

(Projects funded under the Call 2014 onwards must use this format)



LIFE Project Number
LIFE16 ENV/IT/000004

Final Report
Covering the project activities from 01/10/2017¹ to 30/09/2021

Reporting Date²
<31/12/2021>

LIFE ASPIRE PROJECT
**Advanced logistics platform with road pricing and access
criteria to improve urban environment and mobility of goods**

Data Project

Project location:	Lucca, Italy (also Zadar, Croatia; Stockholm, Sweden)
Project start date:	01/10/2017
Project end date:	30/09/2020 Extension date: 30/09/2021
Total budget:	€ 1.865.799,00
EU contribution:	€ 1.037.488,00
(%) of eligible costs:	60%

Data Beneficiary

Name Beneficiary:	Comune di Lucca
Contact person:	Mr. Luca Nespolo
Postal address:	Via S.Giustina, 6 - 55100 Lucca
Telephone:	+ 39 0583442339
E-mail:	lnespolo@comune.lucca.it
Project Website:	www.life-aspire.eu

¹ Project start date

² Include the reporting date as foreseen in part C2 of Annex II of the Grant Agreement

This table comprises an essential part of the report and should be filled in before submission

Please note that the evaluation of your report may only commence if the package complies with all the elements in this receivability check. The evaluation will be stopped if any obligatory elements are missing.

Package completeness and correctness check	
Obligatory elements	✓ or N/A
Technical report	
The correct latest template for the type of project (e.g., traditional) has been followed and all sections have been filled in, in English <i>In electronic version only</i>	✓
Index of deliverables with short description annexed, in English <i>In electronic version only</i>	✓
<u>Final report</u> : Deliverables not already submitted with the MTR annexed including the Layman's report and after-LIFE plan Deliverables in language(s) other than English include a summary in English <i>In electronic version only</i>	✓
Financial report	
The reporting period in the financial report (consolidated financial statement and financial statement of each Individual Beneficiary) is the same as in the technical report with the exception of any terminated beneficiary for which the end period should be the date of the termination.	✓
Consolidated Financial Statement with all 5 forms duly filled in and signed and dated <i>Electronically Q-signed or if paper submission signed and dated originals* and in electronic version (pdfs of signed sheets + full Excel file)</i>	✓
Financial Statement(s) of the Coordinating Beneficiary, of each Associated Beneficiary and of each affiliate (if involved), with all forms duly filled in (signed and dated). The Financial Statement(s) of Beneficiaries with affiliate(s) include the total cost of each affiliate in 1 line per cost category. <i>In electronic version (pdfs of signed sheets + full Excel files) + in the case of the Final report the overall summary forms of each beneficiary electronically Q-signed or if paper submission, signed and dated originals*</i>	✓
Amounts, names and other data (e.g., bank account) are correct and consistent with the Grant Agreement / across the different forms (e.g., figures from the individual statements are the same as those reported in the consolidated statement)	✓
Other checks	
Additional information / clarifications and supporting documents requested in previous letters from the Agency (unless already submitted or not yet due).	✓
This table, page 2 of the Final report, is completed - each tick box is filled in <i>In electronic version only *signature by a legal or statutory representative of the beneficiary / affiliate concerned</i>	✓

1. Table of contents

1. Table of contents	3
2. List of key-words and abbreviations	4
3. Executive Summary.....	5
4. Introduction	9
5. Administrative part.....	12
6. Technical part	14
6.2. Main deviations, problems and corrective actions implemented	49
6.3. Evaluation of Project Implementation.....	51
6.4. Analysis of benefits.....	57
7. Key Project-level Indicators	63
8. Comments on the financial report	64
8.1. Summary of Costs Incurred.....	65
8.2. Accounting system	66
8.3. Partnership arrangements	69
8.4. Certificate on the financial statement.....	70
8.5. Estimation of person-days used per action.....	70

2. List of key-words and abbreviations

Acronym / Abbreviation	Description
ASPIRE	Advanced logistics platform with road pricing and access criteria to improve urban environment and mobility of goods
ACS	Access Control System
ARPAT	Regional Agency for the Protection of the Environment of Tuscany Region
EVI	Electronic Vehicle Identification
GVM	Gross Vehicle Mass
KPI	Key Performance Indicator
ICT	Information and Communication Technologies
ITS	Intelligent Transport Systems
L/U	Load/Unload
OCR	Optical Character Recognition
PHEV	Plug-in Hybrid Electric Vehicle
FEV	Full Electric Vehicle
PUT	Urban Traffic Plan (UTP)
RFID	Radio Frequency Identification
RTZ	Restricted Traffic Zone
SULP	Sustainable Urban Logistics Plan
SUMP	Sustainable Urban Mobility Plan
GPOT	General Plan on Urban Traffic
UCC	Urban Consolidation Center
UHF	Ultra-High Frequency
VHF	Very High Frequency

3. Executive Summary

The objective of LIFE ASPIRE is the implementation of a set of measures (regulatory, organizational, operational and technological) related to city logistics processes and in particular to last mile deliveries, setting up a rewarding system (“credit-based rewarding” policy) to promote sustainable freight distribution in urban areas. LIFE ASPIRE aims to help the city in achieving higher standards of energy efficiency and urban air quality and, consequently, improving the quality of life of people (in particular of residents but also tourists).

In order to address LIFE ASPIRE objective, a Logistic Credit Management Platform (LOCMAP) dedicated to urban freight distribution processes in Lucca has been developed and proved to be an innovative tool to manage flexible and differentiated “credit based” regulation and pricing criteria for last mile delivery. LOCMAP integrates the RTZ access control system and manages two new logistics services for operators.

In particular, three different technological solutions have been put in place:

- 22 RTZ entry/exit gates with new RFID system in order to monitor operator access/exit in/from the RTZ.
- 34 L/U parking lots, equipped with smart wireless sensors under the road surface.
- 3 cargo-bikes stations with three cargo bikes each available for transport operators.

A specific replicability and transferability analysis of measures/solutions implemented in Lucca have been carried out in Stockholm and Zadar, taking into account their specific and different contexts.

The LIFE ASPIRE work plan includes 13 actions, packaged into the usual LIFE structure. All the actions have been successfully completed.

A. Preparatory Actions - Completed preparatory activities aiming at verifying, detailing and consolidating the requirements of the services/measures to be activated, during the demonstration phase, in Lucca. LIFE ASPIRE Cities & Stakeholder Supporting Forum – CSSF and Technical and Scientific Committee (TSC) were established. An innovative “credit based rewarding policy” and eco-sustainable city logistics measures/ services as well as the supporting ICT were designed.

Key deliverables submitted:

A.1.1 LIFE ASPIRE Stakeholders and User Needs Analysis report

A.2.1 LIFE ASPIRE city logistics rules, measures, services and support ICT design

B. Implementation Actions - The implementation phase has represented the core part of the project, aimed at demonstrating LIFE ASPIRE measures and rewarding system -The activities developed are mainly related to:

- a. the deployment of LOCMAP platform and integration with installed technologies (action B1) and the launch of the LIFE Aspire App;
- b. the demo site preparation and deployment activities including all procedures for setting up technological equipment (action B2);
- c. the demonstration activity (action B3) has been carried out with the 2596 RFID TAGs distributed in the 2020 permits campaign and still working. From an initial analysis of the data, it was possible to create a ranking of logistics operators who have distinguished themselves for their sustainable behaviour in accessing and delivering in the historic centre.
- d. the definition for both Zadar and Stockholm of the baseline in order to describe the existing situation in the target areas and then the analysis of the most important aspects

interesting for replicability and transferability in the two different contexts, thus facilitating the pedestrians, tourists and residents to the RTZ (action B4).

Key deliverables submitted:

B.1.1 LOCMAP Platform, ICT systems and supporting technologies: implemented solutions

B.2.1 Trial and demonstration plan

B.2.2 Deployment of ICT solutions and logistics equipment installation

B.2.3 Deployment of ICT solutions and logistics equipment installation - Final Report

B.3.1 LIFE ASPIRE measures and services: intermediate demonstration monitoring report

B.3.2 LIFE ASPIRE measures and services: demonstration report

B4.1 - Replicability and Transferability analysis in Zadar Report

B4.2 - Replicability and Transferability analysis in Stockholm Report

C. Monitoring of the impact of the project actions - The monitoring activities were devoted mainly to the definition of the criteria for the evaluation of LIFE ASPIRE measures and services, by means of a specific set of indicators.

Indicators for different categories of evaluation were detailed (action C.1). Data collection was made collecting data automatically by LOCMAP platform related to the vehicles access/exit and stay within the RTZ, (action C.2). Moreover, information related to socio-economic aspects were collected from the municipal offices and concerning environmental data, the overall air quality level has been considered mainly thanks by data provided by on-site air quality monitoring station. Eventually, as requested by LIFE program, LIFE performance indicators were kept monitored and updated (action C3). Key deliverables submitted:

C.1.1 - LIFE ASPIRE Evaluation Plan.

C.2.1 - LIFE ASPIRE data collection report

C.3.2 – LIFE ASPIRE performance indicators

C.3.3 - LIFE ASPIRE performance indicators (xls file) - at Final report stage

C.4.1 - LIFE ASPIRE environmental impacts evaluation

C.4.2 - LIFE ASPIRE socio-economic impacts assessment

C.4.3 - LIFE ASPIRE Business Case

C.4.4 - EU Policy recommendations

D. Public awareness and dissemination of results - Concerning communications and dissemination tasks, overall project communications and dissemination activities were defined: visual identity was set up, LIFE ASPIRE official website was published as well as other dissemination material (e.g. Notice Board; 8 LIFE ASPIRE Newsletters, promotional material, presence on social media). The partners participated to several international events related to project topics, three Annual Workshops (in Lucca and in Stockholm and then virtually hosted by Zadar) were successfully organized. Eventually, networking activities with other European projects were implemented.

Key deliverable submitted:

D.1.1 The LIFE ASPIRE Dissemination and Promotion plan (DPP)

D.1.2 LIFE ASPIRE Official Project Website - Software (URL: <http://www.life-aspire.eu/>)

D.1.3 LIFE ASPIRE “Visual identity”

D.1.4 LIFE ASPIRE Official Notice Boards

D.1.5 - LIFE ASPIRE Annual Workshop (n. 3 events)

D.1.6 – Scientific papers (at least n. 3)

D.1.7 Newsletter n.8

D.1.8 - LIFE ASPIRE International Final Conference

D.1.9 - LIFE ASPIRE Official Video

D.1.10 – LIFE ASPIRE Layman's Report

D.2.1 – LIFE ASPIRE Replicability and transferability strategy Plan

E. Project management - The necessary project management activities (both technical and administrative/financial), were aimed to establish required project operation and coordination structures, to foster cooperation among project beneficiaries and to perform necessary operation and control procedures. In the last two years, the Coordinator submitted to the Commission on behalf of the entire partnership 2 amendment requests, both accepted. The first one was submitted on October, 9th 2019 for the replacement of a partner and simultaneous extension of 6 months and the second one was submitted on February, 2nd 2021 for the request of an extension of further 6 months due to the difficulties related to the Covid-19 pandemic.

Moreover, the Project Coordinator, Mauro Di Bugno, ceased his professional cooperation with the Municipality of Lucca in October 2020, due to retirement, and was replaced by the new manager of the Environment and Mobility Sector, Luca Nespolo.

Key deliverable submitted:

E1.1 - Partnership Agreement

E1.2 - LIFE ASPIRE Project Monitoring Handbook

E1.3 - LIFE ASPIRE After-LIFE Plan

The most important aspect to underline that concerns the last part of the project is certainly the outbreak of the Covid19 pandemic and the consequent limitations, more or less restrictive, made necessary for the containment of infections.

In Lucca the demonstration phase was particularly affected: first of all, the Italian Government opted for a total lockdown from March to May 2020 to limit the spread of the virus, then the Municipality decided to suspend the cogency of the Restricted Traffic Zone institutive measures from May 12 to August 31, 2020, then re-activated from the beginning of September, allowing the project to restart demo activities at 100%.

Concerning deviations, problems and difficulties met during the project implementation, Action A1 was developed according time plan, and formally ended in March 2018. However, holding the importance and peculiarity of CSSF and TSC, which are considered to be open and permanent consultation and advisory groups of external experts, the Consortium agreed on maintaining the activities related to CSSF and TSC active until the end of the project.

The main technical difficulties encountered, concerned delays in completing action B.2. This action implies a complex articulation of new innovative services for the City of Lucca, infrastructure installations and site preparation that required more time than planned. Despite the three months safety margin included in the initial description of the action, this was not sufficient to complete the action ended in December 2020. This delay was mainly due to difficulties in coordinating and involving different municipality offices, as well as third entities relevant for the action, rather than bureaucratic/administrative issues among which several on-site inspections, national amendments to public procurements rules, procedure to obtain all needed legal authorization such as the landscape and environmental ones, unforeseen technical discrepancies between the project design and the execution of the contracts, which required some variations. No less relevant was the impact of the Covid-19 pandemic, which stopped installation sites for some months, the experimental phase was strongly influenced and, although the Consortium has promptly managed difficulties with a

specific back-up plan, it implied to reorganize the previous conditions, taking in consideration the anti-contagion measures.

Therefore, also the implementation of actions B3, C2 and C3 was affected. A shorter time of demonstration of LIFE ASPIRE system in its complete configuration (25 RFID gates, 32 parking sensors, 3 cargo bike sharing stations, LOCMAP platform and rules for rewarding), needed to extend the project duration to let an appropriate assessment of project results as well as replicability and transferability of the LIFE ASPIRE approach in partner cities.

4. Introduction

Environmental problem/issue addressed

Lucca is a typical European town of small and medium dimensions, with common problems related to city logistics: air quality impacts (including CO₂ and “secondary pollutants” emissions, PM₁₀), noise, energy consumption, etc. These aspects have serious negative effects on health and well-being of the population as well as on urban environment, since Lucca centre is characterized by a relevant historic context with a dense grid of narrow streets, by the presence of old and historic buildings, monuments, by important pedestrian flows of tourists and visitors, etc. These conditions are also shared by the city centres of Zadar (HR) and Stockholm (SE), although differences in terms of context and dimension can be reported. The main issues targeted include: air pollution (PM₁₀, greenhouse and noxious gas) and noise, carbon footprint, as declared in various city plans, traffic congestion and problems for public transport vehicles, risk for historic monuments, due to traffic vibrations and noxious gas, safety for pedestrians and tourists. These problems in Lucca have been already partially addressed through specific regulatory initiatives concerning also access policy to the restricted traffic zone in the city historic centre.

Outline the hypothesis to be demonstrated/verified by the project

The project aims to set up a rewarding system to promote sustainable freight distribution in urban areas.

LIFE ASPIRE wants to establish a new approach for urban freight distribution management (and in particular for last mile deliveries) addressing the issue of nearly-zero emission by the adoption of soft measures (RFID, SW enforcement), eco-sustainable logistics services (smart Load/Unload bays and cargo-bike sharing) and effective/ innovative rules (incentive by credits, etc.). Moreover, this approach has been analysed and it evaluated the transferability and replicability of the measures in similar context, with the City of Stockholm (scalability) and at small urban area level with the collaboration of the City of Zadar, taking into account their specific and different context (transferability).

Description of the technical/methodological solution

In order to demonstrate the implementation of innovative, flexible and differentiated “credit based” regulation and pricing criteria for last mile delivery, a Logistic Credit Management Platform (**LOCMAP**) dedicated to urban freight distribution processes in Lucca has been developed and upgraded. LOCMAP integrates the existing RTZ access control system and manages two new logistics services for operators, allowing extra credits collection. In particular, three different technological solution are used for the demo activities:

- 24 RTZ entry – exit gates with new RFID system in order to monitor operator access/exit by means of permit (“Mobility Pass”). These gates are used to calculate permanence time of commercial vehicles within the RTZ.
- 34 L/U parking lots, equipped with smart wireless sensors under the road surface.
- 3 cargo-bikes stations with 3 cargo bikes each available for transport operators.

A specific replicability and transferability analysis of measures/solutions implemented in Lucca has been carried out in Stockholm and Zadar.

Expected results and environmental benefits

Expected results:

- Reduce the current levels of freight traffic by decreasing the total number of commercial vehicles in last mile deliveries operations in the inner historic centre of Lucca (in particular in the RTZ);

- Reduce the current levels of environmental pollution due to commercial vehicles emissions;
- Reduce the related energy consumption;
- Reduce the related noise pollution;
- Reduce risk for historic building due to vibrations resulting from heavy traffic;
- Improve the safety for pedestrian;
- Promoting the adoption of low/zero emission vehicles by transport operators;
- Foster transport operators to use available urban consolidation centres;
- Provide new eco-logistics services for transport operators in last mile deliveries (Load/Unload bays and cargo-bike sharing), both managed by the innovative LOCMAPI;
- Improve the urban environment and, consequently, the quality of life for residents, visitors and tourists.

Environmental benefits:

At the end of the LIFE ASPIRE project we expected to verify a significant impact on the urban environment. A preliminary baseline (before the introduction of the LIFE ASPIRE measures/services), highlighted the following situation related to city logistics processes: CO₂eq 2.162 tons/year; Energy consumption 4.044.297 Kwh/year. The preliminary estimation of savings in the urban environment of Lucca (ex-ante situation), achievable at the end of LIFE ASPIRE project, consider a realistic reduction of CO₂eq: -313 tons/year, equal to -14,4%. Concerning the energy consumption reduction, it is reasonable to estimate - 774.599 Kwh/year, equal to -19,1%.

The above-described extrapolations come from a positive mix of new logistics services, innovative policies and technological measures.

Overall, full operation of the LIFE ASPIRE measures and services will lead to a significant reduction of freight flows toward the city centre and related noxious emissions and it will provide a new approach to RTZ definition and management, encouraging:

- Larger zero emission freight distribution, by awarding the use of low emission vehicles and foot use of hand-trolleys, leveraging on the development of smart Load/Unload bays or cargo-bike sharing service;
- Lower number of accesses and shorter presence in the RTZ for different categories of transport operators and type of vehicles, leveraging on a stricter and innovative regulation enforcement, monitoring technologies and incentive schemes and policies.

Expected longer term results (as anticipated at the start of the project)

Lucca Municipality has already planned to maintain the LIFE ASPIRE logistics measures/services realized during demonstration: the Rfid system has been adopted for all the permits in the historical centre, with a huge potential monitoring capability, even over the experimental target of permits of LIFE ASPIRE and with a mid/long-term investment in term of technology for the Administration.

From political and institutional point of view the involvement of representative of the Italian Ministry of Transport and of Tuscany Region in the Technical Scientific Committee has allowed to share the project approach and to pave the way for future actions. In particular, with the Italian Ministry of Transport a discussion about possible exploitation of the RFID technology as homologated Access Control System was started and it is ongoing, as the Director, Mr. Antoniazzi confirmed in occasion of the project final conference. On the other hand, possible standardization of policies – at regional level –are being evaluated in order to regulate freight access in the Restricted Traffic Zones of all Tuscans cities.

Moreover, to ensure the success of the project, LIFE ASPIRE has directly involved local socio-economic stakeholders and all relevant actors of logistics operations by dedicated Round-table, gathering previous experiences and fruitful dialogue within the City of Lucca, the local Chamber of Commerce, local research centres and transport operators on the issue

of access to the historic centre. LIFE ASPIRE partnership recognises the importance to establish a participatory process with the recipients of the access policies and to pay attention to the opportunities that will also derive from local business development.

Concerning project sustainability in terms of continuation of project activities LIFE ASPIRE actions are perfectly in line with the Italian National guidelines for the development of Sustainable Urban Mobility Plan (SUMP) and are included in the Lucca SUMP, approved by the City Council on last December 2018 and also in the more recent Mobility Implementation Plan for Lucca historic center, approved in February 2021, in particular with the introduction of emission vehicle category like parameter for the permit cost. In doing so, the approach of Life ASPIRE is considered as the cornerstone of the particular rules related to the city logistics. In fact, concerning city logistics, Lucca SUMP and Implementation plan aims to gradually restrict the access of commercial vehicles to the historic centre, through the definition of incremental pricing of access permit, based on the principle of “the polluter pays” considering vehicle emission class, and access and stay in RTZ, making LIFE ASPIRE actions perfectly in line with the implementation of local policy and legislation concerning logistics.

In the last phase of the project, LUCCA has worked to build conditions for the future sustainability of the project system, ensuring in the municipal budget for the following years specific funds for the maintenance and continuous implementation of the ASPIRE technological systems, in particular for a further integration of Locmap with existing access monitoring systems and for RFID antennas implementation.

In this way, it's foreseen the future continuation of the rewarding policy, and also the enlargement of the potential data collection, even beyond the limits of the LIFE ASPIRE experimentation. The Municipality of Lucca thanks to ASPIRE has a scientific instrument capable of supporting its policy choices with dynamic data about access to RTZ and about the improvement of air quality in urban area.

Concerning replicability and transferability of demonstrated technology, Zadar and Stockholm, as partner of the project, have been the most relevant test beds involved in the replication and transfer of LIFE ASPIRE approach, defining the appropriate measures/costs to implement and to operate on a permanent basis, all the services provided in the framework of LIFE ASPIRE.

5. Administrative part

During the whole period the PC - Project Coordinator, formerly Mauro Di Bugno and then Luca Nespolo (and the Project Coordinator Team – PC Team) assisted by the Technical Project Management Group (TM) and the Administrative Manager (AM), has run the overall coordination of the different activities according to the LIFE PROGRAMME criteria. In addition, for the administrative aspects LUCCA has been responsible for the collection of associated beneficiaries' financial records for the consolidation of all the expenses of the Consortium and kept the project accounting always up-to-date, according to deliverable E.1.1 Partnership agreement and E.1.2 Monitoring Handbook.

The technical management was coordinated by the PC that worked in close contacts with the Technical Project Management Group (TM), which included all the technical partners (LUCENSE, MEMEX, MUNICIPIA). The technical management was assured with different modalities such as: official project meetings, extended or restricted technical meetings among partners and/or stakeholders directly involved in the planned actions, but most of all through constant contacts (email, phone calls, skype, and more recently, online meetings for the restrictions due to containment of the pandemic).

Each associated beneficiary, in order to improve and make more effective the coordination, appointed some key persons. After the third amendment at the beginning of 2021, the key persons were: P2 – Municipia: Massimo Imparato, then replaced by Francesco Romanazzi; P3 – LUCENSE: Stefan Guerra; P4 - MemEx: Antonio Liberato; P5 – City of Stockholm: Amanda Baumgartner (then replaced by Victoria Herslöf); P6 – City of Zadar, Ivan Plazina.

The targeted distribution of roles (Administrative/Technical) allowed to efficiently deal with the various project activities and, at the same time, to maintain a high level of communication with all partners on the development of the works.

From the first meeting, it was appointed the LIFE ASPIRE Steering Committee (SC), with one representative of each partner. Last Steering Committee took place on 10th September 2021 at the sidelines of the last Consortium Meeting held to organize the Final Conference.

All foreseen project meetings took place (as detailed in the periodic reports sent to the Monitoring Team).

During the Project Meetings (PM), the activities carried out and in progress were examined, those of the following period planned and the financial and administrative aspects discussed in order to have a constant monitoring and evaluation of the resources used by the individual partners in respect of the project budget.

