LIFE18 GIC/IT/001217

TECHNICAL APPLICATION FORMS

Part C – detailed technical description of the proposed actions

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E1 Communication, dissemination of project results and networking

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F1 Operative management of the project

F2 Administrative and financial management

DETAILS OF PROPOSED ACTIONS

A. Preparatory actions (if needed)

ACTION A.1: Project start up

Description and methods employed (what, how, where and when):

WHAT: This preparatory action will put the legal and technical bases for the implementation of all the technical activities of the project and in particular the technical, scientific and administrative management of the project (Actions F1 and F2) identifying the project staff and setting up all the project managerial project, rules and procedures

HOW: This action will be performed through two tasks:

Task A.1.1 – *Administrative procedures for project start up*

Task A.1.2 - *Setting up of the managing and technical-scientific coordination of the project*

A.1.1 Administrative procedures for project start up

Main aims of this phase are:

- to design and to subscribe partnership agreements,

- to identify the internal staff of each beneficiary that will be in charge of the activities of the project and to define the related role inside the project bodies.

- to handle the selection procedures to recruit temporary staff.

- to handle the tendering procedures to purchase durable and consumables goods, and the needed services for the start-up phases of the project.

The action will be implemented in accordance with Life programme procedures, the Grant agreement provisions and with the national legislation for recruitment and purchases applicable to the public and private bodies.

A.1.2 Setting up of the managing and technical-scientific bodies of the project 1st-3rd

The aim of the activity is:

- to draft the Steering Committee Rules of Procedure (SC)

- to identify a SC representative for each partner

- to identify an administrative responsible and a scientific referent/s for each partner

- to approve the SC Rules of Procedure and the Administrative Managing Rules Manual.

- To guarantee an efficient implementation of the project activities, each partner will identify a person in charge to participate to the Steering Committee meetings.

The SC will be the body in charge of the coordination of the project. It will meet at least every six months in order to decide and agree about the fundamental managing and administrative issues.

WHERE:coordinating and associated beneficiaries seats

WHY: The prevision of a specific preliminary action aims at putting the legal and technical bases for all the technical activities of the project. The aim of the action is to avoid delays in the starting of the technical actions due to the lack of human or instrumental resources and to guarantee the starting and the correct mode of operation of the bodies in charge of the managing, administrative and technical-scientific issues of the project.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG, CESAR

How was the cost of the action estimated?:

Staff Costs:

UNIPG: Project Director and Financial Manager for 5 working days (wd) each; Accountancy Responsible and Project Manager for 10 wd. each

All the other partners have 5 wd for Project Director and Accountancy Responsible each.

Travel Costs:

UNIPG: travel costs for attending LIFE Programme kick off meeting in Brussels: Travel and subsistence rate 750 euro (400€ for travel costs + 350€ for accommodation and meals)

AUTH, ISG: Travel and subsistence rate 750 euro (400€ for travel costs + 175€ x 2 days for accommodation and meals) for kick off meeting

BO: Travel and subsistence rate 500 euro: 200 for traveling by car (fuels, highway toll, etc.) and 150 for daily subsistence for 2 daysfor kick off meeting

A1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Partnership agreements	09/2019
SC Rules of procedures	11/2019
Administrative Managing Rules Manual	11/2019

A1's PROJECT MILESTONES

Milestone name	Deadline
Partnership Agreements signing	09/2019
Constitution of the SC	10/2019

A. Preparatory actions (if needed)

ACTION A.2: Green asset characterization and identification of environmental and climate parameter

Description and methods employed (what, how, where and when):

WHAT: The available data in the 4 pilot municipalities regarding the status of private and public green asset, is partial and not updated. The action is aimed at carrying out a tree census of the green area identifying the phenological and dendrometric characteristics in 10 significant sampling areas for each engaged municipality. The census will be completed through the direct engagement of the citizens foreseen (C2) and students (C3) In parallel it will be identified specific parameters related to the climate and environmental performance of each tree species based on the comparison of the existing literature with the data gathered in the 10 sampling areas. All the data collected in the frame of this action will be used to develop the Urban Green Asset Management System (A.4)

HOW

A.2.1 – Mapping and characterization of natural species in each engaged pilot (2rd– 6thPM)

The starting point in the 4 pilot municipalities is not homogeneous in terms of extension of the census, methodology applied, format and type of data gathered. Furthermore the ecological characteristic are different: Bologna and Perugia (Italy) represents typical Euro-Mediterranean chorological areas, Lisbon – Oieras (Portugal) represents Atlantic chorological areas while Thessaloniki (Greek) the Mediterranean coastal area.

For this reason, the first step is the collection and standardization according with common standard of all the available data regarding:

- the georeferenced data on tree distribution

- dendrometric data for each tree as a botanical species, trunk diameter, age class, height of the foliage (diameter), etc

According with the lacking data in each municipality will be identified specific activities for the mapping and characterization of the green areas aimed at integrating and completing the knowledge status of the urban green asset.

To guarantee the application of a shared approach in the mapping and characterization of the green areas, it will be designed a common**Mapping and characterization protocol**concerning: the criteria for the selection of the sampling area, the phytosociology methodologies for the sampling, the standard for data gathering and collection

According with the prevision of the protocol in each involved municipality it will be identified the 10 sampling areas which will be characterized by various typologies of urban green spaces (urban parks, historical garden, neighbourhood green, functional green, private gardens, sanitary green, etc).

Phenological and botanic experts during 3 days/week will realize a green sampling in field for cataloguing the different tree, shrub and grass species following the phytosociological method to establish a representative catalogue of the plant species present in the area.

The data will be gathered and collected and transfer to populate the database A.4.2.

A.2.2 – Identification of the key parameters to asses climate benefit of trees species(2th– 7thPM)

All the data collected and standardized in the mapping and characterization action will be elaborated using quantitative models to assess the climate and environmental benefits provided from the recorded trees.

The model will be able to account for each species present in the municipalities at different ages (growing stage) the following tree functions:

- Carbon sequestration and storage based on different age, crown dimensions, growing speed, pruning technics

- Particulate pollution removal and human health impacts

- Climate change adaptation effects: urban warming decrease, decrease of urban noise, reduction of soil degradation, reduction of the impact of extreme weather phenomenon, etc

- Increase of Biodiversity value in terms of enforcement native species and their ecosystem services

- Economic and social value

- Reduction of energy consumption in building through thermoregulation effect

The basic data for the assessment of these functions will be obtained by studies carried out in Europe, Italy, United States and adapted to the Mediterranean species and climate condition. In particular for the carbon sequestration and storage capability of trees will be used the data elaborated by CNR IBIMET in the LIFE Gaia Project realized by Bologna Municipality and some open source calculator as the one of United States Forest services and ISPRA models elaborated for the evaluation of forest carbon sequestration. Also the “Living Lab” experience of iSCAPE – H2020 will be integrated as regard as the role of trees as passive control system to improve air quality in the urban environment through field in situ measuring operation. For the other functions, models and data from literature and iTree Eco programme will be used and adapted to the species present in the catalogue

All the species present in the system will be classified on the base of their climate and environmental properties (oxygen production, thermoregulation, acoustic barrier, soil consolidation, biodiversity conservation, etc) but also detailing their adaptation capacity to climate change in different micro-climatic conditions and their dendrometric and phenological characteristics which can represent positive or negative factor respect of the different plantation area (roots structures, crown dimensions, growing speed, etc).

Last but not least, the system will be also able to estimate the economic value of each tree quantifying its ecosystem services

The main goal is to create a check list of useful species guaranteeing specific effect on the different environmental, climate and socio-economic parameters enabling urban planners, private citizens and business to take conscious decision in the management of the Urban green Asset.

All the data elaborated by the model will populate the database of the Urban Green Asset Management System (A4)

WHERE:sampling actions will be performed in 10 significant sampling areas of the pilot cities. Details on how the sampling areas have been selected are provided in the annexed picture.

WHY:

The action is needed to integrate the basic knowledge regarding urban green areas creating an homogeneous starting point.

Furthermore it provides quantitative model, based on existing literature and system, to elaborate the available data obtaining the needed environmental and climatic information related to each tree species.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG

How was the cost of the action estimated?:

Staff:

The activity of standardization of municipal available data will be carried out in AUTH, BO, PG, ISG by the expert in tree biology and expert in urban green area for 20wd each

The activity of definition of the sampling protocol and identification of the key parameters to assess climate benefit of trees species:

UNIPG: expert in tree phenology (40 wd) and experts in tree biology for a total of 40 wd

AUTH and ISG: 20 wd for theexpert in phenology and expert in tree biology each and 40 wd for the expert in urban green area

The activity of sampling and data elaboration

In Perugia: For PG the junior expert in tree biology and expert in urban green area for 60 wd each

In Bologna: For BO theexpert in tree biologyand the expert in urban green area for 60 wd each

In Oeiras: For ISG the expert in tree biology and the expert in urban green area for 60 wd each

In Thessaloniki: For AUTH the expert in tree biology and the expert in urban green area for 60 wd each

Equipment:

For PG, BO:

- A mirrorless tropicalized camera with integrated GPS, optical zoom 28-70mm, Macro 105mm

- A Tablet with integrated GPS to collect the sampling data on the field

- A needle drill resistance measurement device to detect the internal state of the plants

AUTH and ISG:

- A mirrorless tropicalized camera with integrated GPS, optical zoom 28-70mm, Macro 105mm

- A Tablet with integrated GPS to collect the sampling data on the field

- A needle drill resistance measurement device to detect the internal state of the plants

- Manual stereo microscopes optical 35 enlargements

- A Microscopes Image Analysis Software to store and collect the images of plant organs

Consumables:

In each pilot PG, BO, AUTH and ISG, consumables for sampling activities (cutter, box, bags ect) for a total of 500 euros

Name of the picture: Annex RP3

The considered sampling areas have been selected after reviewing some existing classification frameworks for European planning systems. The areas will allow to record a representative baseline data common to the different cities. In particular, the 10 different types of urban green spaces have been selected on the base of a precedent project (GREEN SURGE, Green Infrastructure and Urban Biodiversity for Sustainable Urban Development and the Green Economy-603567); considering that multifunctional urban green infrastructure can simultaneously promote biodiversity, increase the quality of life for people, and support the economy in intensively used and densely built European urban areas.

The typologies are the following:

1. tree alley and street tree,
2. house garden,
3. green playground, school ground,
4. large urban park,
5. historical park/garden,
6. neighborhood green space,
7. institutional green space,
8. green sport areas,
9. community garden,
10. cemetery.

Which in our context include at least 80-90% of the urban green of public heritage.

Although the extension of the precedent sampling areas will not include many hectares of the whole urban green in the four municipalities, the considered typologies election with the census activities will provide a statistically significant sampling of the total flora present in the urban areas.

To expand the chosen areas would not be sustainable in terms of costs considering that the ulterior sub-types of green and the consequent data addition will not improve significantly the sample representativeness.

A2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Mapping and characterization protocol	10/2019
Quantitative models to assess the climate and environmental benefits of different tree species	03/2020
Digital archive with data on natural species characteristic of each engaged pilot	02/2020

A2's PROJECT MILESTONES

Milestone name	Deadline
Completion of natural species characterization	02/2020
Presentation of the quantitative models to assess the climate and environmental benefits of different tree species	03/2020

A. Preparatory actions (if needed)

ACTION A.3: Phenological monitoring area realization

Description and methods employed (what, how, where and when):

WHAT: In the frame of the present action 3 Phenological Monitoring Areas (PMA) will be created in each pilot municipality to investigate the climate change adaptation characteristics of tree species in different environmental conditions. The investigation will be realized observing and recording the principal plant phenological phases of genetically identical trees (clones) in response to climatic and environmental conditions in Mediterranean Areas.

The PMA will be also used during the implementation actions C2 and C3 to improve the knowledge of the citizens and students regarding the effect of climatic change on different tree species.

HOW:

A.3.1 PMA realization inside urban green spaces (2nd – 12th)

To record biological data about plant adaptation performances and to improve the knowledge on effects of climatic change and the awareness of the citizenship through direct observation, some PMA will be realized in public city green areas. These areas will be selected considering the municipal territories with different micro-climatic characteristics to bring citizenship closer to the interpretation of the relationships between environmental factors and plant growth.

The present proposal will capitalize previous experiences (i.e. H2020 – iSCAPE) in the biological biomonitor of the urban climate change effects. Furthermore, iSCAPE approach in the citizens engagement will be integrated by CLIVUT which will consider clone plants spread in 4 south Mediterranean cities with the engagement of school students in plant sampling and generally citizens in science activities.

