

LUCIA

LIGHTING THE BALTIC SEA REGION

April 23, 2021

EXPERIENCE GAINED BY LUCIA PROJECT PARTNERS IN THE REPLICATION ACTIVITIES AND RECOMMENDATIONS FOR ITS IMPROVEMENT

Identification of the experience gained and the dissemination potential of the solutions developed within the LUCIA project in the Baltic Sea region, ID,Nr.:T/RPR/2019/LUCIA-21

Deliverable 3: Final Report

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Introduction

Implementation of the LUCIA¹ Project is based on the idea of supporting municipalities in the economic and environmentally friendly use of energy by providing local administrative authorities with a carefully analyzed and up-to-date body of knowledge on the design and development of energy-efficient urban lighting systems, taking into account such factors as the natural environment, the urban environment, the technological context, economic efficiency and the attitudes of the population. An important part of the project implementation is: dissemination of the acquired knowledge and practical experience among urban planning, energy and lighting specialists, as well as the ability to provide information to administrative and political decision-makers in the Baltic Sea region countries. To achieve this, a number of regional or international activities are being implemented within the Project. In addition, an important outcome of the Project is the collection of available knowledge about lighting on the LUCIA Knowledge Center, which is a platform where the results achieved by all partners are reflected and a network of lighting specialists is created, that is the most important access to distribute the LUCIA knowledge to others apart from BSR. This platform contributes to the maximum reach of the stakeholders and is also planned to be maintained after the end of the Project implementation.

The Project includes five work packages. The interest of this report is in the **activity group of Work Package 5 – Regional Multiplication**, which envisages the development of cooperation at the regional level in the territory of each partner, especially in the agglomerations of Helsinki, Tallinn, Hamburg, Copenhagen, St. Petersburg and Riga. The main specific activities are: identification of the dissemination potential of the experience and solutions developed, including the compilation of the necessary data or examples in a single report; organization of regional seminars during the 3rd reporting period to present the materials developed or results achieved within the framework of Work Packages 2 and 3; as well as organization of final regional seminars in the 5th reporting period, where the partners will present the results achieved at the regional level, including the results of pilot projects.

Within the framework of this project, AC Konsultācijas, Ltd on behalf of the Riga Planning Region perform identification of the experience gained within the project LUCIA and the dissemination potential of the developed solutions in the Baltic Sea region. The evaluation analyzes the dissemination experience and potential of the solutions developed by the Project partners:

- 1) Jomas Street lighting in the city of Jurmala (Project partner – Jurmala Municipality, Riga Planning Region; Latvia);
- 2) Lighting for the Elbewanderweg walking and cycling pathway in Altona Neighbourhood of Hamburg (Project partner – Free and Hanseatic City of Hamburg; Germany);
- 3) Development and demonstration of lighting solutions in DOLL (Danish Outdoor Lighting Lab) laboratory of Albertslund (Project partners – Gate 21, Albertslund Municipality, Denmark);
- 4) Illuminated pedestrian pathway in Porvoo Municipality (Project partner – Porvoo Municipality, Posintra; Finland);

¹INTERREG project of the Baltic Sea Region Transnational Cooperation Program: Lighting the Baltic Sea Region – Cities Accelerate the Deployment of Sustainable and Smart Urban Lighting Solutions “LUCIA”

- 5) Park alley lighting on the campus of Peter the Great St. Petersburg Polytechnic University (Project partner – Peter the Great St. Petersburg Polytechnic University; Russia);
- 6) Canute Garden lighting in the Bastion Zone of Tallinn (Project partner – Tallinn Municipality, Tal-Tech; Estonia).

This Service of *AC Konsultācijas, Ltd* **aims** to identify the experience of disseminating the experience gained and solutions developed within the Project in the Baltic Sea region, especially Helsinki, Tallinn, Hamburg, Copenhagen, St. Petersburg and Riga agglomerations, as well as to develop proposals for successful dissemination of the Project outcomes in the Baltic Sea region.

The following **tasks** are performed within the Service:

1. development of a methodology report describing the progress of the Service execution and the methods applied;
2. learning the Project experience and the experience gained by Project partners;
3. identification and description of the dissemination ways and potential of the experience gained and the solutions developed within the Project in the Baltic Sea region (Helsinki, Hamburg, Copenhagen and Riga agglomerations);
4. working out proposals for successful dissemination of the Project outcomes in the Baltic Sea region;
5. preparing a Draft Report and a Final Report, including English.

1. Methods applied and data sources

This chapter describes the data acquisition methods used in the implementation of the Service. A brief outline is provided below.

1. Document analysis – document analysis was performed within the service. Within this framework, the documentation of four Project work packages was analyzed:

- Results in Work Package 2 (GoA 2.4.3) – Summary of fact sheets;
- Results in Work Package 3 (GoA 3.1) – Report on urban lighting and planning (Intelligent lighting in urban planning);
- Results in Work Package 3 (GoA 3.2) – Report on urban planning and application of green procurement;
- Results in Work Packages 2 and 4 (GoA 2.2; GoA 4.2) – Reports on experience gained and lessons learned from co-production activities;
- Results in Work Packages 4 and 5: Summary on “Lighting the Baltic Sea Region – Cities” (Part 1) and un “Lighting the Baltic Sea Region – Cities” (Part 2);
- Various materials posted on the internal project website <https://atenekom-portal.de/>.

2. Structured interviews – within the service, structured interviews were conducted with Project partners from Germany, Estonia, Denmark, Russia, Finland and Latvia. They took place remotely on the MS Teams platform, between December 9, 2020 and January 25, 2021, with an average of 1-1.5 hours per interview. A total of 11 interviews were conducted, in which 20 people involved in the project were interviewed.

DATE	CITY, COUNTRY REPRESENTED BY THE PROJECT PARTNER	INTERVIEWEES
09/12	Tallinn Municipality, Estonia	Eva Tallo
10/12	Gate 21, Albertslund Municipality, Denmark	Sif Enevold
10/12	Jurmala City, Latvia	Ieva Sponberga
15/12	Posintra, Finland	Topi Haapanen
17/12	Free and Hanseatic City of Hamburg, Germany	Heike Bunte Tommi Vollman Nikolas Fink Renate Jurgesa
18/12	TalTech, Estonia	Alvar Kurell Yannick Le Moullec
05/01	Porvoo Municipality, Finland	Yolanda Potrykus Enni Flykt Elina Leppänen
05/01	LUCI Association, France	Mark Burton-Page
06/01	Peter the Great St. Petersburg Polytechnic University, Russia	Yury Nurulin
12/01	Riga Planning Region, Latvia	Sabine Skudra Ilgvars Francis Sanita Paegle Katrina Valaine
25/01	Gothenburg, Sweden	Lars Ocklund

Table 1 – Interviews with Project partners

The interviews asked questions about the following:

- The solution developed – its gains and the lessons learned in the pilot project implementation process;
- Stakeholders and communication experience with them;
- Cooperation with other Project partners and desire for support from them;
- Informative and audience-oriented events implemented in the Project and their attendance, as well as the feedback;
- Impact of COVID-19 on the project activities and information dissemination activities;
- Partner's experience and skills to disseminate information about the solution and the Project;
- Involvement of cooperation partners in the information dissemination about the solution and the Project;
- Prospective organisations and channels for further dissemination of information on the solution and the Project.

3. Structured information requests – within the framework of the service, structured information requests were made for the project partners with the aim to obtain and specify the information necessary for the evaluation. First, a matrix was sent to the partners, asking for detailed information about the informative and audience-oriented events organized by them. The information was requested in December 2020, and repeated requests to complete it were also sent in January and February 2021.

In addition to the matrix of activities implemented, in January 2021, partners were also asked to provide information on stakeholders and include additional columns in the existing information matrix, indicating the role of stakeholders in disseminating information and their potential for disseminating information in the future.

DATE	INFORMATION REQUESTED	PROJECT PARTNERS WHO WERE REQUESTED FOR INFORMATION
12/2020	Activity matrix for the activities organized by partners. The matrix asked for information on the name and form of the event, the number of participants invited and reached, the purpose of the event and the results to be achieved, as well as the feedback from the participants.	Finland – Porvoo Municipality and Posintra, Estonia – TalTech, Denmark – Gate 21, Latvia – Jurmala Municipality, Germany – Free and Hanseatic City of Hamburg, Altona District, associated company – Konsalt.
25/01/2021	Stakeholder matrix. Additional columns were included in the existing information matrix, asking for information on the role of indicated stakeholders in information dissemination and on their information dissemination potential in the future, as well as for information on other possible organizations able to disseminate information about the Project and the solutions.	Russia – Peter the Great St. Petersburg Polytechnic University, Latvia – Rīga Planning Region and Jurmala Municipality, Estonia – Tallinn Municipality, Finland – Porvoo Municipality and Posintra, Denmark – Gate 21, Germany – Free and Hanseatic City of Hamburg, Altona District.

Table 2 – Time and content of the structured information requests

4. Structured discussions with the Customer – within the framework of the Service, there was a constant exchange of information with the Project Customer (Riga Planning Region). Meetings were organized to discuss the research methodology, the results of interviews and research, and the implementation progress of the Service.

5. Co-creation seminar – within the Service, on March 17, 2021, a co-creation seminar was organized with the aim to discuss replication activities planned by the partners, exchange opinions and recommendations about them, as well as find new ideas for replication activities. The roles of stakeholders in the replication process, as well as possible ways of continuing cooperation with the stakeholders after the conclusion of the Project were also discussed at the seminar. The co-creation seminar was attended by 13 participants, nine of whom were representatives of Project partners from Latvia, Russia, Germany, Denmark and Finland.

2. Pilot Practices Considered within the Service

The chapter briefly describes the solutions / pilot projects that are analyzed within the Service. In total, these are six solutions in six countries. The description provides a brief description of each solution and the benefits of its implementation, the partners involved and their activities within the work packages, as well as the essential positive features, drawbacks and areas for improvement in terms of information multiplication, thereby providing a concise outline for each country.

2.1. Jomas Street lighting in the city of Jurmala (Project partner – Jurmala Municipality, Riga Planning Region; Latvia)

Brief description of the pilot project. As a result of the pilot project, smart lighting will be introduced in the central pedestrian street of Jurmala – Jomas Street, increasing energy efficiency and making Jomas Street more attractive for residents and tourists.

Significance of ecological, technological, economic and social aspects of the solutions. Jomas Street is the central pedestrian street in Jurmala – it is a favorite meeting place for residents and tourists, a walking and recreation area. The street welcomes about 3 million people a year, inviting to a wide range of different cafes and restaurants, as well as offering other services. Therefore, the social significance of the solution is high – it will reach a large number of residents and guests while preserving the historical design features so that the street does not lose its current appearance.

The solution is also an economic and ecological contribution, as within the Project, the lighting of approximately 1.1 km along the central pedestrian streets will be restored – about 100 lamps will be replaced and smart motion sensors will be installed. Lamp control devices-controllers will be installed – with the help of them it will be possible to dim the lamps and remotely monitor them (install various lamp profiles, see power and other parameters). A control device will be installed, enabling street lights to be switched on remotely, as well as to control the lamp control devices. Given these solutions lighting will be more energy efficient, reducing municipal spending on electricity consumed (will save about 40-46 thousand Wh of electricity). In turn, the reduction in electricity consumption will help to reduce the environmental impacts arising from the electricity generation process.

PARTNER	FORM	TYPE OF MANAGEMENT	ROLE / MAIN WORK IN THE PROJECT
Jūrmala City Council	Public sector, government institution	Local (represents only one administrative level)	Participation in the activities of the WP 1 – from 1.1. to 1.3. Participation in the activities of the WP 2 – from 2.1. to 2.4. Participation in the activities of the WP 3 – 3.1. and 3.2. Participation in the activities of the WP 3 – from 4.1 to 4.5. Participation in the activities of the WP 5 – from 5.1. to 5.6.
Riga Planning Region	Public sector,	Regional (representing	Is the Lead Partner of WP 5 activity 5.1. – regional multiplication.

govern- ment insti- tution	several munici- palities)	Participation in the activities of the WP 1 – from 1.1. to 1.3. Participation in the activities of the WP 2 – from 2.1. to 2.4. Participation in the activities of the WP 3 – 3.1. and 3.2. Participation in the activities of the WP 5 – from 5.2. to 5.6.
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Table 3 – Partner characteristics

The qualities achieved in the dissemination of information:

- Involvement of the population through a survey, by obtaining their opinion on more appropriate lighting, its design and other aspects, as well as obtaining contact details of those who want to be involved in further project activities.
- Successful cooperation with stakeholders, including experts in the field; a broad and numerous circles of stakeholders. Active involvement of municipal Council employees in the Project.