In the life of the project, the following consortium meetings took place:

- Kick-off Meeting n. 1 Lucca, Italy (Org. LUCCA), 26-27 October 2017
- Project Meeting n. 2 Pisa, Italy (Org. KIU), 4 May 2018
- Project Meeting n. 3 Livorno, Italy (Org. MEM), 10 July 2018
- Project Meeting n. 4 Lucca, Italy (Org. LUCENSE) 11 October 2018
- Project Meeting n. 5 Lucca, Italy (Org. LUCCA) 5 March 2019
- Project Meeting n. 6 Stockholm, Sweden (Org. STOCKHOLM) 26 June 2019
- Project Meeting n. 7 Livorno, Italy (Org. MEM), 14 November 2019
- Project Meeting n. 8 Online (Org. LUCCA), 03 June 2020
- Project Meeting n. 9 Online (Org. LUCCA), 14 December 2020
- Project Meeting n. 10 Online (Org. LUCCA), 20 April 2021
- Project Meeting n. 11 Online (Org. LUCCA), 10 September 2021.

In addition, the PC has attended the LIFE Kick off meeting in Brussels on the 17th and 18th October 2017 and the International Final Conference held online on September 21st, 2021.

Also several technical meetings were held (both with meetings at the partners' premises and via conf-call) attended, from time to time, by the partners directly concerned with the actions and by external subjects involved in the project activities. During these meetings, the specific problems of the active actions or to be activated in the short term have been discussed.

Communication with the EASME and Monitoring team.

During the reporting period, four monitoring visits took place conducted by Cristina Rabozzi from NEEMO – TIMESIS team: three times at Municipality of Lucca premises and once online. In April 2021, also the Officer, Mario Lionetti, attended online the last Monitoring visit. All the visits had good feedback from CINEA. In addition to these, the direct communication with the Monitoring Team has been continuous and regular, also thanks to the detailed periodic reports on the progress of the different actions, but also by telephone in case of necessity of clarification, preliminary checks on the documentation produced, etc.

The changes due to amendments to the Grant Agreement.

During the second year of the project, the associated beneficiary Kiunsys was involved in several corporate events that have changed its legal subjectivity, requiring a project amendment to formalize these changes.

In particular, in February 2019 Kiunsys informed the coordinating beneficiary, that the branch of company was acquired by Municipia Mobilità Srl.

All employees have continued their contractual relationship with Municipia Mobilità Srl, which has practically maintained Kiunsys fund of human resources, brands, material resources and all the activities, LIFE ASPIRE project included. Kiunsys legal representative informed also that Municipia Mobilità Srl would have been soon incorporated into Municipia Spa, which had already acquired the 100% of Municipia Mobilità Srl. After external monitor consultation, the consortium decided to wait for the progress of social events in order to avoid another project amendment request while the previous one was still ongoing or just completed. Once Municipia Mobilità Srl was formally incorporated into Municipia Spa, at the end of May 2019, the coordinating beneficiary started all the amendment preparation, in strictly collaboration with the monitor Ms. Cristina Rabozzi. In the same period, the technical issues related to the reduced period available for full demonstration activities became clear (see below for a detailed description) making necessary to add to the Amendment request for partner substitution also a request for extension of the project duration of 6 months. The complete amendment request was submitted to e-proposal on 9 October 2019 and it was approved in December 2019.

Another request for amendment was submitted on February, 2nd 2021 for an extension of further 6 months due to the difficulties related to the Covid-19 pandemic. After more than two months of lockdown and the subsequent decision of the Municipality to suspend the cogency of the Restricted Traffic Zone institutive measures from May 12 to August 31, 2020 not to further infer on a local economy already brought to its knees by the pandemic, the demonstration phase suffered a sharp slowdown, preventing data collection and evaluation necessary for the experimentation. Recognizing the objective difficulties encountered during the experimentation phase, the Commission approved the extension of 6 months allowing the project to close on September, 30 2021.

6. Technical part

6.1. Technical progress, per Action

A. Preparatory actions

<p>ACTION A.1</p>	<p>Title: Context analysis review, Stakeholder involvement and Requirements consolidation Foreseen start date 10/2017 Actual start date: 10/2017 Foreseen end date (proposal): 03/2018 Foreseen end date (post Am #3): 03/2018 Actual end date: 03/2018 Beneficiary Responsible for implementation: LUCENSE</p>
<p><i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i></p>	<p>Action A.1 allowed verifying, detailing and consolidating the requirements of the services/measures to be activated, during the demonstration phase, in Lucca. The objectives were: i) review the initial context in order to consolidate the already existing information baseline dataset both at logistics and environment level; ii) to involve different stakeholders (with the set-up of the Cities and Stakeholder Supporting Forum – CSSF) iii) to consolidate the user requirements of the city of Lucca concerning the innovative logistics measures/services and their integration into existing systems as well as outlining a system approach for their unitary management. The activities undertaken during this action have been related to the analysis and study of the most important experience in Europe related to sustainable and eco-friendly freight transport (having a particular attention to the experience of use of cargo bikes/cargo bike sharing stations for the delivering of goods in city centres, in small and medium towns having, more or less, the same problems and characteristic of Lucca). The action has seen also the setting up of the LIFE ASPIRE Cities & Stakeholder Supporting Forum –CSSF. All beneficiaries have worked to involve relevant stakeholders in becoming CSSF members. Organisations involved belong to the following macro-categories: - Cities (mostly small and medium sized but also some metropolitan ones); - Research centres and universities (mostly dealing with transport and mobility issues); - Environmental associations; - Agencies and Associations for Innovation and sustainable mobility. The actual members of the CSSF are 18 from all over Europe. The members were involved through various activities, such as: receiving periodical newsletters (8 issues); invitation to attend the LIFE ASPIRE workshops in Lucca, Stockholm and Zadar; open access to the project deliverables. In addition, they were invited to participate to the International Final Conference held by the coordinating beneficiary. The work done with the CSSF led to the assessment of the LIFE ASPIRE measure and services by the Slovakian Ministry and Regional Government during the participation to the LIFE POPULAIR conference (on the last 7th September 2021): common problem related to air quality and the urgency of finding innovative solutions to address this issue were the link to connect the two experiences. Such a shared view on air quality led to a collaboration which produced a submission to the last LIFE 2021 call with the involvement of Slovakian stakeholder.</p> <p>To give a more technical and scientific imprint to the project, the LIFE ASPIRE consortium decided to establish also a Technical and Scientific Committee (TSC). The TSC is a specialization of the CSSF and added value of the project. It is composed of 10 active/effective members with specific expertise relevant for LIFE ASPIRE topics. This action is coordinated by LUCENSE with the support of all partners.</p> <p><i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones dates foreseen in the grant agreement, and discuss the impact on other actions.</i></p> <p>The action has been developed according to the time frame and, formally ended in March 2018. However, seen the importance and peculiarity of the two entities (CSSF and TSC), which are considered to be open and permanent consultation and advisory groups of external experts, the Consortium agreed on the fact that that Action A1 will remain active until the end of the project. The involvement of other local authorities and stakeholders is considered a key factor for the success of the project and the beneficiaries will continued working to involve other organisations within the end of the project. The TSC of the project, as indicated in</p>

the internal regulation, met 3 times during the project life span. The first meeting was organised on October 12, 2018 (next to the first project workshop in Lucca); the second meeting was organised on November 15 2019, hosted in Lucca by the City of Lucca with also an onsite visit to LIFE ASPIRE installed technologies. During 2020 (giving the pandemic COVID -19 issue) no meetings were organised. The last meeting of the Committee was held on June 3, 2021 (electronically on line to comply with the directives for containing the pandemic), next to the event “Green logistics for Lucca: cargo bike sharing system”, which was held in Lucca and selected as one of the EU Green Week Partner Events. The event was attended by a representative of the TSC (Giacomo Lucente from FIAB Lucca). Selected members of the TSC were invited as speakers to the final conference, where they publicly shared their reflection concerning the results of the participation to the TSC. Moreover, the last newsletter contained also the blueprint consideration of the participation of FIAB to the TSC. Always in the perspective of the impacts on other project actions, beneficiaries worked to involve local stakeholders (meaning the logistics operators that will use/test the LIFE ASPIRE approach). To fulfil this goal n.3 meetings have been organised: on the 7th of May 2019 - with the support of Lucca Chamber of Commerce, on the 25th of July – with the support of the Confcommercio (Italian General Confederation of Enterprises, Professions and Self-Employment) Association Lucca branch and on the 29th of June 2021 (on line). These meetings addressed the goal to involve logistics operators in the demonstration phase and to collect from them relevant feedbacks.

It is important to underline that technical and political representative of the Municipality of Lucca and some project partners visited the Ministry of Infrastructure and Transport in Rome in January 2020 for a meeting with the permanent member of the TSC “Div2 - Road traffic and homologation of the relative regulation and control devices” regarding Aspire.

Moreover, the City of Lucca organized a technical meeting with the city of Pisa in order to share a common approach and objectives related to mobility and in particular logistics measure and services. In order to involve general public and city users a survey, promoted by Lucca, was realized on the topic of logistics process in order to evaluate among the others, the citizens perception of changing demand and impacts of logistics processes due to the COVID-19 pandemic. Results of the survey was introduced in the deliverable C4.2 LIFE ASPIRE socio economic impact assessment.

Deliverables issued: A.1.1 “LIFE ASPIRE Stakeholders and User Needs Analysis report”.

The completion of this Action represents also the achievement of Milestone M2 “Start up phase: user needs and requirements consolidation”

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

Not relevant

Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).

During the development of Action A.1, no significant problems have been encountered.

Mention any complementary action outside LIFE.

N/A

Outline the perspectives for continuing the action after the end of the project.

The action played a significant role both for the assessment of most important experience at European level that can be replicated and adapted to Lucca context, but also for the involvement of relevant stakeholders in the field of sustainable and smart mobility services for urban areas, and are being involved in the CSSF and in the TSC of the project. It is worth to note the direct participation in the TSC of the Italian Ministry of Transport and Infrastructure and of the Tuscany Region (Mobility Department) as they are key actors for future development of project activities as they can influence, in the long term, policies at national and regional level concerning the access to the RTZ of the cities.

In the long term the involvement of members of the Forum will:

- Ease dissemination and potential transferability of the demonstrated technology in Lucca concerning a credit based road pricing criteria for logistics operations in the historic centre;
- Strength knowledge exchanges and relations among organizations for future joint initiatives on sustainable urban logistics or air quality.

In fact, as anticipate above, the collaboration with stakeholders of the LIFE POPULAIR project led to the submission of a project proposal under the LIFE 2021 programme with the participation of a Slovakian organization.

Include tables, photographs etc. to illustrate the actions, such as (for LIFE Nature & Biodiversity, as well as LIFE Climate Action) land purchase and non-recurring management activities.

Annexes:

- 1) List of CSSF members and of TSC members
- 3) TSC internal regulation and Acceptance Form model
- 4) List of local stakeholders involved in the participatory activities

ACTION A.2	Title: Detailed design of eco-sustainable urban logistics services and ICT solutions Foreseen start date 01/2018 Actual start date: 01/2018 Foreseen end date (proposal): 09/2018 Foreseen end date (post Am #3): 09/2018 Actual end date: 09/2018 Beneficiary Responsible for implementation: MEMEX
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>Starting from the A.1 results, Action A.2 provides the definition and design of a set of normative and eco-sustainable city logistics measures/services, and supporting ICT, for freight distribution process.</p> <p>From the <i>logistics point of view</i> this Action was focused on the detailed design of:</p> <ul style="list-style-type: none"> - Innovative "credit based" access control policy which awards transport operators' virtuous behaviours in performing the delivery processes; - L/U parking lots Service; - Cargo-bike Sharing Service. <p>The planned services were designed with a modular approach allowing their independent implementation (in urban space and project timing).</p> <p>This design phase also provided the definition of the relevant needed technical infrastructures.</p> <p>From the <i>supporting technologies (ICT) point of view</i>, the design performed under Action A.2, includes:</p> <ul style="list-style-type: none"> - the Logistics Credit Management Platform (LOCMAP); - the integration and extension of access control system, enhanced by RFID UHF technology, including the specific "Mobility Pass"; - the new L/U parking lots, equipped with sensors; - the new cargo-Bike Sharing Stations, equipped with sensors; - the communication network between on-field devices and LOCMAP. <p>Action A.2 was crucial to design the planned "credit based" access control policy, the innovative logistics services and the support technologies (ICT), and in particular to define the related specifications, in order to pave the way for the following installation, implementation and demonstration phases.</p> <p>The activity was mainly carried out by MemEx in close collaboration with the Municipality of Lucca (involving different departments), Lucense and, for ICT aspects, Kiunsys (now Municipia).</p> <p>Even if no relevant problems were encountered, it is important to highlight that the design of the peripheral system (RFID UHF gates) required relevant technical coordination efforts, dedicated meetings and several technical on-street visits. These visits were performed in collaboration with LIFE ASPIRE partners, involving also other relevant Entities, i.e the public energy company provider.</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	

<p>All the activities of this action have been successfully developed in the planned time and in compliance with the provisions of the work program, also allowing to anticipate the implementation of a preliminary pilot demonstration of the RFID Access Control System (see Action B.1).</p> <p>Moreover, the completion of this Action A.2 paved also the way to the Action B.2 – “Site preparation, installation and organisation”.</p> <p><u>Deliverable</u> A.2.1 - “LIFE ASPIRE city logistics rules, measures, services and support ICT design” was already delivered with the Progress Report.</p> <p>Further details of "credit based" policy and regulation for the collection of "eco points" (in particular for the awarding system), relating to the different parameters considered, were described in the additional Annex to Deliverable A2.1 - “LIFE ASPIRE city logistics rules, measures, services and support ICT design Details of “Credit Based” access policy control”, submitted with the Progress Report.</p> <p>The completion of this Action represents also the achievement of <u>Milestone</u> M4 “LIFE ASPIRE logistics service design and ICT solution completed.”</p>
<p><i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i></p>
<p>Not relevant</p>
<p><i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i></p>
<p>During the development of Action A.2, no significant problems have been encountered. All the activities were developed in the planned time.</p>
<p><i>Mention any complementary action outside LIFE.</i></p>
<p>N/A</p>
<p><i>Outline the perspectives for continuing the action after the end of the project.</i></p>
<p>After project conclusion the design of eco-sustainable urban logistics services and ICT solutions could be revised and updated, following the results of the pilot demonstrations, in order to maintain the level of the implemented solutions in line with the future state-of-the-art, in particular related to potential innovative technologies that could be developed by the market.</p>

B. Implementation actions

ACTION B.1	Title: Platform and support technologies development, adaptation and integration Foreseen start date 01/2018 Actual start date: 01/2018 Foreseen end date (proposal): 03/2019 Foreseen end date (post Am #3): 12/2019 Actual end date: 12/2019 Beneficiary Responsible for implementation: MUNICIPIA
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>The action refers to the development of the technological components envisaged in the LIFE ASPIRE project, namely LOCMAP. The platform manages i) the credit-based policy demonstrated within the project; ii) the access/exit control system of the local RTZ based on RFID technology; iii) the Load / Unload parking space monitoring system and iv) the Cargo Bike sharing System service.</p> <p>During the project, most effort was made to release a stable LOCMAP platform with the integration of the different technologies: RFID gates, Load / Unload parking lots, cargo bike sharing stations. Moreover, relevant effort was dedicated to the integration with the issuing / management platform of permits and the development of the attribution system credits by implementing the logic of the static / dynamic parameters defined in Action A.2.1. The work carried out made possible to perform all required tests of the ICT platform and supporting technologies.</p> <p>From a technical point of view, the platform was designed on a 3-tier modular architecture, consisting of a user interface layer (presentation layer), a business logic layer (business layer) and a data persistence management layer (data management layer). LOCMAP is a cloud platform and the technologies used for the development are PHP and MySql for the back-end, HTML CSS JS for the front-end and JAVA for the mobile app. All the technical details are reported in the Deliverable B.1.1 "LOCMAP Platform, ICT systems and supporting technologies: implemented solutions".</p> <p>After the detailed definition of all the technical specifications and the requirements of the management platform (see Action A.2), as well as of the interfaces for system users, it was possible to carry out software development, release and testing of all the foreseen project functionalities.</p> <p>On one side, the development aimed to ease the back-office work for the Municipality, implementing functions related to: a) importing and displaying users' ID, vehicles and permits acquired from the software managing access permit to access the RTZ; b) L/U parking lot management system; c) RFID Gates and Access Control System; d) Cargo bike sharing and e) overall credits management reports.</p> <p>On the other, the development aimed to ease the use of LOCMAP for the end-user, implementing web and mobile Front-End for end user services with separate functions related to web App modules (user setting, credit reporting, vehicle management) and Mobile App (L/U check-in / out, cargo bikes lock - unlock).</p> <p>The LOCMAP platform is also able to interact with the management of physical devices namely load/unload bay sensors, RFID gates and cargo bike sharing system. The full configuration, deployment and training of personnel was implemented following the installation of all physical devices acquired by LUCCA in relation to Action B.2.</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	
<p>The development of LOCMAP platform was completed.</p> <p>With the respect to the planned activities, the integration of the different modules proceeded in different steps according to the timing of the tendering procedures that led to the subsequent deployment and configuration of all onsite technologies purchased.</p> <p><u>Deliverables</u> issued: B.1.1 "LOCMAP Platform, ICT systems and supporting technologies implemented solutions".</p> <p>No <u>milestones</u> are foreseen for this action.</p>	
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>	
Not relevant	

<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>
The software development activities had to follow the timing of the tendering procedures in order to complete the release of the LOCMAP and the integration of the different modules proceeded in different steps according to the timing of technologies purchase that led to the subsequent deployment and on site configuration.
<i>Mention any complementary action outside LIFE.</i>
Not relevant
<i>Outline the perspectives for continuing the action after the end of the project.</i>
The action has been positively evaluated by METRO, the in-house company of the City of Lucca that manages access permit to the RTZ, that was trained to the LOCMAP use to interface with their management permit platform. The RFID gates system will remain active for the future and making the derived information available for the Municipal police and the Municipal offices in order to assess access rules to the RTZ. Furthermore, the municipal offices decided to extend the Rfid technology and control modality to the whole permit system, also beyond logistics. .

ACTION B.2	Title: Site preparations, installation and organization Foreseen start date 04/2018 Actual start date: 04/2018 Foreseen end date (proposal): 06/2019 Foreseen end date (post Am #3): 12/2020 Actual end date: 12/2020 Beneficiary Responsible for implementation: LUCCA
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>This action focuses on the preparation of the infrastructural and organizational/operational conditions and the definition of all the administrative aspects, necessary for the complete start of LIFE ASPIRE demonstration services/measures in Lucca.</p> <p>This action has involved:</p> <ol style="list-style-type: none"> 1) The preparation of LIFE ASPIRE demonstration site in Lucca, according to the design carried out in Action A.2, in terms of infrastructures, organizations, regulations, appointing of subcontractors, etc.; 2) The deployment of ICT solution developed and customized in Action B.1 (LOCMAP platform and supporting technologies); 3) The purchasing processes of the needed devices; 4) The acquisition of all the authorization necessary for the full operational logistics services; 5) The definition of trials and services demonstration plan. <p>The preparation of demonstration site and the deployment of ICT solution (points 1 and 2) consisted, first in the identification of the best technical solution for Lucca demonstration site, considering several aspects such as the definition of the best locations for systems installation and the type of technological solution to apply.</p> <p>The analysis resulted in the identification of 21 (+3) entry/exit points at RTZ border for the installation of the RFID gate antennas, and the identification of 34 Load/Unload (L/U) bays for the installation of parking sensors. For L/U bays location identification, existing bays and related criticism have been taken into consideration, in order to improve the service given to the final users.</p> <p>In parallel, a similar analysis was conducted for the cargo bike sharing stations locations. For the cargo bikes sharing system, as no similar documented examples are available in Italy, in depth market analysis was performed about available technical solutions in order to identify the most suitable one.</p> <p>Moreover, the relevant historic context of the city of Lucca raised the need to take into account the impact of equipment installation in such an historic scenario. The regulation in force in fact requires a specific authorization in order to preserve and protect cultural and historic places, such as Lucca historic center. Such an activity, better described below (see point 4), resulted in the approval for the installation of all LIFE ASPIRE technical equipment.</p>	

Technical partners have strictly collaborated with Lucca to define technical specifications to be included in the procedure for the selection of equipment's suppliers.

Tender specifications also needed a wide coordination and co-work, not only among project partners, but also within the relevant municipal offices involved (Environment Office, ICT Office, Mobility and Traffic Office, Town Planning Office and Municipal Police). Several onsite inspections and technical meetings have been necessary to coordinate this activity.

The purchasing processes of the needed devices (point 3) has been fully completed with two distinct tenders concerning:

- supply, installation and maintenance of a RFID system for monitoring the access/exit of commercial vehicles to the RTZ, including n.2.500 cards with RFID tags as Electronic Vehicle Identification (EVI); supply and installation of n. 34 parking sensors for managing the L/U bays;
- supply, installation and maintenance of 3 cargo-bike sharing stations with 3 bikes each.

Both tenders were carried out with a negotiated procedure consisting in 2 phases: the first was a call for expressions of interest to establish a list of interested companies and the second phase was a call for offer submission. Offers were evaluated with the best value for money criterion in order to guarantee appropriate technological solution and to address the complexity of the service to be purchased. Both purchasing procedures were completed and the contracts regularly executed.

All parking sensors have been installed; all RFID antennas are on place and 2500 tags were distributed and also reordered to obtain a final distribution of about 2600 tags, in collaboration with Metro S.r.l. The whole system has been formally tested and working since November 2019.

The cargo bike stations system installation has been affected by the Covid-19 pandemic effects; the building sites have been suspended in the lockdown period and the whole system is running by December 2020.

The installation of RFID gates and of cargo bike stations was particularly challenging due to some unforeseeable administrative and technical issues, which had to be solved: building sites permits, traffic limitations needed, the delays of the electricity supplier in connecting meters and also regarding some technical design solutions.

It is also important to mention some relevant activities linked to the organization of the Action B2:

a) the acquisition of the *Landscape Authorization* (According to Legislative Decree n. 42/2004 and D.P.R.13th February 2017 n. 31), a procedure that required a lot of time (minimum 60 days) and several steps of binding opinions for each installation site, rather than an additional request for monumental authorization for some specific sites evaluated relevant to the archaeologist and the superintendency;

2) *GDPR-compliant privacy assessment*; due to the fact that LIFE ASPIRE technology is able to monitor every single vehicle entering/exiting in/from the RTZ and consequently, also the corresponding person holder of the permit, it was necessary to carry out an impact analysis on the management risks of these data. The environment office of the Municipality of Lucca closely worked with the Municipal Police offices in order to draft a preliminary document on how to treat the data that will be collected by RFID monitoring system, in accordance with the new GDPR regulation. This document has been evaluated by the Data Protection Officer (DPO) of the Municipality to verify the compliance with current legislation on PRIVACY. Final positive feedback was obtained on June 2019 providing some measures to be applied in the management of personal data. The DPO highlighted also the need to develop a new privacy policy statement to be collected from operators while receiving the RFID tag (Lucca Mobility Pass). A close collaboration with Metro S.r.l, the company that distribute the Lucca permits to RTZ, has been carried out in order to implement such an action.

Concerning the definition of trials and services demonstration plan (point 5), in order to successfully implement and monitor all the technological system foreseen in LIFE ASPIRE actions, the demonstration was subdivided in 3 different set of tests with growing complexity taking into consideration both operational and management tests and to involve a growing number of logistics operators during the demonstration action in a way that challenges and problems potentially occurring can be more easily faced and solved, as it has been described in Deliverable B.2.1 "Trial and demonstration plan". The delay related to the purchasing processes and Covid pandemic obviously affected this time plan.