Each PMA will be provided with vegetative material with the same origin (clones) ensuring that variations in the phenological responses will be essentially attributable to environmental factors and not to germplasm. In each city 3 PMA will be created and in each PMA 100 trees will be planted of 20 different arboreal species (5 specimens/tree species). The PMA realization period will start from direct plantation of the tree species to the agronomic management of the rooting phase until the independent vegetative growing phase.

The PMA will be biological tools able to provide also information of great interest for the knowledge of the territory, for the improvement of the public and private green areas management, for the enhancement of the landscape. The PMA will represent permanent Didactic Laboratories, for the study and understanding of the basic biological phenomena, natural or induced, and as a visual approach to the urban plants. Agreements will be stipulated between the municipalities participating in the project and the school institutes (first and second degree schools) both to give continuity to the surveys in the PMA and to increase the knowledge of young students towards biological and climate change issues (Action C3).

The technical operations for the establishment of the PMA will take into account the choice of the site to ensure the reliability of the observations, considering that the position, exposure and climatic trends of the same site have to be representative of the investigated area.

Agronomic practices normally required for the tree planting will be performed, the plant indicator species will be chosen as the more adaptable to Mediterranean area among those indicated by the Int. Phenological Garden Network (http://ipg.hu-berlin.de/ipg/faces/list_planttypes), as well as others commonly used in the pilot areas. All the plants utilized will derive from an Italian nursery, propagated with large advance to make the initial supply very fast and being able to cope with any successive failures.

After the planting the water supply will be necessary not to compromise the engraftment and the development of the seedlings. Then, only emergency irrigation will be allow to interpret correctly the rain effects. It will be important the management of the PMA considering the need to monitor the natural behaviour of the indicator species in relation to the environment in which they live, they should be allowed to grow as much as possible in a natural way. With regard to pruning, cuts will be allowed to remove dry parts or sources of inoculation of infections. The availability of meteorological data it will be indispensable for the various applications of phenological data, for the purposes of plant growth and modelling development.

A 3.2 Definition of the Phenological monitoring protocol and data elaboration methodology (2nd – 8th)

The monitoring must meet criteria of objectivity to allow comparison with data from different detectors,

therefore, a methodology of detection will be adopted that does not give space to subjective interpretations by the detector. A Phenological monitoring protocol will be designed with the identification of the sequence of phenological events during the seasonal development.

The main phenophases will be recorded using the phenological keys shown on the International monitoring protocols. The keys describe the development of the cycle for consecutive intervals and at each interval corresponds a phenophase stage. The BBCH scale will be adopted as well known worldwide and used by research, administration, and practise in agriculture and horticulture, as in the phenology as an integrative science in environment, meteorology and climatology. The observations in the PMA will start from the spring of the first year of activity of the Project (year 2020) considering that plants of at least 3-4 years of growth will be planted on which the phases of vegetative and reproductive development will be evident and not affected by plant rooting problems.

The monitoring in the PMA will be carried out in the following years weekly by citizens (action C2) and above all by students with the supervision of teachers who have received basic training (as reported in C3 action) on the morphological aspects of the plants thus being able to interpret their external manifestations in a sufficiently detailed manner.

On the base of the phenological data carried out, a performance ranking of the plant best adapted to future climatic change in the urban areas will be realized to be utilized by public administrations and private citizens in the realization of new green spaces. Specific evaluations will be carried out on the leaves presence periods, on the flowering duration in the different areas for considering their phenological plasticity.

WHERE: inside pilot cities’ green areas.

WHY:

The Phenological Monitoring Areas (PMA) provide fundamental data to the urban planners to select the tree species for the substitution and new plantation according with their vegetative and reproductive adaptations to the climatic change in urban areas.

Furthermore PMA play a key role in supporting the awareness and learning process of citizens and students improving the knowledge on effects of climatic change through direct observations during the different annual seasons.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG,

How was the cost of the action estimated?:

Staff costs:

Expert in phenology of UNIPG (60 wd) and expert in tree biology (60 wd) will define the monitoring protocol in accordance with the expert in phenology of AUTH and ISG (40 wd each).

PG, BO, AUTH, ISG:18 wd for trees species plantation+ 4 wd/month per 9 months for agronomic management until independent vegetative growing phase in the 3 PMA (for eachexpert in tree biology and the expert in urban green area)

Consumables costs:

They will be represented by the acquisition of the plants to utilize in the PMA from a specific nursery where the clones of the “guide species” will be prepared and then shipped in all the 4 pilot cases.

PG, BO, ISG, AUTH: (20 species with 5 plants each= 100 plants/PMA = 300 plants for each pilot (3PMA/pilot) = 300*4=1200 total plants= 6.000 euro each (20 euro/plants)

Other costs:

PG, BO, AUTH, ISG: Costs for the shipment of the above mentioned plants from the plant nursery which will be selected in Italy to the 4 pilot areas.

A3's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Phenological monitoring protocol	10/2019
Georeferenced Map of the PMA with dendrometric and phonologic characteristics of the planted trees	03/2020

A3's PROJECT MILESTONES

Milestone name	Deadline
The reaching of independent vegetative growing phase in all the PMA	08/2020

A. Preparatory actions (if needed)

ACTION A.4: Urban green asset Management system

Description and methods employed (what, how, where and when):

WHAT:

The action is aimed at develop a Urban Green Asset ManagementSystem assuring quantitative modelling and projections providing the basic information both for urban planners and citizens for the designing and implementation of the urban green assets strategy B1-B2

The action will start developing the information system for the integrated management of all the urban green assets

The system , populated with the data gathered in the frame of the A2 action, will provide information and projections tools on the locations and the dendrometric characteristics of existing and potential urban trees, their environmental and climate performances and the best practices to optimize their climate environmental performances.

Finally, it will be developed a specific WEB Platform interacting with Desktop application and WEB App to enable urban planners, citizens and business to interact with the system obtaining the needed information to design and implement positive actions in the frame of **Urban Climate Green Asset Strategy**

HOW

A.4.1 – Urban Green Asset Management System development and maintenance (3rd– 42thPM)

The action will start developing the information system for the integrated management of urban green assets.

The system includes:

- plant census database which contains the specific dendrometric data for each tree as a botanical species, trunk diameter, age class, height of the foliage (diameter), geolocation (A2.1)

- the phenological data carried out by the trees present in the phenological monitoring areas (PMA), always identical by a genetic point of view, introduced in the public parks by the action A3

- environmental behaviours of each individual tree species in terms of GHG absorption, particulate matter absorption, shadow effect, biodiversity increase

- georeferenced data of the urban green asset available on the web by a specific GIS server, based on open source software, able to use both the information layers managed by the Municipalities and made available in the form of standard ESRI layers, both the maps made available by OpenStreetMap.

Through the elaboration of the above listed data the system delivers detailed quantitative models and projections for:

- The estimation of actual and potential phytomass and the related capability of carbon sink;

- the identification of pruning techniques maximizing the climate functions of public and private spaces

- the methodologies for limiting the impact of IAS in urban environment through plant containment, eradication, native species planting, or plant substitution;

- georeferenced planning of new green area with the estimation of climatic and economic value according with LCA, LCC approach

The information system will be implemented in a Web Platform connected with both desktop and web-based applications: the latter, based on open source software, aimed at operators in the field and for individual citizens.

During the whole project implementation, a trouble-shooting activity will be performed in order to detect bugs identifying and eliminating causes in order to improve the effectiveness of the tool.

A.4.2 - Database population (7th - 42th PM)

All the information gathered and processed during the sampling process (A2.1) and the identification of the key parameters to asses climate benefit of trees species (A2.2) will populate the system database containing dendrometric and phenological characteristics, climate functions and spatial data.

All those data will be ongoing updated thanks to the interactions between the system and the interactive tools provided to the end users.

The data which will ongoing populate the system will come from:

- Public area monitoring and management by the administrative staff and technicians (C1.3)

- Citizen monitoring and management of public and private green spaces with the support of the Web-app (C.2.2)

- Phenological monitoring with the students activities (C.3.2)

- Pilot project realized by business sector (C.4.3)

In order to guarantee the reliability of the data a permanent process of validation will be performed by the local administrations.

A.4.3 - Development and maintenance of interactive tools for green monitoring and management (6th –42th PM)

To guarantee the interaction with the end users, specific interactive tools will be developed a Desktop application and a web app

The Desktop application will have the following features:

- Access and population of the database

- Elaboration of data from different from different database

- Construction of existing or simulated green space on map

- Download of the information an guides contained in the platform

- Download of the elaboration

- Tools to calculate the GHG emissions for citizens and business

- E-learning modules on all the project related issues

- User manual for all the functionalities of the interactive tools

The web app, available for smartphones and tablets, is characterized by the following features:

- Data acquisition for the plant census with georeferenced information via GPS including photos

- Plant Species recognition systems (such as PlantNet)

- Restitution of dendrometric and phenological characteristics and info on origin of the species and resilience to climate change and pesticides

- Identification of management techniques maximizing the climate functions

- Estimation of climatic, biodiversity and economic value

The update of the collected data is in real time. In order to promote the diffusion of the web app, a simple guide to the use of the application will be prepared, together with a demonstration video.

WHERE: The system will be developed in Italy gathering all data and information from all the involved pilot cities

WHY:

The action is fundamental because it develop a reliable operative tool enabling

- Urban planner to design and implement effective Urban Climate Green Assets Strategy valuing all the factors related to environmental benefit, climatic effect and socio-economic impact

- citizens to monitor and manage the private urban green area adopting climate-oriented and ecosystem-based approach

- Business to account their emission and identify compensation measures bringing their activities toward the goal of Zero Emissions

Beneficiary responsible for implementation:

BO

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG,

How was the cost of the action estimated?:

Staff Costs:

for elaboration of the quantitative model for the urban green asset management system:

UNIPG: Junior and Senior Researcher in quantitative modelling for 60wd each

ISG: expert in quantitative modelling 32 wd each

BO, PG and ISG: 20 wd each for the Expert in urban green area + IT specialist for urban green area for data management and database population, each

AUTH: 20 wd for the expert in urban green area for database population

External Assistance:

UNIPG: The activities related with the development of the software, as described in the action, will be subcontracted to a specialized IT system developer. The software will be then adapted and updated by a specialized subcontractor to guarantee the monitoring of the data for the whole duration of the project.

AUTH: will subcontract an IT specialist and quantitative modelling (300 euro/day for 50wd)

A4's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Web app	08/2020
Desktop application	08/2020
Urban Green Asset Management System	08/2020

A4's PROJECT MILESTONES

Milestone name	Deadline
Full functioning of thee Urban Green Asset Management System and its interactive tools	08/2020

C. Implementation actions (obligatory)

ACTION C.1: Urban planners capacity building for designing and implementation of Urban Green Asset Management System

Description and methods employed (what, how, where and when):

WHAT: The main goal of this action is to increase the knowledge base and technical-theoretical skills of the public planners through a tailored capacity building process and the activation of a co-planning process with key stakeholders for the formulation and implementation of the Urban Climate Green Asset Strategy.

HOW

C.1.1 – Urban planners capacity building (12rd– 15thPM)

The first step of the planning process is the construction of a deep Knowledge of the existing situation (structure, performance, location, ownership and accessibility of green spaces) and the awareness in these actors of the existing and potential contribution of green spaces to the mitigation of Climate Changes in Cities and to citizen well –being

The capacity building will be based on:

1. short basic courses (8 session of 4 hours each) managed by professors and researchers of the university and with the engagement of international lecturers:

- urban tree dendrometric and phenological characteristics and function in urban environment

- the ecosystem approach in urban planning

- management technics and planning rules improving the environmental and climate performance of urban trees

- How to plan and manage urban green asset through Urban Green Asset ManagementSystem

2. The designing of on a e-learning module, available on the Web platform, with all the contents and learning support materials threated in the frame of the above listed training courses and on specific arguments and topics on demand.

C.1.2 – Urban Climate Green Assets Strategy designing (15th PM – 24thPM)

In each pilot Municipality it will be organized a Study Group with urban planners, administration staff , consultants, technicians in charge of urban trees management, professors and researchers of Universities and Research Centers to discuss the existing data on the different capacity of the trees species, in particular the native ones, to provide climate services (CO2 sequestration, shadows etc).

The advantages to use the study groups methodology is represented by the possibility to build new knowledge and awareness on the existing knowledge and experiences of the participants.

The use of an interdisciplinary approach (administrative and scientific) to address complex issue and to examine the links between social, environment, biodiversity and urban development pave the way for the successful formulation and lasting implementation of an Urban Climate Green Asset Strategy.