Drawbacks in the dissemination of information:

- Lack of communication and cooperation with other municipalities in the region, launched in February 2020, but unfortunately not continued during the pandemic, either in an online format.

Opportunities for growth in the dissemination of information:

- Potential to involve Jurmala Public Council² in discussing and disseminating information.
- Greater involvement of industry professionals and organizations in the dissemination of results.
- Improvement of information dissemination forms – inclusion of visual materials, enabling an opportunity for stakeholders to see the final result (with the help of pictures, virtually “walking” along Jomas Street, etc.).

2.2. Lighting for the *Elbewanderweg* walking and cycling pathway in the Altona district of Hamburg (Project partner – Free and Hanseatic City of Hamburg; Germany)

Brief description of the pilot project. As a result of the pilot project, lighting will be provided for the Elbewanderweg walking and cycling pathway in the Altona district of Hamburg, located on the River Elbe. The project envisages a light art concept for a small pedestrian and bicycle tunnel under Elbhaussee Street and a new modern, energy-efficient lighting installation in the Elbewanderweg.

Significance of ecological, technological, economic and social aspects of the solutions. The solution is socially important, as Elbewanderweg is a popular walking and cycling pathway, located in a "green" area. It

²Jurmala. Sabiedriskā padome. Retrieved from https://www.jurmala.lv/lv/pasvaldiba/konsultativas_padomes/17856-sabiedriskā-padome

is the main direction to the city center and Teufelsbrück gives access to Finkenwerder across the river by public boat, so it is used daily by a lot of cyclists and pedestrians. The lighting to be introduced will be energy efficient.

PARTNER	FORM	TYPE OF MANAGEMENT	ROLE / MAIN WORK IN THE PROJECT
Free and Hanseatic City of Hamburg, Borough of Altona	Public sector, government institution	Local (represents only one administrative level)	<p>Is the Lead partner in the activities of the WP1 - from 1.1. to 1.4. (strategic, content, financial and communication management).</p> <p>Participation in the activities of the WP 2 - 2.1., 2.2., and 2.4. Is the Lead Partner on 2.3. activity. (fact sheets on social acceptance).</p> <p>Participation in the activities of the WP 3 - 3.1. and 3.2.</p> <p>Is the Lead partner in the WP 4 activity 4.2. (Co-creating urban lighting systems). Participation in the activities 4.1., 4.3., 4.4., 4.5.</p> <p>Is the Lead partner in the WP 5 activity 5.2. (mid-term seminar). Participation in 5.1., 5.3., 5.4., 5.5., 5.6. activities.</p>

Table 4 – Partner characteristics

The qualities achieved in the dissemination of information:

- Visual material in video format, which can be demonstrated in seminars and meetings, as well as posted on social networks and other information dissemination channels.
- Multilateral involvement of target groups in the dissemination of information.

Drawbacks in the dissemination of information:

- Low number of online survey respondents, which could be related to a poorly developed field work plan for the survey.
- Low participation in the first seminar at the group working phase.

Opportunities for growth in the dissemination of information:

- Cooperation with regional and national platforms to reach a wider audience.
- Organization of a survey together with the demonstration of the installation (at the same time, the same place) to attract more respondents, as well as organization of an online survey.

2.3. Development and demonstration of lighting solutions in DOLL (*Danish Outdoor Lighting Lab*) laboratory of Albertslund (Project partners – Gate 21, Albertslund Municipality, Denmark)

Brief description of the pilot project. Within the pilot project, lighting equipment will be renovated and displayed in the DOLL laboratory.

Significance of ecological, technological, economic and social aspects of the solutions. The pilot project has a high technological value, as 50 lighting posts will be renovated and modernized in the *DOLL LivingLab* laboratory in Albertslund – with new motion sensors, new traffic signal control and a platform for integrating lighting solutions. Motion sensors are also economically important as they help to reduce lighting to a minimum, thereby saving resources.

The solution is socially significant because it envisages demonstration of smart lighting solutions to anyone interested in – both the professionals and those without knowledge in the field, as *DOLL LivingLab* is an international destination.

PARTNER	FORM	TYPE OF MANAGEMENT	ROLE / MAIN WORK IN THE PROJECT
Gate 21	Organization	National (platform for municipalities, regions, companies and knowledge institutions to promote green growth)	Participation in the activities of the WP 1 – from 1.1. to 1.3. Participation in the activities of the WP 2 – from 2.1. to 2.4. Is the Lead partner in the WP 3 activities 3.1. (Integrating urban lighting in urban planning) and 3.2. (Using (green) public procurement for urban lighting). Participation in the activities of the WP 3 – from 4.1 to 4.5. Participation in the activities of the WP 5 – from 5.1. to 5.6.
City of Albertslund	Public sector, government institution	Local (represents only one administrative level)	Participation in the activities of the WP 1 – from 1.1. to 1.3. Participation in the activities of the WP 4 – from 4.1. to 4.5. Participation in the activities of the WP 5 – from 5.1. to 5.3.

Table 5 – Partner characteristics

The qualities achieved in the dissemination of information:

- A close, experienced circle of cooperation parties formed on the basis of other projects and ensuring successful project implementation (LightingMetropolis, DOLL).
- Highly targeted work with industry professionals and planners.
- High activity in social networks.

Drawbacks in the dissemination of information:

- Insufficient involvement of local residents; face-to-face / online activities are mainly focused on the industry experts.

Opportunities for growth in the dissemination of information:

- Addressing and involving people and active non-governmental organizations.
- A virtual tool that would give stakeholders an insight into the pilot project, given that COVID-19 has reduced the number of visits.

2.4. Illuminated pedestrian pathway in Porvoo Municipality (Project partner – Porvoo Municipality, Posintra; Finland)

Brief description of the pilot project. As a result of the pilot project, a pedestrian pathway will be created and illuminated, connecting Länsiranta, the center of Porvoo and the Old Town of Porvoo.

Significance of ecological, technological, economic and social aspects of the the solutions. The pilot project has significant social value, as a new pedestrian pathway will be created in a previously undeveloped area, which will create not only a pleasant landscape environment, but also new mobility opportunities for pedestrians and cyclists to reach Länsiranta, Porvoo center and Porvoo Old Town. This is particularly important because of the parallel development of the new Länsiranta cultural and recreational area.

The project is also of significant environmental and technological value. Innovative lighting solutions will be implemented to create the lighting, local renewable energy with storage options will be used, allowing the creation of a CO₂-neutral zone.

PARTNER	FORM	TYPE OF MANAGEMENT	ROLE / MAIN WORK IN THE PROJECT
City of Porvoo	Public sector, government institution	Local (represents only one administrative level)	Participation in the activities of the WP 1 – from 1.1. to 1.3. Participation in the activities of the WP 2 – from 2.1. to 2.4. Participation in the activities of the WP 3 – 3.1. and 3.2. Participation in the activities of the WP 4 – from 4.1. to 4.5. Participation in the activities of the WP 5 – from 5.1. to 5.6.
Posintra	Ltd., private sector	Not applicable	Participation in the activities of the WP 1 – from 1.1. to 1.3. Is the Lead partner in the activities of WP 2 activities 2.2. (Economic aspects and business models) and 2.4. (Preparation of collection of fact sheets). Participation in the activities 2.1., 2.3. Participation in the activities of the WP 3 – 3.1. and 3.2. Participation in the activities of the WP 5 – from 5.1. to 5.6.

Table 6 – Partner characteristics

The qualities achieved in the dissemination of information:

- Evident and appealing visual material – a tool where people can see the final result of the pilot project.
- A wide range of stakeholders and involved parties - municipalities, experts, etc. The partner's ability to attract different groups, including people with disabilities and the elderly.
- Great variety of information dissemination – website section, social networks, a newspaper.

Drawbacks in the dissemination of information:

- A lack of activities involving partners at regional or national level.

Opportunities for growth in the dissemination of information:

- Successful practices should be continued, including games and other platforms for attracting audience's attention in online events during the COVID-19 restriction period.

- Wider dissemination of project experience requires cooperation with a regional partner.

2.5. Park alley lighting on the campus of Peter the Great St. Petersburg Polytechnic University (Project partner – Peter the Great St. Petersburg Polytechnic University; Russia)

Brief description of the pilot project: As a result of the pilot project, modern, smart lighting will be installed in the alley of the university campus park.

Significance of ecological, technological, economic and social aspects of solutions. First of all, the pilot project has an important social role, as it is carried out on the campus of St. Petersburg Polytechnic University (SPbPU), where historical and modern educational, social, research and residential buildings, as well as green and sports areas are found. Every day it is crossed by a large number of students, teachers and other people. The installation of lighting is important because it will make recreation in the park safer.

The economic and ecological significance of the solution can be seen in the fact that the lighting will be smart and energy efficient. A total of 22 multifunctional and smart, as well as artistic lamps will be installed.

PARTNER	FORM	TYPE OF MANAGEMENT	ROLE / MAIN WORK IN THE PROJECT
Peter the Great St. Petersburg Polytechnic University	Public sector, educational institution - university	Not applicable	Implementation of the pilot project and project management

Table 7 – Partner characteristics

The qualities achieved in the dissemination of information:

- Dissemination of the information was performed in an active social group – among students. This has enabled relatively quick and cost-effective reach of a significant target group.
- LUCIA fact sheets were translated into Russian, which facilitates informing the target group about the Project.

Drawbacks in the dissemination of information:

- The reached target group is narrow, informative events take place only in lectures and seminars. Encourage Cooperation with the municipality should be encouraged as much as possible to disseminate information further.

Opportunities for growth in the dissemination of information:

- The LinkedIn platform should be used for outcome dissemination.
- Sharing the experience with other collaborating universities or platforms that bring together different universities.
- Involving industry professionals, organizations and policy planners in disseminating information.

2.6. Canute Garden lighting in the Bastion Zone of Tallinn (Project partner – Tallinn Municipality, TalTech; Estonia)

Brief description of the pilot project: As a result of the pilot project, the part of the park called Canute Garden will be renovated and lighting will be created, which will change from season to season.

Significance of ecological, technological, economic and social aspects of solutions. The greatest significance of the Project is due to social added value, since this will not only illuminate part of the park, creating a sense of security for visitors, but also create an enjoyable, aesthetic environment where lighting will vary depending on the season, creating more interest for residents and tourists. A thematic lighting plan will be developed for all parks in the Bastion area of Tallinn. The thematic plan will then be implemented in the Canute Garden, one of the parks in the Bastion area. The project will create an innovative lighting system using RGBW technology (recreation area with a fountain). The park is part of the cultural heritage, so the lighting will also be restored in harmony with the lights of the nearby architectural objects – the walls and the tower.

Like with other pilot solutions, modern, energy-efficient lighting will also be used in this case. The replacement of old lighting equipment will save on electricity payments, as well as reduce the environmental impact of electricity generation, which is an essential economic and environmental value of this solution.

Besides, a decorative smart lighting will be installed to illuminate the fountain, the playground and the main recreation area in the park.

