewater treatment and phosphorus extraction methods and importing.</p> <p>The project partners stated that the scale and variety of the project had an added value for gaining experience, although the comparability was sometimes limited due to the different sizes of the projects. In addition, all the partners profited from the already existing communities each of them had established and the scope of the whole project.</p>
3. Governance capacities of decision makers	<p>Phos4You provided decision-makers technical solutions and guidance on how to implement phosphorus recovery from sewage, adaptable to regionally different (legal) contexts. The project also gave recommendations for national and EU funding bodies for enabling applicants and projects.</p>

<p>4. Better and efficient processes</p>	<p>Phos4You improved wastewater treatment processes by introducing efficient phosphorus recovery technologies, thereby minimising environmental pollution related to phosphorus extraction and additionally promoting the circular economy. The German partners reported that they could successfully implement two demonstrators, that provided relevant results for current and future work.</p>
<p>5. Liveability and attractiveness of NWE territories</p>	<p>Phos4You contributed to the liveability and attractiveness of the NWE territories by facilitating phosphorus recovery from wastewater instead of environmentally damaging extraction and import, although the broad establishment of the technologies is still in its early phase.</p>
<p>References</p>	<ul style="list-style-type: none"> • Project website: https://vb.nweurope.eu/projects/project-search/phos4you-phosphorus-recovery-from-waste-water-for-your-life/ • BioRefine: https://www.biorefine.eu/projects/phos4you/ • Keep.eu: https://keep.eu/projects/18125/PHOSphorus-Recovery-from-wa-EN/ • https://www.phosphorusplatform.eu/images/eNews/ESPP-eNews-no63.pdf • Two interviews with the LP and one PP