In the groups will be discussed:

- the mechanisms and the trees characteristics that assure to specific trees typologies an higher capacity to provide climate services

- the impact of urban trees management technics (as pruning, irrigation etc) on their potential of mitigation of climate changes;

- the importance of the location of trees (streets, parking places, distance from buildings etc) for the warming mitigation;

- the main sources of emission and pollution in the urban areas

- the economic value calculated in terms of increase of citizens' well-being, safety and health

- the key value of native biodiversity conservation

The task of each Study Group in the pilot municipality is to develop the**Urban Climate Green Assets Strategy**containing at least all the information on the contribution of actual urban green spaces to the mitigation of climate Change impact, the action to be implemented to increase this contribution, the potential synergy with other urban planning activities finalized to decrease emission and contrast the urban worming and pollution.

The Plan will provide actions for the three main typologies of green spaces:

- the public area directly owned and managed by the municipal administration through their technical office,

- the private spaces intended as all those green spaces owned by private and not open to public (i.e private gardens etc),

- the greenspaces owned by private but accessible to citizens or customers (i.e parking in shopping centres, exhibition areas etc).

CESAR will be responsible of the management methodology of the Study Group and the training in each pilot Municipality of one or more leading figure in the Group selected among the Administration Staff.

CESAR will also prepare a Guideline for the design of the strategic Strategy and will coordinate and support the activities of the Groups assuring information and Knowledge exchange.

Asthe value of green space does not stop at the administrative boundaries, the participation of stakeholders and citizen will be part of the development process with public forum and discussion of the draft of the plan with related actors (representatives of Business, ONG, etc.).

Three public fora will be organized with the aim to engage local stakeholders in the planning process, organized as follow:

- first forum: presentation of the draft version of the **Strategy**and launch of a Public consultation to gather stakeholders' input

- second forum presentationthe results of the public consultation and the plan drafted in the other pilot municipalities

- third forum: official presentation of integrated Strategy

C.1.3 – Urban Climate Green Assets Strategy pilot application (24th– 42th)

In each pilot municipalities, the **Strategy**will be implemented with different strategies and agreements in the three typologies of urban green areas.

In the green area under public management will be performed:

- ongoing monitoring of plats status adopting Project protocol and tools

- plant substitution and new plantation in agreement with Strategy specifications

- new management technics to maximize environmental and climate function

- circular economy pilot project to reuse pruning residues

In some of the above public area it will be realized public private management agreement foreseeing the direct engagement of the citizens in the application the **Strategy**provisions (C.2.3).

WHERE:

The capacity building and the Strategy designing process will be in equipped rooms selected in each pilot city

The application of the strategy will be carried out in the public owned green area of each municipality

WHY:

The action is fundamental because answers to several threats:

- provision to urban planners of knowledge base and operative tool to design and implement effective Urban climate Green Assets strategy

- Test and implement new shared methodology for the planning and management of the urban green area with the engagement of key stakeholders: citizens, scientific communities, professionals

- Improve the managerial practice of the urban green asset maximizing its potential in terms of mitigation and adaptation of climate change

- Safeguard native biodiversity and improve natural capital

- Improve the health safety and wellbeing in urban ecosystem

- Improve the management of the urban green asset reducing the costs

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, SG, CESAR

How was the cost of the action estimated?:

Staff

UNIPG, ISG, AUTH:

Expert in tree phenology and expert in tree biology:

- 10 wd for training content development

- 24 wd (2 wd/month x 12 months) participation in study group for the designing of the urban green asset strategy

- 18 wd (1 wd/month x 18 months): pilot application of the strategy in public green area

In each pilot: (BO-PG FOR UNIPG),Thessaloniki for AUTH, Oeiras for ISG

CESAR:

Common training format planning: 1 training planner 60 WD

A specialist for the planning and coordination of animation approach for the study group in charge of urban green asset strategy designing: 90 WD

BO, PG:

- Expert in urban green area and Expert in tree biology(each): 12wd supporting the activities of training planning and organization, 48 wd participation in study group for the designing of the urban green asset strategy, 24 wd pilot application of the strategy in public green area

- Green area management workers:12 training + 4wd x24 months per pilot application strategy

AUTH and ISG – Exp in urban green area implement the activities described for the experts of BO, PG here above: 12 wd+48 wd+96 wd

Travel:

UNIPG: training organization and strategy designing and implementation (15 Travel 2 Person 2 Days). Travel and subs rate 500 euro: 200 for traveling by car (fuels, highway toll etc) and 150 for daily subs for 2 days

CESAR: site visit for training organization (6 Travel 2 Person 2 Days to Bologna, Thessaloniki, Lisbon). Travel and subs rate 750 euro (400 for travel costs + 175 x 2 days for accommodation and meals)

Ext. Assistance:

PG, BO, AUTH, ISG: Organization of training session (equipped room rental+coffee break:500 euro/day per 8 training days)

Consumables:

PG, BO, AUTH, ISG: 200 plants (20 euro each) for substitution and new plantations in urban green area managed by public

Other costs:

BO, PG, ISG, AUTH: Reimbursement for international lecturers engaged in training courses (4 speakerX4daysXeach pilot). Rate: 1500 euro including lecturer fees, travel and accommodation costs.

C1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
4 Urban Climate Green Assets Strategy	08/2021
e-learning module	11/2020

C1's PROJECT MILESTONES

Milestone name	Deadline
Adoption by the municipalities of the Urban Climate Green Assets Strategy	08/2021

C. Implementation actions (obligatory)

ACTION C.2: Citizens in urban climate action

Description and methods employed (what, how, where and when):

WHAT: The aim of the action is the direct engagement of the citizens in theUrban Climate Green Assets Strategythrough the following process:

1Awareness activitieswhere the people are introduced to the key aspect of the climate and ecosystem function of green asset in urban environment

2Engagement in green asset census and monitoring where citizens became part of the primary actors of the characterization, analysis and monitoring of the urban public and private green and natural spaces using the Web App developed in the A3)

3Engagement in Green Asset managementwhere citizens are directly engaged, in collaboration with the municipalities in the management of private and public green and natural spaces

HOW:

C.2.1 Citizens awareness (12th– 18th)

The first steps of the process will regard the organization of awareness path organized in the green areas of the cities.

10 thematic walks will be organized in urban areas characterized by different structural and ecosystem characteristics: high construction density, residential area, green areas, etc to concretely show and discuss the role of green asset in improving health safety and wellbeing in urban ecosystem.

It will be explored urban vegetation, also herbaceous and not just arboreal, to deepen specific topics: interaction between ecosystem services and biodiversity, interaction between climate change and the increase of plant pathogens, tree ecosystem functions, presence of IAS and their impact, adaptation effect of the trees against urban warming, soil degradation, impact of extreme weather phenomenon, etc

The walks will be leaded by technical experts on the theme and managed through an interactive approach aimed at raising doubts from participants and animate common discussion on the problem and possible solutions

C.2.2 Citizen engagement in Green Asset census and monitoring (18th– 42nd)

In the second step of the action the citizens will be directly engaged in the census and monitoring of the urban Green areas using the web app.

In order to enable them to use all the App it will be organised 5 theoretical-practical training days during which citizens will be accompanied in the green spaces previously selected to receive information on the use of the App in order to become the future censors of urban green spaces.

They will be accompanied in performing the census of the trees loading the georeferenced photos on the web app which successively will notify users about the species name and about all the information related with their dendrometric and phenological characteristics and ecosystem functions.

The will be trained on how to implement tree census by the app exploring photographic functionalities (correct distance, correct zoom use etc, trunk size correct acquisition, vegetative state, species and common name) and data on plant status gathering and uploading.

After the end of the training the citizens will be engaged in the monitoring action until and beyond project end applying citizens science methodology.

The monitoring of the areas will be coordinated by the municipalities through the app which will identify for each citizen the area, the specific data to be collected and other specific requirements. The selection of the areas will be made in order to integrate the data lacking in the database and to obtain an ongoing updating of the plant status.

C.2.3 Citizen engagement in public and private Green Asset management (18th– 42nd)

The action will run in parallel with the C.1.3 and consist in the application of Urban Climate Green Asset Strategy in all the area not directly managed by the public.

The action will cover three type of areas:

- green spaces owned by private and not open to public (i.e private gardens etc)

- green spaces owned by private but accessible to citizens or customers (i.e parking in shopping centres, exhibition areas etc)

- selected green area owned by public where will be experimented public private management agreement

It is foreseen a prelaminar training organized in 5 theoretical-practical days will be organized during which, Using web-app features, it will be carried out specific intervention of pruning, substitution, plantation of selected trees, valuing their ecosystem service in terms of carbon sink, shadow effect, reduction of pollutants, reduction of soil erosion, etc.

The Web-app will allow to enter data from the field and take advantage of the GPS abilities of smartphones and tablets. The app allows users to quantify and qualify the benefits of trees, including CO2 absorption, power saving and pollution reduction. Users can also figure out the best placement for future tree plantings in order to maximize their benefits.

The training will be managed by botanist and agronomists which lead citizens both in the understanding of the tree behaviour and in the concreate application of the management and pruning practices.

At the end of the training each engaged citizen will apply the technics in identified private green areas providing data of the intervention carried out and the related climate and biodiversity impact.

Each municipality will distribute 400 native species tree plants to citizens for the substitution of new plantation in private owned green areas.

For the selected public green where a public-private management will be tested, the municipalities will organize technical meetings with to design a Public Private Management Plan where will be identified: the area, the rule and responsibilities of the parties, the monitoring protocol, the management practice, the

possible substitution/new plantation interventions.

WHERE: the action will be carried on in private and public green area of the 4 selected pilot cities

WHY:

The action is fundamental because answers to several threats by:

- providing to citizens of knowledge base and operative tool to monitor and manage the private urban green area adopting climate-oriented and ecosystem-based approach

- realizing a full and permanent monitoring of the whole urban green asset with specific data on dendrometic and phenological characteristics and their climate and ecosystem function

- Improve the managerial practice of the private urban green asset maximizing its climate mitigation and adaptation potential

- Safeguard native biodiversity and improve natural capital

- Improve the health safety and wellbeing in urban ecosystem

Beneficiary responsible for implementation:

PG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, AUTH, ISG,

How was the cost of the action estimated?:

Staff Costs:

UNIPG, ISG, AUTH:

Expert in tree phenology 15 wd for planning thematic walks and 15 wp for planning theoretical practical training days

Experts in tree biology 15 wd for planning thematic walks and 15 wp for planning theoretical practical training days

BO, PG, ISG, AUTH:

Expert in urban green area and expert in tree biology (each): 2wd/month x 18months for the coordination of green assets science monitor

Expert in Social analysis and communication: Participation in the thematic walks 10wd e participation in training days 5wd 2wd/month x 18months for green asset public-private management of public area

External Assistance: AUTH technical support for citizen engagement activities (16wd per 300 euro/day)

Consumables:

Purchasing of 400 plants (20 euro each) which will be used for substitution and new plantations in private owned green areas.

C2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Report on the result of monitoring and management activities	02/2023
Public Private Management Plan	08/2021

C2's PROJECT MILESTONES

Milestone name	Deadline
Start of Green Asset census and monitoring by the citizens	02/2021
Start of public and private Green Asset management by the citizens	02/2021

C. Implementation actions (obligatory)

ACTION C.3: Climate educational skills

Description and methods employed (what, how, where and when):

WHAT:

The action is aimed at designing and pilot apply national and international education and academic paths to unable young generations of urban citizens to become conscious of their potential in containing climate change and to adopt climate and environmental responsible behaviours.

HOW

C.3.1 Module designing and integration in Education, training and academic planning (6th– 12th)

According with the data and model gathered and processed in the frame of the preliminary actions, dedicated module will be designed, pilot tested and permanently included in the didactic and academic planning of the schools and university of the four pilot municipalities.

For the education system, in each municipality it will be created a Work group composed by municipal technicians, technical experts (botanic, agronomist, etc) school managers and didactic responsible in charge of designing the module for each education and academic level.

Each module will identify: didactic contents, methodological approach, duration of the modules, division between theoretical and practical activities, other specific activities organization such as international exchange, schools competition and internship.

In each municipality will be selected:

- 4 primary school classes engaging 10/11 years old students

- 4 first level secondary school classes engaging 12/13 years old students

- 4 secondary school classes engaging 17/18 years old students

The education module will threat similar contents with different level of difficulty and will regard the following common topics: the climate and its interactions with the physiological plants; hints of botany and recognition of some plants species with the creation of a small herbarium useful for trees recognizing, overview of phenology, biodiversity in the city, urban green areas and the use of trees in the city, labs and role playing using also the web app.

Each module will also foresee specific field actions aimed at showing the application of the census methodology and phenological observation in the created PMA (A3), in particular the students of the secondary schools will be in charge of the monitoring the 3 PMA and the data reporting

As for the academic system the project engaged universities will design a multidisciplinary academic module, which will integrate the academic path of different faculties: engineering, architects, biology and natural sciences, agronomy, mathematics, physics and chemistry, economy.

