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LIFE Project Number
LIFE11 ENV/IT/000016

FINAL REPORT
Covering the project activities from **01/09/2012 to 30/06/2015**

Reporting Date
30/09/2015

LIFE+ PROJECT NAME or Acronym
Municipalities Subsidiarity for Actions on Energy

Project Data

Project location	Italy
Project start date:	01/09/2012
Project end date:	30/06/2015
Total Project duration (in months)	34 months
Total budget	€ 919.266
Total eligible budget	€ 883.332
EU contribution:	€ 368.967
(%) of total costs	40.14
(%) of eligible costs	41.77

Beneficiary Data

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LIST OF ACRONYM

MUPER	Municipality of Perugia
REGIONE	Umbria Region
CIRIAF	University of Perugia c/o CIRIAF
MARSCIANO	Municipality of Marsciano
UMBERTIDE	Municipality of Umbertide
LISCIANO	Municipality of Lisciano Niccone
MEEP	Municipalities Energy and Environmental Plan
PF	Participatory forum

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2 Executive Summary

The Energetic-Environmental problem has acquired a growing importance during last few years, as testified by the numerous Conferences held in Europe and in the rest of the world, aimed to reach pacts for the protection of the environment, keeping the sustainability of the energetic system as the fundamental principle, with particular reference to the greenhouse gases emissions.

Energy has a central function on the sustainable development issue: firstly for all the services that it assures, essential components of the growth; secondly because the energy system is responsible for a consistent part of the detrimental anthropogenic effects on the environment.

The EU directive 2009/28/CE (RES Directive) imposes to each State Member that, within 2020, a percentage of the final energetic uses gross consumption has to be covered by renewable sources. This burden has been shared between Regions of the same Member State, and at a lower level between the single Municipalities, in order to give responsibilities to the local authorities, also by means of incentives and sanctions, taking into account of the peculiarities of the single territories.

Municipalities play the double role of consumer from one side (public buildings, services, etc...), and governance authority from the other (planning, regulation, directives); therefore, they are called to contribute as first actors to achieve the objectives of energy efficiency, energy saving, renewable sources development and greenhouse gases emission reductions.

The governance tools have normally long term effects, whose quantification is often hard to define in the preliminary phase. Anyway, starting from the experience of the Municipality of Perugia, which has adopted its Energetic-environmental plan many years ago, it is possible to indicate at least the potential of the actions implementation hypothesized in the Plan. Dividing the possible effects of the Energetic environmental plans application into three categories, the capacities for energy saving and emissions reduction

The Italian government obliged the large Municipalities (those with more than 50,000 inhabitants) to adopt an energetic planning instrument, named Municipal Energetic and Environmental Plan (MEEP), that represents the guideline and the starting point to reduce energy consumption and atmospheric emissions. The other small Municipalities have been kept free from any legislative commitment, even if they represent more than 65% of the entire Italian population and despite the great potential of virtuous behaviour in the energy field. MuSAE project (Municipalities Subsidiarity for Actions on Energy) aims are to fill this gap involving little Municipalities in positive actions related to energy and environmental policy. The Municipalities involved in the project are Perugia, Marsciano, Umbertide and Lisciano Niccone, which can be considered as a representative sample of the Italian cities. The project could adequately underline the potential, the role and the critical situations of the Italian towns in implementing the 20-20-20 targets at 2020. MuSAE project must be framed in this background.

The territorial communities characterized by small dimensions could give an added value to diffuse the culture of environmental protection, considering that they represent a consistent part of the total number of the Municipalities. Thus, the authorities of the local Municipalities have to face growing responsibilities encountering significant obstacles in the realization of an Energetic-Environmental planning system and the consequent on-purpose actions and politics.

Within this context, the project's main objective is that of tackling these criticalities and responsibilities and supplying the Authorities the tools and methodologies to plan short-term actions at a local level.

By means of a process of know-how transfer and competence sharing among the project partners, the small Municipalities will be given an important instrument for the knowledge and the potential active

interventions on their territories (Simplified and shared Energetic-Environmental Plan). The plan will guide the Municipalities for the definition of the policies and strategies regarding renewable sources development (solar thermal and photovoltaic, wind power, hydro power biomasses, geothermal, etc..) and energy consumption reduction, with the annexed environmental benefits.

During the phase of the Plan elaboration, the small Municipalities administrators will be guided towards the awareness of the specific character of the territory, since they will be firstly informed on the more energy-consuming sectors, the energy sources mostly exploited and the penetration of renewable. This part is propaedeutic to the design of pilot-projects such as energetic refurbishment of buildings, installation of renewable energy plants, reduction of fossil fuel consumption in the transport sector, etc... .

Beyond these actions, the Municipal administrations will activate information strategies, finalized to make aware the citizens, the local private firms and all the stakeholders of the need for a sustainable energy system (energy one-stop desk). The dissemination will deal with the energy efficiency, the available technologies, the environmental and economic benefits and the possible forms of incentives or fiscal deductions, so achieving the spreading of “good practices” among the general public and the companies operating in the territory.

The Energy Efficiency Plan 2011 (Communication from the Commission to The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions), states that the European Union is moving in different directions to sustain the local approach to energy efficiency; it is strongly proposed, for instance, the adhesion to the Covenant of Mayors, trying to encourage the partnership among different Cities that are pursuing the same objectives in the energetic and environmental field.

Within this framework, the primary objective of the project consists of showing that one way to provide the small Municipalities of an Energetic-Environmental planning system consists of working with the help of a big Municipality, already skilled in these arguments, giving at the same time the possibility to the latter of experimenting participated processes and operative actions, repeatable in its own territory.

The peculiarity of the Energetic-Environmental Plans for the small Municipalities resides on the high level of participation, to be implemented informing the citizens about the steps for the definition of the energy policy, giving hints for own contributions, and among other results, installing a local energy one-stop desk, organizing targeted campaigns on energy efficiency and starting the design phase of pilot-projects.

The National Association of Italian Municipalities (ANCI) and its Umbria Section (ANCI Umbria) supported (as testified by the letter of adhesion dated 13 July 2011) the diffusion and the repeatability of the project findings, sharing the results in the net of all the Municipalities interested.

It was developed a stable partnership among the local communities sharing common problems and perspectives, with the aim of generating, after the project, a net of local authorities interested to undertake innovative policies in the field of energy and environment, according to the proposed methodology.

In this context, the presence of the partner Regione Umbria played a strategic role on orienteering the actions and the investments proposed by the planning instruments of the various Municipalities, since the management of conspicuous European and National funds was included in its competencies.

Regione Umbria covers the double function of financial sustainability control of the proposed actions, and dissemination vehicle at a wider dimension of the project experience.

The arrangement of the Guidelines for small Municipalities Energetic-Environmental Plans (MEEPs) will be completed with the design of pilot-actions, developed from the technical-economic point of view with the criteria of the Green Joint Public Procurement.

These operative interventions could be focused, for instance, on small size energy conversion systems from renewable sources or high efficiency plants (hybrid solar systems, small size wind towers, mini-hydro, geothermal heat pumps, micro-cogeneration) and they will constitute a

demonstrative operative element of project achievements.

Throughout the project, each action will be implemented with respect to its usefulness in the wider European context. European Member States Municipalities are affected by problems similar to those described for Italy; as a consequence, minor adjustments will be required in order to export project results to the other EU countries.

The effectiveness of proposed methodology and the annexed solutions will be shared with other Member States by means of a wide information campaign, employing both scientific and technical channels (such as international publications, conference and a dedicated website).

MuSAE project started in September 2012, and progressed with good quality results. Although some motivated delays respect to the original scheduling, all goals are achieved by the end of the project on 30th June 2015.

This report describes all the actions realized during the project life:

- Participatory forum: establishment and carried out by each partner Municipality;
- Energetic and Environmental Plan: know how transfer from the big municipality to the small ones, and final plans elaboration of the small municipalities, which, before MuSAE project did not dispose of this tool;
- Methods and tools: Guidelines for the drafting of energy- environmental plans, Database of laws and standards, Catalogue of competences;
- Energy Desks opening in the municipalities, to support citizens, designers, technicians and companies;
- Pilot actions in each Municipality to demonstrate innovative solutions in the field of efficiency and the renewable energy sources;
- Disseminations of best practices, network, monitoring of the project;

The methodologies and topics proposed are general and thus also relevant for small and big Municipalities in other countries. The experience will be perfectly repeatable in any other EU Region where there are Municipalities close to each other: one with an already implemented Energetic-Environmental Plan and the other that lacks this instrument.

The project is the mean that will permit to contribute locally to reach the Italian and European targets of emissions reduction, involving directly the local communities, at the aim of modelling adequate tools for all EU small Municipalities. The focal point for these cities consists of the community adhesion to the territory planning and management process; following the philosophy of Agenda 21, in fact, the participation represents the determinant variable for the actuation and the respect of the EU normative in these arguments, improving the knowledge basis necessary for the policies regarding the environment thematic.

The experiences acquired from other EU projects such as MedClima and ZeroCO2 will be yielded, and, putting into effect the Directives of the Covenant of Mayors, an instrument will be produced that will potentially reach a high number of EU citizens, today excluded from the processes of Energetic-Environmental Planning.

Besides, the operative actions on small Municipalities will be carried out as small size interventions, particularly fitted for the creation of new opportunities for the development of local small and medium enterprises, thus favouring the local employment, in perfect accordance to the objectives of the Environmental Compliance Assistance Programme for Small and Medium-sized Enterprises.

In the following part 3 we will describe the background, the problems, the solutions, the objectives, the benefits, the expected long term results.

In part 4 we described the administrative aspects, such as the tools used, the management system adopted, the participation and communication between the partners.

In part 5 the technical progress per task are illustrated, following the project phases.

The annexes are organized as guide line requests: Administrative annexes, Technical annexes, Dissemination annexes.

MuSAE Project's benefits and results on the short term:

1. All partners have participate to the Umbria Region call concerning the energy audit of Public buildings and they are designing now the next works in order to improve the efficiency of their buildings;
2. A collaboration between MUPER and AzzeroCO2 (ESCO that participated to networking with two Life projects called "Recoil" and "Eco Life") began after the networking meeting in Brussel in relation to the efficiency of public buildings;
3. Umbria Region shared the MuSAE output, used it for the Regional Energy Strategy Plan, and now is publishing a call about MEEP for the others Umbria Municipalities;
4. The MUPER, MARSCIANO, UMBERTIDE, LISCIANO pilot actions made are currently working and appreciated by the users.

As explained at point 3.2, the long-term results will consist in a higher environmental awareness and culture among the people and those working in the field, the energy info desks, the possible future investments derived from the MuSAE project experience, in order to contribute significantly to reach and go beyond the targets set by the strategy "Europe 20/20/20" and by its evolution.

3 Introduction

3.1 *Description of background, problem and objectives*

3.1.1 Environmental problem/issue addressed

Frequently mass media, institutional conventions, green economy companies debate about environmental problems, use of renewable energy sources, but citizens and companies do not find practice solutions applicable to their problems or do not know the correct way to reduce their carbon footprint and to improve their position in the different sectors, like mobility, heating and cooling energy saving. They do not know the opportunities, the economic advantages, the authorisation issues, to convince them to spend money or change behaviours for improving their comfort, quality of life and give a good contribution to the environment. Sometimes inadequate knowledge of environmental topics causes protest and diffidence towards innovative solutions.

The MuSAE project aims to engage in the energetic environmental municipality planning all different levels of stakeholders, and to disseminate the common strategies and objectives. This could enhance companies' and citizens' awareness for fostering the environmental sustainability actions.