PARTNER	FORM	TYPE OF MANAGEMENT	ROLE / MAIN WORK IN THE PROJECT
Municipality of Tallinn	Public sector, government institution	Local (represents only one administrative level)	Participation in the activities of the WP 1 – from 1.1. to 1.3. Participation in the activities of the WP 2 – from 2.1. to 2.4. Participation in the activities of the WP 3 – 3.1. and 3.2. Participation in the activities of the WP 3 – from 4.1 to 4.5. Participation in the activities of the WP 5 – from 5.1. to 5.6.
TalTech – Tallinn Technical University	Public sector, educational institution - university	Not applicable	Participation in the activities of the WP 1 – from 1.1. to 1.3. Is the Lead partner in the WP 2 activity 2.1. (Fact sheets on Technology). Participation in activities from 2.2. to 2.4. Participation in the activities of the WP 3 – 3.1. and 3.2. Is the Lead partner in the activities of WP 4 – 4.1. (Technical preparation for successful tendering), 4.3. (Tendering), 4.4. (Realisation of pilot sites), 4.5. (Communication & exchange on pilot sites, documentation) Is the Lead partner in the activities of WP 5 – 5.3. (State-of-the art report “Lighting cities of the BSR”) and 5.4. (Final conference in Tallinn). Participation in activities 5.1., 5.2., 5.5. and 5.6.

Table 8 – Partner characteristics

The qualities achieved in the dissemination of information:

- Translation of the LUCIA fact sheet into Estonian successfully extends the scope of information dissemination.
- Activities informing a large audience.

Drawbacks in the dissemination of information:

- Lack of purposeful communication focused on reaching definite target groups; lack of feedback.

Opportunities for growth in the dissemination of information:

- Activities for industry professionals.
- Organizing events that provide feedback and suggestions for further action.

3. Characterization of solution dissemination methods

The chapter provides an overview of the multiplication of the results (acquisition and dissemination of information) accomplished by Project partners. The information is summarized in tabular form and the main conclusions are presented briefly after each table.

3.1. Jomas Street lighting in the city of Jurmala (Project partner – Jurmala Municipality, Riga Planning Region; Latvia)

ACTIVITY, INCL. THE DATE AND FORM (ON-SITE, ONLINE, INCL. THE CHANNEL)	NUMBER AND PROFILE OF PARTICIPANTS ADDRESSED, HIGHLIGHTING THE "KEY PLAYERS"	PROPORTION OF PARTICIPANTS REACHED	RESULTS TO BE ACHIEVED BY THE ACTIVITY	KEY ISSUES DISCUSSED	PARTICIPANT FEEDBACK– POSITIVE THINGS; GAINS	PARTICIPANT FEEDBACK– NEGATIVE THINGS; DRAWBACKS
Survey on Jomas Street lighting 18-24/09/2019 Online	The survey was published on the municipal website (www.jurmala.lv) and Facebook page (Jūrmala), available for everyone to fill in.	Number of respondents: 94 – residents, business environment representatives, Jurmala City Council representatives	Informing the population about the planned lighting replacement within the LUCIA project and receiving feedback and suggestions for improvements	Issues on the existing street lighting (design, functional capabilities, quality), preferred lighting design, functional features	Nearly 10% of respondents also attended the on-site event to discuss proposals on-site.	Objections and complaints received concerning other areas not related to the replacement of lighting. Repeated feedback is required after the replacement of lighting (will be organized in August).
Seminar with residents and lighting suppliers 04/10/2019	60 persons – residents, lighting suppliers’ representatives,	25 persons – residents, lighting suppliers’ representatives,	Receiving proposals for street lighting improvements in Jomas Street and to obtain	Information about the LUCIA project; street lighting infrastructure in Jurmala; presentations	Proposals obtained by means of questionnaires.	The opinion of lighting suppliers that funding for the replacement of Jomas

On-site	representatives of <i>Jūrmalas gaisma, Ltd</i> , Jurmala City Council representatives	representatives of <i>Jūrmalas gaisma, Ltd</i> , Jurmala City Council representatives	information on the latest trends in street lighting (orally and by means of questionnaires).	of lighting suppliers' representatives on the latest trends in the field of street lighting; discussions; feedback. The proposals were taken into account for the preparation of the lighting replacement design procurement and the preparation of the design program.	Street lighting is insufficient.	
City Festival design working group meeting 02/10/2019, 29/04/2020, 29/10/2020 On-site	7 Jurmala City Council representatives – planners and administration representatives (Deputy Chairman of Jurmala City Council, Head of Marketing and External Communication Department, Head of City Planning Department, Head of Culture Department, City Chief Artist, Chairman of the Board of <i>Jūrmalas gaisma, Ltd</i> ; Senior Legal Adviser in the Chairman's Office)	7 Jurmala City Council representatives–	Receiving feedback on the planned lighting replacement within the <i>LUCIA</i> project, proposals for the Project development.	Information about the <i>LUCIA</i> project; visual solution of lighting replacement in Jomas Street and indicative construction cost estimate.	A decision made on the visual design of Jomas Street lighting. Evaluation of cost estimates performed, proposals for cost optimization received.	A lengthy decision-making process. Vaguely defined requirements for the visual design of Jomas Street.

<p>Regional seminar with Riga Planning Region municipalities 25/02/2020 On-site</p>	<p>40 persons – representatives of Riga Planning Region municipalities – municipal planners, representatives of municipal capital companies in the field of lighting.</p>	<p>27 persons</p>	<p>Receiving feedback on the planned lighting replacement within the LUCIA project, proposals for the Project further development. Present the RPR reports: “Assessment of the current public outdoor lighting plans in RPR municipalities and guidelines for smart lighting implementation”, “Report on integrating modern lighting solutions in urban planning process and application of green public procurement in the municipalities of Riga Planning Region”.</p>	<p>Information about the LUCIA project; “Assessment of the current public outdoor lighting plans in RPR municipalities and guidelines for smart lighting implementation”, “Report on integrating modern lighting solutions in urban planning process and application of green public procurement in the municipalities of Riga Planning Region”, Jurmala pilot project – things accomplished, planned; a summary of the heard; discussion on further development of the Project and on favouring qualitative changes and policy and practice improvement.</p>	<p>Involvement of the participants in discussions on further development of the Project, on favouring qualitative changes and policy and practice improvement.</p>	<p>The implementation of the pilot project was not included in the planning stage, therefore it was not possible to provide sufficiently precise information on the results after the implementation of the Project, as well as to receive objective feedback on the implementation of the pilot project.</p>
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Table 9 – Overview of the activities implemented by Jurmala municipality

Conclusion: Within the framework of the Project, Jurmala Municipality has organized several separate local events with specific goals for the Project promotion. So far, less use has been made of the Riga Planning Region resource, i.e. the opportunity to address municipalities of Riga Planning Region and other target groups in the municipalities and rouse their interest. It is recommended to make greater use of regional government level opportunities, for example, to maintain contacts throughout the Project implementation period, including regular contacts with the municipalities of Riga Planning Region, keeping them interested through various solutions from the beginning to the end of the Project.

3.2. Lighting for the *Elbewanderweg* walking and cycling pathway in the Altona Neighborhood of Hamburg (Project partner – Free and Hanseatic City of Hamburg; Germany)

ACTIVITY, INCL. THE DATE AND FORM (ON-SITE, ONLINE, INCL. THE CHANNEL)	NUMBER AND PROFILE OF PARTICIPANTS ADDRESSED, HIGHLIGHTING THE "KEY PLAYERS"	PROPORTION OF PARTICIPANTS REACHED	RESULTS TO BE ACHIEVED BY THE ACTIVITY	KEY ISSUES DISCUSSED	PARTICIPANT FEEDBACK– POSITIVE THINGS; GAINS	PARTICIPANT FEEDBACK– NEGATIVE THINGS; DRAWBACKS
Survey on the current lighting situation in the pilot project 06/2020-09/2020 Online	Target group: local residents, users of the pilot project.	~5% of the addressed / invited Respondents: 14	Summarizing opinions on lighting	Places that require more/less lighting, how safe people feel in these places, etc.	No information	Insufficient participation in the survey – a small number of respondents.
Workshop on lighting installation in the tunnel (26.06.2020.) On-site	Target groups: local residents, passers-by, public concerned. 180 people passed / stopped by during the event	~15% of the addressed / invited Participants: 36 took part in a written survey	Providing information about lighting in the tunnel; summarizing opinions on lighting.	Information on the light, its possible effects and side-effects (like light pollution), presentation of a new lighting design. Discussion of different perspectives.	The lighting installation attracted public attention, inviting people to participate spontaneously in the workshop. The discussion encouraged people to get involved.	The workshop site was too busy due to pedestrians and cyclists. Due to the limitations of COVID-19, it was necessary to control the flow of participants and passers-by.

Expert webinar 20/10/2020 27/10/2020 Online	Target group: experts, lighting planners, administration representatives.	~20% of addressed / invited Participants: round about 40 at each event	Providing information on various themes, discussing innovations and problems etc.	Information on: - light pollution and its effects; -smart lighting technologies.	Successful discussions, review of respective literature and links to it.	No information
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Table 10 – Overview of the activities implemented by Altona Neighborhood of Hamburg Municipality

Conclusion: Additionally to the activities listed in the table above, the Project partner has successfully selected a suitable way of communicating the project to the local level of government, which is a visual material in video format. Such material can be widely used – both at on-site seminars and online, as well as on various websites. However, it would be useful to work with regional platforms to reach a wider audience.

The partner should carefully review the survey questions, methodology and fieldwork plan to achieve a significantly higher response rate next time. Given that the survey was carried out on-site – in paper format – it would have been useful to organize it during the workshop (installation), when a large number of passers-by showed interest. If similar installations are planned to be organized, it is recommended to combine both activities. In addition, in order to promote the response, it is recommended to consider a possibility of organizing it electronically, actively disseminating information on social networks.

3.3. Development and demonstration of lighting solutions in DOLL (*Danish Outdoor Lighting Lab*) laboratory of Albertslund (Project partners – Gate 21, Albertslund Municipality, Denmark)

ACTIVITY, INCL. THE DATE AND FORM (ON-SITE, ONLINE, INCL. THE CHANNEL)	NUMBER AND PROFILE OF PARTICIPANTS ADDRESSED, HIGHLIGHTING THE "KEY PLAYERS"	PROPORTION OF PARTICIPANTS REACHED	RESULTS TO BE ACHIEVED BY THE ACTIVITY	KEY ISSUES DISCUSSED	PARTICIPANT FEEDBACK – POSITIVE THINGS; GAINS	PARTICIPANT FEEDBACK– NEGATIVE THINGS; DRAWBACKS
Seminar – smart outdoor lighting 24/10/2019	Lighting and smart city planners and chief	48 participants	Sharing knowledge about processes and technologies for the	Presentations, management and sensor solutions	Own network and channels used to	Greater emphasis should be placed on creating lighting for

On-site	executives from municipalities, universities; consulting companies and manufacturers.		implementation of smart lighting.	by various companies, quality measurements.	reach the participants.	people and lighting design.
Webinars: 1. Lighting for people and ecosystems. 2. City planning and lighting for liveable cities	Planners, chief executives, professionals and researchers Municipalities, universities, consultants, manufacturers, lighting companies, incl. start-up community included in the project LightingMetropolis. Everybody works in the field: outdoor lighting, city planning and development, environment and climate, smart city. The target area for regional replication is interregional and covers Greater Copenhagen (East of Denmark and Skon in Sweden)	1. 86 participants 2. 55 participants	Joint planning of lighting in the early stages of its implementation	Lighting in planning, lighting research (on behavior and design, impact and safety)	Active interest in the chat. Exchanging links where you can get further information. Positive feedback.	No survey was carried out to summarize opinions and feedback.
Visits to the DOLL Visitor Center Still going on On-site – before COVID-19 restrictions;	DOLL visitors from all over the world	Not applicable	Organizing discussion on smart lighting and its implementation in the cities, raising the issues of	Priority theme – moving sensor solutions for lighting	No information	No information

currently in small quantities – online	political decisions, technical, as well as moral and social aspects.
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Table 11 – Overview of the activities implemented by Denmark

Conclusion. In general, a successful model, where the team is built up of the Project partners both of a local administrative level and of a national level platform with a stable and wide range of cooperation partners. However, from the activities performed and the location of the participants, it can be seen that in such a situation it is necessary to pay more attention to the involvement of the residents of the local pilot area. Even if there has been sufficient involvement of the local community, we propose to single out the local population as a separate, particularly interesting target group for the informative events, thereby obtaining a clear assessment of their interest and degree of involvement.