Furthermore it will be foreseen specific practical activities for the using of the Urban Green Asset

ManagementSystem and related desktop and web application and specific internship path in the other university.

C.3.2 Testing of new module (12th – 42nd)

From the second year of the project the module will be concretely tested in the different selected education and academic level.

The didactic approach will be principally based on the direct engagement of the student in the field observation of natural phenomenon and realization of practical activities with the aim to increase the conscience about the climate changes effects in each city proposing proper solutions

The students will have the opportunity to experience the climatic impact in the host country and exchange methodical information or feelings and emotions on the project activities.

The theoretical activities in the education system will foresee specific theoretical lesson held by technicians and professionals of the different matters with illustration of case study.

The practical activities in primary school will foresee:

- Nature labs in green area to recognize, select and collect leaves, grass, and branches

- Creation of a small herbarium useful for trees recognizing

- School contest

The practical activities of the secondary education students will foresee:

- Sampling activities in selected areas for collecting of dendrometric and phenological tree characteristics according with the sampling protocol

- Phenomenological monitoring of the plants present inside the PMA recording data on main phenophases will be recorded using the phenological keys shown on the International monitoring protocols (A3 action).

- Video tutorial on the tree species census and phenological observation

In the academic system the module will be integrated to the didactic planning of one faculty and open to the participation of the students of all the other faculties selected during the planning phase.

It will be organized a specific presentation of the module in each engaged faculty presenting the main contents and the practical activities foreseen.

From the second semester of the academic year the module will be open with the participation of at least 20 students. According with the results of the first year the engaged faculty will value how to improve in the following didactic years.

WHERE: The actions will be implemented in 1primary school, 1 first level secondary school,1 secondary school and 1 University present in the 4 pilot cities

WHY:the action answers to the need to design and concretely include in the education and academic system dedicated module on climate and biodiversity priorities providing a cross-curricular and multidisciplinary perspective in the different level of education and academic system.

More specifically the curricula must deepen the causes and effects of climate change as well as possible responses developing competences in the field of climate change mitigation and adaptation, as well as ecosystem functions and biodiversity value, with the aim to promote climate-resilient development and reduce the vulnerability of communities.

Beneficiary responsible for implementation:

AUTH

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, AUTH, ISG, CESAR

How was the cost of the action estimated?:

Staff costs:

UNIPG,AUTH, ISG:

Expert in tree phenology: 8wd/month x 6monthfor module designing and integration in education, training and academic planning; 2wd/month x 30 months for testing of new modules

Expert in Social analysis and communication (and expert in tree Biology – Permanent for UNIPG): 4wd/month x 6 months for module designing and integration in education, training and academic planning; 2wd/month x 30 months for testing of new modules

Expert in Tree Biology: 4wd/month x 6 months for module designing and integration in education, training and academic planning;

BO:

Expert in Social analysis and communication: 8wd/month x 6month; testing of new modules 2wd/month x 30 months

CESAR: responsible for the technical and methodological designing of training planning and will support and supervise the testing of the new modules along the entire period: training planner 8wd/month x 6month + didactic expert 2wd/month per 30 months

Consumables:

UNIPG, AUTH, ISG, BO: will purchase consumables for sampling activities (cutter, box, bags ect) for a total of 2000 euros

Name of the picture: Annex RP5_1

The training modules organized for the C3 action will be subdivided according to age groups, indicating in each country the class to which the schools participating in the project belong.
The education modules are targeted on:
- 4 primary school classes of first grade student classes with 10/11 years
- 4 classes of secondary school of first degree with age 12/13
- 4 secondary school classes with students aged 17/18

A) Primary school
- Nr of classes: 4
- Age: 10/11
- Nr of students: 60 (at least)

Learning module contents:
Theoretical
- Hints of botany:
  - Parts of a plant and their functions
  - Reproduction and Life Cycles - Part 1: Parts of a flower Part 2 Pollination, fertilisation9
  - Living processes and what plants need to grow
  - Grouping and classification
  - Plants in their Natural Environment
- Climate change and plants functions:
  - The phenomenon of climate change
  - Impact on our daily life
  - How plants can mitigate climate change: the photosynthesis,
  - How plants can adapt climate change extreme weather phenomena: flooding, landslides etc

Practical Activities:
- **Watch and observe:**
  - plant seeds either in pots or the school grounds
  - observe plants growing in natural environments through walk in urban gardens, parks and FMA (in connection with C2) using magnifying glasses to examine the parts of flowers closely.
- **Collection and characterization**
  - take pictures of different plants, flowers and tree species
  - plant material collection and classification
  - drawing and labelling plants
  - preparation of a small herbarium for species recognition
- **Experiments:**
  - Test for different plants climate factors resistance (sun, water, cold, etc)
- **Video clips/books/images:**
  - watching video clips to teach about climate, plants and their interaction

Name of the picture: Annex RP5_2

- research in books and web the key contents of theoretical modules (, Reproduction and Life Cycles, living process, Interaction between climate and trees etc)
- **Contest**:
  - Creation of posters on the following theme: how would you manage your green spaces in different climate conditions?

Module organization:
- Theoretical: 3 meetings (2-hour each)
- Practical: 1 walk in urban green area (4-hour) 2 labs (4-hours)

Learning Outcomes:
At the end of the module the students will be able to:
- Recognize the parts of plats and their functions
- Describe plant reproduction and Life Cycles
- Recognize and classify the different plants
- Describe the plants climate functions
- Discuss the interaction between climate phenomenon and plants life cycle

Activity for guarantee follow up:
The school teachers and didactive planners will be engaged in all the part of the didactic module designing and will be provided with all the learning material developed within the theoretical-practical lessons in order to be repeat in the following years

The educational modules organized for the C3 action will be subdivided according to age groups, indicating in each country the class to which the schools participating in the project belong.
The education modules are targeted on:
- 4 primary school classes of first grade (10/11 years)
- 4 middle school classes (12/13 years)
- 4 secondary school classes (17/18 years)

B) Middle school
- Nr of classes: 4
- Age: 12/13
- Nr of students: 60 (at least)

Learning module contents:
Theoretical
- Hints of Plant morphology and physiology:
  - Classification of trees and shrubs species
  - Trees and shrubs dendrometric and phenological characteristics
  - Trees and shrubs ecosystem functions
  - Introductions to biodiversity

Name of the picture: Annex RP5_3

- Principle Mediterranean habitats and respective characteristics

- Climate change and plants functions:
  - Weather and Climate: What's the Difference?
  - Greenhouse effects and Greenhouse Gas Emissions
  - Climate Change Over Time
  - Tree Rings: Living Records of Climate
  - Climate change effects on biodiversity
  - Meaning of mitigation and adaptation to climate change

- Presentation of the project web-app and its functions

Practical Activities:
- **Watch and observe:**
  - observe dendrometric and phenological characteristics of different trees and shrubs in natural environments through walk in urban gardens, parks and FMA (in connection with C2) using tree characterization tools.
- **Collection and characterization**
  - trees and shrubs material collection and classification
  - Gathering dendrometric and phenological data
  - insert data in web-app
- **Experiments:**
  - Test for different plants climate factors resistance (sun, water, cold, etc)
- **Video clips/books/images:**
  - watching video clips to teach about climate, plants and their interaction
  - research in books and web the key contents of theoretical modules (trees ecosystem functions, extreme weather phenomenon, Climate change effects on biodiversity)
- **Contest**:
  - Creation of video explaining trees ecosystem functions

Module organization:
  - Theoretical: 4 meetings (2-hour each)
  - Practical: 1 walk in urban green area (4-hour) 2 labs (4-hours)

Learning Outcomes:
At the end of the module the students will be able to:
- Recognize the more relevant trees and shrubs species of Mediterranean area
- Identify dendrometric and phenological characteristics of the different species
- Explain Trees and shrubs ecosystem functions
- Define biodiversity
- List the main Mediterranean habitats

Name of the picture: Annex RP5_4

- Identify connection between GHG emission and climate change
- Describe the impact of the climate change on natural environment and impact on human lives
- Identify the role of green area for mitigating and adapting the urban ecosystem to climate change

C) Secondary school

- Nr of classes: 4
- Age: 17/18
- Nr of students: 60 (at least)

Learning module contents:
Theoretical

- An Introduction to Plant Taxonomy and Phenology:
  - Fundamentals of Plant Evolution
  - Identification of the main species
  - Identification of the phases of the life cycle of the trees and bushes present through the use of photos and guides
- Climate change and plants functions:
  - Greenhouse effect and global warming.
  - The concept of climate change.
  - The effects of climate change on extreme weather.
  - The carbon cycle
  - The carbon footprints and its main sources
  - Interaction between trees and global warming
  - How to maximize trees' climate change mitigation effect
  - Trees as a tool to adapt urban environment to climate change
  - The ecosystem approach in urban green area planning and managing
- Presentation of the project web-app and its functions

Practical Activities:

- **Watch and observe:**
  - observe dendrometric and phenological characteristics of different trees and shrubs in natural environments through participation in urban green area census and FMA management (in connection with C2) using tree characterization tools.
- **Collection and characterization**
  - Green area and FMA data gathering
  - Gathering dendrometric and data classification and storing
  - insert data in web-app
- **Video clips/books/images:**
  - watching video clips to teach about climate, plants and their interaction
  - research in books and web the key contents of theoretical modules
- **Contest**:
  - Elaborate simple model to determine connection between weather and trees phenological characteristics.

Name of the picture: Annex RP5_5

Module organization:

- Theoretical: 6 meetings (2-hour each)
- Practical: 4 in sampling activity in urban green area and PMA (4-hour or all day)

Learning Outcomes:

At the end of the module the students will be able to:

- Recognize the species present in the green areas
- Observe different vegetative and reproductive phases and their relationships with thermal accumulation in different species.
- Recognize the change in the life cycle of the species observed
- Utilize simple tools to collect data on observed plants for PMA recording
- Recognize phenological characteristics in PMA areas
- Utilize web app for carrying out green areas' census and PMA monitoring
- Identify strategy for trees' climate change mitigation effect
- Describe how trees can adapt urban environment to climate change
- Describe how to manage urban green areas according with an ecosystem approach
- Determine the connection between weather and trees phenological characteristics.

Activity for guarantee follow up:

The school teachers and didactive planners will be engaged in all the part of the didactic module designing and will be provided with all the learning material developed within the theoretical-practical lessons in order to be repeat in the following years

Moreover, the school teachers will utilize in future the PMA as teaching didactic laboratory for students to discover natural environment having fun at the same time.

C3's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
4 secondary school modules (1 per pilot)	08/2020
4 first level secondary school modules (1 per pilot)	08/2020
4 primary education modules (1 per pilot)	08/2020
4 academic modules (1 per pilot)	08/2020

C3's PROJECT MILESTONES

Milestone name	Deadline
Approbation of the yearly didactic planning with the new curricula	08/2020

C. Implementation actions (obligatory)

ACTION C.4: Business in Urban Climate Actions

Description and methods employed (what, how, where and when):

WHAT:

The action is aimed at increasing the awareness of the different business sectors present in the urban areas regarding the benefit for their business and for the Urban Community to actively participate in the Urban Climate Green Asset Strategy planting and maintaining trees in private places also for public use (eg shopping centers, condominiums, etc.)

In the frame of the action it will be activated a process to inform, made aware and engage all the urban economic stakeholders in a new model of business which respect the environment and contribute to the Urban climate goal.

Accordingly the key urban business actors will be engaged the co-designing and application of a new regulatory and incentive framework through a participatory process, pursuing environmental and climate responsible policy of all the economic actors operating in the urban context.

HOW:

C.4.1 Business awareness (12th– 24th)

For business, sustainability and in particular Zero Emissions strategy can mean greater competitiveness and represents a continuation of its inevitable drive towards efficiency. The importance of this Strategy increases where there is local shared strategy promoted by local authorities and by citizens.

This sub-activity is finalized to increase the awareness of entrepreneurs on the benefit of a more sustainable behavior and in participating in the Urban Climate Green Asset Strategy as a mean to exchanges their emission with the sequestration capability of new planted trees.

The activity will be based on:

- In each city, organization of 4 Workshops addressed to 4 main business sectors (industry, tourism, retail, transport) regarding the impact of Climate Change on the Urban environment (4 hours each).

The workshops (WS) will be organized in collaboration with Chambers of Commerce and representative organizations of the categories involved, in their offices or in the main hall of Universities involved in the project in the cities. Target for each sector: 20 participants.