3.1.2 Outline of the hypothesis to be demonstrated/verified by the project

The transfer of competences and expertise from the large municipalities to the smaller ones, and the integration of multidisciplinary approaches with the academic contributions and the regional governance engagement, demonstrated a widely agreed added value to the common challenge.

The Municipalities and the Research Centre have to work together to get better results in energy and environmental policies.

Moreover, the active participation of the local stakeholders, demonstrated a high level of awareness among citizens and economic players about the environmental issues and the culture of energy saving, as first priority to reach through the monitoring of the energy planning and the continuous information to all users.

The MEEPs, the info-desks and the pilot actions provided tangible examples about the local governments' commitment on sustainable energy policies and how small municipalities can contribute in order to reach, and in some cases overcome, the objectives of Europe 2020.

3.1.3 Description of the technical/methodological solution

For the implementation of the MEEPs a group of engineers and technical staff of the partner organisations worked together, combining the knowledge and experience of the administrative procedures (e.g. about the authorisation processes) offered by the involved local governments and the rigour of the scientific approach provided by the University (CIRIAF).

Furthermore, the partnership's openness to the public confrontation, through the participatory forums and the local seminars, the interest to share with other experiences how to improve the Energy performance (national and international networking), and the availability of all produced knowledge resources are oriented to further exploit the MuSAE results in other communities all over Europe.

The Forums for fostering a more active participation of citizens and economic players were based on the adaptation of the "European Awareness Scenario Workshop", exploiting visualisation methods for a more effective highlighting of the common priorities and evaluations, providing to participants common grids and matrixes in order to structure the common efforts and to collect from them important feedback and contributions. All feedback reports were published on the project website to show the achieved conclusions and to share them with those people unable to take part to these meetings.

3.1.4 Expected results and environmental benefit

Awareness raising among key stakeholders about the correct use of energy, the technical innovations in this field and the supporting policies for reducing carbon footprint and increasing renewable sources.

The co-design and the implementation of planning tools like the MEEPs allow the public officers and administrators to improve their commitments and practices toward their communities, promoting the integration of environmental concerns into other policies.

MuSAE demonstrated the benefits generated by the cooperation among Municipalities (of different sizes), university and technical assistance expertise, and the valorisation of its results by other local public bodies in charge of this topic.

3.2 *Expected longer term results*

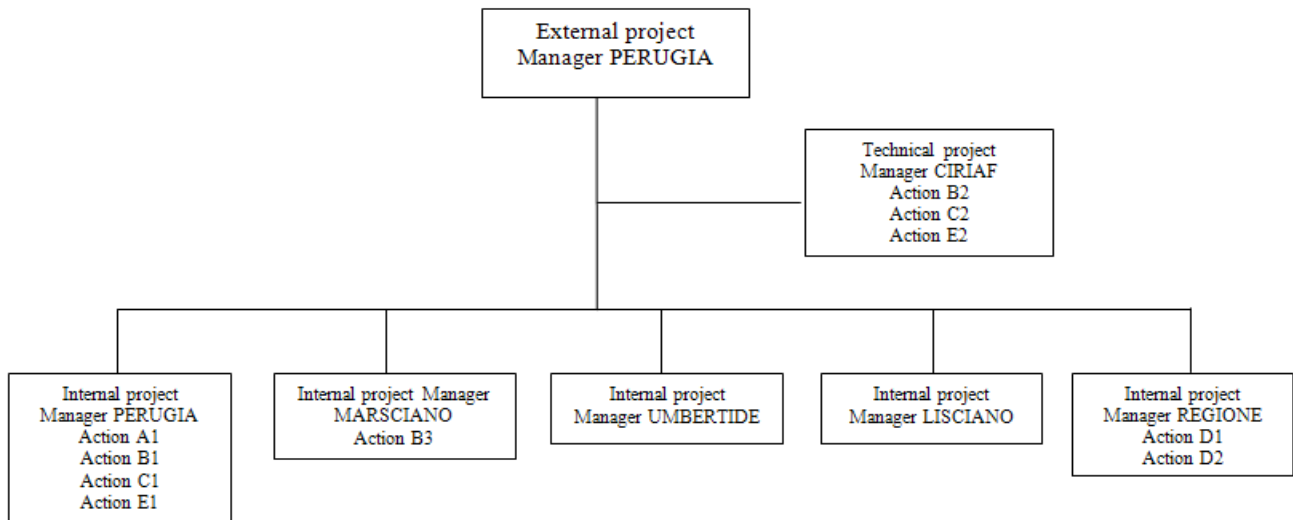
A long term objective is the transferability of the Energetic and Environmental Planning in many other Municipalities as a milestone to reach the European environmental targets.

In the Umbria Region, the feedback received from the project has taken shape in the identification of a specific measure in the 2014-2020 Regional Energy and Environmental Strategy (REES). The REES is the Umbria Region's new planning tool which sets the goal of achieving by 2020 a ratio of 15.2% between the energy produced from renewable energy sources and the gross final consumption of energy, a percentage higher than the target of 13.7%, established by the EU with the burden sharing. The strategy identifies four different types of regional measures, describing them in relation to the four main macro-areas (domestic/residential, industrial and services, agriculture and transport), and indicating the actions to carry on. More specifically, among the measures aimed at improving Governance, the following action is proposed: *"Drafting of plans and programs for analysis of emissions in the major sectors, of the overall energy consumption, and of public utilities consumptions, identifying possible measures for increasing energy efficiency"*. This measure intends to support the implementation of energy efficiency measures, intelligent energy management and the use of renewable energy through the drafting of Energy and Environmental Plans in the Municipalities of Umbria. The long-term results will consist of a higher environmental awareness and culture among the people and those working in the field, the energy info desks, the possible future investments derived from the MuSAE project experience, in order to contribute significantly to reach and go beyond the targets set by the strategy "Europe 20/20/20".

4 Administrative part

4.1 Description of the management system

The project team is organised according to the following organization chart already included in the project proposal and in the inception report:



The staff members were as listed below:

MUPER

Gaia Gifuni (External Project Manager)

Enrico Antinoro (Department “Governo e Sviluppo del Territorio e dell’Economia” Director)

Laura Cesarini (Secretariate of local authority Director)

Silvio Cipriani (European Projects, Culture and Tourism Director)

Gabriele A. De Micheli (Technology, Energy, ICT Service Operative Unit Director, Project Manager and coordinator)

Manuele De Luca (Info-Desk and Technical employee)

Daniele Volpi (Energy manager), Dino Monacelli (Network services manager), Michele Giovagnoni (ICT manager)

Leonardo Tortoioli, Matteo Ciabatta, Alessandro Fedeli (Technical employees)

Daniela Mecocci, Enrica Staccini, Antonio De Pascalis, Antonio Prelati (Administrative employees)

UMBERTIDE

Fabrizio Bonucci (Project Manager)

Massimo Citti, Montanucci Luca, (technical employees)

Loriana Citti (Administrative employee)

MARSCIANO

Francesco Zepparelli (Project Manager)

Andrea Farnesi, Simone Riganelli (technical employees)

Lucia Padiglioni (Administrative employee)

LISCIANO

Franco Staccini (Project manager)

Claudio Mariotti (Technical employee)

Fabio Gonfia, Maurizio Razzetti, Alberto Burattini (Administrative employees)

REGIONE UMBRIA

Andrea Monsignori (Project manager)
Michele Cenci, Roberta Rosichetti (Technical employees)
Maria Ruggiero, (Administrative employee)

CIRIAF

Francesco Asdrubali (Project manager and CIRIAF Director)
Giorgio Baldinelli, Elisa Moretti (Researcher/technician, teacher)
Federico Rossi (Permanent Senior Researcher)
Novella Tamburini (Permanent Administrative secretariate)
Leandro Lunghi (Permanent Technician expert)
Matteo Cornicchia (Contract junior Researcher)
Andrea Presciutti (Temporary Researcher expert)
Elisa Moretti (Temporary Researcher expert)
Francesco D'Alessandro (Contract junior Researcher post doc. fee)
Francesco Bianchi (Contract junior Researcher)

In march 2014 a full-time employee (Manuele De Luca) has been taken by MUPER for the energy info-desk activation to carry out all the related activities and to support internal and external project managers on other activities of the project. Therefore, the info-desk will be kept open even after the end of the project.

On April 2014 the task of External Project Manager has been given to Eng. Gaia Gifuni, Environmental Engineer with various experiences acquired on related works. Despite the delay of the assignment, which occurred later than previously expected, this did not affect the quality of the project since the internal project manager of MUPER (Eng. De Micheli) with his great experience staff members (Eng. Volpi - Energy Manager and Eng. Tortoioli - technical employee) has compensated for his lack until April 2014, performing both tasks in collaboration with Eng. Asdrubali (CIRIAF Project Manager), Eng. Baldinelli (CIRIAF technical manager) and Eng. Moretti (CIRIAF technician expert). It was then made a handover between Internal Project Manager (MUPER) and the External Project Manager. Moreover, the project managers of LISCIANO (Franco Staccini), of UMBERTIDE (Fabrizio Bonucci), and of MARSCIANO (Francesco Zepparelli) have carried out also the functions of technicians, due to a reduced availability of technical personnel employed by their municipalities.

With regard to the staff working on LIFE+ Project, for the activities in charge of LISCIANO, it is also necessary to specify that Claudio Mariotti (technical staff), Bani Filippo, Alberto Burattini and Fabio Gonfia (administrative staff) are employees of the Municipality of Montone, that carry out their service also for the Municipality of Lisciano Niccone as a result of a specific agreement between the entities themselves, pursuant to art. 30 of Legislative Decree no. 267/2000. The activities carried out by employees of the Municipality of Montone in the Municipality of City of Lisciano Niccone, are also specifically regulated through administrative acts (City Council resolutions), which provide for the controls and uses of the individuals at the associated institution (annex Pers 1) as well as the hours that each Municipality of Montone employee has to work in the Municipality of Lisciano Niccone, which vary from 3 to 6 hours per week, depending on the person. Based on the number of hours actually worked, the Municipality of Lisciano Niccone reimburses the Municipality of Montone every six months by means of an act of determination of the personnel manager of the Municipality of Lisciano Niccone.

In May 2014 the task of Financial Auditor has been given (Maria Chiara Grasselli). Since then, she realized periodical visits with the leading partner and one intermediate control with all partners, with a final check after the project end.

The MuSAE project began on 1st September 2012 and it ended on 30th June 2015, for a total of 34 months. The project was structured in 5 Work-packages and 11 Actions (Table 1).

