

Smart Light Concepts

D 2.2.2 Report describing important issues for feasibility studies of local SLIC-low-carbon PL-systems

The paper (D 2.2.1) will be discussed during one of the meetings in order to evaluate the process of project development. PP3 and LP will jointly write the overall conclusions and evaluation of the processes of feasibility and design of the pilots, the successes and pitfalls and the extrapolation and recommendations for future projects.

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1. Introduction

This document describes overall evaluation and conclusions of the processes of feasibility and design of the pilots, the successes and failure and the extrapolation and recommendations for future projects. This document could be helpful for future European projects by giving some insights on success and failure factors of the project from the perspective of the SLIC project. In the deliverable D2.2.1, analysis of success and failure factors of the SLIC project revealed some critical factors as listed below.

- Technology and System Assessment.
- Economic Viability.
- Operational Considerations.
- Legal Ramifications.
- Schedule and Resource Concerns.
- Monopoly of Public Lighting system - The Project team (ie. Municipality) has complete ownership of the Public Lighting (PL) system
- Clear way of working with data harvested from PL system (collection, storage, analysis)

Failure factors considered are as follows:

- Unrealistic estimations such as being too ambitious about the goals, duration and costs.
- Project lacks structure
- Some costs are not considered
- Communication issues in project management.
- Irresponsible project members.
- Unavailability of relevant technical knowledge within project team
- Involving too many external partners/subcontractors
- Not having a well functioning data-infrastructure prior to the project

In the light of these factors, processes of feasibility and design of the pilots were outlined in D.2.2.1. In this document, the overall conclusions and evaluation of the processes of feasibility and design of the pilots (Deliverable D.2.2.1), and future recommendations are presented.

2. Evaluation process of the project development

The evaluation process was conducted by covering four groups in line with the feasibility study of the pilots. These are

- **Pilot partner planned objectives:** Whether planned objectives were accomplished or not?
- **Defining specifications of newly installed Public Lighting (PL) systems:** What are the specifications of the newly installed PL systems to achieve the objectives?
- **Defining specifications of lighting control units:** What are the specifications of the newly installed lighting control units to achieve the smart technics on PL ?
- **Measuring energy savings after new PL Installation:** Whether energy saving was measured or not, if measured was there any energy savings observed or projected?

The overall statistical responses of pilot partners for the factors considered in deliverable D 2.2.1 is outlined in Appendix A. In this section, detailed statistics of the factors that affect the pilots on achieving their feasibility study goals are described.

2.1 Technical capability

The first factor for success and failure investigation is the technical capability of the pilots (Figure 1). 43% of the pilots reported that they have the technical capability to implement PL strategies on their own. However, 43% of the pilots indicated that even though they do not have the technical capability, they arranged external experts to implement the project plan. It was reported that working with external experts causes delays in the implementation of the stages of the project.

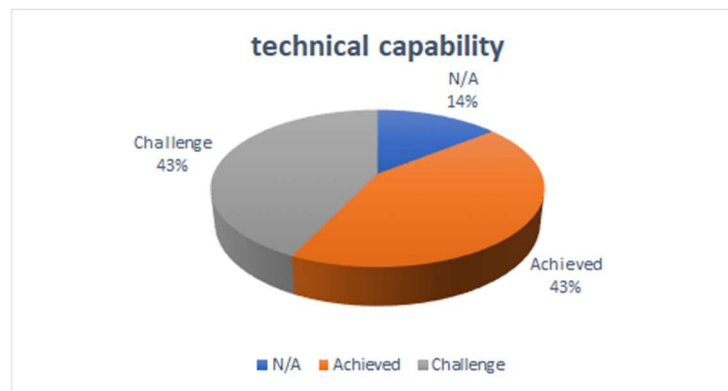


FIGURE 1 TECHNICAL CAPABILITY ANALYSIS OF PILOTS

2.2 Operational feasibility

It was found that most of the pilots have a feasibility study prepared before the project started. This has a positive impact on identifying the expectations from the project, and a timeline to plan their activities towards achieving their goals. More specifically, it is reported that operational feasibility was achieved successfully in the majority of pilots (Figure 2). The most important factor for achieving operational feasibility was defined as easy communication within pilots also between pilot and lead partner. Two pilot partners reported that communication was challenging. One partner reported coordination between external experts in order to implement their PL strategies was challenging, and the second one reported about delays and challenges for budget shifting requests.