The WS will be articulated in 4 modules: 1st the key topic threated by an expert will be: main sources of climate change drivers in Cities and contribution of the different business sector, role of Green spaces and trees in mitigation, compensation measures, Emission Trading system and related business opportunities; 2nd also presented international case study of company implementing win-to win zero-emission strategy, the case studies will be consistent with the sector of participants;3rd discussion of the contents of previous 2 with the participants and focus on the relevance in their city and sector of the consequences of climate change. The projections of the development of the sector and the consequences in terms of increasing decrease in GHG emissions, the repeatability of the illustrious experiences with the case study, the obstacles and incentives to behaviours of the sector operators to reduce emissions and the effects of climate change; 4th illustration of the calculator to estimate the GHG emission by each company and its use to reduce the emissions in numbers of trees that seize them. The workshops will be promoted by the Municipality and organized with the involvement of the representative organizations of the various business sectors.

All the teaching material will be available on the web platform (see A4) in form of a e-learning course as well as the proposal emerged from the workshops in the 4 Cities.

- The creation in the platform (A.4) of a calculator to estimate the GHG emission. The calculator could be used by entrepreneurs to calculate their emissions introducing basic data on their consumption and waste production. The experience of LIFE Proof will be used to create the calculator. The calculator will be provided with a special tool able to convert the emission in number of trees with the possibility of the selection of species and age and evaluate the average cost of planting and management per year.

The calculator will be used by the Municipality in collaboration with the University to calculate the conversion of the emissions of events of the City life as fair, blocking vehicle traffic to reduce pollution, cultural and sport events etc .

These data will be used to discuss and design with the stakeholders a framework of incentives to reduce the related emission and pollution by planting and maintaining new trees.

C.4.2 Incentive system designing with local business (12th– 24th)

The participatory design of a regulatory and incentives framework is the key activity of this action. In each pilot city a working group will be set up with trade association of the different business sector, policy makers and professionals and universities.

The working group will have the task of drawing up the framework of incentives and rules to encourage the reduction of GHG emission and urban warming through investment in public and private green asset. The draft document will also contain successful cases implemented in pilot cities, as in the case of Bologna through LIFE GAIA, or in other European or International cities or regions.

The working groups in the pilot Municipality will be in continuous in contact and will share the respective proposals.

In order to guarantee the wider participation also of the individual entrepreneurs the draft proposal will be presented in a frame of a public event where will be also launched a public consultation aimed at gathering input from the ground.

The input will be gathered, evaluated and integrated in a final proposal which will be presented to the public and pilot adopted by the pilot municipalities in their regulatory framework.

C.4.3 Pilot application of new regulatory and incentive measures (24th-42nd)

In the pilot municipalities the new regulatory and incentive system will be pilot adopted following a three-folds strategy:

- Compensation measure applied to Public event organization and creation of new medium-big scale productive and business unit. The action will foresee the estimation of GHG emission and the identification of measures to compensate, partially or totally the emission through plantation and contribution to management of new tree in the identified areas;

- Zero emission voluntary programme. Publication of a public call for the selection of pilot activities which voluntaries join to a programme for the monitoring of the emission related to their activities and implementation of compensation measures through investment in green asset. The positive impact of the action will be assessed by a LCA and certified by the municipality

WHERE: The action will be implemented in the 4 pilot municipalities and surrounding areas.

WHY:

The action is aimed at provide an effective solution to the Conflict between business interest and climate objective. In the pilot cities will be concretely demonstrated the feasibility of a scheme where enterprise invest in the Urban Green Asset obtaining concrete benefit in terms of imagine and profit, creating a win-win model of urban business.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG, CESAR

How was the cost of the action estimated?:

UNIPG, AUTH, ISG:

Expert in tree phenology and Expert in Social analysis and communication:

- Support in thematic coordination of the workshop and definition of e-learning contents 12wd

- Participation in incentive system designing 1wd/month x 12 month

BO, PG, AUTH, ISG:

Exp in urban green area and exp in Urban Sustainable Development (each)

- Support in thematic coordination of the workshop and definition of e-learning contents 12wd

- 4wd/month per 12 months for strategy definition

- 2wd/month x 18 months for implementation of the strategy

CESAR:

Coordination and management of e-learning platform: training planner 2wd/month x 30month + didactic expert 2wd/month per 30 months

C4's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
e-learning modules	06/2021
4 set regulatory and incentive measures	08/2021
e-learning platform	02/2021

C4's PROJECT MILESTONES

Milestone name	Deadline
Launching of regulatory and incentive measures	08/2021

C. Implementation actions (obligatory)

ACTION C.5: Replicability and transferability

Description and methods employed (what, how, where and when):

WHATThis action is aimed at concretely transfer the model to other 4 identified cities with comparable characteristics

2 in Italy, 1 in Portugal and 1 in Greece. Starting from the lesson learnt during the designing and pilot implementation of the Urban Climate Green Asset Strategy in the 4 pilot municipalities, it will be activated a peer to peer transfer in 4 transfer municipalities where will be created the condition for the applicability of the model after project end.

HOW

C.5.1Urban green asset characterization and PMA creation in Transfer cities(18th– 30th)

In parallel with the application of the Urban Climate Green Asset Strategy in the four pilot municipalities, 4 transfer cities will be selected, introduced to the project approach and concretely engaged in the activities.

The transfer cities will be selected among urban context presenting comparable characteristics from the pilot cities in terms of ecological, socio-economic and environmental condition. For each one of the selected municipalities will be designed a specific replication plan where the executive planning of all the envisaged replication activities will be identified.

In the identified 4 municipalities, 2 in Italy, 1 in Portugal and 1 in Greece, it will be carried out the mapping and characterization of natural species of 10 identified green areas and created 3 phenological monitoring area to assess the resilience of the different species to climate change. All the process will be implemented applying the protocol tested and fine-tuned in the pilot cities.

All the data gathered will be analysed and integrated in the *Urban Green Asset Management System*, tested and finetuned according with the results of the testing in the 4 pilot municipalities.

The activities will be carried out with the direct engagement of the technicians of the transfer municipalities

C.5.2 Designing of Urban Climate Green Asset Strategy in Transfer cities (30th– 42nd)

The urban planners and technicians will be involved in specific training session of 12 hours on:

- the function of urban green in the Urban ecosystem

- the application of the ecosystem approach in planning and managing urban green area.

- the use of the *Urban green heritage management system in the designing of the* Urban Climate Green Asset Strategy

The theoretical session will be integrated with field visits in the pilot cities to concretely verify the on-going actions and value the replicability in the transfer cities.

The training session will be managed through a peer to peer approach directly engaging the policy planners of the pilot municipalities who will be asked to lead their peer in the process.

After the training in each transfer municipality, it will start the process of designing of the Urban Climate Green Asset Strategy. According with the data and model elaborated by the *Urban green heritage management system,* the transfer municipalities technicians, mentored by their peers of the pilot municipalities, will design a draft of the Strategy which will be discussed and agreed with the citizens representative.

The agreed strategy will be accompanied by a detailed **business case**to value the economic feasibility of the actions foreseen in the strategy identifying the specific actions, the scheduling, the environmental and

economic benefit, the implementation costs and related funding source.

The business case aims at creating the basic condition in the transfer municipalities to concretely implement the Urban Climate Green Asset Strategy after project end.

WHERE The transfer actions will be carried out in 4 cities (2 in Italy, 1 in Greece and 1 in Portugal) which will be identified by each Pilot municipalities according their specific characteristics and the interest in applying the LIFE CLIVUT model in their context

WHY The action aims at concretely text the wide replicability and transferability of the project tools and methodologies in different context with different ecological, socio-economic and environmental condition. The action, starting from the experience of the 4 pilot municipalities will identifies further potential economic and technical criticalities for the effective application of the model on EU scale.

This action will also pave the way for the concrete application of Urban Climate Green Asset Strategy in other 4 EU cities guaranteeing the widening of project impact within and after project end.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG,

How was the cost of the action estimated?:

Staff Costs:

The activity of standardization of municipal available data will be carried out in AUTH, BO, PG, ISG by the expert in tree biology for 20wd each.

The activity of sampling will be carried out by:

UNIPG, AUTH, ISG, BO: the expert for tree biology will work 15wd for sampling, 18wd for trees plantation in PMA; 12wd for the supervision until growing phase in the 3 PMA

UNIPG, AUTH, ISG expert in tree phenology for coordination and supervision of sampling and creation/management PMA for 42 wd

PG, BO, AUTH, ISG: Expert in urban green area and expert in tree biology 48wd each for peer to peer training and support in designing of the urban green asset strategy in the transfer municipalities.

Travel Costs:

UNIPG, PG, BO, AUTH, ISG: Field activities in transfer cities (10 travel x 2 people x 1 day). Rate 100 euro for transportation and meals costs.

Consumables:

In each pilot PG, BO, AUTH and ISG will purchase consumables for sampling activities (cutter, box, bags etc.) for a total of 500 euros:

PG, BO, ISG, AUTH: (20 species with 5 plants each= 100 plants/PMA = 300 plants for each pilot (3PMA/pilot) = 300*4=1200 total plants= 6.000 euro each (20 euro/plants)

Other costs:

UNIPG, BO, AUTH, ISG: Costs for the shipment of the above-mentioned plants from the plant nursery which will be selected in Italy to the transfer areas.

C5's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
4 replication plans	02/2022
4 Urban Climate Green Asset Strategy in transfer city	02/2023
4 business case	02/2023

C5's PROJECT MILESTONES

Milestone name	Deadline
Completion of Urban Climate Green Asset Strategy in transfer city	02/2023

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.1: LCA of environmental and climate impact of the Urban Climate Green Asset Strategy

Description and methods employed (what, how, where and when):

WHAT:

In this action the performance of the Urban Climate Green Asset Strategy. Each partner will be responsible for the monitoring of its actions. In particular the aim of the monitoring will be to collect data on GHG reduction, increase of local autochthonous species, number of new trees substituted and planted by the local Administration and private citizens and entrepreneurs, replication and transfer, website performances and behavioral change can be monitored. In order to take in to account all the parameters the whole monitoring and assessment procedure will be designed and implemented according with a LCA approach. A monitoring protocol will be adopted, collecting all the procedures used for different tasks. Baseline statistics will be collected at the beginning of the project and then data monitoring will be done at the end of the 2ndand 3rdyear, calculating the absolute value of the indicator and the percentage variation

In each involved Municipality, a monitoring strategy will be implemented to evaluate the trends of particular parameters linked to the energy consumption, the GHG emissions, the PM concentrations in urban areas and to citizens health grade (i.e. cardio vascular diseases, asthma syndromes, etc).

The main strategy will be to define an appropriate sampling methodology to identify significant samples of urban buildings. The various samples identified in each municipality will represent different typologies of buildings subjected to different micro-climatic plant effects.

Firstly, each individual sampled building energy consumption will be evaluated by reviewing a year's worth of electricity and gas bills, for identifying how much is being spent on heating or cooling.

At the end of the project, a comparison between ex-ante and ex-post energy consumption through energy bills will be realized for each sampled building to infer the potential plants effects on the consumptions. After the project end, the same municipalities will continue yearly evaluations on the samples to evaluate the progressive consumption reductions.

The GHG emission reductions linked to the energy savings in each urban area will be reconsidered on the base of the energy supplies variations during the years.

As regard as monitoring methodology of PM concentrations and dangerous substances in urban atmosphere, agreements will be established between the Municipalities and public institutions that gives technical support to local Authorities on environmental policy specifically on monitoring of the various environmental components (PM10; PM2.5; NO2; O3; CO; SO2). In particular, regional agencies for environmental protection and prevention will be consulted periodically for obtaining specific reports on PM-substances variations due to plant absorption.

HOW: This action will be performed through four tasks:

D.1.1 – Designing of the monitoring protocol 6th – 12th

The protocol will describe for each actions of the Urban Climate Green Asset Strategythe objective of the monitoring and the parameter to take in account for the impact in terms of environmental an climate indicators (GHG emission divided for main sources, pollution divided for main sources, biodiversity index, energy saving, waste reduction), the source of data, the analysis tools, and data elaboration methodology.

D.1.2 – Ongoing monitoring 13th – 42th

The ongoing monitoring will be based on the data collected from the implementation of pilot action contained in the Urban Climate Green Asset Strategyand will be used to evaluate the effective environmental impact of these action using the LCA methodology to compare the implementation with the Status quo. For the status quo will be used the value of all environmental and climate indicators related to the EU climate goals for the available year closer to the start of the Project.