Table 1 (List of work packages and actions of MuSAE)

WPA. Preparatory Action (9 months):
<i>A.1 Stakeholders' engagement plan</i>
WP B. Implementation (31 months):
<i>B.1 Know-how transfer</i>
<i>B.2 Design of the governance tools</i>
<i>B.3 Pilot projects design and first implementation</i>
WP C. Monitoring of the impacts of the project actions (34 months):
<i>C.1 Monitoring and evaluation of the project impacts</i>
<i>C.2 Scientific and technical monitoring of processes/outputs/outcomes/impacts</i>
WP D. Communication and dissemination (34 months):
<i>D.1 Communication campaign</i>
<i>D.2 National and European networking</i>
<i>D.3 After Life+ Communication Plan.</i>
WP E. Project management and monitoring of the project progress (34 months):
<i>E.1 Process and partnership management.</i>
<i>E.2 Technical management of the project</i>

The MuSAE project milestones were represented in the following table 1b:

Table 1b (Milestones of MuSAE)

Name of Milestone	Action
Participatory Forums establishment	A.1
End of the know-how transfer action	B.1
First round of stakeholders' engagement (Participatory Forum)	B.2
Second round of stakeholders' engagement (Participatory Forum)	B.2
Third round of stakeholders' engagement (Participatory Forum)	B.2
Realization of 3 municipal environmental plans	B.2
Launch of energy info-desks	B.3
Launch of pilot actions design	B.3
Publishing of the project website	D.1
Meeting in Brussels	D.2
Final conference	D.1

The MuSAE project deliverables were represented in the following table 1c:

Table 1c (Deliverables of MuSAE)

Name of Deliverable	Action
Participatory Forums design and planning	A.1
Feedback reports of the first 4 meetings (preparatory meetings)	A.1
Final Report and database for know-how transfer	B.1
Greenhouse gases inventory	B.2
Professional competence catalogue & training path	B.2
Guidelines of Simplified Participated Energy Plans	B.2
Pilot action design	B.3
Energy one-stop desk reporting	B.3
Communication and dissemination Plan	D.1
Life+ Boards	D.1

Information Materials for the project	D.1
Information Material for Info-desk	D.1
Project website	D.1
Layman's Report	D.1
Networking meetings in Brussels - Report	D.2
Action Plan and Project Logical Framework	E.1
Risk/Contingency Plan	E.1
After Life+ Communication Plan	D.3

The project partners were all based in Italy, in the Umbria Region: one work package leader has been assigned to each WP in order to organize, coordinate and monitor the work carried out. Each leader was responsible for the progress within the work package, for reporting the progress and the possible problems to the coordinator. The WP leader had to organize technical discussions and facilitate the communication between all the partners involved in the work package.

Table 2 (List of the work package & task leaders of MuSAE)

WP/TASK	WP/TASK Leader
WP A.1 Preparatory Actions	MUPER
WP B.1 Implementation – Know-how transfer	MUPER
WP B.2 Implementation – Governance tools design	CIRIAF
WP B.3 Implementation – Pilot actions and info-desk	MARSCIANO
WP C.1 Monitoring of the impacts of the project actions	MUPER
WP C.2 Scientific and technical monitoring	CIRIAF
WP D.1 Communication campaign	REGIONE
WP D.2 National and European networking	REGIONE
WP D.3 After Life+ Communication Plan	MUPER
WP E.1 Project and partnership management	MUPER
WP E.2 Technical management	CIRIAF

As stated in the agreement, the Coordinator (MUPER) is responsible for the management of the whole project. The Municipality of Perugia monitored the progress of work to ensure exchange of information between the partners and objective achievements; it collected the deliverables and merged project management and financial reports for the European Commission. These progress reports were prepared and delivered to the EU, according to the time schedule that has been fixed. The coordinator was the contact point with regards to the European Commission for this project.

The partnership agreement has been signed on March 26th 2013, and it has not been changed during the project. The partnership agreement was already delivered in the Inception Report.

On November 21th 2013 MUPER gave the task for the provision of an integrated package of technical support services to Speha Fresia Co. (*already annexed in Mid Term report*). In order to give an homogenous approach to the Participatory Forums, on March 1st 2014 and on May 07th 2014, MARSCIANO and UMBERTIDE assigned the task for the provision of technical support (organization and facilitation of the Participatory Forums) to Speha Fresia Co. too (*already annexed in Mid Term report*); later also LISCIANO assigned this task to the same company.

As far as the monitoring of the project actions (C.1 and C.2), a Partnership Steering Committee and a Scientific Steering Committee were established, and had periodical meetings to perform the

monitoring and evaluation plan action of the project; their functions cover the project management and the monitoring of the project impact on the territories involved.

The Partnership Steering Committee (PSC) was composed by the Coordinator (MUPER: De Micheli, Volpi) as representative of the Municipalities, a representative of CIRIAF, as scientific partner, (Asdrubali, Baldinelli) and a representative of Umbria Region (Monsignori, Rosichetti, Ruggiero). The PSC was involved both in the monitoring of the progress and in the implementation of the project actions (Actions E.1 and E.2) and in the monitoring of the impact of the project actions (Actions C.1 and C.2).

The PSC was supported, for the technical issues, by the Partnership Scientific Steering Committee (SSC). The SSC was composed by the Coordinator (MUPER) as representative of the Municipalities, a representative of CIRIAF (as scientific partner) and a representative of Umbria Region: Volpi, Baldinelli, Rosichetti.

4.2 Evaluation of the management system

The project management process was carried out with no particular problems. The problems encountered were sometimes logistic, sometimes connected to the urgent and contingent problems due to the technical service of the Municipalities. Some of these are very small organizations with few employees, and this caused some (recoverable) delay.

There are not deviations from the arrangements contained in the partnership agreements.

Through the implementation and updating of specific management tools contained in Action E.1 (e.g. logical framework, Gantt diagram, action plan, “to do lists”, processes and budget explanations, minutes of the meetings etc.) and in Actions C.1 and C.2 (e.g. monitoring grids and matrixes about the generated impacts, both social and environmental), the consortium managed to have, although some initial difficulties, a project management system consistent with the expected goals, transparent in its internal and external communications, and collaborative among the partners. The good cooperation among partners was one of the positive impacts generated by MuSAE (as stated by the consortium’s members), as it is not so common the horizontal cooperation among public authorities, mainly between small and big municipalities).

The management system staff has been completed at the date of Mid Term Report.

All partners have defined their staff at the beginning of the project. So, internal project managers, directive positions, senior researchers, junior researchers, technicians, administration secretaries of each partners, were clearly involved in the project.

Regarding the program for external assignments, there have been some delays that have increased the workload of the internal staff, who had to devote more time to the project. Consequently, some actions were pushed back from their scheduled times. Despite this, the work got back on schedule, and all the planned actions have been carried out. Some delays were caused by the bureaucratic complexity of some internal procedures in the management of the financial reporting, given that it was the first experience for almost all partners.

MUPER signed a direct contract with External Project Manager, Mrs. Gaia Gifuni. About this figure, after the monitoring visit of November 2013, the European Commission wrote (ENV/E4/GC/LM/ps 29/01/2014) to prepare a report assessing the impact of this on the project and describe in detail the activities covered by other figures (annex Admin 1).

First of all the external project manager activities were carry out by the mentioned engineers of MUPER, De Micheli, Volpi, Tortoioli, and engineers of CIRIAF Asdrubali, Baldinelli, Moretti, without negative impact on the quality of project. The delays, as represent in the logical framework (*annex 7.1.10 of Mid Term report*), were recovered, without damaging the balance of the project actions and without compromising any results.

As far as the external assistance, the Municipalities signed direct contracts with a company expert in this field called “Speha Fresia”. This company ensures a support on the Participatory consultations, Competence catalogue, facilitation of the partnership cooperation for sharing and defining vision, mission, activities breakdown and indicators, workshop, tools design and feedback reports.

MUPER signed a direct contract with independent auditor for the financial and administrative control of all the project. Mrs. Maria Chiara Grasselli worked for this task, ensuring formal and substantial correctness of the administrative evidences, when the project was in progress and at the end of it.

The communication with the Commission was carried out through the help of Monitoring team (Eng. Mengali).

MUPER had sent each month a short report about the activities done to the Monitoring team. MUPER sometimes had asked some questions about his problems or about partners requests to the monitor. The Monitoring team was always helpful and expert in all circumstances.

The communication with the Italian Ministry of Environment was carried out professionally by Mrs. Betti, known during the Kick Off meeting in November 2012. She had come in Perugia in the occasion of the second monitoring visit last November 2013.

On 22th june 2015, the External Project manager met Mrs. Betti in Rome and delivered some output project documents, as Layman’s Report and other dissemination materials.

Then on 10th July 2015, Mrs Betti came in Perugia for Life info day 2015 event at University of Perugia, and she invited us to explain about MuSAE as local successfully Life Project.

During European Sustainable Energy Week 2015, we organized a networking meeting in Brussels (16-18 June 2015) and we met Technical and Administrative Desk Officer to explain the ongoing progress of the project.

5 Technical part

5.1 *Technical progress, per task*

5.1.1 Action A.1 - Participatory project executive design and planning with key stakeholders

PREPARATORY ACTION

State of the Action:	Foreseen start date:	September 2012
	Actual start date:	November 2012
	Foreseen end date:	March 2013
	Actual end date:	May 2013

The Preparatory Action, as reported in the inception report, ended with the organisation of the four Preparatory Meetings, with the last one held in Marsciano on May 30th 2013.

Initially, this phase was planned to last 7 months, starting in September '12 and ending in March '13, thus we needed to postpone the deadline of 2 more months.

In the Preparatory Meetings, the project was presented and the main stakeholders' interests collected, and partners had also outlined a methodology to lead the other three rounds of Participatory Forums (PF) for each town, and that took place throughout the project lifetime. Specifically for this cross-cutting nature of the PF, we assigned to Action A.1 all meetings, for not spreading these activities throughout all project actions. As a matter of fact, the PF were closely linked to the core deliverables implementation (B.1, B.2, B.3), to the Social-Environmental Impacts monitoring and evaluation (C.1), and to all communication and dissemination actions (D).

As reported in the inception report, through the Preparatory meetings we managed to engage around 90 stakeholders (50 in Perugia, 25 for the two municipalities of Umbertide and Lisciano Niccone, and 15 for Marsciano).

Since May 2013 until April 2014 a more detailed programme of the next rounds of PF was agreed by the partners, and with the support of the external assistance, a methodological proposal was implemented in order to facilitate the active and effective participation of the key stakeholders in each town.

The proposed participatory approach is based on the co-development of concepts, ideas, and proposals, working in little groups, where people are more likely to participate and say their views, with plenary sessions where to feedback about the groups' results and share knowledge, practices, and strategic visions.

The results of these meetings are reported and sent to all participants (the full version), while a short version, with the key outcomes is published on the project website under "Documents" (<http://www.life-musae.it/documenti>) and attached to the report (*annexes 7.2.1 and 7.2.2 of Mid Term report*).

Specific tools were developed per each meeting, starting from the outputs of the knowledge transfer and of the on-going implementation of the Energy Environmental Plans (MEEPs).

The setting of the working space was taken into account too, with chairs in circle for the plenary sessions, the composition of little groups (up to 10/12 people), and the use of visualisation techniques.

PARTICIPATORY FORUMS

State of the Action: **Foreseen start date:** April 2013
 Actual start date: March 2014
 Foreseen end date: June 2014
 Actual end date: June 2015

The first round of meetings was held:

MUPER on March 21st 2014
MARSCIANO on April 12th 2014
UMBERTIDE on May 31st 2014
LISCIANO on July 20st 2014

The second round of meetings was held:

MUPER on October 30th 2014
MARSCIANO on November 11th 2014
UMBERTIDE on November 13th 2014
LISCIANO on November 13th 2014

The third round of meetings was held:

MUPER on April 14th 2015
MARSCIANO on March 26th 2015
UMBERTIDE on June 6th 2015
LISCIANO on June 11th 2015

All supporting documents and evidences are available online. The reports in Italian and the English abstract are provided on the project website. In the annex Tech 1 there are all the FORUMS Reports.

MUPER

The **first round of MUPER** participatory forum was held on March 21st 2014 by the ANCI (National Association of the Italian Municipalities) headquarters based in Perugia, Via Alessi.

It was organised within the frame of a wider event promoted by the town, “*Perugia Green Days*”, a four days public event devoted to the environmental issues, with seminars, specific workshops (like our MuSAE PF) and various exhibitions.