In a first phase, in order to catch up and to respect the plan, the consortium tested out a pilot experimentation using n.3 already installed RFID antenna, located in the city center of Lucca. Lucca equipped n. 40 municipality cars with RFID tags in order to test e tune the functionalities of the LOCMAP. Anyway, the Plan was adjusted during activities and was fully respected when, in August 2020, 2596 Rfid TAG were working

<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.</i>
<p>Action B.2.2 started on April 2018, according to the project proposal; the end date was scheduled on June 2019 and then extended until December 2020, due first to the procedural delays and then to the Covid pandemic.</p> <p>The <u>Milestone</u> M5 “Demonstration site preparation completed, LIFE ASPIRE measures and services start up” has been achieved, although a short delay. In fact, as illustrated in the Mid-term report, that deadline (09/2018) was not in line with the development and with the end of the action. So, taking into account the Trial and demonstration plan, milestone M5 has been rescheduled to October 2019. This deviation contributed to the beneficiary's decision to submit an amendment request extending the duration of the project of further 6 months. About deliverables that fall in the reporting period:</p> <p><u>Deliverables</u> issued:</p> <p>B.2.1 “Trial and demonstration plan” has been submitted on 30/09/2018. It has a review 3.0 submitted with Midterm report, to reschedule the foreseen rounds of test.</p> <p>B.2.2 “Deployment of ICT solutions and logistics equipment installation - Intermediate Report” was submitted with the Midterm report.</p> <p>B.2.3 “Deployment of ICT solutions and logistics equipment installation - Final Report” attached to this final report</p>
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>
See amendment n. 2 request submitted for the extension of the project
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>
<p>Action B.2 included several different activities which overall required more time than expected.</p> <p>Action B2 activities are in fact based on the involvement of different subjects and offices of the Lucca Municipality as well as on the interaction with external providers (such as for example the company providing energy services) and on the close coordination between technical aspects, administrative procedures, legal framework and infrastructure limit for site preparation. This is due mainly to bureaucratic/administrative nature of the Municipality, which is a complex machine dealing with a number of legal procedures to follow and with the involvement of several Department with different responsibilities for the installations of technologies foreseen in the action. Moreover, some technical solutions had to be corrected due to the need to better customize the installation of technologies on specific site needs and these aspects could not be foreseen at the beginning of the action. Eventually, the need to deal with organizations/Companies not directly involved in the project implementation therefore caused delays to acquire the necessary information, as documented by the correspondence with the Contractors.</p> <p>Covid-19 pandemic affected Action B2 first than other linked actions and the lockdown period in particular, even also the consequent slow reaction of the Country, caused a further delay on the implementation of this Action. However, all difficulties and problems raised were faced and solved in close collaboration with technical partners allowing the Action B2 to be completed according to new amendment request time plan and with a complete achievement of its outputs, in a quantitative and qualitative way.</p>
<i>Mention any complementary action outside LIFE.</i>
NONE
<i>Outline the perspectives for continuing the action after the end of the project.</i>
<p>LUCCA decided to reserve dedicated economic resource in next years (2022 and beyond) to continue to maintain and update the existing technology systems, as well explained in deliverable C.4.3 - LIFE ASPIRE Business Case and deliverable E1.3 - LIFE ASPIRE After-LIFE Plan.</p>

ACTION B.3	Title: LIFE ASPIRE measures and services operation and demonstration Foreseen start date 10/2018 Actual start date: 10/2018 Foreseen end date (proposal): 09/2020 Foreseen end date (post Am #3): 09/2021 Actual end date: 09/2021 Beneficiary Responsible for implementation: LUCCA
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>Action B.3 represents the core action, which is concerned with the operation, and demonstration of the planned measures and services and included the setting of the various operational parameters and it is strictly related on the results of Action A.2, and on the site preparation and deployment activities carried out in Actions B.1 and B.2. Its result fed the input for the evaluation Action C.2.</p> <p>During the project, the action carried out the planned activities focusing on the demonstration of the following main aspects:</p> <ul style="list-style-type: none"> • operation and demonstration of the planned LIFE ASPIRE measures and logistics service: use of the three technological innovations (RFID monitoring, L/U park monitoring, Cargo bike sharing service) by the targeted users • realize an effective integration between ALL technological equipment including the fine tuning of all operational aspects • use of the LOCMAP platform by both the logistics operators and the Municipal operator (e.g., Municipal Mobility Dept and Municipal police office, METRO) in order to set the appropriate collection of relevant data for the demonstration and LOCMAP platform functionalities • Study, adjustment and evaluation of the "credit based" policy (Eco points, awarding and rewarding schemes: testing of the credit system and tuning of the awarding scheme and of the rewarding mechanism, including the organization of the awarding events. <p>During the action, 2596 Mobility Pass with RFID tags were distributed to the target users (to all relevant cat. E, U, M, D involved in the trial phase) in order to implement the demonstration activities. In order to raise awareness among the operators on the aim of LIFE ASPIRE project and the demonstration, specific information was provided (using also a dedicated leaflet) including: description of technologies installed and their opportunity, Eco points collection modality and awarding mechanism, how to direct download of the Life Aspire APP.</p> <p>During the demonstration, a large amount of relevant information was acquired related for example to the type of vehicle the different category of users, the pattern of use of the different LIFE ASPIRE technologies installed (load/unload bays and cargo bike sharing system). As an example, the work done allowed to monitor round 1500 average accesses to RTZ per day and more than 60% occupancy level of the L/U bays, showing that LOCMAP could collect and integrate a large amount of heterogeneous data coming from different sources.</p> <p>The information collected included also data for the calculation of KPI identified and analyzed in the action C monitoring of the impact of project action.</p> <p>Since the technological systems to be installed are several and the data to be integrated in the platform are quite complex, the demonstration implemented followed n. 3 rounds of tests with growing complexity, as described in the demonstration plan (deliverable B2.1). The demonstration took into consideration both operational and management aspects and involved a growing number of logistics operators reaching, by the end of the demo activity, all the logistics operators working in Lucca historic centre.</p> <p>The credits system took into account the specific category of users, the type of vehicle, the transport operators' behaviours (e.g., duration of the stay in the LTZ, delivery trips frequency, etc.), the use of the L/U parking bays and the use of the cargo-bikes sharing stations. Concerning the Credit System, the work carried out included also the interaction with the City Council Offices in order to ensure the introduction of the rewarding approach proposed by the LIFE APIRE activities as a regulation approved by the City Council: for this purpose on October 29th, 2019, the Implementation measures for the experimental phase of the project (deliberation n. 242/2019) has been officially approved by the City Council; in particular its ANNEX 1 contains the set of static and dynamic parameters of the rewarding policy relating to urban logistics.</p>	

In order to ensure effectiveness and future sustainability to the credit based access policy and to the demonstration assessment, relevant effort were addressed to coordinate actions at different levels for the preparation of the demonstration operations, in particular:

- Political Commitment to LIFE ASPIRE rewarding policy: involvement of the whole city government board through the engagement of the Mobility and Environmental Assessors
- Involvement of all relevant municipal Offices in the demonstration activities, e.g., Municipal Police
- New Operative Urban Mobility Plan (PAMS, Deliberation 16/2021, City of Lucca) for Lucca historic center including the adoption of relevant parts of LIFE ASPIRE approach in the definition of specific measures concerning access and circulation inside the city center. In detail, LIFE ASPIRE gave specific inputs concerning the implementation of the static parameter relating to the emission category of the vehicle for the graduation of the permit fee following the polluters pay Principle.
- METRO S.r.l Municipal RTZ Permit Office: agreements and training of dedicated resources to ensure appropriate collaboration in the required operative procedures:
- Integration of METRO software solution managing access permit and LOCMAP platform.
- Distribution of the RTZ access permits equipped with RFID tag to logistics operators by METRO
- Assessment and application of legal requirements related to GDPR for the documentation required for permit release and the management of the acquired information of each registered tag (tracking of tag, use of all technologies), approved by the Municipal DPO.

The parameters demonstrated for the credit system are those namely **static parameters** (related to the vehicle technical characteristics, in particular, to the typology of Engine/Fuel and to the dimensions/GVM category) and **dynamic parameters** (related to the behavior of the operator). Static parameters were recorded during the procedures for the supply of the RTZ access permits by METRO S.r.l, the in-house company of the Municipality of Lucca that takes into account parking and access management on behalf of the City. The eco-points related to the dynamic parameters concerned the eco-sustainable “behavior” of transport operators in performing last mile delivery in the historic center of Lucca. The eco-points collected relate to dynamic parameters were automatically acquired by LOCMAP thanks to the technologies installed (RFID gates, load unload parking bays, cargo bike sharing system) resulted in the ranking of all the logistic operators (round 1800 companies) according to the defined parameters.

The demonstration activity allowed to investigate and assess the impacts of the planned credit-based policy in relations to the elements of freight mobility identified as most relevant for the site during user needs analysis and stakeholder involvement (Action A.1), and to adopt adjustments in order to make the credit system more and more efficient. For example, some parameters initially included in the demonstration resulted to be less important for the evaluation of sustainable behaviour of the operators (e.g., duration of the stay in the RTZ VS number of deliveries per vehicle). On the other hand, other parameters resulted to be more important for the evaluation such as the vehicle emission category. Moreover, further aspects concerning logistics process, not taken into consideration in the demonstration plan, were highlighted (e.g., number of vehicles accessing the RTZ owned by a single company, substitution of vehicle with a new and greener one). Such aspects can be surely very useful for future improvement of the whole management of urban logistics process, contributing to future sustainability of the rewarding system.

It is worth to note that the activities related to the credit system allowed to separate the aspects related to the awarding from those related to the rewarding processes. Obviously, the rewarding mechanism fundamental to establish a proper incentivisation processes that can lead to the ecological transition of the transport companies. The active involvement of transport operators (from action A1 to action B3) allowed to identify the most welcomed incentive to promote sustainable behaviors. Promotion and visibility concerning social and ecological sustainability, more than possible reduction of the RTZ access fee (as foreseen in the first phase of the project implementation), resulted to be a better rewarding mechanism for the logistics companies.

The demonstration activity was devoted also to the test of the single installed technologies in order to identify potential improvement to put in place in order to increase the reliability of the system, simplify its maintenance and increase the level of acceptance by the users.

1) Concerning the **access control system based on RFID technology**, the demonstration proved that the position and the reading direction of some RFID UHF antennas can be improved in order to increase the readability of the tag included in the mobility pass. Moreover, due to the versatility and reliability of the

technology, highlighted the feasibility of extending the use of RFID tags also for other category of users (e.g., residents).

2) The demonstration of the operations included the use of 34 **L/U parking lots equipped with wireless sensors** that allows the LOCMAP to monitor the state of the occupancy. The demonstration provided useful information for the City administration concerning the acceptance of the system and the level of use of each lot, possible integration of the system with other lots and pattern of parking that represents a barrier for the use of the dedicated L/U bays to be overcome by other specific measure. The demonstration highlighted some limits of the actual normative framework concerning parking of freight vehicle in the RTZ that requires specific solutions to be defined together with the Municipal Police.

3) Concerning the **Cargo-bike Sharing service**, the demonstration draws the attention of the transport operators who were not accustomed to the use of this kind of vehicle to goods delivery though many of them knew that similar experiences were ongoing in other cities. The use of the system allowed to underline the need of simplify the lock/unlock procedure, the limited volume and maximum weight that can be transported that fits only specific operations and the need to use also different types of cargo bikes to meet the need of different users.

It is therefore to note the high level of interest demonstrated by category of users initially not included in the demonstration, such as retailers and residential. At the end of the demonstration period the City of Lucca decided to open the use of the system to this category of users and to simplify the lock/unlock procedure.

Overall, also the use of LOCMAP was part of the demonstrated technologies and during the 3 rounds of demonstration all its functionalities and modules were analyzed and adjusted in order to increase its usability for the final user (both for the mobile and web applications).

Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.

LIFE ASPIRE measures and services operation and demonstration started later than foreseen. However, according to the last delivered "Trial and demonstration Plan" (B2.1), the demonstration activities grew in complexity and completeness taking into consideration more and more operational and management aspects in 3 main rounds as planned in B2.1. For example, due to the fact that technological equipment was not fully operative all at once, action B3 included in its implementation first demonstration phase the RFID system and the parking sensors and, later, the cargo bike sharing system.

Obviously, COVID-19 pandemic impacted the development of the action and this aspect is better described in the section below.

Deliverables issued: B.3.1 "LIFE ASPIRE measures and services: intermediate demonstration monitoring report", B.3.2 "LIFE ASPIRE measures and services: demonstration report".

The completion of this Action represents also the achievement of Milestone M7 "Demonstration activity completed".

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

Not relevant

Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).

The COVID-19 pandemic outbreak has had a disruptive impact on the way we live and move in Lucca, with citizens and businesses severely affected by the crisis. The project worked from the outset of the epidemic to mitigate the socio-economic impact of COVID-19 on mobility, as well as on other sectors relevant to the city. Commerce and tourism in particular are suffering due to the crisis. Action B3 is one of the most affected by the pandemic COVID-19 due to the consequences of the urgent measures adopted by the City Council. In detail the following aspects were relevant for the development of demonstration action:

- suspension of some of part of relevant RTZ regulation (e.g., deactivation of automatic control access system) to facilitate access to the city centre,
- temporary closing of the RTZ permits office, from 03 2020 until 07 2020 and related suspension of the RFID tag distribution

<ul style="list-style-type: none"> the COVID-19 pandemic produced major changes in the consumer behaviour related to ecommerce and home deliveries with relevant impact on related logistics processes. <p>NOTE: During the lockdown the suspension of part of the RTZ regulations was practiced by several Italian cities (e.g., metropolitan areas as Milan, or towns as Parma).</p>
<i>Mention any complementary action outside LIFE.</i>
N/A
<i>Outline the perspectives for continuing the action after the end of the project.</i>
<p>As described before, the integration of LIFE ASPIRE policies awarding system in the new access regulation to the Lucca historic centre will allow the integration of the LIFE ASPIRE awarding system in the framework of activities implemented by the Municipality concerning Sustainable Logistics/Mobility to improve air quality in the urban areas after project duration.</p> <p>From the operative point of view, the Municipality put in practice actions to maintain the installed technologies, systems and to extend their use to other user groups, beyond the logistics operators after project duration (e.g., all RTZ access permit equipped with RFID tag, cargo bike sharing system open to other users, acquisition of new permit management software solution for managing the RFID monitoring and credit policy, maintenance of the RFID UHF antennas network).</p>

ACTION B.4	<p>Title: Replicability and Transferability analysis in Zadar and Stockholm</p> <p>Foreseen start date 10/2018 Actual start date: 10/2018</p> <p>Foreseen end date (proposal): 09/2020</p> <p>Foreseen end date (post Am #3): 09/2021 Actual end date: 09/2021</p> <p>Beneficiary Responsible for implementation: ZADAR AND STOCKHOLM</p>
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>The activities carried out by the cities of Zadar and Stockholm are related to the replicability and transferability aspects of LIFE ASPIRE approach. In particular, Zadar and Stockholm worked on the “7 steps” proposed methodology. Both cities have collected information related to the current situation of access/exit gates in the city centre, presence of access control systems and related regulation, level of traffic flows due to commercial vehicles, etc. Both Zadar and Stockholm have first of all defined the baseline with an accurate recognition of the existing situation in the target areas. The cities analyzed the most important aspects interesting for replicability and transferability in the two different contexts, thus facilitating the pedestrians, tourists and residents to the restricted zones.</p> <p>The City of Zadar tried to transfer or replicate certain measures and actions implemented in Lucca as a small urban area. To begin with, Zadar looked at the whole situation and analyzed all the shortcomings of the previous decision of the city on the traffic of delivery vehicles through the pedestrian zone Poluotok, which was selected as the target environment in the implementation of measures within the project. After they detected all the items that need to be changed, started the process of changing the old "Decision on determining and arranging traffic in the pedestrian zone" Peninsula in Zadar. The new decision amended several items that they considered not useful in the new regulation of traffic in the pedestrian zone.</p> <p>In order to have feedback from the field, they started the process of making "Analysis of the impact of the implementation of measures to regulate the traffic of delivery vehicles in the pedestrian zone Peninsula in Zadar", for this work through public procurement they selected "Regional Energy Agency North - REA North", which in cooperation with the city of Zadar made the mentioned analysis, taking into account LIFE ASPIRE inputs. With this study, Zadar was able to obtain quality data and guidelines that are the next steps in implementing the measures, as better described in the deliverable B.4.1. The analysis started in September 2018.</p> <p>The first step was to set up video surveillance system to monitor vehicles in the pedestrian zone, set up cameras at all entry / exit locations so that they could monitor all vehicles entering the pedestrian zone and thus control them. This measure was yet in use in the city of Lucca and Zadar has considered this step like the first one useful to be implemented in the city of Zadar.</p>	

Another measure selected to be replicated from Lucca to Zadar are transshipment points, that serve as an alternative for delivery vehicles that have to make their delivery in the afternoon shift; the places are marked in yellow and are located outside the pedestrian zone at each of the entrances to the pedestrian zone. A total of 11 places outside the pedestrian zone have been marked.

They have approved delivery at any time, but only with manual delivery carts and electric wheelchairs (vehicles). Some of the suppliers immediately procured the said stroller and started shipping that way.

In 2020, Zadar started with the preparation of "Logistic analysis and presentation of collected data related to delivery activities in the area of the Peninsula - Zadar". REA North. They made a detailed analysis of all activities carried out within the ASPIRE project. This document was much more extensive and detailed, and the results obtained helped in planning other measures to be implemented.

In the meantime, there was the Covid -19 pandemic, and all planned activities were stopped because most of them required large financial resources, and due to budget cuts, the city did not start with the planned activities. Anyway, this led Zadar to concentrate on evaluations about feasibility of other measures of LIFE ASPIRE, well described in D. 4.2 and annexed report "Analysis of support technologies. Socio-economic and environmental impacts study".

Through the ASPIRE project, the City of Zadar received very high-quality examples of other cities in solving the problem of delivery vehicles. Zadar planned to implement some of the other measures that the city of Lucca has already implemented: physical barriers, RFID system with vehicle tracking, sensors at transshipment points and finally provide a special delivery cart that everyone could use. Of all the measures listed, they will first install physical barriers that will prevent driver abuse in afternoon delivery shifts. Other measures will be installed over the next few years, as needed and according to financial possibilities. It is also very important to point out that the air quality due to the reduced number of vehicles in the pedestrian zone is excellent; they will also conduct air quality measurements next summer after implementing several more of these measures.

The city of Stockholm conducted a procurement for a subcontractor that would assist the city's work and the analysis produced by the external experts is included in the final Deliverables. SWECO was contracted by Stockholm through a public procurement in March 2020. Their assignment was to assist the city within three different areas:

- Mapping of freight flows in old Town, mainly by interviewing recipient in the area, also by compile the previously collected data on freight flows that the city has collected. Interviews were carried out throughout November 2020.
- Conducting a digital workshop, in June 2020, the city of Stockholm organized an internal digital workshop with representatives from different administrations within the city. The aim of the workshop was to create a common view of the challenges for the Old Town, identify what tools (regulations and incentives) as a municipality have to control the transports, to set a common vision of what we want to achieve, and to develop proposals for measures to achieve the target. The concluded vision was "Old Town is a well preserved historical urban area with accessible and safe transports, contributing to a vibrant life for both residents and visitors." Also, four objectives were identified: Increased awareness of the regulations in the Old town, Increase adherence of the regulations, Fewer trucks entering the Old town, and More zero emission vehicles entering the Old town.
- SWECO also assisted the city with a layout for the draft of the report for the Transferability study, Identification of Life ASPIRE specific candidate measures and services with potential for transfer.

The identification of Life ASPIRE specific candidate measures and services with potential for transfer in Stockholm was narrowed down to five measures:

Traffic monitoring – Increase adherence of the regulations in the Old town through access control system in cooperation with the police. In order to monitor freight urban transport, Lucca have installed RFID gates at the access and exit points. This is part of the LOCMAP in order to earn logistics credits. There are some legal boundaries to implement this system in Sweden, since it comes to camera surveillance and the need to identify both the driver's face and the vehicle. The Stockholm approach was therefore to involve the Permit office of the Municipality and together give the city police access to the city's new parking database (Paris). If the police can determine on site which vehicles have an exemption, the police can directly fine the vehicles that do not have the right to drive in the area, the control is significantly facilitated, which can increase

compliance with the rules. A test was carried out in September 2021 with good result. The next step is to exploit the possibility for a scale up and have the same system used throughout Stockholm.

Zero emission vehicle – Last-mile solution for zero emission deliveries and waste collection in the Old town. During late fall 2020 Stockholm interviewed some of the main carriers to Old town to better understand their perspective. The carriers like the idea of a micro-terminal. Later, in early 2021, the city's Environment & Health Administration conducted a series of interviews with restaurants owners who some were also positive to the idea. The carriers would like the micro-terminal to be located where deliveries to the terminal can be carried out at nighttime, outside of the Old town and close to the major road network. In this way, the trucks delivering to the terminal does not need to go in to the congested area of the city. Due to covid-19, the planned pilot could not be carried out during the project but the city has located an area for the micro-terminal and are planning to launch a pilot early 2022.

Benchmarking – Investigate and analyze what other cities have done with similar challenges as Stockholm, Lucca and Zadar. Several business models have been tested where transports into an area are consolidated last-mile through micro-terminals with the purpose of reducing the traffic and improving the environment. The biggest challenge is finding a business model that works over time. Three different business models were examined in order to better understand if the model is successful or not. Amongst other useful facts the analyze points out Binnestadservice as the best concept as that system has managed to run their business model for a long time and have also spread to more cities. The Stockholm approach should try to replicate a similar model based on the interviews carried out with restaurant owners. The interviews concluded that many had a willingness to pay for the possibility to choose time for delivery of goods as they then could work out a better manning schedule for their staff.

Information campaign – Increase awareness of the regulations in the Old town through information campaign targeting transporters and receivers. In old town, the businesses that generate most freight volumes are restaurants, grocery retails, retails, and hotels. Before the Covid-pandemic, restaurants receive 2 -3 deliveries on average every day. Groceries stores receive the most goods but have consolidated deliveries due to their franchise businesses. Due to the pandemic most shops and restaurants closed down until further notice and some did unfortunately close down permanently. Suppliers adapted their deliveries to the current situation, with fewer trucks and most restaurants stated that they ceased to use their smaller delivering companies in favor of bigger more established companies that proved a wider range of products. As a result, the project decided that it was ill timed to plan for an information campaign. We still believe that a campaign will increase awareness of the current regulations and therefore we plan to follow through on this measure in next year, outside of the Life Aspire project.

Sharing systems – Sharing systems (cars/bikes) for residents and commercial owners in the Old town. As part of the Life aspire project, a cargo bike sharing system was implemented in Lucca. Stockholm identified that this type of transportation vehicle can also be useful to the residents of Old town to avoid using cars for the last mile of transportation. It could also be useful for transport companies if they have smaller goods to unload outside of the permitted distribution window between 6 am and 11 am. The city has recently finalized a procurement regarding a new bike sharing system for the entire city of Stockholm. The system will provide 5150 regular bikes and 150 cargo bikes, both with an electrical support function. Bikes can be accessed through a website or app. These will also provide information regarding placement of the bike parking stations, in real time specify number of available bikes, type of bike, battery power left for each individual bike in the stand, and a bug report system allowing the user to report faults on any bike. The parking space for the bikes will be virtual, regulated by a geofencing system. In Old town the space will be located in proximity to the surrounding main roads, enabling easy transfer of goods between cargo bikes and trucks as it correlates with parking space for cars. This will also be a compliment to the resident of old town, as it will prove an alternative for last mile transport within the city limits. The system will be in place in spring 2022. The activities have been carried out by the city of Zadar and Stockholm with the support of Lucca, Lucense, MemEx.

Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables' and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.