D.1.3 – Final assessment 24th – 42nd

The impact of the Strategic Plan will be estimated in relation not only to the pilot action implemented during the project, but simulating the implementation of all the recommendations and actions in a framework of ten

years. An LCA will be carried to make a counterfactual assessment of the full implementation of the plan. The projection of the implementation for the private action will be based on the data collected in the interviews to stakeholders (se C.2.2.2)

D.1.4 – Environmental monitoring related to LIFE KPI 13th – 42nd

Collection and analysis of data and information along the project implementation phase on the basis of the Key Project Indicators referred to the environmental impact of the project.

Updating of the LIFE KPI Webtool along the project, accordingly with its development.

WHERE: The monitoring action will be performed in the 4 pilot municipalities

WHY: Monitoring project impact is essential to know if the project is in line with the identified expected results and how the project contributes to the LIFE programme and EU climate goals. Furthermore, the implementation of an ongoing monitoring action will give the opportunity to detect failure risk to achieve the expected results and plan and implement affective corrective interventions.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, AUTH, ISG

How was the cost of the action estimated?:

UNIPG:

Senior Experts in environmental LCA: designing of monitoring protocol 40wd + 36wd for on-going monitoring + 18wd for final assessment.

Junior Experts in environmental LCA : 20wd designing of monitoring protocol.

ISG, BO, AUTH: Expert in environmental LCA 36wd for on-going monitoring + 18wd for final assessment each

D1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
4 monitoring strategies	02/2023
Urban Climate Green Asset Strategy monitoring protocol	08/2020
LCA of environmental and climate impact of the urban climate green asset strategy	02/2023

D1's PROJECT MILESTONES

Milestone name	Deadline
Updating of the LIFE KPI webtool (environmental)	02/2021
Signing of the agreements between municipalities and public institutions	02/2023
Urban Climate Green Asset Strategy monitoring protocol adopted	08/2020

D. Monitoring of the impact of the project actions (obligatory)

ACTION D.2: Monitoring of Socio Economic Impact

Description and methods employed (what, how, where and when):

WHAT: To evaluate the social and economic impact of the Urban Climate Green Asset Strategy a complete study will be carried out adopting the Life Cycle Costing and Social Life Cycle Assessment. The study will consider and assess the involvement of the different target of the project in the implementation of the strategy and the impact of each action in terms of increased citizens well-being, safety and health and Urban sustainability and attractiveness.

The socio-economic impact on citizens will be estimated in relation of direct and indirect actions in which they take parts:

- Direct: Effects deriving from the behavior change due to the participation in the action C2 and C3 (as energy saving), increase utilization of green areas and related knowledge,

- Effect deriving from the implementation of the Urban Climate Green Asset Strategic Plans by the Municipality, the owners of private green spaces and the entrepreneurs.

The measuring and updating the changes in attitudes and practices of the target audiences will be carried out through follow-up activities with the participants in the various actions and through surveys to citizens with both online and face-to-face questionnaires. The questionnaires will be promoted in all the main areas of the project: Professionals who deal with urban programming and urban forests, schools, trade associations and through the press and social media.

A database will be constructed with the participants in the actions. An ex ante and ex post awareness/behavioural survey on all target citizens, business community and students will be realized to assess their level of awareness and current behaviour before and after the Project actions.

By far the most commonly used methods will be questionnaires, interviews and discussion/focus groups. The majority of surveys will include elements of quantitative and qualitative data collection.

An ex ante survey will be based on:

- Interviewers activities for submitting onsite questionnaires or by Telephone, postal and online surveys.

- Stakeholder consultation/interviews

The ex post survey, based on same adapted questionnaire and same statistical sample (for comparative purpose), will assess the impact of the project by evaluating the increased awareness and in particular any modification they have implemented in their private/business life behaviours

Particular attention will be paid to analyse:

- Citizens behaviour change in managing their own green spaces

- increased attention to the ecosystem and climate functions of trees

- increased consciousness of the biodiversity issue in public and private garden tree species selection

- Interest in participating in the public-private management of public spaces

- adhesion of the business to the voluntary programme and compensation measures

- adhesion of the business to the compensation measures

An on - line questionnaire open to all citizens will also be activated on the portal (Action A4).

HOW

D.2.1 – Designing of the monitoring protocol 6th – 12th

The protocol will describe for each actions of the project and the Urban Climate Green Asset Strategythe

objective of the monitoring and the parameter to take in account for the impact in terms of socio-economic indicators (green jobs, revenue, investments, ets) the source of data, the analysis tools, and data elaboration methodology.

D.2.2 Assessment of the economic impact (12th– 42nd)

The economic impact of the Urban Climate Green Asset Strategy will be assessed adopting the Life Cycle Costing Approach.

According with the baseline and the indicator identified by the project will be performed in each area an on-going monitoring of the most relevant parameter on a 6 monthly bases.

The basic elements of observation will be:

- Managerial cost of green area

- Carbon credit deriving from the implementation

- Energy cost of the public and private building presence in the area of the new plantation

- New investment on public and private urban green areas

- New jobs place created

- Increase of income

- Economic value of the compensation measures

The information related to quantitative parameters will be collected by economic index and statistics.

D.2.3. Assessment of the social impact (12th– 42nd)

The social impact of the Urban Climate Green Asset Strategy will be assessed adopting the Social LCA method.

According with the baseline and the indicator identified by the project will be performed in each area an on-going monitoring of the most relevant parameter on a 6 monthly bases.

The monitoring will be based on the observation of

Quantitative parameters:

- the number of contacts within the Portal,

- numbers of citizens participating to the plant census,

- numbers of interrogation of the Desktop Application related to the planting and management of trees in urban areas,

- numbers of students participating to the courses,

- numbers of citizens and stakeholders participating in the public consultation,

- use of the emission calculator by entrepreneurs and citizens,

- number of articles and publication in the local media related to the project and in particular to the Strategic plan.

Qualitative parameters mainly related with behavior change:

- increase in the use of public green areas and the related effect on health,

- wiliness to pay for new green spaces and new trees in their City

- growing interest and attention on environmental and climate matters

- change in management of green areas

The information related to quantitative parameters will be collected by the web portal analytics and activity reports whereas the information related to quantitative parameters will be gathered through direct interviews to representative sample of citizens, students, entrepreneurs.

D.2.4 – Socio-Economic monitoring related to LIFE KPI 12th – 42nd

Collection and analysis of data and information along the project implementation phase on the basis of the Key Project Indicators referred to the economic impact of the project.

Updating of the LIFE KPI Webtool along the project, accordingly with its development.

WHERE: The monitoring action will be performed in the 4 pilot municipalities

WHY: The evaluation of thee socio-economic impact of the project is a crucial element for its long term sustainability in the pilot context and of the replicability and transferability on a Mediterranean scale.

The action is aimed at demonstrating with reliable data that the model proposed by LIFE CLIVUT is not only relevant under a environmental and climatic point of view, but it is also able to provides benefits to urban stakeholders in terms of reduction: of the cost of green areas, reduction of cost for cooling system, reduction of cost for damages recovery after natural disasters, increase of business opportunities creation of new job places, improvement of health, safety and wellbeing and related reduction on social and health care services.

Beneficiary responsible for implementation:

ISG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, AUTH, ISG

How was the cost of the action estimated?:

ISG: Professor and Researcher/Experts in LCC and social LCA 40wd for the coordination of the action + 30wd for socio-economic assessment of the project and 30wd for the socio-economic assessment of Urban Climate Green Asset Strategy, each

UNIPG, BO, AUTH: Expert in LCC and social LCA: 30wd for socio-economic assessment of the project and 30wd for the socio-economic assessment of Urban Climate Green Asset Strategy, each

UNIPG: Expert in Social analysis and communication; 24wd for on-going monitoring + 50wd for final assessment.

D2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Report on the first (ex-ante) and second (ex-post) surveys and the differences in the responses for each target in the project (citizens, business community and students)	02/2023
Socio Economic assessment monitoring protocol	08/2020
Socio Economic Impact Report	02/2023

D2's PROJECT MILESTONES

Milestone name	Deadline
Updating of the LIFE KPI web tool (socio-economic)	02/2021
Socio Economic assessment monitoring protocol adopted	08/2020

E. Communication and dissemination of results (obligatory)

ACTION E.1: Communication, dissemination of project results and networking

Description and methods employed (what, how, where and when):

WHAT: This action is aimed at communicating the main aims of the project to the wider public and to give a wide visibility to the results achieved in order to transfer and to capitalize them also beyond the partnership.

Furthermore, during the whole project duration, an activity of networking with other LIFE projects and experts will be done to promote a constant exchange of experiences and a synergic collaboration among working groups in Europe working on Urban Climate Mitigation and Adaptation Strategy in particular the Covenant of Mayors.

This activity will capitalize existing best practices, improve the knowledge about the project and related topics and will give the opportunity to develop further coordinated initiatives even after the project end.

HOW:

Task E1.1 - ***Communication of the activities and the results of the project (1st-42h)***

Communication activities will be structured in key messages articulated in specific terms in order to attract the interest of the target groups namely:

- Local authority technicians and policy makers

- Urban Planners

- Citizens

- Education and academic system

- Business activities in particular: tourism, commercial sector, etc

- Professionals (architects, engineers, botanic)

- National and EU NGO

- Research institutes

Information and communication activities will follow a targeted strategy that will involve local and national media, actions of involvement of local key actors and dissemination to other stakeholders not directly involved.

Specifically:

- Designing of project **logo**;

- Creation of a **website**

- Development of **social media profiles**(i.e Facebook, Twitter)

- Publication of 4 **articles on international press**; elaboration of 4 technical-scientific articles to be published on specialized magazines; plus at least 25 articles on national and local press in the 3 involved countries.

- Production and distribution of informative material (ENG/IT/GR/PT) **10.000 brochure (2500 x pilot city), 14 roll up (2 per partner) and 2000 (500 x pilot city) folders**per municipality

- Distribution of **gadgets**in the occasion of the public events of the project: 2000 pens 2000 block notes 2000 eco sustainable bags (for each pilot city)

- Installation of 40 **Notice boards**10 per municipality

- Elaboration of a **Layman's report**in paper and e-version downloadable from project website in EN project languages

E1.2 - Dissemination of project results (*24th – 42th*)

Dissemination strategy will move in two directions:

- horizontal: addressing to subjects/body similar to those involved in the project: Local authority technicians and policy makers, Urban Planners, Education and academic system, Business activities in particular: tourism, commercial sector, etc , Professionals (architects, engineers, botanic), National and EU NGO, Research institutes

- vertical: addressing to those who have power or possibility to policy makers/authorities who can develop a new regulatory framework for the effective implementation of Urban climate asset at local, regional and national level.

On of the main channel to disseminate project activities and results is the Covenant of Mayors for Climate and Energy, for this reason will be organized the presentation of the final result of the project in the frame of the Covenant Annual Conference

The dissemination activities will include:

- Organization of 3 National Final Conference in Bologna, Lisbon and Thessaloniki

- Presentation of the project in the Annual conference of the Covenant of Mayors for Climate and Energy

- Organization of 1 Final Conference **in Umbria**to present the outcomes and results of the project (80 participants belonging to project targets, policy makers at national and EU level) to present the final results of the project. The organization procedure will follow the principles of “Sustainable Events”.

Action E1.3: Networking (1st42nd)

Networking activities will be developed through exchanges and remote collaboration with identified experts, existing networks and through participation to meetings with beneficiaries involved in similar projects (including LIFE programme and other EU funding programmes).

Special attention will be given to networks, organizations and projects concerning the development of management plans for Urban climate Green Asset Strategy and a special connection will be created with the Covenant of Mayors for Climate and Energy.

The aforementioned activities will be reinforced through the participation of project partners in various International (and National) conferences on Urban climate Green Asset Strategy (ref. Action D2.2).

The action will be realized in connection with the implementation of the activities (Actions B) in order to share and spread the results achieved by the project, gather feedbacks, find out any eventual criticalities and develop the best strategies to solve it.

Example of projects that could be involved in the networking activities:

- LIFE SHARA LIFE15 - GIC/ES/000033

- LIFE Clim'Foot LIFE14 - GIC/FR/000475

- NATURE 4 CITY LIFE - LIFE16 GIC/FR/000099

- LIFE_WZROST_PL - LIFE14 GIC/PL/000008

- LIFE Climate CAKE PL- LIFE16 GIC/PL/000031

- LIFE OLIVE4CLIMATE - LIFE15 CCM/IT/000141

- LIFE SMART IN’AIR

- LIFE ASTI

The following activities are foreseen;

- Organization of 1 Platform meeting on Climate Strategy in Urban ecosystem

- Participation in 3 events of the Covenant of Mayors for Climate and Energy for each participating city

- Participation of the Coordinating Beneficiary in at least 6 international events organized by the above-mentioned projects

- Within project meetings is foreseen the participation, in presence or through web-conference of representatives of other projects

- All the representatives of relevant projects will be invited to take part to the Final Conference.