The second meeting was attended by 35 people from different backgrounds, and was specifically addressed to involve in our debate local A21 members, young people, as citizens and students, and also public bodies, small businessman, the Electric Distribution Company (ENEL) and SMEs. Young people were mostly attending the University. Particularly useful was the participation of ENEL, the professional association of engineers and geologists, and the associations of handicraft, agriculture and commerce.

Before sharing the programme in detail, the President of ANCI Umbria welcomed participants, introducing some focal points for the municipalities, mainly the small ones, about Europe 2020 agenda, towards a smart, sustainable and inclusive growth, and the role of small municipalities in the local development of a territory. The solidarity among big and small towns embedded in MuSAE project was underlined as key success factor for the know-how transfer and a more effective cooperation between territories and public administrations.

The 2nd meeting agenda included the presentation of the MuSAE project progress, by Eng. Baldinelli of CIRIAF and the presentation of the new updated version of Perugia EEP, by Eng. De Micheli of the Municipality of Perugia. Then, the facilitator asked participants to share in four groups (segmented in the following target groups: citizens, public administrations, small and medium enterprises, and university students). The task per each group was to analyse the three “intervention areas” foreseen in the municipal EEP:

- 1) Measures to foster energy saving;
- 2) Promotion of renewable sources;
- 3) Transport and fuels optimisation.

Each person was asked to assign “individual” spots (maximum 6) on the favourite measures and interventions, and to select, within the group through discussion and negotiation, only 5 priorities. Among them, the group was asked to deepen one proposal for the pilot in MuSAE, synthesising the core aspects (what, how, who, resources, time).

All groups provided a feedback in the plenary session, illustrating the debate and the different views. The pilot project proposals are: the energy reorganisation through heating and cooling pumps (1° group: local government bodies); the energy requalification of one school building (2° group: SMEs); a small wind power plant (3° group: university students); to increase the “MiniMetro” transport prolonging the timetable in the evening and connecting with other public transports (4° group: young citizens).

After the feedback presentation, the final conclusions were summarised by MUPER, thankful for the contribution received in the four proposals, and announcing the follow-up meeting.

The **second round of MUPER** participatory forum was held on October 30th 2014, at the National Association of Italian Municipalities in Umbria, with the participation of 18 stakeholders of different systems: public officers, professionals and associations of professionals, university teachers, researchers and students.

The main aims were to inform and update about the ongoing activities (feedback of the former PF, updated version of the MEEP of Perugia, availability of the legislative database updated at 2013, the poll results realised during the *Perugia Green Days* event, the Energy-Info-Desk etc.) and to discuss about the proposal of Pilot Project: the intervention of energy re-qualification of a public building (the school of Ramazzano). The report of the meeting in Italian and an abstract in English are available on the project website.

The **third round of MUPER** participatory forum was held on April 14th 2015, at the School of Ramazzano, with the participation of 30 persons representing: public officers of partners’ municipalities and policy-makers, teachers and workers of the public school (a kindergarten), citizens, university teachers, researchers and students, professionals and entrepreneurs. The presentation of the interventions realised in the school and the direct evaluation by the direct users represented a stronger engagement by MUPER to proceed in this direction, for the other schools in charge of the town.). The report of the meeting in Italian and an abstract in English are available on the project website.

MARSCIANO

After the preparatory forum meeting in Marsciano in May 2013, the **first round of Marsciano** participatory forum was held on April 12th 2014, and it was addressed to the young students (17-20 years old) of the Technical Institute of Mechatronic, some small businessman, some public employees. It was realised in the framework of the event “*Fiera Verde*” (Green Fair) and devoted to sensitize students of the last year of the technical school with the core scope to introduce MuSAE issues to the next generation of technical workers. We had 26 participants, among them 20 students, who were the key players of this meeting. After the presentation of MuSAE and the efforts of MARSCIANO in the design of this new tool (MEEP), we proposed to share the audience in 3 sub-working groups, and for one hour they discussed in deep the three “intervention areas” foreseen in the municipal EEP: 1) Measures to foster energy sparing; 2) Promotion of renewable sources; 3) Transport and fuels optimisation. The final feedback collected among participants showed an overall satisfaction about the workshop, motivated by a great interest for the potential intervention areas monitored by EEP (they knew more about renewable sources) and a surprising awareness among the young students on e.g. security of bike riders, sustainability concepts, focusing on sparing resources,

new energy sources and the need to engage citizens about the renewable energy sources. The aversion against any form of traffic limitation or car sharing resulted very interesting (young people are jealous of their own car!).

After the feedback presentation, the final conclusions were summarised by **MARSCIANO**, thankful for the contributions, and announcing the follow-up meeting.

The **second round of MARSCIANO** participatory forum was held on November 11th 2014, with the main objective to present the final version of the MEEP, adopted by the Municipality. We had 31 registered participants, among them public officers and policy-makers, citizens and citizens' committees, students of the Technical School of Mechatronic, professionals and entrepreneurs. The MEEP was discussed in deep, with the detailed presentations by MARSCIANO and CIRIAF staff, and the main concerns were about "how citizens can participate in the final decisions about the MEEP?". The information about the procedure related to the final adoption of the MEEP, which foresees a period of 60 days for all citizens to write amendments in order to improve the final version, which will be formally introduced in the Municipal programming tools after this public consultation, was very useful to promote the further citizens' activation on these topics. Within this meeting a SWOT analysis of the MEEP was proposed for a common assessment, as well a Preference Grid concerning the favourite domains for improving the energy management. The results are reported and available on the project website.

The **third round of MARSCIANO** participatory forum was held on March 26th 2015, and this last meeting was targeted to share a final evaluation on the MEEP and on the Pilot Project (n.2 electric cars), already presented with a public event on March 12th 2015. This last meeting had fewer participants (9 registered) but the discussion was not less engaging, because we had interesting contributions: about the MEEP citizens applied 2 requests of revision, although the good evaluation of the pilot project with the introduction of the electric mobility (transport is the sector with higher CO₂ emissions in Marsciano), somebody proposed that the next interventions could be oriented towards the hydroelectric power. The results are reported and available on the project website.

UMBERTIDE

After the preparatory forum meeting in Umbertide in May 2013, the **first round of UMBERTIDE** participatory forum was held on May 31st 2014 and by April 2014 the proposal was deepened among partners and the external assistance. A first agreement was reached with the identification of the target groups to involve, the choice of the meeting location, and the time scheduling of all next meetings. The programme and the invitation to the PF were published on the project website and a targeted mailing list was invited to the participatory workshop. Also in this case, a priority was given to the young people.

We had 22 participants at Mola Casanova: public officers, professionals and students, enterprises and citizens. They were invited, after the plenary presentation of MuSAE aims and actions, to work together for deepening the MEEP items and the opportunities offered by the Life+ project shared in two sub-working groups. Beyond the evaluation about the ongoing progress, participants gave a priority for the pilot project too. The feedback of the groups and the discussions shared during the meeting are reported and available on the project website.

The **second round of UMBERTIDE** participatory forum was held on November 13th 2014, with the main scope to inform about and discuss on the MEEP implemented during MuSAE and to present the detailed planning of the pilot project implementation (mini-wind system). We had 22 registered participants and during this meeting we had the opportunity to collect some assessment grids about the MEEP and the favourite interventions in this field.

The **third round of UMBERTIDE** participatory forum was held on June 6th 2015, with 14 registered participants (public officers, policy makers, educational centre staff, citizens and university researchers). The main scope was to provide a shared evaluation of the achieved results (MEEP, the info-desk, the pilot), and the first comments highlighted as key intangible outcome of MuSAE the

cooperation between the big and the small towns, not only for the know-how transfer, but also for the improved capability to work together and to find synergies from this cooperation.

LISCIANO

The **first round of LISCIANO** participatory forum was held on July 20th '14, in connection with an important local event. As LISCIANO is the littlest village in the partnership, probably, we will follow original ways for engaging local stakeholders: the local fair is the first step to collect adhesions to the PF, organising the first forum within this frame.

We had globally 34 registered participants, and they were invited, after the plenary presentations, to provide their feedback about the “priority areas of intervention for the MEEP”, with the highest rate assigned to the “Measures for fostering energy saving” with the 42% of preferences.

The **second round of LISCIANO** participatory forum was held on November 13th 2014, together with **UMBERTIDE** at Mola Casanova. The main scope to combine the two towns' forums was to provide a further occasion to Lisciano Municipality to further inform about the MEEP implemented during MuSAE. As a matter of fact, another meeting devoted to the detailed presentation of the MEEP and the pilot was organised as “Open Council” to the citizens and with the participation of the experts of CIRIAF.

The **third round of LISCIANO** participatory forum was held on June 11th 2015, with 15 participants (public officers and policy-makers, citizens, university teachers and researchers, professionals). Through this last meeting we had the opportunity to share the final evaluation about the MEEP (through a SWOT grid), to collect the preferences about the priority of interventions, and the overall assessment of MuSAE results.

5.1.2 Action B.1 - Know How Transfer from the big Municipality to the small ones

State of the Action:	Foreseen start date:	September 2012
	Actual start date:	October 2012
	Foreseen end date:	March 2013
	Actual end date:	December 2013

Know-how transfer from the big Municipality to the small ones has started, with four specific partners meetings held between the MUPER coordinator and technicians and the three small Municipalities ones, on November 12th 2012, on January 17th 2013, on March 26th 2013, on April 8th 2013 (*annexes 20,21,22 and 23 of Inception report*). The goals of these meeting consisted of explaining the MEEP contents and the novelties of the new release, the data to collect, their analyses, the path to write, to adopt and finally to ratify the MEEP.

The database of laws and Standards, which is a part of the deliverable linked to the action, has been provided (*annex 2 of Inception report*); the final report for the know-how transfer phase has been reported and updated after mid term report (annex Tech 2).

Transfer activities by the City of Perugia to other contracting partners took place either through meetings in different locations, video conferencing, emails and phone calls. Both the preparation of teaching activities by the teachers and the study activities by the students have required a time commitment respectively related to the preparation of lessons and their learning. Communication via e-mail, phone calls and video conferencing, among other partners are also included in the transfer activities, in particular between the City of Perugia and the other partners for the organization of meetings, requests for clarification on issues addressed and/or deepen their knowledge.

The know how transfer has involved not only the technical issues, but also some administrative issues as how to adopt and how to approve the MEEP in Municipal Council, and how to publish and

participate it.

5.1.3 Action B.2 - Design of the governance tools

State of the Action: **Foreseen start date:** September 2012
 Actual start date: March 2013
 Foreseen end date: June 2014
 Actual end date: January 2015

1) MEEP:

Following the conclusion of Action B.1, the municipalities were ready to prepare the MEEP planning tool. This tool was drawn up for each municipality and concluded in October 2014, and includes the “Greenhouse Gases Inventory.”

Marsciano adopted its MEEP in November 2014(annex Tech 3);

Umbertide’s MEEP was presented during the forums in November 2014 and was adopted in March 2015 (annex Tech 4);

Lisciano Niccone adopted its MEEP in November 2014 (annex Tech 5);

All the MEEPs were discussed during the participatory forums, where the people could make their remarks, which were then implemented by the municipalities.

The Italian Law 10/91 requires municipalities with a population of over 50,000 to adopt a specific instrument for environmental and energy planning within their own municipal territory.

The Municipal Energy-Environmental Plan (MEEP) allows municipalities to prepare the energy balance of the demand (consumption) and supply (production) of energy within their territory and to base their own energy development strategies on this plan.