During the project there were no difficulties and delays with the implementation of activities, only the Covid-19 pandemic affected the completion of the project which was extended, due to the whole situation and so that all project partners could complete all planned activities.

Due to the covid pandemic, some actions could not be carried out during the time frame of the project. However, Stockholm and Zadar focused on identifying transferable measures from Lucca, applied them with moderations to fit the legal framework system, and made them apply to the current and future situation in their cities.

Deliverables issued: B.4.1 “Replicability and Transferability analysis in Zadar Report” (including annexed report “Analysis of support technologies. Socio-economic and environmental impacts study”; B.4.2 “Replicability and Transferability analysis in Stockholm Report” (including annexed report “Analysis of cost-efficient transferability of project solutions to other cities”).)

The completion of this Action represents also the achievement of Milestone M10 “Final decision of the cities of Zadar and Stockholm to adopt the proposed project solutions”.

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

Not relevant

Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).

All activities related to the action B4 Replicability and Transferability analysis were done on time and there were no difficulties in implementing the actions. Apart from the extension of the project completion deadline due to the corona virus, they did not have any major difficulties. For example, Zadar has given up on installing physical barriers at the entrances to the pedestrian zone due to the currently high purchase prices of the device, which does not mean that in the near future we will not continue with the planned activities related to better regulation of delivery vehicles in the pedestrian zone.

In Stockholm, as previously stated, due to the pandemic, the day-to-day life in old town was shut down, not allowing them to test the effective transferable measures other than identifying them and making a feasibility study for a future implementation of the measures,

Mention any complementary action outside LIFE.

City of Stockholm

The Stockholm city council has approved the Freight Plan namely its Sulp (Sustainable Urban Logistics Plan) representing a specific platform to put freight issues higher up in the city political agenda. The city had consolidated the relationship with local stakeholders in the “Old town” – pilot area for the transferability of measures adopted in Lucca. An important topic under discussion is among others the optimization of the waste management and related transport.

City of Zadar

During the project, the city of Zadar has installed 10 cameras to control delivery vehicles in the pedestrian zone, the cameras have a system for monitoring the license plates of each vehicle. We have installed a vehicle tracking room in which traffic wardens’ control and review all recordings of vehicles and, if necessary, send alerts to all those who have been driving at an unauthorized time. The locations of the transfer points are plotted, which serve so that delivery vehicles can deliver at any time without entering the pedestrian zone, a total of 11 locations were used for transfer points.

Outline the perspectives for continuing the action after the end of the project.

City of Stockholm

Gamla stan is the heart of Stockholm and there is a strong political will to increase the attractiveness of the area for tourist and residents. The city of Stockholm has conducted a roadmap for replicability and transferability of the identified measures and services. The results we have achieved so far have a positive effect on the living environment in Old town and the city are planning for continued implementation of measures.

City of Zadar

In the city of Zadar during the project and when inviting stakeholders to participate in the project, they received an unexpected number of interested people who with their knowledge and experience helped Zadar find the best solutions, the will of the users exists and it is a good start of cooperation between stakeholders and the city of Zadar. More and more citizens support such projects and want to participate in all activities. The measures Zadar planned to implement will continue to be implemented and will be an example of how we can work on LIFE ASPIRE methods together with users and stakeholders.

C. Monitoring of the impact of the project actions

ACTION C.1:	Title: LIFE ASPIRE evaluation methodology Foreseen start date 04/2018 Actual start date: 04/2018 Foreseen end date (proposal): 09/2018 Foreseen end date (post Am #3): 09/2018 Actual end date: 09/2018 Beneficiary Responsible for implementation: MEMEX
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>Action C.1 mainly defined the criteria for the evaluation of LIFE ASPIRE measures and services, in their different aspects, and the development of a specific set of indicators.</p> <p>The activities performed successfully allowed the definition of: i) specific set of indicators (i.e. environmental and energy impacts, performance of the implemented LOCMAP and ICT support technologies, service operational costs, etc.), in addition to the LIFE project performance indicators; ii) the methodology for data collection during demonstration phase; iv) the modalities for analysing data; v) the criteria for baseline, ex-ante and ex-post evaluation; vi) the criteria for transferability evaluation of the implemented measures..</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables' and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	
<p>The activities of this Action were developed in compliance with the work program and with the project timing, allowing a regular achievement of the specific objectives.</p> <p>All the activities developed, with particular regard to the set of indicators of the different categories of evaluation, have been detailed in the specific Deliverable C.1.1 – “LIFE ASPIRE Evaluation Plan”, issued on 31/03/2019. It is important to highlight that the section on data collection procedures represents a sort of operating manual for Actions C.2 - “Data collection during demonstration” to be used during the demonstration/monitoring phases of the LIFE ASPIRE measures (Actions B.3 and C.3). Moreover, Deliverable C.1.1 represent also a pivotal document for the development of Action C.4 – “Project impacts evaluation”.</p>	
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>	
<p>During the second Monitoring Visit the Deliverable C.1.1 was considered as overall good by the external monitoring team. Notwithstanding, in order to comply with the recommendation of the Annex to the specific letter of EASME (22/03/2019 - ref. B3/ML), a revised/extended version of Deliverable C.1.1 was elaborated (30/09/2019) including a specific detailed section on the preliminary baseline situation and on availability of needed parameters. Moreover, the new version of Deliverable C1.1. provided a preliminary description of the ex-ante situation and clarifications on the collection of environmental data.</p> <p>The definition of baseline and the description of the ex-ante evaluation was an anticipation of the activities to be performed (as per the Project Plan) under Action C.4.</p>	
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>	
<p>During the development of Action C.1, no significant problems have been encountered. All the activities were developed in the planned time, apart from the additional work dedicated to the revised/extended version of Deliverable C.1.1.</p>	
<i>Mention any complementary action outside LIFE.</i>	
N/A	
<i>Outline the perspectives for continuing the action after the end of the project.</i>	
N/A	

ACTION C.2	Title: Data collection during demonstration Foreseen start date 01/2019 Actual start date: 01/2019 Foreseen end date (proposal): 06/2020 Foreseen end date (post Am #3): 06/2021 Actual end date: 06/2021 Beneficiary Responsible for implementation: LUCENSE
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>During the demonstration phase, the collection of functional and logistics, energy, environmental and socio-economic data and information was performed, in accordance with the impact and the related indicators defined in the Evaluation Plan (Deliverable C.1.1). In particular, the collected data and information concerned, among others, functional, energy and environmental aspects (CO2 production) and the efficiency of freight transport in urban areas and the socio-economic and transport efficiency aspects for an integrated assessment of the general impact of LIFE ASPIRE.</p> <p>The data collection are reported in the deliverable C2.1 which includes a list of round 60 relevant KPIs related to the following aspect of the demonstration:</p> <ul style="list-style-type: none"> • RTZ gates with new RFID UHF devices (General aspects) • L/U parking lots management system (Environmental aspects) • KPIs for a single measure: L/U parking lots management system (Energy aspects, System efficiency and satisfaction of users) • KPIs for a single measure: Cargo-bike Sharing Service (Environmental and energy aspects, System efficiency and satisfaction of users) • Social and economic aspects • Indicators concerning communication, dissemination, awareness rising <p>The tables reported in the deliverable C2.1 provided the procedures for acquiring relevant data for the completion of the main KPI indicated in LIFE ASPIRE Evaluation Plan, in the LIFE ASPIRE Performance indicator Deliverable and in the Online KPI Database</p> <p>The data collection involved a proper mix of different methods and sources:</p> <ol style="list-style-type: none"> 1) collection/storage of the automatic data generated by LOCMAP, 2) available data bases from official sources (ARPAT, Tuscany Region, ISPRA, IRSE, etc...) 3) information collection by means of specifically targeted questionnaires, manual counting, surveys to logistic operators as well as to citizens and city users. <p>Concerning information and data from end-users, according to collection procedure defined in Deliverable C.1.1, they were collected also with the support of selected stakeholders involved. During the meetings with the service providers and logistics operators (see action A1), information related to the actual specific transport efficiency level were discussed. In particular the following ones (foreseen in the Evaluation Plan), e.g.:</p> <ul style="list-style-type: none"> - average distance travelled per trip by each vehicle, - average vehicle loading factor (volume or weight of transported goods per trip), - average specific efficiency (energy and emission) of used vehicles (Kwh/Km or Kg of CO2 /Km). <p>Also, information related to socio-economic aspects were collected from the municipal offices and during the different meetings with the stakeholder (e.g., delivery costs, tariffs and prices)</p> <p>Concerning environmental data, the overall air quality level has been considered thanks to the data provided by ARPAT and regional government. In particular, the contribution of the transport sector to the overall air quality was investigated by acquiring information from the environmental offices of the regional government also by dedicate meetings (as described in the evaluation action).</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	
<p>The data collection activities were affected by the time plan of the demonstration, and by the impact of COVID-19 pandemic, However, due to the longer period of demonstration and to the recovery plan took in place by the partners, more data than originally foreseen related were acquired. It is worth to note that acquired data referred to different logistic operative conditions due to the impact of COVID-19.</p> <p><u>Deliverables</u> issued: C.2.1 "LIFE ASPIRE data collection report".</p>	

The completion of this Action represents also the achievement of <u>Milestone</u> M6 “Environmental data collected”.
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>
Not relevant
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, 31rganizational or environment related problems).</i>
Since the demonstration activities have experienced a delay, as explained in action B3, data collection followed the demonstration steps: firstly, the data concerning the complete RFID monitoring system and load and unload bays were collected, then, data related to the cargo bike sharing system. As soon as the full-scale demonstration was in place it was possible integrate the data information collection process.
<i>Mention any complementary action outside LIFE.</i>
N/A
<i>Outline the perspectives for continuing the action after the end of the project.</i>
Data collection will continue as the City will maintain the technological measures and will extend their use to other user groups, beyond the logistics operators after project duration.

ACTION C.3	Title: Monitoring and measuring LIFE performance indicators Foreseen start date 10/2018 Actual start date: 10/2018 Foreseen end date (proposal): 09/2020 Foreseen end date (post Am #3): 09/2021 Actual end date: 09/2021 Beneficiary Responsible for implementation: LUCCA
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>This mandatory Action concerns the reporting on the outputs and impact of the project taking into account the LIFE KPI that reviews the LIFE Performance Indicators required by the Call 2016, in order to contribute to evaluating the impact of the LIFE ASPIRE project.</p> <p>In fact, at proposal level the LIFE ASPIRE Consortium reviewed the LIFE performance project indicators and filled in the .xls table firstly, and then, after the request of the executive agency the the new LIFE KPI webtool was filled in according to the new monitoring system provided by the EU in 2018, 2019 and 2021. The monitoring indicators activity required the calculation of impacts at the end of the project as well as an estimation of the expected impact at 5 years after the conclusion of the project.</p> <p>At Progress Report stage an accurate analysis of the LIFE performance indicators (Deliverable C.3.1), was made. At Mid-Term stage Report stage, following the recommended update of Deliverable C.1.1, and in particular of its sections related to the definition of the preliminary baseline and preliminary ex-ante evaluation, a new version of LIFE Performance Indicators .xls table (Deliverable C.3.2) has been elaborated. At final report stage, the relevant sections of the LIFE KPI webtool was filled in, describing in a quantitative and qualitative way the project impacts.</p> <p>In particular, the following sections were evaluated: Project setting, area/length and population, Environmental and Climate action outputs and outcomes, Societal outputs and outcomes.</p> <p>The related indicators value have been filled in and described:</p> <ul style="list-style-type: none"> • 1.5. Project area/length • 1.6. Humans (to be) influenced by the project • 6. Air • 8. Climate Change Mitigation • 10. Governance • 11. Information and awareness raising to the general public • 12. Capacity building • 13. Jobs • 14. Contribution to Economic growth 	

Specific explanation was added in the field “comments” to support calculations and justification of the data filled in and a particular attention was paid to points 6 and 8 because of the specific issues raised in the last post-monitoring letter (re. ARES (2021)3337838 – 19/05/2021) With the submission of the LIFE KPI Webtool, the deliverable C.3.3 “LIFE ASPIRE performance indicators at final report stage” is considered completed
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.</i>
The activities of this Action were developed in compliance with the work program and with the project timing. In particular, the due monitoring steps (at Progress report, Mid-term report and Final report) were elaborated with no significant deviations between the Project Proposal. <u>Deliverables</u> issued: C.3.1 “LIFE ASPIRE performance indicators (.xls file) – at Progress report stage”; C.3.2 “LIFE ASPIRE performance indicators (.xls file) – at Mid-Term report stage”; C.3.3 “LIFE ASPIRE performance indicators (.xls file) – at Final report stage”.
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>
N/A
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>
During the development of Action C.3, no significant problems have been encountered. All the activities were developed without delays.
<i>Mention any complementary action outside LIFE.</i>
N/A
<i>Outline the perspectives for continuing the action after the end of the project.</i>
The estimation of the expected impact at Final Report stage consider also a period of 5 years after the conclusion of the project. After five years from the end of the project a comparative assessment of expected results vs the real situation of the logistics process/impacts at that time will be performed by LIFE ASPIRE consortium partners.

ACTION C.4	Title: Project impact evaluation Foreseen start date: 10/2018 Actual start date: 10/2018 Foreseen end date: 09/2021 Actual end date: 09/2021 Beneficiary Responsible for implementation: MEMEX
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>The significant activities performed under Action C.4 concerns the analysis and evaluation of the implemented LIFE ASPIRE measures, services and support technologies (under different points of view), properly conducted on the datasets collected during the demonstration phase, developed under Action B.3. considering the following four main evaluation categories:</p> <ul style="list-style-type: none"> - the evaluation of environmental impacts, with particular focus on noxious gases (and particulate matter) and GHG emissions and noise levels; - the evaluation of energy impacts; - the evaluation of levels of efficiency of the implemented services/measures (in particular of the IT Platform “LOCMAP”) and of the user appreciation; - the evaluation of the socio-economic aspects, that ended up with the development of a Business Case analysis and with suggestions to policy makers at regional, national and European level. 	

In this sense the activities were divided in 4 Sub-Actions: i) Environmental and energy impacts evaluation (Sub-Action C.4.1, resp. MemEx); ii) Assessment of socio-economic impacts (Sub-Action C.4.2, resp. Lucense); iii) LIFE ASPIRE Business Case (Sub-Action C.4.3, resp. MemEx); iv) EU Policy Recommendations (Sub-Action C.4.4, resp. Lucca Municipality). For each sub-action a specific Deliverable is annexed.

A continuous monitoring activity was performed during the pilot phase to preliminarily assess the development of the impacts in order to tune the demonstration operations, and in particular the data collection.

As already detailed, the complexity of the measures, services and systems implemented in Lucca under the LIFE ASPIRE umbrella, required a gradual development of the activities needed to complete the devices installation, the specific LOCMAP platform/app and the operational start-up. For this reason, also the demonstration activities started in successive steps, once the various test phases to validate the systems/services were completed.

Similarly, data and information collection activities also followed this procedure and were gradually launched, after the beginning of the demonstration activities, in order to be sure to gather data that are related to reasonably established and stable demonstrated services (in terms of service operation, users sample size, etc.).

From an operational point of view, since the beginning, data and information collection involved a mix of widely used methods, fully described in Deliverable C.2.1 “Data collection report”.

Overall, as planned in Action C.1, impacts evaluation was based on the assessment of the following main steps:

- a) Baseline scenario identification (i.e., situation before the implementation of the LIFE ASPIRE measures/services), at project onset. The baseline scenario was updated in the occasion of the a revised/extended version of Deliverable C.1.1.
- b) Ex-ante scenario evaluation in terms of estimation of the possible expected impacts of the planned LIFE ASPIRE measures/services on the basis of the baseline situation, previous experiences, preliminary collected data, standard impacts calculation methodologies, etc. The ex-ante scenario was also updated in the occasion of the a revised/extended version of Deliverable C.1.1.

In addition, to compare and validate the results of the ex-ante scenario evaluation made with the assumption described above, a specific application sw has been used, i.e. the micro-simulator Aimsun® TSS (made available by MEMEX at no additional cost for the project).

- c) Measures and services monitoring during demonstration, mainly based on on-going data collection from LOCMAP Platform, surveys, etc.
- d) Ex-post scenario evaluation (situation at the end of the project), based on the data collected during the demonstration and comparison with the BAU 2020 scenario.

Moreover, evaluation of a long-term extrapolation, beyond 5 years after the project conclusion was performed.

The adopted project methodology to define the average emission/energy reductions was based on the “official” database of average emission factors relating to road transport, made for the purposes of drawing up the national inventory of atmospheric emissions, created annually by ISPRA as a means of verifying the commitments undertaken at international level on the protection of atmospheric environment, such as the Framework Convention on Climate Change (UNFCCC), the Kyoto Protocol, the Geneva Convention on Transboundary Air Pollution (UNECE-CLRTAP), the European Directives on the limitation of emissions. Moreover, this database is based on the “EMEP/EEA Air pollutant emission inventory guidebook 2019” and is consistent with the “IPCC 2006 Guidelines relating to greenhouse gases”.

For the definition of the pollutant emissions of the different vehicle category considered the software COPERT (version 5.4.36) has been used. The development of this tool is coordinated by the European Environment Agency, as part of the activities of the European Topic Center for Air Pollution and Climate Change Mitigation.

With particular reference to the environmental impacts, it is important to highlight that the evaluation focused on noxious pollutant emission reduction (in particular NO_x, CO, C₆H₆, PM₁₀ and PM_{2.5}).

Additionally (even if this topic is more “Climate changes” related), GHGs reduction (i.e. CO₂, N₂O and CO₂eq) have been assessed.

Benefits have been mainly calculated considering the reduction of commercial vehicle trips (in km) due to the LIFE ASPIRE measures/services and the average pollutant emission savings (from ISPRA “official” Database), related to the composition of the total number of accessing vehicles (i.e. urban logistics fleet). The average fleet composition according to the different powertrains (e.g. petrol, diesel, FEV) and emission standard categories (EURO normative) was defined on the basis of the public information provided by the statistics of ACI (Italian Automobile Club, on behalf of the national Ministry of Transport).

For what concerns the baseline, the total number of Light Duty Commercial Vehicles accessing the city centre of Lucca, and related mileage, were available thanks to previous studies and specific surveys, validated at the project onset. For what concern the ex-post situation, the total number of Light Duty Commercial Vehicles accessing the city centre of Lucca, and its related mileage, has been calculate by use of the LIFE ASPIRE LOCMAP platform, integrated by on site counting, interviews and surveys during the demonstration period.

In other terms,

$$\sum_{i=1}^{i=1680} v_i m_i e_{i,k}$$

where v_i is the i -th vehicle, m_i is the annual mileage of the i -th vehicle and $e_{i,k}$ is the specific emission of the k -th pollutant for the i -th vehicle.

Concerning the estimation at 5 years beyond the end of the project, the estimations performed consider at least 4 aspects: the first related to the increase of the percentage of FEV at 2025, as foreseen by recent studies of the Politecnico of Milan (Smart Mobility Report 2020), the second related to a further increase of the percentage of FEV, fostered by the implemented awarding approach of LIFE ASPIRE, the third due to a further improvement of the load factor of commercial vehicles and route optimization, thanks to the LIFE ASPIRE logistics measures, the fourth the complete phasing-out of circulating vans from EURO 0 to EURO3. More specific details on the adopted environmental evaluation methodology and achieved results (ex-post situation) are reported in Section 6.4.1.

The environmental/energy evaluation has been complemented by an analysis of the normative and regulatory scenario that represent the basis of the demonstrated cycling measures and services. Moreover, a specific socio-economic impacts evaluation has been performed (i.e local SMEs business improvement, competitiveness of urban area, jobs opportunities, etc.).

Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables’ and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.

Despite LIFE ASPIRE measures and services operation and demonstration started later than foreseen, and consequently also data collection was partially postponed, the evaluation activities were fully carried out in the proper way, achieving the expected results.

As indicated above, from environmental point of view, the implemented measures, services and supporting technologies lead to significant pollutant emission reductions, both for Noxious Gases and Particulate matters, in line (or better) with the expected results. Moreover, also the emission reductions of GH Gases are in line with the expected results.

The activities performed and the results of this Action are described in the specific Deliverables:

C.4.1 – “LIFE ASPIRE environmental impacts evaluation”; C.4.2 – “LIFE ASPIRE socio-economic impacts assessment”; C.4.3 – “LIFE ASPIRE Business Case” and C.4.4 – “EU Policy recommendations”.

The completion of this Action C.4 represents also the achievement of Milestone M8.

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

Final postponed submission of due Deliverables was authorized by EASME in the occasion of the second amendment request by the Consortium on February 2 nd 2021, due to the difficulties related to the Covid-19 pandemic.
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>
COVID-19 pandemic impacted the development of the demonstration and data collection activities, and therefore the selection of the data to be considered for the evaluation was made with particular attention, avoiding to consider periods that weren't representative of the "normal" city logistics situation (e.g. lockdown months).
<i>Mention any complementary action outside LIFE.</i>
N/A
<i>Outline the perspectives for continuing the action after the end of the project.</i>
Considering that data collection will continue as the City will maintain the technological measures and will extend their use to other user groups, beyond the logistics operators after project duration, it is expected that further impacts assessment (in particular from environmental and socio-economic point of view) will be performed to evaluate the results of the updating/extending of the implemented measures, services and support technologies.

D. Public awareness and dissemination of results

ACTION D.1	Title: Dissemination planning and execution Foreseen start date 10/2017 Actual start date: 10/2017 Foreseen end date (proposal): 09/2020 Foreseen end date (post Am #3): 09/2021 Actual end date: 09/2021 Beneficiary Responsible for implementation: LUCENSE
Sub action D1.1	Dissemination and promotion plan (resp. MemEx)
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>This action was completed and concerned the definition of the guidelines and of the technical approach for the dissemination of activities and results of LIFE ASPIRE project. The strategy has been described in details in the <u>deliverable</u> D1.1 “The LIFE ASPIRE Dissemination and Promotion Plan (DPP)” – already submitted with the first progress report (October 2018). The output (DDP Plan) has been drafted by MemEx and approved by all beneficiaries.</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	
<p>All the activities foreseen in this sub-action were completed coherently with the time schedule of the project. In the development of this sub-action no particular problems were identified and all activities were carried out as planned, leading to a clear identification of the guidelines and methods for promoting and disseminating the activities and results of the project. No deviations from the foreseen time schedule of the project.</p>	
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>	
<p>The DPP was updated according to the to the observations included in the 1st monitoring report letter (12/04/2018 EASME B3/ML D (2018) 2183778) sent by EASME after the 1st monitoring Visit in March 2018.</p>	
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>	
<p>During the development of this sub action, no significant problems have been encountered. All the activities were developed without delays.</p>	
<i>Mention any complementary action outside LIFE.</i>	
NONE	
<i>Outline the perspectives for continuing the action after the end of the project.</i>	
NONE	
<i>Compare with the planned activity</i>	
In line	
<i>Was the objective reached? What reactions and feedback were obtained?</i>	
<p>Yes, the DPP is understood and agreed by all beneficiaries. In addition, it is worth to underline the achievement of an effective communication plan that is carried out through different communication channels (see sub-actions below). The Deliverable has been officially sent to EASME, within the 1st progress report (October 2018).</p>	
Sub action D1.2	Project Visual Identity, Website, Notice Boards, Promotional events, Layman’s Report (resp. LUCENSE)
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done)</i>	
<p>PROJECT VISUAL IDENTITY. This action led to the production of the <i>deliverable D.1.3 “LIFE ASPIRE Visual Identity”</i> (– already submitted with the first progress report (October 2018). The Visual Identity includes, among others: logo, A4 letterhead template, presentation folder, PPT template.</p>	

OFFICIAL PROJECT WEBSITE (<http://www.life-aspire.eu/>). Development, maintenance and constant update of the project website as the key source of contents for promoting the project. *Deliverable D.1.2 “LIFE ASPIRE Official Project Website (software)”*.