WHERE: Communication,Dissemination and networking will be performed at European and national level

WHEN: This Action will take place for the whole duration of the project

WHY: Communication,Dissemination andNetworking activities are extremely important mainly for the following reasons:

- they will promote the diffusion of project results to the wider audience and to the project key targets beyond project direct engaged territories

- they will guarantee the dissemination of the project actions and the capitalization of their results in other Mediterranean cities sharing the main problems and conditions, furthermore the dissemination is crucial to affect the National and EU policies providing best practice which can orient policy decisions.

- they will guarantee the wide and effective sharing of knowledge among thematic communities, capitalizing the respective results and creating strategic and operative partnership

Beneficiary responsible for implementation:

ISG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG, CESAR

How was the cost of the action estimated?:

Staff:

all partners: expert in scientific communication and expert in urban green area engaged for a total of 42wd each. The expert in urban green area is also engaged in dissemination and networking activities for 24 wd in total (12wd+12wd)

Furthermore:

For UNIPG the PD and the PM will be engaged in dissemination and networking activities for a total of 24wd each

ISG: Expert in scientific communication 20 wd + and Expert in urban green area 80 wd for the organization of the international platform meeting

Travel

UNIPG Participation to annual conference Covenant of Mayors (CoM)Travel and subs rate 750 euro (400€ for travel costs + 350€ for accommodation/meals)

BO-PG-AUTH-ISG participation in CoM events (3 travels each x 2 people each).Travel and subs rate as above

Ext Assist:

ISG:5000€ graphic designer (Logo, Communication Materials, etc) 5000€ for website development; organization of 1 Nat Final Conference 5000€ each (one day) including i.e costs for renting room, costs for interpreting, catering, fees for speakers, wi-fi and IT tools

ISG: organization of 1 international platform meeting on climate strategy in urban ecosystems 20000 € (one day) including costs as above

UNIPG: 10000 € organization of the Final Conference (one day) including costs as above

BO-AUTH: organization of 1 Nat Final Conference 5000€ each (one day), as above

Other costs:

PG: printing of communication materials 2000 brochures per 0,25€ each, 6 roll up per 80€ each, 2000 folders per 0,20€;

BO-AUTH- ISG (each):printing of communication materials 2000 brochures per 0,25€ each, 2 roll up per 80€ each, 2000 folders per 0,20€;

ISG: editing and printing of 800 copies of Layman’s report (5€ each)

PG, ISG, BO, AUTH, each: production project gadgets 2000 pens per 0,50€, 2000 block notes per 1€/each, 2000 eco-sustainable bags per 2,50€ each; 10 notice boards + showcases (250€ each)

Name of the picture: Annex RP12

For the use of social media, in the framework of LIFE CLIVUT, the language used, the length of messages/articles, the complexity of the contents will be tailored on the specific target addressed (ref. also for target engagement in action C4). Main social media used will be: Facebook, Twitter, Instagram and a *youtube* channel. Anyway, an ongoing monitoring of the effectiveness of the different tools will be implemented (i.e using google analytics) and, according with the results, social media platforms can be changed to guarantee the largest outreach of project achievements.
In the primary schools, social media will not be used: the lessons will be presented to the pupils by the teachers and experts engaged in the educational modules implementation in a friendly and interactive way.
Instead the social media channels will be crucial in the engagement strategy of the middle and high school students, in particular for them, Instagram, Facebook and Youtube will be used for posting news, events, lessons and labs results maximising the smart use of pictures, videos and online surveys.
The expected results of such communications will be to increase the engagement of the targeted students and to make them "bridge" for attracting the interest of their colleagues.
The more "technical audience", i.e. business community, professionals, urban planners and universities could be reached faster through short tweets on twitter that can attract their attention on the matter and that can be linked to the full technical articles (or to some videos posted on a project dedicated *youtube* channel), which can explain in deep how to be actively involved in the project.
All the project social media accounts and Twitter in particular will be linked with the institutional communication channels of local chambers of commerce or trade associations to repost the project related news in order to attract the widest range of technical targets.
For the general public/citizens, Facebook is still the social media more used. Accordingly, it will be important to propose contents less technical that can be understandable by all the users. Also Instagram, with an attractive imagine and a brief description below should be helpful to enlarge the audience in a faster way.
To guarantee the effectiveness of the strategy a proper number of social info will be posted on the different platform in order to avoid nor lack neither overloading of news.

E1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Layman’s Report	02/2023
Platform meeting publication	02/2023
pens	08/2020
block notes	08/2020
brochure	02/2020
roll up	02/2020
folders	02/2020
1 website	02/2020
eco sustainable bags	08/2020
Notice boards	02/2020

E1's PROJECT MILESTONES

Milestone name	Deadline
Website online	02/2020
Realization of the Platform meeting	02/2023
Organization of the Final conference	02/2023

F. Project management (obligatory)

ACTION F.1: Operative management of the project

Description and methods employed (what, how, where and when):

WHAT: The action is aimed at creating a sound and effective managerial system based on a clear sharing of responsibilities both within the Coordinating Beneficiary managerial staff and between the coordinating beneficiary and the associated beneficiaries ensuring a shared decision making process and the smooth implementation of the project activities.

HOW

F.1.1 Project management (1ST– 42ND)

In order to guarantee an effective coordination action, the managerial structural is based on a functional model and on the selection of high qualified profiles in key project roles.

The politic and strategic coordination and the institutional and territorial relations are in charge of the Project Director, expressed by the Coordinating beneficiary(CB).

The daily management of the project will be under the responsibility of the Project Manager for the daily management of all the technical-operative activities. The project manager will be selected by high level professionals guaranteeing specific experience in LIFE project management, full time commitment in management of the project, coordination of activities/partners and constant connection with the EASME and Monitoring Team.

Principal responsibilities:

1. Project Director

- guarantees the project political and strategic coordination

- chair the Steering Committee

- represents the project toward the EC, EASME and third parties.

- supervises and supports Project Manager and Financial Manager in all the activities

2. Project Manager

- Coordinates the whole project implementation

- Supports the Project Director in organizing and coordinating the Steering Committee meetings

- Guarantees the correct implementation of the activities, the achievement of milestones and the production of deliverables

- Designs the executive planning of the activities, detects failure risks, plans and agrees corrective actions

- Coordinates the designing of technical reports and the other docs/information requested from the Monitor and EASME.

- Collect beneficiaries’ input and send to the project monitor the monthly report

- Guarantees a flux of information with Monitor, desk officer and among beneficiaries

- Organizes and coordinates the monitoring visits

- Manages eventual disputes among beneficiaries

Furthermore, each Action foresee a Responsible Beneficiary which will be in charge to plan, monitor, coordinate and report all the action related activities in agreement with the Project Manger and the Project Director.

Finally, each beneficiary will identify his own Project Responsible in charge of partner activities coordination and reporting for the monthly, progress, mid-term and final report.

F1.2 Decision Making

Every strategic decision is in charge of the Steering Committee composed by a representative of each beneficiary and chaired by the PD Project Director supported by Project Manager and Financial Manger (no voting)

The Steering Committee (SC) oversees strategic planning, coordination, monitoring, evaluation and achievement of outputs/results.

It decides on the implementation of the project ensuring the permanent involvement of all the consortium members.

The Steering Committee will meet at least every 6 months and whenever it is considered necessary. During the first meeting SC will adopt the “Rules of procedures”, a document that set roles, responsibilities, composition, organization and decisional procedures. (ref.A1.2)

F1.3 After-LIFE Plan

At the end of the project it will be produced an “After-LIFE Plan” under the responsibility of the coordinating beneficiary ant with the engagement of all the Associated beneficiaries.

The Plan will give details regarding which actions will be carried out after project end, when, by whom, and using what sources of finance

The After-LIFE Plan will be presented in the beneficiary’s language and in English, in paper and electronic format.

WHERE: The action will be performed in the beneficiaries premises. The SC meeting will be organized in the CB main seat

WHY: The proposed organization guarantees that the strategic coordination is strongly in the hands of the CB through the Project Director, while an experienced and full time Project Manager ensures the needed daily project management. The identification of a member of the CB permanent staff who dedicates all its work time to the project coordination is not feasible because permanent staff is engaged in the ordinary activities and cannot be devoted full time to the project. For this reason, the project consortium plans a distribution of responsibilities/tasks based on the concept of management efficiency and scientific quality in coherence with the specific skills of the Associated Beneficiaries.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG, CESAR

How was the cost of the action estimated?:

Staff costs:

UNIPG: Project Director for a total of 60wd, Project Manager for a total of 250 wd for the operative management of the project.

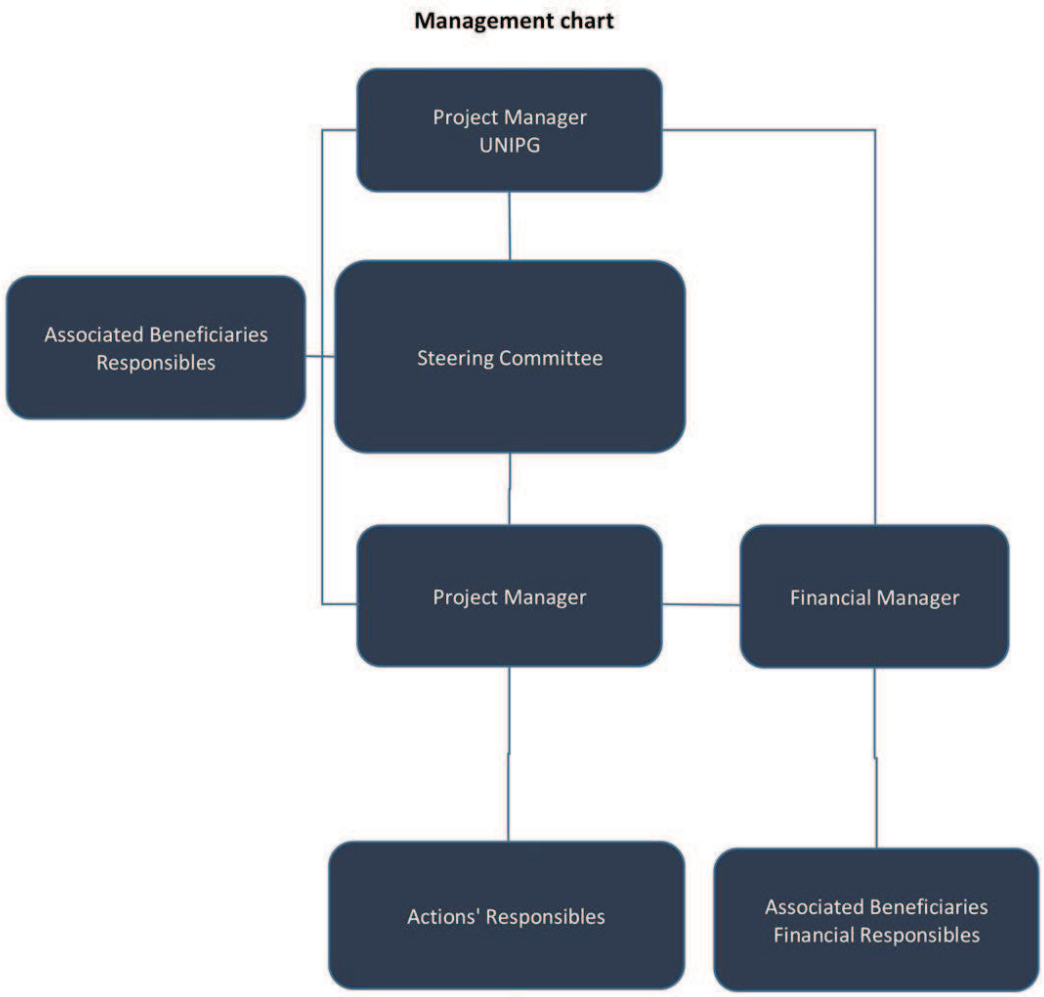
All other partners: Project Responsible for a total of 42 wd for the whole project.