3.4. Illuminated pedestrian pathway in Porvoo Municipality (Project partner – Porvoo Municipality, Posintra; Finland)

ACTIVITY, INCL. THE DATE AND FORM (ON-SITE, ONLINE, INCL. THE CHANNEL)	NUMBER AND PROFILE OF PARTICIPANTS ADDRESSED, HIGHLIGHTING THE "KEY PLAYERS"	PROPORTION OF PARTICIPANTS REACHED	RESULTS TO BE ACHIEVED BY THE ACTIVITY	KEY ISSUES DISCUSSED	PARTICIPANT FEEDBACK – POSITIVE THINGS; GAINS	PARTICIPANT FEEDBACK– NEGATIVE THINGS; DRAWBACKS
Light Festival Porvoo 14-15/02/2020 On-site survey	Target group: local residents of Porvoo, Light Festival visitors	Number of survey respondents: 112 Responses to the sticker task: 150	Obtaining opinions of residents on lighting in general.	In the survey: opinion on general lighting potentialities and on what is a good city lighting; activities in the dark, the most appropriate lighting for Länsiranta area,	Many festival visitors got interested in the <i>LUCIA</i> project.	A large number of festival visitors did not complete the survey.

				opinions on different lighting tones, multi-function light poles.	A good overview of what people expect from lighting was received.	
				Sticker task: assessment of the route experience, the most appropriate place for installation of lighting.		
Web-Vision workshop 16/04/2020 Online	11 participants, 8 instructors. Target group: members of various Porvoo communities (elderly people, young people, persons with impaired vision, entrepreneurs etc.)	No information	Demonstration of the presentation and organization of common discussion.	Themes: comfort and experience, energy and cost savings, maintenance, safety, light pollution, ecology.	Good feedback on webinar functionality. New perspectives gained.	Some participants refused to participate feeling like not having clear enough opinion.
Local seminar 28/09/2020 Online and On-site	LUCIA 80 people were invited (15 experts and 65 representatives from municipalities)	39 participants. Participant profile: 15 experts, 16 representatives from municipalities, 1 media representative and 7 education sector representatives	The LUCIA project fact sheet presentation, economic calculation presentation, Aleksi park plan presentation (pilot site area), presentation of lighting planning.	Economic aspects of smart city lighting; Pre-assessment of lighting investments– TheCalculationTool LUCIA fact sheets Planning of the pilot site area – a park, a pedestrian walkway and smart lighting	On a scale of 1-5, participants rated the activity with 4.2.	

Table 12 – Overview of the activities implemented by Finland

Conclusion. It is important to note that entertainment approach and attractive event, i.e. the Light Festival was used to inform about the Project. This approach demonstrates the variety of possibilities, creativity in drawing attention to the Project theme. At the same time, parallel to such a wide-range event, a seminar for a

narrow circle was also organized to investigate the interests and opinions of various target groups. This is a good example of the variety of events. However, it should be noted that both activities are local and it is necessary to work with a regional partner in order to disseminate the project experience more widely.

In addition, it should be noted that for the needs of the Project, a section on the municipal website has been created, where information about the Project, environmental aspects and plans is available. The website is available in Finnish and Swedish. It is planned to translate the website into English so that it is also available to tourists and city visitors. Website translation also provides an opportunity for other people to get interested in the Project. Besides, information is also disseminated in the local newspaper, social media, Facebook, Instagram and Twitter platforms.

3.5. Parka Park alley lighting on the campus of Peter the Great St. Petersburg Polytechnic University (Project partner – Peter the Great St. Petersburg Polytechnic University; Russia)

ACTIVITY, INCL. THE DATE AND FORM (ON-SITE, ONLINE, INCL. THE CHANNEL)	NUMBER AND PROFILE OF PARTICIPANTS ADDRESSED, HIGHLIGHTING THE "KEY PLAYERS"	PROPORTION OF PARTICIPANTS REACHED	RESULTS TO BE ACHIEVED BY THE ACTIVITY	KEY ISSUES DISCUSSED	PARTICIPANT FEEDBACK – POSITIVE THINGS; GAINS	PARTICIPANT FEEDBACK – NEGATIVE THINGS; DRAWBACKS
Survey among students on lighting, pollution and other important aspects	Target group: students	Respondents: ~ 65-75	Informing students about lighting, environmental pollution.	No information	Students' interest about the Project, its results, solutions and other aspects.	No information
Seminars during lectures	Students who had registered for the particular course	No information	Informing students about the interconnection of the themes: environment and project management	No information	Students' interest about the Project, as well as their interest to participate in the Project activities.	No information

Table 13 – Overview of the activities implemented by SPbPU campus, Russia

Conclusion: The information activities carried out within the framework of the Project contribute to the involvement of students and other related persons, which definitely creates a sense of engagement for these people to the infrastructure to be created. However, it must be acknowledged that the activities carried out can be assessed as local and wider dissemination of project results requires additional activities and such cooperation partners who can offer a wider range of stakeholders. It could be suggested to share the experience with other cooperating universities or platforms that bring together different universities.

3.6. Canute Garden lighting in the Bastion Zone of Tallinn (Project partner – Tallinn Municipality, TalTech; Estonia)

ACTIVITY, INCL. THE DATE AND FORM (ON-SITE, ONLINE, INCL. THE CHANNEL)	NUMBER AND PROFILE OF PARTICIPANTS ADDRESSED, HIGHLIGHTING THE "KEY PLAYERS"	PROPORTION OF PARTICIPANTS REACHED	RESULTS TO BE ACHIEVED BY THE ACTIVITY	KEY ISSUES DISCUSSED	DALĪBŅIEKU FEEDBACK – POSITIVE THINGS; GAINS	DALĪBŅIEKU FEEDBACK – NEGATIVE THINGS; DRAWBACKS
LUCIA webinar #1 “In the focus: People First” 30/09/2020 Online Event moderated by TalTech	Information was disseminated on Facebook (296 people reached) and LinkedIn (106 reactions). Special invitations were not sent out. Profile: Officials and employees from the Baltic Sea region cities (and possibly also outside it), representatives of the LUCIA association, academics.	Number of participants: 50	Raised awareness of lighting in building smart cities (“People First”); sharing with LUCIA partner countries the experience of Tallinn, which illustrated how this approach is taken into account in the city strategy and cooperation planning, co-creation practices.	The role of lighting in building smart cities (“People First”). The strategies of Tallinn Smart City. Involving people in co-creating lighting solutions. Networking in the virtual exhibition zone.	Participants said they had gained new knowledge of the ‘man vs. technology’ issue, smart-city strategies and co-creation practices.	No information.
Translation and dissemination of LUCIA fact sheets (spring, 2021). Three categories of fact sheets prepared within the LUCIA project:	About 25 people. Target group: Estonian city officials and employees with decision-making power or influence	No information.	Meetings organized with Estonian city officials and staff to disseminate and communicate the content of the fact sheets.	6 fact sheets about technology aspects in Estonian; 4 fact sheets about economic aspects in Estonian;	No information.	No information.

technologies, economics, social acceptance. Fact sheets translated in Estonian. Preferably – on-site, but if necessary – online			Making the target group more aware of the benefits and challenges of smart city lighting and “green” public procurement in order to facilitate implementation of such solutions or transition to them.	5 fact sheets about social acceptance in Estonian.		
Dissemination of the information on economic aspects Throughout the Project	Target group: public, community of researchers, city officials and employees	No information	Sharing information on the LUCIA results and actions with wide range of people, incl. the general public, the research community, city officials and employees.	No information	No information	No information

Table 14 – Overview of the activities implemented by Tallinn Municipality

Conclusion: The Partner has carried out activities that allows to inform a large audience, but for which it is difficult to get feedback. Several ways are used to disseminate information – Tallinn newspaper *Pealinn*, online media *Delfi*, social media *TallinnFacebook*, as well as the professional magazine *Elektriala*. Project partners need more targeted communication strategies, using both city and university contacts, as well as the existing cooperation platforms.

4. Cooperation networks and organizations involved in dissemination of the Project objectives and results

Stakeholders involved in dissemination of the Latvian partner's results. Stakeholders of the national level are: the Ministry of Environmental Protection and Regional Development (MEPRD) – Spatial planning department, Regional politics department, Climate change department and Ministry of economics – Department of Sustainable Energy Policy. Stakeholders of the regional level are: the Kurzeme, Vidzeme, Zemgale and Latgale Planning Regions. The local stakeholders include Riga City Council Development department and the municipalities of Riga Planning Region. Additionally, the Riga City Council Traffic Department, Rīgas gaisma, SIA “Jūrmalas gaisma” and Jūrmala Tourism Information Center are also mentioned as stakeholders. The private sector includes Group 93, Metrum, engineers of *IE.LA*, Emergingsolutions, Reģionālie projekti, ALPS, Gaismas stils and Trilux. The professionals involved are both the city planner and the engineers. The Rīgas apkaimju alianse, Jūrmalas Public Council, Entrepreneurs advisory board are mentioned as activists. Activists are the voice of the civic and the major consumers.

Stakeholders involved in dissemination of the German partner's results. International stakeholder is Waddensea forum. National stakeholder is UBA-Umweltbundesamt- Federal environment Agency Germany The stakeholder mentioned at the regional level is LichtbeiratHamburg – an advisory board responsible for light and lighting in the city of Hamburg, BUND - Bund für Naturschutz und Umwelt. Locally, there is IBA – an international construction exhibition working on city planning and development. Among activists in the district of Hamburg – Lurup is mentioned, which operates in the Altona area and is responsible for various initiatives and local needs.

Stakeholders involved in dissemination of the Danish partner's results. The international level stakeholders are: the Interreg Baltic Sea Region and LUCIA partner cities, as well as the Swedish cities of Lighting Metropolis. At the national level, the Danish cities of Lighting Metropolis are involved. At the local level, Albertlund Municipality is involved. Private sector stakeholders include DOLL partners, Hersted Industrial Park companies and motion sensor suppliers. An important role is played by the DOLL partner being involved in a continuous dialogue, as it offers products and solutions for demonstration. Both residents of the Herted Industrial Park and active population are among activists.

Stakeholders involved in dissemination of the Finnish partner's results. The public sector stakeholders are: Porvoon Energia (energy and electricity company in Porvoo) and a professional designer has been engaged from the public sector. Valuable stakeholders have been found by the Project partner Posintra. The stakeholder matrix identifies lighting and energy companies at both national and regional level. The local community having an interest in improving the city environment, also plays an important role in exchanging information. The Project partners emphasize that the small town provides a more successful dissemination of information.

Stakeholders involved in dissemination of the Russian partner’s results. Stakeholder at national level is Russian association of outdoor lighting. The stakeholders mentioned at the regional level are: Committee on Energy and Engineering Support of Saint-Petersburg, which is responsible for infrastructure development; the state agency Lensvet, which is responsible for outdoor lighting in St. Petersburg, and the state agency Energy Saving Center, which is responsible for the energy efficiency of the city's infrastructure. The SPbPU Center of testing of innovation solutions and the SPbPU Chief Power Engineer Service are mentioned at the local level. Three most active students of the SPbPU, as well as the teaching staff of the University are mentioned as activists. As activists are also mentioned environmental engineer, retired resident of the district and individual entrepreneur. The stakeholders of the private sector: “VIK Project” LLC design organization, “Slantsy-Elektromontazh” LLC commissioning works, “PEP” LLC equipment supply and installation, “Candela” LLC development of lighting design projects, designer – individual entrepreneur.

Stakeholders involved in dissemination of the Tallinn partner’s results. National level stakeholders of the public sector are: Estonian Association of Municipal Engineering, Tallinn Technical University, Estonian Academy of Arts, Environmental Board. The type of involvement is different, but mostly it is participation in events, providing information about the Project. The stakeholders of the local level are: Tallinn Urban Environment and Public Works Department streetlighting un, Tallinn Urban Environment and Public Works Department environment unit, Tallinn City Planning Department, Tallinn City Planning Department heritage unit, Tallinn City Center Government. Stakeholders of the local level are characterized by active involvement and joint decision-making. Various stakeholders point to the uniqueness of the Project, which requires interdisciplinary involvement. The stakeholders involved in the private sector are professional engineers and designers. Their role in the Project is to provide information and to participate in discussions sharing their knowledge for successful development of the Project. Professionals deal with issues such as technical condition, lighting technologies, design solutions, smart system solutions and energy efficiency, etc. Communities that contribute to obtaining opinions and sharing information are also active.