NOTICE BOARD. Production of graphic layout and contents – in EN and IT; printing of LIFE ASPIRE notice boards. All beneficiaries have installed the Notice Board at their premises (some of them in English and some others in Italian). The Notice Board pdf file was attached to the progress report together with some pictures giving evidence of the developed action (October 2018). *Deliverable D.1.4 “Official Notice boards”*.

PROMOTIONAL EVENTS. LIFE ASPIRE partner have attended – in some case also as speakers - the following events:

- 11th January 2018, Transportation Research Board - 97th Annual Meeting Washington D.C (USA) – MemEx;
- 27th February 2018, SUCCESS “Sustainable Urban Consolidation CentrES for conStruction” (Final event) Bologna (Italy) – MemEx;
- From 20th to 23rd March 2018, Intertraffic Fair Amsterdam (The Netherlands)- Kiunsys;
- 16th April 2018, Growing Green City Routes Nijmegen (The Netherlands)- LUCENSE;
- 27th April 2018, Meeting in Lucca, with local enterprises in the framework of the participative process for the definition of Sustainable Urban Mobility Plan (SUMP) for the Province of Lucca (morning) – LUCENSE;
- 27th April 2018, Green Logistics for European cities Livorno (Italy) (afternoon) - MemEx, LUCENSE;
- From the 18th to the 21st September 2018, Civitas Forum 2018 Umea (Sweden)- MemEx (LIFE ASPIRE project has been presented during the session “Regulating Access to cities. What’s next?”, on the second day of the Forum. The presentation was entitled: “From the Urban Consolidation Center to an awarding criteria logistics platform: the experience of Lucca Municipality in Life Aspire project”);
- From the 17th to 19th October 2018, 3rd VREF Conference on Urban Freight 2018 – Gothenburg (Sweden)
- City of Stockholm;
- From the 27th to the 28th of March 2019, 3rd International Autonomous Trucks conference Munich, (Germany) – MemEx
- 6th November 2019, ECOMONDO Fair Rimini (ITALY) – seminar on URBAN FREIGHT LOGISTICS and cities projects. The seminar has been organised by Kyoto Club and CNR IIA – LUCENSE;

For 2020 all the selected events were cancelled according to the restrictions due to COVID-19 pandemic.

- 22nd April 2021, Verso la conferenza Nazionale dell’8 luglio “Le città verso la neutralità climatica” (Webinar, online) – LUCCA;
- 29th April 2021, 4o Rapporto MOBILITARIA: “Politiche di mobilità e qualità dell’aria nelle città italiane 2021”, event organised in the occasion of the Key Energy Digital Green Weeks - Key Energy the Renewable Energy Expo (Webinar, online) – LUCCA
- 7th May 2021, “Veneto Smart Region: laboratorio di co-design. Quale strategia per i dati regionali?” (Webinar, online) – LUCCA;
- 12th May 2021 “Governance regionale per città verso la #TransizioneEcologica” (Platform meeting, online) – LUCCA. Event organized by Ecological Transition Ministry, with specific focus sessions to illustrate selected national best practice. ASPIRE was hosted in the thematic table “*Actions in the energy field and in the urban environment for a better quality of life*”.
- 3rd June 2021, Green Week 2021 Organisation of a project event in Lucca “Green logistics for Lucca: cargo bike sharing system”, labelled as Partner Event for EU Green Week 2021 by the EC DG Environment – Lucca historic centre – LUCCA, all partners.

On this occasion the first rewarding ceremony for the best 2020 logistic operators and for their participation in the LIFE ASPIRE project trial phase was also held.

- 1st December 2021, Annual POLIS Conference 2021 – Session URBAN FREIGHT ZOOMING TO ZERO, Gothenburg (Sweden) – MemEx.

The cargo bike stations installed in the historic centre have been officially inaugurated on March 5, 2021. A press conference has been organized to present the LIFE ASPIRE approach and the new service for city logistics operators. Seen the restriction due to COVID 19 emergency the conference saw the participation of the City Councillor Gabriele Bove and one representative per partner.

On October 5, 2021, at the Sala degli Specchi in Palazzo Orsetti in Lucca, was held the second rewarding ceremony of three logistics operators and an artisan who participated in the demo activities of the project.

<p>The mobility City Councillor Gabriele Bove and the Director of LUCENSE Enrico Fontana have rewarded the more sustainable logistics operators that, in the first 9 months of 2021, have made access to the historic center of Lucca with low environmental impact means of transport. The operators rewarded: Lucense transports, represented by Vincenzo Filizzola, Eco-city Transport Lucca, represented by Monica Motta, Logistica impresa, of Rome, present with Massimo Maria Palombi and Christin Tucci. Rewarded also the first classified for the category “artisans”, La Sfoglia d’Oro di Sant’Anna, represented by its owner Massimiliano Venturelli.</p> <p>The LAYMAN’S REPORT (deliverable D.1.10) has been produced and it is attached to this report.</p>
<p><i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.</i></p>
<p>This activity is being developed according to the time schedule of the project. The planned output was produced accordingly (such as visual identity, project website).</p> <p>The website was published at the end of December 2017 (in line with the foreseen MILESTONE M3). The website is updating from time to time according to the new progress of the project.</p> <p>The notice board has been printed well in advance to the foreseen deadline, following the suggestion of EASME - 1st monitoring report letter (12/04/2018 EASME B3/ML D (2018) 2183778) sent after the 1st monitoring Visit in March 2018.</p> <p>Deliverables issued: D.1.2 “LIFE ASPIRE Official Website”; D.1.3 “LIFE ASPIRE Visual Identity”; D.1.4 “Official Notice boards”; D.1.10 Layman’s Report.</p>
<p><i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i></p>
<p>Not relevant</p>
<p><i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i></p>
<p>During the development of this sub action, no significant problems have been encountered but it is worth to mention that due the COVID-19 emergency, especially in 2020, the events that the partnership had identified to participate were cancelled, reducing the possibility to participate in relevant external disseminating occasion. Besides, various events were not organised in 2021 but the consortium identified a few interesting online events to attend and present the project, its activities and main results (as indicated in the table above).</p>
<p><i>Mention any complementary action outside LIFE.</i></p>
<p>The beneficiaries with the participation to sector events, exhibition and conferences – organized by third parties – have presented and discussed the LIFE ASPIRE approach to an audience not familiar with LIFE PROGRAMME but interested in sustainability, green logistics and environmental issues.</p>
<p><i>Outline the perspectives for continuing the action after the end of the project.</i></p>
<p>The project web site will be online and maintained for at least 5 years after the project conclusion</p>
<p><i>Include tables, photographs etc. to illustrate the actions, such as (for LIFE Nature & Biodiversity, as well as LIFE Climate Action) land purchase and non-recurring management activities.</i></p>
<p>Annexes:</p> <ol style="list-style-type: none"> 1. SUCCESS “Sustainable Urban Consolidation CentrES for conStruction” programme 2. Growing Green City Routes_photos 3. Meeting in Lucca 27th April 2018_programme 4. Green Logistics for European cities_programme 5. Civitas_forum_2018_final_draft_programme 6. Civitas_forum_2018_photos 7. 3rd VREF Conference on Urban Freight_programme 8. 3rd International Autonomous Trucks conference_programme 9. 3rd International Autonomous Trucks conference_photo 10. URBAN FREIGHT LOGISTICS and cities projects seminar_programme 11. Verso la conferenza Nazionale dell’8 luglio “Le città verso la neutralità climatica_programme 12. “Politiche di mobilità e qualità dell’aria nelle città italiane 2021” programme

13. “Veneto Smart Region: laboratorio di co-design. Quale strategia per i dati regionali?”summary of the presented projects 14. “Governance regionale per città verso la #TransizioneEcologica” (Platform meeting, online) – LUCCA_programme 15. “Governance regionale per città verso la #TransizioneEcologica” (Platform meeting, online) – LUCCA_screenshots 16. “Green logistics for Lucca: cargo bike sharing system” (GW Event)_Programme IT 17. “Green logistics for Lucca: cargo bike sharing system”, (GW Event)_ Programme EN 18. “Green logistics for Lucca: cargo bike sharing system”, (GW Event)_ Pictures 19. “Green logistics for Lucca: cargo bike sharing system”, (GW Event)_ link to the official website 20. Annual POLIS Conference 2021_programme 21. Layman’s Report (Deliverable D.1.10)	
<i>Compare with the planned activity</i>	
<p>This sub action is proceeding as foreseen until the spreading of COVID-19 pandemic that, as explained in the paragraph above, saw the cancellation of the events that the Consortium has planned to attend. Therefore, two on site visits to the installed technologies in Lucca were organizing just before March 2020. One took place on November 15 2019 for the members of the TSC and the partners from the city of Zadar and Stockholm, in Lucca for the consortium meeting. The other one took place on February 13 2020, for the representative of the CIVITAS SUMP-PLUS project, co-financed by the European Commission, in Lucca for a project meeting. Within the day dedicated to the comparison of good practices related to sustainable mobility, liveability of urban centres and ecological freight transport the representative carried out a site visit in Piazza Santa Maria and Piazza San Frediano. Led by the City Councillor Gabriele Bove, the delegation had the opportunity to see in person the demonstration activities carried out by Lucca Municipality, with LIFE ASPIRE project (RFID antenna and load/unload bays equipped with sensors).</p>	
<i>Was the objective reached? What reactions and feedback were obtained?</i>	
<p>The objective of this sub action was to create, first, a corporate image for the project and to create some external visibility tools to promote the project to third parties. These objectives were reached. In addition, a positive communication of the project, both for general communication and dissemination that for logistics operators has been reached.</p> <p>The positive feedbacks obtained by this action can be summarized as follows:</p> <ul style="list-style-type: none"> - Official website: number of overall unique visitors (2018-2021) round 9.500 - Emails from third parties asking information about LIFE ASPIRE approaches (visitors of the website; people attending the conferences and the webinars, events above mentioned). 	
Sub action D1.3	Sub-action D1.3 Media works: dissemination materials, newsletters and video production (resp. LUCENSE)
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>Periodic LIFE ASPIRE Newsletters (1 issue/6 months). The beneficiaries have produced 8 issues of the project’s newsletter. The 2 additional issues were produced due to the project extension. All produced newsletters have been uploaded on LIFE ASPIRE official website (http://www.life-aspire.eu/paginaneews/), sent to the beneficiaries contact lists and uploaded also on LUCCA Municipality official website available at the following link (http://www.comune.lucca.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/18092). LIFE ASPIRE newsletter issues n. 1 and n. 2 have been attached to the 1st progress report; issues n. 3 and 4 have been sent within the mid-term report while issues n. 5, 6, 7 and 8 are attached to the present report and are all gathered in the Deliverable D.1.7.</p> <p>Each issue has been sent to approximately 1300 single contacts at EU level.</p> <p>Presence on social media. Since few months after the beginning of the project, social pages have been opened (Facebook, Instagram and Twitter). All beneficiaries have worked on the production of contents (news, tweets and pictures) on the project and related themes. The social pages created have been constantly animated with periodical publication of posts, tweets and pictures. To summarize, in quantifiable terms, the social media have the following trend: Facebook: 206-page likes; 218 followers; 350 posts; Twitter: 162 followers, 223 tweet; Instagram: 90 followers; 224 posts.</p> <p>Audio- visual material, in particular an illustrative short video. Illustrative short videos focusing on the cargo bike service have been produced and uploaded on the official website. Here the link to the videos:</p>	

[How to use the Cargo Bike; Gabriele Bove – Municipality of Lucca; Stefan Guerra LUCENSE; Antonio Liberato -MemEx](#) and [Paolo Lanari - MUNICIPIA](#)

LIFE ASPIRE official video has been produced and is available at the following link: ENG version (<https://vimeo.com/595846334>); ITA version (<https://vimeo.com/595841356>) (Deliverable D.1.9). The official video has been published on the LIFE ASPIRE website and LUCCA Municipality official website. Since the final conference has been done online due to COVID -19 restrictions the consortium has decided, also to follow a green approach, to distribute and promote the video online (as indicated above) and has had, so far, 320 views.

Promotional materials. According to LIFE ASPIRE Visual Identity, contents for tri-fold brochure and flyer have been developed. In order to be distributed during promotional events the following materials have been printed: no. 1 Roll up quite at the beginning of the project and one in 2019 to update the roll up with the logo of the new partner, Municipia and the renewed logo of partner Memex; no. 1000 threefold brochures; no. 1000 leaflets; no. 200 presentation folders; no. 7 notice boards, 4 posters for Greenweek event according to EU templates, 15 certificates as award for logistics operators, stickers with the project logo for the most sustainable vehicle and all Aspire customized coverings for cargo bike boxes.

Scientific papers: during the life span of the project 3 papers have been issued. The papers are the following: the first one was produced, in 2018, for the Transportation Research Board (TRB) 97th Annual Meeting held in Washington D.C. in January; the second one was produced, in 2020, for ECOMM (European Conference on Mobility Management) Cascais 2020 and the last one was produced in 2021 for TTS official newsletter. All the details of the papers are given in Deliverable D1.6, attached to the present report.

Media presence. Contacts with local press have been established and news on the project have been published on several occasion (kick off meeting in Lucca, LIFE ASPIRE annual workshops, meetings with local stakeholders, events organized during the Green week; awarding of most sustainable logistic operators and final international conference). Articles have been published by local web-newspapers (such as Lucca in Diretta, Lo Schermo, La Gazzetta di Lucca) and on regional newspaper such as La Nazione. All produced press releases have been uploaded on LIFE ASPIRE official website, section Press Releases. In the framework of the first LIFE ASPIRE workshop in Lucca, a short television service was broadcasted on NOI TV (local television Lucca). Some other services from NOI TV have been done in occasion of the most important events of the project (such for the “ecopoints”, for the inauguration of the cargo bike stations, for the Green logistics for Lucca: cargo bike sharing system” event). It is worth to underline that a service in occasion of the event “Green logistics for Lucca: cargo bike sharing system” has been registered also by the newscast of Tuscany TG3 and was broadcasted on RAI 3. The full service is available at the following link: <https://www.youtube.com/watch?v=BMJD97Zhxlk>

Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.

During the development of this sub action no significant problems have been encountered.

Deliverables issued: D.1.6 “Scientific papers”; D.1.7 “Newsletters”; D.1.9 LIFE ASPIRE Official Video.

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

Not relevant

Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).

No major problems encountered.

Mention any complementary action outside LIFE.

Not Applicable

Outline the perspectives for continuing the action after the end of the project.

Not applicable

Include tables, photographs etc. to illustrate the actions, such as (for LIFE Nature & Biodiversity, as well as LIFE Climate Action) land purchase and non-recurring management activities.

Annexes:

<ol style="list-style-type: none"> 1. LIFE ASPIRE newsletter issues n. 5, 6, 7, and 8 (Deliverable D.1.7) 2. Press releases (available at the following link: News – LIFE ASPIRE – Advanced logistics platform with road pricing and access criteria to improve urban environment and mobility of goods (life-aspire.eu)) 3. Official video (Deliverable D.1.9) - ENG version (https://vimeo.com/595846334); ITA version (https://vimeo.com/595841356) (D.1.9) 4. Scientific papers (Deliverable D.1.6) 	
<i>Compare with the planned activity</i>	
In line with planned activity.	
<i>Was the objective reached? What reactions and feedback were obtained?</i>	
<p>The objective of this sub-action is to disseminate LIFE ASPIRE project approach and results to a wide audience, using the communication tools created. LIFE ASPIRE web site and social media have generated some contacts asking for more information about LIFE ASPIRE. In particular, it is worth to underline that:</p> <ul style="list-style-type: none"> - LIFE ASPIRE project has been inserted in the ISPRA GELSO database as a good practice for local development. ISPRA is the Italian Higher Institute for the Protection and Environmental Research, a public research institution and subordinate to the supervision of the Ministry of the Environment and the protection of the territory and sea GELSO is the acronym for “GEstione LOcale per la SOstenibilità” (in English Local Management for Sustainability). In addition, the project has been quoted as good practice in <i>XIV ISPRA report on “Quality of urban environment”</i> (chapter “Action and instrument for local sustainability” - http://www.sinanet.isprambiente.it/gelso/files/2018_XIV_RAU_gelso.pdf). - LIFE ASPIRE project has been inserted – as good practice – in the first report July 2019 “Urban Agenda for sustainable development”, drafted by ASVIS (Alleanza Italiana per lo Sviluppo Sostenibile – Italian Alliance for Sustainable Development) and Urban@it (National center of studies for urban policies). The Urban Agenda was drafted by the working group on Goal 11 (Sustainable Cities and Communities) - of the 17 goals for a better world by 2030 – and was published on March 2018. Its uniqueness is the identification of precise quantitative objectives for each objective and for the main sub-objectives of the UN 2030 Agenda related to urban areas, with an indication of the actions needed to reach them (https://asvis.it/home/46-4368/agenda-urbana-per-lo-sviluppo-sostenibile-ecco-i-nuovi-dati-di-asvis-e-urbanit-#.XZ8I5tL7Tct) - The Ministry for Ecological Transition– Italian LIFE – National contact points environment & resource efficiency – has selected LIFE ASPIRE project as «LIFE project of the month» for July 2021. In the section of the website, all the Italian LIFE projects of 2014-2020 period have been collected. Here the link to the project website: https://www.mite.gov.it/pagina/progetto-life-aspire-citta-di-lucca 	
Sub action D1.4	Annual workshops and final international conference (resp. Lucca Municipality)
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>LIFE ASPIRE first annual workshop. The workshop entitled “<i>Innovation in urban mobility of goods. Rewarding policies and measures</i>” was held at the Monumental Complex of San Michele in Lucca, on October 12, 2018. In the workshop, in addition to the presentation of the LIFE ASPIRE approach, some significant Italian experiences (City of Verona and Ferrara) were the presentation of the two cities, in fact, have similar dimension to Lucca and share similar approaches in controlling the access to the RTZ and the use of RDIF systems. The solutions adopted in the cities of Zadar and Stockholm, in terms of freight mobility and delivering were presented as well. The workshop has been an occasion to distributed project leaflets and brochures to the participants. Dissemination and promotion of the event to over 2500 contacts via e-mail, publication on local newspaper, phone calls, social network and publication on partners websites. The workshop has seen the participation of round 40 people among which SMEs, municipalities, universities, research organization and associations.</p> <p>LIFE ASPIRE second annual workshop. The workshop entitled “Smart logistics solutions in Gamla Stan” was held at Grillska huset in Stockholm, on June 25, 2019. The workshop has seen the participation of important stakeholders that have brought the Swedish experience in finding smart logistics solutions for</p>	

freight transportation but not only. The workshop has been promoted also by LIFE ASPIRE social media channels but also via the official channels of the City of Stockholm.

The workshop has seen the participation of round 30 people among which SMEs, municipalities and associations.

LIFE ASPIRE third annual workshop. The third annual project workshop was held on March 4, 2021 online, using Gotowebinar platform, due to the persistence of the epidemic emergency related to Covid-19. The webinar entitled “LIFE ASPIRE awarding system: urban logistics before and after Covid-19” has been organised by the beneficiary Zadar Municipality with the support of the whole LIFE ASPIRE Consortium. The workshop has been promoted also by LIFE ASPIRE social media channels but also via the official channels of the City of Zadar. The final registration list was of about 60 participants among municipalities, public entities and associations.

LIFE ASPIRE Final Conference was held online on September, 21 2021 takingpart in the European Mobility Week in the sections “Activities within the week” and “Permanent measures” (<https://mobilityweek.eu/2021-participants/?year=2021&ci=LbbuslUE>).

Entitled “The role of urban logistics in the ecological transition”, it was divided into two sessions, one in the morning and one in the afternoon. The morning session was focused on the demonstration of the results of LIFE ASPIRE project, while the afternoon session was focused on the policies for the mobility of goods and air quality in urban areas. In addition to the project partners, the conference hosted some speakers of national and international importance who gave their valuable contribution on the issue of sustainable mobility of goods and people. In particular, during the afternoon session dedicated to the policies for the mobility of goods and air quality in urban area, 3 representatives of the TSC were invited as speakers. Mr. Silverio Antoniazzi (Ministry of Sustainable Infrastructure and Mobility) who talked about the Regulatory evolution of the RTZ for the control of freight transport; Mr. Bruno Pezzuto (TTS Italia) that focused his speech on the LEZ requirements and management tools and lastly Mr. Valerio Marangolo (Region of Tuscany) who illustrated the Regional Plan for Air Quality and interventions to improve air quality in the Plain of Lucca. A total of 67 spectators attended the conference directly in the Zoom room throughout the day, while 115 views were recorded between the morning and afternoon session on the Aspire Facebook page. All presentations and documents related to all the events have been uploaded on LIFE ASPIRE website at the following link: <http://www.life-aspire.eu/documents/>

Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.

Deliverables issued: D.1.5 “LIFE ASPIRE Annual Workshop”; D.1.8 “LIFE ASPIRE International Final Conference”

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

Not relevant

Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).

No major problems encountered.

Mention any complementary action outside LIFE.

The Municipality of Lucca is taking part to the effort leaded by the Province of Lucca in the definition of the Sustainable Urban Mobility Plan at a scale of the whole province, involving other several municipalities. The approach of LIFE ASPIRE will be an interesting contribution toward which other municipalities have already expressed their interest. Moreover, similar consideration applies at a European scale since the City of Lucca is taking part to the H2020 SUMP PLUS project aimed an advanced methodology of sustainable urban mobility planning, where the experience of LIFE ASPIRE will be valued by other relevant European cities.

Outline the perspectives for continuing the action after the end of the project.

Not applicable

Include tables, photographs etc. to illustrate the actions, such as (for LIFE Nature & Biodiversity, as well as LIFE Climate Action) land purchase and non-recurring management activities.