Travel costs: travel have been estimated as follows:

Travel and subsistence rate for international trip: 750 euro: (400€ for travel costs + 350€ for accommodation and meals) per 1 person

Travel and subsistence rate for national trip: 500 euro: 200 for traveling by car (fuels, highway toll, etc.) and 150 for daily subsistence for 2 days per 1 person (UNIPG will participate with 2 people)

Name of the picture: Management Chart



Name of the picture: Rationale of the project consortium

Rationale of the project consortium			
Beneficiary	**Acronym**	**Country**	**Role in the project**
Università degli Studi di Perugia - DICA	UNIPG	IT	Coordinating Beneficiary in charge of Coordinating the following actions: **A.2 Green asset characterization and identification of environmental and climate parameter** and **A3 – Phenological monitoring area realization** leading the designing of the operative protocols and guaranteeing the scientific supervisions of all the foreseen activities. **C5 - Replicability and transferability** coordinating the actions and supporting the Italian responsible municipalities, in Urban green asset characterization and PMA creation in transfer cities **D1 - LCA of environmental and climate impact of the Urban Climate Green Asset Strategy** designing the monitoring protocols and guaranteeing the scientific supervisions of all the foreseen activities. A1 **Project Start Up, F1 Operative management of the project** and **F2 – Administrative and financial management** coordinating the whole project Finally it will lead a key role in the dissemination and networking activities presenting the project in international seats.
Aristotle University of Thessaloniki	AUTH	GR	Associated beneficiary in charge of implementing all the project pilot actions in the municipality of Thessaloniki and cooperate with UNIPG in designing the Operative protocol for actions A" and A3 Furthermore AUTH will be in charge of coordinating the Action **C3 Climate educational skills** coordinating in particular the designing of the academic curricula.
ISG-Instituto Superior de Gestão	ISG	PT	Associated beneficiary in charge of implementing all the project pilot actions in the municipality of OEIRAS Furthermore ISG will be in charge of the **Action C4 Business in Urban Climate Actions** coordinating the whole process of business engagement and training and the designing of effective scheme. Lastly ISG will coordinate the Action D2 **Monitoring of Socio Economic Impact** adopting the LCC and Social LCA approach. Lastly ISG will be in charge of coordinating the **Action E1 Communication, dissemination of project results and networking**
Municipality of Bologna	BO	IT	Associated beneficiary in charge of implementing all the project pilot actions in its own territory. It will manage the transfer action in an identified city though a peer to peer process (C5) Furthermore BO will be in charge of coordinating the **Action A4 Urban green asset management system** putting at disposal of the consortium of the experience tools and methodology developed in the frame of LIFE+GAIA and already in place in the municipality. Lastly Bologna will have a key role in the capitalization of the results of iSCAPE project thanks to the institutional relation with the University of Bologna and ARPA Emilia Romagna
Municipality of Perugia	PG	IT	Associated beneficiary in charge of implementing all the project pilot actions in its own territory furthermore it will manage the transfer action in an identified city though a peer to peer process (C5)
CESAR Centro per lo Sviluppo Agricolo e Rurale	CESAR	IT	Associated beneficiary in charge of coordinating the Action **C1 – Urban planners capacity building for designing and implementation of Urban Climate Green Asset Strategy** designing the **methodology for the** Study Group and supervising the designing process in all the pilot areas

F1's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
After-LIFE Plan	02/2023

F1's PROJECT MILESTONES

Milestone name	Deadline
Mid-term presentation	02/2021
Final report presentation	05/2023

F. Project management (obligatory)

ACTION F.2: Administrative and financial management

Description and methods employed (what, how, where and when):

WHAT: The activities of this action will be related to the administrative and financial coordination of the project to guarantee the cost-effective approach. The financial management system and procedure will be based on the Life programme regulation, the Grant Agreement provisions and the national and European laws.

HOW:

The financial manger selected by the Coordinating Beneficiary among professionals with experience in financial management and accounting of EU funded projects with specific reference to Life program.

The Financial Manager is in charge of the entire administrative-financial process. Each beneficiary will identify his own administrative referent that will coordinate the internal procedures and the periodic financial reporting. In order to guarantee the effectiveness of the process, the Financial Manager will design an Administrative Management Manual and organize specific informative sessions to illustrate the auditing, administrative and financial management rules for associated beneficiaries financial responsible.

Financial Manager will be in charge of:

- Designing the Administrative Management Manual

- Organizing informative sessions addressed to the associated beneficiaries’ financial responsible;

- Implementing a financial monitoring system to stand over the correctness of the financial and administrative procedures of the associated beneficiaries;

- supporting the associated beneficiaries in their duties, giving them assistance and information

- keeping updated the financial reporting of the project every 3 months

- coordinating the administrative session of the monitoring visits;

- organizing periodical meeting in the associated beneficiaries' headquarters in order to verify the cost-reporting system and giving support if necessary;

- proposing amendments and/or shifts in the budget;

- collecting the financial reports and check the coherence of the technical actions of the project;

- submitting the overall financial reporting together with the mid-term report and the final report.

The Financial Manager works in close cooperation with the Project Manager and the Project Director in the issues related to the budget amendments/sharing and to the dispute resolution inside the partnership. He is the direct interlocutor of the EC for the financial-economic-management of the project.

The financial responsible of the associated beneficiaries will be in charge of:

- applying a reporting system in accordance with the LIFE programme rules;

- ensuring the conformity of the invoices and the other accounting documents with national law and with the obligation arising under Grant Agreement;

- verify the coherence of the costs allocated with the estimated budget and the actions of the project;

- preparing motivated budget modification requests to submit and agree with the FM and the PM;

- sending a financial reporting to the FM every 3 month with supporting documentation of expenditure and any other needed documents;

- submitting the financial reporting together with the mid-term report and the final report;

- keeping a continuous communication with the FM reporting every potential issue which could jeopardize the correct implementation of the economic and financial issues of the project.

Green public procurement: All the public tendering procedures for the selection of the service and goods provider in LIFE CLIVUT will be handled respecting the criteria of the Green Public Procurement foreseen specific criteria for each of the product groups, summarized as follows:

- Paper:Purchaseonly products **officially recognized eco-labelling schemes**100% recycled and totally chlorine free for plain/copy paper; certified as sustainably harvested virgin fibers (e.g. FSC certified) for colored paper, Reduce consumption by reusing paper for notepads and double sided copying.

- IT Product:Purchasing only products **officially recognized eco-labelling schemes**; Use of Recycled toner and inkjet cartridges; reduce printing; purchase products with a restricted amount of hazardous constituents and with a reduced potential for hazardous emissions upon disposal: design for durability, upgradeability and reparability; selection of products with a design for dismantling and End-of-life management to maximise the recovery of resources.

- Food & Catering:Purchase food produced through organic agriculture; adapt menus (less meat and more seasonal food); avoid use of plastic cutlery and plates.

- Cleaning and waste: Purchase environmentally friendly cleaning products, Set up a waste collection policy.

- Building Maintenance: Include environmental criteria for contracting maintenance services (e.g. materials using less water and energy); targeting user behaviour (e.g. switching off lights when leaving rooms).

WHERE: The action will be performed in the Associated Beneficiaries' premises.

WHY: The proposed organization guarantees that the strategic coordination is strongly in the hands of the Coordinating Beneficiary through the Project Director, while a Financial Manager ensures the needed daily financial management proposing and discussing with the Project Director budget revision. The final decision regarding all the crucial aspect remain under the responsibility of the Steering Committee.

Beneficiary responsible for implementation:

UNIPG

Responsibilities in case several beneficiaries are implicated:

UNIPG, BO, PG, AUTH, ISG, CESAR

How was the cost of the action estimated?:

Staff Costs:

UNIPG: Accountancy responsible 42wd for the whole duration of the project + 160wd for the Financial Manager

All other partners: Accountancy responsible 42wd for the whole duration of the project

Travel costs: travel have been estimated as follows:

Travel and subsistence rate for international trip: 750 euro: (400€ for travel costs + 350€ for accommodation and meals) per 1 person

Travel and subsistence rate for national trip: 500 euro: 200 for traveling by car (fuels, highway toll, etc.) and 150 for daily subsistence for 2 days per 1 person

F2's PROJECT DELIVERABLE PRODUCTS

Deliverable name	Deadline
Minimum criteria for green procurement	02/2020

F2's PROJECT MILESTONES

Milestone name	Deadline
Financial Final report presentation	05/2023
Financial Mid-term presentation	05/2021

DELIVERABLE PRODUCTS OF THE PROJECT

Name of the Deliverable	Number of the associated action	Deadline
Partnership agreements	A 1	30/09/2019
Mapping and characterization protocol	A 2	31/10/2019
Phenological monitoring protocol	A 3	31/10/2019
Administrative Managing Rules Manual	A 1	30/11/2019
SC Rules of procedures	A 1	30/11/2019
1 website	E 1	29/02/2020
Digital archive with data on natural species characteristic of each engaged pilot	A 2	29/02/2020
Minimum criteria for green procurement	F 2	29/02/2020
Notice boards	E 1	29/02/2020
brochure	E 1	29/02/2020
folders	E 1	29/02/2020
roll up	E 1	29/02/2020
Georeferenced Map of the PMA with dendrometric and phonologic characteristics of the planted trees	A 3	31/03/2020
Quantitative models to assess the climate and environmental benefits of different tree species	A 2	31/03/2020
4 academic modules (1 per pilot)	C 3	31/08/2020
4 first level secondary school modules (1 per pilot)	C 3	31/08/2020
4 primary education modules (1 per pilot)	C 3	31/08/2020
4 secondary school modules (1 per pilot)	C 3	31/08/2020
Desktop application	A 4	31/08/2020
Socio Economic assessment monitoring protocol	D 2	31/08/2020
Urban Climate Green Asset Strategy monitoring protocol	D 1	31/08/2020
Urban Green Asset Management System	A 4	31/08/2020

Web app	A 4	31/08/2020
block notes	E 1	31/08/2020
eco sustainable bags	E 1	31/08/2020
pens	E 1	31/08/2020
e-learning module	C 1	30/11/2020
e-learning platform	C 4	28/02/2021
e-learning modules	C 4	30/06/2021
4 Urban Climate Green Assets Strategy	C 1	31/08/2021
4 set regulatory and incentive measures	C 4	31/08/2021
Public Private Management Plan	C 2	31/08/2021
4 replication plans	C 5	28/02/2022
4 Urban Climate Green Asset Strategy in transfer city	C 5	28/02/2023
4 business case	C 5	28/02/2023
4 monitoring strategies	D 1	28/02/2023
After-LIFE Plan	F 1	28/02/2023
LCA of environmental and climate impact of the urban climate green asset strategy	D 1	28/02/2023
Layman’s Report	E 1	28/02/2023
Platform meeting publication	E 1	28/02/2023
Report on the first (ex-ante) and second (ex-post) surveys and the differences in the responses for each target in the project (citizens, business community and students)	D 2	28/02/2023
Report on the result of monitoring and management activities	C 2	28/02/2023
Socio Economic Impact Report	D 2	28/02/2023

MILESTONES OF THE PROJECT

Name of the Milestone	Number of the associated action	Deadline
Partnership Agreements signing	A 1	30/09/2019
Constitution of the SC	A 1	31/10/2019
Completion of natural species characterization	A 2	29/02/2020
Website online	E 1	29/02/2020
Presentation of the quantitative models to assess the climate and environmental benefits of different tree species	A 2	31/03/2020
Approbation of the yearly didactic planning with the new curricula	C 3	31/08/2020
Full functioning of thee Urban Green Asset Management System and its interactive tools	A 4	31/08/2020
Socio Economic assessment monitoring protocol adopted	D 2	31/08/2020
The reaching of independent vegetative growing phase in all the PMA	A 3	31/08/2020
Urban Climate Green Asset Strategy monitoring protocol adopted	D 1	31/08/2020
Mid-term presentation	F 1	26/02/2021
Updating of the LIFE KPI web tool (socio-economic)	D 2	26/02/2021
Updating of the LIFE KPI webtool (environmental)	D 1	26/02/2021
Start of Green Asset census and monitoring by the citizens	C 2	28/02/2021
Start of public and private Green Asset management by the citizens	C 2	28/02/2021
Financial Mid-term presentation	F 2	31/05/2021
Adoption by the municipalities of the Urban Climate Green Assets Strategy	C 1	31/08/2021
Launching of regulatory and incentive measures	C 4	31/08/2021
Completion of Urban Climate Green Asset Strategy in transfer city	C 5	28/02/2023
Organization of the Final conference	E 1	28/02/2023
Realization of the Platform meeting	E 1	28/02/2023
Signing of the agreements between municipalities and public institutions	D 1	28/02/2023

Final report presentation	F 1	26/05/2023
Financial Final report presentation	F 2	28/05/2023

ACTIVITY REPORTS FORESEEN

Please indicate the deadlines for the following reports:

• Progress Reports n°1, n°2 etc. (if any; to ensure that the delay between consecutive reports does not exceed 18 months)

• Mid term report payment request (for project longer than 24 months or with Eu contibution of more than EUR300,000)

• Final Report with payment request (to be delivered within 3 months after the end of the project)

Type of report	Deadline
Midterm report	26/02/2021
Progress report	28/02/2022
Final report	26/05/2023