INTERNATIONAL ORGANIZATIONS	NATIONAL ORGANIZATIONS	REGIONAL ORGANIZATIONS	LOCAL ORGANIZATIONS	SPECIALISTS, ACTIVISTS ETC.
Jomas Street lighting in the city of Jurmala (Project partner – Jūrmalas municipal-irt, Riga Planning Region; Latvia)	National policy makers (Ministry of Environmental Protection and Regional Development)	Regional level public administration (Kurzemes, Vidzemes, Zemgales and Latgales planning regions)	Local level public administration (Riga city council departaments, municipalities) municipal capital companies, Tourism Information Centre. In the private sector – area development planners (Grupa 93, Metrum,	Urban planners and engineers. Activists – Rīgas apkaimju alianse, Jūrmala Public Council, Entrepreneurs advisory board.

				Reģionālie projekti), inženieri (IE.LA inženieri, Emerging solutions, ALPS, Gaismas stils un Trilux).	
Lighting for the Elbe-wanderweg walking and cycling pathway in Altona Neighbourhood of Hamburg (Project partner – Free and Hanseatic City of Hamburg; Germany)	Waddensea forum-	UBA-Umweltbundesamt- Federal environment Agency Germany	Regional level advisory board "light/lighting" of the City of Hamburg (<i>Lichtbeirat Hamburg</i>), BUND - Bund für Naturschutz und Umwelt, BUKEA-Behörde für Umwelt, Klima, Energie und Agrarwirtschaft	International building exhibition for the city of HH - (IBA)	Local group for local initiatives (Lurup)
Development and demonstration of lighting solutions in DOLL (<i>Danish Outdoor Lighting Lab</i>) laboratory of Albertslund (Project partners – Gate 21, Albertslund Municipality, Denmark)	International organizations (Interreg Baltic Sea Region, Lighting Metropolis Swedish cities)	Organization at national level (Lighting Metropolis Danish cities)	-	Local level public authority (Albertslund Municipality), DOLL	Hersted Industrial park residents
Illuminated pedestrian pathway in Porvoo Municipality (Project partner – Porvoo Municipality, Posintra; Finland)	-	Business sector (areas – energy, lighting)	Business sector (areas – energy, lighting)	Energy company (Porvoo Energia)	Design and consulting company (Ramboll Finland Oy, as well as various business representatives)

<p>Park alley lighting on the campus of Peter the Great St. Petersburg Polytechnic University (Project partner – Peter the Great St. Petersburg Polytechnic University; Russia)</p>	<p>-</p>	<p>Russian association of outdoor lighting</p>	<p>Regional authority responsible for infrastructure development - “Lensvet” un “Energy Saving Center” Regional Managing Authority (Committee on Energy and Engineering Support of Saint-Petersburg)</p>	<p>Technical research educational institution (SPbPU Center of testing of innovation solutions and SPbPU Chief Power Engineer Service)</p>	<p>“VIK Project” LLC design organization, “Slantsy-Elektromontazh” LLC commissioning works, “PEP” LLC equipment supply and installation, “Candela”. Environmental engineer, retired resident of the district, individual entrepreneur. Technical research institution - university students and lecturers</p>
<p>Canute Garden lighting in the Bastion Zone of Tallinn (Project partner – Tallinn Municipality, TalTech; Estonia)</p>	<p>-</p>	<p>National level policy makers - Estonian Association of Municipal Engineering, Environmental Board), research educational institutions (Tallinn Technical University, Estonian Academy of Arts)</p>	<p>-</p>	<p>Local level public administration institutions (Tallinn municipal departments, Tallinn City Center Government)</p>	<p>Designers and engineers from various companies, Tallinn Old Town Community, Kalamaja Community, Russian Culture Centre</p>

Table 15 – Stakeholders involved in dissemination of the results

Analyzing the stakeholder matrixes, it can be concluded that majority of the Project partners have involved local and regional level institutions and organizations. Latvia and Estonia have also involved national level organizations and institutions that could further disseminate information. Finland and Poinstra partner have involved a large number of companies working in the field of lighting and energy. There are Project partners having also successfully involved activists and their communities and organizations.

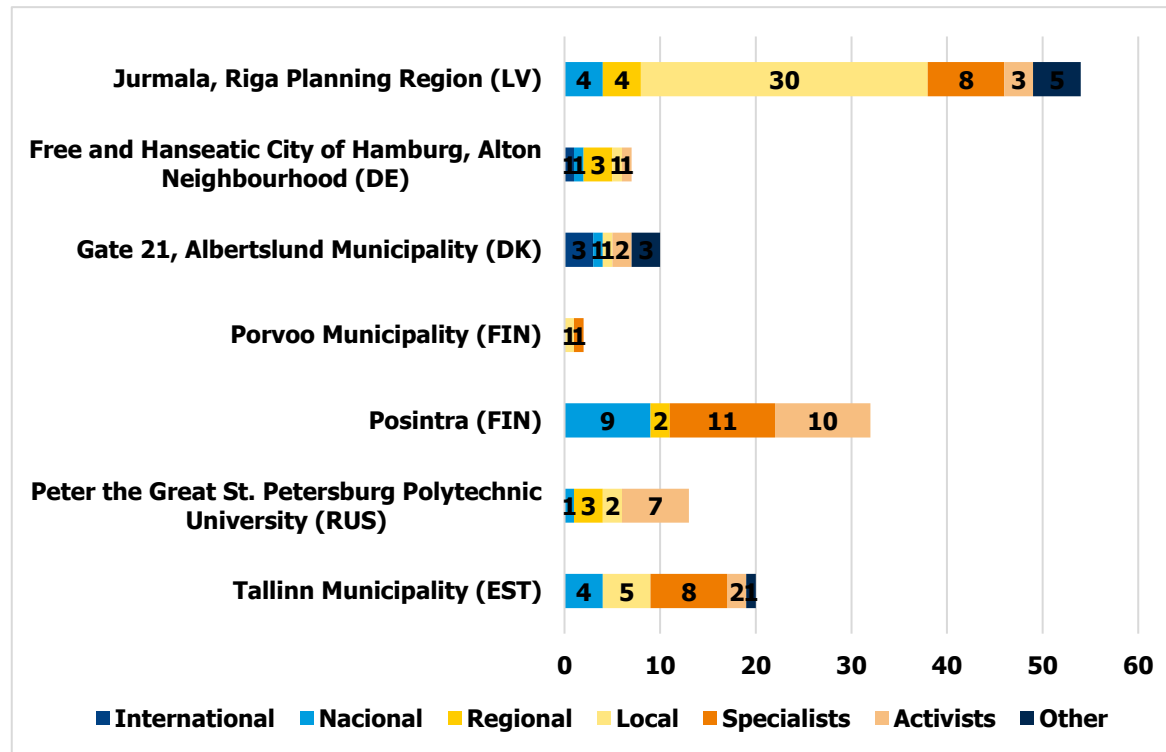


Figure 1 – Number of stakeholders at different levels in the Project partner countries³

³According to the stakeholder matrix of *Gate 21*, Albertslund Municipality is a stakeholder. Project partners *TalTech* have no stakeholder matrix.

5. Recommendations for better dissemination of solutions and identification of new stakeholders

This chapter describes the preconditions and provides recommendations for a more successful implementation of replication activities, taking into account the experience acquired within the LUCIA project. These recommendations are addressed to LUCIA project partners, who are responsible for project planning and implementation of various activities. The recommendations are structured in four parts:

1. The first part is general recommendations for project planning and management. This section analyzes the various aspects of project planning observed in the LUCIA project that should be taken into account in future -in other similar projects. Recommendations are important to ensure the successful implementation of the project.
2. The second part provides specific recommendations for more successful replication of the Project results.
3. The third part gives practical recommendations on how to revitalize multiplication activities both on-site and online, and how to increase the interest of the audience in them.
4. The fourth part provides recommendations about networks, platforms and organizations that can be involved by the Project partners in disseminating the results of the LUCIA project.

5.1. Project planning and coordination

Successful implementation of the Project requires careful planning of the Project steps at the beginning and ensuring effective Project management in the course of its execution. Well-considered Project planning is also a precondition for a more successful replication of Project results, which is particularly important within the *LUCIA* project. A summary of these preconditions, highlighting the successful examples, as well as a brief description of the cases where any problems were observed is provided further.

- Careful selection of the pilot project location. This is one of the most important preconditions directly affecting replication activities. A location of the pilot project, which is frequently visited by tourists and locals, will make it possible to reach the audience with less challenge. The LUCIA project aims to disseminate information to the widest possible audience, explaining the economic and environmental benefits, as well as technical and social benefits of the solutions. For example, in the case of Jurmala and Tallinn cities, the central streets and places of the cities where a large number of people gather daily were selected for the implementation of the solution. In turn, for example, the Finnish pilot solution was introduced in an area that is still under development. Reaching public in such cases can be more challenging.
 - When selecting the location of the pilot project, it is desirable to carry out, as far as possible, an in-depth site examination – exploration of land, engineering communications, road accessibility, special site requirements and other aspects. Of course, the development of the solutions in these areas is welcome and necessary, but it must be borne in mind that it may create additional difficulties in implementing the solution at a later stage, creating a possible need to redirect financial and human resources from other activities. In the case of Finland, already mentioned, the implementation of the solution required land preparation works, as the area is located by the river and therefore requires special preparation,

land improvement effort was needed to make it accessible and visually attractive. The partner has successfully coped with this, but compared to other partners, the implementation of the Project was more technologically complex.

- The solution development and implementation plan should be worked out in a co-creative format. The choice, description and justification of the solution to be implemented within the Project are a challenge. In order to promote the creation of an innovative and interesting solution, it is recommended to involve the creative industries in the planning process. By promoting co-creation in creative workshops, which are becoming increasingly popular today, it is possible to give birth to new, unique products or services. Furthermore, creation of an interesting, unique solution is essential to increase the interest of different groups in the pilot project and to be able to more successfully convey the target message of the Project through replication activities.
- Involvement of stakeholders at the earliest possible stage of the Project is essential, especially in the case of politicians and local authorities. This is a precondition that directly affects the replication activities implemented within the Project. Early stakeholder involvement ensures that all parties have a common understanding of the result to be achieved and the Project's objectives. If there are differences of opinion, they can be resolved early. At early stages of the Project, it is possible to plan the work more efficiently, because experts in various fields are involved in the development of the plan and identification of risks. In addition, by involving partners and stakeholders at an early stage of the Project, a snowball effect is achieved – the informed parties have more time to inform others about the solutions, and they pass this information further on. In the end, a larger target group⁴ is reached, the Project replication activities are implemented more efficiently and with less resource consumption, and the message of the Project's benefits can be better embedded in people's minds. This approach also helps to ensure that more people arrive at the opening of a solution or demonstrations.
 - The biggest challenge at the start of the Project is to find stakeholders – especially policy makers. As indicated by the interviewed Project partners, key persons and activists, as well as previous connections play an important role in this process. Provided this, it is much easier to establish cooperation, as well as smoother progress of the Project. If the partner has a wide range of collaborating organizations, especially at government level, replication activities may be easier to implement. At the same time, it should be noted that a wide range of cooperation organizations does not provide a success story. This is a prerequisite that must be used properly. For example the partner Riga Planning Region had already developed close cooperation with a large number of municipalities within the Region before the Project. It helped them in replication activities, however, as observed, this advantage could be used even more effectively.
- Efficient work by pooling resources and performing work jointly with other Project partners is important. This is a prerequisite for implementing the replication plan with less resource consumption

⁴ See the LUCIA project presentation on the reach and involvement of stakeholders here: <https://atekom-portal.de/share/page/site/lucia/document-details?nodeRef=workspace://SpacesStore/9e6af48e-3e50-48b1-b482-e3aa378ad39b>

and for promoting greater creativity in the selection of replication ideas. In the end, it is possible to achieve a diverse program of replication activities, drawing experience from other partners, addressing gaps in time and strengthening the positive aspects of the activities.