Annexes:	
<ol style="list-style-type: none"> 1st workshop_Lucca_AGENDA_EN (Deliverable D.1.5) 1st workshop_Lucca_AGENDA_IT (Deliverable D.1.5) 1st workshop_Lucca_photo (Deliverable D.1.5) 2nd workshop_Stockholm_AGENDA_EN (Deliverable D.1.5) 2nd workshop_Stockholm_photo (Deliverable D.1.5) 3rd workshop in Zadar_AGENDA_EN (Deliverable D.1.5) 3rd workshop in Zadar_photo (Deliverable D.1.5) Final International Conference in Lucca AGENDA_EN (Deliverable D.1.8) Final International Conference in Lucca AGENDA_IT (Deliverable D.1.8) Final International Conference in Lucca AGENDA_photo (Deliverable D.1.8) 	
Produced press releases have been attached to subaction D1.3	
<i>Compare with the planned activity</i>	
In line with planned activity.	
<i>Was the objective reached? What reactions and feedback were obtained?</i>	
<p>Yes the objectives of the workshop were reached. In fact, the workshop had the goal to local disseminate LIFE ASPIRE approach; facilitating common discussion and consensus building among the involved stakeholders and allowing exchanging views and experiences with other similar initiatives. To the workshops, were invited (as speakers) cities and private organizations dealing with similar themes (for the first workshop in Lucca, the cities of Verona and Ferrara, for the 2nd workshop in Stockholm MOVEMYBIKE, for the 3rd workshop in Zadar a representative of the Regional Energy Agency North but also a representative from the University of Zadar and Mobilita Evolva, among the others. In the case of the final conference in Lucca the city of Antwerp, a representative from the UE directorate General for Environment and (as reported above) representatives from the Italian Ministry of Infrastructure and mobility, TTS Italia and the Region of Tuscany. Reactions and feedback: contacts via email to obtain more information on the project (downloading ppt presentations from the website).</p>	
Sub action D1.5	Networking with other projects (resp. LUCENSE)
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>The activities undertaken have mainly concerned the exchange of information with other initiatives and projects tackling similar issues. The activities of this sub-action are on-going and have been developed according to the project program. In particular, a list of interesting projects to be contacted has been drafted (and already sent with the midterm report) and the coordinator of the identified have been contacted by emails. On LIFE ASPIRE website a specific section «Networking» has been created and will be updated with all new projects that will express interest in cooperating with LIFE ASPIRE (http://www.life-aspire.eu/networking/). More than 40 projects have been selected and contacted; with 14 of them LIFE ASPIRE has established a deeper contact as reported below. The CIVITAS and POLIS network have been informed about the project as well as the CLOSER platform.</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	
The activity has been in line with the time schedule. No deliverable is foreseen for this sub action.	
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>	
Not relevant	
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>	
No major problems encountered.	
<i>Mention any complementary action outside LIFE.</i>	
LIFE ASPIRE has contacted projects with similar topic financed by other EU programs or funds such as HORIZON 2020, INTERREG and so on	

<i>Outline the perspectives for continuing the action after the end of the project.</i>
Continue the dissemination action, using dissemination material and networking contacts developed so far, focusing of demo activities and results.
<i>Include tables, photographs etc. to illustrate the actions, such as (for LIFE Nature & Biodiversity, as well as LIFE Climate Action) land purchase and non-recurring management activities.</i>
Annexes: <ul style="list-style-type: none"> 1. List of projects 2. Screen shot of LIFE ASPIRE website “Networking section”
<i>Compare with the planned activity</i>
In line with planned activity.
<i>Was the objective reached? What reactions and feedback were obtained?</i>
<p>The objective was reached. The reactions and feedback can be summarized as follows:</p> <ul style="list-style-type: none"> - LIFE_SC; Mobility4EU; REFORM; GOSUMP, MoTiV, LIFE Gystra, LIFESC; U-Mob LIFE; BattleCO2; CIVITAS Handshake, MUV H2020, SULPITER, CIVITAS ReVeAL, H2020 are followers of LIFE ASPIRE Twitter page; - U- Mob LIFE, LIFE Sic2Sic and CIVITAS Handshake are followers of LIFE ASPIRE Instagram page; - A Skype call has been done with MoTiV project manager on July 19, 2018 in order to exchange deeper information about the respective projects and find possible ways of cooperation. A very good contact has been established with the project “LIFE-IP SK Air Quality Improvement project - full title: Enhancing the implementation of Air Quality Management Plans in Slovakia by strengthening capacities and competencies of regional and local authorities and promoting air quality measures”. The POPULAIR project (acronym) is coordinated by the Ministry of Environment of the Slovak Republic, will last 8 years and being implemented by 11 partners from Slovak and Czech Republic. The Municipality of Lucca was contacted – in September 2020 - by the project coordinator in order to start a cooperation with LIFE ASPIRE. A Skype call has been organised with the representative of the POPULAIR project: Jana Bielikova (Project Manager); Zuzana Kopinova (Slovak Ministry of Environment) and Jana Pavlikova (Slovak Environment Agency) and LIFE ASPIRE (Lucca and LUCENSE). After the Skype call the networking activities among the two projects has continued and, among other things, they asked us to join the CSSF and to be inserted into the database of contacts to receive updates from the project. The representatives of the project have been invited to attend the final international conference and they helped to spread the news among their contacts in eastern Europe. On the 7th of September 2021, Stefan Guerra (LUCENSE) was invited as speaker in representation of the LIFE ASPIRE project to the project’s International Conference on “Effective Air Quality Management. Objectives and implementation Instruments” (in Banská Bystrica). For restriction due to COVID 19, Mr Guerra attended the conference remotely. - ASPIRE has been inserted on the websites in the networking/other project section – of the following projects: <ul style="list-style-type: none"> - LIFE GYM (https://www.greenyourmove.org/copy-of-supporting-network) - LIFE Gystra (https://www.lifegystra.eu/en/enlaces/) - H2020 MoTiV (http://motivproject.eu/about-motiv/related-projects.html) - LIFE_SC - Life for Silver Coast (http://www.lifeforsilvercoast.eu/networking/) - LIFE BRENNER LEC (http://brennerlec.life/it_IT/other-eu-projects) - LIFE PREPAIR (http://www.lifeprepare.eu/index.php/networking/) - U-MOB (http://u-mob.eu/related-projects/) - LIFE BATTLE CO2 (https://www.battleco2.com/en/proyectos-amigos/) - CIVITAS Handshake (https://handshakecycling.eu/resources) - LIFE FOR SILVER COAST (http://www.lifeforsilvercoast.eu/en/networking-2/) - LIFE SIC2SIC (http://www.lifeforsilvercoast.eu/en/networking-2/) <p>Other projects worth to mention are:</p> <p>SUMP-PLUS "Sustainable Urban Mobility Planning: Pathways and Links to Urban Systems" (H2020 CIVITAS; 1st September 2019 – ongoing). SUMP_PLUS is a three-year Research and Innovation</p>

Action designed to address sustainable urban mobility related challenges and explore new opportunities and innovative mobility planning tools, by developing a strong, rigorous evidence base through a co-created City Laboratories approach, that will be demonstrated in six different EU cities Antwerp (Belgium), Alba Iulia (Romania), Greater Manchester (UK), Klaipeda (Lithuania), Lucca (Italy), and Platanias (Greece), building on the strengths of the existing SUMP and SULPs. MemEx is Technical Responsible of the whole Project. Website: www.sump-plus.eu/. Lucca is one of the 6 City Labs of the project whose aim is to strengthen sustainable logistics' role in SUMP in and beyond the city centre. During the 2PM in Lucca (February 2020) the partners could see the functioning of the technologies connected to Aspire (as reported also above).

Digitising data of urban vehicle access regulations (UVAR) across Europe to facilitate the private public and commercial use of UVARs. UVAR Box Project was awarded in the framework of the Preparatory Action — User-friendly Information Tool on Urban and Regional Vehicle Access Regulation Schemes, Contact n. MOVE/B4/2019-498. The Project will provide up to date and relevant information about Urban Vehicle Access Regulations (UVARs), addressing current fragmentation and lack of availability of UVAR data. The project is in line with the Directive 2010/40/EU of the European Parliament and of the Council of 7 July 2010 on the framework for the deployment of Intelligent Transport Systems in the field of road transport and for interfaces with other modes of transport. This UVARs concerns: Low Emission Zones (LEZ), Congestion charging, Limited Traffic Zones, Pedestrian Zones Parking Regulations. The plan of the EU-funded UVAR Box project is to push for a much more effective use of UVARs and adequately inform road users about such schemes, when moving across the EU. MemEx is project partner and National County Coach for Italy. Lucca Municipality was invited as follower and active participants. Website: www.uvarbox.eu/
LIFE ASPIRE newsletters have been sent to the key contacts of all identified projects and LIFEASPIRE has been inserted in the mailing list of most of them.

ACTION D.2	Foreseen start date 04/2020 Actual start date: 10/2020 Foreseen end date (proposal): 09/2020 Foreseen end date (post Am #3): 09/2021 Actual end date: 09/2021 Beneficiary Responsible for implementation: LUCENSE
Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).	
<p>Moving from the results and lessons learned with the pilot cases of Zadar and Stockholm (action B4), and with the aim to multiply the positive impacts of the demonstrated measures/services, LIFE ASPIRE elaborated a dedicated strategy plan for replicability and transferability of the project approach, focusing not only on "what" to transfer but also "how" to do this.</p> <p>The plan is contained in the due deliverable “D.2.1 - Replicability and transferability strategy Plan” demonstrating the achievement of the M9.</p> <p>The plan is developed following the “7 steps” methodology yet tested and assessed in Zadar and Stockholm. A particular importance was given to the evaluation of the target context; during the project experience has been confirmed that the analysis of the practices, policies, legal framework, socio economic parameters are the main starting point for a successful implementation of the process.</p> <p>In the elaboration of the plan a crucial role was represented also by the huge relationship work with stakeholders carried out during the project. First positive results have been obtained:</p> <ul style="list-style-type: none"> • LIFE ASPIRE has been inserted in the database of best practices <i>GELSO - Local Management for Environmental Sustainability</i>, a project of ISPRA -Higher Institute for Environmental Protection and Research, which aims to promote the dissemination and knowledge of good sustainability practices implemented in Italy through its website http://www.sinanet.isprambiente.it/gelso/banca-dati/comune/comune-di-lucca/life-aspire 	

- LIFE ASPIRE has been also selected by ASVIS (Italian Alliance for Sustainable Development) to be inserted in the publications of the "First Update Report of the Urban Agenda for Sustainable Development" of the *Working Group 11* <https://asvis.it/best-practices-sul-goal-11/1199-4713/aspire-capofila-comune-di-lucca-per-la-mobilita-sostenibile-delle-merci-nei-centri-storici-di-citta-piccole-e-medie#>
- A specific **relationship is ongoing with the Ministry for Ecological Transition (MITE)**; on May, 12th, ASPIRE was presented at a national MITE event «*Città sostenibili per una migliore qualità della vita*» («*Sustainable cities for a better quality of life*»), in the framework of the Project “Mettiamoci in RIGA”- LQS “Knowledge platform” (<https://mettiamociinriga.minambiente.it>); in the occasion LIFE ASPIRE was one of the LIFE project presented to propose for implementation and replicability to Regions and Cities for its innovative measures.

Furthermore, thanks to the involvement in the project of the Ministry of sustainable infrastructures and mobility in the Technical Scientific Committee, we opened a discussion about the possible future integration of the “discouraging” approach linked to the automatic control systems (legally authorized by MIT) with the “rewarding” approach of LIFE ASPIRE, like confirmed by the Director Mr. Antoniazzi during his speech in the final conference.

Beyond the promotion activities developed under Action D.1, taking also in consideration the experiences achieved in the sites of Zadar and Stockholm, the strategy plan includes also some actions performed in order to pave the way to promote replicability and transferability of the LIFE ASPIRE approach towards National and EU cities, also after the project conclusion. This action has to be considered such as always ongoing, spreading and going deeper the dissemination action during the project.

Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables' and milestones' dates foreseen in the grant agreement, and discuss the impact on other actions.

This action has been postponed according to the last amendment, mainly to permit the elaboration of the Strategy plan after the first project impacts assessment, especially in the pilot site of Zadar and Stockholm. In this way the due deliverable D.2.1 has been aligned to the activities of the linked actions, in particular B4. Also milestone M9 “Transferability and scalability strategy completed” has been reached.

If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).

NONE

Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).

NONE

Mention any complementary action outside LIFE.

NONE

Outline the perspectives for continuing the action after the end of the project.

This action is one of most important for the replicability/transferability and prosecution of the LIFE ASPIRE approach. Certainly, the function of the Plan, joined to the interest of Lucca, Zadar and Stockholm to continue implementing LIFE ASPIRE also beyond its duration, is the clear commitment for the promotion of the strategy plan

E. Project management

ACTION E.1	Title: Project management by LUCCA Foreseen start date 10/2017 Actual start date: 10/2017 Foreseen end date (proposal): 09/2020 Foreseen end date (post Am #3): 06/2021 Actual end date: 09/2021 + 3 months for the final report). Beneficiary Responsible for implementation: LUCCA
<i>Describe the activities undertaken and outputs achieved in quantifiable terms (also indicate by whom they were done).</i>	
<p>Sub-action E 1.1 Project management by Lucca</p> <p>The Coordinating Beneficiary (CB, Lucca), in close cooperation with all the other Associated Beneficiaries, has carried out the activity of management and monitoring, according to the method approved and described in the “Project Monitoring Handbook”.</p> <p>All members of the Consortium are very keen to cooperate with the Coordinating Beneficiary and demonstrate familiarity with European funds and related management.</p> <p>The CB has always been in strict contact with the external monitoring team, not only when provided the periodical report (now every 3 months) about the state of the project, but also for any relevant doubt in the management of the project that requires feedback from the monitoring team.</p> <p>The associated beneficiary Kiunsys was involved in several corporate events that have changed its legal subjectivity, requiring a project amendment to formalize this change. The coordinating beneficiary defined the procedures in collaboration with external monitoring team, also to handle the transitory phase without interruptions or several delays in the project implementation and waiting for the final Company structure of the partner to be substituted.</p> <p>It is worth to underline that the good coordination among partners made possible to manage the submission of the amendment request without particular problems. The final submission on e-portal was on 9th October 2019 and the approval on December 2019.</p> <p>A second request for amendment was submitted on February, 2nd 2021 for an extension of further 6 months due to the difficulties related to the Covid-19 pandemic. After more than two months of lockdown and the subsequent decision of the Municipality to suspend the cogency of the Restricted Traffic Zone institutive measures from May 12 to August 31, 2020 not to further infer on a local economy already brought to its knees by the pandemic, the demonstration phase suffered a sharp slowdown, preventing data collection and evaluation necessary for the experimentation. Recognizing the objective difficulties encountered during the experimentation phase, the Commission approved the extension of 6 months allowing the project to close on September, 30 2021.</p> <p>Sub-action E 1.2 Project audit report</p> <p>According to the default Amendment n.1, this activity is no longer applicable to ASPIRE partners; infact the article n.11 of the Financial Guidelines (Annex X to the LIFE Grant Agreement, Financial and Administrative Guidelines, updated 07.07.2021), this audit is compulsory for beneficiaries (incl. their affiliated entities) that have at least 750,000 EUR Union Contribution in the budget: as none of the Aspire project beneficiaries receives such a contribution from the UE, this report is no longer necessary.</p> <p>Sub-action E 1.3 After-LIFE Plan</p> <p>To this sub-action is linked to the deliverable E.1.3 “LIFE ASPIRE After Life Plan”, in which are analysed and described activities planned for the continuation of the logistic services and maintenance and enhancement of technologies, in particular from a financial and governance implications point of view. In this Plan can be found an overview of the project and an assessment of the situation at the end of the project, the after-LIFE objectives and methodology, funding needs and sources of funds.</p> <p>This sub-action will be implemented in the last phase of the project, but it’s just on a good way, considering that LIFE ASPIRE it’s yet included in all municipal relevant strategy and planning tools (SULP, SUMP, General Traffic Plan and also in the new Detail Plan of the historical center drafted for the approval).</p>	
<i>Compare with planned output (including the foreseen action description, expected results, deliverables and milestones) and time schedule. Please justify any deviations from the action start and end dates as well as the deliverables’ and milestones’ dates foreseen in the grant agreement, and discuss the impact on other actions.</i>	

All internal deadlines, including the submission of due <u>deliverables</u> for the reporting period (E.1.1, E.1.2, E.1.3) and <u>Milestone M1</u> were respected. The submission of all requested documents (most of all concerning the financial updating) are sent in due time, according to the Handbook.
<i>If relevant, clearly indicate how actions were modified, and any correspondence with the EASME approving the changes (in particular this is required if there has been a significant over-spending of the foreseen budget for the action).</i>
NONE
<i>Clearly indicate major problems / drawbacks encountered, delays, including consequences for other actions (technical, legal, financial/economic, market, organisational or environment related problems).</i>
NONE
<i>Mention any complementary action outside LIFE.</i>
NONE
<i>Outline the perspectives for continuing the action after the end of the project.</i>
NONE

6.2. Main deviations, problems and corrective actions implemented

About the consortium, it is important to describe the corporate events that involved the associated beneficiary Kiunsys during the second year of the project duration, as anticipated in the previous Section 5. In brief, Kiunsys branch of company was acquired by Municipia Mobilità Srl and some months later (April 2019) Municipia Mobilità Srl was incorporated into Municipia Spa.

Taking in consideration that all Kiunsys employees continued their contractual relationship with Municipia Mobilità Srl, which has practically maintained Kiunsys SRL human resources, brands, material resources and all activities, the Consortium (see Steering Committee of 5th March 2019) approved partner change. Moreover, with the agreement of Ms. Rabozzi, partners decided to wait the full company changes to submit a unique amendment request.

It is worth to note that Municipia SpA started working hard on the project just from 12/04/2019 in order to ensure the continuity of project activities and minimize delays in scheduled actions, also considering that in the period from January 2019 to April 2019 Kiunsys contributions were foreseen in several project actions and specifically in action B1 related to the development of LOCMAF platform and related integrations of purchased technologies.

The main technical difficulties encountered, concerned delays in completing actions B.2., B.3 and which in turn affected the quality/quantity of the data collected through activities of Action C2 and activities of Action.

Initially action B2 implied a complex articulation of new innovative services for the City of Lucca, infrastructure installations and site preparation that required more time than planned. Despite the three months safety margin included in the initial description of the action, this was not sufficient. To face the issues encountered, the Coordinating beneficiary, responsible for action B.2, increased periodic internal meetings and actively involved partners, successfully solving the problems incurred. Furthermore, a contingency plan was put in place, taking advantage of three RFID antennas already in place in Lucca, that were used to develop and test LOCMAF functionalities.

Then, COVID-19 pandemic outbreak had a disruptive impact on daily life activities also in the cities involved in the project in particular in Lucca, including mobility of people and goods. Citizens and businesses have been severely affected by the crisis. The local administration worked from the outset of the pandemic in an attempt to mitigate the socio-economic impact of COVID-19 on mobility, as well as on other sectors relevant to the city. In particular, commerce and tourism are suffering the most immediate hits of the crisis resulting among the most affected sector. From the project point of view, COVID-19 slowed down different LIFE ASPIRE activities: the municipal appointed measures have foreseen the suspension of the Regulation to access to the RTZ; no restrictions (and controls) were possible, with a clear impact on the data acquisition campaign. Besides, the ongoing distribution of the Restricted Traffic Zone (RTZ) access permits was slowed down during the emergency due to the closure of METRO office to the public. At last, the lockdown period led to the closing of shops and retailers, main recipients of the incoming goods flow in the city centre then causing a strong reduction of commercial vehicle traffic.

A shorter time of demonstration of LIFE ASPIRE system in its complete configuration (22 RFID gates, 34 parking sensors, 3 cargo bike sharing stations, LOCMAF platform and rules for rewarding), would have reduced data collection, affecting the evaluation of LIFE ASPIRE performance, limiting an appropriate assessment of project results as well as replicability and transferability of the LIFE ASPIRE approach in partnering cities.

Considering all these issues, the Consortium decided to request an extension of the duration of some project key actions. Such a request was included in the Amendment request submitted on February 2021 and shortly approved.

6.3.Evaluation of Project Implementation

- **Methodology applied:**

The methodology for the project implementation evaluation activities was developed and is described in detail in Deliverable C.1.1 – “LIFE ASPIRE Evaluation Methodology”, that, in order to comply with recommendations provided by EASME, was revised in an extended version of Deliverable C.1.1 including, among the others, a specific section on the preliminary baseline definition at project onset and a detailed preliminary description of the ex-ante situation. According to Action C.1 results, the methodology applied foresaw that the evaluation phase was carried out with reference to four different aspects:

- Environmental aspects, Energy aspects;
- Levels of efficiency and appreciation of ASPIRE services/measures;
- Socio-economic aspects.

A particular attention was paid to the definition of the modalities to monitor and evaluate the demonstration activities and the performance level of the innovative Logistics Credit Management Platform (LOCMAP).

The selected and implemented methodology led to a good capacity to evaluate the project results; its application and conclusion is well described in the KPI webtool results and in particular in deliverables C.4.1 and C.4.2. About environmental aspects, the partnership tried to comply with the observations raised during the last monitoring visit, in particular reported in issues 7 and 8 of the post-visit letter.

The methodology applied for the evaluation of the implemented LIFE ASPIRE measures (based also on the several project KPI described in the deliverable C2.1), made possible to analyze the measures both from a qualitative and quantitative point of view, bringing out some ideas for the improvement and correction of the same, which will be taken into consideration for the continuation of the action beyond the project duration.

- **Results achieved against the objectives and expected results foreseen in the proposal:**

<i>Action</i>	<i>Foreseen in the revised proposal (Objectives and Expected results)</i>	<i>Achieved</i>	<i>Evaluation</i>
ACTION A.1: Context analysis review, Stakeholder involvement and Requirements consolidation	1) Validation of the baseline scenario 2) Stakeholder involvement : set up of the Cities & Stakeholder Supporting Forum - CSSF 3) Consolidation of the user requirements	All objectives/results have been achieved: in particular n. 1 and 3 are described in deliverable A.1.1, CSSF was established and furthermore, also CTS was established.	Objectives and results fully achieved; a deeper analysis of the stakeholders led to the establishment of the not foreseen TSC, that was one of the main technical support, with a specialization of the CSSF and giving added value of the project development
ACTION A.2: Detailed design of eco-sustainable urban logistics services and ICT solutions	Definition of the "credit based" access control policy and design of ICT support technologies	The credit base policy was elaborated, in parallel with the design of the ICT system technologies, in its 3 components	Objectives and results fully achieved. Some minor adjustments were needed in the execution phase of the equipment instalments, due to some specific on site problems. A specific added annex to Deliverable A.2.1 “Details of “Credit Based” access policy control” was elaborated and was the basis

			of the static and dynamics parameters approved by the City council
ACTION B.1: Platform and support technologies development, adaptation and integration	1) development of the Logistics Credit Management Platform (LOCMAP) 2) Integration of technologies systems in LOCMAP	LOCMAP is running, in all its components and is able to manage in an integrate way all the equipment installed in LUCCA	Objectives and results fully achieved. Some minor delays were registered in the phase of the integration, due to the different timing of the procurements and for the Kiunsys/Municipia substitution, but without negative effects of the action success.
ACTION B.2: Site preparations, installation and organization	1) Preparation of the LIFE ASPIRE demonstration sites in Lucca, and deployment of ICT solution 2) purchasing processes of the needed devices 3) acquisition of all the authorisation necessary for full operational logistics services; 4) definition of trials and services demonstration plan.	The site was successfully prepared, public procurements have been exploited and after the acquisition of the due authorisations, all equipment were installed. The trial and demonstration plan was defined and adjusted when needed	Objectives and results fully achieved. This action was complex to implement, due to the reasons elsewhere provided (see above), however the Consortium provided the corrective measures necessary to successfully implement the action
ACTION B.3: LIFE ASPIRE measures and services operation and demonstration	1) Regular operation and use of the three technological innovations (RFID monitoring, L/U park monitoring, Cargo bike sharing service) by the targeted users 2) test of their integration in LOCMAP 3) collection of relevant data for the demonstration 4) Study, adjustment and evaluation of the "credit based" policy and organization of the awarding/rewarding events.	1) all technological services are running 2) LOCMAP integrated RFID UHF antennas, L/U sensors and cargo bike stations and could manage as a whole 3) data was collected 4) The credit based policy is applied and 2 awarding events were organized	Objectives and results fully achieved. Action B3 was also affected by some delays and needs of adjustments, mainly due to Covid 19 negative impacts. Despite these difficulties, the activities were rescheduled and corrected to achieve full implementation of the action. It is worth to underline that data collection is still ongoing and will give further results and effectiveness to the LIFE ASPIRE continuation
Action B4: Replicability and Transferability analysis in Zadar and Stockholm	Carry out a replicability and transferability analysis to evaluate the applicability of various actions, practice and outcomes, such as those encountered in a previous stage of the LIFE ASPIRE project in Lucca in different city context (Zadar peninsula and Stockhom Gamla Stan)	Analysis completed	Objectives and results fully achieved. Zadar and Stockholm performed a feasibility assessment and an evaluation of implementation actions. Due to the strong impact of the pandemic Covid-19, the implementation of the

			evaluated measures was slowed down and required specific adaptation (see deliverables B.4.1 and B.4.2)
ACTION C.1: LIFE ASPIRE Evaluation Methodology	To provide a specific methodology/guidelines for the evaluation of the project results: "LIFE ASPIRE Evaluation Plan" - Deliverable C.1.1.	Methodology elaborated and baseline defined	The methodology was fully elaborated, also taking into account suggestions of the monitoring team and of the monitor.
ACTION C.2: Data collection during demonstration	Data collection campaign	Data collection campaign realized	This action has been fully implemented, despite being affected by the delays imposed by the pandemic. The data collection plan developed in Action B required some adjustments, however it was possible to have a valuable period of experimentation (12 months) in its complete configuration with all operational technologies, under different operative conditions.
ACTION C.3: Monitoring and measuring LIFE performance indicators	Reporting on the outputs and impact of the project taking into account the LIFE performance indicators	KPI Webtool monitored and filled in	The LIFE KPI webtool was fed in a regular way, according to the foreseen deadlines and the KPI set was assessed and evaluated on the basis of the implemented actions
ACTION C.4: Project impacts evaluation	Analysis and evaluation of the implemented LIFE ASPIRE measures, services and support technologies in four main evaluation categories: <ul style="list-style-type: none"> - environmental impacts - energy impacts; - efficiency of the implemented services/measures - socio-economic aspects - development of a Business Case analysis and with suggestions to policy makers at regional, national and European level. 	All listed categories of evaluations were conducted and explained in the several due deliverables	Objectives and results fully achieved. The different evaluations were conducted and analysed taking into account, when relevant, the Covid-19 impacts. The Business case analysis has been elaborated and some indications to policy makers were suggested in the due deliverables
ACTION D.1: Dissemination planning and execution	1) Elaboration of the Dissemination and Promotion Plan 2) realization of Project visual identity, Website, Notice boards, Promotional events, Layman's Report 3) Media works: dissemination materials,	All activities were achieved, according to the wide detailed description of Action D.1 in section 6	The dissemination activity was very relevant in LIFE ASPIRE; the implementation of the dissemination and communication activities, from many points of view, was huge and continuous, especially starting from the implementation period of