The idea of the adoption of MEEPs by smaller Municipalities is based on the fact that the MEEP:

- considers the energy demand in the municipality in all sections of energy use, such as agriculture, industry, services, transport, residential, and waste disposal.
- evaluates municipal energy needs with opportunities for energy production, with possible actions and measures involving energy savings.
- allows municipalities to choose the best energy policies for achieving the goals that have been set.

In this way also small and medium sized municipalities can benefit from well-organized and well-defined energy and environmental planning.

2) GUIDELINES (annex Tech 6):

One of the basic ideas of the MuSAE project consisted in transferring the skills acquired by the Municipality of Perugia in the realization of its MEEP, developed with the technical and scientific support of CIRIAF, to the other Municipalities of the Umbria Region. Except for the larger ones, most of the medium and small size Municipalities in the Region has a small number of employees in their technical department, having to deal with a large number of tasks. On that basis, the project has developed simplified guidelines (annex Tech 6); that allow these realities to adopt their plans in the short term, without draining human resources from their structure. The guidelines describe also the steps that Municipalities must follow to join the Covenant of Mayors and the benefits and responsibilities arising from this: primarily, the drafting of the SEAP (Sustainable Energy Action

Plan).

The guidelines are also addressed to all the Municipalities that did not participate in the MuSAE project and to all the stakeholders involved in energy and environmental planning in their own territory .

The topics covered in the guidelines for the drafting of a MEEP are summarized below:

- the municipal energy balance: the territory's energy supply and demand;
- estimate of climate-altering gases linked to energy consumption;
- forecasting of future scenarios;
- ways of proposing and selecting measures aimed at achieving the EU 2020 objectives.
- Covenant of Mayors: commitments, analysis of the SEAPs (Sustainable Energy Action Plan), comparison with the MEEPs adopted by the MuSAE project.

The short shift of the planning instruments definition and the need of preparing a document applicable not only to the four Municipalities involved in MuSAE, but also to any situation in EU where this situation is pertinent, suggested to move the deadline for the Guidelines report emission to January 2015.

3) CATALOGUE OF COMPETENCES, (annex Tech 7):

Is a deliverable of the project valuable for small municipalities and the management of MEEPs.

The preparation of the Competence Catalogue started with the process of shared analysis on the professionals and the training requirements outlined by the new tools of environmental energy programming. The identification of the professionals character was defined in a first proposal, to be exploited for a screening of the knowledge, skills and competence required (ideal type), both specific and transversal. This competences catalogue was verified among the staff of public authorities involved, to highlight the spread of knowledge, skills and expertise possessed compared to those in the target. To deepen the training need analysis of the 3 local authorities staff involved in the project (small towns) we submitted specific self-evaluation questionnaires to the technical staff and the administrative employees, while to the Majors and other policy makers, we collected qualitative interviews.

Having as background the national planning and objectives in this field (national roadmap), the direct screening served to define targeted learning pathways to improve the professional skills and competences in designing, planning and managing the MEEP of small municipalities.

5.1.4 Action B.3 - Design of the pilot-Actions and info-desk implementation

State of the Action:	Foreseen start date:	September 2012
	Actual start date:	June 2013
	Foreseen end date:	March 2014
	Actual end date:	June 2015

- MARSCIANO and MUPER engineers carried out the design of info desk, its contents, the tools and materials to provide and share with the citizens, the designers, the companies. The info desk organization and the staff were established too.
- In march 2014, MUPER has been taken a full-time employee for the energy info-desk activation

and to carry out all the related activities. Therefore, the info-desk will be kept open even after the end of the project. For the launch of the info-desk, an advertising campaign was made with the use of video, audio and flyers that have received visibility in the major regional channels of information such as television and radio, which led to a good return of contacts also due to the audience received during one of the most important match of Perugia football team.

At the same time, a stand in Piazza Italia, a central place in Perugia, was opened during the "Perugia Green Days" (20th-23rd March); it has given even more visibility and, in addition of having only an informative function for the MuSAE project and info-desk, it also had a participatory function with citizenship through questionnaires that have produced important information about the pilot-actions and knowledge about energy and environmental issues of the citizens. The questionnaire report was annexed (*annex 7.2.5 of Mid Term report*).

- The choice of pilot projects that each partner has made, in order to disseminate best practices on environmental sustainability and the use of renewable sources, was the result of meetings held with stakeholders during the participatory forums and the information obtained from the MEEP, therefore, as a consequence of delay of MEEP, the pilot-project designs was moved forward than scheduled but completed within the end of the MuSAE project;

A summary description of each project is given below:

- **MUPER** pilot project regarded the improvement of the energy efficiency of the municipal nursery school in Ramazzano by installing a remote system to read the electricity consumption of the building and of the new heat pump, the energy produced by the photovoltaic system and the information concerning the alarm system. All data recorded will be used by personnel responsible of their maintenance for an efficient energy control and optimization. Authorized personnel will also be able to remotely switch on and off the electrical loads in use on the building.

Some information as production and consumption of energy will be displayed on an information panel installed inside the school and some others may also be published and accessible to the public, for institutional reasons and to promote the concept of "KNOW, CONTROL, SAVE". Thank to the building automation system installed we estimate to reduce the energy consumption of 10%.

Furthermore, the project also took into consideration the installation of an electrical energy storage system.

- **MARSCIANO** pilot project regarded electric transportation to improve sustainable mobility. The first stage of this project provided for the installation of two electric vehicle charging stations by ENEL, for both public and private use, at no cost to the city. This was followed by the purchase of two Renault ZOE 100% electric cars and the scrapping at the same time of two old municipally-owned cars, which not only provides important environmental benefits but also allows savings in operating costs of approximately 5,000.00 euro per year compared to the two scrapped cars. It should be noted, however, that the project's main value is not so much economic as much as environmental, starting with the motivation that the purchase of these two 100% electric cars can give to all citizens regarding the current potential of electric transportation in terms of the reducing of noxious emissions, greenhouse gases and noise pollution.
- The participatory forums held by the Municipality of **UMBERTIDE** brought to light the townspeople's priority interest in wind energy. This influenced the decision to install at the Mola Casanova renewable energy demonstration center - which already has a hydroelectric plant and a geothermal resource - a small demonstration wind farm, whose function is to make known and demonstrate to the public, and especially to young students (the most frequent visitors to the center), this renewable energy resource, as yet little used within the municipality. The project

was called WindU, from wind + U(mbertide). During the carrying out of the final project it was seen that the implementation of wind power together with solar photovoltaic energy is a significant “plus” in terms of productivity and innovation, and therefore it was decided to integrate the wind turbine envisaged in the preliminary stage with a series of photovoltaic panels installed alongside it. The project therefore provides for the installation of a 1 kW wind turbine and four 250W photovoltaic solar panels for a total of 2 kW of maximum capacity. The energy produced will be stored in four 200 Ah batteries. This energy will be used to charge the electric bikes at the Mola Casanova center.

- The pilot project of the Municipality of **LISCIANO NICCONE** concerned a building located in Via Unità d’Italia, home of the nursery and primary School and consists of the installation of a remote reading system for a photovoltaic system (20 kW) and a remote management system for the greatest electrical loads (electric water heaters and lighting lines) which can thus be monitored and switched on and off remotely.

5.1.5 Action C.1 - Monitoring and evaluation plan of the project actions

State of the Action: **Foreseen start date:** September 2012
 Actual start date: September 2012
 Foreseen end date: June 2015
 Actual end date: February 2015

This Action lasts for the whole project life.

The Partnership Steering Committee was involved both in the monitoring of the progress in the implementation of the project actions (Actions E.1 and E.2) and in the monitoring of the impact of the project actions (Actions C.1 and C.2): number of stakeholders and citizens involved, quantification of emissions reduction, number of new employees, energy saving.

There were organized ten meetings of partnership Steering Committee to assess the progress of the project :

1° Meeting of partnership Steering Committee	Perugia	25/09/2012
2° Meeting of partnership Steering Committee	Perugia	12/11/2012
3° Meeting of partnership Steering Committee	Perugia	17/01/2013
4° Meeting of partnership Steering Committee	Perugia	26/03/2013
5° Meeting of partnership Steering Committee	Perugia	31/10/2013
6° Meeting of partnership Steering Committee	Perugia	15/11/2013
7° Meeting of partnership Steering Committee	Perugia	23/01/2014
8° Meeting of partnership Steering Committee	Perugia	29/09/2014
9° Meeting of partnership Steering Committee	Perugia	19/12/2014
10° Meeting of partnership Steering Committee	Perugia	04/02/2015

To evaluate the qualitative impacts among partners’ organisations and staff, targeted forms were implemented in order to collect periodical feedback among the consortium members. While, with the core scope to actively engage direct and indirect beneficiaries, a supporting document was edited by the end of 2013 the “Project Social-Environmental impacts monitoring/evaluation Plan” .

The objective of this supporting document is to report how MuSAE project has influenced, during its

development, the social-environmental visions and practices of the key stakeholders: public authorities, citizens and economy players.

Most of the data and information here enclosed were used to implement information materials for the communication campaign and the implementation of the Layman's Report (Action D.1) and for any deliverables devoted to Action D.3 After Life+ dissemination.

The common assessment of the project impacts took into account, first of all, the clear identification of the local stakeholders (links to Action A.1 and D.1), somehow informed about MuSAE. The core actors were engaged in the common ongoing assessment during the realisation of the Participatory forum meetings or during dissemination activities, submitting them targeted simple questionnaires.

With the final versions of the expected core deliverables (the 3 small town MEEPs), and starting by July 2014, direct interviews with specific target groups were administrated, in order to collect direct evaluations about the concrete impacts, social and environmental, of MuSAE experience.

Some templates were developed for the definition of the Project Mission Statement and an overall grid to collect monitoring data, in relationship to each typology of stakeholders was shared.

With the final agreement about the project mission, a selection of indicators was defined for monitoring the period June 2014/June 2015, when the core deliverables were available, as reported in the 1° updating of the Impacts Evaluation Plan report rev.0 (annex Tech 8) and in the final version of Impacts Evaluation Plan report rev.1 (annex Tech 8)

5.1.6 Action C.2 - Scientific and technical Monitoring

State of the Action:	Foreseen start date:	September 2012
	Actual start date:	September 2012
	Foreseen end date:	June 2015
	Actual end date:	June 2015

The Partnership Scientific Steering Committee was created at the aim of supporting the Steering Committee for the technical issues regarding the monitoring of the impact of the project actions.

The project indicated the delivery of five technical reports for the Action C.2; only two evaluation report and a plan (annex Tech 9) of technical monitoring were produced because of the misunderstanding that was generated among the actions C and actions E.

After the November 2013 monitor visit, the distinction between the actions C (focused on monitoring the impact of project activities) and actions E (dedicated to the progress of the activities) has been clarified.

The technical report sent with Mid Term report in March 2014 was an intermediate report (annex Tech 9). At June 2015 has been updated in the final report on the technical monitoring activity (Annex Tech 9).

5.2 *Dissemination actions*

5.2.1 Objectives

The overall communication strategy was developed during the whole project life cycle, and after the project end in term of sustainability and multiplier effects.

The overall objectives of the dissemination plan were:

- The clear identification of the direct and indirect target beneficiaries for choosing the best channel of communication.

- The exploitation of the existing institutional networks and information supports granted by the partnership composition and by the nature of its members (local government authorities and university).
- The valorization of some implementation actions (e.g. Participatory Forums and Energy Desks) beyond the specific dissemination activities, to inform and engage citizens in MuSAE issues.
- The organization of specific public events at regional and EU level, fostering contacts and exchange with the European networks about Energy planning and management;
- The creation of targeted visibility tools like Life+ Posters, project website, flyers, brochures, panels, newsletters, were done.
- The collection of qualitative feedback by the public audience involved through the different ways.
- The creation of the conditions to further valorise MuSAE goals after the project end (After Life+ Dissemination Plan).