- Given that the most common obstacle in both the *LUCIA* project and other projects is the limited human and financial resources, it is recommended that partners carry out similar tasks, such as the development of replication methodologies (questionnaires, discussion guidelines, etc.). Although each country and solution has its own specificities, it is possible to develop a common questionnaire or discussion content, a form for summarizing the results, which can later be adapted and translated. A good example, that can be mentioned here, is the stakeholder matrix, which had a uniform form and uniform filling guidelines for all project partners. Therefore, it is necessary to make more active use of networking opportunities within this Project by organizing individual or wider group meetings.
- At the organizational level, it is recommended to establish horizontal cooperation with other departments of the institution/organization at the beginning of the Project, for example, with the public relations department, as it possesses skills, resources and experience in disseminating information and addressing potential informants. It is desirable to avoid situations where all Project responsibilities are concentrated in the hands of one or two persons, as observed in the case of Gate 21 from Denmark, because it is challenging to fully focus on project planning, solution development and implementation, publicity and communication with stakeholders at the same time. If possible, it is recommended to involve several specialists on a part-time basis instead of one or two full time, as it is possible for a professional in a particular field to perform a type of work corresponding to his/her competencies faster. In the case of limited resources for individual activities, it is recommended to assess the possibilities of cooperation in the field of replication with volunteers or prospective professionals (students) who can do this work within their study programs, for example, by conducting questionnaires, interviews, writing press releases, developing informational applications or WEB pages. In no case of a partner, except for Peter the Great St. Petersburg Polytechnic University was such student engagement ensured.

5.2. Ways and channels of information dissemination

This section provides recommendations for more successful dissemination of the Project results. The recommendations are aimed at enabling the partners to more effectively address and engage the widest possible range of activists and thereby disseminate information on the innovative and environmentally friendly solutions developed within the Project. Recommendations:

- Diversification of the communication strategy and its adaption to the target groups. In order to ensure that replication measures reach the addressee, i.e. the target person gets interested in the appropriate form and content, it is essential to define the target groups to be reached, adapting the communication strategy to each of them. It is necessary to define:
 - Goals: what result you want to achieve.
 - Target group: what group you want to reach, address (the audience can be segmented by such characteristics as age, residence, gender, income level, level of education, field of

education or field of work/sector, status (young person, young parents, pensioners, etc.), target group values, interests or ‘sore points’). In particular, within this Project, it is recommended to segment the groups according to whether they are a public sector institution (adapting the communication strategy to its specifics and level), industry professionals (adapting the strategy to different areas). NGO or residents and communities or citizens and organizations (also adapting the strategy accordingly). Creating a customer portrait or *person* is recommended in this process. When defining the target group, it is highly recommended to read the information gathered in Chapter No. 4.2 of the Co-Creation Reader document⁵. In an excellent way, it provides more detailed recommendations and visual materials for choosing a target group.

- Content: what you want to talk about, what message you want to convey. It is important to diversify the language of communication for each target group (e.g. researchers, professionals, local people, etc.), as their interests and knowledge can vary. For example, people without knowledge of the field can be better addressed and interested in aspects associated with lighting – safety, outdoor walks, etc. By including only lighting, environmental impact and financial efficiency in communication, full attention of the audience may not be received.

Interviews with the Project partners indicate that the topics that interest people in general are safety, energy efficiency or how much the solution can save, design solutions and their suitability in the specific place. The issues that cause the most confusion are smart lighting technologies, municipal involvement in lighting issues, and the experience of other countries in the field of lighting.

- Channel: what channels/sources of information these groups prefer to use and which of them you want/can use.
- Form of communication: how the group prefers to receive information and how you can/want to present it to them;
- Time: when and how often we want to communicate, which days and times of the week are more suitable for the target group. Project partners point out that the most appropriate time of year to talk about lighting, for example, is autumn, winter. The dark time of the season can encourage people to think about lighting, as it can make this time more pleasant as well as safer.

According to the information available to the evaluators, a material has been created within the LUCIA project, in which the group segmentation approach was described: “Stakeholder mapping and involvement”⁶ (Developer: Riga Planning Region). Within their competence, the Project partners have taken these recommendations into account, since the replication action plan is most often developed separately for each of the target groups. At the same time, evaluators see an opportunity to develop the communication

⁵ Co-Creating Urban Lighting Solutions: Lucia Lessons Learned Report, April 2021, Borough of Altona of the Free and Hanseatic City of Hamburg

⁶ See the presentation for Project partners here: <https://atekom-portal.de/share/page/site/lucia/document-details?nodeRef=workspace://SpacesStore/beefeddc-bc2d-477e-85db-42d10f211c73>

strategy at an even more detailed level. The information acquisition channels and the level of prior knowledge of the specific target groups are recommended to be studied more in depth, as the most suitable forms or time of communication for the group were not always selected. This is confirmed by the fact that the online survey in the Hamburg pilot project had a low response rate (which means that the most appropriate information channels for the target group were possibly not selected); some partners point out that part of the content of the replication activities was not completely clear to some target group (so there was possibly no complete information on the knowledge of the target group or people with too different knowledge were invited into one group); the survey of the Finnish pilot project received low response (which means that no appropriate time and form was chosen to address the visitors); in the seminar organized within the pilot project implemented in Latvia it was not possible to provide experts with sufficiently precise information about the results after the Project implementation (so the event was not organized in the appropriate time period).

- Although the development of a specific communication strategy at the initial stage of the Project is time consuming, later in the replication process it outweighs the initial investment of time and resources, since the objectives and approaches of communication are clearer and therefore the audience is achieved with less time and financial resources investments, and there is a lower “drop-out” of participants because the information is adapted to each group, the most efficient ways to reach each group have been considered. This is particularly important in the *LUCIA* project, which involves stakeholders with a very different knowledge base: policy makers and planners, industry experts and the public (residents, NGOs). At the same time, as the Project partners have acknowledged, organizing events within a single target group can be a challenge due to the different knowledge and competencies of the audience. Such differences have been observed by the Riga Planning Region among the municipal representatives to be involved.
- Use of the platform “LUCIA Knowledge Center” to exchange information and to address and inform professionals, especially foreign professionals. The platform has been introduced to the Project partners by LUCI Association and the partner City of Gothenburg . Task of other project partners now is it to fill it with the content so that others can actively use it - that is important to fulfill the aspect of dissemination.
- Use of visual materials to disseminate information. Using visual materials (infographics, posters or even mobile applications) to convey information is more effective than simply writing text or listening to information in a seminar. It is recommended to use both approaches in combination, as they can ensure both a larger initial audience and a possibility to present more detailed information at a later stage. The Project has developed successful visual materials and videos, such as the pilot website developed by the Finland partner. The fact sheets worked out within the Project are also clear and understandable visual material that can be used to disseminate information. It is strongly recommended that video materials be developed about the pilot project site and the solution, because, as the Project partners acknowledge, it is an appealing way of information transfer. It is recommended to consider working on video materials together or sharing them with partners, so that other partners can also use them in the process of replication.

Visual solutions – images can also be included in surveys, asking respondents to choose between different solutions, different design proposals, or demonstrating how the everyday picture does change with/without the pilot project.

- Sharing the materials and their diversification on social networks should be continued by evaluating how to better reach the audience. Currently, the Project most often uses the social network of Facebook, Twitter and Instagram; less often, but also LinkedIn. The YouTube channel is not sufficiently used, which can also be effective in reaching certain target groups. LinkedIn can also be used more actively to reach new experts in the field. It is important not only to publish written information on social networks, but also to publish and share video materials.
- In the case of all these social networks, a precondition for effective communication is the fact whether and to what extent it is possible to reach the particular audience. If advertising services are not used to receive messages published by an organization, the target group should follow the organization or receive the message from other organizations or persons who share it. As it was found out in the interviews, in the current situation republishing the news is not fully used, for example, in the case of Jurmala Municipality and the Riga Planning Region; therefore it is recommended to ask the Project partners, stakeholders or other cooperation organizations to republish the news with a certain regularity and share the news with everybody interested in the subject. In the case of *LinkedIn* and *YouTube*, each country needs to evaluate which channel it could use and which is popular enough in the country.

In addition, it is recommended to consider purchasing an advertising service in order to ensure that the message reaches the target group directly. In this case, it is essential to define the parameters of the target group, and in order to do this more precisely and to understand how much time the target groups spend on a particular site, it is recommended to use the analysis tools created by the following sites:

- <https://www.facebook.com/ads/audience-insights>
- <https://analytics.twitter.com/about>
- and others.

In the current situation, according to the information available to the evaluators, no partner has carried out a demographic analysis of such users.

- Evaluation of the success of the dissemination campaign through regular monitoring. In the current situation, according to the information available to the evaluators, no partner has performed such an analysis because of a lack of resources, hence the partners at the moment do not have detailed information on the usefulness of specific replication measures, i.e. on the balance between the investment and the audience reached. However, it is important to gather such information in order to assess whether and how to adapt the replication measures so that the widest possible range of persons interested in the subject can be informed about the Project solution. Depending on the intensity of the communication activities, this would range from once a month to once a week. For this monitoring purpose, data about the number of views of a particular recording or video, the number of shared news and the number of "likes" can be used. In the case of websites, it is possible to obtain data on website visitors by using the tool:
 - <https://analytics.google.com/analytics/web/provision/#/provision>.
- In addition, if your campaign includes a specific slogan or keywords, it is recommended to use the Google tool that which offers the possibility to see Google users' information search habits in a

geographical scope, including the number of times the information was searched for with the specified keyword. The link to the tool is available here:

- <https://trends.google.com/trends>.
- Finding a specific approach to encourage the involvement of decision-makers and policy makers. This is an essential precondition for ensuring that the idea of a solution is taken over and implemented by another municipality. Experts and planners can clearly explain and justify the benefits of the solutions to politicians, and the information they provide plays an important role in the decision-making process of policy makers. As concluded in the interviews, addressing and engaging policy makers in the Project have been a challenge. Keeping attention of this group throughout the Project is an equally vital challenge.

One of the suggestions on how to encourage the involvement of decision makers is to invite decision makers and politicians to engage in the solution/installation opening or demonstration events. It is important for the representatives of this group to participate in public events; they like taking advantage of the opportunities to meet with their electorate. In addition to this, decision-makers and politicians can be interested in events in which foreign experts and heads of local governments from other countries share their experience, their problems and solutions to these problems. It is important for decision-makers and politicians to broaden their horizons and learn about the approaches used by other similar municipalities, as well as to compare themselves with other municipalities. According to one of the Project partners, the involvement of equal, prestigious people in the event promotes the motivation of policy makers to attend the event. In some cases, the choice of a prestigious event site can also play an important role in the decision of policy makers to attend the event.

In addition, the involvement of policy makers can be facilitated by a more personal approach – i.e. by verbal invitations to participate, by sending a personal e-mail to a particular policy maker. Formalized and signed invitations can also give the event a greater weight in the eyes of policy makers.

In turn, industry experts prefer events that provide new knowledge, offer the opportunity to meet other professionals in the field or demonstrate their own knowledge to others. Therefore, one of the recommendations that can be used by partners is to organize expert panels to discuss the solution, its advantages and disadvantages, sustainability, technology and other issues. Such panels can be organized separately or simultaneously with the demonstration of the solution, creating separate discussion rooms/discussion tents, such as at the talk festival *LAMPA*, which takes place in Latvia at the beginning of summer. Currently, the Project partners involve experts in the form of seminars, but do not organize expert panels or discussions, where they could share arguments in favour of one or other solution approach, where experts could talk in scientific or professional language about the latest trends or environmental impact issues.

- Taking into account the events related to lighting, the environment or cyclists and pedestrians, assess the participation possibility in them in order to introduce the audience to the pilot site and the developed solution. A good example is the Project partner from Germany planning to speak at the Velo-city Lisbon/Portugal 2021 and National Cycling Congress in Germany/Hamburg 2021 to talk about lighting and how it affects cyclists.