	<p>newsletters and video production</p> <p>4) realization of Annual workshops and final international conference</p> <p>5) Networking with other projects</p>		<p>the data acquisition campaign. Although dissemination opportunities and events were radically reduced or cancelled in the first pandemic period, the partnership was able to optimize the opportunities in the year 2021. Furthermore, both the workshops and the final conference reached good levels of participation, as the networking activity was successful and created new opportunities for collaboration</p>
ACTION D.2: Replicability and transferability strategy Plan	Elaboration of a "Replicability and transferability strategy Plan"	Plan elaborated	<p>The Plan started from the analysis carried out in Zadar and Stockholm and it represents a useful guidelines to replicate and transfer the good practice of LIFE ASPIRE to other cities, taking into account the lessons learned from the relevant stakeholders and from the experiences of the LIFE ASPIRE</p>
ACTION E.1: Project management	<p>1) Organization and coordination of the project management</p> <p>2) Project Audit report</p> <p>3) After-LIFE Plan</p>	<p>All activities were achieved, with the exception of the project audit report that was not due, according to the amendment n. 1</p>	<p>The management of the project was successfully; there are no critical issues to report; the relationships between the partners and the beneficiary coordinator were productive and the monitoring team was involved in the necessary moments, maintaining a constant dialogue for the duration of the project. The after LIFE plan was developed, taking into consideration the various implications relating to the continuation of the project and the will expressed by the Municipality of Lucca in this regard.</p>

- **Indicate which project results have been immediately visible and which results will only become apparent after a certain time period.**

All technological services in Lucca are immediately visible (RFID UHD antennas, L/U bays, Cargo bike stations) and operative. An effective improvement in urban logistics processes can be experienced, especially considering the increased number of less pollutant vehicles accessing the historic centre demonstrating an increased awareness of logistics operators about their impacts on the urban environment.

The effects on the air quality due to the project action and of further implementation of the technological systems (already programmed in the planning documents of Lucca), will be visible in the mid-longer term. The planned and evaluated approaches to be replicated/transferred in Zadar and Stockholm needs will some years to become apparent .

- **If relevant, clearly indicate how a project amendment led to the results achieved and what would have been different if the amendment had not been agreed upon.**

As already illustrated widely in other sections of this report, n.2 amendments were required by the partnership for this project: the first one, due to corporate events of one of the partners and for the delays associated with the implementation of some actions; the aim was to assure a suitable demonstration period; the second one was required to mitigate the impacts of the pandemic. Thanks to these two amendments, it was possible to gain one full year of collection campaign in the complete configuration, with all technologies operating and running, and therefore to respect the data collection and evaluation plan, as proposed and adjusted in the duration of the project.

- **Describe the results of the replication efforts.**

The replication activity was carried out under the Action B4 than on Action D2.

The action B4 was devoted to give more practical results, in terms of evaluating possible implementation pathways of the LIFE ASPIRE approaches and technologies carried out by Zadar and Stockholm. While the project foresaw only the assessments on the transferability/replicability analysis of the measures demonstrated in Lucca, the partnering cities (in particular Zadar) also tried to start a local demonstration of specific LIFE ASPIRE measures, that were partially slowed down by the pandemic impacts in their implementation. However, both Stockholm and Zadar focused on identifying transferable measures, which were analysed in order to fit the local legal framework, and to make them applicable to the current and future context in the cities.

For example, Zadar plan to install physical barriers at the entrances to the pedestrian zone to better regulate the access of delivery vehicles in the pedestrian zone. In Stockholm, identified e and evaluated LIFE ASPIRE measures with a specific feasibility study for a future implementation of the measures.

About the replication of LIFE ASPIRE in further cities of context, the Plan developed as for deliverable D2.1 could certainly give good opportunities for its application in different contexts, where air quality issues due to urban freight mobility processes need to be addressed. Both the collaboration with the Italian Ministry of Infrastructure and with relevant other projects concerning air quality demonstrated the potential replication of the LIFE ASPIRE approach. For instance, this interest led to a collaboration for the replicability of specific measures within Lucca and selected stakeholders of Bratislava (Slovakia) on common air quality issues.

- **Indicate the effectiveness of the dissemination activities and comment on any major drawbacks.**

The effectiveness of the dissemination activities performed so far (e.g. LIFE ASPIRE Workshops, Final Conference, presentations in sector Conferences, networking with other projects, CSSF/CTS activities, etc.), stimulated significant interest from several local administrations/stakeholders towards the LIFE ASPIRE approach, measures and services (in addition to partners Zadar and Stockholm), resulting in the possibility of replications in other similar urban context (e.g. the cities involved in CSSF).

It is worth to mention that Lucca received collaboration proposals from different European Entities/Municipalities, that, thanks to the dissemination activities carried out, are interested in the LIFE ASPIRE activities. The last collaboration led to a recent technical visit in Lucca by a delegation of Slovenian stakeholders in order to exchange good practice, focusing on LIFE ASPIRE measures.

- **Policy impact**

At local policy level, LIFE ASPIRE contributed to the update of the approach/regulation incorporated in to new “Mobility, parking and access implementation Plan” for the historic center of the city (PAMS, deliberation of Lucca City Board n. 16/2021 – effective from 1st june 2021.). In particular, PAMS includes specific rules related to a new pricing system for permits to RTZ, according to the “polluter pays” principle. Furthermore, in the same Plan, it foreseen that the Municipality of Lucca will continue to implement measures to reduce the negative impacts of polluting vehicles, making the access rules progressively more restrictive and favouring the use of less polluting urban logistics vehicles.

Moreover, some LIFE ASPIRE aspects are included in the General Plan on Urban Traffic of Lucca (PGTU, deliberation of Lucca City Council, n. 10/2017) and in the Sustainable Urban Logistics Plan (SULP), developed by the City of Lucca.

In addition, measures and services demonstrated by LIFE ASPIRE are included also in the approved Lucca Sustainable Urban Mobility Plan (SUMP SULP, deliberation of Lucca City Council n. 107/2018). The Plan confirms and develops the principles already established in the Short term SUMP (i.e. PGTU), regarding the incentive to use more sustainable freights transport. The Plan, taking into account also some guidelines of the Italian Ministry of Infrastructure and Transport, foresees among others: the introduction of rewarding system for

less polluting vehicles; the adoption of a set of rules that awards a sustainable last mile delivery; the rationalization of loading/unloading bays also through the use of electronic and IT tools. The Lucca SUMP clearly considers LIFE ASPIRE as one of the instruments for the fulfilment of its goals.

It is important also to highlight that city logistics measures and services developed by LIFE ASPIRE are also in line with the local PAC - Piano di Azione Comunale d'Area 2019-2021 (Air Quality Plan) approved by the Municipality (deliberation of the City Board n. 73/2019) and they will be confirmed and further implemented in the next drafting of the local Air Quality Plan - PAC 2022-2024 (e.g., vehicles category emission allowed to access the RTZ). Concerning the regional level, LIFE ASPIRE contributes to the target set by the Regione Toscana for the Plain of Lucca (deliberation of the Regional Council n. 72/2018). Due to the particular high number of exceedances of PM10 limit values, the municipalities of the Area of the Plain, were assigned a relevant emission reduction objectives. The LIFE ASPIRE project represent on the positive actions developed by the City of Lucca to contribute reaching this important goal.

Concerning the national level, LIFE ASPIRE shared its experience with the Ministry of Transport to help the ongoing revision of the relevant national normative concerning access, parking and circulation inside RTZs (Decree 250/1999 and related guidelines approved in 2019). In particular, the contribution focused on the technological infrastructures (i.e. use of the RFid UHF Antennas), on the allowed time spent by transport operators inside the RTZ and on the data storing and related privacy aspects. The office of the ministry showed high interest as some of the LIFE ASPIRE contents are in line with the actions carried out by the Ministry in the implementation of the Agreements signed in Turin by the Government and the European Commission in the frame of the Clean Air Dialogues (i.e Intervention Area 3 Mobility - Action 2, related to RTZ management).

In this sense, at national/regional level LIFE ASPIRE promoted and fostered the participation in the Technical and Scientific Committee – among other members - of the Italian Ministry of Infrastructure and Transport and of Tuscany Region (Mobility Department). As above mentioned, these two members are key actors in the development policies at national and regional level concerning the access to the Restricted Traffic Zones of the cities and the use of ICT/RFID for the control of the access and other related policies.

At the European level, the LIFE ASPIRE project has taken to the attention of the UVAR community of experts, the need to address awarding scheme as an important aspect to consider in the implementation of UVAR (Urban Vehicles Access Regulations, ITS Directive 2010/40 / EU and Regulation (EU) 2017/1926), thanks to the participation of the city of Lucca to the network of Pilot sites of the UVAR Box project, (EC DG MOVE/B4/SER/2019-498/SI2.832125).

Apart from the technological point of view, LIFE ASPIRE creates also synergies and integrations with other EU policies concerning urban mobility.

In particular, the LIFE ASPIRE approach for urban freight distribution management foster transport operators to adopt low/zero emission commercial vehicles, contributing to the Lucca 2030 objective of a nearly-zero emissions last mile delivery and is in line with the recent initiative Urban Mobility Framework – part of the wider “Efficient and Green Mobility Package” to be released on December 2021 which aims to make urban mobility more sustainable, smart, and healthy.

The approach developed by the project was studied by Zadar and Stockholm and helped to focus sustainability aspects of city logistics, also with involvement of local stakeholders, in order to properly address them in the local policy context.

6.4. Analysis of benefits

1. *Environmental benefits*

a. Qualitative and quantitative environmental benefits

The awarding system (and related normative) and the innovative logistics services implemented with LIFE ASPIRE in Lucca, fostered the freight operators mind change to adopt more sustainable approaches in performing their activities, and this has reflected in a significant increase in FEV vans n. of accesses to the RTZ (up to 43/day). Surveys highlighted also an increased number of EURO5 and EURO6 accessing the RTZ (around +40%) and a significant reduction of EURO3 category. Interviews with transport operators confirmed these trends and highlighted also an increase of the load factor (from less than 40% in BSL to around 50% in ex-post situations). In other words, a general reduction of circulating vans of around -10,4%, registered during the “clean” monitoring periods (i.e. not affected by the COVID-19 restriction measures).

Considering the achieved *pollutant emissions saving* in the historic city center (and surroundings) environment of Lucca, the ex-post results, compared with the BAU 2020 scenario are very positive (better than the expected) and can be summarized as follow:

Noxious gases and Particulates matter emission savings:

NO_x : -1.159 Kg/y,

CO : -865 Kg/y

PM₁₀ : -266 Kg/y

PM_{2,5} : -259 Kg/y

Concerning the indicator VOC (Volatile Organic Compounds), the calculation performed were related to benzene (C₆H₆). As expected by the monitoring data of the Regional Environmental Agency of Tuscany (ARPAT), the calculated values are low, considering the small number of light duty commercial vehicles with petrol powertrain.

C₆H₆ : -5,08 Kg/y

GH gases emission savings:

CO₂: -151.062 Kg/y

N₂O: -9,22 Kg/y

CO₂eq: -154

With a perspective of 5 years beyond the project conclusion, the estimations performed consider at least 4 aspects: the first related to the increase of the percentage of FEV at 2025, as foreseen by recent studies of the Politecnico of Milan (Smart Mobility Report 2020), the second related to a further increase of the percentage of FEV, fostered by the implemented awarding approach of LIFE ASPIRE, the third due to a further improvement of the load factor of commercial vehicles and route optimization, thanks to the LIFE ASPIRE logistics measures, the fourth the complete phasing-out of circulating vans from EURO 0 to EURO3.

These conservative estimations showed the following emission reduction (compared to the ex-post situation):

Noxious gases and Particulates matter emission savings (5 years beyond the end of the project):

NO_x : -682 Kg/y,

CO : -380 Kg/y

PM₁₀ : -73 Kg/y

PM_{2,5} : -64 Kg/y

C₆H₆ : -1,01 Kg/y

GH gases emission savings: (5 years beyond the end of the project):

CO₂: -202.740 Kg/y

N₂O: -9,04 Kg/y

Concerning the *air quality aspects*, it is important to recall that the area of Lucca is one of the Italian territories showing poor air quality. Due to the local low thermodynamic activity and mild winds, the atmosphere rather static contributes substantially to amplify impacts of human activities, causing a high level of concentration of air pollutants. During the last 10 years, it has always been among those in Italy with the highest number of PM10 exceedances.

Italy has been condemned in 2020 by the EU Court of Justice for having systematically exceeded the daily/annual limits for PM10 and has been obliged to adopt without delay appropriate measures to respect these limits in all the zones concerned, including the area of Lucca (Judgment in Case C-644/18 Commission v Italy).

Based on reports of the Regional Environmental Agency of Tuscany (ARPAT) and Regional Emission Inventory (IRSE), it clearly emerges the relevance of transport sector in the production of air pollutants in Lucca, in particular considering the urban roads network.

Considering the air quality general aspects, the PM10 values are detected by the n. 3 ARPAT monitoring stations of the Lucca area (Capannori, San Concordio and Micheletto stations). These three monitoring infrastructures carry out background measurements on behalf of Region of Tuscany. In particular, Micheletto, which is located within the urban center of Lucca, is specifically dedicated to register the values of pollutant concentrations related to traffic. For this station, even considering the complexity of the contribution of the different emission sources and the impacts of the COVID-19 pandemic, the PM10 values recorded until September 2021 show a significant improvement compared to the baseline values of 2017.

ARPAT reports the following situation:

2017: 29 limit exceedances ($>50\mu\text{g}/\text{m}^3$), PM10 average year value: $26\mu\text{g}/\text{m}^3$

2021: 21 limit exceedances ($>50\mu\text{g}/\text{m}^3$), PM10 average year value: $24\mu\text{g}/\text{m}^3$

Clearly, these figures cannot be directly related to the results of the LIFE ASPIRE project, due to the different reference scales.

Interactions with the technical services of the Tuscany Region have clarified that the air quality modeling system (SPARTA Model), developed by the LaMMA Consortium (Environmental monitoring and modeling laboratory of the Tuscany Region), is not able to appreciate variations in the different emissions (e.g. PM10) below a certain threshold.

Therefore, for the evaluation of the benefits of the project, in terms of contribution to a better air quality, the project adopted the methodology suggested by the environmental department of Region of Tuscany. In this sense, the ex-post PM10 emission reduction of 266 kg/year (compared to the BAU 2020 scenario), contributes significantly to meet the targets set by Regione Toscana in the strategic document “Regional Air Quality Plan” - PRQA, Piano Regionale della Qualità dell’Aria e dell’Ambiente (DCR 72.2018).

Actually, the overall PM10 emissions reduction target assigned to the Lucca Plain (440 sqkm) is of 260 tons/y.

Inside the Plain, the urban areas of Lucca Municipality have an extension of 20 sqkm and therefore, considering that transport processes represent the 13% of the overall PM10 emissions, the LIFE ASPIRE Project contribution to the air quality improvement amount to a significant -17,3% for the specific sector.

From the energy savings point of view, the comparison between the LIFE-ASPIRE ex-post scenario and the BAU 2020 scenario highlights how the consequent benefits are equal to around -11,7%, decreasing from 257,5 TOE /year to 227,3 TOE /year. These figures takes into account the mileage reduction of conventional vans but also the mileage increase of electric vans.

2. *Economic benefits*

The movement of goods in urban areas, largely determined by the changes in our lifestyles and by the continuous evolution of services, has undergone a significant revolution, boosted by the ongoing health emergency, resulting in clear growth in the urban logistics sector. In particular, e-commerce has experienced exponential growth and is also expanding to the agri-food sector

with the phenomenon of online shopping with home delivery and instant delivery services. At the same time, logistic models connected to trade are changing following new supply dynamics, e.g. the Just in Time model, which reduce the need of storing inside the shop, requiring higher frequency and more flexibility of deliveries, with related reduction of vehicle load factor (even less than 20%).

All these elements lead to an increase in the volumes, frequency and capillarity of urban logistics activities requiring a coordinated effort from all stakeholders involved, aimed at minimizing the impact on the urban ecosystem.

To face these changes, Public Bodies need to regulate logistic activities in an integrated way, managing public spaces and their use, encouraging virtuous behaviour of both businesses and distributors in order to reduce the negative externalities generated by transport activities. Eventually, the citizen-consumer must become aware of the impact of the logistic activities related to their home delivery choices, driven by an awareness-raising activity that must come from the Public Bodies.

Under this perspective, the LIFE ASPIRE project has a huge market potential, especially for the industrial partners, since it designed, developed and tested in a real demonstration scenario with a set of policy measures and ITS technologies, as effective solutions to tackle the emerging issues in urban logistics. Indeed, all the main actions realised and demonstrated within the project are coherent with recommendations reported in the position paper “La logistica urbana in una visione integrata”, released by the Italian Ministry of Infrastructure and Transport and by the members of ANCI, the National Association of Italian (December 2020). In particular:

- the implementation of various approach to access regulation to the urban centres of cities for light heavy duty and private vehicles to promote behaviours changes;
- the digitization of access control procedure to manage permission related to vehicles and drivers who carry out logistics activities within controlled areas (e.g. RTZ, Environmental Areas, etc.) and more generally within wider urban and metropolitan areas;
- the adoption of systems capable of managing loading/unloading areas in real time, of supporting proximity transshipment areas in order to favour intermodality by the use of lighter vehicles (as cargo-bikes), in order to limit road and kerbside parking (which affects the overall circulation of vehicles) and to reduce the time for vehicle to find an available parking lot (thus reducing energy consumption and emissions);
- the adoption of systems capable of tracking and tracing logistics processes.

In addition, beyond such recommendations, there have already been some positive feedback from the market, as reported by the industrial partner Municipia. In particular, the interest for the LIFE ASPIRE results have been already expressed by several cities following the presentation of the project in public events with other public bodies. Therefore, Municipia is interested in industrializing the technologies developed and demonstrated in LIFE ASPIRE in order to develop the solution from the current level (demonstration in operative environment - TRL 7) to a more stable system, ready for the market (TRL 9). The business opportunity for the industrial partner is to add innovative, appealing products to their current offering portfolio and thus have a wider number of solution which are able to better address the emerging needs of cities for the management of urban logistics.

3. *Social benefits*

LIFE ASPIRE projects will produce social benefits on the longer run, from different points of view. The improvement of social awareness, acceptance and promotion among citizens, retailers and logistics operators of the values of a sustainable behaviours and greener transport represents a relevant aspect to improve air quality of our cities and related health impact on all

residents and city users. Moreover, concerning the local administrations, LIFE ASPIRE activities will produce benefits in terms of promotion of eco sustainable urban logistics services, adoption of zero/low-emission vehicles, stimulation of integration freight delivery in the overall, coordinated, sustainable mobility offer (in particular related to commercial activities). Obviously, the setup of new services will need to define related job profiles concerning management of new technologies used. Such social benefits are tightly related to economic benefits described in the section above and detailed in the deliverable C4.2.

4. *Replicability, transferability, cooperation:*

One of the most relevant activities of the project is to create specific conditions for replicability and transferability of the project; to this purpose, LIFE ASPIRE had a specific action (B4) to test the capability to export the project in other contexts, Zadar and Stockholm. On the other hand, replicability, transferability and possibility of cooperation are analyzed also in action D2, with a specific focus beyond the project duration.

Both aspects contribute to give value to the linked benefits achieved.

Regarding the first issue, with Zadar and Stockholm have been evaluated the potential replicability and transferability of the measures applied in Lucca, following the specific “7 step methodology” proposed by the project, such pilot cases to assess the LIFE ASPIRE approach. In particular, the project tried to face the problem to regulate the traffic of delivery vehicles in the pedestrian and historical zone (small urban area) through some measures transferred from the city of Lucca. The first step was to analyse similarities and differences between Lucca and the target contexts; then, the project tried to translate problems in practical solutions, with a dedicated attention to the methodology; in Zadar, in the Peninsula, the main benefits achieved are the new Regulation approved by the City and applied to all those who enter the pedestrian zone by vehicle and the instalment of a new monitoring system with video cameras to monitor delivery vehicles at all entrances/exits from the pedestrian zone, transshipment points, and set up a control room for traffic wardens who use video cameras to monitor delivery vehicles in the pedestrian zone. Also the evaluations about the further implementation of an Rfid system had a positive result. All the activities have given excellent results at the end of the monitoring phase of the project: the implemented measures proved to be an excellent choice because customer satisfaction is positive and all those who live in this part of the city reacted positively and praised the measures. Delivery people have easier access to the pedestrian zone, and they also always have a free transshipment point to deliver. Zadar has planned to continue with the implementation of measures to maximally protect their old core.

The same methodology was applied to the Old town in **Stockholm**. Also in Gamla Stan specific measures were analysed and candidate to be transferred. Due to the Covid pandemic, some of the measures have not been carried out during the project time, other than in theory, and we can therefore only speculate about the effects they will have. As a result of the interviews, the conclusion is that some measures will have a positive output on lowering emissions due to less traffic and more facilitated monitoring of the existing regulations.