5.2.2 Dissemination: overview per activity

MUPER, as MuSAE coordinator, disseminates the information of the LIFE+ and MuSAE project in each workshop, convention and several meetings based on Environmental and Energetic issues organized in Perugia or in other towns where MUPER gave a contribution on these items. The people reached by MuSAE project information were all local policy makers, A21 members, University and technical high school teachers and students, companies, designers, citizens. The dissemination activities reached more people than foreseen in the project.

Several meetings were done during the approval of MUPER Energetic Environmental Plan revision in April - August 2013 and during “Perugia Green Days” edition 2013, based on mobility theme and edition 2014 based on Agroenergy theme. MuSAE was presented in Turin (Nov. 2013) in Urbanpromo event, an important international annual meeting, organized by Italian Architect Associations, Municipalities Associations, Regions and Companies association.

In addition to meetings, the stand of Perugia Green Days (20th-23th march 2014) gave a questionnaire to the citizens, and collected the results. This different approach permitted to talk with citizens about environmental problems and received an immediate feedback. The questions was focused on several topics: knowledge of European Environmental policy, Environmental and Energetic Plans, MuSAE Project, Renewable Energies, co-heating system and application, Energy save (*annex 7.2.5 of Mid Term report*).

To those who answered to the questionnaire, MUPER gave MuSAE gadgets (led pencil, block notes with MuSAE logo, and energy-saving light bulbs).

In the sites of all partners there is the notice boards in visible position. The Web site is operative, the e-Mailing lists was done, an Audio-visual product was done to launch Info Desk.

Photographs, Brochures, handouts, were done. A short handbook was done to present MUPER Energetic and Environmental Plan.

5.2.3 Action D.1 - Communication campaign

State of the Action:	Foreseen start date:	September 2012
	Actual start date:	September 2012
	Foreseen end date:	June 2015
	Actual end date:	June 2015

The organisation of the dissemination activities started with the creation of the public relations and communication office in charge of the action leader, who produced a first draft of the dissemination

plan which was a sort of guideline for stimulating new points of view and proposals of the partners. Partnership scheduled the provision of the different communication tools during the different project stages and in relationship to the specific public events.

The main targets were to inform and sensitize public audience about energy and environmental issues, on the promotion of energy saving concepts, about the role of public bodies at all levels (from Europe to the local governments) and on the opportunities available at European, national and regional funds, in order to exploit this experience for further interventions.

So, the awareness raising campaigns and dissemination activities included in the Plan were addressed to the following three segments:

- a) citizens of the Municipalities involved in the project;
- b) Municipalities and other local bodies of the Region;
- c) Institutions and citizens of other Italian and European regions.

During the project life, the planned activities of the Communication Campaign were:

- relationship with media *ex-ante*, *in itinere* and *ex-post* to foster and wide spread the project activities/results and Life+ Programme (press conferences and releases);
- organization of realisation of 8 local seminars and 2 conferences (regional and national) to inform all other small Municipalities of the Region Umbria and to debate with them about the strong and the weak points of the Guidelines to implement the Participatory model for the Municipal Energetic-Environmental Plans;
- production and dissemination of information materials (digital and printed) containing the project aims and targets, to deliver among municipalities, citizens, entrepreneurs and other key stakeholders during the regional conference and other meeting occasions;
- the participation to scientific conference organised by other bodies, and a final event, planned at the end of the project;
- realisation of Life+ boards to be placed at each partner's seat;
- printing and delivering of the core product, the Guidelines, both on paper and on CD Rom;
- editing, printing and delivering of the Laymans' Report: the Italian version was used to wide spread among citizens and entrepreneurs;
- creation and permanent updating of the project website with an English section with the translations of the main outputs and a restricted area for the partners' to support the partnership in the distance work in each project phase;
- design of the graphic image of the project (logo, colours and pictures/images) to be used for all dissemination products.

This action lasted 34 months, starting from September 2012 to the project end.

The deliverables of this action were:

Name	N° produced	N° distributed
Communication and dissemination Plan	1	1
Life+ Boards	6	6
Information Materials for the project	3.000	3.000
Information Material for Info-desk brochure "How to save"	1.000	900
Information Material for Info-desk brochure "Pilot Actions"	500	450
Guide lines printed copies	300	200
Guide lines CD Rom	500	300
All projects documents on USB card	150	120

Project website	1	1
Layman's Report	300	250

All the activities planned for the communication and dissemination campaign were carried out: more specifically, in the last year of the project, 8 local seminars were held that covered the entire region, along with a regional and national conference in which 120 people participated, with speakers of national importance (annex Diss 3).

The disseminations activity is reported below:

Date	Description	Location	Evidences
14/11/2012	Workshop GIS DAY	University of Perugia	Invitation, Participants, Programme and Presentation
20-21/11/2012	Conference twin towns Perugia - POTSDAM	Muper	Programme, Registration sheets
30/01/2013	Presentation of Perugia Municipality Energy-Environment Plan and MuSAE	Muper	Registration sheets
18/02/2013	Conference MEEP and MuSAE	University of Perugia	Photos, Poster and Registration sheets
21/03/2013	Presentation of Perugia Municipality Energy-Environment Plan to the Town Board	Muper	Attendance list
04/04/2013	Presentation of Perugia Municipality Energy-Environment Plan to the Commission	Muper	Agenda and Attendance list
11/04/2013	Presentation of Perugia Municipality Energy-Environment Plan to the Commission	Muper	Agenda and Attendance list
22/04/2013	Presentation of Perugia Municipality Energy-Environment Plan to the Town Council	Muper	Council deliberation
17-19/05/2013	Stand in PERUGIA GREEN DAYS	Muper in Pian di Massiano	Photo and Programme
05/06/2013	Agenda 21 Conference	Muper	Poster, Presentation, Registration Sheets, Photos (photovoltaic and lighting)
01/07/2013	Conference IMPIANTI Termici	Muper	Registration Sheets
11/10/2013	Conference IMPIANTI Termici	Muper	Registration Sheets
17-18/10/2013	Meeting with a delegation from MALMO	Muper	Programme and presentations of MuSAE and of the EEP
19/10/2013	Conference CASACLIMA	Exhibition of Bastia Umbra	

06-08/11/2013	Exposition URBANPROMO	Torino	Photos, Programme, Brochure, Presentation 6 and 7, Boards 1 e 2
20-23/03/2014	Stand PERUGIA GREEN DAYS	Muper	Photos and Questionnaires (Ita & Eng)
			Flyer Energy Info-Desk, Programme, and online Quiz
04/04/2014	Conference CIRIAF 2014	Muper - University	Programme and Registration Sheets
10/10/2014	Progetto TRACE - L'efficienza energetica negli edifici pubblici- Provincia di Perugia	Muper	Programme and Registration Sheets
03/11/2014	Local seminar - FIERA "FA' LA COSA GIUSTA"	Bastia Umbra	Programme and Registration Sheets
03/11/2014	Local seminar - FIERA "FA' LA COSA GIUSTA"	Bastia Umbra	Programme and Registration Sheets
04/11/2014	Local seminar - FIERA "FA' LA COSA GIUSTA"	Bastia Umbra	Programme and Registration Sheets
06/11/2014	Local Seminar	Magione	Programme and Registration Sheets
07/11/2014	Local Seminar	Citta' di Castello	Programme and Registration Sheets
11/11/2014	Local Seminar	Sant'Anatolia di Narco	Programme and Registration Sheets
13/11/2014	Local Seminar	Narni	Programme and Registration Sheets
14/11/2014	Local Seminar	Avigliano	Programme and Registration Sheets
27/02/2015	Convegno AIEL - Come riscaldarsi con il legno	Muper	Programme (locandina)
05/04/2015	EARTH DAY Perugia 2015	Muper	Programme
09-11/04/2015	CONGRESSO CIRIAF 2015	Muper - University	Programme and abstract
17/04/2015	FINAL CONFERENCE	Muper	Programme and Registration Sheets
16-18/06/2015	NETWORKING MEETING	Brussels	Programme and Registration Sheets
AFTER-LIFE DISSEMINATION			
10/07/2015	LIFE INFO DAY PERUGIA - RETTORATO	Muper - University	PPT DE MICHELI

5.2.4 Action D.2 - National and European Networking

State of the Action: **Foreseen start date:** September 2012
Actual start date: September 2012

Foreseen end date: June 2015
Actual end date: June 2015

CIRIAF has begun this action, that was more operative after the formal approval by the Municipality councils of MARSCIANO, UMBERTIDE, LISCIANO. Analogously was for the Guidelines, and the Competence catalogue.

MUPER before the mentioned Urbanpromo 2013, had organized two international meetings in Perugia, the first with the twin town of Postdam, the second with a delegation of Malmoe. In both cases participants had appreciated the aims and the description of MuSAE Projects and had compared their MEEP and actions to realized them.

As part of the networking activities planned for the MuSAE project and in order to gather information about the final event for the dissemination of the project, Giorgio Baldinelli and Francesco D'Alessandro of CIRIAF went to Brussels October 8-10, 2014; they were able to participate in various seminars organized as part of OPEN DAYS 2014, an event that takes place annually as part of the European Week of Regions and Cities. They also visited the Region of Umbria's Office for Institutional Relations with the European Union in Brussels, where a meeting was held with the office head, Maria Paola Simone, who, after explaining the functions of the office, showed the CIRIAF delegation the rooms the Region of Umbria has available in Brussels. (annex Diss 4)

On June 16, 2015, 13 people from the project staff flew from Perugia to Brussels with a direct Ryanair flight for a dissemination and networking event during the 2015 European Sustainable Energy Week (EUSEW 2015). As according to plans, a meeting was scheduled in Brussels with other Life projects and with a delegation of other European regions, but given the important circumstance it was also decided to organize a conference with a networking meeting.

It was also an opportunity to meet personally the financial and technical desk officers and to visit the institutional offices of the environmental delegation of the European Commission. (annex Diss 5)

A collaboration between MUPER and AzzeroCO2 is starting about efficiency in public building. AzzeroCO2 is an ESCO that participated to networking meeting in Brussel.

5.2.5 Action D.3 - After LIFE+ Communication Campaign

State of the Action: **Foreseen start date:** January 2015
 Actual start date: May 2015
 Foreseen end date: September 2015
 Actual end date: September 2015

The After LIFE+ Communication Campaign was defined in the specific document (annex Diss 6)

The purpose is the Dissemination of the LIFE tool in other territories as following:

- **Regional Strategy:**
The MuSAE project experience demonstrated the need for all local actors to be involved in order to achieve the common goal of increasing energy efficiency and reducing waste, demonstrating that alongside the indispensable regional energy planning there must also be local energy planning.
The feedback received from this experience has taken shape in the identification of a specific measure in the 2014-2020 Regional Environmental Energy Strategy (REES).
The REES is the Region of Umbria's new planning tool

(<http://www.regione.umbria.it/energia/sear>) adopted by the Regional Council with D.G.R. 1821 of 29/12/2014, which aims to achieve a ratio between the energy produced from RES and the gross final consumption of energy (GFC) of 15.2% by 2020, thus exceeding the target of 13.7% established by D.M. 15/03/2012 (Burden Sharing). The strategy identifies four different types of regional measures and explicates them according to the 4 main macro sectors of intervention (domestic-residential, industrial and services, agriculture and transport), indicating the actions to be put forward.