FIGURE 2 OPERATIONAL FEASIBILITY ANALYSIS OF PILOTS

2.3 Implementation time

Another evaluation factor of pilots' feasibility study is time where whether they were able to finish their implementation on time or not was investigated (Figure 3). Even though communication was easy between pilots, dependency on external experts and covid-19 situation affects pilots' timeline, where only 29% reported as achieved their goals within planned duration.

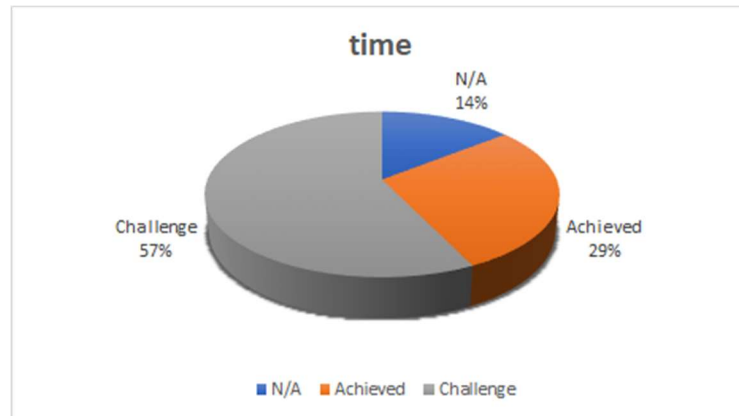


FIGURE 3 PROJECT IMPLEMENTATION COMPLETION TIME ANALYSIS OF PILOTS

2.4 Legality assessment

Another factor for evaluating the feasibility study was legality assessment of the project by pilots. The analysis (Figure 4) showed that 57% of the pilots indicated that they assessed the project implementation in their area in terms of the regulations, where 14% of the pilots said the legality check of the project was done after project implementation finished. But 29% of pilots did not provide any information for this evaluation criteria.



FIGURE 4 PROJECT LEGALITY ASSESSMENT SITUATION OF PILOTS

2.5 Risk assessment

In this factor, the main aim was to investigate whether the pilots are assessed the risk factor of the project implementation or not. Figure 5 shows that 73% of the pilots have considered risks or are aware of the risks involved in the project implementation, while 14% of the pilots indicated that there is an ongoing process to assess the risks. On the other hand, 14% of the pilots indicated that they have not assessed the risk factors of the new PL yet.



FIGURE 5 PROJECT RISK ASSESSMENT SITUATION OF PILOTS

2.6 Budget

Budget was considered as another success or failure factor of feasibility study of pilots. In this assessment category, the aim was to identify how pilots found budget management of projects to achieve their target. 86% of pilots indicated that the budget was enough to implement PL installation (Figure 6). While 14% of pilots did not provide any information about this factor.



FIGURE 6 BUDGET FACTOR FOR FEASIBILITY STUDY SUCCESS OR FAILURE ASSESSMENT OF PILOTS

2.7 Environment target

The final factor that was considered was environmental target (Figure 7) where the assessment for whether energy saving is accomplished or measured. This is the ultimate goal of the SLIC project. Therefore, this could be considered as the most significant factor to evaluate whether a project achieved its aim or not. Pilots indicated that the SLIC project helped them to implement new lighting technologies such as LED, dynamic dimming, sensor, radar etc. 28 % of the pilots (2 pilots) did not provide any information regarding this factor. However, 43% of the pilots (3 pilots) showed that they have not done energy saving measurement to see the level of energy saving is succeeded with the new PL implementation, and 29% of pilots (2 pilots) indicated they measured and were able to see energy saving with new PL installation. These statistics and more detailed answers of each pilot partner for this factor can be found in Tables 1 and 2 of Appendix A.