- Going to the municipal twinning towns/cities in other countries to present the solution. As a rule, there is usually a close contact and regular co-operation between them, so it is relatively easier to organize such an event.
- Adaptation to the circumstances of COVID-19 and redesigning information dissemination strategies and techniques. Given the spread of COVID-19 and the development of new strains of the virus, as well as delays in the supply of vaccines, on-site assembly is expected to be limited for several more months, especially indoors. A return to normal life can only be expected in the second half of the year. It is therefore essential that the plan of activities and events be rescheduled as soon as possible for successful completion of the Project, including the implementation of the replication plan. Currently, a waiting attitude among the Project partners can be observed, activities have been reduced and temporarily suspended.

The content of the planned events can be adapted to online activities – in the formats of seminars and webinars, which are already under way. It is recommended to supplement the activities with various interactive tools (*Miro*, surveys, etc.), as well as much more use of game elements should be introduced that help participants to keep their attention. More information on these is provided in the next section of this document.

It is expected that small-scale outdoor gatherings could be allowed during the spring months. Given that a number of partners consider that online events and activities cannot be provided online in the same quality as on site, it is recommended to plan some of the events outdoors – in the park/pilot solution area. Then it is possible to both accommodate distanced chairs and demonstrate the solution and related information. At the same time, it is recommended to obtain feedback from the participants immediately.

In order to gain encouragement and ideas for dissemination solution techniques, it is recommended to organize an informal exchange of views between the Project partners.

5.3. Recommendations and tools for attracting and retaining attention online and on-site

This section provides suggestions on how to revitalize multiplication activities both on-site and online, and how to increase the interest of the audience in them:

- Encouragement to obtain proposals from people and to give feedback on how they have been taken into account. Since the central person of the Project is a person who a safe, pleasant and sustainable environment with lower electricity costs and more environmentally friendly solutions is being created to, it is important for the replication activities to involve people in generation idea, discussion and decision-making – especially those who are residents of the neighborhood. This can be facilitated by allowing people to evaluate and vote for the preferred alternatives, as well as by inviting them to discussion.
- Taking a more personal approach in discussions, planning seminars and information events. If possible, more territorially attached local groups should be organized in replication activities, as they increase people's responsiveness. People in them feel safer and more personally addressed, better aware of specific neighborhood problems, needs or benefits. This has a positive correlation with the group's intentions and efforts to further disseminate information about the Project.

- Drawing inspiration from different approaches from other project partners, such as Finland:
 - In addition to the website, a virtual tool⁷ has been developed for dissemination of the Project information in Finland, where you can walk around the pilot project area and see the solutions. The tool is an outstanding idea, since it helps to attract the audience through its interactivity, as well as to introduce the solution to those target groups for whom it is not possible to reach this pilot area on their own. At the same time, it is important to emphasize that the development of tools goes hand in hand with an integrated communication strategy to make the target group aware of the tool. Otherwise, a situation may arise where resources have been spent on developing the tool, but its effectiveness is low. It is recommended to carry out regular statistical analysis of the page visits, especially in the context of each informative activity implemented, in order to assess how this activity has increased the page visits.
A section on the page is advised where people can leave their comments and questions about what they have seen, or fill in a small questionnaire to find out their opinions on what they have seen in a structured and clear way, as well as listen to information about the Project, as it will help reach people with visual impairments.
 - The Finnish partner has experience in organizing an attention-attracting event (light festival) in combination with finding out public opinion about the solution. It is also recommended for other partners to organize an attention-attracting event, during which they can introduce the solution to the people interested in the subject and identify the public opinion.
 - After the online workshop, the Finnish partner has found a way to compensate the participants for the lack of face-to-face meeting by giving coffee coupons on the grounds that it compensates for the missing coffee break in person. It is a simple and successful way to create participants' positive emotions and encourage greater responsiveness in the future.
- It is recommended to continue the webinar and seminar approach already started when organizing conferences and seminars online. The platforms where this can be successfully done are: Big marker, MS Teams, Zoom, Hopin, WebEx and others. Online events need to be "refreshed" with a variety of games or competitions, as they help retain the audience's attention, allow the organizers to make sure about the audience's knowledge and how well they have understood what they heard. For more detailed information about games and competitions see Appendix 1.
 - *Kahoot* tool – it offers a possibility to organize quizzes with different types of questions - single/multiple choice questions, yes/no questions, questions where it is possible to match answers in the correct order, open-ended questions (for obtaining feedback and ideas). Each question automatically displays the participants who have scored the most points.
 - *AhaSlides* is a tool similar to *Kahoot* mentioned above, where you can also create different types of questions: single/multiple choice questions, answers in image form, open-ended questions, rating scales. Participants can also ask questions in writing during the game.
 - Contest *Surprise quiz* – it requires a conference platform with a chat function. The prepared presentation includes slides with quiz questions. The presenter announces that a *Surprise quiz* has started/will take place during the presentation and that the chat is the

⁷Virtual Tool, <http://projektit.ramboll.fi/360/porvoo/lucia/valaistus/>

place where the correct answer is to be given. The point is scored by the first participant who submitted the correct answer in the chat. The participant with the highest score wins. The game presenter can place questions in several places of the presentations.

- The game *Find a Thing!* – it requires a conference platform (*MS Teams, Zoom, etc.*), where the participants participate with the video camera switched on. The game presenter has to name a feature and the participants find and show to the camera as soon as possible a thing that corresponds to the named feature, then the one who is the last to find the required thing names the next feature.
 - The game *Use Emoticon/GIF* – it requires a platform where all participants can place a response on the whiteboard (e.g. *MIRO*), a platform where *GIF* are available (e.g. *giphy.com*). The game presenter says an idiom or a sentence, then the participants are given time to find what they think is the best representation of the idiom or the sentence; the participants place it on the common board. Once the pictures are posted, each participant can award a point for what he/she thinks is the best answer.
 - The game *Create a Form* – it requires a conference platform (e.g., *Zoom*). The presenter names a shape; the participants have to place their hands and head so that all participants form the required shape. At the end, a screenshot can be taken so that the participants have pleasant memories in a visual format about participating in the event.
- **Including surveys, interactive tools or voting elements to encourage the involvement of all participants.** Examples of tools include the Miro board, where participants can take notes on a common whiteboard; the Mentimeter, where participants can answer questions and see the audience answers; or use, for example, of ZOOM to place symbols on a shared screen to show others the idea for which they express more support.
 - **Develop an application with a game to promote the Project.** Nowadays, an attractive and interesting way of presenting information is essential for attracting and retaining attention. In cooperation with students who study programming, it is recommended to consider development of an application that can inform about the solution in the game format, for example, by asking questions about the savings from lighting, about the ways the solution could help protect the environment, and so on. It is recommended that the game element be supplemented with some physical activity (orienteering), in which you have to go from point to point in order to reach the next question.
 - **When organizing on-site events, complement them with approaches that attract attention and raise interest:**
 - Inviting a progressive foreign expert to an on-site event of the Project will promote greater involvement of local experts and at the same time provide an opportunity to complement the expertise of local experts on the subject. The content can be made more interesting by organizing expert discussion panels indoors or at discussion festivals, such as the conversation festival LAMPA mentioned above. Such a festival can also be attended by foreign partners. The involvement of foreign experts and heads of local governments could also stimulate the interest of politicians in attending the replication event.
 - To attract interest of decision-makers/politicians, it is recommended to organize events where they can have the opportunity to be present at the opening of the solution or in demonstrations meeting with their voters.

- Inviting public figures to on-site events would increase public interest in the event, create more confidence in the solution developed and encourage awareness of the benefits of the solution.
- Organizing smart lighting festivals, like the Porvoo Municipality has done it, provides an opportunity to successfully address the public. The aim of the event is to attract public attention in an interesting way and inform about the Project activities and its significance in improving everyday life. It is recommended to develop such a plan of informative activities that is interesting and engaging for children, as this will also ensure the reach of adults.
- It is recommended to disseminate information related to the solution of the pilot project at other events taking place in the respective municipality – even in cases when they concern other subjects, such as children festivals, fairs, cycling races/cycling trips, etc.
- It is advisable to combine formal on-site events – seminars, demonstrations – with a practical task, such as walking a route by marking or answering questions at checkpoints, providing information about the route, for example by bicycle, or offering a tour around the solution area.
- It is recommended to organize learning about the pilot territory and the solution during a cycling trip, as the partner from Latvia plans to do it. Here it is essential to take into account that the trip takes place during the dark hours of the day, as this will allow you to get to know the lighting better.
- It is advisable to popularize the pilot solution by means of a mobile van that can travel around different municipal areas and places. Such an idea is planned the partner from Latvia.
- It is recommended to organize local, smaller and targeted events. For example, students and young people can be offered meetings in different parts of the city that are popular among young people, and they can be organized in an informal way. Given the theme of this particular Project, it would be most appropriate time could be the dark season; and the event should be organized with a specific goal, such as lighting or talking about lighting a specific place, so that young people can also be active in the dark period of the year.

5.4. Recommendations about platforms, networks and organizations that can be involved in disseminating Project objectives and results achieved

This section provides recommendations about networks, platforms and organizations that can be involved by the Project partners in disseminating the results of the *LUCIA* project. Initially, general recommendations for all Project partners are provided to all project partners. The second part of the section provides individual recommendations for each of the partners, taking into account their organizations involved so far. Although the situation is different for each country and Project partner, there are four key features that are the same for all Project partners. Their potential is under-exploited:

- The existing cooperation partners – the stakeholders have not been sufficiently evaluated. There is a suspicion that their potential for disseminating information may be greater:

- For example, in the case of Latvian partners, it is possible to make more active use of regional seminars, where representatives of regional municipalities meet (on average, 1–2 times a year). By disseminating information to this group, it is possible to encourage other municipalities to take over the practice.
- For example, in the case of German partners, local communities, associations, organizations in the Altona area can be involved more actively, disseminating information about activities, surveys, events and other actions.
- For example, in the case of Danish partners, it is possible to involve local people, associations, and organizations operating in the municipality of Alberslund more actively.
- For example, in the case of Finnish partners, it is possible to involve other municipalities and companies operating in the energy sector more actively, as well as local people, which are already successfully helping to disseminate the results.
- For example, in the case of the Russian partner, it is possible to involve even more students who could analyze and/or disseminate information as well as carry out research activities within the Project.
- For example, in the case of the Estonian partner, it is possible to involve municipalities and associations more actively.
- Local communities, associations and local youth centers are not used as a resource for disseminating the objectives and results of the LUCIA project. Often just local organizations – those of the neighborhood, town or village – are the most active, since they involve motivated, willing and capable residents/professionals. They can contribute significantly to the dissemination of information among both the elderly and the younger. Communities and organizations can help to reach the elderly, while young people (youth councils, youth organizations) – the younger and middle-aged population.
 - Addressing this part of the society will further reach the less active part of the society, for example, young people in educational institutions, sports activities, parents, relatives and acquaintances of young people. Creating such a cooperation model would achieve a snowball effect.
- People who have special needs and their representative organizations are not addressed in the Project, except in the case of one partner. Given that promoting environmental accessibility and the inclusion of different social groups is the horizontal priority for each project, it is recommended to involve this group in obtaining and disseminating information, as it can better adapt the environment for people who have special needs – both with reduced movement and visual and hearing impairments.
- Involvement of university students in achieving the Project goals and disseminating information is not sufficient – currently only the Russian partner has defined it as a specific group to which the information is purposefully transferred. Students are not only a fairly effective way to reach a wide audience (other students, their acquaintances, parents, etc.), but also a resource that can be used in targeted action of the Project. In cooperation with the study programme directors, students can be involved in identification of public or expert opinion (sociology students), spatial planning (urban planners), economic aspects and cost-benefit analysis (students of economics), project solution mobile application development (IT students). Moreover, both sides would gain – for students it would be a practical, real project to work on within their studies, it would help teachers to make

the learning process more interesting, and it would allow the partner to save the often lacking human resources and finances.