- Dissemination of guidelines:

The development of a tool such as the creation of guidelines for the preparation of the MEEP was a very important stage. The disclosure and dissemination of this tool is one of the priorities of the after-life communication campaign.

5.3 Evaluation of Project Implementation

The evaluation of the project implementation was developed through different means, questionnaires, round tables and open discussions, monitoring and evaluation sessions during the Partnership and the Scientific Steering Committees (SC) meetings among partners, and exploiting all public meeting occasions to investigate and collect our target groups and key stakeholders feedback on the evaluation of MuSAE proposal.

Since the submission phase, partners agree to foster, throughout the project lifetime, a participatory and social responsible approach towards the communities involved by MuSAE, planning for this task a specific Action (C.1 Monitoring and Evaluation Plan of the project actions), with the production of supporting documents (initial Plan and updating reports) exploited for the project and partnership management (inception, mid-term and final reporting) and for the dissemination purposes (Layman's Report and After Life+ Communication Plan).

The objective of these supporting documents was to report how MuSAE project has influenced, during its development, the social-environmental visions and practices of the key stakeholders about energy planning: public authorities, citizens and economy players.

The methodology applied to reach these publics, as better described in the Report "C.1 Project Social-Environmental Impacts Monitoring/Evaluation Plan" delivered on December '13 (*annex 7.1.4 of Mid Term report*) was targeted to formulate and validate, together with partners and external stakeholders (direct and indirect beneficiaries), and in relation to the vision and the mission of the MuSAE proposal, a participatory assessment of the project actions. This document was updated on 2015 (*annex Tech 8*)

The Scientific and Technical monitoring (Action C.2) supported the evaluation process through its intermediate reports (*annex 7.2.7 of Mid Term report*). This document was updated on 2015 (*annex Tech 9*)

The overall evaluation process was organised since the very beginning of the project life (Sep.'12) establishing the monitoring procedures and the information needs, as agreed by all partners in the contracts with the leading partner (MUPER), but it was focussed mainly on the administrative and financial procedures (E.1).

Although periodical meetings were organised by the Partnership Steering Committee (composed by: De Micheli, Volpi, Asdrubali, Baldinelli, Monsignori, Rosichetti, Ruggiero), some difficulties were met in the initial phase (Sep.'12/May '13), as for the three small municipalities this Life+ project is the first experience on European project.

The administration and accountability procedures required by the Programme were slowly assimilated, producing some delays in the actions implementation. After the inception report, the partnership was more aware about the project complexity, and in the following 11 months (Jun.'13/Apr.'14) some delays were recovered, focusing all efforts on achieving the key project deliverables (the Municipal EEPs of 3 small towns) and outcomes (increased participation of external players through the Participatory Forums, the dissemination seminars and conferences).

Through the open discussions devoted to the evaluation of the project actions during the SC meetings, some critical issues emerged like some delays and the deficiency of personnel in some Municipalities. These constraints were solved through the other partners supports, the monitor and the national focus point supports.

Very interesting evaluation feedback were collected during the first round of the Participatory Forums in Perugia and Marsciano (55 participants) and through the questionnaire submitted to all citizens participating to Perugia Green Days event, where MuSAE project was present with a stand in the exhibition area (358 citizens and 81 employees).

These qualitative information are reported in the Rev.1 of the Project Social-Environmental Impacts Monitoring and Evaluation Plan (*annex 7.1.4 of Mid Term report*).

For the Final Report the common assessment of the project actions was reported in the following grid:

	Task	Foreseen in the revised proposal	Achieved	Evaluation
Action A.1 Participatory project design and planning with key stakeholders:	Preparatory Action establishment	within March 2013	100% on May 2013	Although the 2 months of delay, one Forum in each town was established. This action, as linked to the stakeholders' evaluation of MuSAE key deliverables (MEEPs), was influenced by the time scheduling of related action (B.2).
	Participatory Forums external stakeholders' engagement through 3 rounds meetings (target number: 12 meetings)	within June 2015	100% on June 2015	By July 2014 all first round of meetings were realised (33%), the second round has been done within October 2014 (67%) and in June 2015 the action has been concluded with the last round of participatory forums (100%). The overall evaluation by the partners and the external stakeholders was quite good, as participatory practices, facilitated through structured processes, can be very effective and can enrich the Project outcomes/outputs by citizens' evaluations, ideas and proposals.

Action B.1	Know-how transfer from big to small municipalities:			
	End-phase of know-how transfer	within June 2013	Achieved the 100% on June 2013 as planned	The action has been progressed as planned. The know-how transfer report has been concluded on March 2014 and annexed to this report as requested (annex Tech 2).
Action B.2	Design of governance tools:			
	Energetic Environmental Plans	Definitive stage within June 2014	All definitive plans concluded on October 2014.	The preliminary plans were released as planned, their structure has been shared and defined (see the document on the know-how transfer). There was a delay of four month due to administrative reasons.
	Guidelines	Final report within June 2014	Final report concluded on January 2015	The final version was concluded on January 2015. 300 copies of the guidelines have been printed together with 500 copies on CDRom.
	Competence Catalogue	Final version within June 2014	Final version concluded on January 2015	The action was concluded by January 2015 with a delay of seven month.
Action B.3	Design of pilot actions and info desks implementation:			
	Pilot actions	all four Pilot Projects within March 2015	All four Pilot Projects concluded on June 2015	Due to a delay of MEEP development, the pilot-actions design were in turn moved forward.
	Energy info-desks	Opening the info-desk within September 2014	Opening the info-desk concluded on June 2015	The opening was foreseen by September 2014. MUPER opened its desk earlier than planned on March 2014, conversely, MARSCIANO activated the service on November 2014, UMBERTIDE on March 2015 and LISCIANO on June 2015.
Action C.1	Monitoring and evaluation plan of the project actions:			
	Meetings of partnership Steering Committee	organization of 10 Steering Committee within September 2015	100% achieved on February 2015	Although the initial difficulties, the partnership managed to start the project actions evaluation with external stakeholders with its planning (December '13) and its implementation started on March 2014. Some templates were shared among partners, in order to better investigate the impacts evaluation (e.g. Grids to select priorities in the EEPs or pilots proposals, SWOT analysis grid on MEEPs,

				dissemination sheet to report about the quantity and the quality of the reached audience, targeted questionnaires to different typologies of stakeholders). The SC was in charge to foster the exploitation of these monitoring tools, providing a more inclusive evaluation process to MuSAE project.
Action C.2	Scientific and technical monitoring:			
	Reports of Technical Monitoring	100% within June 2015	100% Achieved on June 2015 as planned	The intermediate report covered all the activity till March 2014 instead of three report foreseen, as already clarified at the monitoring visit on November 2013, the same as the final monitoring report released on June 2015.
Action D.1	Communication campaign:			
		Throughout the project	Throughout the project	This action has been performed throughout the project life with conferences, dissemination of information materials and seminars.
Action D.2	National and European Networking:			
		Throughout the project	Throughout the project	As above, the action persisted throughout the project life and will go on even after its end.
Action E.1	Project and partnership management:			
	Inception report	Project start up within march 2013	May 2013	The Inception report has been released quite in line on 31 st May 2013
	Mid-term report	Project development within March 2014	May 2014	The Mid-Term report has been released on 31 st May 2014
	Final report	Project end within September 2015	September 2015	The Final Report is released on time by 30 th September 2015
Action E.2	Technical project management:			
	Specific planning tools and technical report	Throughout the project	Throughout the project	This action has been performed throughout the project life with gantt charts updating, ongoing risk assessment and technical reports sent monthly to the Monitor.

5.4 *Analysis of long-term benefits*

5.4.1 Environmental benefits

An objective of the project was to realize three MEEPs for the small Municipalities involved, which do not dispose of this tool. These instruments allow the administrators to implement a series of actions with direct benefits on the territories, promoting the integration of environmental concerns into other policies. By means of a process of know-how transfer and competences sharing among the project partners, the small Municipalities received an important instrument for the knowledge and the potential active interventions on their territories (simplified and shared Energetic-Environmental Plans). The Plans will guarantee immediate effects in terms of renewable sources development (solar thermal and photovoltaic, wind power, hydro power biomasses, geothermal etc.) and energy consumption reduction, with the annexed environmental benefits.

The governance tools have normally long term effects, whose quantification is often hard to define in the preliminary phase. Anyway, starting from the experience of MUPER, which has adopted its Energetic Environmental Plan since many years, it is possible to indicate at least the potential of the implementation of the actions hypothesized in the Plan. Dividing the possible effects of the Energetic environmental plans application into three categories, the capacities for energy saving and emissions reduction should be synthesized as follows:

- 1) renewable energy: the global contribution of renewable sources of energy should cover, in 5 years about 8% of the global energy demand (depending on the single Municipality), contemporarily reducing a similar percentage of CO₂ emissions;
- 2) transport: in small Municipalities like those involved in the project, the potential for environmental benefits derived by this sector are linked essentially to the increase of public transport. The traffic fluidization constitutes a problem more in big cities than in small towns; nevertheless, a push towards the limitation of the private vehicles could bring in 5 years to a CO₂ emission reduction inside a single Municipality of about 1% of the current value;
- 3) the actions dedicated to energy saving include the refurbishment of buildings by means of insulation of the envelope, the use of more efficient heating and cooling plants and household appliances, the change of industries machineries towards more effective systems. The potential of these interventions is strictly linked to the constructions and factories density of each single Municipality, in any case, it is reasonable to assign an emission reduction capability of up to 4% of the current value in 5 years.

The main objective of the project is the diffusion of the culture of energy saving, energy efficiency and environmental protection, starting from a local dimension to reach a larger scale.

5.4.2 Sustainability

The MEEPs of Marsciano, Umbertide and Lisciano Niccone indicate several measures to be performed by the Municipalities in order to reduce their GHG emission. In particular all the Municipalities have decided to set as target for their future scenario based on the requirements of the Covenant of Mayors, i.e. the reduction of 20% GHG emissions considering as baseline year the one for which the most comprehensive and reliable data can be provided.

Umbertide has already adhered to the Covenant of Mayors, while Marsciano and Lisciano Niccone have committed themselves to doing the same by selecting the aforementioned scenarios in their MEEPs.

Another main long term effect produced by the project consists on sensitizing the various stakeholders involved on issues related to energy planning. The pilot projects, decided and implemented with the participation of stakeholders in each area, will remain as visible examples left by the municipalities, to make the resident population aware of the importance of energy saving measures and emission reduction.

The arrangement of the Guidelines for small Municipalities Energetic-Environmental Plans will remain available for all Municipalities not provided of an Energy Plan.

The project website will be kept active even after the expiry of the project. It contains all the tools, Guidelines and information necessary for the stakeholders involved, it will be kept updated and it will be a reference point for each Municipality that will decide to adopt tools similar to those provided by the project MuSAE.

The energy Info-desks created in each municipal area will constitute important tools for the implementation of local energy policies. They will promote initiatives to create a network of partnerships and to support individuals who wish to engage in activities for energy saving and environment protection, thus contributing to the objectives to be achieved. Other neighbouring Municipalities are likely to follow the good example of constituting themselves their Energy Info-desk.

All the cited actions could contribute significantly to the population and private companies awareness towards the culture of sustainable development, allowing them to become protagonist actors of energetic and environmental choices.

Besides, the consensus research and the sharing of programmatic and operative decisions of the strategies makes stronger and easier the implementation process and the definition of specific projects.