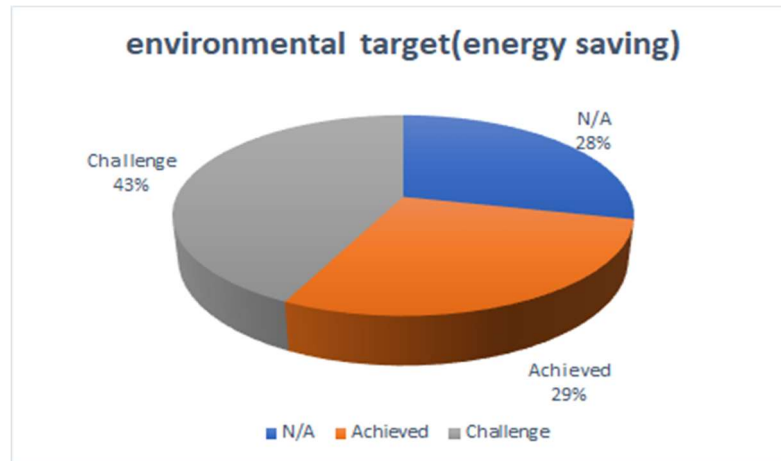


FIGURE 7 PROJECT ENVIRONMENTAL TARGET CHECKING ANALYSIS OF PILOTS

2.8 Evaluation summary

Overall, the budget is found to have the highest success rate for feasibility study of pilots. For operational feasibility, pilots indicated that healthy communication between lead partner and project lead was one of the main reasons for the success. Although there was a lack of technical expertise in the pilots, project execution was able to be carried on by external experts. However, this led to delays on PL system installation due to the need for additional planning and communication. In addition, having technical experts in the pilots could be a reason for delays on risk, legality and environmental target assessment of new installation. Moreover, other factors like Covid-19 greatly contributed to further delays.

3. Future recommendations

Future projects can benefit from the assessment of the success and failure factors of feasibility study of SLIC pilots. First, having a technical expert on the project domain in the organisations could accelerate project implementation, which could contribute to finishing the plans on time. If this is not feasible, external expertise should be sought, with clear up-front agreements on support before and during project execution. Secondly, measuring project outcome could be a priority from the beginning of the project that may give insights of achievement of project success. Projects can be delayed for several reasons (e.g Covid-19), therefore there should be a backup plan to deliver project outcomes on time. Budget is also an important factor to accomplish the project goals. Accordingly, if pilots do not face any budget related issues, the project timeline will be less affected. However, budget is not the only factor for project success as having a clear plan and technical experts to carry on the implementation of the plans should be a requirement for a smooth project delivery.

Appendix A

Table 1: Pilot partners' responses on the evaluation factors of feasibility study in document D 2.2.1. In this table; **N/A** indicates no information is provided, **P** shows that project target is achieved for the related factor, while **C** indicates that target not achieved currently, which is considered as a challenge/failure for the related factor of the pilot partner's feasibility study.

Pilot Partner	Considered factors to evaluate feasibility study of pilot partners						
	Environmental Target	Time	Risk	Operational feasibility	Legality	Technical capability	Budget
PP2	N/A	N/A	N/A	N/A	N/A	N/A	N/A
PP4	P	C	P	C	P	P	P
PP5	N/A	P	P	P	C	P	P
PP6	C	C	P	C	P	C	P
PP7	P	C	C	N/A	N/A	C	P
PP9	C	P	P	P	P	C	P
PP10	C	C	P	P	P	P	P

Table 2 Overview statistics of Table 1: This table shows the sum of **N/A**, **P** and **C** in each factor for all pilot partners.

Result	environmental target (energy saving)	time	risk	operational feasibility	legality	technical capability	budget
No information provided (N/A)	2	1	1	2	2	1	1
Achieved (P)	2	2	5	3	4	3	6
Not achieved currently (C)	3	4	1	2	1	3	0