- Use base and networks of other projects to disseminate information.
- Involvement of new partners, institutions, organizations or community groups in disseminating the information:
 - In case of Latvian partners, Jurmala Tourism Information Center, Jurmala Culture Center, Jurmala NGOs, entrepreneurs in the field, business organizations (Business Advisory Council⁸) and the Council of Energy Experts⁹ could be more actively involved, as they could pass on the solution and Project ideas to entrepreneurs, representatives of educational institutions and other experts in the industry. The Council of Energy Experts meets regularly and is responsive to various initiatives and activities. The Jurmala Public Council, which unites active associations and foundations, as well as other NGOs can also be involved. The partner has also spoken about a need for greater involvement of landscape architects.
 - In the case of the German partner, the International School of Hamburg (ISH) could encourage the involvement of school students in Project activities.
 - In the case of the Danish partners, co-operation with the University of Copenhagen¹⁰ is possible, which would facilitate the exchange of information and knowledge.
 - In the case of Finnish partners, the Porvoo Multicultural Association¹¹ could help to involve representatives of other cultures in the Project activities and thereby contribute to their integration into society.
 - In the case of the Russian partner, cooperation with other universities could be developed, particularly one on which the partner has information that it is interested in the issue of outdoor lighting; as well as with private sector representatives/organizations.
 - In the case of Estonian partners, it is recommended to address energy sector companies and organizations specializing in lighting and to develop a network similar to the Danish partner. It is recommended to address new industry professionals who are interested in the subject and have the possibility to disseminate information.

Recommendations of the co-creation seminar for retaining the interest and maintaining cooperation of stakeholders after the end of the Project are the following:

- Surveys on the pilot site should be organized also after the end of the Project in order to maintain contact with the residents, as well as to inform the municipality about their opinion, which could decide on the need for further improvements.

⁸Jūrmala. *Uzņēmēju konsultatīvā padome*. Retrieved from: https://www.jurmala.lv/lv/pasvaldiba/konsultativas_padomes/17858-uznemeju-konsultativa-padome

⁹LDDK, Nozaru ekspertu padomes. Retrieved from <https://lddk.lv/atbalsts-biznesam/nozaru-ekspertu-padomes/>

¹⁰University of Copenhagen. Retrieved from <https://www.ku.dk/english/>

¹¹Multicultural association of Porvoo. Retrieved from <http://maporvoo.fi/>

- Information and invitation of stakeholders defined in the matrix to other activities related to lighting should be carried out.
- LUCI Association should continue joint planning meetings with Project partners, exchanging ideas and planning other activities. It is a global association through which the exchange of views can be organized. From project partners' countries unfortunately none of Latvia is in this organization. Cities such as Riga and Jurmala could evaluate their participation in it.
- Joint activities (discussions, guest lectures) should be organized by LUCI where stakeholders of all partners, in particular experts, can meet and exchange industry news and other current matters. This is relatively easier to do if the events take place online.
- Students should be involved in lighting research – by researching economic, technical and social aspects, allowing them to study and discover new dimensions, as well as, for instance, summing up and comparing the fact sheets collected by all partners. Long-term effects can be achieved by encouraging students to develop final theses on lighting installations, their differences and benefits.
- Industry representatives should be involved in the evaluation of new lighting solutions in the future, as well as possible technological improvements in the pilot sites.

In the case of all future events, it is recommended to take into account the recommendations developed in Section 5.3. for revitalizing online and on-site events.

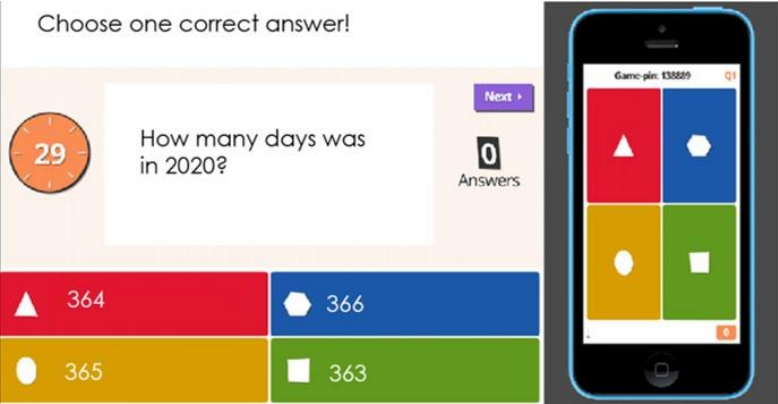
Summary

The six pilot practices / solutions included in the Service have been presented and analyzed from different perspectives, but the main purpose of this assessment was to evaluate the current dissemination practices of the solutions and their success, as well as to suggest improvements.

Initially, an extensive collection of information, both quantitative and qualitative, and descriptive, was carried out for each Project partner, using a unified, structured approach, thereby providing an opportunity to analyze the partners according to the same approach. The result was, firstly, the profile of each partner, i.e. information on the sector represented (public, private), the type of governance (local, regional, national or international) and their role or main work to be carried out in the Project. Secondly, a structured overview of the result multiplication (information acquisition and dissemination) activities carried out by the Project partners was obtained. Third, a brief and structured overview of each partner's networks and organizations involved in disseminating the results is provided.

All the information obtained and structured according to the same approach allowed to identify the most successful models and correlations that provide better results. The recommendations are summarized in Chapter Five of this Report. General and overall recommendation for future projects – all partners should choose a common strategy for dissemination of the results, i.e. common guidelines should be followed. By defining such type of dissemination guidelines common to all Project partners, the proposed ones should be designed with the desired final result in mind, i.e. the target groups to be achieved and the type of message and purpose to be disseminated should be structured and defined as precisely as possible. Such common approach would not only make the work more efficient, but would also provide productive feedback.

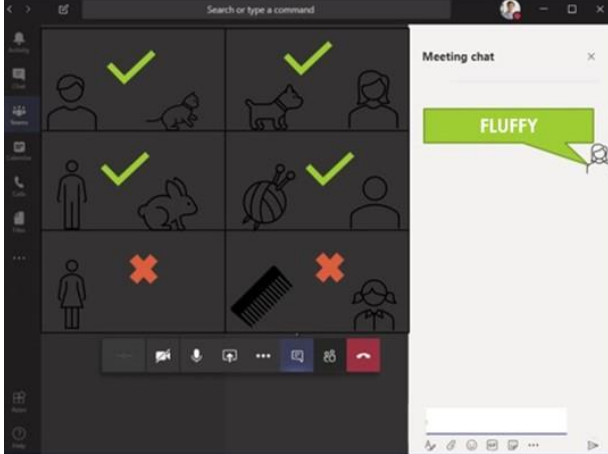
1. attachment – Quiz platforms

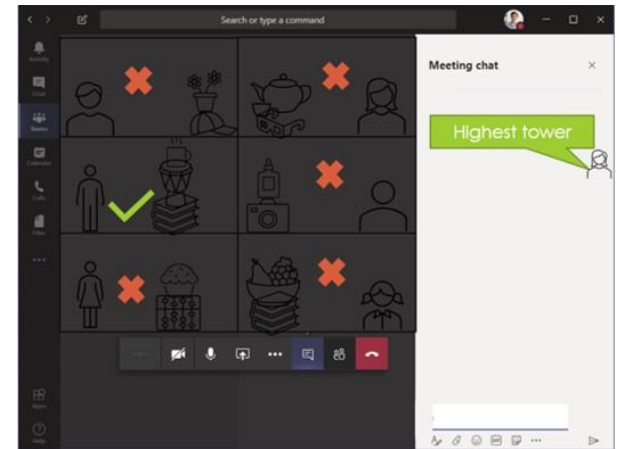
PLATFORM	FUNCTIONS	OTHER INFORMATION	EXAMPLE
1. Kahoot	<p>It is possible to create quizzes with different types of activities:</p> <ol style="list-style-type: none"> 1) single/multiple choice questions. 2) True or false questions. 3) By putting the answers in the correct order. 4) By open ended questions (<i>feedback</i>). <p>After each question participants are shown in leaderboard.</p>	<p>To implement the quiz, there are another conferencing platform needed where the presenter can share the screen (<i>for example, MS Teams, Zoom</i>).</p> <p>Participants do not need to pre-register or download the application.</p> <p>The quiz host can download the results of the quiz in MS excel file.</p> <p>Participants must have two devices, because the quiz host shares the screen with the question, while the participant's device does not show questions, but only the color and shape of the answer options.</p>	

2. Possible to create Quiz questions can be connected and integrated into the Google Slides.
- AhaSlides** Possible to add sound effects to the quiz, as well as a wide range of options for quiz design. Participants can log in by entering an online link in a web browser or by scanning a QR code.
- 1)Single/multiple choice questions.
- 2)Answers in image format.
- 3)Open ended questions.
- 4)Rating scales.
- Participants can write questions to the host during the game.



2. attachment – Web conferencing energizers and games that encourages participants to "wake up."

GAME	REQUIRED	RULES	OTHER INFORMATION	EXAMPLE
1. Find it	Conference platform (<i>MS Teams, Zoom</i>) in which participants are with turned on video cameras.	<ol style="list-style-type: none"> The game manager names a feature (<i>such as red</i>). Participants, as soon as possible, find and display in the camera the found object that corresponds to the named feature. The last one who finds the required thing names the next feature. 	<p>It is also possible to limit the time for the round (for example, 20 seconds). In this case, all the features are called by the game host. If the participant does not find the object within the specified time, he/she withdraws from the game.</p> <p>Continuing the game features can become more complex (for example sticky).</p> <p>Alternative option: Ask participants to find a specific object (for example screwdriver) or perform a task (such as building the</p>	

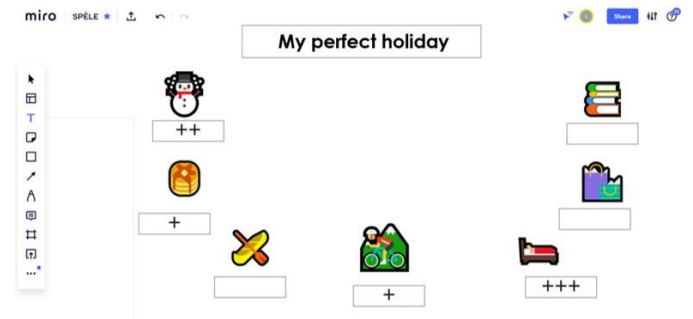


2. Picture it

-Platform where all participants can post an answer on the whiteboard (for example MIRO).
- Website with GIFs (for example giphy.com).

- 1) The game host names an idiom (for example *broke leg*) or a statement (for example, *today is a great day because...*).
- 2) Participants are given time (for example, *1 minute*) to find a suitable representation for the sentence and place it on the whiteboard.
- 3) Thereafter, each participant awards a point for the answer he/she likes the best.
- 4) The player with the highest score is the winner.

The rules for the game can be different, for example, the sentence can be represented with an emoji, GIF, picture, or drawn by the participant himself.



3. Pop quiz

- Conference platform with chat function (for example, MS Teams, Zoom).

1) For this game it is necessary to include slides with quiz questions in a prepared presentation. Questions can be on any topic, including the facts mentioned previously in the presentation.

2) The host announces that a pop quiz has started and that the correct answer must be written in the chat section.

3) The participant who writes the correct answer first – receives a point.

4) Such slides can be placed in separate places in the presentation and it is important that participants are not warned.

The advantage of the game is an unlimited number of players. In this case, the winner can be determined objectively and easily, because the answers must be written in a chat.

This game can increase participants involvement and concentration to the presentation, especially if the winner can win a prize.



		5) The participant with the most points is the winner.	
4. Create shape	- Conference platform where participants are displayed in the same size, as well as the order of the images does not change and all participants devices are displayed in the same way (<i>for example, Zoom</i>).	1) The host names a shape (<i>for example, rectangle</i>). 2) Participants must place their hands/head left/right, so that all participants form the required shape. 3) Once the participants have created the shape, the host can take a screenshot.	Before starting the game, participants and hosts video conference options need to be set to a gallery view, so that everyone has the same image size. The game can be played up to 25 players, or as much as the specific platform allows to display in one screen. Shapes can also become more complex (<i>for example, tree, heart, house</i>). The advantage of this game is the active involvement of all participants in the game.