5.4.3 Economic and social benefits

The project is one of the tools that should contribute locally to reach the Italian and European targets of emissions reduction, involving directly the local communities, at the aim of modelling adequate instruments for all EU small Municipalities. The focal point for these cities consists of the community adhesion to the territory planning and management process; following the philosophy of Agenda 21, in fact, the participation represents the determinant variable for the actuation and the respect of the EU normative regarding these arguments, improving the knowledge basis necessary for the policies related to environmental thematic.

Besides, the operative actions on small Municipalities will be featured in the direction of small size interventions, particularly fitted for the creation of new opportunities for the development of local small and medium enterprises, so favouring the local employment, in accordance to the objectives of the Environmental Compliance Assistance Programme for Small and Medium-sized Enterprises.

Therefore, new perspectives will emerge for all the stakeholders in the fields touched by the project; the project itself could contribute to boost the local economy in a crisis period such as the current, that hits mainly sectors like constructions, giving benefits from the informative and dissemination actions and from the concrete actions provided.

Thanks to the MuSAE project, Umbria Region has decided to finance energy and environmental planning through the 2014-2020 Regional Energy and Environmental Strategy (further described in the following): it will allow possible future investments and new jobs in the field of energy efficiency and sustainable development.

Finally, an active participation in a shared definition of energy and environmental planning will increase the awareness of the various stakeholders, in particular of citizens. Sometimes the inadequate knowledge of environmental topics causes concerns and diffidence towards innovative solutions, so their involvement in defining the strategies to reach a cleaner future can be of big support in filling the gap between them and the public administrations.

5.4.4 Replicability

The methodologies and topics proposed in the project are general and thus also relevant for small and big Municipalities in other countries. The experience can be perfectly repeatable in any other EU

Region where there are Municipalities close to each other: one with an already implemented Energetic-Environmental Plan and the other that misses this instrument.

The MuSAE project involves the transfer of knowledge in the field of energy planning of a large municipality (MUPER), to small and medium-sized municipalities (MARSCIANO, UMBERTIDE, LISCIANO). Simplified and widely shared Energetic-Environmental Plans, useful for every small town in Europe, can be realized, for example, following the indications of the Sustainable Energy Action Plans that all the Municipalities participating to the Covenant of Mayors should prepare. The Plans are structured according to the Guidelines that were realized with the technical-scientific contribution of a University partner, exploiting its wide background on Energetic-Environment Planning.

The Guidelines contain the methods for deriving the small towns Plans from the experience of a big Municipality already provided of its own planning instrument.

In particular, the territorial energy planning requires an accurate and deep knowledge of the analyzed reality; it is therefore necessary to initially characterize the territory from a geological point of view, moving then to the assessment of climatological and environmental conditions and, finally, retrieving the demographics and socio-economic data. The collection of all these data in a single document results useful to have a complete and quick view of the territory addressed by the MEEP, and to develop the energy and environmental policies of the territory with an increased awareness. This phase could result problematic because of the difficulties in finding the above mentioned data, therefore, the Guidelines identify the sources to be consulted, such as the Italian Institute of Statistics (ISTAT) for demographics and economic activities, the maps with geo-referenced information for the ground use made available by the regional atlas, regional environmental protection agencies for environmental data, etc. At present, indications are only supplied for the Italian situation, but the same suggestions can be easily transferred to other EU member states, by identifying the agencies responsible for each data in every Nation.

As stated before, the Umbria Region Energy and Environmental Strategy will contribute to replicate the experience of MuSAE funding the production of MEEPs in Umbrian Municipalities. The Umbrian Municipality of Monte Castello di Vibio is currently adopting the guidelines developed by MuSAE for realizing its MEEP while the municipalities that were involved in the seminars organized during the project (Magione, Sant'Anatolia di Narco, Narni, Città di Castello, Avigliano Umbro) have showed their interest in applying them.

5.4.5 Best Practice lessons

The know-how transfer from the big Municipality to the small ones constitutes in itself a new best practice for the spreading of Energetic-Environmental Plans. Another best practice can be identified in the definition of the decision matrixes. The decision matrix (described in the document: C2.1 scientific and technical monitoring) is a tool that every Municipality that have adopted a MEEP can use to compare all the possible actions to be implemented for decreasing energy consumptions and environmental impacts. This comparison allows to define a ranking of the actions that have the best scores both for the technical/economic feasibility and the social acceptance

5.4.6 Innovation and Demostation Value

The territorial communities characterized by small dimensions could give an added value to diffuse the culture the environmental protection and energy savings, considered that they constitute a consistent part of the total number of the Municipalities: in Italy, for instance, 65% of the citizens live in cities with less than 50,000 inhabitants. But, in most cases small towns do not have enough competencies and means to cope with this challenge.

The match between the requirements of the big Municipalities linked to execute concrete and shared

interventions and the need for the small ones to participate to the process of energy rationalization and emission reduction for their own territory, represents the fulcrum of the project.

Thus, the main innovation characteristic consists of the transfer of the know-how from the big Municipalities authorities that have already an Energetic-Environmental Plan, to the administrations of the small towns.

Another innovative feature of the proposal lies on the attempt to involve the small Municipalities with a subsidiary approach, where these authorities are not substantially left alone to build this instrument. Besides, the model implemented will be identified by a high grade of participation in the Plans definition.

The aid of a more structured public authority gives the small Municipalities a possibility of defining its energetic and environmental status and arranging operative actions, despite the scarcity of their economic resources.

Besides, the Plans systemization of different Municipalities that insist on territories close to each other makes the demand-supply analysis more complete, orienting the choices of energy policy and emissions reduction in a more organic manner, maintaining at the same time the features of an operative and local instrument.

Another beneficial effect on small towns authorities is linked to the development and the strengthening of civil servants specific competencies on themes related to energy efficiency, renewable energy sources, legislative and normative references and knowledge of the possible financial or incentive instruments for operative interventions. They will be given a specific expertise on technical-economic feasibility studies, so making the Municipalities active actors on the design phase of the interventions.

From the side of the big Municipality, the project represents firstly an opportunity to enforce the technical competencies of the personnel dealing with energetic and environmental issues; moreover, it will witness the experimentation of a highly shared process of plan definition and actuation in the small towns, an experience to be repeated in its territory. In fact, the research of citizens approval of the strategies and the programmatic choices makes stronger and easier the following step of the operative definition of specific projects.

5.4.7 Long Terms Indicators of the project success

The long-term indicators to assess the effectiveness of the project are fully described in the document: C2.1 scientific and technical monitoring. It has been achieved, a system of continuous monitoring, which will highlight on an annual basis the advances made in the field of energy saving and emission reduction of greenhouse gases. Practically, on the basis of work carried out on the territory of the Municipalities involved, it will be possible to estimate how much energy has been saved, the amount of energy produced from renewable sources and the quantity of CO₂ equivalent emissions avoided.

5.4.8 Relevance for Policy Areas

The issues developed by the MuSAE project, and in particular the attention given to Municipal Energy and Environmental Plans, provided support to the energy planning activities that the Umbria Region is required to implement. The MuSAE project experience has shown the need for all local actors to become involved to achieve the common objective of increasing energy efficiency and reducing greenhouse gases emissions, proving that the essential regional energy planning must be combined with local energy planning.

The feedback received from this experience has taken shape in the identification of a specific measure in the 2014-2020 Regional Energy and Environmental Strategy (REES). The REES is the of Umbria Region new planning tool which sets the goal of achieving by 2020 a ratio of 15.2% between the energy produced from renewable energy sources and the gross final consumption of energy, a

percentage higher than the target of 13.7%, established by the EU with the burden sharing. The strategy identifies four different types of regional measures, divided in four main macro-areas (domestic/residential, industrial and services, agriculture and transport), and indicating the actions to carry on. More specifically, among the measures aimed at improving Governance, the following action is proposed: *“Drafting of plans and programs for analysis of emissions in the major sectors, of the overall energy consumption, and of public utilities consumptions, identifying possible measures for increasing energy efficiency”*. This measure intends to support the implementation of energy efficiency interventions, intelligent energy management and the use of renewable energy through the drafting of Energy and Environmental Plans in the Municipalities of Umbria.

At Municipal level, it has to be noticed that the MEEP defines the strategies that should be followed by a Municipality when realizing energy and environmental related Plans, such as the Town Planning Act, the Building Code, the Transportation Plan, The Street Lighting Plan, and other.

MEEP is also a tool useful to measure the results of each goal established and compare the local goals with the UE ones in order to have a feedback of the actions done.

6 Comments on the financial report

6.1 Summary of Costs Incurred

The LIFE11 ENV/IT016 MuSAE Project, carried out in 34 months, was begun on 1st September 2012 and ended on 30/06/2015.

The total costs incurred for the carrying out of the project, from the starting date of operations until its conclusion, amount to a total of € 895.076,09 (real costs), representing 97,37% of the Grant agreement budget (€ 919.266,00).

The eligible costs incurred amounted to € 860.922,66, representing 97,46% of the approved budget of € 883.332,00.

Costs incurred regard activities provided for in the project and are directly related to its implementation, and they respond to the principles of reasonableness and sound financial management.

The following table shows the costs of the MuSAE project, broken down by cost category:

PROJECT COSTS INCURRED					
Cost category	Budget according to the grant agreement*		Costs incurred within the project duration from the start date to 30/06/2015		%**
1. Personnel	598.706,00		605.259,78		101,09%
2. Travel and subsistence	11.720,00		6.088,15		51,95%
3. External assistance	156.740,00		149.046,73		95,09%
4. Durables: total <u>non-depreciated cost</u>					
- <i>Infrastructure sub-tot.</i>					
- <i>Equipment sub-tot.</i>	Real costs	Elig. cost	Real costs	Elig. costs	99,19%
	47.912,00	11.978,00	46.033,85	11.880,42	
- <i>Prototypes sub-tot.</i>					
5. Consumables	24.400,00		13.509,14		55,37%
6. Other costs	22.000,00		18.859,15		85,72%
7. Overheads	57.788,00		56.279,43		97,39%
TOTAL	883.332,00		860.922,80		97,46%

*) If the Commission has officially approved a budget modification 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

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6.6 Summary of costs per action

Action no.	Short name of action	1. Personnel	2. Travel and subsistence	3. External assistance	4.a Infrastructure	4.b Equipment	4.c Prototype	5. Purchase or Lease of land	6. Consumables	7. Other costs	Total
A 1	Participatory project executive design and planning with key stakeholders	19.075,20		38.345,00					1.328,26		58.748,46
B 1	Know-how transfer from the big Municipality to the small ones	35.763,45	568,40								36.331,85
B 2	Design of the governance tools	95.165,38		34.320,67							129.486,05
B 3	Design of the Pilot Action and info-desk implementation	117.836,62		33.879,82		11.880,42			7.190,08		170.786,94
C 1	Monitoring and evaluation plan of the project actions	28.321,93									28.321,93
C 2	Scientific and technical monitoring	49.532,34									49.532,34
D 1	Communication campaign	27.507,22		20.216,24					4.990,80	3.030,75	55.745,01
D 2	National and European networking	42.096,95	5.420,05							15.828,40	63.345,40
D 3	AfterLife+ Communication Plan										-
E 1	Project management of the project and the partnership	117.363,33	99,70	22.285,00							139.748,03
E 2	Technical project management	72.597,36									72.597,36
Overheads		42.333,88	425,83	10.424,82		830,96			944,87	1.319,07	56.279,43
Total		647.593,66	6.513,98	159.471,55	-	12.711,38	-	-	14.454,01	20.178,22	860.922,80

The costs of individual actions are in line with the approved project. All the cost differences respect the initial provisions are within the limits of 10%