Through a new traffic monitoring system Stockholm would increase adherence of the regulations in the Old town through access control system in cooperation with the police. The analysis about the feasibility of a new monitoring system for freight urban transport, gave some problems: for example, about RFID gates at the access and exit points, Stockholm concluded that there are some legal boundaries to implement this system in Sweden, since it comes to camera surveillance and the need to identify both the driver's face and the vehicle. Sweden has camera surveillance on major roads, where the camera identifies the driver and the vehicle when speeding. The project also looked into the possibility of implementing a point system that can reward operators who are correctly following the regulations. Some interesting considerations to be taken into account in the eventual implementation, for example Stockholm

concluded for the necessity to guarantee same treatment and conditions to all operators, according to their legislation. So, it's difficult to award good behaviour in that manner, since everyone is subject to, and expected follow to the traffic regulations according to legislations. A specific evaluation ongoing with the police to be able to directly find the vehicles that do not have the right to drive in the area, and facilitate the control. If the test is successful, it can be scaled up and used throughout Stockholm, with immediate benefits in terms of reduction of vehicles, efficiency in the control and same treatment of all operators. This will help the city of Stockholm receiving better compliance with regulations overall. Furthermore, the project set up the objectives of fewer trucks entering the Old town, and more zero emission vehicles entering the Old town. To enable this, a last-mile solution for zero emission deliveries and waste collection in the Old town was planned. Another benefit registered to be mentioned is about the information campaign conducted by Stockholm to increase awareness of current regulations in order to further increase compliance and acceptance to them and also the decision to realize in the next year, like in Lucca, a cargo bikes service for last-mile transportation for residents and also transport companies in Old town.

In conclusion, the process of transferability in Stockholm gave good benefits and the City, on the basis of the results of the Stockholm approach, decided to scale up it within other areas of the city.

The other aspect about Replicability and Transferability evaluated during the project concerned the elaboration of a specific strategy to multiply the benefits of the LIFE approach even beyond the project duration. According to deliverable D.2.1, it has been elaborated a specific implementation Plan for replicability and transferability that could be proposed at different institutional levels, to *guide* the Entity/stakeholders to adopt the LIFE Approach. This is a methodology proposal, based on the result of its application firstly in Zadar and Stockholm and that includes lessons learned from the comparison with the many institutions that have collaborated on the ASPIRE TSC and CSSF, in particular other Administrations, logistics operators, the Ministry and the Region, with the specification that the methodology foresees the need to be adapted to the specific context of replicability. LIFE ASPIRE replicability and transferability plan is available to all interested stakeholders, and will continue to seek opportunities for discussion, thanks to the continuous pursuit of the dissemination of results.

5. *Best Practice lessons:*

During the LIFE ASPIRE project activities, some of the measures/services demonstrated resulted to be very interesting for other cities and stakeholders. It is the case in particular of the cargo bike service which resulted very appealing for further category of users, other than those foreseen by the project plan. In addition, the selection of the most sustainable transport operators, resulted in the identification of the most eco-friendly ones (namely the “inspirers”). The awarding of the inspires resulted to be an interesting practise for other cities and administration as it contributes to the increase the number of eco- friendly operators, by helping them in proceeding in their transition phase in order to contribute to the overall ecological transition of the community.

Moreover, some activities which strongly contributes to the successful implementation of demonstrated measures and services, were recognized as interesting practices to be adopted in other context.

It is the case of the active involvement of both logistics operators and retailers/commercial activities operating in the city centre resulted to be relevant for the definition of the awarding scheme demonstrated in the project. Indeed, direct discussion with the operators and the development of a dedicated survey, allowed to adjust some of the initially foreseen hypothesis related to the rewarding mechanisms in order to make this more effective.

Eventually, the definition of a team of experts highly experienced in the topic of the LIFE ASPIRE project (namely the Technical Scientific Committee, TSC), allowed to share the project approach during all the project duration. In particular, the involvement of the Ministry of Transport was valuable for a useful comparison among other experiences in Italy and to pave the way for the future sustainability of project results.

6. *Innovation and demonstration value:*

Describe the level of innovation, demonstration value added by EU funding at the national and international levels (including technology, processes, methods & tools, nature management methods, models for stakeholder involvement, land stewardship models, organisational & co-operational aspects).

From the point of view of the innovation level, about by the project, the most important to take into consideration is the possibility for a small-medium city to be able to realize an articulated and integrated system of urban logistics measures, which requires financial resources that are difficult to reserve exclusively by the Municipality.

In fact, the financial resources of a public body are normally reserved above all for “ordinary functions” and are rarely used for such complex and technological experimental systems, such as that of LIFE ASPIRE. Thanks to European co-financing, it has been possible to implement a complete system of measures and services, which cannot be obtained otherwise. Furthermore, the innovation of ASPIRE also lies in having used existing and commercialized technologies, but with a new purpose and which has added value to the technology itself. For example, the RFID antennas or Cargo bikes in this project have assumed a monitoring and social utility function that is not normally recognized for this type of technology, at least not with public promotion.

The level and methodology of stakeholder involvement also added further value to the project; for example, the TSC or the logistic operators' roundtable will certainly be maintained even beyond the duration of the project. As evidence of this, it is worth mentioning that in the months of October and November a further discussion table about urban logistic was opened, with the willing of the Assessor for mobility, with particular reference to the regulation of access permits for goods deliveries in the RTZ. The operators awarded as the most sustainable in the context of LIFE ASPIRE were added as "special" guests to this table and this was very appreciated.

7. *Policy implications:*

Concerning policies at any relevant level (from local to European), as described in section 6.4 “Evaluation of Project Implementation”, LIFE ASPIRE provided innovative insights related to many current policies.

Contribution was shared with Regional and National stakeholders on how to update of policy aspects. In particular, the implementation of the policies requires the construction of supportive normative framework to encourage cities along their ecological transition pathway.

Concerning barriers, that potentially hampers the implementation of sustainable city logistics, the project has recognized as the most relevant the inadequate organization and know-how of the local administrations, the lack of funding, the technological complexity, both in the tendering process and in the operational phase.

7. Key Project-level Indicators

The final actual values of the KPIs for LIFE ASPIRE project are duly reported in the online KPI database (web tool), as an output of the mandatory action C.3. Values are consistent with the data described elsewhere in this final report. The evaluation of the project results highlights that data are in line or better than the targets set at the beginning of the project. A thoroughly description of the values and an analytical comparison with the targets set at the beginning of the project is provided in the specific deliverable C.4 “LIFE ASPIRE Environmental impacts Evaluation Report”.

8. Comments on the financial report

Attached to this report all partners Individual financial statements are provided (all digitally signed) and the consolidated financial statement with the request of the balance payment.

The Consortium in the whole **declared eligible costs for 1.614.152,68 €** referred to the whole reporting period (01/10/2017 – 30/09/2021); the first and the second pre-financing payments (30% of the total EU contribution distributed in November 2017 + 40% of the total EU contribution distributed in February 2020) have been fully spent by the Consortium and the condition to ask for the payment of the balance, according to Art. I.4.1 of the G.A. is verified. All partners put in place the appropriate measures to comply with the required accounting and reporting system, in accordance with the financial guidelines, to the Grant Agreement and to monitor and CINEA remarks, considering the internal management policies of their own Authority or Company.

All partners have a reliable accounting and reporting system, according to Art. II of Annex X to the G.A. “Financial and Administrative Guidelines”; this is assured maintaining a separate and up-to-date books of account of the project expenditure. All partners followed the recommendation of the Art. 2 of Annex X to establish project codes in the analytical accounting systems and they set up an accounting system in line with this requirement, as described in section 8.2 below.

From a financial point of view, the partnership did not deviate much from what foreseen in the Grant Agreement as total costs are about 80.000,00 euros lower than the budget.

The reasons for this difference are to be sought first of all in the depreciation of durable goods which started later than expected, lowering the sum of the eligible costs, involving a huge own contribution by Lucca; besides, the global pandemic from Covid 19 limited travels and meetings in presence, caused a slowdown in the execution and experimentation works with the final result of an increased use of internal resources and a consequent growth of personnel costs. To give an up-to-date picture of the incoming state of the project, in the table below a resume of allocation of total actual costs incurred at the date of 30th September 2021 is reported, action by action.

Consolidated cost per action table							
	Personnel costs	Travel	External assistance	Equipment	Consumables	Other	TOTAL
A1	51.637,52 €	-00 €	-00 €	-00 €	-00 €	-00 €	51.637,52 €
A2	62.001,15 €	-00 €	-00 €	-00 €	-00 €	-00 €	62.001,15 €
B1	63.905,25 €	-00 €	-00 €	-00 €	-00 €	-00 €	63.905,25 €
B2	93.642,39 €	-00 €	20.823,02 €	262.191,66 €	5.000,00 €	-00 €	381.657,07 €
B3	114.527,77 €	-00 €	-00 €	-00 €	-00 €	-00 €	114.527,77 €
B4	133.838,88 €	3.957,49 €	121.477,07 €	-00 €	-00 €	3.608,51 €	262.881,95 €
C1	63.841,12 €	-00 €	-00 €	-00 €	-00 €	-00 €	63.841,12 €
C2	72.801,56 €	-00 €	-00 €	-00 €	-00 €	-00 €	72.801,56 €
C3	79.871,16 €	-00 €	-00 €	-00 €	-00 €	-00 €	79.871,16 €
C4	76.489,77 €	-00 €	-00 €	-00 €	-00 €	-00 €	76.489,77 €
D1	124.067,74 €	1.461,25 €	28.675,00 €	-00 €	-00 €	5.550,55 €	159.754,54 €
D2	51.066,36 €	-00 €	-00 €	-00 €	-00 €	-00 €	51.066,36 €
E1	198.483,41 €	9.499,97 €	16.168,64 €	-00 €	-00 €	3.199,10 €	227.351,12 €

8.1.Summary of Costs Incurred

PROJECT COSTS INCURRED			
Cost category	Budget according to the grant agreement in €*	Costs incurred within the reporting period in €	%**
1. Personnel	1.168.480	1.186.174,08	101,51
2. Travel and subsistence	42.501	14.918,71	35,10
3. External assistance	240.900	187.143,73	77,68
4. Durables goods: total <u>non-depreciated</u> cost			
- <i>Infrastructure sub-tot.</i>			
- <i>Equipment sub-tot.</i>	273.300	262.191,66	95,93
- <i>Prototype sub-tot.</i>			
5. Consumables	5.000	5.000	100,00
6. Other costs	22.500	12.358,16	54,92
7. Overheads	113.118	116.583	103,06
TOTAL	1.865.799	1.784.369,34	95,63

*) If the Agency has officially approved a budget modification through an amendment, indicate the breakdown of the revised budget. Otherwise this should be the budget in the original grant agreement.

**) Calculate the percentages by budget lines: e.g. the % of the budgeted personnel costs that were actually incurred

Evaluating the categories individually, there are some but not wide discrepancies that can be completely smoothed out with a budget shift among categories. The categories that denote underspending with respect to the budget are “Travel and subsistence”, “External assistance”, and “Other costs”, all due to activities planned at the time of signing the Grant Agreement and which have been reviewed or not possible to do (travels in particular, but also meeting and events to attend in presence) in light of health restrictions due to the Covid 19 pandemic.

The categories that imply some further considerations, compared with the budget, are “Personnel” and “Equipment”. As far as Personnel costs are concerned, all the health restrictions to stem the spread of the pandemic have redesigned the relationships between partners and between partners and stakeholders to such an extent that all meetings, workshops and even the final conference were held online on digital platforms. For this reason, there was more commitment by partners both for the planning and for the organization of these meetings and activities. Furthermore, some partners (mainly Stockholm and Zadar) that initially planned to need external assistance costs for some tasks, due to different reasons, didn’t need the entire external assistance budget, being able to manage more activities internally and increasing the related personnel staff costs. At the same time some partners have stated an increase in the hourly cost: Municipia declared that the work has been done with some more skilled resources than planned in the budget that turned out to be more expensive, but adding more expertise to the project; in Lucca, since actual counting system was applied, it is appropriate to report that the hourly cost of the previous project coordinator Di Bugno has risen since he retired at the

end of October 2020 and leading to a lowering of the ratio between hours worked and budgeted hours, and therefore to an increase the annual hourly cost.

As far “Equipment” is concerned, the depreciation of durable goods started later than expected due to an unforeseen and objective delay in the execution of the works, lowering the number of months falling in the reporting period, and also the sum of the eligible costs in comparison to the total costs, involving, moreover, a huge own contribution by the Coordinating Beneficiary. It is worth to underline that the depreciation period of the equipment of the LIFE ASPIRE project is of 48 months, according to the relevant Italian legislation, Attachment A/3 to D. Lgs. n. 118/2011 and the date to be taken into account as started depreciation point is the date of their registration in the former accounting system of the Entity.

In any case, where more or less significant discrepancies were found in the Individual financial Statements of beneficiaries, the Coordinating Beneficiary requested a more detailed official justification which is held in the records.

At the individual partner level, the aforementioned discrepancies are more visible, while at the partnership level the costs are smoothed by falling within the 20% budget shifting margin (according to the Consolidated financial report, only 1% of budget shifting at Consortium level has been used).

Each beneficiary provided the Individual financial statement attached to this report, claiming for the reported costs, according to the LIFE financial guidelines. It is worth to underline that Kiunsys declares cost until 28/12/2018, date of its withdrawing.

Concerning the sheet “Funding” of the statement, and assuming the Final report like a picture of the final state of the project, each partner has reported in the “Requested Union Contribution” table the first and second pre-financings already received and the balance expected, while in the “Beneficiary's own contribution” the difference between total costs declared and the total amount of fundings received and to be received from the EU.

8.2.Accounting system

LUCCA	<p>Municipality of Lucca is a local Public Authority which must follow technical and administrative procedures required by the relevant regulations.</p> <p>Local authorities accounting system implies that income and expenditures must balance and must always be registered.</p> <p>In particular, concerning internal project accounting system, it's assured by different measures:</p> <ul style="list-style-type: none"> • The office in charge of the project has its own code (0280) traced by the analitical accounting system; • within the cost center, there are different income and expenditure chapters, on which the financial resources of the project are allocated and identified; • each chapter is bound to the destination of the contribution and/or project and shows the acronym of the project in each commitment of expenditure; • the office in charge of the project implementation has also an own reporting system dedicated to the project, with specific electronic folders and also paper folder where supporting documents are collected. <p>All EU transfers and all the expenses related to Life Aspire project are first approved by the project manager and then verified and authorized by the Accounting Manager and registered in specific chapters on Municipality budget.</p> <p>All procurement procedures are carried out according to the Art. II.9 of the G.A. and to the European and national public procurement rules. The selection of</p>
-------	--

	<p>suppliers is carried out in different ways, depending on the value of the contract and of the type of goods/service required: direct award, framework contract, negotiated procedure.</p> <p>Project staff that deals with the award of the contract has to ensure avoiding conflict of interest and has to declare it.</p> <p>The timesheets are completed manually by each and monthly submitted to the signature of the project manager (Mauro Di Bugno) for each employee and of the Councillor for the Environment for the project manager. Each employee is assigned to the project with a specific letter of assignment and is informed by the project manager about the activities to be carried out, the timing and the foreseen deadlines.</p> <p>With regard to the invoice compliancy with the LIFE financial guidelines, after the selection of the supplier LUCCA drafts a specific contract with the supplier, indicating the project code, the tender code (CIG) and the national CUP code and ask the supplier to issue electronic invoices for local authorities correctly with the same codes and project name in the invoice description field. Invoices that are not in compliance with these provisions are not accepted and the supplier is invited to issue a credit note and then a correctly filled out invoice..</p>
.LUCENSE	<p>LUCENSE is a private Research Organization according to the European Commission Communication (OJ 2006/C 323/01) and keeps separated accounting systems for the activities carried out for the research projects and those for its commercial purposes.</p> <p>Therefore, this accounting system already allows to precisely identify the costs incurred for research projects. Moreover, the project LIFE ASPIRE expenses are specifically identified by the code RUIC6 as well as being identified by the project acronym.</p> <p>The expenses foreseen for the research projects are identified and approved by the project manager.</p> <p>The timesheets are completed manually and monthly submitted to the assessment and signature of the superior of each employee with the support of the project manager.</p> <p>Each employee assigned to the project is informed by the project manager about the activities to be carried out, the timing and the deadlines foreseen. The same information is included in a specific letter assigning the employee on the project. The letter has to be signed for acknowledgement.</p> <p>The project manager/superior of the employee assigned to the project, monthly assess the activities progress and the time dedicated to them, approving the time registration by signing the timesheets produced by the employee.</p> <p>When needed the selection of suppliers is normally carried out on the basis of a market research, requesting at least 3 quotes, for the services or goods required.</p> <p>With regard to the invoice compliancy with the LIFE financial guidelines, after the selection of the supplier LUCENSE drafts a specific contract or order containing the constraint for the supplier to write a reference to the order number and date and the link to the project by putting the project code, as indicated in the Grant Agreement, in the invoice description field.</p> <p>In this way, both the order and the related invoice(s) contain a clear reference to the project. Invoices that are not in compliance with these provisions are not accepted and the supplier is invited to follow the provisions of the contract or order.</p>
MEMEX	<p>Memex is a private Company; in order to ensure a comprehensive and compliant financial report, MemEx has established a reliable accounting and reporting system, based on:</p> <ul style="list-style-type: none"> • a paper folder dedicated to the project in which all original supporting documents are collected and a digitalised folder dedicated to the project

	<p>in which all scanned copies of the original supporting documents are collected;</p> <ul style="list-style-type: none"> • a specific project code (cost center) associated to all the expenses sustained within LIFE ASPIRE in MemEx official accounting system, managed by MemEx accountant. <p>This system allows to maintain separate and up-to-date books of accounts of the project's expenditure and to directly reconcile them with the corresponding supporting documents.</p> <p>MemEx has adopted the model timesheet of the LIFE programme to record the time spent working on the project and has established a reporting routine for the staff involved in LIFE ASPIRE. Antonio Liberato, president of the company, is the project responsible and supervisor.</p> <p>The staff involved in the project daily records the number of hours spent in LIFE ASPIRE, in other EU/national/regional funding projects and other activities in the .xls monthly timesheet and signs it the last working day of each month. The supervisor then checks all timesheets within the 5th of the following month, approves and countersigns them. Antonio's monthly timesheets instead are controlled and approved by Eng. Renato Bellini, member of the Board of the company.</p> <p>All timesheets are collected in the paper (original copies) and digitalised (scanned copies) folders dedicated to the project.</p>
STOCKHOLM	<p>Our office, Transport Department at the City of Stockholm, use Unit 4 (Agresso) as accounting system. The project number for the LIFE Aspire Project is 7002941. We ask the sender of invoices to add this number on the bills in order for our accounting system to match it to the project.</p> <p>When approving costs in the system the person ordering the service/product first needs to accept the invoice and after that the supervisor needs to approve it with an order of Delegation from City of Stockholm (in Swedish: Delegationsordning för Trafikkontoret), before it comes to the economical department who pay the bills.</p> <p>All employees must report in Agresso the hours they have worked in different projects every week. To follow up time spent in each project you can receive the hours per person and project through Agresso.</p> <p>For EU-projects, the supervisor approves the time reports according to the time sheets provided from the project administration.</p> <p>For invoices, we always ask the sender to add the project number on the bill in order for our accounting system to connect it with our project. We also ask the sender to add the LIFE Aspire EU-project number in according to Monitor's warning. However, the sender seem to have fixed columns for the invoice and don't always have the space to add more than the internal project number. We have therefore added the official LIFE Aspire number by hand on the bills before sending them to you.</p>
ZADAR	<p>Zadar is a local Public Authority that has provided from the start of the project a specific project code (cost center) associated to all the expenses sustained within LIFE ASPIRE in the official accounting system.</p> <p>ASPIRE project staff payroll is calculated by inserting project employee data (salary amount, health insurance, transportation of employees, etc.) in the excel table, with the percentage of dedicated time in order to calculate the employee cost for project.</p> <p>Each project expenses is posted in the budget dedicated items. Each project-related cost (salary, travel, external experts...) is posted in the project items in the determined percentage. Each cost is signed and approved by Body leaders, the project is presented at every expense.</p>

	<p>As a proof of work on the project Zadar uses the official LIFE timesheet template, in which the hours worked on the project are reported: in the total hourly work per day table the percentage of work of each person on the project is highlighted. Each timesheet is reviewed and approved by the project staff and then finally signed and approved by the head of the Body; each timesheet is completed and reviewed every month.</p> <p>Each invoice issued for the project contains the project name and project number, and also have the project name on all purchase orders so that it could be more easily to prove the cost incurred in the project.</p>
KIUNSYS	<p>Kiunsys is a private company that is equipped with an internal reporting system that registers costs and links them univocally them to the R&D project. Employees fill in an internal reporting system (ERP) to make costs related to the project approved.</p> <p>Kiunsys used model timesheet of the LIFE program to record the time spent working on the project; employees must manually complete a daily activity sheet showing the hours worked on it and it is used only for research projects.</p> <p>Project Manager has to approve submitted time reports on a monthly basis. Concerning invoices, at the actual state, Kiunsys has not invoices from external companies to report; however each order to the supplier is foreseen that will contain a clear reference to the project and it's mandatory for the supplier to mark his invoice to show the link to the specific project.</p>
MUNICIPIA SPA	<p>Municipia Spa is a private company with an organizational structure according to its Company size.</p> <p>All European projects are handled by a distinct accounting system that is named GECOR and that collects the costs of each project.</p> <p>To ensure the record of time spent on the project, employees fill in an internal reporting system (named RAS) daily. The system allows to report (also percentage of work) in the project at which people participate.</p> <p>In addition to RAS, employees must manually complete another daily activity sheet showing the hours worked, that is the timesheet content.</p> <p>Project Manager have to approve submitted reports on a monthly basis. After this the R&D department manager approve/disapproves the reports.</p> <p>Project Manager have to approve submitted time reports on a monthly basis. Concerning invoices, at the actual state, Municipia spa has not invoices from external companies to report; however, each order to the supplier contains a clear reference to the project and it's mandatory for the supplier to mark the invoice to show the link to the specific project.</p>

8.3.Partnership arrangements

Thanks to the fact that the coordinator is a public Authority, all money transfers from the Coordinating beneficiary to the associated beneficiaries are easily traced and linked to the LIFE ASPIRE project, in accordance with national and European legislation. The identification code (CUP) required by Italian legislation is the following: J62I17000020004.

According to the project Monitoring Handbook (Deliverable E.1.2), each financial report of the beneficiaries was updated at least every quarter period, filling in all costs falling under the reporting period; all FS were sent to the CB by the end of the month following the reference period. Every six months all beneficiaries had also to provide complete supporting documents to the FS. The CB checked the completeness of the financial statements, requesting, if necessary, the appropriate modifications. Finally, it prepared the Consolidated Financial Statement based on the declarations of the partners.

The sums received by the Coordinating Beneficiary from the EU as first and second pre-financings were then distributed to the partners, according to the percentages provided for in the Grant Agreement: 30% of the total budgeted for the first pre-financing (November 2017) and 40% of the total budgeted for the second pre-financing (February 2020). All transactions took place by bank transfer which allows high security, transparency and traceability in money transfer. The same method will be used for the transfer of balance payment.

8.4. Certificate on the financial statement

According to the article n.11 of the Financial Guidelines (Annex X to the LIFE Grant Agreement, Financial and Administrative Guidelines, updated 07.07.2021), this is compulsory for beneficiaries (incl. their affiliated entities) that have at least 750,000 EUR Union Contribution in the budget: as none of the Aspire project beneficiaries receive such a contribution from the UE, this document is no longer necessary.

8.5. Estimation of person-days used per action

Action type	Budgeted person-days	Estimated % of person-days spent
All projects when applicable Action A: Preparatory actions	560	92,57
ENV projects Action B: Implementation actions	1963	84,32
ENV and GIE projects Action C: Monitoring of the impact of the project action	1087	108,81
ENV and GIE projects Action D: Public awareness/communication and dissemination of results	786	80,81
ENV and GIE projects Action E: Project management	732	100,34
TOTAL	5128	92,16